Programme design document form for small-scale CDM programmes of activities

(Version 03.0)

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

PROGRAMME DESIGN DOCUMENT (PoA-DD)	
Title of the PoA	**Promotion of the Improved Cooking Stove (ICS) – Nepal**
Version number of the PoA-DD	10
Completion date of the PoA-DD	03/12/2014
Coordinating/ managing entity	Alternative Energy Promotion Centre (AEPC)
Host Party(ies)	Nepal
Sectoral scope(s) and selected methodology(ies), and where applicable, selected standardized baseline(s)	Sectoral Scope 3: Energy Demand Methodology: AMS.II.G version 06 (Energy efficiency measures in thermal applications of non-renewable biomass)

PART I. Programme of activities (PoA)

SECTION A. General description of PoA

A.1. Title of the PoA

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Promotion of the Improved Cooking Stove (ICS) – Nepal

A.2. Purpose and general description of the PoA

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The Promotion of the Improved Cooking Stove (ICS) – Nepal, a CDM Program of Activities (PoA) is an initiative to be implemented by Alternative Energy Promotion Center (AEPC)[1] which is a nodal agency for promoting Renewable Energy Technologies (RETs) in Federal Democratic Republic of Nepal (Federal Democratic Republic of Nepal is hereby referred to as Nepal later in the document). The use of fuel efficient improve cooking stoves would lead to less consumption of fuel-wood which would thus reduce the emission from the stove. The programme will also contribute towards reducing deforestation and also improvement in the quality of life of the targeted group through reduction of drudgery, time and money spent on fuel wood collection and throughout improvement of the indoor environment. The CPAs under the programme will be implemented and maintained by AEPC.

Policy/measure or stated goal of the PoA

The ICS program is aligned with the Government strategy as the main objective of the ICS program is the dissemination of the appropriate improved cooking stove to the rural household of Nepal resulting in the reduction of firewood consumption leading to climate mitigation in a sustainable manner.

The Rural Energy Policy (2006) of Government of Nepal has set framework and policy for the renewable energy promotion. This policy emphasises to promote clean, reliable and appropriate energy sources as a means to reduce rural poverty and protect the environment. The policy highlights the following strategies related to the biomass energy:

- Raise awareness on ICS as well as other biomass energy technologies to reduce indoor air pollution and fuel wood consumption
- Promote research, development and dissemination of ICS and other biomass energy technologies that are appropriate for different geographical and cultural settings.
- Technology transfer of ICS in rural areas
- Encourage establishment of information centres and exhibitions
- Discourage direct burning of cow dung.

The aim of the PoA is to promote dissemination of Improved Cooking Stove (ICS) with replacement of existing Traditional Cooking Stoves (TCS) to the existing users in Nepal. The programme will contribute towards improving livelihoods of the rural households through improved access to energy services from the improved cooking stoves. The carbon revenues will be utilised to recover the portion of the costs of the program[2]. The contribution of the PoA to sustainable development of

[1] http://www.aepc.gov.np/

[2] NRREP started in July 16, 2012 is presently funded by Danida, Norway, DFID, KfW and GoN. GoN is committed to contribute 35% of the total indicated budget i.e. 184 million USD for the five years span of NRREP as per Annex: Changes in NRREP, Programme Document in 1.2, page 46). The GoN commitment includes its regular financial support in renewable energy sector as well as carbon revenue from this PoA and other registered CDM projects implemented by AEPC. The remaining 65% is expected to be funded by external donors. As of now, the Norwegian and Danish Governments confirmed their commitments of Norwegian Kroner 172 million (about 17% of the total cost) and Danish Kroner 205 million (about 20% of the total cost) respectively (see agreements between GoN and Norwegian Embassy, and between GON and Danish Embassy). Other donors, so far, have not yet confirmed their contribution. Since the carbon

the country is significant in terms of environmental, technological, economic and social well being. The sustainable development benefits of the programme have been discussed below.

PoA Management Framework

AEPC was established in 1996 as a semi autonomous body formed under the Alternative Energy Promotion Board for developing and promoting RETs in Nepal. The overall objective of AEPC is to popularise and promote the use of renewable energy technologies to raise living standards of rural people to protect the environment and to develop commercially viable alternative energy industries in the country. The Alternative Energy Promotion Board is a separate board which consists of 9 members from various sectors – Government, Private Sector and Financial Institutions. The board of AEPC has overall authority to make decision on AEPC's activities. Human resources of AEPC are hired by the Board and totally separated from Civil Servant and cannot be transferred to government ministry and departments. AEPC supports government to formulate RETs related policy, plan and coordinate national level stakeholders to implement the policy and plan. Presently, AEPC is in the process of transforming into a full autonomous organization.

Under its umbrella AEPC is implementing various programs and projects. One of them, Energy Sector Assistance Programme (ESAP) Phase I, was introduced in 1999 with an expected implementation period of 15-20 years and completed in 2007. The ESAP Phase II started in March 15 2007 and ended in July 16 2012. One of the major components of ESAP was Biomass Energy Component[3] (BEC) which was established to support AEPC in promoting biomass based energy technologies. The aim of BEC was to improve the kitchen environment for rural population and introduce new biomass energy technologies through commercialisation. BEC developed application of other biomass energy technologies such as metallic stoves, briquetting, biomass gasifiers, cogeneration and biofuels. The overall strategy of BEC was to promote biomass energy through Non Governmental Organisations (NGOs), forest user groups and other relevant organisations based on best practices guidelines and support mechanisms. As a result of ESAP Phase I and II activities more than 615, 000 Mud ICSs, 7,000 Metallic ICS and around 1,600 Institutional Mud ICSs were installed throughout the country.

With the end of ESAP Phase II on 15 July 2012, the Government of Nepal and Development Partners (DPs) agreed to start a new programme called National Rural and Renewable Energy Program Accordingly, NRREP has started from 16 July 2012[4] for a period of five years and is presently funded by Danida, Norway, DFID, KfW. The development objective of the NRREP is to improve the living standard of rural women and men, increase employment of women and men as well as productivity, reduce dependency on traditional energy and attain sustainable development through integrating the alternative energy with the socioeconomic activities of women and men in rural communities. NRREP has three main components i.e. Central Renewable Energy Fund, Technical Supports, and Business Development for Renewable Energy & Productive Energy Use. In line with the NRREP objectives and continuation of successful efforts by ESAP Phase I and II in promoting ICS, the Technical Supports component has a dedicated Biomass Energy Subcomponent (BES) with objective to further scale-up implementation network for ICS with defined quality criteria. The proposed CPAs under PoA are part of BES activities.

Beside, the Climate and Carbon Subcomponent (CCS) under Technical Supports subcomponent was also created with the main objective that CDM and other carbon market instruments are functional and generate revenue.

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revenue from this PoA is expected to be part of the GoN commitment (35%) to NRREP to achieve among others the promotion of 475,000 ICS (majority belonging to proposed PoA) under BES/NRREP it is not possible to achieve this target in the absence of this PoA. Besides, the funding commitment is for 5 years span of NRREP and the CPAs developed after this period will experience a funding gap and the revenue from CDM will be required to cover the cost of programme after the NRREP is over.

[3] In ESAP Phase I the component has title "Biomass Energy Support Programme" (BESP), however in ESAP Phase II the component title was changed to " Biomass Energy Component" (BEC)

[4] National Rural and Renewable Energy Programme (NRREP), Programme Document, May 2012

General operating and implementing framework of PoA

The implementation plan of this PoA is shown in the table below:

Table 1: PoA Implementation Plan

S.N	Year	Mud ICS	Metallic ICS
1	2013^	0	1,236
2	2014	60,000	6,000
3	2015	60,000	6,000
4	2016	60,000	6,000
5	2017	60,000	6,000

^ Installation for 2013 is a real case installation while for others it is projected.

The proposed implementation plan for the PoA contributes to the five years' target of the National Rural and Renewable Energy Program (NRREP) executed by AEPC for the period from 2012 to 2017. As per the program document of the NRREP, the target for ICS implementation is 475,000 for the program period i.e. 2012 to 2017 which corresponds to 95,000 units per year. However, since the NRREP envisages the implementation of ICS throughout Nepal and under the PoA only the ICS implemented in Terai and High Hill ecological zones of Nepal are eligible, the target of the PoA is less than the actual overall target of the NRREP. The implementation plan until now is formulated for the period until 2017 only; hence the post 2017 scenario will be guided by the progress of NRREP and another program that might evolve after 2017.

AEPC shall serve as a PoA managing entity and sole legal representative of the program. Therefore, AEPC shall be the coordinating entity which communicates with the CDM Executive Board, including on matters relating to the distribution of CERs. AEPC will ensure that all CPAs under this PoA are neither registered as an individual CDM project activity nor included in any other registered PoA and that the CPA is subscribed only to this PoA. AEPC will manage a central database for all CPAs.

AEPC would coordinate with the users of ICS to ensure that all requirements with respect to a CDM PoA such as assisting with validation and registration, record keeping, monitoring and survey of households at a regular interval are met. In addition to implementing the activities as per design and complying with the requirements of the CDM-PoA, the programme management would also be responsible for the environmental integrity of the programme.

BES and CCS under AEPC/NRREP will provide technical support to local level institutions like Regional Service Centres (RSCs) and District Renewable Energy Service Centers (DRESC)/Local Partner Organizations (LPOs) [5] to implement the program. These organizations are the service providers who provide support to implement the program at local level in coordination with District Energy and Environment Units/Sections (DEEU/S) established at each District Development Committee (DDC) in 75 districts of Nepal.

LPOs will be selected on the basis of criteria like past experience in renewable energy project implementation, availability of competent human resource, outreach of services, etc. LPOs will be responsible for social mobilization, communication and education for raising awareness, capacity building activities at local level, supporting the stove technicians, monitoring the programme activities and coordinating the activities with local stakeholders.

With social mobilization support from LPOs communities will select potential stove masters (Promoters) for training. Priority will be given to women and people belonging to poorer sections. They will be trained in construction of built-on-site model stove and its repair and maintenance. The trained Promoters/stove masters would then install the stoves in individual households in the

[5] District Renewable Energy Service Centers are also called Local Partner Organizations (LPOs). Both entities are delegated with same responsibilities; however, the district based organization providing renewable energy services in Terai are called DRESCs while those operating in hills are called LPOs.

programme area based on demand from the users. The trained stove masters will also provide after sales services- repair and maintenance of the stoves.

In case of metallic ICS, pre-qualified manufacturers (workshop) are trained to fabricate the stove as per the drawing and specification. These workshops will sell the stoves to the users. The stove manufacturers provide after sales service to the users. The manufacturers also orient the users on use and operation of the metallic ICS at the household level.

A record keeping system and a unique identification (ID) card with a unique serial number (CDM Code), user's name, and address, date stove installed/sold including the name of the stove installer or person/institution selling the stove and the amount of direct subsidy for every Metallic ICS disseminated will ensure that each ICS can be traced to one specific CPA to avoid double counting.

The user manual will have four copies of ID card which will include all information- unique number (including CPA number) user's name, address, date of stove installed/sold, name of stove installer/selling institution and the amount of direct subsidy for every Metallic ICS. One copy of the ID card will be in the user manual, second copy will be kept separately with the user along with citizenship card, third copy will be kept at RSC and the fourth copy will be kept at AEPC. The user will keep one copy of ID card along with the citizenship card and the other copy will be in the user manual in order to make sure that the ID card will be stored safely and is easily made available during verification.

Sample of unique number (CDM code) in the ID card.

PP	PoA	CPA number	Stove number
AEPC	ICS	XXX	XXXXX

When the operating life of a mud ICS is over, it will be replaced by a new stove. The average operating life of mud ICS is three years[6] and during the replacement process, the identification number of the ICS will be same as the total number of stove per CPA will have to be same. In case the user is not willing to replace the ICS, a new user will be provided with the ICS with the same number thereby keeping the total number of stove in a CPA same. In case of mud ICS, the ICS will be replaced after every three years. For Metallic ICS, since the operating life is 25,995 operational hours which is equivalent to 11.86 years (using the operational life in hours for 6 hours of daily usage as stated in the report[7]). Since, the life of MICS is greater than the crediting period of the CPA (i.e. 7 years), MICS need not be replaced till the end of the crediting period of CPA. In case, the crediting period is renewed for CPAs, MICS will be replaced after 11 years of its operation (starting from the date of installation). During the replacement process, the identification number of the MICS will be same as the replaced MICS. In case the user is not willing to replace the ICS, a new user will be provided with the MICS with the same number thereby keeping the total number of stove in a CPA same.

Each CPA can include maximum of 22,349 ICS (see Table 7) which is rounded down to 22,000 stove per CPA. A total of 22,000 ICS will form a CPA under the PoA. For the allocation of CDM code to ICS under each CPAs of the PoA, CDM code for 22,000 ICS for first CPA will be provided starting from AEPC-ICS-001-00001 to AEPC-ICS-001-22,000. Similarly, for CPA 2, CDM code from AEPC-ICS-002-00001 to AEPC-ICS-002-22,000 will be provided and so on.

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

[6] Celebrating 500000+ ICS, Biomass Energy Support Programme, AEPC/ESAP, 2012, pp 81 (the referred page is in Nepali language)

[7] Report on Determining life of metallic improved cooking stoves disseminated by AEPC/ESAP, March 11, 2012

The proposed PoA is a voluntary action by AEPC since:

- The installation of the ICS is a voluntary action by the households.
- The targets formulated by the Nepal Government for the dissemination of ICS are not mandatory.
- The approach of the program is demand driven. Every household makes a substantial part of the investment itself.

Sustainable development benefits

The following sustainable development benefits are envisaged from the programme.

a) Environment well being

- ✓ The programme will lead to the reduction in the wood consumption so that the natural recovery of forests and/or reforestation could take place,
- ✓ The programme will lead to reduction in Indoor Air Pollution from wood smoke and avoid smoke related health disorders
- ✓ The reduction in biomass consumption for cooking through efficient use leads to improved ecological balance.
- ✓ The protection of standing forests will ensure the maintenance of watersheds that regulate water table levels and prevent flash flooding
- ✓ The programme will lead to prevention of fire hazards in the household kitchen and the improved cooking stove technology is environmentally safe

b) Social well being

- ✓ The programme will contribute to the preservation of wood resources so as to avoid inter-communal and/or inter-religious conflict over resources.
- ✓ There will be reduction of the workload as a result of reduced in time for colleting the firewood which can be used more productively in other income generating activities.
- ✓ The programme will effectively address gender and poverty reduction issues through increased economic activities and employment opportunities bringing about better living conditions.

c) Economic well being

- ✓ The fabrication, operation and repair and maintenance of ICS's are expected to provide employment to the local people.
- ✓ The costs incurred in the purchase of firewood will be reduced through increased efficiency of the ICS thus leading to lesser firewood consumption.

d) Technological well being

The introduction of locally manufactured technology with improved energy efficiency helps in technological self-reliance in the area.

A.3. CMEs and participants of PoA

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AEPC is the managing/coordinating entity of the PoA and would communicate with the Board. The contact details of AEPC are provided in the Appendix 1 of this PoA DD. AEPC will implement, monitor, maintain the database, support private sector, quality control, fund administration and awareness creation including management of the ICS programme.

A.4. Party(ies)

Name of Party involved (host) indicates 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)
Federal Democratic Republic of Nepal (Host)	Alternative Energy Promotion Center (AEPC)	No

A.5. Physical/ Geographical boundary of the PoA

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The geographical boundary of the PoA will be Nepal. The PoA can include ICS in all 75 districts of Nepal.

A.6. Technologies/measures

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The existing traditional stoves used in Nepal are simple structures made from clay or having stone or metal tripods. These stoves are very inefficient because they have poor air flow and insulation. The proposed PoA will introduce activities that improve efficiency over the existing traditional cook stoves which will save non-renewable biomass in the baseline scenario.

The mud ICS have been developed from continuous modification and improvement over the traditional stoves used in Nepal. These stoves are made of clay, rice husk, dung and a few metal rods. The household mud ICS will have varying number of potholes (one or two or three) with chimney. A baffle is used to direct the flame and hot air to the second pot hole in case of the two pot hole stove and to second and third pot holes in case of three pot hole stove. The mud ICS is one of the most simple, inexpensive and widely used technologies designed to improve combustion efficiency of biomass and reduce exposure to indoor air pollution. In case of Rocket Stove[8], there is no chimney in the stove. The operation life time the mud improved cooking stove is three years.

The improved cooking stove (metallic stove) for the high hill region was designed and developed by Kathmandu University with support from AEPC and then further improvement was done by AEPC.

No technology transfer from abroad is involved in development of mud ICS

The metallic ICS model is similar to mud improved cooking stoves but made from metal to allow space heating as well. Adjustable air vent in the main door allows regulation of air flow and damper in flue pipe allows transfer of heat efficiently towards cooking pots. The stove with secondary air hole and ash tray is also available in two models which help in combustion efficiency of stove and easy removal of ash from the stove. No technology transfer from abroad is involved in development of metallic ICS. The operational life of MICS is 25,995[9] hours.

[8] Rocket stove is also a type of mud ICS but is categorized as a different type of stove due to difference in the basic principle, outlook and performance. It is named a Rocket Stove in order to differentiate it from regular mud stoves disseminated in the program.

