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

PROGRAMME OF ACTIVITIES DESIGN DOCUMENT (PoA-DD)

PART I. Programme of activities (PoA)

SECTION A. General description of PoA

A.1. Title of the PoA

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Programme to Reduce Non-Renewable Biomass Consumptions through Introduction of High-Efficiency Cook Stoves
Version number: 02.1
Completion date: 4/3/2013

A.2. Purpose and general description of the PoA

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The proposed programme of activity (hereinafter referred to as the PoA) aims to reduce the non-renewable biomass consumption by introducing the highly efficient cooking appliance named high-efficiency cook stove (hereinafter referred to as the HCS) to the households in Nepal. The traditional cook stove (hereinafter referred to as the TCS) like 3-stone fire cook stove or other conventional cook stove with no combustion air supply or flue gas ventilation system which many Nepalese households currently use have lower efficiency than HCS, so it requires a larger amount of fuel wood. The HCS consumes less quantity of wood fuel, so that it would result in the reduction of non-renewable biomass (hereinafter referred to as NRB) and combustion of fossil fuel. Thus the PoA achieves the GHG emission reduction. The potential emission reduction per one HCS is approximately 1.68 tCO_2e[1] in a year.

Wood is the main source for the cooking fuel in Nepal. According to the latest version of "*Nepal Living Standards Survey 2010/11*" published by the Central Bureau of Statistics in Nepal in November 2011, 64% of total households in Nepal depend on firewood as the primary cooking fuel; contrary to that, LPG is the major cooking fuel in urban areas (59%)[2] in 2010. On the other hands, 69% of total households have made use of the firewood for their major cooking fuel while 41% in urban area have been used LPG as their main cooking fuel in 2003[3]. Furthermore, the total area of the forest and shrub covering area in Nepal has been getting smaller than before as the following table.

Table 1. Forest and Shrub covering area change[4]

	Forest and Shrub Area (000 ha)	Area Change to 1964-65 (%)
1964 - 1965	6,466.9	100.0%
1978 - 1979	6,306.4	97.5%
1985 - 1986	6,224.0	96.2%

[1] The potential emission reduction per appliance under CPA-1.
[2] Nepal Living Standard Survey 2010/11-English, Central Bureau of Statistics, November 2011, http://cbs.gov.np/wp-content/uploads/2012/02/Statistical_Report_Vol1.pdf

[3] Nepal Living Standard Survey 2003/04, Central Bureau of Statistics, December 2004, http://cbs.gov.np/wp-content/uploads/2012/02/NLSS-II-Report-Vol-1.pdf
[4] *Energy Sector Synopsis Report* (Jul. 2010, Water and Energy Commission Secretariat)

1987 - 1998	5,828.0	90.1%
2000	5,653.0	87.4%
2005	5,533.0	85.6%

It is notable that the households in Nepal are getting more dependency on fossil fuel recently instead of woody biomass, while the total covering area of forest and shrub has been declining gradually. The gap between the energy demand and the firewood supply would lead to an environmental un-sustainability or perhaps, the over exploitation of wood resource would have changed the ecosystem in Nepal.

As to the implementation of the CDM programme activity (hereinafter referred to as CPA), the marketing plan is voluntarily made by the CME. The promotion of PoA, the aggregation of CPAs, is also done by CME voluntary. Following to the plan, the CPA is created one after another. The first CPA (hereinafter referred to as the CPA-1) is implemented focusing on Kavrepalanchok district which is located in Bagmati zone in Nepal.

The aggregated amount of energy saved under one CPA does not exceed the limit of the "*micro scale*" project, i.e., 20GWh.

<Contribution to the sustainable development in Nepal>
- The forest resource is protected by using the wood fuel effectively.
- The consumption of the fossil fuel is reduced owing to the improvement of cook stove efficiency.
- The indoor air quality and the people's health are improved by reducing the domestic smoke emission from cook stove.

A.3. CMEs and participants of PoA

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CME：Shubhalakshya Developers Pvt.Ltd

Project Participant：Tepia Corporation Japan Co., Ltd.

Project Participant：ALCEDO Corporation

A.4. Party(ies)

Name of Party involved (host) indicates a host Party	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Federal Democratic of Nepal (host)	Shubhalakshya Developers Pvt.Ltd	No
Japan	Tepia Corporation Japan Co., Ltd.	No
Japan	ALCEDO Corporation	No

A.5. Physical/ Geographical boundary of the PoA

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The geographical boundary of the PoA includes the whole Nepal; the geographical boundary of each CPA locates in the PoA boundary. In establishing the PoA boundary, it is identified that no applicable national and/or sectoral policies and regulations exist.
The following figure shows the geographical extent of Nepal.

Figure 1. The geographical extent of the PoA in Nepal

Some households in mountain region are depending on TCS for heating purpose; therefore those households are not targeted disseminating HCS under the PoA.

A.6. Technologies/measures

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The technology applied for the PoA is high-efficiency cook stove (HCS), which is made of insulating brick. The insulating brick have a special and unique characteristic that it has a lot of bubbles inside, which contribute to keep the chamber warm for several hours. The HCS introduced by the PoA is originally brought from Japan, and some parts are customized for Nepalese households in consideration of their convenience and making the price affordable. Some obvious different specifications are shown in the following table:

Specification	Japanese HCS	Nepalese HCS
Coating	Tiles are stuck on for make the cook stove waterproof and decoration purpose.	Cement mortar are paste for make the cook stove waterproof.
Door	Some options	Only 1 type (2 doors)
Pot	Some options	Only 1 type (2 doors)

Owing to the insulating brick and the closed combustion chamber, the efficiency is improved up to 30% approximately. As a result, dissemination of the system would greatly contribute to the reduction of woody biomass consumption, thus it leads to the decrease of NRB consumption. In addition, the HCS has chimney for smoke ventilation to outside; the installation of HCS will greatly contribute to the improvement of indoor air quality and the promotion of people's health.

The following pictures are TCS which is commonly used at typical Nepalese households recently.

According to AMS-II.G (ver.05.0), the default values 10% and 20% are set for the replaced TCS efficiency 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" or "other types of systems" respectively. The left TCS below is categorized into the former type of system (applies 10% default value), while the right one into the later default value (20%).

The efficiency has been set at the PoA level as 20% for conservative purpose.

Figure 2. Three-stone fire type (left) and other type with chimney (right)

A.7. Public funding of PoA

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There is no public funding included in this PoA.

SECTION B. Demonstration of additionality and development of eligibility criteria

B.1. Demonstration of additionality for PoA

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According to the paragraph 6 (e) of "*Procedure for registration of a programme of activities as a single CDM project activity and issuance of certified emission reductions for a programme of activities*", the PoA considered to be additional if the PoA applies either conditions below;

(i) the proposed voluntary measure would not be implemented, or
(ii) the mandatory policy/regulation would be systematically not enforced and that non-compliance with those requirements is widespread in the country/region, or
(iii) that the PoA will lead to a greater level of enforcement of the existing mandatory policy /regulation.

As to the PoA, it belongs to Type II energy efficiency project activities which aims to improve the energy efficiency, and then the maximum energy saving under each CPA under the PoA does not exceed 20GWh per year. Furthermore, according to the "*Guidelines for demonstrating additionality of microscale project activities*" (ver.04.0), each CPA under the PoA is located in Nepal, one of the LDC[5], therefore all CPAs are considered to be additional, and in other words, none of the CPA included in PoA would occurred without CDM. Therefore it falls into the condition (i) above. Accordingly, the PoA is considered to be additional.

