

**AMS-I.E.**

## Small-scale Methodology

---

Switch from non-renewable biomass for thermal applications by the user

Version 09.0

Sectoral scope(s): 01



**United Nations**  
Framework Convention on  
Climate Change

<b>TABLE OF CONTENTS</b>	<b>Page</b>
<b>1. INTRODUCTION .....</b>	<b>3</b>
<b>2. SCOPE, APPLICABILITY, AND ENTRY INTO FORCE .....</b>	<b>3</b>
2.1. Scope .....	3
2.2. Applicability .....	3
2.3. Entry into force .....	3
2.4. Applicability of sectoral scopes .....	4
<b>3. NORMATIVE REFERENCES .....</b>	<b>4</b>
<b>4. DEFINITIONS .....</b>	<b>4</b>
<b>5. BASELINE METHODOLOGY .....</b>	<b>4</b>
5.1. Project boundary .....	4
5.2. Additionality .....	5
5.2.1. Option 1 (Positive list) .....	5
5.2.2. Option 2.....	5
5.2.3. Option 3.....	5
5.3. Baseline emissions.....	5
5.4. Project emissions .....	7
5.5. Leakage emissions.....	8
5.6. Emission reductions .....	8
5.7. Data and parameters not monitored .....	8
<b>6. MONITORING METHODOLOGY .....</b>	<b>11</b>
6.1. Data and parameters monitored .....	11
6.2. Representative sampling methods.....	14
6.3. Project activity under a programme of activities .....	15
<b>APPENDIX. NON-BINDING SURVEY QUESTIONNAIRE .....</b>	<b>16</b>

## 1. Introduction

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

**Table. Methodology key elements**

<b>Typical project(s)</b>	Generation of thermal energy by introducing renewable energy technologies for end users that displace the use of non-renewable biomass. Examples of these technologies include, but are not limited to biogas stoves, solar cookers or passive solar homes
<b>Type of GHG emissions mitigation action</b>	Renewable energy: Displacement of more GHG-intensive, non-renewable biomass-fuelled applications by introducing renewable energy technologies

## 2. Scope, applicability, and entry into force

### 2.1. Scope

2. This methodology comprises of activities to displace the use of non-renewable biomass by introducing renewable energy technologies. Examples of these technologies include, but are not limited to biogas stoves, bio-ethanol stoves, solar cookers, passive solar homes.
3. Project participants are able to show that non-renewable biomass has been used since 31 December 1989, using survey methods or referring to published literature, official reports or statistics.

### 2.2. Applicability

4. The methodology is applicable for technologies displacing use of non-renewable biomass by renewable energy.
5. Project participants or coordinating and managing entities shall describe in the PDD/PoA-DD how the double counting of emission reductions has been addressed (e.g. between end users, distributors and producers of stoves).
6. For project activities introducing bio-ethanol cookstoves, project participants or coordinating and managing entities shall demonstrate that the bioethanol cookstoves are designed, constructed and operated to the requirements (e.g. with regard to safety) of a relevant national or local standard or comparable literature. Latest guidelines issued by a relevant national authority or an international organisation may also be used.

### 2.3. Entry into force

7. The date of entry into force is the date of the publication of the EB 100 meeting report on 31 August 2018.

## **2.4. Applicability of sectoral scopes**

8. For validation and verification of CDM projects and programme of activities by a designated operational entity (DOE) using this methodology, application of sectoral scope 01 is mandatory and sectoral scopes 13 and 15 are conditional.

## **3. Normative references**

9. Project participants shall apply the “Guideline: General guidelines for SSC CDM methodologies”, “TOOL21: Demonstration of additionality of small-scale project activities” and “TOOL19: Demonstration of additionality of microscale project activities” available at: <http://cdm.unfccc.int/Reference/Guidclarif/index.html#meth> and <https://cdm.unfccc.int/Reference/tools/index.html> mutatis mutandis.
10. This methodology also refers to the latest approved versions of the following approved standards, tools and methodologies:
  - (a) “AMS-I.I.: Biogas/biomass thermal applications for households/small users”;
  - (b) “AMS-II.G.: Energy efficiency measures in thermal applications of non-renewable biomass”;
  - (c) “AMS-III.F.: Avoidance of methane emissions through composting”;
  - (d) “AMS-III.G.: Landfill methane recovery”;
  - (e) “AMS-III.H.: Methane recovery in wastewater treatment”;
  - (f) “AMS-III.BG.: Emission reduction through sustainable charcoal production and consumption”;
  - (g) “TOOL03: Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion”;
  - (h) “TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation”;
  - (i) “TOOL16: Project and leakage emissions from biomass”;
  - (j) “TOOL30: Calculation of the fraction of non-renewable biomass”;
  - (k) “Standard: Sampling and surveys for CDM project activities and programme of activities”.