[9] Report on Determining life of metallic improved cooking stoves disseminated by AEPC/ESAP, March 11, 2012

Figure 1: Three Pot Hole Metallic ICS with water tank

Figure 2: Three pot hole Metallic ICS with tray

Figure 3: Two pot hole Metallic ICS with tray

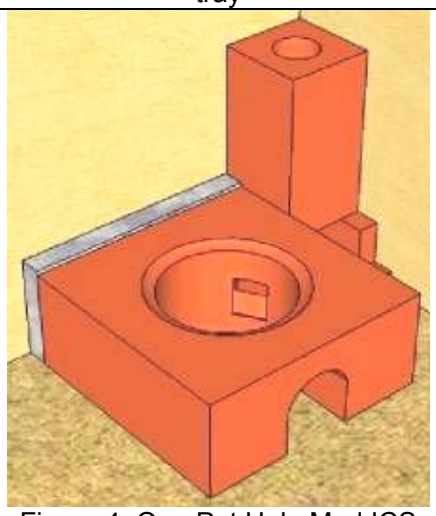

Figure 4: One Pot Hole Mud ICS

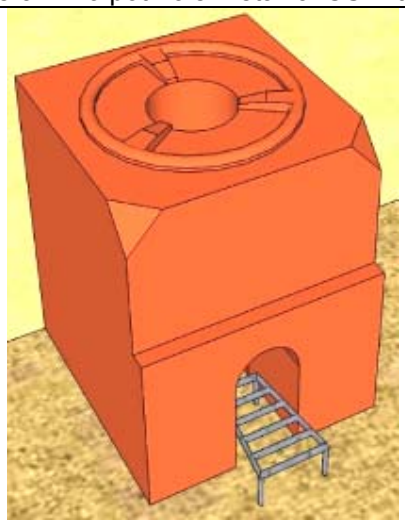

Figure 5: Fixed type Single Pot hole Rocket Stove (rectangular or cylindrical shape)

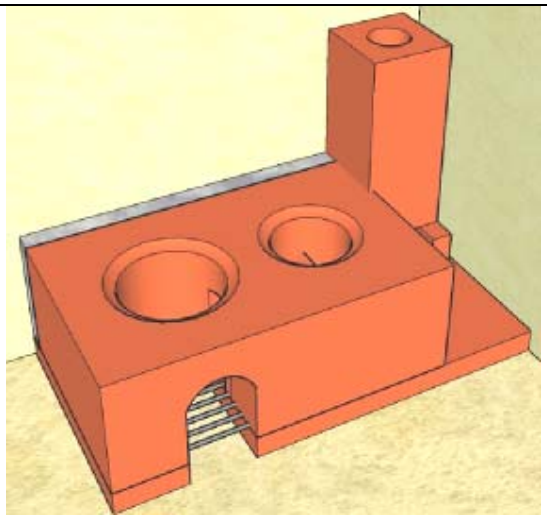

Figure 6:Two Pothole Plain Type Mud ICS

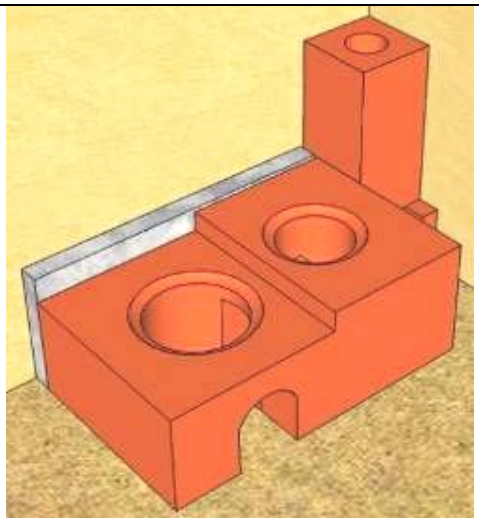

Figure 7: Two Pothole Raised Type Mud ICS

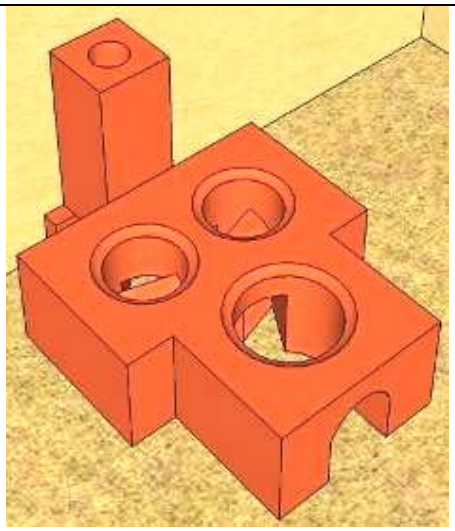

Figure 8: Three Pothole Plain Type Mud ICS

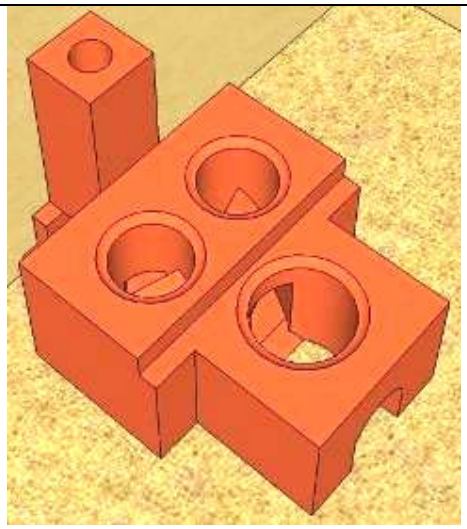

Figure 9: Three Pothole Raised Type Mud ICS

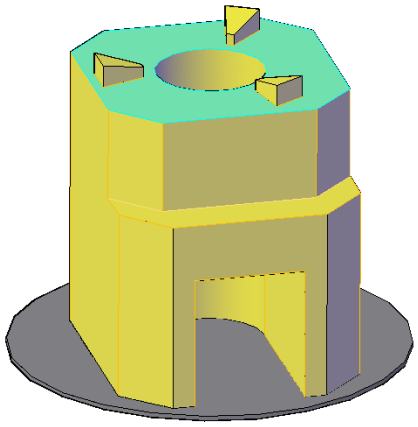

Figure 10: Portable rocket stove (Octagonal shaped body, Rectangular shaped body, Cylindrical shaped body)

Figure 11: Portable rocket stove (Conical shape)

Technical Description for the Mud Improved Cooking Stoves:

According to the improved stoves construction and, repair and maintenance handbook[10] published by biomass energy sub-component, the size of brick prepared for construction of mud ICS is of 8 inch length, 4 inch width and 2 inch height. The following table provides the technical description for the various types of the mud improved cooking stoves promoted by BES/NRREP.

Table 2: Technical Description for the Mud Improved Cooking Stoves:

S.N.	Stove Type	Length (inches)	Breadth (inches)	Height (inches)	Chimney height (inches)	Fire gate* (inches)
1	Single Pot hole Mud ICS	8" + X	8" + X	9"-18"	24" to 60"	6" x 7"
2	Two Pot hole plain type Mud ICS	12" + X + Y	8" + X	10"	48" to 60"	6" x 7"
3	Two Pot hole raised type Mud ICS	12" + X + Y	8" + X	10" / 12"	48" to 60"	6" x 7"
4	Three Pot hole plain type Mud ICS	12" + X + Y	8" + X / 12' + 2Y	10"	48" to 60"	6" x 7"
5	Three Pot hole raised type Mud ICS	12" + X + Y	8" + X / 12' + 2Y	10" / 12"	48" to 60"	6" x 7"
6	Fixed type Single Pot hole Rocket Stove(Rectangular or *Cylindrical shape)	14" to 16" (length for rectangular body and external diameter for cylindrical body)	16" (breadth for rectangular body and external diameter for cylindrical body)	15" - 16"		6' x 6"
7	Portable rocket stove Octagonal shaped body Rectangular shaped body Cylindrical shaped body	10"-12" 10"-12" ϕ10"-12"	Combustion chamber ϕ 4"-5"ϕ 4"-5"ϕ 4"-5"	Combustion chamber 10"-13" 10"-13" 10"-13"		5"x6" 5"x6" 5"x6"
8	Portable rocket stove (Conical shape)	Top external diameter = 8"-9"	Bottom external diameter = 10"-11"	10" - 12"		5"x6"

* For large sized pot (> 12" dia.), the width of fire gate should be 1/2 x pot diameter and 7" height
ϕ = diameter

Diameter of first pot	X inches
Diameter of second pot	Y inches
Diameter of third pot for multi-pot Mud ICS	Z inches
Size of mud brick	8" x 4" x 2" inches
Chimney brick	8" x 8" inches
Chimney hole diameter	4" inches

[10] The handbook is in Nepali language.

Technical Description for the Metallic Improved Cooking Stoves[11]:

A typical Metallic Improved Cooking Stove with three pot holes and water tank has the following technical description

- Weight of Stove :~ 40 Kg per set (with chimney)
- Length of Stove : 675 mm
- Breadth of Stove : 430 mm
- Height of Stove : 260 mm
- No of Pothole : 3
- Water Tank : 360x150x220 mm
- Material :Mild Steel (MS) 4mm top Plate, 1.6 mm body, Stainless Steel (SS) water tank
- Life : 25,995 operation hours

Two pot hole metallic cooking stove with tray

- Weight of Stove : ~ 30 Kg per set (with chimney)
- Length of Stove : 600 mm
- Breadth of Stove : 300 mm
- Height of Stove : 220 mm
- No of Pothole : 2
- Material : MS 4mm top Plate, 2 mm body and ash tray
- Life : 25,995 operation hours

Three pot hole metallic cooking stove with tray

- Weight of Stove : ~ 40 Kg per set (with chimney)
- Length of Stove : 610 mm
- Breadth of Stove : 430 mm
- Height of Stove : 220 mm
- No of Pothole : 3
- Material : MS 4mm top Plate, 2 mm body and ash tray
- Life : 25,995 operation hours

A.7 Public funding of PoA

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The ICS included in this PoA receive subsidies and technical support under the BES of NRREP. The programme presently receives funding from the following sources:

- Government of Nepal
- Government of Norway
- Government of Denmark

Referring to OECD guidance on use of ODA funding for CDM projects the issue of diversion of ODA has been addressed for all donors involved in the BES under NRREP[12]. The ODA non-diversion letters are presented in Appendix 2 of this document.

The funding from the sources is deposited to the basket fund of NRREP and this fund shall be utilized for implementation of, including others, all CPAs for ICS PoA developed during the five year span of NRREP. Hence all the CPAs that will be implemented under this PoA within the five year span of NRREP will receive public funding from the same sources, therefore letter for ODA non-diversion is issued at PoA level.

[11] Technical specification sheet adopted by AEPC as AEPC/ESAP identified/promoted MICS model 1, AEPC/ESAP identified/promoted MICS model 2 and AEPC/ESAP identified/promoted MICS model 3.

[12] OECD, 2004. DAC/CHAIR(2004)4/FINAL: ODA eligibility issues for expenditures under the clean development mechanism (CDM), available at: http://www.oecd.org/dataoecd/12/47/33657913.pdf

SECTION B. Demonstration of additionality and development of eligibility criteria

B.1. Demonstration of additionality for PoA

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NRREP started in July 16, 2012 is presently funded by Danida, Norway, DFID, KfW, and GoN. GoN is committed to contribute 35% of the total indicated budget[13] . The GoN commitment includes its regular financial support in renewable energy sector as well as carbon revenue from this PoA and other registered CDM projects implemented by AEPC. The remaining 65% is expected to be funded by external donors. As of now, the Norwegian and Danish Governments confirmed their commitments of Norwegian Kroner 172 million (about 17% of the total cost) and Danish Kroner 205 million (about 20% of the total cost) respectively[14]. Other donors, so far, have not yet confirmed their contribution. Since the carbon revenue from this PoA is expected to be part of the GoN commitment (35%) to NRREP to achieve among others the promotion of 475,000 ICS (majority belonging to proposed PoA) under BES/NRREP, it is not possible to achieve this target in the absence of this PoA. Besides, the funding commitment from donors is for 5 years span of NRREP and the CPAs developed after this period will experience a funding gap and the revenue from CDM will also be required to cover the cost of programme after the NRREP is over.

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

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The criteria for the inclusion of the CPAs under this PoA in accordance with para 16 of Standard: Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities (version 03), EB 74 annex 05 are listed below:

SN	Topic	Criteria	Means of verification
a	Geographical boundary	All CPAs included in this PoA will be located in the host country of Nepal.	▪ Geographical coordinates of CPA. ▪ CPA database
b	Double counting	All CPAs included in this PoA will be uniquely identified.	▪ Each ICS to be included in the CPA have an ID card with unique number (CDM code) as mentioned in section A.2. These ID cards will be used to prevent double counting of ICS in the PoA as well as other ICS projects. ▪ A check in CDM website among other CDM projects and PoAs.
c (1)	Technology	CPA will implement improved mud and metallic cook stoves having minimum efficiency of 20%.	▪ CPA database (confirmation that the ICS implemented under each CPA meets the technical specification as outlined in section A.6 of the PoA DD) ▪ WBT test reports by Kathmandu University.

[13] NRREP, Programme Document, Annex: Changes in 1.2, page 46.

[14] Agreements between GoN and Norwegian Embassy, and between GON and Danish Embassy.

c (2)	Level of Service	The ICS installed under the CPAs will deliver better services in terms of reduction in indoor smoke and reduced firewood consumption through improved efficiency.	▪ This criterion will be met by compliance with the eligibility criteria c (1).
d	Start date	Conditions that the start date of CPA will be after the PoA start date.	▪ Confirmation of start date of a CPA by CME. ▪ Start date of PoA through PoA DD
e	Compliance with methodology	Each CPA complies with the applicability and other requirements outlined in AMS II G version 06.	▪ Applicability requirements of the methodology are met by complying the eligibility criteria mentioned in serial number c (1), i, k, and m.
f	Additionality	Energy saving from an individual unit of CPA will not exceed 5% (9 GWh thermal in this case) of small scale CDM threshold per year as per para 2 (c) of EB 68 annex 27.	▪ CPA DD (demonstration that each type of ICS implemented under the CPA will have annual energy savings less than 9 GWh thermal).
g	Local stakeholder consultation/ Environmental impact analysis	PoA specific requirements related to undertake local stakeholder consultation and environmental impact analysis	▪ Section E (Environmental impacts and Section F (Local stakeholder comments) of the PoA DD.
h	ODA non-diversion	Affirmation that public funding from annex 1 parties doesn't result in a diversion of official development assistance.	▪ PoA DD (footnote 2 discusses on the total indicative budget for NRREP and Section A.7 of PoA DD discusses on public funding for PoA. As all the CPAs for this PoA implemented within the span of NRREP would receive public funding from same source, ODA non-diversion need not be verified for CPAs implemented within this period, for the period beyond that, ODA non-diversion will be verified through CPA-DD)
i	Target group	▪ Target group for implementation of ICS under the CPAs will be the households using traditional cooking stoves (TCS) in baseline. ▪ Target group for implementation of mud ICS under the CPAs will be	▪ ICS installation form filled up by the stove installer ▪ CPA database and list of VDCs eligible for metallic ICS[18].

		individual households located in terai[15]. ▪ Target group for implementation of metallic ICS under the CPAs will be individual households located in high hills[16] or hills[17]. In case of households representing hills, the Village Development Committees (VDCs) intersected by 2,000 m contour and north facing VDCs intersected by 1,500 m contour are eligible.	
j	Sampling	All CPAs will comply with the conditions of sampling requirements in accordance with the approved Standard: Sampling and Surveys for CDM project activities and POA (version 4.1).	▪ This will be confirmed using criterion in Appendix 5 of PoA-DD.
k	Threshold check	The aggregate annual energy savings from the ICS installed under a CPA would not exceed the limit of small scale threshold i.e. 180 GWh thermal in fuel input as per AMS II G version 06 para 5.	▪ PoA DD ▪ Checking the CPA database that the ICS installation in each CPA is limited to 22,000 in accordance with section B.2 of generic part of the PoA DD.
l	Debundling check	The CPA is not a debundled component of a large project activity.	▪ CPA DD
m	Other requirements (as per methodology)	Demonstration of use of NRB	▪ The baseline report for ICS PoA conducted by an independent third party. ▪ The use of NRB is verified by fraction of non-renewable

[18] There are 1557 VDCs in high hills and hills that are eligible for metallic ICS.

[15] 20 Terai Districts as specified by GoN in the Subsidy Policy for Renewable (Rural) Energy 2009 (2066 BS), Annex 2 are Banke, Bara, Bardiya, Chitwan, Jhapa, Dang, Dhanusha, Kailali, Kanchanpur, Kapilvastu, Mahottari, Morang, Nawalparai, Parsa, Rauthat, Rupandehi, Saptari, Sarlahi, Siraha and Sunsari.

[16] 15 High Hill districts as specified by GoN in the Subsidy Policy for Renewable (Rural) energy 2009 (2066 BS), Annex 2 are Bhojpur, Darchula, Jajarkot, Khotang, Sankhuwasabha, Bajhang, Bajura, Dolpa, Humla, Jumla, Kalikot, Manang, Mugu, Mustang and Solukhumbu.

[17] 40 accessible districts in Hills (including mid hill and high hill) as specified by GON in the Subsidy Policy for Renewable (Rural) Energy 2009 (2066 BS), Annex 2 are Achham, Dailekh, Myagdi, Okhadhunga, Ramechhap, Rukum, Terhathum, Arghakhanchi, Baglung, Baitadi, Dadeldhura, Bhaktapur, Dhading, Dhankuta, Dolakha, Doti, Gorkha, Gulmi, Ilam, Kaski, Kathmandu, Kavre, Lalitpur, Lamjung, Makwanpur, Nuwakot, Palpa, Panchthar, Parbat, Pyuthan, Rasuwa, Rolpa, Salyan, Sindhuli, Sindhupalchowk, Surkhet,Syangja, Tanahu, Taplejung and Udaypur, In accordance with the subsidy delivery mechanism 2010, only those household living at altitudes of and above 2000 metres level as well as in VDCs intersected by 2000 meter contour line and north facing houses or families residing in the VDCs located at altitudes of 1500 metres and above are eligible.

			biomass approved by the board (EB 67 annex 22)[19].
n	Other requirements (as per methodology) ▪ Choice of values of parameters for fNRB and B_{old} and monitoring approach for $B_{y,savings,}$	The national default values for fraction of non-renewable biomass approved by the board will be used (as per criteria "m" of CPA inclusion) and values of parameters B_{old} will be determined at PoA level. Similarly the monitoring approach for $B_{y,savings}$ will also be determined at PoA level.	▪ CPA DDs and corresponding PoA DD
o	Others	Signed agreement for ER right transfer	▪ ER right transfer form included in the installation report.

B.3. Application of technologies/measures and methodologies

>>

Type: Type II – Energy Efficiency Improved Projects
Methodology: AMS II.G - Energy efficiency measures in thermal applications of non-renewable biomass
Version: Version 06
Reference: https://cdm.unfccc.int/methodologies/DB/UFM2QB70KFMWLVO7LJN8XD1O2RKHEK

S. N.	AMS II.G, Version 06 Requirements	Project activity applicability	Means of verification
1.	This category comprises the efficiency improvements in thermal applications of non-renewable biomass. Examples of applicable technologies and measures include the introduction of high efficiency[20] biomass fired cook stoves [21] or ovens or dryers and/or improvement of energy efficiency of existing biomass fired cook stoves or ovens or dryers. (AMS II G v06, para 2)	This CPA includes the dissemination of the high efficiency biomass fired cook stoves having the efficiency improved by 10-15% compared to traditional stoves. This CPA will save non-renewable biomass which otherwise would have been consumed by less efficient cooking appliances. The single pot or multipot portable or in situ improved cooking stoves will have a specified efficiency of at least	This will be verified using the eligibility criteria "c (1)" of CPA inclusion.

[19] Information note: Default values of fraction of non renewable biomass for least developed countries and small island developing States (version 01.0)

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

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

S. N.	AMS II.G, Version 06 Requirements	Project activity applicability	Means of verification
		20% as tested and certified by Kathmandu University[22].	
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. (AMS II G v06, para 4)	▪ The non-renewable biomass has been used in the country since 1989. The Baseline Study [23] conducted in 2010/11 demonstrated that the time needed to gather firewood, the price of firewood and the distance travelled to gather firewood is increasing at least since 1989 (please refer to section B.4 for details). In that survey the respondents were asked to provide averages for the time needed to gather firewood, the distance travelled and the price. The average of the estimates from all respondents, showed a clear increase on all three indicators. ▪ EB 67 annex 22 has affirmed that the fraction of non-renewable biomass for Nepal is 86%.	This will be verified using the eligibility criteria "m" of CPA inclusion.
3.	The aggregate energy saving of a single project activity shall not exceed the equivalent of 60 GWh per year or 180 GWh thermal per year in fuel input. (AMS II G v06, para 5)	The energy saving per unit appliance (ICS) is 8.05 MWh thermal so the total energy saving of a CPA having maximum 22,000 unit ICS will be 177.2 GWh thermal each year.	This will be verified using the eligibility criteria "f" and "k" of CPA inclusion.
4.	The use of this methodology in a project activity under a programme of activities is legitimate if the following leakages are estimated and	B_{old} will be adjusted by multiplying it with an adjustment factor of 0.95 to account for leakages and in this case surveys will not be	CPA DD

[22] Nepal Bureau of Standards and Metrology (NBSM) is the national standard body for Nepal. However, NBSM doesn't have facilities for testing and certifying ICS and it also has not accredited any other entity to test and certify ICS (refer to supporting document 137 "Declaration by NBSM"). Hence, Kathmandu University having vast experience in testing and certifying ICS was chosen for the test and certification of ICS.

