CLEAN DEVELOPMENT MECHANISM

CDM-SSCWG42-A05

Information note

Rationale for default factors used in AMS-I.E and AMS-II.G

Version 01.0

DRAFT

United Nations
Framework Convention on
Climate Change

COVER NOTE

1. Procedural background

1. In consideration of the request for revision and the top-down work undertaken to improve the methodological standards, the small-scale working group (SSC WG) recommended that the Executive Board (hereinafter referred to as the Board) of the clean development mechanism (CDM) launch a call for public input on the draft revisions of the "AMS-II.G: Energy efficiency measures in thermal applications of non-renewable biomass" (see SSC WG 42 report, annex 4).

2. The draft revision is based on the submission requests "SSC_684: Revision of AMS-II.G concerning sample size requirements for thermal efficiency testing", "SSC_695: Clarification on thermal efficiency monitoring requirements under AMS-II.G (versions 3.0, 4.0 and 5.0)" and other approved clarifications as well as the on-going top-down work on the revision of the methodology taking into account feedback received in response to a call for public input launched at EB 73. The draft revision proposed default values for baseline wood fuel consumption.

2. Purpose

3. The purpose of this document is to provide the rationale and justification for default values for baseline fuel wood consumption.

3. Key issues and proposed solutions

4. The data in project design documents (PDDs) on fuel wood consumption shows significant variation among regions, which makes the use of regional default values very challenging. Bearing in mind the conservative nature of the default values, the SSC WG agreed to recommend 0.50 tonnes/capita/year as a default value. Project proponents have an option to use the proposed conservative default value or determine project specific values by undertaking a study in the project region as prescribed in the methodology. Therefore, the default value is not mandatory to apply.

4. Impacts

5. The default value for baseline fuel wood consumption will facilitate the implementation of CDM project activities and component project activities (CPAs) distributing efficient cook stoves, which are very relevant for the least developed countries (LDCs) and other regions that are underrepresented in the CDM.

5. Subsequent work and timelines

6. The SSC WG recommended that the Board launch a call for public input on the draft revision of the "AMS-II.G: Energy efficiency measures in thermal applications of non-renewable biomass". After receiving public inputs on the document, the SSC WG will continue working on the revision of the approved methodology, at its 43rd meeting, for recommendation to the Board.

6. Recommendations to the Board

7. Not applicable.

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1. Introduction

1. This document provides the rationale and justification for default values for baseline woody biomass consumption in the draft revised methodology "AMS-I.E: Switch from Non-Renewable Biomass for Thermal Applications by the User" (version 5.0)[1] and "AMS-II.G: Energy efficiency measures in thermal applications of non-renewable biomass" (version 5.0) (see SSC WG 42 report, annex 4).

2. The proposed default values can be used to determine B_y (i.e. quantity of woody biomass that is substituted or displaced in tonnes under for AMS-I.E) and $B_{old,i}$ (i.e. quantity of woody biomass used in the absence of the project activity in tonnes under AMS-II.G).

3. A call for public inputs was open from 30 September 2011 to 30 October 2011 on the standardized approaches for simplifying baseline emission calculations in AMS-I.E and AMS-II.G and in total five public submissions were received from stakeholders. The public comments on this particular issue are summarized in appendix 1.

2. Analysis and recommendation

4. **Project design document (PDD) review**: a review of 57 CDM PDDs and CPA-DDs was undertaken. From the values reported in 57 PDDs, average regional values were calculated as shown in table 1. Average value for Asia is 3.73 tons/hh-year with standard deviation (SD) of 1.80, Africa is 5.15 tons/hh-year with standard deviation (SD) of 1.70, and Latin America is 6.18 tons/hh-year with standard deviation (SD) of 2.12. The amount of charcoal used is also included in the calculated values through a conversion factor of 6.0.

Table 1. Average value by region in PDDs

Region	Average	Standard Deviation
Africa	5.15	1.70
Asia	3.73	1.80
Latin America	6.18	2.12

5. **Literature review:** publicly available sources from the United Nationals Environment Programme (UNEP) and the Food and Agriculture Organization (FAO) show an average value for Asia of 0.34 to 0.59 tonne/capita/year, for Africa 0.51 to 0.70 tonne/capita/year and for Latin America 0.34 to 0.61 tonne/capita/year as shown in table 2. Both UNEP and FAO reports provided the values in terms of m^3/person year. In order to compare between PDDs and literature, volume was converted to mass using an estimated bulk density of wood; this conversion introduces a source of uncertainty, as the density of wood is not constant across species and geographic areas. The 0.50 tons/m^3 of wood density was used, as reported in IPCC report to convert from the volume in (m^3) given in the literature to tonnes.

[1] Once the proposed default value is adopted by the CDM Executive Board for the revised methodology AMS-II.G, the revision of AMS-I.E will also be recommended at a future meeting of the SSC WG.

