



## CDM: Recommendation form for Small Scale Methodologies (Version 01.1)

*(To be used for presenting questions/proposals/amendments to the simplified methodologies for small-scale CDM project activity categories)*

<b>Date of SSC WG meeting:</b>	16–19 April 2013, SSC WG 40
<b>Title/Subject (give a small title or specify the subject of your submission, maximum 200 characters):</b>	Revision of calculations to include multiple types of cook stoves under AMS-II.G
<b>Indicative methodology to which your submission relates</b> <i>(refer the items of Appendix B of the Simplified Modalities and Procedures), if applicable:</i>	AMS-II.G “Energy efficiency measures in thermal applications of non-renewable biomass”
<b>Name of the authors of the query:</b>	Stephen Stewart Institution: Cool nrg International <a href="mailto:stephen@coolnrg.com">stephen@coolnrg.com</a>

### **Summary of the query:**

Please use the space below to summarize the query related to SSC methodologies/categories SSC Modalities and Procedures provide recommendation/analysis of the SSC WG.

Original text from Stakeholder:

#### **1. Revision of paragraph 13 in relation to the calculation of $B_{old}$**

Paragraph 13(a) of AMS-II.G Version 5.0 states that  $B_{old}$  is determined as follows:

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

Using the above approach would give the amount of woody biomass used in the absence of the project activity for all devices combined.

However, the parameter  $B_{old}$  is otherwise defined as:

*“Quantity of woody biomass used in the absence of the project activity in tonnes per device”*

Multiplying by the number of operational project devices is incorporated into paragraph 11, equation 1 of AMS-II.G Version 5.0 (using the parameter  $N_{y,i}$ ), therefore it is suggested through this submission that paragraph 13(a) of AMS-II.G is revised to:

*“Calculated as the estimated average annual consumption of woody biomass per device (tonnes/year). This may be derived from historical data or a survey of local usage”*

#### **2. Revision of calculations in order to include multiple types of different cook stoves in a CPA**

In some instances, it may be necessary to distribute more than one type of cook stove per household to replace the baseline device in a CPA. For example, in Ethiopia, full replacement of the baseline stove (three stone fire) would require the implementation of two project cook stoves; one Mirt stove and one Tikikil stove (for the purposes of this example). The Mirt stove has a large flat cooking surface that is suitable for cooking Injera, a traditional type of pancake-like thin bread (please refer to the attached GIZ-ECO report for the Mirt stove titled ‘GIZ\_HERA\_2012\_Mirt\_stove.pdf’ for further information). The Tikikil stove is a rocket stove that is suitable for cooking or boiling water within a pot (please refer to the attached GIZ-ECO report for the Tikikil stove titled ‘GIZ\_HERA\_2012\_Tikikil\_Stove\_ET.pdf’ for further information). The two project stoves meet different cooking style requirements and therefore would both be required to ensure that the use of the

baseline stove can be discontinued. For example, cooking in a pot on a Mirt stove is not ideal (as it would be very inefficient), and baking Injera on a Tikikil rocket stove is not possible due to the large flat surface area required.

In addition, due to the nature of the different stove types and cooking styles, the Controlled Cooking Test (CCT) is appropriate for the Mirt stove (giving specific fuel consumption or fuel consumption rate) and the Water Boiling Test (WBT) is appropriate for the Tikikil stove (giving thermal efficiency). Where different types of tests are required for different cook stoves (i.e. KPT, WBT or CCT), it is not possible to calculate a weighted average value for the purposes of calculating  $B_{y,savings}$ .

We propose that the following equations should be used to calculate emissions reductions so that multiple cook stove types requiring different types of tests may be implemented as outlined in the above scenario:

$$ER_y = \sum ER_{y,i} \quad \text{Equation (1)}$$

Where:

$ER_y$  = Emission reductions during the year  $y$  in t CO<sub>2</sub>e

$ER_{y,i}$  = Emission reductions by project device of type  $i$  during year  $y$  in t CO<sub>2</sub>e

Where:

$ER_{y,i}$  = Emission reductions by project device of type  $i$  during year  $y$  in t CO<sub>2</sub>e

$B_{y,savings,i}$  = Quantity of woody biomass that is saved in tonnes per device of type  $i$  in year  $y$

$f_{NRB,y}$  = Fraction of woody biomass saved by the project activity in year  $y$  that can be established as non-renewable biomass using survey methods or government data or default country specific fraction of non-renewable woody biomass (fNRB) values available on the CDM website

$NCV_{biomass}$  = Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.015 TJ/tonne, wet basis)

$EF_{projected\_fossilfuel}$  = Emission factor for the substitution of non-renewable woody biomass by similar consumers. Use a value of 81.6 t CO<sub>2</sub>/TJ

$N_{y,i}$  = Number of project devices of type  $i$  operating in year  $y$ , determined as per paragraph 22

