IETA
INTERNATIONAL EMISSIONS TRADING ASSOCIATION

PROJECT DEVELOPER FORUM

Mr. Martin Hession, Chair and Members of the Executive Board
UNFCCC Secretariat
Martin-Luther-King-Strasse 8
D 53153 Bonn
Germany

Project Developer Forum Ltd.
100 New Bridge Street
UK London EC4V 6JA

International Emissions Trading Association
24, rue Merle d'Aubigné
CH-1207 Geneve
Switzerland

To cdm-info@unfccc.int
From KimCarnahan@ieta.org and Rachel.Child@pd-forum.net
Date 16 May 2011

Subject Call for public inputs: Expansion of the usability of the small scale methodology AMS-III.AV "Low greenhouse gas emitting water purification systems"

Dear Mr. Hession,

IETA and PDF have combined our comments for this call for input in this document. We welcome the development of this methodology and look forward to its approval. The principle of raising future emissions is acknowledged, default values are provided, choices for data/evidence provision are given and environmental integrity is preserved. Please find hereafter further suggestions for improvement based on the experience of our collective membership. Please note that we are not able to substantiate our arguments as much as we would like since a lack of data/evidence is the very reason for the need for such top-down methodologies in these underrepresented countries. This methodology constitutes a good compromise between efficiency and environmental integrity and we are sure it will soon lead to the issuance of CERs.

(i) Appropriateness of the maximum volume of purified water per person per day set at 5.5 liters in equation 1 of the methodology taking into account the baseline defined in the methodology, i.e. use of fossil fuel or non-renewable biomass for boiling water;

The use of the 5.5 liters per person per day cap for Case 2 projects is unreasonable. The same, uncapped amount of treated water needs to be allowed to get CERs in all countries and locations where there is a proven lack of access to improved drinking water sources, i.e. in both Case 1 and Case 2 situations.

For projects falling under case 1, the lack of access to safe drinking water is proven by (i) JMP data, (ii) other official data from government agencies or independent studies or (iii) survey methods. Case 2 only allows crediting of project population for which it can be demonstrated through documentation that the common practice of water purification is or would have been water boiling. In both cases, it is assumed (case 1) or proven (case 2) that the water would be boiled in the baseline. So there need not be any differentiation in the amount of water allowed to receive credits between the two scenarios. Thus the cap in case 2 needs to be eliminated.

(ii) Appropriateness of the threshold proportion of rural population using an improved drinking source specified in paragraph 4 of this methodology.

The proposed threshold of 50% of the rural population using an improved drinking-water source is unnecessarily conservative. With this threshold, the current list of countries that fall under Case 1, according to the JMP data (option i) is limited to only 20 countries (Table 1). Many other countries where there is a well known problem of access to improved drinking water sources are not on this list.

Table 1 Countries where 50% or less of rural population is served with improved water sources, according to JMP data from 2008

Country	Proportion of Rural population served with Improved Water (%)
Afghanistan	39.00
Angola	38.00
Democratic Republic of the Congo	28.00
Congo	34.00
Ethiopia	26.00
Gabon	41.00
Madagascar	29.00
Mali	44.00
Mongolia	49.00
Mozambique	29.00
Mauritania	47.00
Niger	39.00
Nigeria	42.00
Papua New Guinea	33.00
Sierra Leone	26.00
Somalia	9.00
Chad	44.00
Togo	41.00
United Republic of Tanzania	45.00
Zambia	46.00

We would like to suggest increasing the threshold to 60%, as it was proposed in the first draft of the methodology. This will enable the inclusion in case 1 of fifteen more countries, mostly LDCs (see table 2 below), with a recognized problem of access to safe drinking water. The expansion of this list will give greater confidence to investors as validation/registration risks are significantly lowered. One possibility may also be to pre-approve all LDCs on top of this list. Further, we propose to delete the word rural from the methodology as there are many cases where urban areas boil water too e.g. Kathmandu (where there actually is a public distribution system but the quality is perceived as insufficient), Favelas etc.