[5] http://unfccc.int/cooperation_and_support/ldc/items/3097.php

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

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According to "*Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities*" (ver.02.1), the eligibility criteria requirements for the CPA under the PoA are determined as follows;

	Requirements	Eligibility Criteria
a	The geographical boundary of the CPA including any time-induced boundary[3] consistent with the geographical boundary set in the PoA.	All CPAs are to be located in Nepal. The date of the installation at each household and the location of HCS are checked whether it is earlier than the expiration date of the PoA duration and it locates within the geographical boundary of PoA on the HCS sales receipt, while the locations of sampled HCSs are monitored through GPS installed into smart phone.
b	Conditions that avoid double counting of emission reductions like unique identifications of product and end-user locations (e.g. programme logo).	All HCSs installed through the CPA under PoA are given its own serial numbers.
c	The specifications of technology/measure including the level and type of service, performance specifications including compliance with testing/certifications.	The HCS to be disseminated is tested its efficiency to ensure that the efficiency is higher than 20% at a professional institute before sold to each household.
d	Conditions to check the start date of the CPA through documentary evidence.	The starting date of the CPA is checked with the sales receipt of HCS to ensure that it is later than the starting date of PoA, i.e., 4/2/2013.
e	Conditions that ensure compliance with applicability and other requirements of single or multiple methodologies applied by CPAs.	All CPAs comply with the applicability and other requirements of the methodology AMS-II.G (ver.05.0).
f	The conditions that ensure that the CPA meets the requirements pertaining to the demonstration of additionality as specified in section 3.1 of the standard.	The maximum annual energy saving achieved by the CPA under the PoA is less than 20GWh in consideration of the requirements mentioned in the following standard and guideline: As to the CPA, the annual energy saving is less than 20GWh and the CPA of the PoA applies the single technology / measure and / or methodology, the following statement in "*Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities*" (ver.02.1) to be met;

		8. PoAs that consist of one or more microscale projects as CPAs shall include eligibility criteria derived from all the relevant requirements of the "*Guidelines for demonstrating additionality of microscale project activities*" According to the paragraph 3 of the guideline, the CPA satisfies: (a) The geographic location of the project activity is in an LDC/SIDS or special underdeveloped zone of the host country identified by the government and / or (b) The project activity is an energy efficiency activity with both conditions (i) and (ii) below satisfied: (i) Each of the independent subsystems / measures in the project activity achieves an estimated annual energy savings equal to or smaller than 600 megawatt hours; (ii) End users of the subsystems or measures are households/communities/SMEs.
g	The PoA-specific requirements stipulated by the CME including any conditions related to undertaking local stakeholder consultations and environmental impact analysis.	The local stakeholder consultation is undertaken at CPA level. As to the environmental impact analysis has been done at PoA level, so it has not to undertake at CPA level.
h	Conditions to provide an affirmation that funding from Annex I Parties, if any, does not result in a diversion of official development assistance.	The CME confirms there is no public funding from Annex I parties to each CPA. It is confirmed on the official document from the local government.
i	Where applicable, target group (e.g. domestic/commercial/industrial, rural/urban, grid-connected/off-grid) and distribution mechanisms (e.g. direct installation).	The target group of each CPA is determined based on the commercial marketing plan by CME.
j	Where applicable, the conditions related to sampling requirements for the PoA in accordance with the "Standard for sampling and surveys for CDM project activities and programme of activities".	Sampling is conducted for doing monitoring activity based on the "*Standard for sampling and surveys for CDM project activities and programme of activities*" (ver.03.0).
k	Where applicable, the conditions that ensure that every CPA (in aggregate if it comprises of independent sub units) meets the small-scale or microscale threshold and remains within those thresholds throughout the crediting period of the CPA.	The aggregated scale of the annual energy saving per each CPA does not exceed 20GWh during the crediting period.
l	Where applicable, the requirements for the	Each CPA is not a de-bundled component of

	debundling check, in case the CPAs belongs to small-scale or microscale project categories.	another project. It is demonstrated whether the energy saving achieved by one operating HCS is no larger than 1% of 60GWh in accordance with the following guideline; 10. If each of the independent subsystems/measures (e.g., biogas digester, solar home system) included in the CPA of a PoA is no larger than 1% of the small-scale thresholds defined by the methodology applied,[9] then that CPA of PoA is exempted from performing de-bundling check i.e., considering as not being a de-bundled component of a large scale activity.

B.3. Application of methodologies

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The PoA applies AMS-II.G "*Energy efficiency measures in thermal applications of non-renewable biomass*" (ver.05.0).

The PoA aims to disseminate the HCS to the households currently use the TCS so that reducing the NRB consumption; the HCS brought is customized applying for the local households.

The baseline is determined mainly based on the literature survey. According to paragraph 31 of AMS-II.G (ver05.0), f_{NRB} and 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. So that f_{NRB} and B_{old} are determined at the PoA level. The detailed information is shown in the Annex 4.

SECTION C. Management system

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According to "*Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities*" (ver.02.1), the management system of CME is determined as follows;

	Management system requirements	Management system of CME
1	Clear definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies;	The personnel involved in the process of inclusion of CPAs, i.e., each household who get the HCS, is recorded on sales receipt when the HCS is sold to them. CME compiles the sales receipts appropriately and makes them available to be reviewed by DOE at the time of validation of the PoA.
2	Records of arrangements for training and capacity development for personnel;	CME conducts training and capacity development for personnel and keeps the record with the training date.
3	Procedures for technical review of inclusion of	The HCSs to be included in a CPA is self-

	CPAs;	declared by the CME with the documented evidence including the address and the other related evidence. The households who own HCS are grouped into one CPA by the installation date and the geographical distribution to meet the microscale size.
4	A procedure to avoid double counting (e.g. to avoid the case of including a new CPA that has already been registered either as a CDM project activity or as a CPA of another PoA)	In Nepal, there is one improved cooking stove promotion project registered as SSC project on March 15th, 2011[6]. The PoA aims to replace TCS to HCS by CME, besides CME confirms whether the households who install the HCS are not included in the above project hereafter.
5	Records and documentation control process for each CPA under the PoA;	The households included in each CPA under PoA are identified by the serial number. The serial numbers of each HCS are confirmed on the documented sales receipt kept by CME. The documents are kept at the CME office at least 2 years after the end of each crediting period.
6	Measures for continuous improvements of the PoA management system.	In order to keep the management quality, the CME conducts the PoA management staffs training regularly.

SECTION D. Duration of PoA

D.1. Start date of PoA

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05/02/2013

(The date of publication of the PoA-DD for global stakeholder consultation.)

D.2. Length of the PoA

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28 years

SECTION E. Environmental impacts

E.1. Level at which environmental analysis is undertaken

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✓ Environmental Analysis is done at PoA level

[6] Reference No. 4530 "Efficient Fuel Wood Cooking Stoves Project in Foothills and Plains of Central Region of Nepal" registered on May 15th, 2011. Use SSC methodology AMS-II.G (ver.2.0). http://cdm.unfccc.int/Projects/DB/DNV-CUK1298888484.88/view

E.2. Analysis of the environmental impacts

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According to the Nepal Environment Protection Rules, 2054 (1997), there is no need to carry out the concrete environmental impact assessment for CPA or PoA; so that the qualitative assessment is implemented to the PoA level.

