CLEAN DEVELOPMENT MECHANISM

CDM-MP74-A11

Draft Small-scale Methodology

AMS-II.G: Energy efficiency measures in thermal applications of non-renewable biomass

Version 09.0

Sectoral scope(s): 03

United Nations
Framework Convention on
Climate Change

COVER NOTE

1. Procedural background

1. The Executive Board of the clean development mechanism (CDM) (hereinafter referred to as the Board), at its ninety-third meeting (EB93), adopted the workplan of the Small-Scale Working Group (SSC WG) for 2017, which contained an analysis of "AMS-I.E.: Switch from non-renewable biomass for thermal applications by the user" and "AMS-II.G.: Energy efficiency measures in thermal applications of non-renewable biomass" followed by revision of the methodologies.

2. Furthermore, in the context of the concept note[1] on cost-effective and context-appropriate approaches for MRV, EB94 requested the secretariat, the Methodology Panel (MP), and SSC WG, to jointly include best practice examples covering monitoring aspects into the methodological tools and sampling guidelines. It is suggested that example survey forms should be included in AMS-I.E. and AMS-II.G.

3. Taking the above Board mandates into account, the SSC WG 54 prepared the draft revised methodologies AMS-I.E. and AMS-II.G. A call for public inputs was launched from 28 July to 11 August 2017. No input was received.

2. Purpose

4. The purposes of this revision are:

   (a) To revise the emission factor of "substitution fuels likely to be used by similar users";

   (b) To include example survey forms that may be used by project participants and coordinating and managing entities;

   (c) To incorporate the responses from the SSC WG to the issues that have been already clarified through the past clarification requests; and

   (d) To refer to the new draft methodological tool "Calculation of fraction of non-renewable biomass", and remove current requirements to determine fNRB.

3. Key issues and proposed solutions

5. The current version of the methodology AMS-II.G includes a fossil fuel emission factor of the substitution fuels likely to be used by similar users (81.6 tCO2/TJ), which was developed assuming 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). A 50 per cent weight is assigned to coal as the alternative solid fossil fuel (96 t CO2/TJ) and a 25 per cent weight

[1] <http://cdm.unfccc.int/Meetings/MeetingInfo/DB/O8KXN2TWY09J16Z/view>.

is assigned to both liquid fuel (71.5 t CO2/TJ for kerosene) and gaseous fuel (63.0 t CO2/TJ for liquefied petroleum gas (LPG)). The MP agreed to revise this default value, based on the global average ratio of cooking fuels (the normalized ratio of kerosene and LPG excluding coal)[2], i.e. 9 per cent for kerosene and 91 per cent for LPG.

6. The proposed revision also includes example survey forms that may be used by project participants and coordinating and managing entities.

7. Furthermore, the issues that have been recently clarified by the SSC WG on AMS-II.G. are reflected in the proposed revised methodology, including:

   (a) SSC_727 Clarification on the test method to demonstrate above 20% stove efficiency under AMS-II.G.;

   (b) SSC_726 Clarification on the requirements to use simplified approach to test stove efficiency under AMS-II.G.;

   (c) SSC_725 Clarification on efficiency testing for institutional improved cookstoves of different saucepan capacities under AMS-II.G.; and

   (d) SSC_724 Clarification on monitoring requirements under AMS-II.G.

8. Furthermore, current requirements to determine fNRB are removed and a reference to the new draft methodological tool “Calculation of fraction of non-renewable biomass” has been provided.

4. Impacts

9. The draft revision will enable more accurate and reliable calculation of emission reductions and also provide further clarity on the requirements to be followed by CDM project activities and component project activities (CPAs) introducing efficient cookstoves, which have strong relevance for the least developed countries (LDCs) and other regions that are underrepresented in the CDM.

5. Subsequent work and timelines

10. The methodology is recommended by the MP for consideration by the Board at its ninety-seventh meeting. No further work is envisaged.

6. Recommendations to the Board

11. The MP recommends that the Board approve this draft revised methodology, to be made effective at the time of the Board’s approval.

[2] Only fossil fuels used for cooking are considered to determine the ratio. This ratio is estimated from several data sources, including i) The DHS Program- Demographic and Health surveys - STATcompiler (www.statcompiler.com) (step 1: Choose country, step 2: Choose ‘complete list’, step 3: Choose ‘household characteristics’) and ii) for China: *Cashman S, Rodgers M, Huff M, Feraldi R, Morelli B. Life Cycle Assessment of cookstove fuels in India and China. Washington, DC U.S. Environmental Protection Agency; 2016*.

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1. Introduction

1. The following table describes the key elements of the methodology:

Table 1. Methodology key elements

Typical project(s)	Introduction of efficient thermal energy generation units utilizing non-renewable biomass (e.g. complete replacement of existing biomass-fired cookstoves or ovens or dryers with more efficient appliances), or retrofitting of existing units reducing the use of non-renewable biomass for combustion
Type of GHG emissions mitigation action	Energy efficiency: Displacement or energy efficiency enhancement of existing heat generation units results in saving of non-renewable biomass and reduction of GHG emissions

2. Scope, applicability, and entry into force

2.1. Scope

2. This methodology comprises efficiency improvements in thermal applications of non-renewable biomass. Examples of applicable technologies and measures include the introduction of high efficiency biomass fired project devices (cookstoves or ovens or dryers) to replace the existing devices and/or energy efficiency improvements in existing biomass fired cookstoves or ovens or dryers.[1]

3. In the case of cookstoves, the methodology is applicable to introduction of single pot or multi pot portable or in-situ cookstoves with rated efficiency of at least 20 per cent. The Water Boiling Test (WBT) method shall be used to test the efficiency of the cookstove to meet this eligibility requirement, following the requirements indicated in “Data / Parameter table 11” which details the options for testing and certification as well as supporting documentation (e.g. certificate issued by third party or test results) that needs to be presented to the validating DOE.

2.2. Applicability

4. 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.

5. 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.