$B_{y,savings,i}$  is estimated using one the following methods:

Option 1:

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

Where:

$B_{old,i}$  = Quantity of woody biomass used in the absence of the project activity in tonnes per device of type  $i$

$B_{y,new,i,KPT}$  = Annual quantity of woody biomass used in year  $y$  in tonnes per device of type  $i$ , measured as per the Kitchen Performance Test (KPT) protocol. The KPT should be carried out in accordance with national standards (if available) or international standards or guidelines (e.g. the KPT procedures specified by the Partnership for Clean Indoor Air (PCIA) <<http://www.pciaonline.org/node/1049>>

Option 2:

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

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

Where:

$B_{old,i}$	=	Quantity of woody biomass used in the absence of the project activity in tonnes per device of type $i$
$B_{y,new,i,survey}$	=	Annual quantity of woody biomass used during the project activity in tonnes per device of type $i$ , determined through a survey
$\eta_{old}$	=	<ol style="list-style-type: none"> <li>1. Efficiency of the device being replaced (fraction); measured using representative sampling methods or based on referenced literature values. Use weighted average values if more than one type of device is being replaced;</li> <li>2. A default value of 0.10 may be optionally used if the replaced device is a three stone fire, or a conventional device with no improved combustion air supply or flue gas ventilation, that is without a grate or a chimney; for other types of devices, a default value of 0.2 may be optionally used</li> </ol>
$\eta_{new,i,y}$	=	Efficiency of the device of type $i$ being deployed as part of the project activity (fraction), as determined annually using the water boiling test (WBT) protocol carried out in accordance with national standards (if available) or international standards or guidelines. Use weighted average values if more than one type of system is being introduced by the project activity

Option 3:

$$B_{y,savings,i} = B_{old,i} \times \left(1 - \frac{SC_{new,i,y}}{SC_{old}}\right) \quad \text{Equation (5)}$$

Where:

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

### 3. Minor revisions

A number of additional minor revisions have been made in the draft methodology attached:

- Equation numbers updated
- Text revisions for clarity in relation to parameter names and descriptions that include device of type  $i$
- Minor revision to text of paragraphs 15, 17, 24, 28, 30, 31 for clarity

Please note that all of the above suggested revisions have been made in the attached draft methodology and highlighted appropriately.

### **Recommendation by the SSC WG:**

Please use the space below to provide amendments / change (in your expert view, if necessary).

Please refer to paragraph 25(a), annex 5 of the meeting report of the SSC WG 40  
<[http://cdm.unfccc.int/Panels/ssc\\_wg](http://cdm.unfccc.int/Panels/ssc_wg)>.

### **Answer to authors of query by the SSC WG:**

Please use the space below to provide answer to the authors of the above query.

The small-scale working group (SSC WG) of the CDM Executive Board would like to thank the author for the submission.

#### Revision of paragraph 13 in relation to the calculation of $B_{old}$

The SSC WG noted that there is scope for further defining  $B_{old}$ , as to whether it referred to the woody biomass consumed (in the absence of the project) *per device* or *in total*. The SSC WG agreed to recommend to amend paragraph 13(a) of AMS-II.G, so that it reads as "Calculated as the estimated average annual consumption of woody biomass per device (tonnes/year). This may be derived from historical data or a survey of local usage".

#### Revision of calculations in order to include multiple types of different cook stoves in a CPA

The SSC WG agreed to clarify that if more than one different project cook stoves is necessary to replace the pre-project cook stoves, woody biomass consumption should be calculated *per device*, but it agreed not to propose revision to the formula of the methodology at this meeting. The project proponents should demonstrate their proposed procedure for calculating the woody biomass consumption for multiple types of cook stoves to a validating DOE. The SSC WG also agreed to continue to consider a revision of the methodology in broad based consultation with stakeholders, with a view to providing more detailed guidance on the determination of the quantity of woody biomass consumed, under various circumstances (e.g. when cook stoves are installed in a phased manner, pre-project stoves continue to be used, etc.).

#### Minor revisions

The SSC WG appreciates the suggested modifications to the methodology of AMS-II.G. Since these are rather minor editorial revisions, the SSC WG agreed to incorporate them in a future recommendation of revision to the methodology.

Signature of SSC WG Chair: Mr. Martin Cames

Date: 19/04/2013

Signature of SSC WG Vice-Chair: Mr. Washington Zhakata

Date: 19/04/2013

### **SECTION TO BE FILLED IN BY THE UNFCCC SECRETARIAT**

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## History of the document

Version	Date	Nature of revision(s)
01.1	12 April 2012	Editorial changes to include new logo and other improvements.
01.0	2005	Initial publication.
<b>Decision Class:</b> Regulatory <b>Document Type:</b> Form <b>Business Function:</b> Methodology		