Note: Please do not confuse access to "improved drinking water source" with access to "safe drinking water in compliance with drinking water quality specified in a relevant national standard or guidelines": as an example, rain water is an improved drinking water source[1]. This is by no means a guarantee to eradicate water-borne diseases, whereas the project technology does exactly that (see paragraph 3.b). It is thus proposed to re-write para 4.a) as follows: "Case 1: Project activities implemented in LDCs or countries/regions with proportion of population using water in compliance with drinking water quality specified in a relevant national standard or guidelines equal to or less than 60% confirmed by one of the three options below:"

Table 2 Countries where 51-60% of rural population is served with improved water source, according to JMP data from 2008

Country	Proportion of Rural population served with Improved Water (%)
Central African Republic*	51.00
Cameroon	51.00
Djibouti*	52.00
Eritrea*	57.00
Guinea-Bissau*	51.00
Haiti*	55.00
Iraq	55.00
Kenya	52.00
Cambodia*	56.00
Lao People's Democratic Republic*	51.00
Liberia*	51.00
Morocco	60.00
Sudan*	52.00
Senegal*	52.00
Yemen*	57.00

* LDCs

(iii) Other issues:

Standardization of definitions and the applicability conditions

- The applicability condition 3 (a) requires that "prior to the implementation of the project activity, a public distribution network of safe drinking water does not exist within the

[1] In other words, the current definition reads: "An improved drinking-water source is defined as one that, by nature of its construction or through active intervention, is protected from outside contamination, in particular from contamination with faecal matter » (see http://www.wssinfo.org/definitions-methods/introduction/ and http://www.wssinfo.org/definitions-methods/watsan-categories/.

total project area". How to define project area? How to define accessibility? (In certain areas there is some form of distribution network but not to every household). Further, this condition contradicts the condition 4 (a), which allows the use of an improved drinking-water source by up to 50% of the rural population of a country. Finally, how to define safe drinking water? (Often, the authorities claim the water is safe to drink but effectively, people still boil. This is difficult to prove.) Therefore, the condition 3 (a) needs to be deleted. Environmental integrity is not harmed because – after all – people only use the CDM project's equipment if the alternatives are perceived to be worse, either in terms of time, money or water quality. As an example, although Kathmandu has a public distribution system, people still boil the water or buy bottled water if they can afford to. If left in, it would need to be clarified that the safe drinking water distribution network is in compliance with drinking water quality specified in a relevant national standard or guidelines and the access to it is possible/acceptable and the price is affordable.

- The applicability condition 3 (c) needs to be deleted as there will not be any more CERs if a project decides not to replace the equipment before the end of the crediting period i.e. the environmental integrity is preserved.
- As mentioned, we propose to delete "rural" from the methodology. However, if left in, the definition of rural areas in case 1 refers to WHO/UNICEF Joint Monitoring Programme for water supply and sanitation definitions (footnote 3). Firstly, it is not clear where to find this definition. Secondly, a definition by a relevant national agency has to be also accepted in options (ii) and (iii) to enable the use of existing statistics and studies.

Default factors for parameter $f_{NRB,y}$ *and* η_{wb}

We would like to encourage the secretariat to develop/commission the development of default values for as many countries as possible. Whenever surveys need to be conducted, transaction costs and validation/registration uncertainties for investors increase, especially in these countries where data availability is a huge challenge.

As an example, η_{wb} could be set at 0.25 for case 1 (based on World Bank efficient cook stove programs) and this value can be revisited by the small-scale panel every 3 to 5 years.

Default values for $f_{NRB,y}$ can be developed for example, based on the national statistics collected by Food and Agriculture Organization of the United Nations (FAO) within the Forest Resources Assessment Programme. Based on the definition provided in AMS-I.E., woody biomass is "renewable" if one of the following two conditions is satisfied:

1. The woody biomass is originating from land areas that are forests where:

   (a) The land area remains a forest;

(b) 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); and

(c) Any national or regional forestry and nature conservation regulations are complied with.