- Indoor air quality:

A great volume of smoke emitted inside the room from TCS will be dynamically curbed by the use of HCS with doors attached on and chimney. Thus the implementation of the PoA would bring about the good influence on the indoor air quality.

- Forest resource:

The installation of the HCS contributes to the reduction of the consumption of woody biomass because of its high combustion efficiency; so that it leads to protect the forest resource in Nepal. Accordingly, the PoA contributes to the improvement of forest environment.

- Solid waste:

The replaced TCSs are disposed appropriately not to give bad influence on the environment. Consequently, there would be little impact on the local environment.

- Transboundary impacts:

The PoA implementation will bring the reduction of fossil fuel consumption indirectly. In Nepal, most of the fossil fuel like coal, LPG and kerosene are imported from India and abroad; the dissemination of the project scheme in Nepal could result in the reduction of pollutions caused by the exploitation of these fuels in other parts of the world. Therefore good impact but no bad impact will be exist because of the PoA.

SECTION F. Local stakeholder comments

F.1. Solicitation of comments from local stakeholders

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The stakeholder consultation is done at CPA level. The reason why the stakeholder consultation has been done at CPA level is that the result can reflect the more localized around each CPA targeted area. The area of this stakeholder consultation covers Bagmati zone, which includes whole boundary of CPA-1. The stakeholder consultation at Bagmati zone was conducted in August to September in 2012. As to the survey, the overview of the CPA and the PoA is introduced at the same time, their current TCS-related concerns, situations and the health status and the expectations are heard face to face. Their comments are input to the data collection forms installed into smart phones and the results automatically aggregated into excel form.

The total interviewee of the survey was 400 in 4 districts: Dhading, Kavrepalanchok, Nuwakot and Sindhupalchok in Bagmati zone; among these households, 353 households are confirmed using TCS.

F.2. Summary of comments received

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145 out of the above 400 households commented to the current situation of using a cook stove. Among them, more than 85% of the respondents are female and the rest are male.

As it can be seen in the following figure, most of the households own single pot TCS and only 10 households own improved cook stove (hereinafter referred to as ICS).

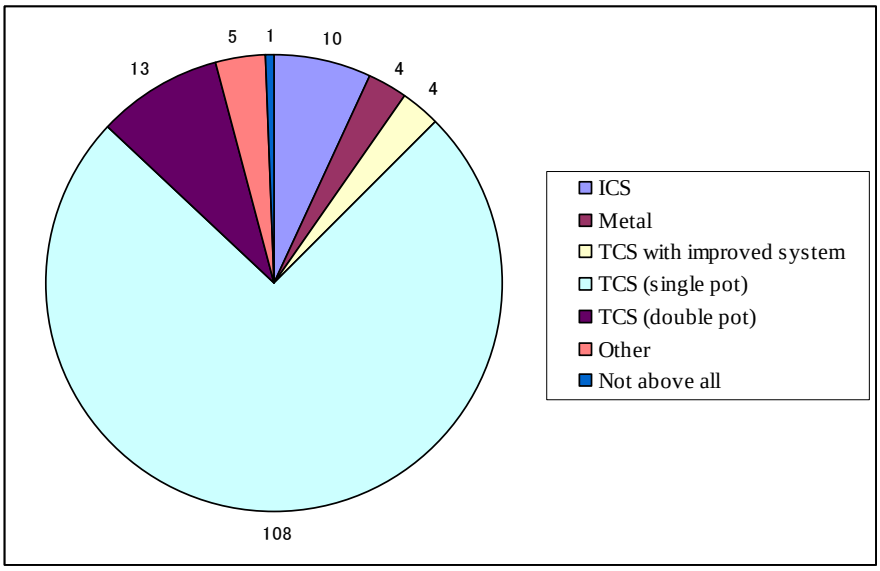

Figure 3. Cook stove share

As to the interview survey result, a TCS user concerns it takes long time to cook with their cook stove with fuel wood, i.e., “Firewood is only used when there is a free time.”, or another interviewee mentioned “Wants to use LPG but cannot afford” because of its higher cost for fuel. And another respondent answered “Difficult to clean utensils when cooked with fuel wood” since TCS without any air ventilation or some relevant improved system emit a large amount of ash and so on.
On the other hands, a TCS user interviewee answers that they had ICS before but destroyed because it consume more fuel than TCS.

F.3. Report on consideration of comments received

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The HCS is customized to satisfy the potential local HCS users demand, the above interview results are considered into its design of HCS.
When designing the HCS, the HCS disseminated under the PoA is designed sure to consume less fuel wood by dynamically improving its combustion efficiency and its utility for saving their cooking time.

SECTION G. Approval and authorization

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The letters of approval (hereinafter referred to as the LoA) from the host country and the Annex I party, i.e., Nepal and Japan, are not available at the time of submitting the PoA-DD to the validating DOE.
As to the CME letters of authorization of its coordination of the PoA from each party are not submitted yet, too.

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 micro scale CPA is implemented by the Coordinating or Managing Entity (hereinafter referred to as the CME) in the geographical boundary of the PoA in Nepal. The aim of the CPA is to reduce the non-renewable biomass consumption by introducing the HCS to the local households. The # [XXX] CPA

(hereinafter referred to as the CPA-[XXX]) aims to disseminate up to [XXX] HCSs around [name of the targeted area].

Credit Interest and Sales Agreement
The interest of the emission reduction of each HCS belongs to the CME, on the other hands, the households own HCS itself. It is clearly defined by making agreement between the CME and those households when the HCS sold. Furthermore the sales agreement does include the confirmation article whether a household intend to buy the HCS is not included in any other project in Nepal.

Management Scheme
The HCS sold under the CPA are managed based on its serial number attached on each HCS. The CME will continuously monitor the operation status of HCS during the monitoring period by checking the sampled household. The CME establish a monitoring structure to supervise the staffs and data collected.

SECTION B. Application of a baseline and monitoring methodology

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

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The CPA applies the approved SSC methodology AMS-II.G "*Energy efficiency measures in thermal applications of non-renewable biomass*" (ver.05.0).

For more information, please refer to the following website;
http://cdm.unfccc.int/methodologies/DB/REQC2MYZJJ6I7BC9SKCS32T2K87AOW

B.2. Application of methodology(ies)

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According to the AMS-II.G (ver.05.0), the following scopes to be met for applying the methodology;

	Scope	CPA status
1	This category comprises efficiency improvements in thermal applications of nonrenewable biomass. Examples of applicable technologies and measures include the introduction of high efficiency[7] biomass fired cook stoves[8] or ovens or dryers and/or energy efficiency improvements in existing biomass fired cook stoves or ovens or dryers.	The HCS installed under the CPA is more efficiently than the TCS currently used by the household. The default values 10% and 20% are set in AMS-II.G (ver.05.0) for a 3-stone fire or a conventional system with no improved combustion air supply or flue gas ventilation system, and for other types of systems respectively; the average efficiency of HCS exceeds 20%. Therefore the CPA is applicable to the condition.
2	Project participants shall be able to show that non-renewable biomass has been used in the project region since 31 December 1989, using survey methods or referring to published literature, official reports or statistics.	According to the AMS-II.G (ver.05.0), at least 2 of the following indicators to be sown to exist for supporting the use of NRB referring to published literature, official reports or statistics; a) A trend showing an increase in time spent or distance travelled for gathering fuelwood, by users (or fuel-wood suppliers) or alternatively, a trend

[7] The efficiency of the project systems as certified by a national standards body or an appropriate certifying agent recognized by that body. Alternatively, manufacturers' specifications may be used.
[8] Single pot or multi pot portable or in-situ cook stoves with specified efficiency of at least 20%.

		showing an increase in the distance the fuel-wood is transported to the project area; b) 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; c) Increasing trends in fuel wood prices indicating a scarcity of fuel-wood; d) Trends in the types of cooking fuel collected by users that indicate a scarcity of woody biomass. As stated in Appendix 3 of this document, the forest area is getting smaller at least from 1978; therefore the indicator b) above must exist. Furthermore, the cooking fuel type has been changing that many households tend to use more LPG than wood before as shown in Appendix 3. So the indicator d) above also exists. To sum up, NRB has been used since 31 December 1989, and then the condition is applicable.