## **4. Definitions**

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

## **5. Baseline methodology**

### **5.1. Project boundary**

12. The project boundary is the physical, geographical site of the use of biomass or the renewable energy.

## 5.2. Additionality

13. Additionality is demonstrated using one of the options below:

### 5.2.1. Option 1 (Positive list)

14. Demonstrate ex-ante that the penetration<sup>1</sup> of renewable energy based thermal energy technologies (e.g. biogas stoves, solar cookers) is equal to or less than 5 per cent of the technologies/measures providing similar services in the region<sup>2</sup> in order to be considered as automatically additional.

15. The penetration shall be determined using one of the following options:

- (a) Official statistics or reports, relevant industry association reports or peer-reviewed literature;
- (b) Results of a sampling survey conducted by project participants or a third party as per the latest version of “Standard: Sampling and surveys for CDM project activities and programme of activities”; covering technologies/measures providing similar services as the project technology/measure;

16. To determine the penetration using the above paragraph, the most recent data available at the time of submission of the CDM-PDD or CDM-CPA-DD for validation/inclusion, shall be used, and the data vintage used shall not include data older than three years prior to: (a) the start date of the CDM project activity; or (b) the start of validation/inclusion, whichever is earlier.

### 5.2.2. Option 2

17. Demonstrate additionality applying the “TOOL21: Demonstration of additionality of SSC project activities.”

### 5.2.3. Option 3

18. Demonstrate additionality applying the “TOOL19: Demonstration of additionality of microscale project activities.”

## 5.3. Baseline emissions

19. It is assumed that in the absence of the project activity, the baseline scenario would be the use of fossil fuels for meeting similar thermal energy needs.

20. Baseline emissions would be calculated as:

$$BE_y = B_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected\_fossil\_fuel} \quad \text{Equation (1)}$$

---

<sup>1</sup> Refers to proportion of stock of functional equipment at the user end, also termed as market saturation.

<sup>2</sup> Region/Applicable geographical area - should be the entire host country. If the project participants opt to limit the applicable geographical area to a specific geographical area (such as province, region, etc.) within the host country, then they shall provide justification on the essential distinction between the identified specific geographical area and rest of the host country.

Where:

$BE_y$	=	Baseline emissions during the year $y$ in t CO <sub>2</sub> e
$B_y$	=	Quantity of woody biomass that is substituted or displaced in tonnes
$f_{NRB,y}$	=	Fraction of woody biomass used in the absence of the project activity in year $y$ that can be established as non-renewable biomass (fNRB) <sup>3</sup>
$NCV_{biomass}$	=	Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.0156 TJ/tonne)
$EF_{projected\_fossil\ fuel}$	=	Emission factor for the substitution of non-renewable woody biomass by similar consumers. Use a value of 63.7 t CO <sub>2</sub> /TJ <sup>4</sup>

21.  $B_y$  is determined by using one of the following options:

- (a) Calculated as the product of the number of households multiplied by the estimate of average annual consumption of woody biomass per household that is displaced by the project activity (tonnes/household/year);

$$B_y = N_{HH} \times (BC_{BL,HH,y} - BC_{PJ,HH,y}) \quad \text{Equation (2)}$$

Where:

$N_{HH}$	=	Number of households in the project activity, number
$BC_{BL,HH,y}$	=	Average annual consumption of woody biomass per household before the start of the project activity, tonnes/household/year
$BC_{PJ,HH,y}$	=	If it is found that pre-project devices were not completely displaced but continue to be used to some extent, average annual consumption of woody biomass per household in the pre-project devices during the project activity, tonnes/household/year

- (b) Calculated as the product of the number of persons served per household multiplied by the number of households and the estimate of average annual consumption of woody biomass per person that is displaced by the project activity (tonnes/person/year);

$$B_y = N_{HH} \times N_{p,HH} \times (BC_{BL,PP,y} - BC_{PJ,PP,y}) \quad \text{Equation (3)}$$

Where:

$N_{p,HH}$	=	Average number of persons served per household, number
$BC_{BL,PP,y}$	=	Average annual consumption of woody biomass per person before the start of the project activity, tonnes/person/year

---

<sup>3</sup> Default values endorsed by designated national authorities and approved by the Board are available at <[http://cdm.unfccc.int/methodologies/standard\\_base/index.html](http://cdm.unfccc.int/methodologies/standard_base/index.html)>.