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

(a) The land area remains cropland and/or grasslands or is reverted to forest;

(b) 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); and

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

Based on the FAO statistics, it can be demonstrated that both conditions (a) and (b) are not satisfied for most African countries[2][3], meaning that all woody biomass used leads to deforestation and declining of carbon stock and thus is non-renewable.

To demonstrate a specific country example of Tanzania, both forest and other wooded land areas there have been declining and non-forest areas ("other land" category) have been increasing which proves that condition (a) in the definition of renewable woody biomass is not satisfied (Table 1):

Table 3 Forest and non-forest areas in Tanzania according to FRA 2010[4]

Categories	Area in 10^6 hectares			
	1995	2000	2005	2010
Forest	41.5	37.5	35.4	33.4
Other wooded land	18.2	14.9	13.3	11.6
Other land	28.9	36.2	39.9	43.5

[2] Global Forest Resources Assessment 2005, http://www.fao.org/forestry/32033/en/
[3] Global Forest Resources Assessment 2005, http://www.fao.org/forestry/32044/en/
[4] Global Forest Resources Assessment 2010, Country Report, United Republic of Tanzania (FRA 2010), p14 http://www.fao.org/docrep/013/al657E/al657E.pdf

Table 2 shows the declining trend in the carbon stocks, which proves that condition (b) in the definition of renewable biomass is not satisfied either.

Table 4 Carbon stock in Tanzania according to FRA 2010[5]

	Carbon (Million metric tonnes)							
	Forest				Other wooded land			
Year	1990	2000	2005	2010	1990	2000	2005	2010
Carbon in above ground biomass	2,020	1,824	1,725	1,628	770	630	558	491

For simplification and broadening of this methodology, as well as of the other methodologies involving the substitute of non-renewable woody biomass, we suggest to introduce a default value of $f_{NRB,y}$ = *100% for all countries where a consistent declining trend in forest and other wooded land area and in carbon stock can be demonstrated based on the latest FRA data.*

Leakage emissions

Leakage needs to be deleted; a hydro project for example does not need to confirm that an equal amount of electricity to that it produced has been reduced from fossil-fuel-fired power plants. On a separate note, this is a prime example of how perceived verification risk can discourage investments in the first place: the leakage procedure of AMS-I.E. adds a lot of uncertainty at a very late stage, when all of the investment and implementation work is already done.

We thank you again for your consideration of this input.

Yours sincerely,

Henry Derwent
President and CEO, IETA

Rachel Child
Co-vice Chairperson,
Project Developer Forum

[5] Ibid, p 35

Indicative simplified baseline and monitoring methodologies
for selected small-scale CDM project activity categories

TYPE III - OTHER PROJECT ACTIVITIES

Project participants shall apply the general guidelines to SSC CDM methodologies, information on additionality (attachment A to Appendix B) and general guidance on leakage in biomass project activities (attachment C to Appendix B) provided at <http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html> *mutatis mutandis*.

III.AV. Low greenhouse gas emitting water purification systems

Technology/measure

1. This methodology comprises introduction of low greenhouse gas emitting water purification systems to achieve water quality defined in a relevant national standard or guidelines for drinking water quality.[1]

2. Water purification technologies that involve point-of use (POU) or point-of-entry[2] treatment systems for residential or institutional applications such as systems installed at a school or a community centre are included. The examples include, but are not limited to water filters (e.g. sand, membrane, activated carbon, ceramic filters), solar energy powered UV (ultraviolet) disinfection devices, photocatalytic disinfection equipment, pasteurization appliances, etc.