6. For cases where the biomass is sourced from renewable sources, the project participants should use a corresponding Type I methodology.

7. If the project device requires a specific fuel for this device (e.g. briquettes, pellets, woodchips), the consumption of the fuel should be monitored during the crediting period.

[1] Implementation of Greenfield applications is not covered in this methodology.

2.3. Entry into force

8. The date of entry into force is the date of the publication of the EB 97 meeting report on 03 November 2017.

2.4. Applicability of sectoral scopes

9. For validation and verification of CDM projects and programme of activities by a designated operational entity (DOE) using this methodology, application of sectoral scope 03 is mandatory.

3. Normative references

10. Project participants shall apply the general guidelines to small-scale (SSC) CDM methodologies and Tool for the demonstration of additionality of small-scale project activities" available at: <http://cdm.unfccc.int/Reference/Guidclarif/index.html#meth> mutatis mutandis.

11. This methodology also refers to the latest approved versions of the following approved methodology(ies) and tool(s):

    (a) "AMS-III.BG: Emission reduction through sustainable charcoal production and consumption";

    (b) "Project and leakage emissions from biomass";

    (c) "Tool to calculate values of fraction of non-renewable biomass".

4. Definitions

12. The definitions contained in the Glossary of CDM terms shall apply.

13. For the purpose of this methodology, the definitions of demonstrably renewable woody biomass and non-renewable woody biomass provided in paragraphs 30 and 31 shall apply.

14. The following definition shall also apply:

    (a) **Batch** - is defined as the population of the device of the same type commissioned at a certain calendar year. To establish the date of commissioning, the Project Participant may opt to group the devices in "batches" and the latest date of commissioning of a device within the batch shall be used as the date of commissioning for the entire batch.[2]

[2] If the efficiency drop of project devices is monitored through the first batch approach (see paragraph 27 below), project participants shall describe in the PDD the measures taken to ensure that all batches receive the same level of quality control in the production, and maintenance/replacements during the crediting period, as the first batch. Monitoring reports shall describe the number of actions taken for maintenance and replacements to all batches separately.

5. Baseline methodology

5.1. Project boundary

15. The project boundary is the physical, geographical site of the efficient devices that utilize biomass.

5.2. Emission reductions

16. It is assumed that in the absence of the project activity, the baseline scenario would be the projected use of fossil fuels to meet similar thermal energy needs as those provided by the project devices.

17. Emission reductions are calculated as:

$$ER_y = \sum_i \sum_j ER_{y,i,j} - LE_y \qquad \text{Equation (1)}$$

Where:

i	=	Indices for the situation where more than one type of project device is introduced to replace the pre-project devices[3]
j	=	Indices for the situation where there is more than one batch of project device
ER_y	=	Emission reductions during year *y* in t CO_2e
$ER_{y,i,j}$	=	Emission reductions by project device of type *i* and batch *j* during year *y* in t CO_2e
LE_y	=	Leakage emissions in the year *y*

$$ER_{y,i,j} = B_{y,savings,i,j} \times N_{y,i,j} \times \mu_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected\_fossil\ fuel} \qquad \text{Equation (2)}$$

Where:

$B_{y,savings,i,j}$	=	Quantity of woody biomass that is saved in tonnes per cookstove device of type *i* and batch *j* during year *y*
$f_{NRB,y}$	=	Fraction of woody biomass that can be established as non-renewable biomass ~~using survey methods or government data or default country specific fraction of non-renewable woody biomass~~ (fNRB) ~~values available on the CDM website~~[4]

[3] For example, in some instances, full replacement of the pre-project device would require the implementation of more than one project device (e.g. one stove suitable for cooking and the other stove suitable for cooking/boiling water).

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

$NCV_{biomass}$	=	Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.015 TJ/tonne, based on the gross weight of the wood that is 'air-dried')
$EF_{projected\_fossilfuel}$	=	Emission factor for the fossil fuels projected to be used for substitution of non-renewable woody biomass by similar consumers. Use a value of ~~81.6~~ 63.7 t CO_2/TJ[5]
$N_{y,i,j}$	=	Number of project devices of type *i* and batch *j* operating during year *y*
μ_y	=	Adjustment to account for any continued use of pre-project devices during the year *y* when applying equations 6 and 8 (fraction). Use 1.0 in other cases

18. $B_{y,savings,i,j}$ due to implementation of efficient thermal devices is estimated as per the following options:

19. Option 1: Thermal Energy Output (TEO):

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

Where:

$HR_{y,i,j}$	=	Useful thermal energy output delivered per project device ~~decive~~ *i* in batch *j* during year *y* (TJ)
$\eta_{old,i,j}$	=	Efficiency of the old devices being replaced by project devices of type *i* and batch *j*
$\eta_{new,i,j}$	=	Efficiency of the project device ~~decive~~ *i* and batch *j*

20. The useful thermal energy shall be calculated based on the rated capacity of the project device multiplied by the number of utilization hours:

$$HR_{y,i,j} = HC_{i,j} \times t_{y,i,j} \times 0.0000036 \quad \text{Equation (4)}$$

Where:

$HC_{i,j}$	=	Rated thermal capacity as per manufacturer specification (kW)

[5] This value represents the emission factor of the substitution fuels likely to be used by similar users, on a weighted average basis. The value is calculated, based on the global average ratio of cooking fuels (the normalized ratio of kerosene and liquefied petroleum gas (LPG) excluding coal), i.e. 9 per cent for kerosene (71.5 t CO2/TJ) and 91 per cent for LPG (63.0 t CO2/TJ). ~~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 per cent weight is assigned to coal as the alternative solid fossil fuel (96 t CO_2/TJ) and a 25 per cent weight is assigned to both liquid fuel (71.5 t CO_2/TJ for kerosene) gaseous fuel (63.0 t CO_2/TJ for liquefied petroleum gas (LPG)).~~