[23] The baseline study was conducted by the independent third party (Nepal Environmental and Scientific Services [NESS] Private Limited, Kathmandu, Nepal)

S. N.	AMS II.G, Version 06 Requirements	Project activity applicability	Means of verification
	accounted for, as required on a sample basis using a 90/30 precision for the selection of samples: (a) Use of non-renewable woody biomass saved under the project activity to justify the baseline of other CDM project activities can also be a potential source of leakage. If this leakage assessment quantifies a portion of non-renewable woody biomass saved under the project activity that is then used as the baseline of other CDM project activities then B_{old} is adjusted to account for the quantified leakage; (b) Increase in the use of non-renewable woody biomass outside the project boundary to create non-renewable woody biomass baselines can also be a potential source of leakage. If this leakage assessment quantifies an increase in the use of non-renewable woody biomass outside the project boundary then B_{old} is adjusted to account for the quantified leakage; (c) As an alternative to subparagraphs (a) and (b), Bold can be multiplied by a net to gross adjustment factor of 0.95 to account for leakages, in which case surveys are not required. (AMS II G v06, para 41)	required.	
5.	To determine the value of the fraction of non-renewable (fNRB) to be applied in a component project activity (CPA) of a POA, use one of the two options as follows: (a) Conduct local own studies to determine the local *f*NRB value (sub national values); or (b) Use default national values approved by the Board. The choice of which option to use	The national default values for fraction of non-renewable biomass approved by the board will be used.	This will be verified using the eligibility criteria "m" of CPA inclusion.

S. N.	AMS II.G, Version 06 Requirements	Project activity applicability	Means of verification
	shall be made ex ante. However, a switch from a national value of fNRB (i.e. option (b)) to sub-national values (i.e. option (a)) is permitted, under the condition that the selected approach is consistently applied to all CPAs. (AMS II G v06, para 42)		
6	Monitoring approaches for $B_{y,savings}$ (Option 1, 2 or 3 in paragraph 12), and values for parameters fNRB (when Option (a) in paragraph 30 is chosen) and the quantity of woody biomass B_{old} , may be determined either at the CPA level before the inclusion of CPA or at the PoA level before the registration of the PoA-DD. (AMS II G v06, para 43)	The monitoring approach for $B_{y,savings}$, and choice of values of parameters fNRB and B_{old} for all CPAs will be determined at PoA level.	This will be verified using eligibility criteria "n" of CPA inclusion.

B.4. Date of completion of application of methodology and standardized baseline and contact information of responsible person(s)/ entity(ies)

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>>Date of completion of final draft of the baseline section and monitoring methodology (under re-submission)

31/08/2014

Name and contact details of the person/entity determining the baseline

Name: Mr. Raju Laudari
Position: Assistant Director
Contact No: +977-1-5539390
Email: raju.laudari@aepc.gov.np

SECTION C. Management system

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The PoA management system as per para 19 of Standard: Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities (version 03) EB 74 Annex 5 is presented in the table below. The table outlines the abstract of CME manual which details out each requirement and the CME manual will be made available to DOE during verification.

Table 3: Details of PoA Management System

	Requirement	Justification
a)	Responsibilities in AEPC	AEPC is responsible for ▪ Implementation of the PoA . ▪ Support GoN in formulation of policies, plans for promotion of Renewable Energy Technologies in

		Nepal. ▪ Coordination with stakeholders. ▪ Administration of subsidy for MICS. ▪ Assure the competence of staffs involved in executing the PoA and review and assess the performance of staffs involved in executing the PoA using the competency matrix.[24] The specific roles and responsibilities of components under AEPC for the implementation of this PoA are as follows: Climate and Carbon Subcomponent (CCS) is responsible for: ▪ Ensuring full compliance with CDM processes related to documentation, validation, monitoring and verification of ICS PoA. ▪ Establishing communication with the UNFCCC and DOE on the matters related to CDM PoA. ▪ Conducting Annual ICS Users' Survey for Emission Reduction monitoring. Biomass Energy Subcomponent (BES) is responsible for: ▪ Manage to ensure the proper implementation of ICS PoA. ▪ Research and development activities including design of efficient mud and metallic ICS models and recommend AEPC for the inclusion of new model in the PoA. ▪ Facilitates AEPC in administration of subsidy for metallic ICS. ▪ Quality control, component internal monitoring of ICS through RSCs, stove master/promoters. ▪ Qualification of metallic ICS manufacturing companies, their Performance evaluation. ▪ Ensure the provision of after sales services and warrantee by the concerned companies to users. Regional Service Centers (RSCs) are local NGOs or companies working for AEPC for the implementation of renewable energy programmes. For this PoA RSCs are responsible for: ▪ Facilitating the implementation of ICS PoA at regional and district levels. ▪ Capacity building of promoters/stove masters in coordination with or through LPOs with regards to stove installation, monitoring, repair and maintenance, and after sales services. ▪ Monitoring the status of stoves installed by promoters/stove masters under the PoA. ▪ Maintaining the database of ICS installed under the PoA and report monthly to AEPC. ▪ Maintain documentation of ICS installation report and ER transfer slip in hard copies. Local Partner Organizations (LPO) are local (VDCs, ward)

[24] Details of competence checking and performance appraisal has been discussed on the CME manual, please refer CME manual for details..

		organizations working for RSCs for the implementation of ICS at specific local levels. For this PoA RSCs are responsible for: ▪ Demand creation of ICS at local level. ▪ On demand preparation of mud ICS at user households and fill up the ICS installation form through stove masters/promoters. ▪ Orient the ICS users on the wise use and maintenance of ICS. ▪ Facilitate the monitoring of CPAs in their service coverage area during annual ICS users' survey conducted by an independent third party. ▪ Keeping and updating data on ICS installed under the POA in respective district. ▪ Selection of Stove Masters/Builders. ▪ Training to Stove Masters/Builders. ▪ Reporting to RSCs on progress Stove Masters/Builders are individuals who work at households levels, and for this PoA are responsible for: ▪ Installation of ISC. ▪ Filling the details of the users after stove installation. ▪ Providing two times after sales services to the beneficiary household. District Energy and Environment Unit/Sections (DDEU/S) are the local representative of AEPC at District Development Committee (DDC) who support for the promotion of renewable energy at district level. DEEU/S are responsible for: ▪ Coordination and information sharing at district level regarding the implementation of PoA. ▪ Facilitate the promotion of mud and metallic ICS by awareness raising by the officers positioned at DEEU/S. ▪ Demand creation of ICS at local level. ▪ On demand preparation of mud ICS at user households and fill up the ICS installation form through stove masters/promoters. ▪ Orient the ICS users on the wise use and maintenance of ICS. ▪ Facilitate the monitoring of CPAs in their service coverage area during annual ICS users' survey conducted by an independent third party. ▪ Keeping and updating data on ICS installed under the POA in respective district
b)	Training and capacity development	▪ AEPC ensures quality control and quality assurance by providing the following capacity building activities to different stakeholders: ▪ MICS Manufacturers/ companies: o MICS design and manufacturing o MICS Installation o Subsidy form processing ▪ RSC staff (Biomass Energy Engineers, Field Facilitators and District Coordinators): o Stove design and testing, o Technical and general monitoring training

		○ ICS database management training (Management Information System Training MIS) ○ Orientation on requirements (database management, monitoring, eligible stove models, coding of ICS) for implementation of ICS PoA. ▪ Stove masters/promoters ○ Stove installation, ○ Repair and Maintenance Training ▪ Technical and Internal Monitoring of ICS ▪ Training records will be maintained
c)	Procedures for technical review of inclusion of CPAs	▪ All required data (user's name, address, stove installation date/or sold date, the name of the stove installer, unique code number etc) of all ICS that are disseminated/installed will be recorded in the central database at AEPC. ▪ Data of particular ICS will be stored CPA wise in the AEPC's database system. This will help to differentiate the stoves according to respective CPA. ▪ Once the installation number of ICS/MICS reaches 22,000 (maximum), Carbon Financing Officer at Climate and Carbon Subcomponent with the concerned Program Officer of Biomass Energy Subcomponent will review the database and check all the information required for inclusion of the ICS in a CPA. Maximum 22,000 ICS will then be bundled as a single CPA. ▪ The Program Officers at Climate and Carbon Subcomponent and Biomass Energy Subcomponent will verify the information in the ER transfer slip with the information at central database system. ▪ During CPA inclusion, the program officer will check the eligibility criteria as mentioned in the PoA-DD. ▪ National Advisor of Climate and Carbon Subcomponent will review the CPA inclusion procedure in line to the requirement of the PoA-DD. ▪ Manager of Climate and Carbon Subcomponent will perform the quality check and recommend for inclusion of the specific CPA in the PoA. ▪ Finally AEPC will submit all necessary documents to DOE for the inclusion of CPA in the PoA
d)	A procedure to avoid double counting	▪ All ICS disseminated under the PoA will be provided with unique identification number (CDM Code) which will ensure the avoidance of double counting. ▪ The CDM code will be provided to the Biomass Energy Engineers of RSCs through AEPC's web-portal. The web-portal prevents the CDM code double counting i.e. a single code cannot be allocated to more than one stove. ▪ The unique codes then will be provided by Biomass Energy Engineers of RSCs to LPO staff, who will then provide the number to stove master/promoters. During Mud ICS installation the stove master/promoter will have a stove manual where

		after installation he/she will insert ICS code number in four similar ID cards. One ID card will be given to the user, one will remain in a manual, and other two will be kept by RSCs and AEPC. In case of MICS, the unique codes are tagged in the MICS body at the time of manufacturing. ▪ ICS CDM codes will be also cross-checked and verified internal monitoring of ICS by RSC and LPO staffs. ▪ All ICS implemented under the PoA will be listed in the database. The database system will be designed with the principle of not accepting the same unique number twice. ▪ In case of Metallic ICS, the unique number will be verified before the disbursement of subsidy which will also prevent double subsidy to the same household. ▪ Double counting check will also be done during the annual ICS users' survey conducted by an independent third party. ▪ A double counting check will be conducted by checking the UNFCCC database, to compare this PoA with the CPAs of other PoAs or other registered CDM project. Similarly, the database of other carbon schemes like Gold standard and VCS will also be checked to confirm that the CPA of the proposed PoA is not a part of CPAs of other PoAs or other registered CDM projects.
e)	Records and documentation control process for each CPA under the PoA	▪ The numbers of mud ICS disseminated will be reported by promoters/stove masters to RSCs. The RSCs will enter the data in its database and will send monthly ICS installation report to AEPC. The quarterly and semi annual progress reports of RSCs on Biomass activities in hard copy will also be submitted to AEPC.AEPC will manage the overall database of the program. ▪ AEPC will maintain the central database in electronic format as well as hard copy. The database will include all the information regarding the ICS users-unique number (including CPA number), user's name, address, date of stove installed/sold, name of installer or person/institution selling the stove and the amount of direct subsidy given for every MICS disseminated. ▪ The hard copies of the database, ER transfer slips and unique ID (CDM code) will be filed and kept (recorded) at AEPC and RSCs ▪ The record of installation report, progress report, ER transfer slip will be also monitored during the annual ICS users' survey conducted by an independent third party.
f)	Measures for continuous improvements of the PoA management system	▪ AEPC will implement continuous monitoring and improvement processes in order to ensure proper implementation of the PoA complying with the CDM processes. ▪ Continuous improvement will be done by AEPC through processes such as internal monitoring,

		update on training manuals, designs of mud and metallic ICS, trainings and capacity building of program staffs and continuous monitoring on recommended changes or updates by UNFCCC of related PoA procedures. ▪ AEPC will also improve and upgrade the data management system and procedures for quality assurance. These systems and procedures will be reviewed on a continuous basis to ensure that no double counting of emission reductions occurs within and across CPAs ▪ In order to ensure that the CME manual embraces all recent developments, it is subject to review in every 2 years.

SECTION D. Duration of PoA

D.1. Start date of PoA

>>
05/10/2011 (date of uploading of GSP)

D.2. Duration of the PoA

>>
The length of the PoA is 28 years.

SECTION E. Environmental impacts

E.1. Level at which environmental analysis is undertaken

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1. Environmental Analysis is done at PoA level ☒
2. Environmental Analysis is done at CPA level ☐

Environmental analysis as per requirements of the CDM modalities and procedures is undertaken at PoA level.

As per the Environment Protection Act dated 30 January 1997 and Environment Protection Rules dated 26 June 1997, 12 sectors are required to undertake environmental impact assessment studies. It should be noted here that Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) are not regulatory requirement in Nepal for installation of the ICS at the individual household level.

As there will be no variation in the stove technology at CPA level and no negative impacts are expected from the implementation of the ICS project, Environmental Analysis will not be required at CPA level.

E.2. Analysis of the environmental impacts

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There are no major impacts on the environment due to the installation of the ICS. The local ecology is not likely to get impacted by this type of programme activity. The programme activity included under this PoA helps in reducing the consumption of the firewood thus reducing the pressure on forest, reduces indoor air pollution and benefits with the use of dung cakes as fuel farmyard manure thus having positive environmental impacts.

SECTION F. Local stakeholder comments

F.1. Solicitation of comments from local stakeholders

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A local stakeholder meeting was conducted at Bhairahawa for ICS POA CDM Project Activity as per the requirement for CDM project. The local stakeholder consultation meeting was conducted on 20 April 2011, Wednesday on Nathamal Giniya Devi Trust Meeting Hall, Bhairahawa, Rupandehi. The local stakeholder's from the nearby district, Improved Cooking Stove users, Traditional Cooking Stove user, district officials, media persons and civil society, were invited for the local stakeholders meetings through the individual letters distributed by door to door canvassing and through an advertisement in the local news paper, which can be acquired by the interested public. The meeting was attended by Improved Cooking Stove users, Traditional Cooking Stove user, Local Development Officer, DNA representative, regional renewable energy service centers, civil society and media persons. The list of participants who attended the meeting can be found in the minutes of meeting.

Second round of stakeholder meeting was conducted on Sunday, 29 January 2012, at T.U. Field Training Centre, Chautara, Sindhupalchowk. The stakeholders were invited by providing the invitation letter at their doors and publishing the advertisement in the local newspaper and the stakeholder included the representatives of local government body, NGOs. Since the first meeting focused the stakeholders of Terai areas, the second round meeting was conducted so as to incorporate necessary suggestion, feedback and comments from the stakeholders from high hill region. The participants during the meeting were MICS users, traditional stove users, government organization representatives, local NGO representatives, MICS manufacturers, Rural Renewable Energy Service Centre (RRESC) under ESAP, media persons and political parties. The list of participants who attended the meeting can be found in the minutes of meeting.

The comments have been filed and taken into account in the design of the BES. Since the BES has been successfully operated for many years, there were little comments on the technical aspects or negative side-effects of the program.

F.2. Summary of comments received

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The following table provides the details of the comments received during the local stakeholder consultation meeting:

Table 4: Question raised by the stakeholders and answered by PP

S.N.	Question	Answer
1.	How many renewable energy CDM projects have been registered in Nepal? Are there any other new CDM projects being developed in Nepal?	There are altogether three registered CDM projects in Nepal. The two projects are related to the Biogas one project is related to the Micro hydro power. AEPC is currently in the process of developing two biogas CDM project activity, one biogas PoA, IWM PoA CDM project activity and ICS PoA CDM project activity.
2.	What are the various types of stoves available in the country?	Several types of ICS are now available in Nepal. Among these the most common are the mud ICS which are simple, of low cost and can be built by using locally available materials. Various models of mud ICS have been developed and promoted in the mid-hills of Nepal. Among these, the two pot hole stove is the most popular. Other varieties have one

S.N.	Question	Answer
		and three pot holes. Besides the popular mud ICS, several other types of improved stoves such as metallic stoves, air induced stoves, bee-hive briquettes stoves and rocket stoves have also been introduced and are getting popularity.
3.	Is there any subsidy for installing the Improved Cooking Stoves in Terai region?	The amount of subsidy for installing the ICS can be found in the Rural Energy Subsidy Policy 2009. The subsidy amounts on Biomass Energy Technologies are – GoN is promoting mud ICS in the mid-hills and Terai areas without direct subsidies. However, in high hills (mountain) district NPR 4000 is being provided on 3-pot hole metallic ICS and NPR 2700 on 2-pot hole metallic ICS. The amount of subsidy is subject to change with the revision in the subsidy policy.
4.	What are the benefits from installing the Improved Cooking Stoves?	The following are few expected benefits from the Improved Cooking Stoves: • Fuel wood consumption will be reduced by about half • Reduction of fire hazards in kitchen • Reduced drudgery of women as they spend less time collecting fuel wood, cooking and washing dishes • Improved health of women due to reduced exposure to smoke • Increased participation by men in kitchen work because of clean environment • Reduction in the rate of deforestation of the nearby forests
5.	How are the improved cooking stoves being disseminated in the new regions?	The ICS is being implemented through a decentralized approach by establishing local support structures and integrating planning activities with local governments. Field implementation is managed by Regional Service Centers (RSCs), who is coordinating with local bodies and identify, train and support Local Partner Organizations (LPOs). The LPOs implement the ICS at field level and are responsible for achieving their targets and reporting back to RSCs. LPOs also select, train, supervise and support promoters/stove masters. Private sector and national/regional NGOs function as Service Providers to provide technical support at field level.
6.	Will this Improved Cooking Stove program provide any employment opportunity?	The fabrication, operation and repair and maintenance of ICS's are expected to provide employment to the local people.
7.	How does the ICS project activity reduce the greenhouse gases?	The traditional cooking stove consumes more firewood as compared to the improved cooking stove. The programme will lead to reduce GHG emissions, mainly by reducing the consumption of the firewood used for cooking.

S.N.	Question	Answer
8.	What are the additional benefits to owners and other stakeholders after registering the ICS program as CDM?	AEPC is currently preparing the Carbon Revenue Utilization Guideline which discusses about the utilization of carbon revenue earned by different renewable technologies. In this guideline, ICS has been identified as one of the technology that is eligible for earning carbon revenue. It is proposed that part of the revenue received from ICS CDM POA will be utilized for providing subsidy to ICS users willing to replace their traditional stoves, part of the revenue will be utilized for the user benefit plan, preparation of the CDM related documents, validation, verification etc. The 2% of the revenue received will also go to the DNA. The exact proportion of the benefits will be finalized and made available after the approval of Carbon Revenue Utilization Guideline from cabinet.
9.	What would be the additional role and responsibilities of owners and other stakeholders after registering the ICS program as CDM?	The continuous operation of the ICS is a must for receiving the carbon revenue from the ICS CDM project. The user would thus be required to operate the ICS on a continuous basis. In addition to this, the ICS owner has to provide the emission reduction right transfer to AEPC for enabling AEPC to prepare CDM related documents such as the programme design document, emission reduction calculation, monitoring reports etc.
10.	What are the roles and responsibilities of MICS users and other stakeholders in the CDM Project?	In order to receive carbon revenue, traditional stove should be displaced by the improved stoves which should be in continuous operation. The users also need to maintain the ICS's good condition so as to maintain the efficiency of the stove in order to achieve expected emission reduction. In addition, local stakeholders should also facilitate in dissemination of ICS and support during monitoring.
11.	How many types of Metallic ICS are eligible under the ICS PoA CDM project?	For the ICS CDM PoA, three types of MICS are eligible. Beside these three models, there are also other models of MICS approved by AEPC/NRREP/BES which are eligible for subsidy but not for ICS PoA CDM.
12.	What amount of subsidy is provided to the users of MICS?	In high hills (mountain) districts NPR 4000 is being provided on 3-pot hole metallic ICS and NPR 2700 on 2-pot hole metallic ICS.
13.	What is Emission Reduction Right Transfer, why is it important?	Emission Reduction Right Transfer is an agreement between ICS user and AEPC where the users agree to transfer the emission reduction from the installation and operation of ICS to AEPC. AEPC thus markets the emission reductions from all the ICS users to generate revenue for implementation of the PoA.