Table 2. Values in literature

Africa					
Region	**tonnes/capita/year**		**m^3/capita/year**		**Source**
West Sahelian Africa (WSA)	0.34		0.68		UNEP Wood Energy in Africa
East Sahelian Africa (ESA)	0.50		1.00		UNEP Wood Energy in Africa
West Moist Africa (WMA)	0.53		1.07		UNEP Wood Energy in Africa
Central Africa (CA)	0.51		1.02		UNEP Wood Energy in Africa
Tropical Southern Africa (TSA)	0.69		1.38		UNEP Wood Energy in Africa
Insular East Africa (IEA)	0.42		0.84		UNEP Wood Energy in Africa
North Africa (NA)	0.08		0.17		UNEP Wood Energy in Africa
Non Tropical Southern Africa	0.52		1.05		UNEP Wood Energy in Africa
Arid and sub-arid Africa	0.25	0.25	0.50	0.50	FAO Wood Fuel Survey
Savanna area	0.50	0.75	1.00	1.50	FAO Wood Fuel Survey
High Forest Areas	0.60	0.85	1.20	1.70	FAO Wood Fuel Survey
Mountanous Areas	0.70	0.95	1.40	1.90	FAO Wood Fuel Survey
Africa Average	**0.51**	**0.70**	**1.03**	**1.40**	
Asia					
Region	**tonnes/capita/year**		**m^3/capita/year**		**Source**
Indo-Gangetic plains	0.10	0.35	0.20	0.70	FAO Wood Fuel Survey
Lowland areas, S.E. Asia	0.15	0.45	0.30	0.90	FAO Wood Fuel Survey
High forest areas	0.45	0.65	0.90	1.30	FAO Wood Fuel Survey
Mountainous areas	0.65	0.90	1.30	1.80	FAO Wood Fuel Survey
Asia Average	**0.34**	**0.59**	**0.68**	**1.18**	
Asia					
Region	**tonnes/capita/year**		**m^3/capita/year**		**Source**
Andean plateau	0.48	0.80	0.95	1.60	FAO Wood Fuel Survey
Arid areas	0.30	0.45	0.60	0.90	FAO Wood Fuel Survey
Semi-arid areas	0.35	0.60	0.70	1.20	FAO Wood Fuel Survey

Africa					
Other	0.25	0.60	0.50	1.20	FAO Wood Fuel Survey
Latin America Average	**0.34**	**0.61**	**0.69**	**1.23**	

Sources:

(a) Wood Energy in Africa, UNEP 1994: <http://www.unep.org/training/programmes/Instructor%20Version/Part_2/Activities/Innovations_and_Technology/Energy/Supplemental/Wood_Energy_in_Africa.pdf>;

(b) Wood Fuel Survey, FAO 1983: <http://www.fao.org/docrep/Q1085E/q1085e04.htm>;

(c) Wood density is assumed to be 0.50 tonnes/m3, as reported in IPCC: <http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-chapter9.pdf>.

6. **Minimum service level for energy required for cooking:** the need for energy per capita for cooking is primarily met by burning roughly one half tonne per person per year of firewood in open fires (UNDP, UN Millennium Project, and World Bank, 2006). The methodology sets a minimum service level for energy for cooking at 0.5 tonnes per capita per year.

Sources:

(a) Modi, V., S. McDade, D. Lallement, and J. Saghir. 2006. Energy and the Millennium Development Goals. New York: Energy Sector Management Assistance Programme, United Nations Development Programme, UN Millennium Project, and World Bank: <http://www.unmillenniumproject.org/documents/MP_Energy_Low_Res.pdf>.

7. To compare the values reported in PDDs and literature, average household size is derived from the Population Council Report available at: <http://www.popcouncil.org/pdfs/wp/144.pdf>. See table 3 below.

Table 3. Average size of residential family units by region

Asia	Latin America	Near East/ North Africa	Sub-Saharan Africa
5.14	4.76	5.65	5.25

8. Based on the analysis above, the SSC WG noted that:

(a) Taking into account the average household size, the values reported in PDDs seem to be comparable to ones in literature;

(b) There is significant regional variation in the data reported in PDDs on fuel wood consumption, which makes the use of regional default values very challenging;

(c) While the regional values are generally preferred by stakeholders, it is challenging to provide definition of regions, in particular for vegetation zones.

9. Therefore, bearing in mind the conservative nature of the default values, the SSC WG agreed to recommend 0.50 tonnes/capita/year as a default value for woody biomass consumption to be included in AMS-I.E and AMS-II.G.

10. Project proponents have an option to use the proposed conservative default value or determine project specific values by undertaking a study in the project region as prescribed in the methodology. Therefore, the default value is not mandatory to apply.