$t_{y,i,j}$ = Number of hours of utilization of the device during the year *y*

0.0000036 = Factor to convert kWh to TJ

21. Option 2: kitchen performance test (KPT):

$$B_{y,savings,i,j} = B_{old,i,j} - B_{new,KPT,i,j} \quad \text{Equation (5)}$$

Where:

$B_{old,i,j}$ = Annual quantity of woody biomass that would have been used in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project device type *i* and batch *j*

$B_{new,KPT,i,j}$ = Annual quantity of woody biomass used in tonnes per project device of type *i* and batch *j*, measured as per the KPT protocol, ~~for the initial efficiency determined in the year of its commissioning~~. The KPT shall 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)>

22. Option 3: water boiling test (WBT):[6]

$$B_{y,savings,i,j} = B_{old,i,j} \times (1 - \frac{\eta_{old,i,j}}{\eta_{new,i,j}}) \quad \text{Equation (6)}$$

$$B_{y,savings,i,j} = B_{y=1,new,i,j,survey} \times (\frac{\eta_{new,i,j}}{\eta_{old,i,j}} - 1) \quad \text{Equation (7)}$$

Where:

$B_{y=1,new,i,j,survey}$ = Quantity of woody biomass used by project devices in tonnes per device of type *i* and batch *j*

23. Option 4: controlled cooking test (CCT):

$$B_{y,savings,i,j} = B_{old,i,j} \times (1 - \frac{SC_{new,i,j}}{SC_{old}}) \quad \text{Equation (8)}$$

Where:

SC_{old} = Specific fuel consumption or fuel consumption rate of the pre-project devices

$SC_{new,i,j}$ = Specific fuel consumption or the fuel consumption rate of the devices of type *i* and batch *j* deployed as part of the project

24. The calculations in the equations above assume that there is only one device per household. Considering that baseline surveys or other methods may estimate the total consumption per household, an adjusted formula as below shall be used in case more

[6] Based on whether $\eta_{new,i,j}$ or $B_{y=1,new,ij,survey}$ is used for monitoring, either equation (6) or (7) may be used respectively.

than one project device is used in the household. For example, if 2 project devices are installed per household, 0.5 times the baseline woody biomass consumption per household ($B_{old,HH}$) is used as the total annual quantity of woody biomass that would have been used in the absence of the project activity in each device ($B_{old,i,j}$). Where more detailed data is available, e.g. the thermal capacity of the project devices and respective utilisation hours, a weighted average thermal output ($HR_{y,i,j}$) may be used to determine the savings of baseline consumption for each device.

$$B_{old,i,j} = B_{old,HH} \div N_{d,HH} \quad \text{Equation (9)}$$

$$B_{old,HH} = B_{old,p} \times N_{p,HH} \quad \text{Equation (10)}$$

Where:

$B_{old,HH}$	=	Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices (tonnes/household/year)
$N_{d,HH}$	=	Number of project devices per household (number)
$B_{old,p}$	=	Annual quantity of woody biomass that would have been used per person in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices (tonnes/person/year)
$N_{p,HH}$	=	Average number of persons per household (number)

25. Where charcoal is used as the fuel by baseline (old) or project (new) devices, the quantity of woody biomass shall be determined by using a default wood to charcoal conversion factor of 6 kg of firewood (wet basis) per kg of charcoal (dry basis).[7] Alternatively, credible local conversion factors determined from a field study or literature may be applied.

26. The life span[8] of each type of the project devices shall be documented in the PDD based on manufacturer's specification.

27. The loss in efficiency of the project devices *i* in each batch *j* due to aging shall be accounted during the monitoring period *y*. For Option 1 and Option 3 (as specified in paragraphs 19-23), the Project participant may choose any option below to account for the loss in efficiency (for Option 3) or decrease in the capacity (for Option 1); the option should be identified and fixed ex ante in the PDD at the time of registration. However, when Option 2: kitchen performance test (KPT) or Option 4: controlled cooking test (CCT) is used, the requirements below are not applicable because any annual changes of the

[7] Refer to:<http://www.ipcc-nggip.iges.or.jp/public/gl/guidelin/ch1ref3.pdf>.The term 'wet basis' assumes that the wood is 'air-dried' as is specified in the IPCC default table.

[8] The life span should be reported in cases where the PPs are opting to account the efficiency loss as per paragraph 27(a).

quantity of woody biomass used and any annual changes in specific fuel consumption will be captured by the KPT and CCT respectively[9].

(a) A default schedule of linear decrease in efficiency up to the terminal efficiency assumed as 20 per cent shall be applied through the life span of the project device[10]. For example, if the life span of project device is five years and project device has an efficiency of 30 per cent at commissioning then a 2 per cent decrease in efficiency every year shall be applied; or

(b) Manufacturer of project devices shall confirm with technical justification based on certification by a national standards body or an appropriate certifying agent recognized by that body that no decrease in efficiency of project device is envisaged during the crediting period; or

(c) Determine[11] the rate of efficiency drop for a representative sample of the first batch of project device *i* in year *y* and assume that same rate of loss in efficiency applies to all other batches. In other words, it may be assumed that the degradation of efficiency measured in a representative sample of the first batch of project devices i apply to all subsequent batches. The efficiency of the project devices in the first batch has to be monitored annually through representative samples and this rate of loss in efficiency may be applied correspondingly to all batches;

(d) Determine the loss in efficiency annually from a representative sample of each batch and use the actual loss rate that is measured.

28. If the life span of devices is less than the crediting period, it shall be demonstrated that the devices shall be replaced after the life span has ended. In such cases, if it cannot be demonstrated that the project devices will be replaced with new devices, no emission reductions can be claimed beyond the life span of the project devices.

~~**5.2.1. Differentiation between non-renewable and renewable woody biomass**~~

~~29. Project participants shall determine the shares of renewable and non-renewable woody biomass in $B_{old,i,j}$ (the quantity of woody biomass used in the absence of the project activity in tonnes per device of type *i* and batch *j*), 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.~~

[9] The KPT shall be conducted at representative households where the ICS has been regularly used since the beginning of the project activity in order to reflect the typical condition of the improved devices after aging. Similarly, the CCT shall be used to test the specific fuel consumption of representative devices that have been regularly in operation and subject to the regular process of replacement/maintenance introduced by the project activity since its beginning.