Table 5: Question raised by the PP and answered by stakeholders

S.N.	Question	Answer
1.	What are the benefits that you have observed after using the Improved Cooking Stove?	After installing the improved cooking stove last year, there is a reduction in the firewood consumption, there is less smoke in the kitchen and the children can study near the kitchen because of less smoke. The

S.N.	Question	Answer
		health hazard related to indoor air pollution has been reduced. There is also the reduction in the time spent for collecting and gathering the firewood
2.	Should such kind of project activities be promoted in the other regions of the country?	The technology should also be disseminated in other places because this will have benefits particularly for the women as the improved cooking stove reduce the drudgery of women and also the cooking time.
3.	Has the Improved Cooking Stove program generated any employment opportunity in your region?	The improved cooking stove has provided the training to the local people who can now go to the household level and explain them the benefits of the ICS and help them in constructing the improved cooking stove at their household.
4.	How have you heard about the Improved Cooking Stove	I have heard about the ICS through radio and through the service providers. There should be more advertisement, orientation, awareness about the technology and program activities at field level. Local languages should be used during publicity campaign.

F.3. Report on consideration of comments received

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No negative comments received for the programme activity. Overall there was unanimous agreement that the proposed programme was a beneficial from sustainability view point to the rural households of Nepal.

SECTION G. Approval and authorization

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The host country DNA (Ministry of Environment, Science and Technology) on Jan 09, 2013 has approved the Promotion of Improved Cooking Stove (ICS) as CDM Programme of Activities (PoA) confirming Nepal's voluntary participation in the project and confirming that the project would contribute to sustainable development in Nepal. Further, the DNA has authorized the participation of AEPC as project/programme participant. The letter of approval from the host country is presented separately (attachment 1).

PART II. Generic component project activity (CPA)

SECTION A. General description of a generic CPA

A.1. Purpose and general description of generic CPAs

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The main objective/goal of the CPAs is to promote dissemination of Improved Cooking Stove (ICS) with replacement of existing Traditional Cooking Stoves (TCS) to the existing TCS users in Nepal. The project activity will contribute towards improving livelihoods of the rural households through improved access to energy services from the improved cooking stoves. The use of fuel efficient improve cooking stoves would lead to less consumption of fuel-wood which would thus reduce the emission from the stove. The project will also contribute towards decreasing deforestation and also improvement in the quality of life of the targeted group through reduction of drudgery, time and money spent on fuel wood collection and throughout improvement of the indoor environment. This CPA will be implemented and maintained by AEPC.

SECTION B. Application of a baseline and monitoring methodology and standardized baseline

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

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Type: Type II – Energy Efficiency Improved Projects
Methodology: AMS II.G - Energy efficiency measures in thermal applications of non-renewable biomass
Version: Version 06
Reference: https://cdm.unfccc.int/methodologies/DB/UFM2QB70KFMWLVO7LJN8XD1O2RKHEK

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

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The Promotion of the Improved Cooking Stove (ICS) – Nepal meets the applicability criteria of AMS II.G/ v06 as follows:

Table 6: Justification for the choice of the methodology

SN	Criteria (AMS II.G/v.6)	Explanation	Means of verification
1	This category comprises the efficiency improvements in thermal applications of non-renewable biomass. Examples of applicable technologies and measures include the introduction of high efficiency[25] biomass fired cook stoves[26] or ovens or dryers and/or improvement of energy efficiency of existing biomass fired cook stoves or ovens or dryers. (AMS II G v06, para 2)	This CPA includes the dissemination of the high efficiency biomass fired cook stoves having the efficiency improved by 10-15% compared to traditional stoves. This CPA will save non-renewable biomass which otherwise would have been consumed by less efficient cooking appliances. The single pot or multipot portable or in situ improved cooking stoves will have a specified efficiency of at least 20% as tested and certified by Kathmandu University[27].	This will be verified using the eligibility criteria "c (1)" of CPA inclusion.
2	Project participants are able to show that non-renewable biomass has been used since 31 December 1989, using	▪ The non-renewable biomass has been used in the country	▪ This will be verified using the eligibility

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

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

[27] Nepal Bureau of Standards and Metrology (NBSM) is the national standard body for Nepal. However, NBSM doesn't have facilities for testing and certifying ICS and it also has not accredited any other entity to test and certify ICS (refer to supporting document 137 "Declaration by NBSM"). Hence, Kathmandu University having vast experience in testing and certifying ICS was chosen for the test and certification of ICS.

SN	Criteria (AMS II.G/v.6)	Explanation	Means of verification
	survey methods or referring to published literature, official reports or statistics. (AMS II G v06, para 4)	since 1989. The Baseline Study [28] conducted in 2010/11 demonstrated that the time needed to gather firewood, the price of firewood and the distance travelled to gather firewood is increasing at least since 1989 (please refer to section B.4 for details). In that survey the respondents were asked to provide averages for the time needed to gather firewood, the distance travelled and the price. The average of the estimates from all respondents, showed a clear increase on all three indicators. ▪ EB 67 annex 22 has affirmed that the fraction of non-renewable biomass for Nepal is 86%.	criteria "m" of CPA inclusion.
3	The aggregate energy saving of a single project activity shall not exceed the equivalent of 60 GWh per year or 180 GWh thermal per year in fuel input. (AMS II G v06, para 5)	The energy saving per unit appliance (ICS) is 8.05 MWh thermal so the total energy saving of a CPA having maximum 22,000 unit ICS will be 177.2 GWh thermal each year.	This will be verified using the eligibility criteria "f" and "k" of CPA inclusion.
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, as required on a sample basis using a 90/30 precision for the selection of samples:	B_{old} will be adjusted by multiplying it with an adjustment factor of 0.95 to account for leakages and in this case surveys will not be required.	CPA DD

[28] The baseline study was conducted by the independent third party (Nepal Environmental and Scientific Services [NESS] Private Limited, Kathmandu, Nepal)

SN	Criteria (AMS II.G/v.6)	Explanation	Means of verification
	(a) Use of non-renewable woody biomass saved under the project activity to justify the baseline of other CDM project activities can also be a potential source of leakage. If this leakage assessment quantifies a portion of non-renewable woody biomass saved under the project activity that is then used as the baseline of other CDM project activities then B_{old} is adjusted to account for the quantified leakage; (b) Increase in the use of non-renewable woody biomass outside the project boundary to create non-renewable woody biomass baselines can also be a potential source of leakage. If this leakage assessment quantifies an increase in the use of non-renewable woody biomass outside the project boundary then B_{old} is adjusted to account for the quantified leakage; (c) As an alternative to subparagraphs (a) and (b), Bold can be multiplied by a net to gross adjustment factor of 0.95 to account for leakages, in which case surveys are not required. (AMS II G v06, para 41)		
5	To determine the value of the fraction of non-renewable biomass (fNRB) to be applied in a component project activity (CPA) of a POA, use one of the two options as follows: (a) Conduct local own studies to determine the local *f*NRB value (sub national values); or (b) Use default national values approved by the Board. The choice of which option to use shall be made ex ante. However, a switch from a national value of fNRB (i.e. option (b)) to sub-national values (i.e. option (a)) is permitted, under the condition that the selected approach is consistently applied to all CPAs. (AMS II G v06, para 42)	The national default values for fraction of non-renewable biomass approved by the board will be used.	This will be verified using the eligibility criteria “m” of CPA inclusion.
6	Monitoring approaches for $B_{y,savings}$ (Option 1, 2 or 3 in paragraph 12), and values for parameters fNRB (when Option (a) in paragraph 30 is chosen) and the quantity of woody biomass B_{old} , may be determined either at the CPA level before the inclusion of CPA or at the PoA level before the registration of the	The monitoring approach for $B_{y,savings}$, and choice of values of parameters fNRB and B_{old} for all CPAs will be determined at PoA level.	This will be verified using eligibility criteria “n” of CPA inclusion.

SN	Criteria (AMS II.G/v.6)	Explanation	Means of verification
	PoA-DD. (AMS II G v06, para 43)		

Limit of the SSC-CPAs included under this PoA

The annual energy savings resulting from efficiency improvements will not exceed 180GWh thermal in any year for the crediting period.

The maximum number of ICS eligible to be disseminated in each CPA under this PoA will be limited which will result in an annual energy savings below 180GWh thermal as shown below:

Table 7: Maximum Number of ICS under CPA Calculation

S. N.	Parameter	Data ID	Value	Units	Reference
1	Quantity of woody biomass used per ICS in the absence of the project activity	B_{old}	3.07	Tonnes	Baseline Survey Report
2	Efficiency of the system being replaced	η_{old}	10.00%	%	A default value of 0.10 is considered as specified in the approved methodology AMS II.G/v06 para 17 (option 2) pp 08.
3	Efficiency of the system being deployed as part of the project activity (fraction) – ICS	η_{new}	27.00%	%	ICS efficiency test certificate by KU. The value taken is rounded up value for the highest efficiency i.e. 26.89% for conical rocket stove revealed by the test.
4	Net calorific value of the non-renewable woody biomass that is substituted	$NCV_{biomass}$	0.015	TJ/tonne	As specified in the approved methodology AMS II.G/v05 para 11, IPCC default for wood fuel is 0.015 TJ/tone (wet basis).
5	Annual Energy Savings per system (ICS)	$E_{y,ICS}$	0.008054012	GWh_{th}	Calculated using parameter 1,2,3 and 4
6	Limit of Annual Energy Saving for small-scale project activities	-	(60) 180	(GWh) GWh_{th}	Para 5 of AMS II G v06 specifies that the aggregated energy savings of a single project activity shall not exceed 60 GWh per year or 180 GWh thermal per year in fuel input.
7	Maximum Number of ICS to be included in a CPA	N_{max}	22349		Calculated [(7) = (6) / (5)]
8	Maximum Number of ICS to be included in a CPA	*Nmax*	22,000		Rounded down value

B.3. Sources and GHGs

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The project boundary of the SSC-CPA follows the definition in AMS II.G/v06. The project boundary is the physical, geographical area of the use of biomass or the renewable energy. The emissions sources to be included in, or excluded from, each SSC-CPA boundary in the CPAs are presented in the table below:

Table 8: Sources and gases included in the SSC-CPA boundary

Source	Gas	Included?	Justification/ Explanation
Baseline: Combustion of non renewable biomass for cooking.	CO_2	Yes	Major source of emissions
	CH_4	No	Not required by methodology, only CO_2 emission factor for fossil fuels is considered.

Source	Gas	Included?	Justification/ Explanation
			Conservative Assumption.
	N_2O	No	Not required by methodology, only CO_2 emission factor for fossil fuels is considered. . Conservative Assumption.
Project activity: Combustion of non renewable biomass for cooking.	CO_2	Yes	Major source of emissions
	CH_4	No	Not required by methodology, only CO_2 emission factor for fossil fuels is considered.
	N_2O	No	Not required by methodology, only CO_2 emission factor for fossil fuels is considered.

The geographical boundaries of the CPA are the same as the geographical boundaries of the PoA.

B.4. Description of baseline scenario

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The baseline scenario is continued use of non renewable biomass for cooking. The rural households in Nepal use non renewable firewood and negligible amount of cow dung and agricultural waste for cooking. The use of other fossil fuels like kerosene and LPG is insignificant. Research indicates that use of firewood has a low sensitivity to economic determinants[29].

AMS II.G requires use of the emission factor of fossil fuel to calculate the baseline emissions. The actual baseline is the use of non renewable biomass.

Methodology AMS II.G states that "*in the absence of the project activity, the baseline scenario would be the use of fossil fuels for meeting similar thermal energy needs*". This is a conservative approach to determine the baseline emissions. In absence of the project activities, the intended beneficiaries of the programme would continue using the traditional inefficient cooking stoves, consuming high quantity of non-renewable biomass.

Different sources have been used to confirm that NRB is used in Nepal. To determine the actual percentage, national statistics on the supply and demand of firewood have been used. To confirm that NRB continues to be used, the project participants conducted a survey to check whether the reduction in the consumption of firewood is subject to the trends defined in AMS II.G: increasing amount of time needed or distance travelled for firewood gathering, increasing firewood prices or changes in the type of firewood used. The indicators selected to monitor the continued displacement of NRB by the project activities are:

1) Increase in time needed to gather firewood; and

2) Increase in distance travelled to gather firewood.

Majority (66.15%[30]) of the respondents believe that the forest area has declined since their knowledge which also indicates that firewood gathering has become more difficult since 1989. Looking at the average of the survey results[31], in the period between 1989 and 2000, the time needed for firewood collection was 75.11 minutes which increased by 54.18% to 115.81 minutes during the period 2000 and 2010. In the same period the travelling time to collect firewood increased by 29.32% from 50.88 during 1989 and 2000 to 65.8 minutes during 2000 to 2010

[29] The Environmental Impact of Poverty: The Evidence of Firewood collection in Rural Nepal, 30 June 2007, Page 8. http://amid.cepr.org/files/working_papers/baland1.pdf

[30] Table 3.38, Page 29 of Baseline Study 2010/11 conducted by NESS Private Limited

[31] Calculated using the data in Table 3.43, Page 32 of Baseline Study 2010/11 conducted by NESS Private Limited

The trend reported in the above survey is also confirmed by another study by Jean-Marie Baland[32], where forest in the Nepalese Himalayas is reported to be degrading at an alarming rate, which could have serious environmental and economic consequences. The following are some of the findings of this study:

- Nepal's forest cover declined at an annual rate of 1.8% per year between 1980 and 2000.
- Forest degradation leads to increased fuel scarcity. "The time needed to collect firewood has increased 60% over the past quarter century, while collections per household have decreased by 40%."
- Deforestation "is partly irreversible as fertile topsoil is being washed out by soil erosion in deforested areas."
- The report also concludes that collection time is a good indicator of forest degradation since "A major impact of forest degradation for the villagers is the resulting increase in collection time."

A report by the Ministry of Population and Environment[33] confirms deforestation trends in Nepal and connects them with firewood use:

- "The forest area has declined from 45 per cent in 1966 to 29 per cent by the end of the 20th century. The quality of forest has also declined as the shrub land area has doubled from 4.8 per cent in mid-1980s to 10.6 per cent in mid-1990s. The annual deforestation is estimated at 1.7 per cent with 2.3 per cent in the Hill, and 1.3 percent in the Terai."
- "In general, forest depletion is increasing due to firewood collection, cattle grazing, and conversion of forests to agricultural land."
- "Although firewood consumption is slightly decreasing over the years, forest depletion and deforestation is increasing as a majority of the people depend on it."

The price of firewood is not used as indicator for firewood scarcity since very little firewood used is bought from the market.[34] The main source of firewood is from government forests controlled by the Ministry of Forest and Soil Conservation which allocates forest areas to the Timber Corporation of Nepal (TCN). Since supply from TCN is insufficient, unofficial firewood extraction for self-consumption and trade remain substantial, also in government forests.

The various energy sources used by households in the baseline scenario are predominantly non-renewable. The table below provides an overview of the energy use for cooking in the baseline scenario.

Table 9: Energy Sources used by household[35]

SN	Districts	Quantity used							
		Firewood (Kg)	Crop residue (Kg)	Jhirka (twigs) (Kg)	Dung (Kg)	Coal/ charcoal (Kg)	Kerosene (ml)	Other fuel (Kg)	Total Biomass Fuel (Kg)
1.	Baglung	17.10	0.00	10.60	0.00	0.00	0.00	0.00	27.70
2.	Bardiya	7.19	1.38	0.62	1.65	0.04	6.54	0.00	10.88

[32] Jean Marie Baland, "The Environmental Impact of Poverty: Evidence from Firewood Collection in Rural Nepal", Boston University - The Institute for Economic Development Working Papers Series, 30 June 2007.

[33] His Majesty's Government of Nepal Ministry of Population and Environment, NEPAL National Action Programme on Land Degradation and Desertification in the context of United Nations Convention to Combat Desertification (UNCCD), Kathmandu, April 2004

[34] WECS (2010), Energy Sector Synopsis Report 2010, Water and Energy Commission Secretariat, Kathmandu, Nepal , Page 74

[35] Baseline Study 2010/11

SN	Districts	Quantity used							
		Firewood (Kg)	Crop residue (Kg)	Jhirka (twigs) (Kg)	Dung (Kg)	Coal/ charcoal (Kg)	Kerosene (ml)	Other fuel (Kg)	Total Biomass Fuel (Kg)
3.	Chitwan	5.85	0.00	1.93	0.00	0.00	0.00	0.00	7.77
4.	Darchula	11.17	0.00	0.00	0.00	0.00	33.00	0.00	11.17
5.	Jhapa	6.90	0.38	3.13	0.03	0.02	42.50	0.03	10.47
6.	Kalikot	33.60	1.47	5.00	1.42	0.00	0.00	0.00	41.49
7.	Kanchanpur	1.90	0.00	9.11	0.00	0.00	2.00	0.00	11.01
8.	Kapilvastu	7.38	0.00	0.84	2.30	0.00	4.69	0.00	10.52
9.	Salyan	15.00	0.00	0.00	0.00	0.00	0.00	0.00	15.00
10.	Solukhumbu	31.44	0.00	0.00	0.00	0.00	0.00	0.00	31.44
	Mean	9.44	0.27	3.29	0.51	0.01	12.97	0.01	13.52

B.5. Demonstration of eligibility for a generic CPA

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As per the "Eligibility criteria for inclusion of a SSC-CPA in the PoA", the CPA is eligible because it meets all criteria listed below:

Table: Eligibility criteria and the usability to assess the inclusion

SN	Topic	Criteria	Means of verification
a	Geographical boundary	All CPAs included in this PoA will be located in the host country of Nepal.	▪ Geographical coordinates of CPA. ▪ CPA database
b	Double counting	All CPAs included in this PoA will be uniquely identified.	▪ Each ICS to be included in the CPA have an ID card with unique number (CDM code) as mentioned in section A.2. These ID cards will be used to prevent double counting of ICS in the PoA as well as other ICS projects. ▪ A check in CDM website among other CDM projects and PoAs.
c (1)	Technology	CPA will implement improved mud and metallic cook stoves having minimum efficiency of 20%.	▪ CPA database (confirmation that the ICS implemented under each CPA meets the technical specification as outlined in section A.6 of the PoA DD) ▪ WBT test reports by Kathmandu University.
c (2)	Level of Service	The ICS installed under the CPAs will deliver better services in terms of reduction in indoor smoke and reduced firewood consumption through improved efficiency.	▪ This criterion will be met by compliance with the eligibility criteria c (1).

d	Start date	Conditions that the start date of CPA will be after the PoA start date	▪ Confirmation of start date of a CPA by CME. ▪ Start date of PoA through PoA DD
e	Compliance with methodology	Each CPA complies with the applicability and other requirements outlined in AMS II G version 06.	▪ Applicability requirements of the methodology are met by complying the eligibility criteria mentioned in serial number c (1), i, k, and m.
f	Additionality	Energy saving from an individual unit of CPA will not exceed 5% of small scale CDM threshold per year as per para 2 (c) of EB 68 annex27.	▪ CPA DD (demonstration that each type of ICS implemented under the CPA will have annual energy savings less than 9 GWh thermal).
g	Local stakeholder consultation/ Environmental impact analysis	PoA specific requirements related to undertake local stakeholder consultation and environmental impact analysis	▪ Section E (Environmental impacts and Section F (Local stakeholder comments) of the PoA DD.
h	ODA non-diversion	Affirmation that public funding from annex 1 parties doesn't result in a diversion of official development assistance.	▪ PoA DD (footnote 2 discusses on the total indicative budget for NRREP and Section A.7 of PoA DD discusses on public funding for PoA. As all the CPAs for this PoA implemented within the span of NRREP would receive public funding from same source, ODA non-diversion need not be verified for CPAs implemented within this period, for the period beyond that, ODA non-diversion will be verified through CPA-DD)
i	Target group	▪ Target group for implementation of ICS under the CPAs will be the households using traditional cooking stoves (TCS) in baseline. ▪ Target group for implementation of mud ICS under the CPAs will be individual households located in terai[36]. ▪ Target group for implementation of metallic ICS under the CPAs will be	▪ ICS installation form filled up by the stove installer ▪ CPA database and list of VDCs eligible for metallic ICS[39].