<sup>4</sup> 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 CO<sub>2</sub>/TJ) and 91 per cent for LPG (63.0 t CO<sub>2</sub>/TJ).

$BC_{PJ,PP,y}$  = If it is found that pre-project devices were not completely displaced but continue to be used to some extent, average annual consumption of woody biomass per person in the pre-project devices during the project activity, tonnes/person/year

- (c) Calculated as the product of the number of persons served per institution<sup>5</sup> multiplied by the number of institutions and the estimate of average annual consumption of woody biomass per person that is displaced by the project activity (tonnes/person/year);

$$B_y = \sum_1^i N_{p,I,y,i} \times N_{I,i} \times (BC_{BL,PP,y} - BC_{BJ,PP,y}) \quad \text{Equation (4)}$$

Where:

$N_{p,I,y,i}$  = Average number of persons served per institution in year  $y$ , number

$N_{I,i}$  = Number of institutions type  $i$  prior to project implementation, number

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

$$B_y = \sum_i^n HG_{p,y} \div (NCV_{biomass} \times \eta_{old,i}) \quad \text{Equation (5)}$$

Where:

$HG_{p,y}$  = Quantity of thermal energy generated by the new renewable energy technology in the project in year  $y$  (TJ)

$\eta_{old,i}$  = Efficiency of pre - project device per type of device  $i$

## 5.4. Project emissions

22. The project emissions ( $PE_y$ ) from cultivation, use and processing of biomass shall be calculated using the latest version of "TOOL16: Project and leakage emissions from biomass". In doing so, the following sources of project emissions shall be considered as applicable, bearing in mind that some sources may be only relevant for specific fuels (e.g. production of bioethanol):

- (a) CO<sub>2</sub> emissions from on-site consumption of fossil fuels due to the project activity, calculated using the latest version of "TOOL03: Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion", including the consumption of fossil fuels for any processing of feedstock;
- (b) CO<sub>2</sub> emissions from electricity consumption by the project activity using the latest version of "TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation", including the consumption of electricity for any processing of feedstock;

<sup>5</sup> Institutions such as schools, prisons and hospitals.

- (c) Methane emission from solid waste disposal or waste water calculated as per provisions in AMS-III.G. (landfill); AMS-III.F. (composting) and AMS-III.H. (waste water treatment) in cases where the waste is disposed in anaerobic conditions;
- (d) Project emissions related to cultivation of feedstock are calculated using the latest version of the tool “TOOL16: Project and leakage emissions from biomass”;
- (e) Project emissions from transportation are estimated using the latest version of the tool “TOOL12: Project and leakage emissions from transportation of freight,” if the transportation distance is more than 200 km; otherwise they can be neglected.

## 5.5. Leakage emissions

- 23. Leakage emissions ( $LE_y$ ) shall be calculated using the latest version of “TOOL16: Project and leakage emissions from biomass”.
- 24. Leakage emissions (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 following potential source of leakage shall be considered: The use/diversion of non-renewable woody biomass saved under the project activity by non-project households/users that previously used renewable energy sources. If this leakage assessment quantifies an increase in the use of non-renewable woody biomass used by the non-project households/users that is attributable to the project activity, then  $B_y$  is adjusted to account for the quantified leakage. Alternatively,  $B_y$  is multiplied by a net to gross adjustment factor of 0.95 to account for leakages, in which case surveys are not required.
- 25. Project activities switching from baseline device using firewood to efficient project device using charcoal or switching from firewood to processed biomass (briquette, pellets, and woodchips) shall take into account the leakage effects related to the charcoal or processed biomass production.
- 26. A default value of 0.030 t CH<sub>4</sub>/t charcoal may be used in accordance with “AMS-III.BG.: Emission reduction through sustainable charcoal production and consumption.”