[10] If the efficiency of the project devices falls below 20%, it is no longer eligible to be considered a project device.

[11] Example: For the representative sample of Batch 1, if the efficiency of a new project device is 30% and at the end of Year 1, the efficiency is monitored to be 29%; the loss rate is (30%-29%)/1=1%. Then this 1% loss rate is to be assumed to be applicable for all the devices in the first batch and subsequent batches for first year of operation.

5.2.2. Demonstrably renewable woody biomass[12] (DRB)

30. Woody[13] biomass is 'renewable' if one of the following two conditions is satisfied:

(a) The woody biomass originates from land areas that are forests[14] where:

(i) The land area remains a forest;

(ii) 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);

(iii) Any national or regional forestry and nature conservation regulations are complied with;

(b) The biomass is woody biomass and originates from non-forest areas (e.g. croplands, grasslands) where:

(i) The land area remains as non-forest or is reverted to forest;

(ii) Sustainable management practices are undertaken on these land areas to ensure that the level of carbon stocks on these land areas does not systematically decrease over time (carbon stocks may temporarily decrease due to harvesting);

(iii) Any national or regional forestry, agriculture and nature conservation regulations are complied with.

5.2.3. Non-renewable biomass

31. *NRB* is, the quantity of woody biomass used in the absence of the project activity in tonnes per device of type *i* ($B_{old,i,j}$) minus the *DRB* component, as long as at least two of the following supporting indicators are shown to exist:

(a) 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;

(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.

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

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

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

~~32. Thus the fraction of woody biomass saved by the project activity during year *y* that can be established as non-renewable is:~~

$$f_{NRB,y} = \frac{NRB}{NRB + DRB}$$ ~~Equation (11)~~

~~33. Project participants shall also provide evidence that the identified trends are not occurring due to the enforcement of local/national regulations.~~

5.3. Project emissions

34. The project emissions (PE_y) from cultivation of biomass and from utilization of biomass residues shall be calculated using the latest version of the tool "Project and leakage emissions from biomass".

5.4. Leakage

35. Leakage related to the non-renewable woody biomass saved by the project activity shall be assessed based on ex post surveys of users and the areas from which this woody biomass is sourced (using 90/30 precision for a selection of samples). The potential source of leakage due to the use/diversion of non-renewable woody biomass saved under the project activity by non-project households/users that previously used renewable energy sources shall be considered. If this leakage assessment quantifies an increase in the use of non-renewable woody biomass by the non-project households/users, that is attributable to the project activity, then $B_{old,i,j}$ is adjusted to account for the quantified leakage. Alternatively, $B_{y,savings,i,j}$ is multiplied by a net to gross adjustment factor of 0.95 to account for leakages, in which case surveys are not required.

~~36. If devices currently being utilised outside the project boundary are transferred to the project activity, then leakage is to be considered.~~

37. Project activities switching from baseline device using firewood to efficient project device using charcoal or switching from firewood to efficient project device using processed biomass (briquette, pellets, and woodchips) shall take into account the leakage effects related to the charcoal or ~~briquette~~ processed biomass production.

38. A default value of 0.030 t CH_4/t charcoal may be used in accordance with "AMS-III.BG.: Emission reduction through sustainable charcoal production and consumption".

5.5. Data and parameters not monitored

39. In addition to the parameters listed in the tables below, the provisions on data and parameters not monitored in the tools referred to in this methodology apply.

Data / Parameter table 1.

Data / Parameter:	$B_{old,p}$
Data unit:	tonnes/person/year

Description:	Annual quantity of woody biomass that would have been used per person in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices
Source of data:	Where applicable a value from a standardised baseline may be used as an alternative to the default value provided
Measurement procedures (if any):	A default value of 0.5 tonnes/capita per year[15] may be used. This option is limited to household project devices (not eligible for oven and dryers)
~~Monitoring frequency:~~	~~Ex ante~~
~~QA/QC procedures:~~	~~-~~
Any comment:	-

Data / Parameter table 2.

Data / Parameter:	$N_{p,HH}$
Data unit:	Number
Description:	Average number of persons served per household prior to project implementation
Source of data:	Established ex ante prior to project implementation based on records of households served by the project
Measurement procedures (if any):	-
~~Monitoring frequency:~~	~~Ex ante~~
~~QA/QC procedures:~~	~~-~~
Any comment:	-

Data / Parameter table 3.

Data / Parameter:	$B_{old,HH}$
Data unit:	tonnes/household/year
Description:	Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices
Source of data:	This parameter shall be determined ex ante
Measurement procedures (if any):	Use one of the following options: 1. $B_{old,p}$ times $N_{p,HH}$ or; 2. Based on the historical data or a sample survey conducted as per the latest version of "sampling and surveys for CDM project activities and programme of activities". If the monitoring period is shorter or longer than one year, the result may be extrapolated for the monitoring period
~~Monitoring frequency:~~	~~Ex ante~~

[15] Refer to "Annex 5 - Information note on the rationale for default factors used in AMS-I.E. and AMS-II.G." of the SSC WG 42 meeting report for the derivation of the default.

~~QA/QC procedures:~~	~~-~~
Any comment:	-

Data / Parameter table 4.

Data / Parameter:	$B_{old,i,j}$
Data unit:	tonnes/year
Description:	Annual quantity of woody biomass that would have been used in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project device type *i* and batch *j*
Source of data:	This parameter shall be determined ex ante
Measurement procedures (if any):	$B_{old,HH}$ divided by $N_{d,HH}$
~~Monitoring frequency:~~	~~Ex ante~~
~~QA/QC procedures:~~	~~-~~
Any comment:	$B_{old,i,j}$ equals $B_{old,HH}$ when only one project device per household is distributed. For $N_{d,HH}$, please refer to Data / Parameter table 21

Data / Parameter table 5.