Furthermore, according to "*CDM project standard*" (ver.02.1), the CPA under the PoA aims to reduce energy consumption through the reduction of NRB consumption every year during the crediting period, it qualifies as Type II project.
Then, AMS-II.G (ver.05.0) requires satisfying the following applicability.

	Applicability	CPA status
1	The aggregate energy savings of a single project activity shall not exceed the equivalent of 60 GWh per year or 180 GWh thermal per year in fuel input.	Each CPA are developed as microscale project, i.e., the aggregated amount of annual energy saving will not exceed 20GWh. Therefore the CPA under the PoA sure to satisfy this applicability.

B.3. Sources and GHGs

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The sources of GHG emission included in the CPA are as follows;

	Source	Gas	Included	Justification/Explanation
Baseline	Combustion of non renewable biomass for cooking, Emission Factor for combustion of fossil fuels for cooking	CO_2	Included	Main emission source
		CH_4	Excluded	Not required in the methodology.
		N_2O	Excluded	Not required in the methodology.
Project	Combustion of non renewable biomass for cooking, Emission Factor for	CO_2	Included	Main emission source
		CH_4	Excluded	Not required in the methodology.

	combustion of fossil fuels for cooking	N_2O	Excluded	Not required in the methodology.

As per the paragraph 9 of the applied methodology AMS-II.G (ver.05.0), "The project boundary is the physical, geographical site of the efficient devices that burn biomass." The geographical area within all CDM programme activities (CPAs) included in the PoA will be implemented is Nepal.

The mass and energy flow of baseline and project scenarios are shown in the following figure. After the project implementation, the same amount of thermal energy is supplied after implementation of CPA with smaller quantity of woody biomass owing to the efficiency improvement of cook stove. Thus the part of fossil fuel used by the similar consumers which is created as NRB is reduced.

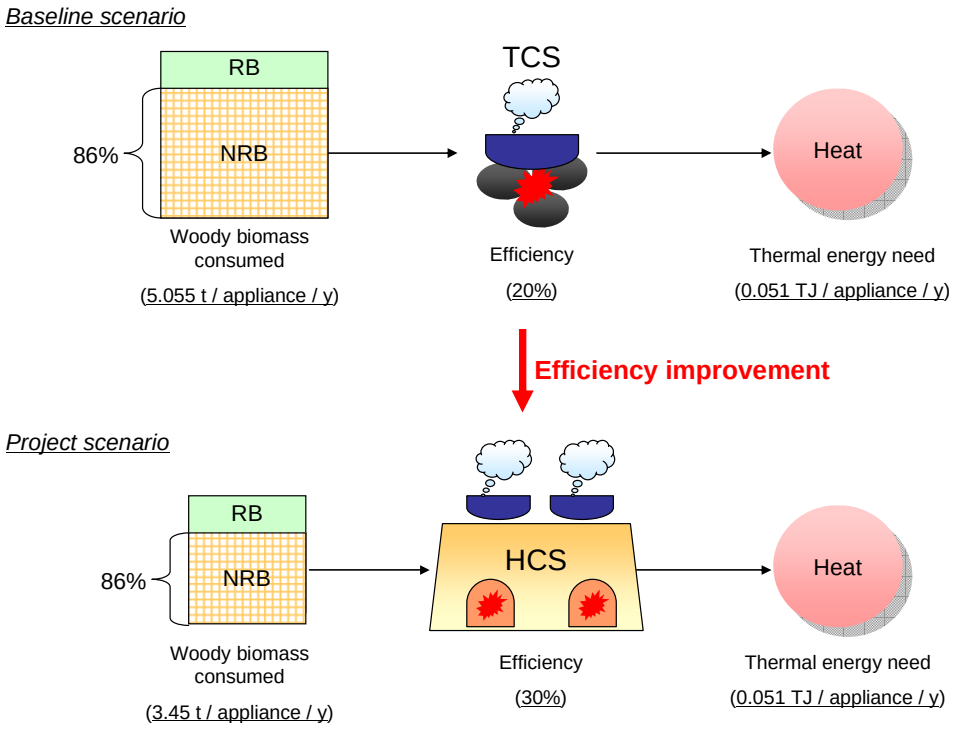

Figure 4. Mass and energy flow

B.4. Description of baseline scenario

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According to AMS-II.G, the baseline scenario is the use of fossil fuel for meeting similar thermal energy needs by the households included in the CPA, PoA. Without the project implementation, a large quantity of NRB would have been continuously consumed. Owing to the improvement of combustion efficiency by installing HCS, the consumption of wood fuel is reduced and accordingly, the corresponding amount of fossil fuel for generating the same energy contained in NRB.

B.5. Demonstration of eligibility for a generic CPA

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The eligibility criteria for including the CPA under the PoA are met as follows.

	Eligibility Criteria	CPA-[XXX]	Tick
a	All CPAs are to be located in Nepal. The date of the installation at each household	The boundary of each CPA is the physical, geographical site of the efficient systems using	☐

	and the location of HCS are checked whether it is earlier than the expiration date of the PoA duration and it locates within the geographical boundary of PoA on the HCS sales receipt, while the locations of sampled HCSs are monitored through GPS installed into smart phone.	biomass. The geographical area where CPA-[XXX] of the PoA locates is Nepal The latest date of HCS sold under the CPA-[XXX] is on DD/MM/YYYY, which is earlier than the expiration date of the PoA.	
b	All HCSs installed through the CPA under PoA are given its own serial numbers.	All HCS included in CPA-[XXX] have its own serial number on it.	☐
c	The HCS to be disseminated is tested its efficiency to ensure that the efficiency is higher than 20% at a professional institute before sold to each household.	The efficiency test of HCS sold under the CPA-[XXX] has been conducted by the professional institute. The efficiency is turned out to be [XXX] %.	☐
d	The starting date of the CPA is checked with the sales receipt of HCS to ensure that it is later than the starting date of PoA, i.e., 4/2/2013.	The starting date of CPA-[XXX] is DD/MM/YYYY which is later than 4/2/2013. The sales receipts of all HCS are kept at the CME office and it would have been kept for at least 2 years after the crediting period.	☐
e	All CPAs comply with the applicability and other requirements of the methodology AMS-II.G (ver.05.0).	The CPA-[XXX] satisfies all requirements stated at B2 of Part II.	☐
f	The maximum annual energy saving achieved by the CPA under the PoA is less than 20GWh in consideration of the requirements mentioned in the following standard and guideline: As to the CPA, the annual energy saving is less than 20GWh and the CPA of the PoA applies the single technology / measure and / or methodology, the following statement in "*Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities*" (ver.02.1) to be met; 8. PoAs that consist of one or more microscale projects as CPAs shall include eligibility criteria derived from all the relevant requirements of the "*Guidelines for demonstrating additionality of microscale project activities*" According to the paragraph 3 of the guideline, the CPA satisfies: (a) The geographic location of the project activity is in an LDC/SIDS or special underdeveloped zone of the host country	The maximum energy saving is calculated as [XXX] TJ, which equals to [XXX] GWh in a year, therefore it must be less than 20GWh. The location of all HCS is included in Nepal.	☐