## 5.6. Emission reductions

- 27. Emission reductions are to be estimated based on the equation below.

$$ER_y = BE_y - PE_y - LE_y \quad \text{Equation (6)}$$

Where:

$$ER_y = \text{Emission reductions in year } y, \text{ tonnes CO}_2\text{eq}$$

## 5.7. Data and parameters not monitored

- 28. 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.**

<b>Data / Parameter:</b>	$B_y$
Data unit:	tonnes/year
Description:	Quantity of woody biomass that is substituted or displaced
Source of data:	-
Measurement procedures (if any):	<p>Calculated using one of the following options:</p> <p>(a) Calculated as the product of the number of households multiplied by the estimate of average annual consumption of woody biomass per household displaced by the project activity (tonnes/household/year);</p> <p>(b) Calculated as the product of the number of households multiplied by the number of persons served per household and the estimate of average annual consumption of woody biomass per person displaced by the project activity (tonnes/person/year);</p> <p>(c) Calculated as the product of the number of institutions multiplied by the number of persons served per institution and the estimate of average annual consumption of woody biomass per person displaced by the project activity (tonnes/person/year);</p> <p>(d) Calculated from the thermal energy generated in the project activity</p>
Any comment:	-

**Data / Parameter table 2.**

<b>Data / Parameter:</b>	$f_{NRB,y}$
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 "TOOL30: Calculation of the fraction of non-renewable biomass"
Any comment:	-

**Data / Parameter table 3.**

<b>Data / Parameter:</b>	$N_{HH}$
Data unit:	number
Description:	Number of households in the project activity in year $y$
Source of data:	-
Measurement procedures (if any):	Established ex ante prior to start of the project activity
Any comment:	-

**Data / Parameter table 4.**

<b>Data / Parameter:</b>	$BC_{BL,HH,y}$
Data unit:	tonnes/household/year
Description:	Average annual consumption of woody biomass per household before the start of the project activity
Source of data:	-
Measurement procedures (if any):	Determined ex ante using one of the following options and remains fixed during the crediting period: (a) $N_{p,HH}$ times $BC_{BL,PP,y}$ ; or (b) Historical data or a sample survey conducted as per the latest version of the “Standard:Sampling and surveys for CDM project activities and programme of activities;” or (c) Country or region specific values approved through the “procedure for development, revision, clarification and update of standardized baselines”, which are available on the CDM website <a href="http://cdm.unfccc.int/methodologies/standard_base/index.html">http://cdm.unfccc.int/methodologies/standard_base/index.html</a>
Any comment:	-

**Data / Parameter table 5.**

<b>Data / Parameter:</b>	$N_{p,HH}$
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):	-
Any comment:	-

**Data / Parameter table 6.**

<b>Data / Parameter:</b>	$BC_{BL,PP,y}$
Data unit:	tonnes/person/year
Description:	Average annual consumption of woody biomass per person before the start of the project activity
Source of data:	-
Measurement procedures (if any):	Determined ex ante using one of the following options and remains fixed during the crediting period: (a) A default value of 0.5 tonnes/person per year <sup>6</sup> ; (b) Historical data or a sample survey conducted as per the latest version of the “Standard:Sampling and surveys for CDM project activities and programme of activities;”

<sup>6</sup> 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.

	(c) Country or region specific values approved through the “procedure for development, revision, clarification and update of standardized baselines,” which are available on the CDM website < <a href="http://cdm.unfccc.int/methodologies/standard_base/index.html">http://cdm.unfccc.int/methodologies/standard_base/index.html</a> >
Any comment:	-

## 6. Monitoring methodology

29. The project participants shall maintain a record for the date of commissioning of project devices of each type *i*.
30. 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.
31. In order to assess the leakages, 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.
32. Monitoring should confirm the displacement or substitution of the non-renewable woody biomass at each location. In the case of appliances switching to renewable biomass the quantity of renewable biomass used shall be monitored. For this, project proponents may apply the “Standard: Sampling and surveys for CDM project activities and programme of activities.”

### 6.1. Data and parameters monitored

Data / Parameter table 7.