Data / Parameter:	$f_{NRB,y}$
Data unit:	-
Description:	Fraction of woody biomass saved by the project activity during year *y* that can be established as non-renewable biomass
Source of data:	-
Measurement procedures (if any):	As per the draft methodological tool “calculation of fraction of non-renewable biomass” ~~As per paragraphs 29 to 32~~
~~Monitoring frequency:~~	~~Ex ante~~
~~QA/QC procedures:~~	~~-~~
Any comment:	-

Data / Parameter table 6.

Data / Parameter:	SC_{old}
Data unit:	t fuel/unit output or t fuel/hour
Description:	Specific fuel consumption or fuel consumption rate of the pre-project devices
Source of data:	

Measurement procedures (if any):	1. Specific fuel consumption or 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 the 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): <http://www.pciaonline.org/testing>. 2. Use weighted average values if more than one type of device is being replaced (taking the amount of woody biomass consumed by each device as the weighting factor). 3. When the CCT is conducted on a sample basis, the sampling requirements indicated in section 6.2 and guidance provided in the "Standard for sampling and surveys for CDM project activities and programme of activities" shall be followed
~~Monitoring frequency:~~	~~Ex ante~~
~~QA/QC procedures:~~	~~-~~
Any comment:	-

Data / Parameter table 7.

Data / Parameter:	$HC_{i,j}$
Data unit:	kW
Description:	Rated capacity for delivering heat as per manufacturer specification (kW)
Source of data:	
Measurement procedures (if any):	The useful thermal energy shall be calculated based on the rated capacity of the project device multiplied by the number of utilization hours. Refer equation 4
~~Monitoring frequency:~~	~~Ex ante~~
~~QA/QC procedures:~~	~~-~~
Any comment:	-

6. Monitoring methodology

40. The PP shall maintain a record for the date of commissioning of project devices of each type *i* and batch *j*.

41. In order to assess the leakage described in section 5.3 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.

42. Relevant parameters shall be monitored and recorded during the crediting period as indicated in section 6.1 below. The applicable requirements specified in the "General guidelines for SSC CDM methodologies" are also an integral part of the monitoring guidelines specified below and therefore shall be followed by the project participants.

6.1. Data and parameters monitored

Data / Parameter table 8.

Data / Parameter:	$N_{y,i,j}$
Data unit:	-
Description:	Number of project devices of type *i* and batch *j* operating during year *y*
Source of data:	Monitoring
Measurement procedures (if any):	Measured directly or based on a representative sample. Sampling standard shall be used for determining the sample size to achieve 90/10 confidence precision. A discount shall be applied based on the percentage of devices operational as determined by the sample survey, e.g. if survey shows that 10% of the devices is non-operating, an adjustment factor of 0.9 shall be applied to number of project devices commissioned in a particular batch. Separate samples shall be taken for each batch
Monitoring frequency:	At least once every two years (biennial)
QA/QC procedures:	-
Any comment:	-

Data / Parameter table 9.

Data / Parameter:	μ_y
Data unit:	Fraction
Description:	Adjustment to account for any continued use of pre-project devices during the year *y*
Source of data:	When applying equations 6 and 8, it is a fraction based on monitoring results. In other cases (i.e. applying equations 3, 5 and 7), use 1.0

Measurement procedures (if any):	This parameter should be monitored using one of the following methods: 1. If the pre-project devices are decommissioned and no longer used, as determined by the monitoring survey its value is 1.0. If both the project devices and pre-project devices are used together, measurement campaigns shall be undertaken using data loggers such as stove utilization monitors (SUMs) which can log the operation of all devices (recording the situation of the device being used or not during any day '*d*' of the measurement campaign) in order to determine the average device utilization intensity (to establish the relative share of the usage of the devices). The measurement campaign shall be conducted in at least 10 randomly selected participant households of the project activity or the component project activity (CPA) for at least 90 days during the year *y*. If seasonal variation is observed, the average value determined through the campaign shall be annualised taking into account seasonal variation of device utilization. 2. Alternatively, surveys may be conducted if the use of data loggers to record the continued operation of baseline devices is demonstrated to be not practical, for example when the baseline device is the three-stone fire. The surveys should be designed to capture the cooking habits and stove usage of households in the region, including quantification of use of baseline devices, by formulating questions and/or collecting evidences to determine the frequency of usage of both the project devices and baseline devices. For example, if there were 3 pre-project devices per household and it was determined during the survey that use of one of them continues during the crediting period then a conservative adjustment factor of 0.66 is applied for the relevant monitoring period. Another example would be the case where there was only one pre-project device per household and its use during the project period continues along with the project stove to meet 25% of the cooking needs of the household in which case the adjustment factor will be 0.75. Where a more precise data is available i.e. the thermal capacity of the project and pre-project devices and respective utilization hours, a weighted average adjustment factor may be used
Monitoring frequency:	At least once every two years (biennial)
QA/QC procedures:	-
Any comment:	- If equation (6) under option 3 (WBT) is used combined with direct measurement of Biomass new, then $\boldsymbol{\mu}_{y,i,j}$ (parameter 2) may be assumed as 1.0. - When the data loggers are used, the days when only project devices or only pre-project devices are used will be attributed accordingly. The days where both devices have been used, if the data loggers are able to detect and record the time each device has been used (e.g. in hours), the share in the total duration of utilization will be used to attribute a fraction of this day to one or to the other device. Alternatively, if the data loggers are not able to determine the duration of the utilization, but only the situation of the device being on or off (i.e. used or not used during that day), the share of 50:50 may be used

Data / Parameter table 10.