	identified by the government and / or (b) The project activity is an energy efficiency activity with both conditions (i) and (ii) below satisfied: (i) Each of the independent subsystems / measures in the project activity achieves an estimated annual energy savings equal to or smaller than 600 megawatt hours; (ii) End users of the subsystems or measures are households/communities/SMEs.		
g	The local stakeholder consultation is undertaken at CPA level. As to the environmental impact analysis has been done at PoA level, so it has not to undertake at CPA level.	The local stakeholder consultation is conducted at the CPA level. EIA is done at the PoA level.	☐
h	The CME confirms there is no public funding from Annex I parties to each CPA. It is confirmed on the official document from the local government.	There is no public funding to the CPA-[XXX].	☐
i	The target group of each CPA is determined based on the commercial marketing plan by CME.	The target area of the CPA-[XXX] is around [area name].	☐
j	Sampling is conducted for doing monitoring activity based on the "*Standard for sampling and surveys for CDM project activities and programme of activities*" (ver.03.0).	The sample size for the CPA-[XXX] is calculated based on a 90% confidence interval and a 10% margin of error.	☐
k	The aggregated scale of the annual energy saving per each CPA does not exceed 20GWh during the crediting period.	The maximum quantity of woody biomass saved of the CPA-[XXX] in a year is [XXX] GWh, which is less than 20GWh.	☐
l	Each CPA is not a de-bundled component of another project. It is demonstrated whether the energy saving achieved by one operating HCS is no larger than 1% of 60GWh in accordance with the following article in "Guidelines on assessment of de-bundling for SSC project activities"; 10. If each of the independent subsystems/measures (e.g., biogas digester, solar home system) included in the CPA of a PoA is no larger than 1% of the small-scale thresholds defined by the methodology applied,[9] then that CPA of PoA is exempted from performing de-bundling check i.e., considering as not being a de-bundled component of a large scale activity.	The CPA-[XXX] is not a de-bundled component of another project in consideration of paragraph 10 of "Guidelines on assessment of de-bundling for SSC project activities". The maximum number of subsystem included in CPA-[XXX] is [XXX] and the maximum amount of the energy saving achieved under the CPA-[XXX] corresponds to [XXX] GWh. Therefore the amount of energy saving achieved by one subsystem is about [XXX] GWh which is obviously less than 1% of the small-scale thresholds (i.e., 60GWh) defined by the methodology applied.	☐

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

B.6.1. Explanation of methodological choices

>>

The emission reduction achieved under the CPA is calculated as follows:

$$ER_y = B_{y,savings} * f_{NRB,y} * NCV_{biomass} * EF_{projected\_fossilfuel} * N_{y,i} \quad (1)$$

Where:

ER_y	Emission reductions during year *y* in tCO_2e
$B_{y,savings}$	Quantity of woody biomass that is saved in tonnes per device
$f_{NRB,y}$	Fraction of woody biomass saved by the project activity in year *y* that can be established as non-renewable biomass using survey methods or government data or default country specific fraction of non-renewable woody biomass (f_{NRB}) values available on the CDM website
$NCV_{biomass}$	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. The value is determined on a weighted average basis which consists of solid fuel (96 tCO_2/TJ), liquid fuel (71.5 tCO_2/TJ) and gaseous fuel (63.0 tCO_2/TJ). Use a value of 81.6 t CO2/TJ.
$N_{y,i}$	Number of project devices of type *i* operating in year *y*

The default value of f_{NRB} is accepted by the Nepalese DNA on June 7th, 2012, which is set as 86%. The weight of each fossil fuel for $EF_{projected\_fossilfuel}$ is investigated as a part of baseline survey.

- $\underline{B_{y,savings}}$ is estimated using one the following methods:

According to the paragraph 12 of AMS-II.G (ver.05.0), there are 3 options to calculate the quantity of woody biomass saved.

<Option 1>

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

Where:

B_{old}	Quantity of woody biomass used in the absence of the project activity in tonnes per device
$B_{y,new,KPT}$	Annual quantity of woody biomass used in year *y* in tonnes per device, measured as per the Kitchen Performance Test (KPT) protocol. The KPT should be carried out in accordance with national standards (if available) or international standards or guidelines (e.g. the KPT procedures specified by the Partnership for Clean Indoor Air (PCIA)

<http://www.pciaonline.org/node/1049)>

<Option 2>

$$B_{y,savings} = B_{old} * (1 - \eta_{old} / \eta_{new,y}) \quad (3)$$

$$B_{y,savings} = B_{y,new,survey} * (\eta_{new,y} / \eta_{old} - 1) \quad (4)$$

Where:

B_{old}	Quantity of woody biomass used in the absence of the project activity in tonnes per device
$B_{y,new,survey}$	Annual quantity of woody biomass used during the project activity in tonnes per device, determined through a survey
η_{old}	1. Efficiency of the device being replaced (fraction); measured using representative sampling methods or based on referenced literature values use weighted average values if more than one type of device is being replaced; 2. A default value of 0.10 may be optionally used if the replaced device is a three stone fire, or a conventional device with no improved combustion air supply or flue gas ventilation, that is without a grate or a chimney; for other types of devices, a default value of 0.2 may be optionally used
$\eta_{new,y}$	Efficiency of the device being deployed as part of the project activity (fraction), as determined annually using the water boiling test (WBT) protocol carried out in accordance with national standards (if available) or international standards or guidelines. Use weighted average values if more than one type of system is being introduced by the project activity

<Option 3>

$$B_{y,savings} = B_{old} * (1 - SC_{new,y} / SC_{old}) \quad (5)$$

Where:

SC_{old}	Specific fuel consumption or fuel consumption rate[7] of the baseline devices i.e. fuel consumption per quantity of item/s processed (e.g. food cooked) or fuel consumption per hour, respectively. Use weighted average values if more than one type of device is being replaced
$SC_{new,y}$	Specific fuel consumption or the fuel consumption rate in year *y* of the devices 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. Use weighted average values if more than one type of system is being introduced by the project activity

The CPA applies for the equation (3) of <Option 2> above by using default value η_{old} and testing the HCS efficiency at the professional institute.

- $\underline{B_{old}}$ is determined by using one of the following two options:

According to the paragraph 13 of AMS-II.G (ver.05.0), one of the following two options is to be chosen for determining B_{old}.

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

OR

(b) Calculated from the thermal energy generated in the project activity as:

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

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

The average annual consumption of woody biomass is investigated at the stage of baseline survey; the CPA applies option (a) above.
Furthermore, "B_{old}" is multiplied by a net to gross adjustment factor of 0.95 to account for leakages in consideration of paragraph 20 of AMS-II.G (ver.05.0).