[36] 20 Terai Districts as specified by GoN in the Subsidy Policy for Renewable (Rural) Energy 2009 (2066 BS), Annex 2 are Banke, Bara, Bardiya, Chitwan, Jhapa, Dang, Dhanusha, Kailali, Kanchanpur, Kapilvastu, Mahottari, Morang, Nawalparai, Parsa, Rauthat, Rupandehi, Saptari, Sarlahi, Siraha and Sunsari.

		individual households located in high hills[37] or hills[38]. In case of households representing hills, the Village Development Committees (VDCs) intersected by 2,000 m contour and north facing VDCs intersected by 1,500 m contour are eligible.	
j	Sampling	All CPAs will comply with the conditions of sampling requirements in accordance with the approved Standard: Sampling and Surveys for CDM project activities and POA (EB 74 Annex 06).	▪ This will be confirmed using criterion in Appendix 5 of PoA-DD.
k	Threshold check	The aggregate annual energy savings from the ICS installed under a CPA would not exceed the limit of small scale threshold i.e. 180 GWh thermal in fuel input as per AMS II G version 06 para 5.	▪ PoA DD ▪ Checking the CPA database that the ICS installation in each CPA is limited to 22,000 in accordance with section B.2 of generic part of the PoA DD.
l	Debundling check	The CPA is not a debundled component of a large project activity.	▪ CPA DD
m	Other requirements (as per methodology)	Demonstration of use of NRB	▪ The baseline report for ICS PoA conducted by an independent third party. ▪ The use of NRB is verified by fraction of non-renewable biomass approved by the board (EB 67 annex 22)[40].
n	Other requirements (as per methodology) ▪ Choice of	The national default values for fraction of non-renewable biomass approved by the board will be used (as per criteria "m" of of CPA inclusion) and values of parameters B_{old} will be	▪ CPA DDs and corresponding PoA DD

[39] There are 1557 VDCs in high hills and hills that are eligible for metallic ICS.

[37] 15 High Hill districts as specified by GoN in the Subsidy Policy for Renewable (Rural) energy 2009 (2066 BS), Annex 2 are Bhojpur, Darchula, Jajarkot, Khotang, Sankhuwasabha, Bajhang, Bajura, Dolpa, Humla, Jumla, Kalikot, Manang, Mugu, Mustang and Solukhumbu.

[38] 40 accessible districts in Hills (including mid hill and high hill) as specified by GON in the Subsidy Policy for Renewable (Rural) Energy 2009 (2066 BS), Annex 2 are Achham, Dailekh, Myagdi, Okhadhunga, Ramechhap, Rukum, Terhathum, Arghakhanchi, Baglung, Baitadi, Dadeldhura, Bhaktapur, Dhading, Dhankuta, Dolakha, Doti, Gorkha, Gulmi, Ilam, Kaski, Kathmandu, Kavre, Lalitpur, Lamjung, Makwanpur, Nuwakot, Palpa, Panchthar, Parbat, Pyuthan, Rasuwa, Rolpa, Salyan, Sindhuli, Sindhupalchowk, Surkhet,Syangja, Tanahu, Taplejung and Udaypur, In accordance with the subsidy delivery mechanism 2010, only those household living at altitudes of and above 2000 metres level as well as in VDCs intersected by 2000 meter contour line and north facing houses or families residing in the VDCs located at altitudes of 1500 metres and above are eligible.

[40] Information note: Default values of fraction of non renewable biomass for least developed countries and small island developing States (version 01.0)

	values of parameters for $B_{y,savings,}$ fNRB and B_{old}	determined at PoA level. Similarly the monitoring approach for $B_{y,savings}$ will also be determined at PoA level.	
o	Others	Signed agreement for ER right transfer	▪ ER right transfer form included in the installation report.

The additionality of the CPA is demonstrated by following the criteria outlined in "Guidelines for demonstrating additionality of small scale project activities" (version 09), Annex 27, EB 68. The paragraph 2(c) of this guideline states:

2 (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.

CPAs under this PoA will result in an annual energy savings of below 180GWh_{th} (60GWh) and will be implemented in Nepal. The project is additional and there is no need for further assessment and demonstration of additionality.

The explanation for each of the condition listed in the Guidelines for demonstrating additionality of small scale project activities" (version 09), Annex 27, EB 68 is discussed below.

Criteria/ Condition	Explanation
The size of each unit (ICS) is no larger than 9 MWh_{th}	The annual energy saving per unit (ICS) is 6.4 to 8.05 MWh thermal which is less than 9 GWh_{th} (i.e. less than 5% of the small scale CDM threshold)

Each CPA is considered additional provided that the CPA is limited to 60 Giga-watt hours of savings per year, which is equivalent to 180 Giga-watt hours thermal per year. Thus, because each CPA cannot exceed 180 Giga-watt hour thermal energy savings per year, as stated in the eligibility criteria, the CPA is considered additional.

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

B.6.1. Explanation of methodological choices

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The key components of AMS II.G are the calculation of the emission reductions, differentiation between non renewable biomass and demonstrable renewable biomass and the occurrence of leakage.

Emission reduction calculation

Paragraph 12 of AMS II.G/v06 requires that the project participants assume that in the absence of the project activity, the baseline scenario would be the projected use of fossil fuels for meeting similar thermal energy needs. The actual baseline scenario is the use of NRB. Since NRB has higher carbon intensity than the fossil fuels proposed in AMS II.G, this assumption reduces the emission reductions significantly, making the outcome more conservative.

According to paragraph 13 of methodology AMS II.G/v06, emission reductions would be calculated as:

$$ER_y = \sum_i ER_{y,i} \quad (1)$$

Where:

i = Indices for the situation where more than one type of project device is introduced to replace the pre-project devices
ERy = Emission reductions during year y in tCO_2e
ERy,i = Emission reductions by project device of type i during year y in tCO_2e

For household cook stoves (as guided by the methodology)**:**

$$ER_{y,t} = \sum_{a=t}^{a=y} B_{y,savings,i,a} \times N_{y,t} \times \frac{\mu_{y,t}}{365} \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected\_fossil\ fuel} - LE_y \quad (2)$$

Where:

a : 'a' is the indices for age (in years) of the cook stoves for the age (in years) of the cook stoves that are operating in the year 'y' of the crediting period
$B_{y,savings,i,a}$: Quantity of woody biomass that is saved in tonnes per cook stove device of type *i* and age *a* in year *y*
$f_{NRB,y}$: Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass using survey methods or government data or default country specific fraction of non renewable woody bomass (fNRB) values available on CDM website[41]
$NCV_{biomass}$: Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.015 TJ/tonne, wet basis)
$EF_{projected\_fossilfuel}$: Emission factor for the substitution of non-renewable woody biomass by similar consumers. Use a value of 81.6 tCO_2/TJ[42]
$N_{y,i,a}$: Number of project devices of type i and age a operating in year *y*
$\mu_{y,i}$: Number of days of utilization of the project device during the year 'y'.
LE_y : Leakage emissions in year y

As stipulated in the paragraph 15 of AMS II.G/v06, $B_{y,savings}$ can be determined using one of the following options:

Option 1:

$$B_{y,saving} = B_{old,i} - B_{a=1,i,KPT} \times \Delta B_{y,i,a} \quad (3)$$

Where:

$B_{old,i}$: Annual quantity of woody biomass used in the absence of the project activity to generate thermal energy equivalent to that provided by the project device of type i, if the project device operate throughout the year y. Value in tonnes per year per device of type i.
$B_{a=1,i,KPT}$: Annual quantity of woody biomass used in tonnes per device of type i, measured as per the KPT protocol, for the initial efficiency determined in the year of its installation (a=1). The KPT shall be carried out in accordance

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

[42] This value represents the emission factor of the substitution fuels likely to be used by similar users, on a weighted average basis. It is assumed that the mix of present and future fuels used would consist of a solid fossil fuel (lowest in the ladder of fuel choices), a liquid fossil fuel (represents a progression over solid fuel in the ladder of fuel use choices) and a gaseous fuel (represents a progression over liquid fuel in the ladder of fuel use choices). Thus a 50% weight is assigned to coal as the alternative solid fossil fuel (96 tCO_2/TJ) and a 25% weight is assigned to both liquid and gaseous fuels (71.5 tCO_2/TJ for Kerosene and 63.0 tCO_2/TJ for Liquefied Petroleum Gas (LPG).

with national standards (if available) or international standards or guidelines (e.g. the KPT procedures specified by the Partnership for Clean Indoor Air (PCIA) <http://www.pciaonline.org/node/1049)>

Option 2[43]:

$$B_{y,savings,i,a} = B_{old} \times \left(1 - \frac{\eta_{old}}{\eta_{new,i,a=1} \times \Delta\eta_{y,i,a}}\right) \quad (4)$$

$$B_{y,savings,i,a} = B_{old} \times \left(\frac{\eta_{new,i,a=1} \times \Delta\eta_{y,i,a}}{\eta_{old}} - 1\right) \quad (5)$$

Where:

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

$B_{y,=1,new,i,survey}$: Annual quantity of woody biomass used by project devices in tonnes per device of type i, determined in the first year of introduction of the devices (e.g. during the first year of the crediting period, y=1) through a sample survey. Sample surveys to estimate this parameter, that are solely based on questionnaires or interviews (i.e. that do not implement measurement campaigns) may only be used if the following conditions are satisfied.

a) Pre-project devices have been completely decommissioned and only efficient project devices are exclusively used in the project households;

b) If multiple devices are used in the project, it is possible from the results of the survey questions to clearly differentiate the quantity of woody biomass being used by each device. In other words, if more than one device, or another device that consume woody biomass, are in use in project households, then the sample survey needs to distinguish the quantity of biomass used by the project device and the other devices that use biomass.

η_{old} : Efficiency of the device being replaced (fraction), determined using one of the following options:

1. Measured using representative sampling methods or based on literatures reporting results of measurements relevant for the type of pre-project devices. Use weighted average values (taking the amount of woody biomass consumed by each device as the weighting factor) if more than one type of device is being replaced;

2. A default value of 0.10 may be optionally used if the replaced system is a three stone fire using firewood (not charcoal), or a conventional device with no improved combustion air supply or flue gas ventilation, i.e. without a grate or a chimney; for other types of devices a default value of 0.2 may be optionally used.

$\eta_{new,i,a=1}$: Thermal efficiency of the device of type i being deployed as part of the project activity (fraction), using the Water Boiling Test (WBT) protocol carried out in accordance with national standards (if available) or

[43] Based on whether $\eta_{new,y}$ or $B_{y,new,survey}$ is used for monitoring, either the Equation (3) or (4) can be used.

international standards or guidelines[44], for the initial efficiency determined in the year of its installation (a=1)

$\Delta\eta_{y,i,a}$: Factor to consider the efficiency loss of the project device type i due to its aging at the year y, as expressed as follows:
$\Delta\eta_{y,i,a} = \eta_{new,i,a} / \eta_{new,i,a=1}$

where $\eta_{new,i,a}$ is thermal efficiency of device i with age a determined using WBT and $\eta_{new,i,a=1}$ is the thermal efficiency of the device at its first year of operation. $\Delta\eta_{y,i,a}$ may be determined through sample surveys of the project device type i for batches of stoves with the same age at each year of crediting period. Alternatively, the monitoring may determine annually the thermal efficiency of devices installed at the first year of the crediting period, and the efficiency loss of the population of devices later on.

Option 3:

$$B_{y,savings,t,a} = B_{old,t} \times \left(1 - \frac{SC_{new,i,a=1} \times \Delta SC_{y,i,a}}{SC_{old}}\right) \quad (6)$$

Where:

$SC_{new,i,a=1}$: Specific fuel consumption or fuel consumption rate of the devices of type i deployed as part of the project i.e. fuel consumption per quantity of item/s processed (e.g. food cooked) or fuel consumption per hour, respectively, for the initial efficiency determined in the year of its installation (a=1). Specific fuel consumption or fuel consumption rate shall be determined using the same CCT protocol used to test the pre-project devices. If more than one project devices are necessary to replace the pre-project device, woody biomass consumption should be calculated per device (taking the amount of woody biomass consumed by each device as the weighting factor).

SC_{old} : Specific fuel consumption or the fuel consumption rate of the pre-project devices, that is fuel consumption per quantity of item/s processed (e.g. food cooked) or fuel consumption per hour respectively. Specific fuel consumption or fuel consumption rate are to be determined using CCT protocol carried out in accordance with national standards (if available) or international standards or guidelines (e.g. the CCT procedures specified by the partnership for clean indoor air (PCIA).

$\Delta SC_{y,i,a}$: Factor to consider the efficiency loss of the project device type i due to its aging at the year y, as expressed as follows:
$\Delta SC_{y,i,a} = SC_{new,i,a=1} / SC_{new,i,a}$

where, $SC_{new,i,a}$ is the specific fuel consumption of the device i with age a determined using the CCT and $SC_{new,i,a=1}$ is the specific fuel consumption of the device at its first year of operation $\Delta SC_{y,i,a}$ may be determined through sample surveys of project device type I for batches of stoves with the same age at each year of the crediting period. Alternatively, the monitoring may determine annually the specific fuel consumption of the devices installed at the first year of the crediting period, and efficiency loss of this population may ne used to correct the initial efficiency of the population of devices installed later on.

The methodology requires choosing one of the three options mentioned above for calculating the "Quantity of woody biomass that is saved ($B_{y,savings}$)". Option 2 equation (4) has been selected.

[44]In all cases the testing protocol shall be the same for both the device being replaced and the device being deployed

As stipulated in the paragraph 19 of AMS II.G/v06, B_{old} can be determined using one of the following options:

1. Estimated as the average annual consumption of the woody biomass per device (tonnes/year). This can be derived from historical data or a survey of local usage,

   OR

2. Calculated from the thermal energy generated in the project activity as:

$$B_{old} = \frac{HG_{p,y}}{NCV_{biomass} * \eta_{old}} \quad \textbf{(6)}$$

Where:

$HG_{p,y}$: Amount of thermal energy generated by the project devices in year *y* (TJ), if the thermal output of the devices can be directly measured

OR

3. A default value of 0.5 tonnes woody biomass per capita per year may be used. The household occupancy shall be determined based on literature or sample surveys conducted for the target project area as per "Standard for sampling and surveys for CDM project activities and program of activities".

The methodology requires choosing one of the three options mentioned above for calculating the "Quantity of woody biomass used in the absence of the project activity (B_{old})". Since, it is difficult and not cost effective to monitor the thermal energy generated in the project activity, Option 1 has been selected, as it is feasible to determine B_{old} based on number of devices multiplied by the estimate of average annual consumption of woody biomass per device substituted (tonnes/year), which can be derived from historical data or estimated using survey methods. As the project involves improved cooking stoves, which are owned and operated by households, the term individual device is meant to represent individual improved cooking stove.

Differentiation between NRB and renewable biomass and determining $f_{NRB,y}$

The methodology requires the Project Participants to determine 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 determine $f_{NRB,y}$ as described below. The following principles shall be taken into account:

Demonstrably renewable woody biomass[45] (DRB)

According to AMS IIG/v06 para 26, woody[46] biomass is "renewable" if one of the following two conditions is satisfied:

1. The woody biomass is originating from land areas that are forests[47] 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.

[45] This definition uses elements of annex 18, EB 23.

[46] In cases of charcoal produced from woody biomass, the demonstration of renewability shall be done for the areas where the woody biomass is sourced.

[47] The forest definitions as established by the country in accordance with the decisions 11/CP.7 and 19/CP.9 should apply.

2. 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:

According to AMS IIG/v06 para 27, 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;
- 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:

$$f_{NRB,y} = \frac{NRB}{NRB + DRB} \quad \textbf{(1)}$$

As per EB 67, Annex 22 "Information note Default values of fraction of non-renewable biomass for Least Developed Countries and Small Island Developing States (version 01.0)", a default value of fNRB 86% has been applied. Therefore the default value of fNRB is 86%.

Leakage

As per the paragraph 30 of the methodology AMS II.G/v06, the following leakages are to be considered:

The use/diversion of non-renewable woody biomass saved under the project activity by non-project households/users that previously used renewable energy sources. If this leakage assessment quantifies an increase in the use of nonrenewable woody biomass used by the non-project households/users that is attributable to the project activity, then Bold is adjusted to account for the quantified leakage. Alternatively, B_{old} is multiplied by a net to gross adjustment factor of 0.95 to account for leakages, in which case surveys are not required. PP has opted to use the adjustment factor of 0.95 in order to account for leakage.

As per the paragraph 31 of the methodology AMS II.G/v06, if equipment currently being utilised is transferred from outside the boundary to the project activity, leakage is to be considered.

The project does not involve any transfer of equipments from outside the project boundary to the project boundary. The programme will use the stoves either built on site or manufactured by a prequalified companies in Nepal. Thus the provision on leakage associated with project boundary is not applicable.