Data / Parameter:	$t_{y,i,j}$
Data unit:	Number of hours
Description:	Number of hours of utilization of the device during the year *y*
Source of data:	-
Measurement procedures (if any):	The rated capacity shall be based on the manufacturer specification. The number of utilization hours shall be estimated at least once every two years (annually or biennially). ~~based~~ The biennial survey shall follow~~ing~~ a 95 per cent confidence interval and a 10 per cent margin of error in accordance with the "Standard for sampling and surveys for CDM project activities and programme of activities".
Monitoring frequency:	Yearly
QA/QC procedures:	-
Any comment:	-

Data / Parameter table 11.

Data / Parameter:	$\eta_{new,i,j}$
Data unit:	Fraction
Description:	Efficiency of the device of each type *i and* batch *j* implemented as part of the project activity
Source of data:	-
Measurement procedures (if any):	Efficiency shall be measured/estimated as per the following: 1. The efficiency of the project devices shall be based on certification by a national standards body or an appropriate certifying agent recognized by that body. 2. Alternatively, manufacturer specifications on efficiency based on water boiling test (WBT) may be used. The WBT shall be carried out in accordance with national standards (if available) or international standards or guidelines (e.g. the WBT procedures specified by the partnership for clean indoor air (PCIA): <http://www.pciaonline.org/testing>. The sampling test of stoves by such certification bodies/agents or manufacturers shall be conducted following a 90/10 precision in accordance with the "Standard for sampling and surveys for CDM project activities and programme of activities". 3. However, the following simplified approach may be used, when the efficient cookstoves are produced by a manufacturer with a good quality management system in place to ensure that the individual equipment produced do not vary beyond the range of acceptance limits (e.g. characteristics such as materials, critical dimensions): (i) Conduct a sample test on three cookstoves with three tests conducted for each stove. The test can be carried out by project proponents by themselves or stove manufacturers; (ii) If the standard deviation of the nine test results indicated above is very small and 90/10 precision requirement is met (in

	this case, the value of the t-distribution for 90 per cent confidence shall be used instead of Z value), the efficiency determined is acceptable, otherwise more sample tests would be required until 90/10 precision is met. 4. For project activities that implement cookstoves with saucepan capacities both greater than 30 L as well as smaller than 30 L, the most conservative value among the results of efficiency tests conducted (i.e. the least efficiency determined) on cookstoves of sizes equal to or smaller than 30 L may be used for stoves that are larger than 30 L in lieu of actual testing of the efficiency of stoves that are above 30 L capacity. The simplified approach above may also be used to comply with eligibility requirements under paragraph 3 and can be used only if the following conditions are met: (i) Stoves that can hold saucepans that are larger than 30 L are from the same manufacturer[16] and of similar design (e.g. with respect to construction materials including insulation material, placement of grate, cooking vessels and if applicable chimney) as compared to the stoves that are smaller than 30 L; (ii) Project proponents should demonstrate that comparable repair and maintenance practices are undertaken on all project stoves, irrespective of the size
Monitoring frequency:	(i) Recorded at the time of commissioning/distribution; (ii) Adjusted for the loss of efficiency as paragraph 27
QA/QC procedures:	-
Any comment:	Follow provisions in paragraph 27 to account for loss in efficiency of the project devices

Data / Parameter table 12.

Data / Parameter:	$NCV_{biomass}$
Data unit:	TJ/tonne
Description:	Net calorific value of the non-renewable woody biomass, briquettes or charcoal used in project devices
Source of data:	-
Measurement procedures (if any):	IPCC default for wood fuel, 0.015 TJ/tonne, based on the gross weight of the wood that is 'air-dried' may be used if fuel used in project device is also woody biomass. If fuel used in the project device is charcoal, 0.029 TJ/tonne may be used. If briquette is used as project fuel, NCV shall be measured annually
Monitoring frequency:	Yearly
QA/QC procedures:	-
Any comment:	-

[16] For in-situ constructed stoves, show that the prefabricated components are sourced from the same supplier.

Data / Parameter table 13.

Data / Parameter:	$SC_{new,i,j}$
Data unit:	t fuel/unit output or t fuel/hour
Description:	Specific fuel consumption or fuel consumption rate during year *y* of the device(s) of type *i* deployed as part of the project that is fuel consumption per quantity of item/s processed (e.g. food cooked) or fuel consumption per hour respectively with the age *a*
Source of data:	-
Measurement procedures (if any):	As per paragraphs 23, using the controlled cooking test (CCT) procedure. The CCT shall be 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): <http://www.pciaonline.org/testing>. When the CCT is conducted on a sample basis, the sampling requirements indicated in section 6.2 and guidance provided in the "Standard for sampling and surveys for CDM project activities and programme of activities" shall be followed
Monitoring frequency:	Yearly
QA/QC procedures:	-
Any comment:	-

Data / Parameter table 14.

Data / Parameter:	$f_{NRB,y}$
Data unit:	-
Description:	Fraction of woody biomass saved by the project activity during year *y* that can be established as non-renewable biomass
Source of data:	-
Measurement procedures (if any):	As per the draft methodological tool "calculation of fraction of non-renewable biomass" ~~As per paragraphs 29 to 32~~
Monitoring frequency:	Yearly, if project proponents opt for annual monitoring instead of fixing the value ex ante at the beginning of each crediting period
QA/QC procedures:	-
Any comment:	-

Data / Parameter table 15.

Data / Parameter:	$B_{y=1,new,i,j,survey}$
Data unit:	Tonnes
Description:	Quantity of woody biomass used by project devices in tonnes per device of type *i*.
Source of data:	Sample survey of end user or direct measurement at each end user locations.

Measurement procedures (if any):	Determined in the first year of the introduction of the devices (e.g. during the first year of the crediting period, y=1) through measurement campaigns at representative households and/or 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: Pre-project devices have been completely decommissioned and only efficient project device(s) are exclusively used in the project households; 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 consumes 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
Monitoring frequency:	First year of installation
QA/QC procedures:	-
Any comment:	-

Data / Parameter table 16.