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

Data / Parameter	$NCV_{biomass}$
Unit	TJ/tonne
Description	Net calorific value of the non-renewable woody biomass that is substituted.
Source of data	IPCC default value for wood fuel.
Value(s) applied	0.015 TJ/t
Choice of data or Measurement methods and procedures	Adopted the IPCC default value indicated in the AMS-II.G (ver.05.0).
Purpose of data	Calculation of baseline emissions.
Additional comment	AMS-II.G requires directly calculating the emission reduction.

Data / Parameter	$EF_{projected\_fossilfuel}$
Unit	tCO_2e/TJ
Description	Emission factor for the substitution of non-renewable woody biomass by similar consumers.
Source of data	IPCC default values for LPG, kerosene and coal.
Value(s) applied	81.6 tCO_2e/TJ
Choice of data or Measurement methods and procedures	Adopted the IPCC default values indicated in the AMS-II.G (ver.05.0).
Purpose of data	Calculation of baseline emissions.
Additional comment	AMS-II.G requires directly calculating the emission reduction.

Data / Parameter	B_{old}
Unit	t
Description	Quantity of woody biomass used in the absence of the project activity per household
Source of data	Baseline survey
Value(s) applied	5.055 t
Choice of data or Measurement methods and procedures	The value is referred to the official literature. The each referenced literature is: *Energy Sector Synopsis Report* (Jul. 2010, Water and Energy Commission Secretariat), *District Development Profile of Nepal 2012* (Jan. 2012, Mega Publication & Research Centre) and *NEPAL LIVING STANDARDS SURVEY 2010/11* (Nov. 2011, Central Bureau of Statistics, Nepal). Please refer to Appendix 4 for detail.
Purpose of data	Calculation of baseline emissions.
Additional comment	AMS-II.G requires directly calculating the emission reduction.

Data / Parameter	η_{old}
Unit	%
Description	Efficiency of the system being replaced.
Source of data	UNFCCC default value from AMS-II.G (ver.05.0).
Value(s) applied	20 %
Choice of data or Measurement methods and procedures	The value is weighted based on the number of each types of TCS categorized into either 1) the system categorized into 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, then applies for 10% or 2) the system categorized into other types of system, then applies for 20%. For the conservative purpose, 20% default value is applied to the all CPA under the PoA.
Purpose of data	Calculation of baseline emissions.
Additional comment	AMS-II.G requires directly calculating the emission reduction.

B.6.3. Ex-ante calculations of emission reductions

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According to B6.1 of Part II above, the emission reduction per appliance is calculated as follows;

$$ER_y = B_{y,savings} * f_{NRB,y} * NCV_{biomass} * EF_{projected\_fossilfuel} * N_{y,i} \quad (1)$$

1.60 t * 86 % * 0.015 TJ/t * 81.6 tCO_2/TJ * [XXX]

[XXX] tCO_2e

In consideration of leakage emission, 5 % of B_{old} is deducted in accordance with the paragraph 20 of AMS-II.G (ver.05.0). Therefore the actual amount for determining $B_{y,savings}$ is calculated as follows;

$$B_{y,savings} = B_{old} * 95\ \% * (1 - \eta_{old} / \eta_{new}) \quad (3)$$

5.055 t * 95% * (1 – 20 % / 30 %)

1.60 t

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

Data / Parameter	N_y
Unit	-
Description	Number of project devices that are operating in year *y*
Source of data	Monitoring survey
Value(s) applied	[XXX]
Measurement methods and procedures	Monitoring shall consist of checking of 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.
Monitoring frequency	At least once every two years (biennial)
QA/QC procedures	The maintenance records are kept in paper media and compiled at the CME office.
Purpose of data	Calculation of baseline emissions.
Additional comments	AMS-II.G requires direct calculation of the emission reduction.

Data / Parameter	$\eta_{new,y}$
Unit	%
Description	Efficiency of the device being deployed as part of the project activity in year *y*
Source of data	Monitoring survey
Value(s) applied	Basically 30 %
Measurement methods and procedures	The water boiling test is applied. Monitoring shall consist of determining the efficiency of representative samples annually. For more information, please refer to Appendix 5.
Monitoring frequency	Annual
QA/QC procedures	Conduct a monitoring survey for checking the efficiency of representative sample households to ensure that they are still operating at the specified efficiency. As to implementing the monitoring survey, the some households are chosen as interviewee in accordance with AMS-II.G (ver.05.0) and a corresponding sampling standard.
Purpose of data	Calculation of baseline emissions.
Additional comments	AMS-II.G requires direct calculation of the emission reduction.

Data / Parameter	$f_{NRB,y}$
Unit	%
Description	Fraction of woody biomass saved by the project activity in year *y* that can be established as non-renewable biomass
Source of data	The data accepted by Nepalese DNA
Value(s) applied	[XXX]
Measurement methods and procedures	Check the latest available value which has been accepted by the Nepalese DNA on the CDM website. http://cdm.unfccc.int/DNA/fNRB/index.html
Monitoring frequency	Yearly
QA/QC procedures	N/A
Purpose of data	Calculation of baseline emissions.
Additional comments	AMS-II.G requires direct calculation of the emission reduction.

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

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- *Monitoring Frequency*

The monitoring activity for HCS efficiency (η_{new}) is conducted annually. Other parameters the number of project devices that are operating in year y (N_y) and the confirmation of disposal of TCS which is displaced by HCS are monitored at least once every two years.

- *Monitoring Structure*

CME establishes a monitoring structure that ensures an efficient monitoring activity and a certain monitoring result. The CME sets several Supervisors in one district as per the population, and some Monitoring Staffs are distributed under the supervisor. It must be noted that the Supervisors and Monitoring Staffs have concurrent duties as sales staffs of HCS.

The Monitoring Staffs do visit each households selected as the sampling and conduct a water boiling test (hereinafter referred to as WBT). The test result is reported to the Supervisor and then the compiled test results are handed in to the Project Manager.

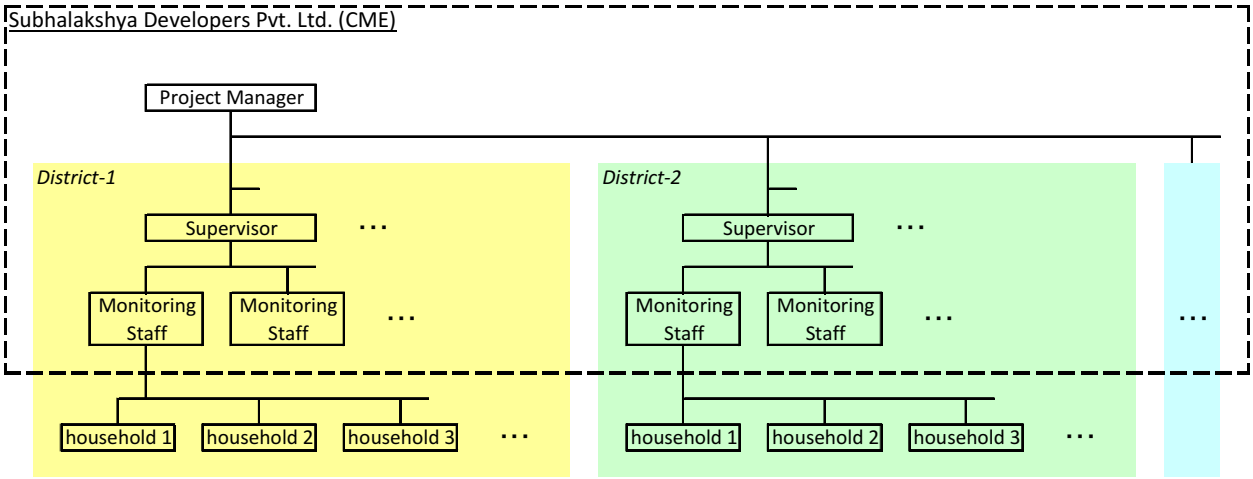

Table 2. Monitoring structure

- *Data Collection*

The Monitoring Staffs are trained regularly. They use a smart phone to input and aggregate the surveyed data and confirm the location of each HCS by the GPS function installed in the smart phone. A special application for the monitoring activity called "*True Grid*" is installed to those smart phones; the application contains some options to choose and direct input form including the WBT result. The data input are exported as Excel, CSV file and/or PDF forms and checked by the Supervisor.