Appendix 1. Summary of public comments on "Standardized approaches for baseline emission calculations under SSC CDM methodologies for displacement of non-renewable biomass"

Table 1. Issues raised regarding appropriateness of default values for wood fuel consumption

Issue	Public comments
[1] PD Forum	The availability of default values for baseline fuelwood consumption reduces the upfront costs for developing CDM projects of these types. However, it should always be possible for developers to determine more accurate values if they chose to do so.
[1] PD Forum	The default for North Africa seems particularly low, and we question whether the number is correctly reflecting the average consumption of households that use fuelwood, or the average consumption of fuelwood per household, including households using different fuels. While the other African regions have high shares of households using wood as their main fuel, this share is much lower in North Africa.
[3] Climate Experts	We appreciate SSC WG's effort to prepare the default value. This makes the project activities to be implemented much easier. I really wish the CDM EB's decision as soon as possible.

Table 2. Issues raised regarding level of aggregation of defaults for wood fuel consumption

Issue	Public comments
[1] PD Forum	The PD Forum believes that the aggregate regional level is appropriate, while more local values may also be used where these are available, for example if values are published by DNAs. The availability of a default value could allow project developers to estimate the emission reductions ex-ante using the defaults, therefore avoiding upfront costs, even if more accurate data is obtained using surveys during the project operation as part of the monitoring.

Issue	Public comments
[2] Atmosfair	Providing default woodfuel consumption values aggregated at regional level which are determined by applying vegetation zones is practical. However PPs need to demonstrate which country or province belongs to which region. There is a high likelihood that PPs and DOEs would not agree on this definition which would result in further delays and costs which is taking away some of the advantages of a default baseline parameter. We therefore suggest that an expert panel is commissioned by the EB to determine which country/province/region belongs to which region.
[2] Atmosfair	It is also not clear from the values provided if the woodfuel consumption is determined by only considering woodfuel users in the region or if the woodfuel consumption is an average including all people and households in the region. If none woodfuel users are included it results in unrealistic figures especially for regions where a considerable number of households are not using woodfuel for cooking purposes. Furthermore it's not clear if charcoal consumption is also considered which would be accurate. It was also noted that a large number of regions are defined for Africa whereas Asia and Latin America only have little defined regions.
[5] World Bank	The wood fuel consumption reported at a regional level noted in table 1, annex 8 of 33rd meeting report of the SSC WG could be adopted as a default. The forest resource assessment of FAO could collate fuelwood consumption at regional, national and sub-national levels, which could be used as default fuelwood consumption for projects and programs under CDM. In situations where fuelwood consumption is reported at sub-national level (i.e. administrative boundaries of states or provinces or agro-ecological zones), it could be permitted as it reflects the consumption pertinent to the sub national/local levels. For example, the World Bank Living Standard Measurement Surveys (LSMS) and national socioeconomic surveys report household fuelwood consumption at sub-national/local levels.

Table 3. Issues raised regarding frequency of update of wood fuel consumption

Issue	Public comments
[1] PD Forum	The quantity of fuelwood consumption by households will be relatively stable, as it is primarily dependent on cooking and eating habits of the population which do not change quickly. Volumes of fuelwood used per household are probably the same today as 20 or 30 years ago in most regions. However, quantities may be affected by economic growth and penetration of higher efficiency utilisation technologies. Economic growth will lead to some households switching to different technologies and fuels. Penetration of higher-efficient utilisation technologies is led by both the implementation of CDM projects and potentially by households becoming more affluent and able to afford more efficient and better stoves. Updates of the default values are unlikely to be required more than once every crediting period.
[2] Atmosfair	Woodfuel consumption is a parameter which should be determined ex-ante for each project or programme. Updates of the default value are therefore only deemed necessary at renewal of the crediting period. However, the default woodfuel consumption values provided in the methodology should be updated regularly by the EB and there should be a procedure to allow PPs to trigger an update or at least to alert the EB that new data is available which would justify an update of the default values.
[3] Climate Experts	For the frequency for updating, we can set it as long as 10 years. Reasons: (a) The fuelwood is used for cooking purpose mainly. The energy use for cooking does not changed over time if the fuelwood is conventionally used; (b) It shall be noted that the CDM project activities target the rural household which utilized fuelwood conventionally. New technologies such as ICS (improved cookstove), biogas and other fossil fuel users are not targeted by the CDM project activities (for improvement of efficiency or fuel switch). Therefore, the statistics shall not be for whole of them but focusing on households with conventional use of fuelwood only.
[5] World Bank	It would be useful to have similar frequency of update of the default fuelwood consumption values as that of the FAO forest inventory and assessment and reporting. In this context, the 5 to 10 year updates of wood fuel consumption published by FAO/IEA or other relevant organization could be adopted.