Data / Parameter:	$B_{new,KPT,i,j}$
Data unit:	Tonnes
Description:	Annual quantity of woody biomass used in tonnes per project device of type *i*
Source of data:	Sample survey
Measurement procedures (if any):	Measured as per the KPT protocol~~, for the initial efficiency determined in the year of its commissioning~~. The KPT shall 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/testing>
Monitoring frequency:	Annual monitoring of the quantity of woody biomass used in tonnes per project device of type *i* and batch *j*
QA/QC procedures:	-
Any comment:	-

Data / Parameter table 17.

Data / Parameter:	$\eta_{old,i,j}$
Data unit:	(i) Default 0.1 or 0.2 (please see details below); (ii) Establish prior to start of implementation based on survey

Description:	Efficiency of pre-project device, which is a three-stone fire using firewood (not charcoal), 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. 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
Source of data:	-
Measurement procedures (if any):	-
Monitoring frequency:	Fixed for each individual household when included in the project activity database
QA/QC procedures:	-
Any comment:	-

Data / Parameter table 18.

Data / Parameter:	**Life Span**
Data unit:	Number of years
Description:	The operating life time of the project device. The life span should be reported in cases where the PPs are opting to account the efficiency loss as per paragraph 27
Source of data:	Manufacturer (certified by a national standards body or an appropriate certifying agent recognized by that body)
Measurement procedures (if any):	
Monitoring frequency:	Fixed and recorded at the time of commissioning/distribution
QA/QC procedures:	-
Any comment:	-

Data / Parameter table 19.

Data / Parameter:	**Date of commissioning of batch *j***
Data unit:	Date
Description:	To establish the date of commissioning, the Project Participant may opt to group the devices in “batches” and the latest date of commissioning of a device within the batch shall be used as the date of commissioning for the entire batch
Source of data:	Internal records
Measurement procedures (if any):	
Monitoring frequency:	Fixed and recorded at the time of commissioning/distribution of the last project device in the batch
QA/QC procedures:	-
Any comment:	To be reported in the monitoring report

Data / Parameter table 20.

Data / Parameter:	**Date of commissioning of project device i**
Data unit:	Date
Description:	Actual date of commissioning of the project device
Source of data:	Internal records
Measurement procedures (if any):	-
Monitoring frequency:	Fixed and recorded at the time of commissioning/distribution
QA/QC procedures:	-
Any comment:	-

Data / Parameter table 21.

Data / Parameter:	$N_{d,HH}$
Data unit:	Number
Description:	Number of project devices distributed per household
Source of data:	Internal records
Measurement procedures (if any):	-
Monitoring frequency:	Recorded at the time of commissioning/distribution of project devices
QA/QC procedures:	-
Any comment:	-

6.2. Representative sampling methods

43. A statistically valid sample of the locations where the devices are deployed, with consideration, in the sampling design, of occupancy and demographic differences can be used to determine parameter values used to calculate emission reductions, as per the relevant requirements for sampling in the *"*Standard for sampling and surveys for CDM project activities and programmes of activities*".* When biennial inspection is chosen a 95 per cent confidence interval and a 10 per cent margin of error shall be achieved for the sampling parameter. On the other hand, when the project proponent chooses to inspect annually, a 90 per cent confidence interval and a 10 per cent margin of error shall be achieved for the sampled parameters. In cases where survey results indicate that 90/10 precision or 95/10 precision are not achieved, the lower bound of the 90 per cent or 95 per cent confidence interval of the parameter value may be chosen as an alternative to repeating the survey efforts to achieve the 90/10 or 95/10 precision.

44. Efficiency of devices may be monitored in a common survey with other monitoring parameters; therefore, a random sub-sample within the common survey can be taken for which stove efficiency is tested, as long as the required precision for stove efficiency is achieved.

6.3. Project activity under a programme of activities

45. 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 $B_{old,i,j}$ *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 $B_{old,i,j}$ is adjusted to account for the quantified leakage;

    (c) As an alternative to subparagraphs (a) and (b) $B_{old,i,j}$ can be multiplied by a net to gross adjustment factor of 0.95[17] to account for both leakages, in which case surveys are not required.

46. 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 studies to determine the local fNRB value (sub national values); or (b) Use default national values approved by the Board (see footnote 4). 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.

47. Monitoring approaches for $B_{y,savings,i,j}$[18] and values for parameters fNRB (when Option (a) in paragraph 46 is chosen) and the quantity of woody biomass $B_{old,i,j}$ may be determined either at the CPA level before the inclusion of the CPA or at the PoA level before the registration of the PoA-DD.

48. If the generic CPA consists solely of units that qualify as “microscale CDM units” as defined in the “Methodological tool 19: Demonstration of additionality of microscale project activities”, the conditions to ensure that CPAs that will be included meet the small-scale or microscale thresholds and remain within those thresholds throughout the crediting period of the CPAs are not required.

[17] The adjustment factor does not need to be applied twice for option (a) and (b).

[18] Any one of the four options in paragraphs 19 to 23 may be used for a particular CPA, but there should be no change in the chosen option during the crediting period.

Appendix. Non-binding survey questionnaire for AMS-I.E. and AMS-II.G.

1. Survey format A: Baseline fuel consumption pattern

1.1. General information[1]

Title of project activity/CPA/PoA	
Name of Surveyor	
Date of survey	mm/dd/yyyy
Period of measurements (for consumption rate)	mm/dd/yyyy to mm/dd/yyyy

1.2. Household profile[2]

Name (Household representative)	
Household size (total number of people)	
- Adult	
- Children	
Address	
Phone number (if available)	

1.3. Stove description prior to the project implementation[3]

(mark x with type of stove used)

"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 chimney".	
Any other type of stove	

[1] Selection of households should be based on a sampling plan.

[2] If the survey is done biennially, it may be designed to capture the results for each year separately (e.g. the survey may ask for the utilization hours for year 1 and for year 2 separately).

[3] An "X" shall be filled in in one of the two alternatives. If the stove does not have a chimney or a grate, then "X" should be filled out for "Any other type of stoves". Such a stove would then be considered an improved cookstove.