Data / Parameter:	Date of commissioning of project device of type <i>i</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 8.**

<b>Data / Parameter:</b>	<b>Date of commissioning of batch <math>j</math></b>
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 9.**

<b>Data / Parameter:</b>	<b><math>NCV_{biomass}</math></b>
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, 0.0156 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:	-

**Data / Parameter table 10.**

<b>Data / Parameter:</b>	<b><math>f_{NRB,y}</math></b>
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 “TOOL30: Calculation of the fraction of non-renewable biomass”
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 11.**

<b>Data / Parameter:</b>	$BC_{PJ,HH,y}$
Data unit:	tonnes/household/year
Description:	Average annual consumption of woody biomass per household in the pre-project devices during the project activity, if it is found that pre-project devices were not completely displaced but continue to be used to some extent
Source of data:	Surveys
Measurement procedures (if any):	Monitoring shall consist of estimation of all project devices or a representative sample thereof, at least once every two years (biennial)
Monitoring frequency:	At least once every two years (biennial)
QA/QC procedures:	-
Any comment:	

**Data / Parameter table 12.**

<b>Data / Parameter:</b>	$BC_{PJ,PP,y}$
Data unit:	tonnes/person/year
Description:	Average annual consumption of woody biomass per person in the pre-project devices during the project activity, if it is found that pre-project devices were not completely displaced but continue to be used to some extent
Source of data:	Surveys
Measurement procedures (if any):	Monitoring shall consist of estimation of all project devices or a representative sample thereof, at least once every two years (biennial)
Monitoring frequency:	At least once every two years (biennial)
QA/QC procedures:	-
Any comment:	

**Data / Parameter table 13**

<b>Data / Parameter:</b>	$N_{p,I,y,i}$
Data unit:	number
Description:	Average number of persons served per institution
Source of data:	-
Measurement procedures (if any):	Average number of persons served per institution shall be based on survey undertaken as per "Standard: Sampling and surveys for CDM project activities and programme of activities". This parameter shall be monitored every year. If the monitoring period is shorter or longer than one year, the result may be extrapolated for the monitoring period
Monitoring frequency:	Monitored annually ex post
QA/QC procedures:	-
Any comment:	-

**Data / Parameter table 14**

<b>Data / Parameter:</b>	$HG_{p,y}$
Data unit:	TJ
Description:	Quantity of thermal energy generated by the new renewable energy technology in the project in year $y$
Source of data:	-
Measurement procedures (if any):	For a biogas digester, it shall be monitored as per the requirements stipulated in the Table 2 of "AMS-I.I.: Biogas/biomass thermal applications for households/small users". Alternatively, project proponents may use a default biogas generation value of 0.13 Nm <sup>3</sup> .m <sup>-3</sup> .day <sup>-1</sup> (i.e. volume of biogas generated in normal conditions of temperature and pressure per unit useful volume of the digester per day) for regions/countries where annual average ambient temperature is higher than 20°C
Monitoring frequency:	Yearly
QA/QC procedures:	-
Any comment:	In case Option (d) in paragraph 21 above is chosen for baseline calculations

**Data / Parameter table 15**

<b>Data / Parameter:</b>	$\eta_{old,i}$
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
Source of data:	-
Measurement procedures (if any):	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
Monitoring frequency:	Fixed for each individual household when included in the project activity database
QA/QC procedures:	-
Any comment:	In case Option (d) in paragraph 21 above is chosen for baseline calculations

## 6.2. Representative sampling methods

33. A statistically valid sample of the locations where the systems are deployed, with consideration, in the sampling design, of occupancy and demographics differences can be used to determine parameter values used to determine emission reductions, as per the relevant requirements for sampling in the "Standard: Sampling and surveys for CDM project activities and programme of activities". When biennial inspection is chosen a 95 per cent confidence interval and a 10 per cent margin of error requirement 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 requirement shall be achieved for the sampled parameters. In cases where survey results indicate that 90/10 precision or 95/10 precision is not achieved, the lower bound of a 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.

### 6.3. Project activity under a programme of activities

34. The use of this methodology in a project activity under a programme of activities (PoA) is legitimate if the following leakages are estimated and accounted for, if required, on a sample basis using a 90/30 precision for the selection of samples, and accounted for:
- (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  $B_y$  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  $B_y$  is adjusted to account for the quantified leakage;
  - (c) As an alternative to subparagraphs (a) and (b),  $B_y$  can be multiplied by a net to gross adjustment factor of 0.95 to account for leakages, in which case surveys are not required.
35. The following further conditions apply for the value of fraction of non-renewable (fNRB) applied in a component project activity (CPA) of a PoA. The choice between (a) conduct own studies to determine the local fNRB value as per “As per “TOOL30: Calculation of the fraction of non-renewable biomass” and then apply those values in the CPAs; and (b) use default national values approved by the Board (see footnote 1); shall be made ex ante. A switch from national value i.e. choice (b) to local values i.e. choice (a) is permitted, under the condition that the selected approach is consistently applied to all CPAs.
36. If the generic CPA consists solely of units that qualify as “microscale CDM units” as defined in the “TOOL19: 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.