Appendix 2. Compilation on PDD values

Table 1. Africa

Title	Host parties	tons/hh/year
Renewable biomass fired improved cookstoves programme for households in Burundi by BQS	Burundi	5.93
Congo (DRC) Improved Cook Stoves program	Congo	4.59
Côte d'Ivoire and Cameroon Efficient Cookstoves Program	Côte d`Ivoire	5.78
African Improved Cooking Stoves Programme of Activities	Ghana	4.36
Efficient Cook Stove Programme: Kenya	Kenya	3.98
Kenya Improved woodstoves project	Kenya	4.80
African Clean Energy Switch – Biogas (ACES-Biogas)	Kenya	4.51
Improved Cooking Stoves Programme of Activities in Africa	Kenya	3.56
SimGas Biogas Programme of Activities	Kenya	6.07
Top Third Ventures Stove Programme	Kenya	3.58
Promotion of Energy Efficient Cook Stoves within Southern African Development Community (SADC)	Malawi	2.34
Improved Cookstoves Program for Malawi and cross-border regions of Mozambique	Malawi Mozambique	4.75
Improved Cooking Stoves for Nigeria Programme of Activities	Nigeria	5.53
Distribution of fuel-efficient improved cooking stoves in Nigeria	Nigeria	5.28
Efficient Fuel Wood Stoves for Nigeria	Nigeria	4.65
Improved Cook Stoves programme for Rwanda	Rwanda	7.84
Efficient Cook Stove Programme: Rwanda	Rwanda	2.65
Heat Retention Cooking in Less Developed Countries	Rwanda	2.68
Distribution of Improved Cook Stoves in Sub-Saharan Africa	Senegal	5.06
CDM Africa Sustainable Energy Programme	Senegal	8.21
Energy Efficient Cook stoves in South Africa	South Africa	4.50
Promoting Efficient Stove Dissemination and Use in West Africa	Togo	10.06
Promoting Efficient Stove Dissemination and Use in West Africa	Togo	6.06

Title	Host parties	tons/hh/year
Improved Cook Stoves for East Africa (ICSEA)	Uganda	4.58
Efficient Cook Stove Programme: Uganda	Uganda	5.42
Up Energy Improved Cookstove Programme, Uganda	Uganda	5.75
Fuel Efficient Stoves in Zambia	Zambia	4.50
Improved Cookstoves Program for Zambia	Zambia	5.07
Fuel Efficient Stoves in Zambia	Zambia	4.10
CDM Lusaka Sustainable Energy Project 1	Zambia	8.23

Table 2. Asia

Title	Host parties	tons/hh/year
Improved Cooking Stoves in Bangladesh	Bangladesh	1.06
Biogas Utility Programme to Households by Grameen Shakti in Municipalities of Bangladesh	Bangladesh	1.60
Micro Hydro Power Plant Promotion Programme in Regions on the Upper Reaches of the Yangtze River, China	China	9.00
Sichuan Province Rural Efficient Biomass Cooking Stoves Programme Project	China	5.58
Methane abatement and household biogas utilization programme in India	India	1.51
Programme for replacement of traditional cookstoves with modern cookstoves in India	India	5.22
Improved Cook stoves Programme – India	India	2.77
SKG Sangha Biodigester PoA	India	4.82
National Programme for Improved Cookstoves in India	India	2.94
Biogas CDM Project of Bagepalli Coolie Sangha	India	3.07
Social Education and Development Society (SEDS) Biogas CDM project for the rural poor	India	3.37
Improved Cook Stoves CDM project of JSMBT	India	2.94
Improved Cook Stoves CDM project of SAMUHA	India	2.94
Kolar Biogas Project	India	4.74
Accion Fraterna Biogas CDM project for rural communities in Anantapur, Andhra Pradesh	India	3.57
Nepal Biogas Support Program-PoA	Nepal	6.40
Promotion of the Improved Cooking Stove (ICS) – Nepal	Nepal	4.23

Title	Host parties	tons/hh/year
Efficient Fuel Wood Cooking Stoves Project in Foothills and Plains of Central Region of Nepal	Nepal	2.70
Biogas Support Program - Nepal Activity-3	Nepal	3.35
Biogas Support Program - Nepal Activity-4	Nepal	3.32
Pakistan Domestic Biogas Programme-Programme of Activities	Pakistan	3.12

Table 3. Latin America

Title	Host Parties	tons/hh/year
“Turbococinas”, rural cooking stove substitution program in El Salvador	El Salvador	4.77
UpEnergy Open Access Improved Cookstoves Program in Latin America	El Salvador	3.56
Distribution of ONIL Stoves—Guatemala	Guatemala	6.64
Improved Cookstoves Program in Honduras “Vida Mejor con Ecofogones de Alto Rendimiento”	Honduras	7.15
Distribution of ONIL Stoves—Mexico	Mexico	5.33
Biogas Programme Nicaragua (PBN)	Nicaragua	9.61

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