B.6.2. Data and parameters fixed ex-ante

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Data / Parameter	B_{old}
Unit	tonnes/household/year
Description	Quantity of woody biomass used per ICS in the absence of the project activity
Source of data	Baseline Survey
Value(s) applied	3.07
Choice of data or Measurement methods and procedures	The baseline survey estimated the average (mean) biomass usage per annum across relevant clusters as a 4.23 tonne/year. Beside the mean firewood consumption, the median firewood consumption was found to be 3.07 tonnes per year. The median consumption of the firewood is more conservative compared to the mean consumption, and is therefore taken as an ex-ante value. The survey was conducted in two ways: perception survey and experimental survey. In the perception survey, the TCS users were interviewed about their usage pattern of the biomass for the household cooking using the traditional cooking stoves. In the experimental the interviewer also measured the actual biomass used in the traditional cooking stove for cooking the meals. The baseline survey was conducted following the General Guidelines For Sampling And Surveys For Small-Scale CDM Project Activities (Version 01); CDM EB50 Annex 30.
Purpose of data	Calculation of Quantity of woody biomass that is saved in tonnes per device
Additional comment	This parameter shall remain fixed for the monitoring periods.

Data / Parameter	η_{old}
Unit	Percentage
Description	Efficiency of the system being replaced (Traditional Cooking Stoves)
Source of data	Paragraph 17 of AMS II.G/v06
Value(s) applied	10%
Choice of data or Measurement methods and procedures	The default value of 0.10 is used as the replaced system is a three stone fire, or a conventional device with no improved combustion air supply or flue gas ventilation, i.e. without a grate or a chimney.
Purpose of data	Calculation of Quantity of woody biomass that is saved in tonnes per device
Additional comment	This parameter shall remain fixed for the monitoring periods.

Data / Parameter	$f_{NRB,y}$
Unit	Percentage
Description	Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass
Source of data	"Default values of fraction of non-renewable biomass for Least Developed Countries and Small Island Developing States (version 01.0)" EB 67 Annex 22.
Value(s) applied	86%
Choice of data or Measurement methods and procedures	Any changes/ revisions to this value would be monitored and if new default values are approved by the CDM EB the value of the fraction of NRB used will be updated.
Purpose of data	Calculation of share of non-renewable biomass
Additional comment	This parameter shall remain fixed for the monitoring periods.

Data / Parameter	$NCV_{biomass}$
Unit	TJ/tonne
Description	Net calorific value of the non-renewable woody biomass that is substituted
Source of data	Paragraph 13 of AMS II.G/v06
Value(s) applied	0.015
Choice of data or Measurement methods and procedures	As per the methodology AMS II.G/v06
Purpose of data	Emission reduction calculation
Additional comment	This parameter shall remain fixed for the monitoring periods.

Data / Parameter	$EF_{projected\ fossilfuel}$
Unit	tCO_2/TJ
Description	Emission factor for the substitution of non-renewable woody biomass by similar consumers
Source of data	Paragraph 13 of AMS II.G/v06
Value(s) applied	81.6
Choice of data or Measurement methods and procedures	This value represents the emission factor of the substitution fuels likely to be used by similar users, on a weighted average basis. It is assumed that the mix of present and future fuels used would consist of a solid fossil fuel (lowest in the ladder of fuel choices), a liquid fossil fuel (represents a progression over solid fuel in the ladder of fuel use choices) and a gaseous fuel (represents a progression over liquid fuel in the ladder of fuel use choices). Thus a 50% weight is assigned to coal as the alternative solid fossil fuel (96 tCO_2/TJ) and a 25% weight is assigned to both liquid and gaseous fuels (71.5 tCO_2/TJ for Kerosene and 63.0 tCO_2/TJ for Liquefied Petroleum Gas (LPG).
Purpose of data	Emission reduction calculations
Additional comment	This parameter shall remain fixed for the monitoring periods.

Data / Parameter	L_y
Unit	Fraction
Description	Leakage adjustment factor
Source of data	Paragraph 30 of AMS II.G/v06
Value(s) applied	0.95
Choice of data or Measurement methods and procedures	As per the methodology AMS II.G/v06, B_{old} can be multiplied by a net to gross adjustment factor of 0.95 to account for leakages, in which case surveys are not required.
Purpose of data	Emission reduction calculations
Additional comment	This parameter shall remain fixed for the monitoring periods.

B.6.3. Ex-ante calculations of emission reductions

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According to paragraph 13(a) of methodology AMS II.G/v06, emission reductions shall be calculated as:

$$ER_{yit} = \sum_{a=t}^{a=y} B_{y,savings,i,a} \times N_{yit} \times \frac{\mu_{yit}}{365} \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected\_fossil\,fuel} - LE_y \quad (2)$$

Where,

Description	Parameter	Unit	Type
Index for age (in years) of the cook stoves that are operating in the year 'y' of the crediting period	*a*	NA	Calculated
Index for the type of cook stoves that are operating in the year 'y' of the crediting period	*i*	NA	Calculated
Emission reductions during the year y	ER_y	tCO_2e	Calculated
Quantity of woody biomass that is saved	$B_{y,savings}$	tonnes	Calculated
Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass	$f_{NRB,y}$	%	Fixed ex-ante
Net calorific value of the non-renewable woody biomass that is substituted (0.015 TJ/tonne)	$NCV_{biomass}$	TJ/tonne	Fixed ex-ante
Emission factor for the substitution of non-renewable woody biomass by similar consumers. (81.6 tCO_2/TJ)[48]	$EF_{projected\_fossilfuel}$	tCO_2/TJ	Fixed ex-ante
Number of project devices of type *i* operating in year *y*	$N_{y,i}$		Calculated
Leakage attributable to the project devices operating in year y	LE_y	%	Fixed ex ante

[48] This value represents the emission factor of the substitution fuels likely to be used by similar users, on a weighted average basis. It is assumed that the mix of present and future fuels used would consist of a solid fossil fuel (lowest in the ladder of fuel choices), a liquid fossil fuel (represents a progression over solid fuel in the ladder of fuel use choices) and a gaseous fuel (represents a progression over liquid fuel in the ladder of fuel use choices). Thus a 50% weight is assigned to coal as the alternative solid fossil fuel (96 tCO_2/TJ) and a 25% weight is assigned to both liquid and gaseous fuels (71.5 tCO_2/TJ for Kerosene and 63.0 tCO_2/TJ for Liquefied Petroleum Gas (LPG).

The quantity of woody biomass that is saved ($B_{y,savings}$) shall be calculated using option 2 of paragraph 17 of methodology AMS II.G/v06 as follows:

$$B_{y,savings,i,a} = B_{old} \times \left(1 - \frac{\eta_{old}}{\eta_{new,i,a=1} \times \Delta\eta_{y,i,a}}\right) \quad (4)$$

Where:

Description	Parameter	Unit	Type
Index for age (in years) of the cook stoves that are operating in the year 'y' of the crediting period	*a*	NA	Calculated
Index for the type of cook stoves that are operating in the year 'y' of the crediting period	*i*	NA	Calculated
Quantity of woody biomass that is saved	$B_{y,savings}$	Tonnes	Calculated
Quantity of woody biomass used in the absence of the project activity	B_{old}	Tonnes	3.07 (ex ante determination by independent third party)
Efficiency of the system being replaced	η_{old}	%	Fixed ex-ante
Efficiency of the system being deployed as part of the project activity	η_{new}	%	Monitored

The quantity of woody biomass used in the absence of the project activity (B_{old}) shall be determined using the option "a" of paragraph 19 of methodology AMS II.G/v06. The project proponent has carried out the baseline survey (through the independent third party) to determine the quantity of biomass used in the absence of the project activity.

In order to account for leakage, B_{old} is multiplied by a net to gross adjustment factor of 0.95, in which case surveys are not required. The project does not involve any transfer of equipments from outside the project boundary to the project boundary. Thus this provision on leakage is not applicable.

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;
- 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:

$$f_{NRB,y} = \frac{NRB}{NRB + DRB} \quad \textbf{(2)}$$

As per EB 67, Annex 22 "Information note Default values of fraction of non-renewable biomass for Least Developed Countries and Small Island Developing States (version 01.0)", a default value of fNRB 86% has been applied. Therefore the value of fNRB is 86%.

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

The table below provides the aspects to be monitored according to methodology AMS II.G and its applicability to the ICS SSC-CPA.

Parameters to be monitored according to methodology	Applicability to the Project	Parameter to be Monitored (YES/NO/Not Applicable)
Monitoring shall consist of checking of all devices or a representative sample thereof, at least once every two years (biennial) to determine if they are still operating; those devices that have been replaced prior to and independently from the monitoring survey by an equivalent in-service device can be counted as operating. (AMS.II.G ver 06/para 33)	The emission reduction is linked with the number of appliances (ICS) operational, so this needs to be monitored.	Yes (Through Annual Survey)
Monitoring shall also consist of checking the efficiency of all devices or a representative sample thereof annually as below: (a) For project activities using the Kitchen Performance Test Protocol to determine the quantity of fuel saved (i.e. paragraph 15Option 1), monitoring shall determine the fuel consumption per operating device ($B_{a=1,i,KPT}$) of all operating devices or a representative sample thereof, annually and $\Delta B_{y,i,a}$ as per paragraph 15; (b) For project activities using the Water Boiling Test protocol (i.e. paragraph 17Option 2), monitoring shall consist of determining the efficiency of all operating devices or a representative sample thereof, annually and $\Delta\eta_{y,i,a}$ as per paragraph 17. For the purpose of calculating emissions reductions, the ex post monitored value of the efficiency of the operating devices ($\eta_{new,i,a=1}$) shall be used; (c) For project activities using the Controlled Cooking Test protocol (i.e. paragraph 18Option 3), monitoring shall consist of determining the specific fuel consumption or fuel consumption rate ($SC_{new,i,a=1}$) of all operating devices or a representative sample thereof, annually and $\Delta SC_{y,i,a}$ as per paragraph 18.	Option (b) is applied for monitoring efficiency of devices	Yes (Through Annual Survey)

Parameters to be monitored according to methodology	Applicability to the Project	Parameter to be Monitored (YES/NO/Not Applicable)
If option (b) in paragraph 19 is chosen for determining B_{old}, monitoring shall also determine the amount of thermal energy generated by the project technology *t* in year *y*	The option (b) in paragraph 19 of AMS II.G/v06 is not chosen for determining B_{old}. It is determined using the option (a) in paragraph 19.	Not Applicable
In order to assess the leakage described above, monitoring shall include data on the amount of woody biomass saved under the project activity that is used by non-project households/users (who previously used renewable energy sources). Other data on non-renewable woody biomass use required for leakage assessment shall also be collected.	The methodology allows the use of a default factor of 0.95 to account for leakage. So this will not be monitored in the project.	No (Instead a default factor of 0.95 shall be used)
Monitoring shall ensure that either: a. The replaced low efficiency device are disposed of and not used within the boundary or within the region; or b. If pre-project stoves continue to be used, monitoring shall ensure that the fuel-wood consumption of those stoves is excluded from $B_{old,i}$.	Option (a) is chosen that is, monitoring shall ensure that the replaced low efficiency appliances are disposed of and not used within the boundary or within the region.	Yes (Through Annual Survey)

The various parameters that are to be monitored under the project activity are listed below:

Data / Parameter	**$N_{y,i,a}$**
Unit	Number
Description	Number of project devices of type i and age a that are operating in year *y*
Source of data	Annual ICS users' survey
Measurement methods and procedures	The information on the number of devices operational is determined by the ICS users' survey by an independent third party through monitoring of the user households drawn as random sample.
Monitoring frequency	Annually
QA/QC procedures	During the annual users' survey, an independent third party will inspect representative sample households to check if the devices are operating or not. Sample for this survey will be drawn as per the "Guidelines for sampling and surveys for CDM project activities and programme of activities, version 3 (EB 75, annex 8)".
Purpose of data	Emission reduction calculation
Additional comments	If households are found continuing the use of traditional stoves, such households will be counted for having non-operational project device and equal proportion of households will not be counted towards emission reductions. Nevertheless, some households may retain their traditional stoves for religious reason where the traditional stoves are not used, the annual ICS users' survey will capture this information and it will be used accordingly while calculating the emission reductions.

Data / Parameter	$\eta_{new,i,a}$
Unit	Fraction
Description	Efficiency of the device of type i being deployed as part of the project activity, with the age a
Source of data	Water Boiling Test report conducted by an independent third party during the annual ICS users' survey
Measurement methods and procedures	Different types of ICS are disseminated under the programme. Separate Water Boiling Test will be carried out for these ICS using the standard National Stove Performance testing protocol adopted by AEPC which is based on testing protocol developed by University of California, Berkeley and The Shell Foundation. The efficiency test will be carried out for different types and models of ICS. The value obtained from the test will be used to calculate the emission reductions of the systems for that year of operation. Sample for this survey will be drawn as per the "Guidelines for sampling and surveys for CDM project activities and programme of activities, version 3 (EB 75, annex 8)".
Monitoring frequency	Annually
QA/QC procedures	The test will be carried out twice every year (50% of sample in summer season and 50% of sample in winter season) by an independent third party. As required by AMS II.G for annual surveys, the margin of error 10% and a confidence interval of 90% will be ensured for the monitoring the efficiency of stoves. Please refer to Appendix 4.
Purpose of data	The monitored value of this parameter will be used in the determination of the ex-post emission reduction for all CPAs.
Additional comments	If any sample stove is found to be operating below the 20% efficiency, the proportionate number of stoves of that type included in the CPA will be considered to be non-operational and not accounted for ER calculation.

Data / Parameter	$\Delta\eta_{y,i,a}$
Unit	Fraction
Description	Factor to consider the efficiency loss of the project device type i due to its aging at the year y
Source of data	Water Boiling Test report conducted by an independent third party during the annual ICS users' survey
Measurement methods and procedures	
Monitoring frequency	Annually
QA/QC procedures	The test will be carried out twice every year (50% of sample in summer season and 50% of sample in winter season) by an independent third party. As required by AMS II.G for annual surveys, the margin of error 10% and a confidence interval of 90% will be ensured for the monitoring the efficiency of stoves. Please refer to Appendix 4.
Purpose of data	The monitored value of this parameter will be used in the determination of the ex-post emission reduction for all CPAs.
Additional comments	If any sample stove is found to be operating below the 20% efficiency, the proportionate number of stoves of that type included in the CPA will be considered to be non-operational and not accounted for ER calculation.

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

All the CPAs included in the PoA will be monitored and verified individually.

The approved methodology AMS II.G/v06 requires monitoring of the following parameters:

1. Monitoring shall consist of checking of all devices (ICS in this case) or a representative sample thereof, at least once every two years (biennial) to determine if they are still operating; those devices that have been replaced by an equivalent in-service device can be counted as operating (AMS II G, v/06, para 33).
2. Monitoring shall also consist of checking the efficiency of all devices or a representative sample thereof annually as below:

   (b) For project activities using the Water Boiling Test protocol (i.e. paragraph 17, Option 2), monitoring shall consist of determining the efficiency of all operating devices or a representative sample thereof, annually. For the purpose of calculating emissions reductions, the ex post monitored value of the efficiency of the operating devices ($\eta_{new,y}$) shall be used;
3. The replaced low efficiency appliances are disposed of and not used within the boundary;

The numbers of mud ICS disseminated are reported by promoters/ stove masters to Local/District partners. The RSCs will maintain the database and will send to AEPC. AEPC will manage the overall database of the program.

The performance of the ICS (annual check of a representative sample of all devices (ICS) to ensure that they are still operating) and discontinuation of the use of traditional cooking stoves will be based on the Annual User Survey which will be conducted by an independent third party. The efficiency of the ICS will be monitored by an independent third party. These surveys will be conducted following statistically sound sampling procedure following the "Guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities Ver. 3.0 (EB 75, Annex 8)". As part of the survey, statistically valid sample of ICS will be surveyed and in order to achieve 90% confidence interval and a 10% margin of error requirement for the sampled parameters. The parameter efficiency of ICS will be measured twice a year; the 50% of samples will be tested during the summer while the 50% of samples will be tested during the winter month. The sampling method is further explained in Appendix 4.

Quality Control and Quality Assurance Procedure

The QA/QC includes the following elements:

- *Annual User Survey: The Annual User Survey uses a random sample of ICS users to measure a wide-range of health, economic, social and environmental indicators. The information obtained from the user survey is used to enable continuous improvement of the program and the technology applied.*

Mud Improved Cooking Stoves:

The number of mud ICS prepared by promoters/ stove masters at household level are reported to AEPC through regional service centers (RSCs). RSCs first of all record the ICS into the database and sent to AEPC every month in the soft copy. The total stove installation report will be submitted in the hard copy in each quarter of the year. The BES team will generate random sample for monitoring using the Guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities, Version 03[49] with margin of error of 10% and confidence interval of 90% will be monitored. Sampled ICS will be monitored annually to determine the efficiency of the ICS installed in each CPA by an independent third party. Similarly, the operation of the ICS and displacement of the traditional stoves are also monitored annually by an independent third party.

[49] Guidelines for Sampling and Surveys for CDM Project activites and Programme of Activities Ver. 3.0 (EB 75, Annex 8)

Metallic Improved Cooking Stoves:

In case of metallic ICS, the quality of the stove is checked at the manufacturing premises in a lot during spot monitoring before delivery of the stoves to the users. The installer fills up subsidy application form during installation of the stove and database is entered at RSC which is then forwarded to AEPC database for further verification and release of subsidy amount. The central office team will generate random sample for monitoring using the Guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities, Version 03[50] with margin of error of 10% and confidence interval of 90%. Sample will be randomly generated from database and monitored annually to determine the efficiency of the metallic ICS installed in each CPA by an independent third party. Similarly, the operation of the ICS and displacement of the traditional stoves are also monitored annually by an independent third party.

Details of monitoring are mentioned in Appendix 4.

Internal Audit Procedure

Mud Improved Cooking Stoves:

In case of mud ICS the internal auditing is done through RSC and its local partner. The promoter/ stove masters submit the data along with the user information sheet that includes user's name, and address, date stove installed/sold including the name of the stove installer or person / institution selling the stove. This user information sheet is submitted to RSC through its local partner. The RSC cross checks the installation details in random basis.

Metallic Improved Cooking Stoves:

In case of Metallic ICS the internal auditing is done in AEPC by cross checking copy of subsidy application form submitted by manufacturing cum installing companies and the soft copy details submitted by RSCs to AEPC. The soft copy detail is generated by RSC through a copy of subsidy application form submitted by manufacturing cum installing companies to RSC.

Data Archiving Procedure

The data archiving procedures followed by the BES after the completion of the construction of the ICS is presented below:

Mud Improved Cooking Stoves:

The numbers of mud ICS disseminated are reported by promoters/ stove masters to RSC through its local partner. It is then entered into the database by RSC and sent BES of AEPC/NRREP every month in the soft copy. The total stove installation report will be submitted in the hard copy in each quarter of the year.

Metallic Improved Cooking Stoves:

The installer/ manufacturing company representative fills up subsidy application form during installation of the stove and database is entered at RSC which is then forwarded to BES of AEPC/NRREP database for further verification and release of subsidy amount.