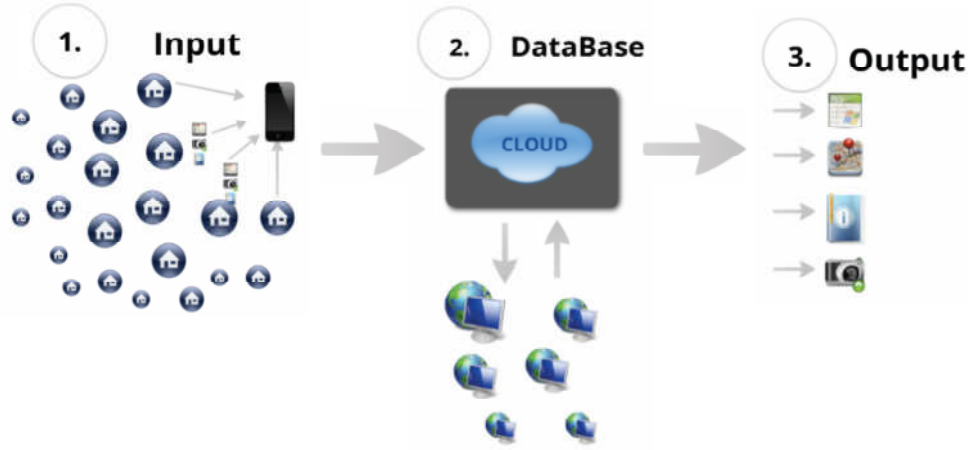

Figure 5. Data collection image

- *Water Boiling Test (WBT)*

The households to be monitored for "η_{new}" are chosen in consideration of "*Standard for sampling and surveys for CDM project activities and programme of activities*" (ver.03.0). The sampling size calculation is shown in the Appendix 5 of this document.

The efficiency test follows the national testing protocol in Nepal. According to the protocol, WBT will be conducted at each sampled household. The boiling point is corrected based on the altitude of the household locates.

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

Organization	Subhalakshya Developers Pvt. Ltd.
Street/P.O. Box	11362
Building	Swornim Bhawan
City	Kathmandu
State/Region	Bagmati
Postcode	N/A
Country	Nepal
Telephone	+977-1-4491080
Fax	+977-1-4493407
E-mail	bpaper1@hotmail.com
Website	N/A
Contact person	Pranab Lal Shrestha
Title	Project Manager
Salutation	Mr.
Last name	Shrestha
Middle name	Lal
First name	Pranab
Department	N/A
Mobile	N/A
Direct fax	N/A
Direct tel	N/A
Personal e-mail	pranab_shrestha@hotmail.com

Organization	ALCEDO Corporation
Street/P.O. Box	1-28-6
Building	-
City	Higashi-Nakano
State/Region	Nakano
Postcode	164-0003
Country	JAPAN
Telephone	+81-3-5358-9985
Fax	+81-3-5358-9986
E-mail	info@alcedo.co.jp
Website	http://alcedo.co.jp/indextop_en.html
Contact person	Mamoru Moriyama
Title	Chief Operating Officer
Salutation	Mr
Last name	Moriyama
Middle name	N/A
First name	Mamoru
Department	N/A
Mobile	N/A
Direct fax	N/A
Direct tel	N/A
Personal e-mail	mamoru01@gmail.com

Organization	Tepia Corporation Japan Co., Ltd.
Street/P.O. Box	4-3-1, Toranomon
Building	Shiroyama Trust Tower 31F
City	Minato-ku
State/Region	Tokyo
Postcode	105-6031
Country	Japan
Telephone	+81-3-6721-5505
Fax	+81-3-6721-5506
E-mail	info@tepia.co.jp
Website	http://www.tepia.co.jp
Contact person	Xuefeng Wen
Title	Director
Salutation	Mr.
Last name	Wen
Middle name	N/A
First name	Xuefeng
Department	Tokyo Headquarters
Mobile	N/A
Direct fax	N/A
Direct tel	N/A
Personal e-mail	wenxf@tepia.co.jp

Appendix 2: Affirmation regarding public funding

No public funding from parties in Annex I is involved in the CPA or PoA.

Appendix 3: Application of methodology(ies)

The followings are investigated referring to published literature, official reports or statistics.

(a) Non-renewable biomass has been used since 31 December 1989.

1. Carbon stock change

According to "*Energy Sector Synopsis Report*" published by water and Energy Commission Secretariat in July 2010, it has been confirmed that the forest and shrub coverage area in Nepal has been decreasing after 1964. The forest and shrub coverage area in 2005 is about 5,533 ha, which only equals to 85.6% compared to 1964 – 1965.

Figure 6. Forest and Shrub Area change in Nepal

	Forest and Shrub Area (000 ha)	Area Change to 1964-65 (%)
1964 - 1965	6,466.9	100.0%
1978 - 1979	6,306.4	97.5%
1985 - 1986	6,224.0	96.2%
1987 - 1998	5,828.0	90.1%
2000	5,653.0	87.4%
2005	5,533.0	85.6%

Furthermore, the average depleting rate of forest area in Nepal is most significant in South Asia from 1990 to 2000 based on "*Global Forest Resources Assessment 2000*" published by FAO.

Figure 7. Forest Area change in South Asia 1990 - 2000

Country / area	Land area	Forest area					Area change 1990 – 2000 (total forest)	
		Natural forest	Forest plantation	Total forest				
	000ha	000ha	000ha	000ha	%	ha/capita	000ha/year	%
Bangladesh	13,017	709	625	1,334	10.2	n.s.	17	1.3
Bhutan	4,701	2,995	21	3,016	64.2	1.5	n.s.	n.s.
India	297,319	31,535	32,578	64,113	21.6	0.1	38	0.1
Maldives	30	1	-	1	3.3	n.s.	n.s.	n.s.
Nepal	14,300	3,767	133	3,900	27.3	0.2	-78	-1.8
Pakistan	77,087	1,381	980	2,361	3.1	n.s.	-39	-1.5
Sri Lanka	6,463	1,625	316	1,940	30.0	0.1	-35	-1.6
Total South Asia	412,917	42,013	34,652	76,665	18.6	0.1	-98	-0.1
Total Asia	3,084,746	431,946	115,847	547,793	17.8	0.2	-364	-0.1
TOTAL WORLD	13,063,900	3,682,722	186,733	3,869,455	29.6	0.6	-9,391	-0.2

Thus it can be concluded that the carbon stock must have been depleting after 31st December, 1989.

2. Trends in the types of cooking fuel

The major source of cooking fuel in Nepal has been wood from long time ago. However, the share of cooking fuel defers from time to time as shown in the below figures. The share is determined depending on the number of households using each fuel.