1.4. Household fuel consumption pattern prior to the project implementation[4]

How many meals did you prepare last week or last month?	Meals/week or month

1.4.1. Fuel use for cooking

	Yes/No	Quantity of usage	Unit
Charcoal			kg/month or year
Wood			kg/month or year
LPG			kg or Cylinders/month or year
Kerosene			Litres/month or year
Coal			kg/month or year
Electricity			kWh/month or year
Other fuels (explain)			

2. Survey format B: Project survey

2.1. General information[5]

Title of project activity/CPA/PoA	
Name of Surveyor	
Date of survey	mm/dd/yyyy
Period of measurements (for consumption rate)	mm/dd/yyyy to mm/dd/yyyy

2.2. Household profile

Name (Household representative)	
Household size (total number of people)	
- Adult	
- Children	
Address	
Phone number (if available)	

[4] In many cases, the end-user might not be able to provide information on quantity of cooking fuel in terms units mentioned above. In many places the volume of firewood (e.g. the volume capacity and level of filling of the transporting/storage room) is measured, not its weight. This very much depends on the local practice of measurement. The project participants should include such local measurement unit in the questionnaire. In some cases, the measurement unit could also be in terms of money spent on purchasing the fuel. Therefore, the project participant shall provide further guidelines for how the conversion of these reported values to required units (mass or volume) should be carried out (e.g. If a household uses a bag of charcoal every 10 days, then the monthly average can be calculated if the weight (or volume and bulk density) of the full bag can be determined.).

[5] Selection of households should be based on a sampling plan.

2.3. Household fuel consumption pattern post the project implementation

Cooking device	
Model name/number	
Unique ID	
Date of installation	mm/dd/yyyy
Do you use the project cookstove? (Physically check the stove).[6]	Yes/No
- If yes, have you used the stove regularly since you installed it?[7]	Yes/No
- If yes, is your stove in good condition?[8]	Yes/No
- If no, why did you stop using the stove?	
- How many meals did you prepare using project cookstove last week or last month?	Meals/week or month
Do you use your traditional (baseline) cookstove also?	Yes/No
- If yes, how many meals did you prepare using traditional (baseline) cookstove last week or last month?[9]	Meals/week or month
Do you use any other stove? (ICS etc.)[10]	Yes/No

2.3.1. Fuel use for cooking[11]

	Yes/No	Quantity of usage	Unit
Charcoal			kg/month or year
Wood			kg/month or year
LPG			kg or Cylinders/month or year
Kerosene			Litres/month or year

[6] The question is to determine if the cookstove is currently in use, i.e. to address the parameter of "usage factor". Physical checks to verify the usage may be done by checking the conditions of stoves, e.g. warm to touch, ashes in grate, and soot on stove.

[7] The question is to determine if the cookstove has been continuously used.

[8] The project proponent may rephrase the question keeping in mind the objective i.e. whether or not the project cookstove is in usable condition. If the project cookstove is not in usable condition, the PP shall exclude such stoves from project database of the whole crediting year and subsequent years. The PP may include such stoves again on replacing them with new cookstoves of similar efficiency.

[9] The question is to determine if the baseline stove is being used to account for project emissions.

[10] The question is to cross-check if the project cookstove is used for all cooking requirements. It may also detect the situation where a household is taking part in more than one project activity, avoiding double-counting.

[11] In many cases, the end-user might not be able to provide information on quantity of cooking fuel in terms units mentioned above. In many places the volume of firewood (e.g. the volume capacity and level of filling of the transporting/storage room) is measured, not its weight. This very much depends on the local practice of measurement. The project participants should include such local measurement unit in the questionnaire. In some cases, the measurement unit could also be in terms of money. Therefore, the project participant shall provide further guidelines for how the conversion of these reported values to required units (mass or volume) should be carried out (e.g. If a household uses a bag of charcoal every 10 days, then the monthly average can be calculated if the weight (or volume and bulk density) of the full bag can be determined).

Coal			kg/month or year
Electricity			kWh/month or year
Other fuels (explain)			

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Document information

Version	*Date*	*Description*
09.0	11 October 2017	MP 74, Annex 11 To be considered by the Board at EB 97. This draft methodology (CDM-SSCWG54-A04) was available for public input from 28 July to 11 August 2017. It received no input. Revision to: • Revise the emission factor of "substitution fuels likely to be used by similar users"; • Include example survey forms; • Clarify monitoring requirements; • Refer to the new draft methodological tool "Calculation of fraction of non-renewable biomass".
08.0	22 July 2016	EB 90, Annex 13 Revision to include the procedures to quantify baseline woody biomass consumption for the entire household.
07.0	24 July 2015	EB 85, Annex 14 Revision to simplify the baseline emission equation, determination of efficiency and monitoring parameters.
06.0	21 February 2014	EB 77, Annex 11 Revision to: • Introduce simplified approaches to determine the thermal efficiency of project devices; • Introduce default values for baseline fuel wood consumption.
05.0	23 November 2012	EB 70, Annex 30 Includes clarification on monitoring requirements under different options; and provides a provision of wood to charcoal conversion factor.
04.0	20 July 2012	EB 68, Annex 23 Includes a reference to the available country specific default values for fNRB and specifies requirements of using national or local fNRB values for CPAs under a PoA.
03	15 April 2011	EB 60, Annex 21 KPT for stove testing included, requirements for leakage estimation simplified, default net gross adjustment factor is included as an option to account for any leakages, emission factor

Version	*Date*	*Description*
		for the projected fossil fuel revised, more options for sampling and survey included.
02	04 December 2009	EB 51, Annex 18 To include: (a) Default efficiency factors for baseline cookstoves; (b) Procedures for sampling, (c) Revised procedures for determination of quantity of woody biomass that can be considered as non-renewable; and (d) Clarifications as to which leakage requirements are appropriate for projects versus PoAs.
01	01 February 2008	EB 37, Annex 7 Initial adoption.

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