Organization Structure

The chart below presents the role and responsibilities of various organisations involved in the ICS PoA:

[50] Guidelines for Sampling and Surveys for CDM Project activites and Programme of Activities Ver. 3.0 (EB 75, Annex 8)

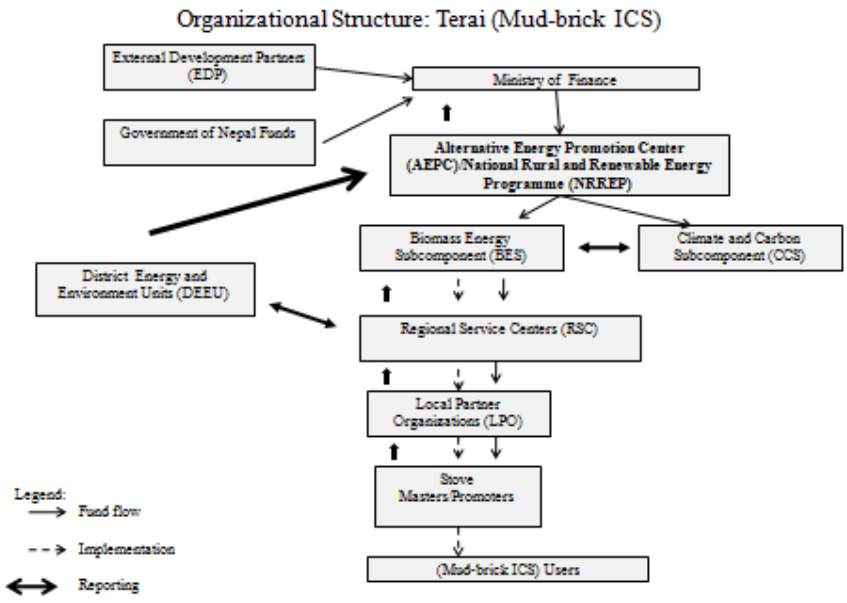

Figure 1: Organisational structure for Mud ICS

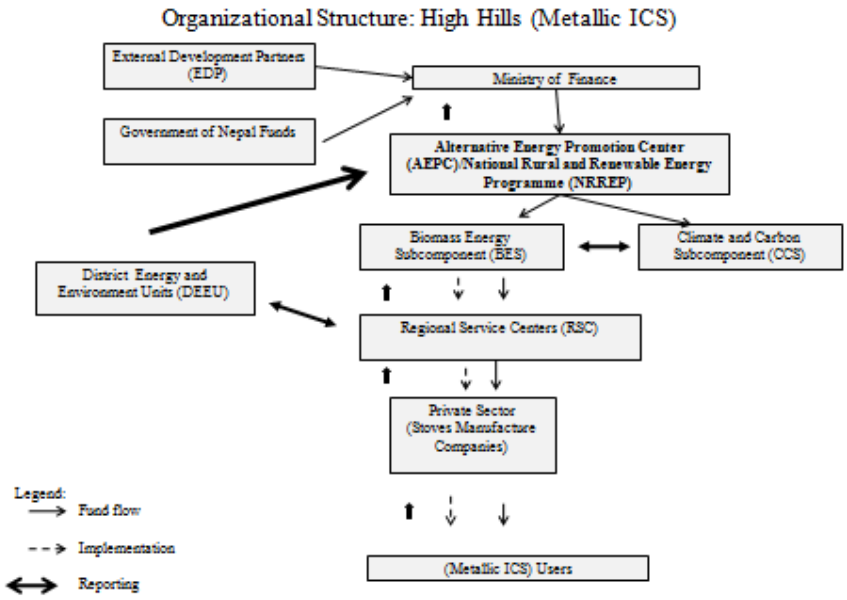

Figure 2: Organisational structure for Metallic ICS

Alternative Energy Promotion Center (AEPC)

- AEPC is responsible for overall coordination and the execution of the ICS PoA. The AEPC provides feedbacks to GoN for policy formulation and executes the policies.
- AEPC is responsible for overall monitoring and evaluation together with its development partners. This also includes endorsing new modalities e.g. the modality to be developed to target the poor.
- AEPC is responsible for carrying out Annual ICS Users' Survey that is also in line with the requirements of the CDM. The survey would report the performance of the stoves as well as perceptions of ICS users.

- AEPC administrates subsidy for metallic ICS as per Nepal Government's Renewable (Rural) Energy Subsidy Policy and its Delivery Mechanism.
- AEPC is responsible for coordination with national level institutions/agencies relevant for promotion of ICS technology.
- AEPC advocates and promotes ICS through BES/NRREP at macro level.

External Development Partners (EDPs):

- EDPs support AEPC in dissemination of mud and metallic ICS through BES/NRREP.
- EDPs provide financial support for technical supports to disseminate ICS and for subsidy to households installing metallic ICS under the NRREP
- EDPs are also responsible for overall programme evaluation together with the AEPC and other development partners.

National Rural and Renewable Energy Programme (NRREP) - Biomass Energy Subcomponent (BES)

- BES/NRREP provides technical supports through its network of Regional Service Centres (RSC) to organizations of the ICS sector. The technical supports include awareness building, promotion, capacity building, monitoring, advocacy/lobbying, gender and social inclusion, etc.
- Based on approved plans and budgets, BES/NRREP supports AEPC to administer the fund for technical supports as per developed guidelines and procedures.
- BES/NRREP develops technical designs of mud and metallic ICS and recommends AEPC to include them in the programme.
- BES/NRREP supports AEPC in administration of subsidy for metallic ICS as per Nepal Government's Renewable (Rural) Energy Subsidy Policy and its Delivery Mechanism. This includes quality control and regular monitoring of metallic ICS, company qualification, performance evaluation as well as for provision of after-sales services and warrantee.
- BES/NRREP facilitates, promotes, monitors and backstops the development of ICS sector

National Rural and Renewable Energy Programme (NRREP)-Climate and Carbon Subcomponent (CCS)

- Ensuring full compliance with CDM processes related to documentation, validation, monitoring and verification of ICS PoA.
- Establishing communication with the UNFCCC and DOE on the matters related to CDM PoA.
- Conducting Annual ICS Users' Survey for Emission Reduction monitoring

Regional Service Centers (RSC)

- ***RSCs***, by themselves or through Local Partner Organizations (LPO), are responsible for facilitating the implementation of programme.
- ***RSCs***/LPO are responsible for imparting technical supports such as awareness building, promotion, capacity building, local level advocacy/lobbying, gender and social inclusion etc of the programme.
- ***RSCs***/LPO responsible for skill transfer to BGs/SMs, monitoring/follow up to ensure skill transfer to BGs/SMs, orientation/demonstration, demand creation & massive dissemination of quality ICS.
- ***RSCs***/LPO responsible for regular monitoring as well as efficiency testing of ICS for internal quality control.
- ***RSCs*** responsible for data entry and regular reporting to BES/NRREP.

District Development Committees (DDCs)

- DDCs, through their District Energy and Environment Units/Sections (DEEU/DEES), are responsible for coordination and information sharing on ICS.
- DDCs help in promotion of metallic ICS by awareness raising and contributing a part of fund to be borne by the users (non-local material cost for mud-brick ICS and transportation cost for metallic ICS).
- DDCs, together with the AEPC and other development partners, are also responsible in monitoring of mud-brick and metallic ICS.

Local Development Partners (District/Local Line Agencies) /Micro Finance Institutions (MFIs)

- Where applicable, local development partners (District/local line agencies) such as Federation of Community Forest User Groups (FECOFUN), Red Cross etc. and other Community Based Organizations (CBOs) and Non-government Organizations (NGOs) help in promotion of metallic ICS by awareness raising and contributing a part of fund to be borne by the users as transport subsidy.
- When necessary, Micro Finance Institutions (MFIs) lend credit to metallic ICS users.

Stove Masters (SMs)

- SMs are the permanent residents of the locality trained by program in mud-brick ICS construction, whereas the BGs are the informal groups of SMs formed to keep themselves active and focused in the ICS business through self-motivation.
- SMs sell their skill by constructing mud-brick ICS as per the need of prospective user household and charge a fee (in cash or kind, akin with wages of skilled work locally). SMs are responsible to train the users on operation, maintenance and repair of ICS.

Metallic Stove Manufacturers (MSMs)

- MSMs are responsible for manufacturing, supplying and installing quality metallic ICS to eligible users as per the designs and specifications provided by AEPC.
- MSMs are responsible for training metallic ICS users on proper operation and maintenance of the system.
- MSMs are responsible to handover the Users' Manual and any other information materials provided from BES/NRREP and train the users on operation and maintenance of the plants.
- MSMs are responsible to complete documentation required for processing of subsidy and for release of the after-sales service guarantee money and submit them to AEPC in a timely manner.
- MSMs are responsible to cooperate and accompany AEPC staff, or any other personnel as assigned and communicated by AEPC, in the field for quality control and other verification purposes.
- MSMs are responsible to visit metallic ICS user households and deliver the promised after-sales service and other services fully respecting the promised guarantee.
- MSMs are responsible for promotion, awareness and other activities that help to promote the technology by linking it with other rural development agencies at the local level.
- MSMs coordinate with DDCs/VDCs, CBOs/NGOs and local development partners to mobilize support for transportation of metallic ICS to the user households in the remote areas.
- MSMs coordinate with banks, MFIs and other CBOs/NGOs to ease credit flow to beneficiaries.

Users

The users are the ones who actually use the mud improved cooking stove or metallic improved cooking stoves. The users:

- Request for the installation of the ICS as per their need.
- Payment of installation fee to promoter/stove master
- Regular maintenance of the ICS

Appendix 1. Contact information of coordinating/managing entity and responsible person(s)/ entity(ies)

CME and/or responsible person/ entity	☒ CME ☒ Responsible person/ entity for application of the selected methodology(ies) and, where applicable, the selected standardized baseline(s) to the PoA
Organization	Alternative Energy Promotion Centre (AEPC)
Street/P.O. Box	Khumaltar, Lalitpur, P.O. Box – 14237 (Kathmandu)
Building	
City	Kathmandu
State/Region	Bagmati
Postcode	
Country	Nepal
Telephone	+977-1-5539237 / 5539390 / 5539391
Fax	+977-1-5542397
E-mail	ram.dhital@aepc.gov.np
Website	www.aepc.gov.np
Contact person	Ram Prasad Dhital
Title	Executive Director
Salutation	Mr.
Last name	Dhital
Middle name	Ram Prasad

Appendix 2. Affirmation regarding public funding

CLIMATE AND POLLUTION AGENCY

Alternative Energy Promotion Centre
G.P.O.Box No 14237 Katmandu
Khumaltar, Lalitpur
NEPAL

Climate and Pollution Agency
P.O.Box 8100 Dep, N-0032 Oslo,
Norway
Visiting address: Strømsveien 96

Telephone: +47 22 57 34 00
Telefax: +47 22 67 67 06
E-mail: postmottak@klif.no
Internet: www.klif.no

Att. Raju Laudari

Date: 19 January 2012
Our ref.: 2009/832
Your ref.:
Contact person: Hans H. Kolshus

Official Development Assistance Non-Diversion Letter

The Climate and Pollution Agency, being the Norwegian Designated National Authority (DNA) under the Clean Development Mechanism (CDM), hereby confirms that:

- Norway provides Official Development Assistance to the Government of Nepal for the implementation of the national Improved Cooking Stove (ICS) Program. The ICS Program is implemented through the Alternative Energy Promotion Centre (AEPC).
- Norway does not intend to receive Certified Emission Reductions (CERs) to be generated from this CDM program of activities.
- The public funding from Norway does not result in the diversion of official development assistance.

Signed on behalf of Norway's Designated National Authority for the CDM,

Yours sincerely,

Audun Rosland
Director of the Climate Department

EMBASSY OF DENMARK
Kathmandu

Lazimpat (Neel Saraswati Marg)
P.O.Box 6332, Kathmandu
Tel: +977 (1) 441 30 30
Fax: +977 (1) 441 14 09
E-mail: kmamb@um.dk
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Alternative Energy Promotion Centre
G.P.O. Box No. 14237 Kathmandu
Khumaltar, Lalitpur
Nepal

Att. Raju Laudari

Enclosure | File: 104.Nepal.802-300.KTM. | Department | 12 February 2013

Official Development Assistance Non-Diversion Letter

The Embassy of Denmark on behalf of the Danish Ministry of Foreign Affairs hereby confirms that:

- Denmark provides Official Development Assistance to the Government of Nepal for the implementation of national Improved Cooking Stove (ICS) Program under the National Rural and Renewable Energy Programme (NRREP). Alternative Energy Promotion Centre (AEPC) is an executive Agency of this program.
- Denmark does not intend to receive Certified Emission Reductions (CERs) to be generated from any CDM Program of Activity (CPAs) of this ICS Programme of Activities (PoA) CDM.
- The public funding from Denmark does not result in diversion of official development assistance.

Yours Sincerely,

Ditte Bjerregaard
First Secretary

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

Type: Type II – Energy Efficiency Improved Projects
Methodology: AMS II.G - Energy efficiency measures in thermal applications of non-renewable biomass
Version: Version 05
Reference:
http://cdm.unfccc.int/filestorage/7/m/24G3EKN6PT0QJ1BHRICMYDX97OW8UF.pdf/EB70_repan30_AMS-II.G_ver05.0.pdf?t=a3B8bXduZXN6fDB_vbeKKv31VvgE2tIGodRq

S. N.	AMS II.G, Version 06 Requirements	Project activity applicability	Means of verification
1.	This category comprises the efficiency improvements in thermal applications of non-renewable biomass. Examples of applicable technologies and measures include the introduction of high efficiency[51] biomass fired cook stoves [52] or ovens or dryers and/or improvement of energy efficiency of existing biomass fired cook stoves or ovens or dryers. (AMS II G v06, para 2)	This CPA includes the dissemination of the high efficiency biomass fired cook stoves having the efficiency improved by 10-15% compared to traditional stoves. This CPA will save non-renewable biomass which otherwise would have been consumed by less efficient cooking appliances. The single pot or multipot portable or in situ improved cooking stoves will have a specified efficiency of at least 20% as tested and certified by Kathmandu University[53].	This will be verified using the eligibility criteria "c (1)" of CPA inclusion.
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. (AMS II G v06, para 4)	▪ The non-renewable biomass has been used in the country since 1989. The Baseline Study [54] conducted in 2010/11 demonstrated that the time needed to gather firewood, the price of firewood and the distance travelled to gather firewood is	This will be verified using the eligibility criteria "m" of CPA inclusion.

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

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

[53] Nepal Bureau of Standards and Metrology (NBSM) is the national standard body for Nepal. However, NBSM doesn't have facilities for testing and certifying ICS and it also has not accredited any other entity to test and certify ICS (refer to supporting document 137 "Declaration by NBSM"). Hence, Kathmandu University having vast experience in testing and certifying ICS was chosen for the test and certification of ICS.

[54] The baseline study was conducted by the independent third party (Nepal Environmental and Scientific Services [NESS] Private Limited, Kathmandu, Nepal)

S. N.	AMS II.G, Version 06 Requirements	Project activity applicability	Means of verification
		increasing at least since 1989 (please refer to section B.4 for details). In that survey the respondents were asked to provide averages for the time needed to gather firewood, the distance travelled and the price. The average of the estimates from all respondents, showed a clear increase on all three indicators. ▪ EB 67 annex 22 has affirmed that the fraction of non-renewable biomass for Nepal is 86%.	
3.	The aggregate energy saving of a single project activity shall not exceed the equivalent of 60 GWh per year or 180 GWh thermal per year in fuel input. (AMS II G v06, para 5)	The energy saving per unit appliance (ICS) is 8.05 MWh thermal so the total energy saving of a CPA having maximum 22,000 unit ICS will be 177.2 GWh thermal each year.	This will be verified using the eligibility criteria "f" and "k" of CPA inclusion.
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, as required on a sample basis using a 90/30 precision for the selection of samples: (a) Use of non-renewable woody biomass saved under the project activity to justify the baseline of other CDM project activities can also be a potential source of leakage. If this leakage assessment quantifies a portion of non-renewable woody biomass saved under the project activity that is then used as the baseline of other CDM project activities then B_{old} is adjusted to account for the quantified leakage; (b) Increase in the use of non-renewable woody biomass	B_{old} will be adjusted by multiplying it with an adjustment factor of 0.95 to account for leakages and in this case surveys will not be required.	CPA DD

S. N.	AMS II.G, Version 06 Requirements	Project activity applicability	Means of verification
	outside the project boundary to create non-renewable woody biomass baselines can also be a potential source of leakage. If this leakage assessment quantifies an increase in the use of non-renewable woody biomass outside the project boundary then B_{old} is adjusted to account for the quantified leakage; (c) As an alternative to subparagraphs (a) and (b), Bold can be multiplied by a net to gross adjustment factor of 0.95 to account for leakages, in which case surveys are not required. (AMS II G v06, para 41)		
5.	To determine the value of the fraction of non-renewable (fNRB) to be applied in a component project activity (CPA) of a POA, use one of the two options as follows: (a) Conduct local own studies to determine the local *f*NRB value (sub national values); or (b) Use default national values approved by the Board. The choice of which option to use shall be made ex ante. However, a switch from a national value of fNRB (i.e. option (b)) to sub-national values (i.e. option (a)) is permitted, under the condition that the selected approach is consistently applied to all CPAs. (AMS II G v06, para 42)	The national default values for fraction of non-renewable biomass approved by the board will be used.	This will be verified using the eligibility criteria "m" of CPA inclusion.
6	Monitoring approaches for $B_{y,savings}$ (Option 1, 2 or 3 in paragraph 12), and values for parameters fNRB (when Option (a) in paragraph 30 is chosen) and the quantity of woody biomass B_{old} , may be determined either at the CPA level before the inclusion of CPA or at the PoA level	The parameters $B_{y,savings}$, fNRB and B_{old} for all CPAs will be determined at PoA level.	This will be verified using eligibility criteria "n" of CPA inclusion.