The share of wood is the highest in whole Nepal however, the fossil fuel has become the most popular cook fuel source in urban area which is relatively developed in that country. In the figures show the trend the Nepali households getting more dependency on LPG as their cook fuel is common in any areas in Nepal. And after 2004, the wood share is decreasing slightly. In conclusion, the trend in types of cooking fuel shows the scarcity of woody biomass.

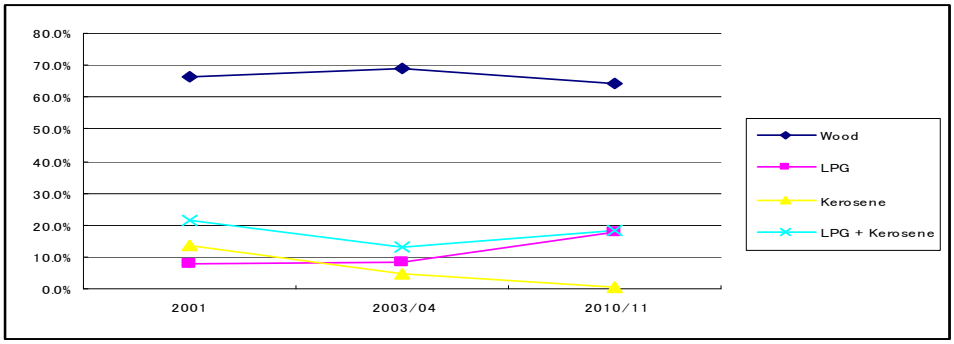

Figure 8. Cook fuel trend in whole Nepal

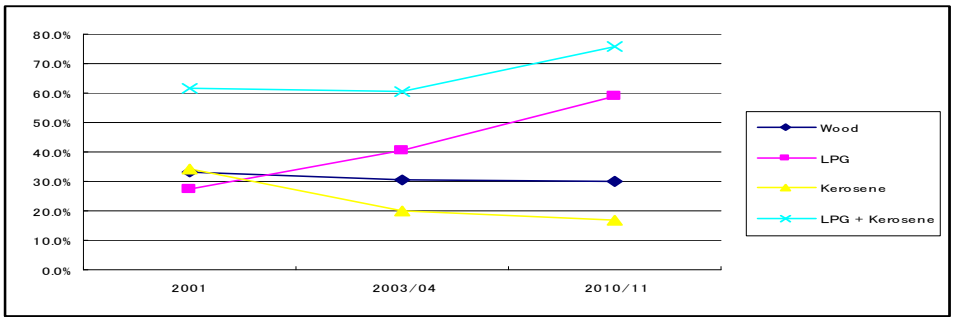

Figure 9. Cook fuel trend in urban area

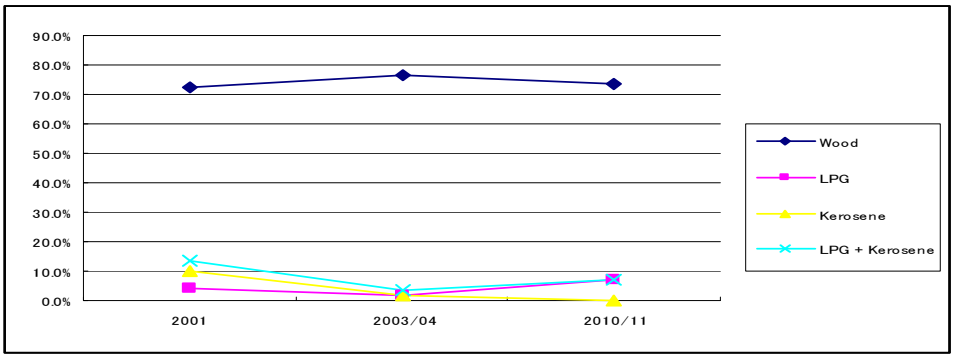

Figure 10. Cook fuel trend in rural area

* Data in 2001: “Population Census 2001”, Central Bureau of Statistics
** Data in 2003/04: “Nepal Living Standard Survey 2003/04”, Central Bureau of Statistics
*** Data in 2010/11: “Nepal Living Standard Survey 2010/11”, Central Bureau of Statistics

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

As to the calculation of emission reduction, B_{old} (quantity of woody biomass used in the absence of the project activity per household) is set ex ante before the registration of the PoA-DD. The detailed process is shown below.

· Annual fuelwood consumption per household

5.055798 t / household

	Item	Unit	Value	Source
1	Total Fuelwood Consumption in Nepal (2008)	TJ	311,167.30	Energy Sector Synopsis Report (Water and Energy Commission Secretariat)
2	Calorific value of wood fuel	TJ / t	0.01675	Energy Sector Synopsis Report (Water and Energy Commission Secretariat)
3	Residential Fuelwood Consumption	%	99.20%	Energy Sector Synopsis Report (Water and Energy Commission Secretariat)
4	Total Household in Nepal	households	5,659,984	District Development Profile of Nepal 2012 (Mega Publication & Research Centre)
5	Fuelwood share for cooking purpose in Nepal	%	64.40%	NEPAL LIVING STANDARDS SURVEY 2010/11
6	Fuelwood Consumption per Households	t / hhs / y	5.055798322	Calculation (= 1 / 2 * 3 / (4 * 5))

According to *Energy Sector Synopsis Report* published by Water and Energy Commission Secretariat in July 2010, total fuelwood consumption in whole Nepal is 311,167.30 TJ in 2008, which equals to about 5,212 t[9] in a year. Among the whole fuelwood consumption, 99.20% of fuelwood is used for residential purpose and rest for industrial and commercial purposes. In addition, the fuelwood is consumed within 64.40% of total households for primary cooking purpose in Nepal.

Furthermore, leakage emission has to be considered in accordance with AMS-II.G (ver.05.0); B_{old} is multiplied by a net to gross adjustment factor of 0.95 to account for leakage.

Thus the annual fuelwood consumption per households is calculated as follows;

$$B_{old} = B_{old} * f_{leakage}$$
$$= 5.055798 * 0.95$$
$$= 4.803008406 \text{ (t/y)}$$

[9] 311,167.30 TJ * 0.01675 TJ/t = 5,212.052275 t
(* 0.01675 TJ/t : *Energy Sector Synopsis Report* (Water and Energy Commission Secretariat), July 2010)

Appendix 5: Further background information on the monitoring plan

For determining the "Number of project devices that are operating in year *y* (N_y)" and "Efficiency of the device being deployed as part of the project activity in year *y* ($\eta_{new,y}$)", the monitoring is carried out to the households selected in accordance with "Cluster Sampling" shown in "*Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities*" (ver.02.0).

As to the sampling method, the [XXX] households are grouped into small clusters; for example 10 households for a 1 cluster. Then total [XXX] clusters are included in CPA-[XXX]. In order to have some understanding of the proportion of cook stoves still operating and the variation in this proportion between villages, a small preliminary sample has been taken.

Then the equation for the number of villages that need to be sampled is:

$$c \geqq 1.645^2 MV / \{(M-1) * 0.1^2 + 1.645^2 * V\} \quad \text{(a)}$$

Where:

$$V = SD_B^2 / p^2 \quad \text{(b)}$$

c	Number of clusters to be sampled
M	Total number of clusters
1.96	Represents the 90% confidence required
0.1	Represents the 10% relative precision required

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History of the document

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