## Appendix. Non-binding survey questionnaire

### 1. Survey format A: Baseline fuel consumption pattern

#### 1.1. General information<sup>1</sup>

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

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

(mark x with type of stove used)<sup>2</sup>

"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	

#### 1.4. Household fuel consumption pattern prior to the project implementation<sup>3</sup>

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

---

<sup>1</sup> Selection of households should be based on a sampling plan.

<sup>2</sup> An "X" shall be filled in in one of the two alternatives. If the stoves 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.

<sup>3</sup> 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).



### 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<sup>4</sup>

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)	

### 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). <sup>5</sup>	Yes/No
- If yes, have you used the stove regularly since you installed it? <sup>6</sup>	Yes/No
- If yes, is your stove in good condition? <sup>7</sup>	Yes/No
- If no, why did you stop using the stove?	

<sup>4</sup> Selection of households should be based on a sampling plan.

<sup>5</sup> 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.

<sup>6</sup> The question is to determine if the cookstove has been continuously used.

<sup>7</sup> 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.

- 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? <sup>8</sup>	Meals/week or month
Do you use any other stove? (ICS etc.) <sup>9</sup>	Yes/No

### 2.3.1. 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			Liters/month or year
Coal			kg/month or year
Electricity			kWh/month or year
Other fuels (explain)			

-----

<sup>8</sup> The question is to determine if the baseline stove is being used to account for project emissions.

<sup>9</sup> 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.

### Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
09.0	31 August 2018	EB 100, Annex 10 Revision to include simplified provision for automatic additionality (if market penetration is less than or equal to 5 percent).
08.0	1 November 2017	EB 97, Annex 10 Revision to: <ul style="list-style-type: none"> <li>• Allow inclusion of bio-ethanol for cookstoves;</li> <li>• Include an example survey form;</li> <li>• Refer to the “TOOL30: Calculation of the fraction of non-renewable biomass”.</li> </ul>
07.0	22 July 2016	EB 90, Annex 12 Revision to: <ul style="list-style-type: none"> <li>• Include the default values for baseline fuel wood consumption per person;</li> <li>• Include the procedures to quantify baseline woody biomass consumption for the entire household and;</li> <li>• Introduce the monitoring table.</li> </ul>
06.0	28 November 2014	EB 81, Annex 25 The revision: <ul style="list-style-type: none"> <li>• Introduces the “TOOL16: Project and leakage emissions from biomass”, streamlines biomass cultivation procedures across small and large scale methodologies;</li> <li>• Removes restrictions for application in a PoA.</li> </ul>
05.0	20 July 2012	EB 68, Annex 22 Includes: <ul style="list-style-type: none"> <li>• A reference to the available country specific default values for fNRB;</li> <li>• A default biogas generation rate for regions/countries where annual average ambient temperature is higher than 20°C; and</li> </ul> Specifies: <ul style="list-style-type: none"> <li>• The requirements of using national or local fNRB values for CPAs under a PoA.</li> </ul>
04.0	15 April 2011	EB 60, Annex 20 Requirements for leakage estimation simplified, default net gross adjustment factor is included as an option to account for any leakages, emission factor for the projected fossil fuel revised, more options for sampling and survey included.
03.0	17 September 2010	EB 56, Annex 17 To expand the applicability to renewable energy water treatment technologies.

AMS-I.E.

Small-scale Methodology: Switch from non-renewable biomass for thermal applications by the user

Version 09.0

Sectoral scope(s): 01

---

<i>Version</i>	<i>Date</i>	<i>Description</i>
02.0	26 March 2010	EB 53, Annex 18 To include the changes below which are consistent with the changes to AMS-II.G. approved by the Board at its fifty-first meeting: <ul style="list-style-type: none"><li>• Further clarification on the eligible technology/measures;</li><li>• Default efficiency factors for baseline cookstoves;</li><li>• Procedures for sampling;</li><li>• Revised procedures for quantity of woody biomass that can be considered as non-renewable; and</li><li>• Clarifications as to which leakage requirements are appropriate for projects versus PoAs.</li></ul>
01.0	1 February 2008	EB 37, Annex 6 Initial adoption.

---

Decision Class: Regulatory

Document Type: Standard

Business Function: Methodology

Keywords: biomass, simplified methodologies, thermal energy production, type (i) projects

---