S. N.	AMS II.G, Version 06 Requirements	Project activity applicability	Means of verification
	before the registration of the PoA-DD. (AMS II G v06, para 43)		

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

Parameter	Data ID	Value	Units	Reference
Number of Improved Cooking Stove installed in the CPA	N	22,000	Number	BESP Database
Quantity of woody biomass used in the absence of the project activity	B_{old}	3.07	Tonnes/year	Table 3.61, Page 41 of Baseline Study 2010/11 conducted by NESS Private Limited
Efficiency of the system being replaced	η_{old}	10.00%	Percentage	As specified in the approved methodology AMS II.G/v05: A default value of 0.10 may be optionally used if the replaced system is a three stone fire, or a conventional system with no improved combustion air supply or flue gas ventilation system, i.e. without a grate or a chimney; for other types of systems a default value of 0.2 may be optionally used.
Efficiency of the system being deployed as part of the project activity (fraction)	$\eta_{new,y}$	20.00%	Percentage	Measured Value
Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass	$f_{NRB,y}$	86.00%	Percentage	Use of a default value 86% as per EB 67, Annex 22 "Default values of fraction of non-renewable biomass for Least Developed Countries and Small Island Developing States (version 01.0)"
Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.015 TJ/tonne)	$NCV_{biomass}$	0.015	TJ/tonne	As specified in the approved methodology AMS II.G/v05 IPCC default for wood fuel, 0.015 TJ/tonne
Emission factor for the substitution of non-renewable woody biomass by similar consumers. Use a value of 81.6 tCO2/TJ	$EF_{projected\_fossilfuel}$	81.60	tCO2/TJ	As specified in the approved methodology AMS II.G/v05 Use a value of 81.6 tCO2/TJ
Emission reductions during the year y	ER_y	35,547.65	tCO2 e	Calculated
Leakage consideration	-	0.95	-	As per paragraph 13.a) of approved methodology AMS II.G/v04
Leakage Emissions	Ly	1,777.38		Calculated
Number of devices operational during year *y*	$N_{y,i}$	100.00%	Percentage	Measured value. (Assumed 100% operational ICS for ex-ante emission reduction calculation)
Net Emission reductions during the year y	ER_y	33,770.27		Calculated
	ER_y	33,770	tCO2e	Rounded Down Value

Appendix 5. Further background information on the monitoring plan

As per the "Sampling and surveys for CDM project activities and program of activities" standard (version 4.1, section 6), the recommended sampling plan is as following:

(a) Sampling Design:

i. **Objectives and reliability requirements:** The objective of the sampling plan is to achieve unbiased and reliable estimates of the proportion or the mean value of the key variables over the crediting period. As per the sampling and survey standard (EB 74 annex 6, version 4.1, para 7) in case "*where there is no specific guidance in the applicable methodology, project proponents shall use 90/10 confidence/precision as the criteria for reliability of sampling efforts for small-scale project activities and 95/10 for large scale project activities.*" The methodology applied for the PoA (AMS.II.G version 06/para 39 requires the project proponent achieving 95 percent confidence interval and a 10 percent margin of error while for annual inspection 90 per cent confidence interval and a 10 per cent margin of error shall be achieved for the sampled parameters. Since it is small scale PoA and PP has opted for the annual inspection, the survey will be conducted to achieve the confidence/precision of 90/10 and this is in accordance with the requirements set out as per methodology and sampling standard. The table below provides the monitoring parameters that will be monitored annually:

Parameter	Type	Description
$N_{y,i}$	Proportional parameter	Number of project devices of type *i* and operating in year *y (this also accounts the baseline stoves that are still in use)*
$\eta_{new,i}$	Mean value parameter	Efficiency of the device of type i being deployed as part of the project activity

ii. **Target Population:** The target population for different parameters discussed in the table above are given below:

- For the proportional parameter; the target population is the ICS users of ICS type *i* listed in the CME records.
- For the mean value parameter; the target population is the total number of operational ICS of types *i* for which the emission reductions will be accounted for the monitoring period in question. The mean value parameter, unless and otherwise required by the estimated number of samples (if it is greater than the sample estimate for the proportional parameter) will be the subset of the operational ICS as identified during the annual monitoring surveys.

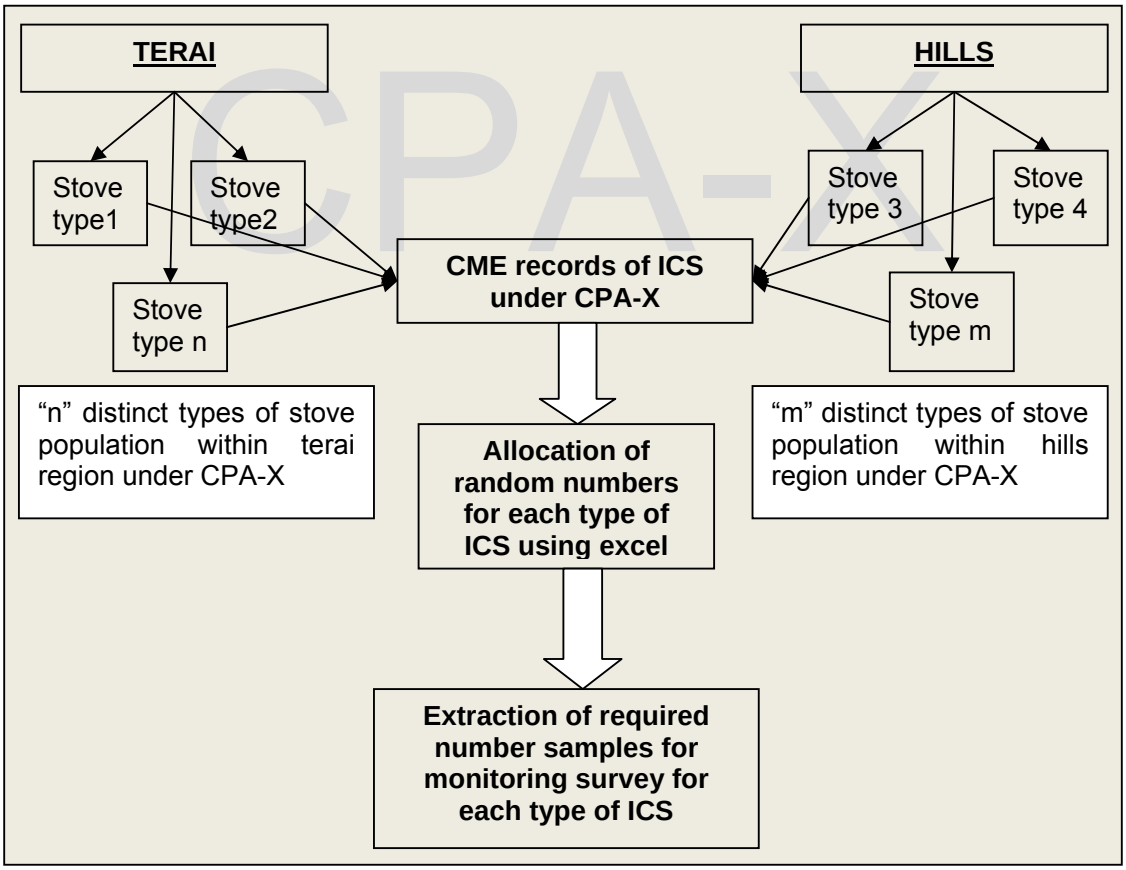
iii. **Sampling frame:** The PoA will implement different type models of ICS in two broad ecological zones of Nepal (Hills and Terai). In order to account these differences, the CME has considered the following to ensure the homogeneity of the ICS population under discussion.

- There are specific installation requirements for the metallic and mud ICS i.e. metallic ICS will be installed in the high hill region and mud ICS will be installed in the plain land of terai. Hence the homogeneity is ensured in terms of location of ICS.
- PP has opted for the CPA wise sampling i.e. the ICS units installed under each CPA will be sampled separately. Since the ICS units under one CPA are likely to be implemented within one year, homogeneity is assured in terms of different ages of ICS.
- For the purpose of sampling, PP has decided to opt the simple random sampling for each type of ICS implemented under each CPA i.e. sampling estimate for each type

of ICS implemented in one CPA will be done separately. Hence the homogeneity is assured in terms of different models of ICS.

Since both the parameters (proportion of ICS still under operation and efficiency of the operational ICS) under discussion are likely to be affected by the aforementioned conditions, the homogeneity will be ensured for the sampling frame.

iv. **Sampling Method:** A simple random sampling will be adopted for estimating the sample size for the monitoring surveys. Simple random sampling is suited to populations that are homogenous (EB 75 annex 08). In this method of sampling the ICS units under the same ecological zone and model identity will be grouped as one population within the CPA. This will be achieved from the ICS installation record maintained by CME for each CPA. From the population of ICS, the random numbers will be assigned for each ICS using excel function and the sample ICS will be extracted accordingly. The schema of the sampling method is given below:



v. **Sample Size:** The calculation of the required sample size for each parameter will be calculated at 90/10 confidence/precision as required for the annual monitoring. The sample size is determined using the Guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities Ver. 3.0 (EB75, Annex 8)[55]. As required by AMS II.G Ver 5, for annual surveys, the level of precision of 10% and a confidence level of 90% will

[55] Guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities Ver. 3.0 (EB 75, Annex 8)

be assessed for the monitoring parameters; efficiency of ICS, and number of ICS in operation, displacement of traditional stoves.

Two different formulae for calculating the required sample size (n) will be used for these parameters because the parameters number of ICS in operation and displacement of traditional stoves are binary in nature (proportions/percentage) and the efficiency of the stove is a continuous variable (mean value).

In order to calculate the required sample size for binary values (i.e. the number of ICS in operation and displacement of tradition stoves), value of proportion (p) is required. Similarly, to calculate the sample size for continuous variable (efficiency of the ICS), the mean value and standard deviation (SD) are required.

For the first monitoring period, the values as described below will applied. For the following monitoring periods, the estimates shall be adjusted taken the results of the previous monitoring period(s) into account.

The minimum sample size to determine number of ICS in operation and displacement of tradition stoves using the procedure outlined in para 12 of appendix 1, EB 75 Annex 8, Guidelines for Sampling and Surveys for CDM Project activites and Programme of Activities Ver. 3.0.

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

Where:
n= Sample size
N = Total number of ICS of type *i* installed under a specific CPA
p = expected proportion (0.5)[56]
1.645 = represents the 90% confidence required
0.1 = represents the 10% relative precision (0.1x0.5=0.05 = 5% points either side of p)

Substituting the values of "*N*" in equation above for the each type of the ICS model implemented under the CPA, the sample size will be deducted.

Similarly, the minimum sample size to determine efficiency of ICS using the procedure outlined in para 51 of appendix 1 of Guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities Ver. 3.0 (EB 75 annex 8)

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

Where:
V = $(SD/mean)^2$
n = sample size
N = total number of ICS of type *i* in a specific CPA
Mean = expected mean (please refer table below)[57]
SD = expected standard deviation (please refer table below)
1.645 = represents the 90% confidence required
0.1 = represents the 10% relative precision

[56] The expected proportion has been taken as 0.5 for the first monitoring period. For the successive monitoring periods, the sample size will be deducted in accordance with the monitoring results of the first monitoring period.

[57] The expected mean efficiency and the standard deviation of ICS will be taken from the efficiency test of ICS conducted by Kathmandu University (see table below).

SN	ICS model	Mean efficiency ICS wise (%)	Standard deviation (within ICS model) %
1	1PH Mud ICS	22.17	0.63
2	2PH plain type Mud ICS	23.55	0.46
3	2PH raised type Mud ICS	21.65	0.76
4	3 PH raised/plain Mud ICS	20.63	0.73
5	Single Pot Rocket Mud ICS Fixed	22.10	0.79
6	Portable Rocket Stove (Octagonal)	24.81	0.77
7	Portable Rocket Stove (Conical)	26.89	0.97
8	3 PH MICS with water tank	22.84	1.56
9	3 PH MICS with tray	21.42	2.02
10	2 PH MICS with Tray	21.02	1.16

Substituting the values of "*N*" in equation above for the each type of the ICS model implemented under the CPA, the sample size will be deducted.

vi. **Sampling Frame:** The sample frame consists of the households using a specific type of ICS disseminated under the CPA.

(b) Data:

(i) Field Measurements:

1. Checking of a representative sample of each type of ICS installed every year to ensure that they are still operating ($N_{y,i,a}$).
2. Determination of the efficiency of a representative sample of each type of ICS using the WBT protocol.
3. The replaced low efficiency appliances are disposed of and not used within the boundary
4. The survey will be conducted annually with the objective to target 10 percent precision and to achieve 90 percent confidence.

(ii) Quality Assurance/Quality Control:

A survey questionnaire will be prepared to seek responses of operating status (yes or no) of ICS units by ICS using households.

The survey will be performed by a competent team selected by the CME after evaluating their technical and financial proposals. The team will visit the sampled households for conducting the survey. During the survey, in order to anticipate any low response rate and answers bias, 10% oversampling will be applied.

There might be chances of getting outliers while sampling. The following approach will be used to identify and address outliers for the samples during monitoring. If the final sample size in any monitoring period is 30 or above, outliers will be defined as those data points with values greater than three standard deviations from the mean of the sample. When the sample size is below 30 then the concept of outliers can be defined using the concept of 'fences' as defined by the upper and lower quartiles of the sampled data shown in the following formula:

Inner lower fence: Q1 – 1.5 (Q3-Q1)
Inner upper fence: Q3 + 1.5 (Q3-Q1)

Where, Q3 and Q1 are the upper and lower quartiles of the sampled data respectively.

Outliers in this case are defined as those data points in the sample below the inner lower fence or above the inner upper fence.

In either case, data points identified as outliers according to the above analysis will be examined further to correct for possible transcription and data entry errors, but will be omitted from the analysis if no such administrative errors exist.

(iii) Analysis:

(i) Checking of a representative sample of ICS installed (of each CPA) every year to ensure that they are still operating ($N_{y,i}$)

(ii) Determination of the efficiency of a representative sample of all devices using the WBT protocol

A conservative value of 20% efficiency of all types of stoves will be used for ex-ante emission reduction calculation for the 1st CPA. Apart from CPA 1, the efficiency obtained from field test will be applied using weighted average mean value of efficiency of all types of stove disseminated in the CPAs. For the efficiency testing of the ICS Field Technical Coordinator or Biomass Energy Engineer of RSC will perform the efficiency tests of sample ICS using the National standard testing protocol i.e WBT protocol as required by the methodology AMS II G Ver. 06.

The values of efficiency of ICS disseminated in each CPA are calculated and used for emission reductions calculation in each CPA. If a single model of ICS is disseminated in a CPA, simple average of the value of efficiency can be used for emission reduction calculation of the CPA, in case multiple models of stoves are used, a weighted average of the values of efficiencies will be calculated and used for emission reduction calculation in each CPA. The formula for calculating the average value of efficiency of ICS is as:

$$\eta = (W_1*\eta_1+W_2*\eta_2+W_3*\eta_3+\ldots W_N*\eta_N) / (W_1+W_2+W_3+\ldots..+W_N)$$

where,
η = weighted average efficiency of all ICS
W_1 = number of stoves disseminated of Model 1
W_2 = number of stoves disseminated of Model 2
W_3 = number of stoves disseminated of Model 3
W_n = number of stoves disseminated of Model N
η_1 = efficiency of stove Model 1
η_2 = efficiency of stove Model 2
η_3 = efficiency of stove Model 3
η_N = efficiency of stove Model N

(iii) The replaced low efficiency appliances are disposed of and not used within the boundary;

It will be ensured by the AEPC that the survey includes the parameters (i), (ii) and (iii) to be monitored by the independent third party and this will be clearly mentioned in the Terms of Reference (ToR) prepared by AEPC to hire qualified independent third party. The independent third party consists of a team comprising of a team leader, statistician, field technician and enumerators. Field enumerators will be trained by the survey team (team leader and supervisor) for data collection through structured/semi structured questionnaire[58]. The field enumerator will fill the questionnaire through face to face

[58] Semi-structured interviews/questionnaire are interviews conducted with a fairly open framework which allow for focused, conversational, two-way communication

interview with the ICS users. The enumerator will inspect the sampled ICS user household to ensure that it is operating and the traditional stove has been displaced. During the survey, the enumerator will visit the ICS user household and inspect the ICS and also see whether the user is still using traditional stove or not. The traditional stoves are either tri-pod stoves or three stone stoves or other types of mud stoves which the user need to dismantle or dispose after the installation of new ICS. The AEPC will ensure that all the questionnaires required for the monitoring of the parameters (i) and (iii) are filled. To remedy the incomplete questionnaires and non-responses the sample size will be enlarged at least by 10%.

The independent third party will collect, compile and analyze the data to derive the number of stoves disseminated, the percentage of ICS in operation, displacement of traditional cooking stove by ICS users. AEPC will prepare "monitoring report" based on the survey report prepared by the independent third party.

The data collected will be compiled in Excel sheets and/or other software and analyzed to derive the percentage of ICS in operation and the efficiency of the ICS installed by households. The values of efficiency of ICS disseminated in each CPA are calculated and used for emission reductions calculation in each CPA. If a single model of ICS is disseminated in a CPA, simple average of the value of efficiency can be used for emission reduction calculation of the CPA, in case multiple models of stoves are used, a weighted average of the values of efficiencies will be calculated and used for emission reduction calculation in each CPA. The formula for calculating the average value of efficiency of ICS is as:

$$\eta = (W_1*\eta_1+W_2*\eta_2+W_3*\eta_3+\ldots W_N*\eta_N) / (W_1+W_2+W_3+\ldots..+W_N)$$

where,
η = weighted average efficiency of all ICS
W_1 = number of stoves disseminated of Model 1
W_2 = number of stoves disseminated of Model 2
W_3 = number of stoves disseminated of Model 3W_n = number of stoves disseminated of Model n
η_1 = efficiency of stove Model 1
η_2 = efficiency of stove Model 2
η_3 = efficiency of stove Model 3
η_N = efficiency of stove Model N

There might be some cases of traditional stoves not dismantled in the user household due to cultural or religious reason. In such cases the traditional stoves are not used for cooking purpose but for worshiping, therefore such cases would not be considered as use of traditional stove beside ICS. The use of traditional stove (if found during monitoring) for cultural or religious reason will be verified during monitoring done by independent third party. As the traditional stove used for cultural reason will not be operation on daily basis, those types of stoves can be identified by observing them (for example the condition of the stove used daily would be different from the condition of the stove used rarely, so by observing the condition of the stove, the use of stove for cultural/religious or daily use can be found out). Details about the use of traditional stove for cooking purpose or religious/cultural purpose shall be provided by the third party in a separate section in the annual survey report produced by the third party.

Apart from this, during the sampling if it is found out that household continue using traditional stove along ICS which have already been included in the CPA, the equivalent percentage of the particular ICS type will not be accounted/included for emission reduction calculation.

(c) Implementation:

The survey questionnaire will be prepared by independent third party in close coordination with AEPC. The questionnaire will pre-tested and field personnel will be trained in conducting the

survey to ensure the quality of data collected and the survey will be carried out once a year. The schedule for implementing the sampling effort should be defined prior to the field activity as well as indication of who will conduct the actual data collection and the analyses; include qualifications, experience and any potential conflicts of interest of those involved in the data collection and analyses.

Parameter	Objective	Timeframe/ Frequency	Method of Data Collection	Use of Data	Target Population	Sampling Frame
$N_{y,i,a}$	Total number of improved cooking stoves that are operational	Measurement taken every year	Semi Structured questionnaire survey conducted among the user households	Monitoring will ensure that the ICS implemented through the project is operational and has displaced low efficiency appliances from the project boundary.	ICS user households	List of households having ICS installed/purchased.
$\eta_{new,y}$	Determining mean efficiency of the ICS in use.	Measurement taken every year till the end of crediting period of each CPA	Technical testing following the WBT protocol as per National stove testing protocol	The weighted average value of the efficiencies will be used to estimate emission reduction	ICS user households	List of households having ICS installed/purchased.

Appendix 6. Summary of post registration changes

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Document information

Version	*Date*	*Description*
03.0	25 June 2014	Revisions to: • Include the Attachment: Instructions for filling out the programme design document form for small-scale CDM programme of activities (these instructions supersede the "Guideline: Completing the programme design document form for small-scale CDM programme of activities" (Version 03.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for the application of the methodology (ies) to the PoA in B.4 and Appendix 1; • Add general instructions on post-registration changes in paragraphs 2 and 3 of general instructions and **Error! Reference source not found.**; • Change the reference number from *F-CDM-SSC-PoA-DD* to *CDM-SSC-PoA-DD-FORM*; • Editorial improvement.
02.0	13 March 2012	EB 66, Annex 13 Revision required to ensure consistency with the "Guidelines for completing the programme design document form for small-scale CDM programmes of activities".
01.0	27 July 2007	EB33, Annex43 Initial adoption.

Decision Class: Regulatory
Document Type: Form
Business Function: Registration
Keywords: programme of activities, project design document, SSC project activities