3. The methodology is applicable under the following conditions:

(a) ~~Prior to the implementation of the project activity, a public distribution network of safe drinking water does not exist within the total project area and safe drinking water (SDW) if any is produced by the consumers by only using point-of-use or point of entry water purifiers. If during the crediting period SDW is made available in (parts of) a project area through a public distribution network, this methodology can not be applied anymore to this project area from that point in time and the emission reductions pertaining to this project area can not be claimed from that point onwards. This condition should be checked annually during the crediting period;~~

Note: If this para is left in, include ”in compliance with drinking water quality specified in a relevant national standards or guidelines1” after ”SDW...”.

(b) It shall be demonstrated that the application of the project technology/equipment achieves compliance with drinking water quality specified in a relevant national standards or guidelines;[1]

~~(c) In cases where the life span of the water treatment technologies is shorter than the crediting period of the project activity, there must be documented measures in~~

[1] In case a national standard/guideline for drinking water quality is not available, the standards/guidelines by the World Health Organization (WHO) or United States Environmental Protection Agency (US-EPA) shall be applied

[2] Point of Use (POU) devices treat only the water intended for direct consumption, typically at a single tap or limited number of taps, while Point of Entry (POE) treatment devices are typically installed to treat all water entering a single home, business, school, or facility (USEPA, 2006).

~~place to ensure that end users have access to replacement purification systems of comparable quality.~~

4. Applicability of this methodology is foreseen in the following types of situations that shall be reassessed at the beginning of each crediting period:

(a) Case 1: Project activities implemented in LDCs or ~~rural areas[3] of countries~~countries/regions with proportion of ~~rural~~ population using water in compliance with drinking water quality specified in a relevant national standard or guidelines ~~an improved drinking water source~~ equal to or less than 6~~5~~0% confirmed by one of the three options below:

(i) Proportion of populations using an improved drinking-water source for the most recent year for which data is available from WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation shall be used (<http://www.wssinfo.org/data-estimates/table/>) for this purpose. Definition of improved and unimproved drinking water source shall be as per the information provided by JMP;

(ii) Using official data such as publicly available statistical data from a government agency or an independently commissioned study by an international organization or an university;

(iii) Using survey methods (use 90/10 precision for sampling);

(b) Case 2: Project activities implemented in areas not included in case 1.

Boundary

5. The project boundary includes the physical, geographical sites of the low greenhouse gas emitting technologies for water purification installed by the project activity.

Baseline emissions

6. For a simplified and standardized approach it is assumed that fossil fuel or non-renewable biomass (NRB) is used to boil water as a mean of water purification in the absence of the project activity. The emissions are calculated based on the energy demand for boiling water, and in case of displacement of NRB the baseline emissions are corrected for the fraction of the biomass that can demonstrated to be non renewable. For case 1, it is assumed that all of the purified water produced and monitored during the project period is consumed for drinking purposes. For case 2, additional requirements are specified for the quantification of emission reductions.

7. The baseline emissions shall be calculated as follows:

$$\mathrm{BE}_y = QPW_y * \mathrm{SEC} * f_{NRB,y} * EF_{projected\_fossilfuel} * 10^{-9} \quad \textbf{(1)}$$

~~[3] As per the WHO/UNICEF Joint Monitoring Programme for water supply and sanitation definitions.~~

Indicative simplified baseline and monitoring methodologies
for selected small-scale CDM project activity categories

III.AV. Low greenhouse gas emitting water purification systems (cont)

Where:

BE_y	Baseline emissions during the year *y* in (tCO_2e)
QPW_y	Quantity of purified water in year *y* (litres) ~~For case 1 t~~The quantity of purified water is the total amount of water treated by the project activity in year *y*. ~~For case 2 the quantity of purified water is monitored, and the total amount is subject to a cap derived from the number of total project population for which it can be demonstrated through documentation that the common practice of water purification is or would have been water boiling multiplied by the maximum volume of drinking water per person per day, set at 5.5 litres[4] per person per day~~
SEC	Specific energy consumption required to boil one litre of water (kJ/L)
$f_{NRB,y}$	Fraction of woody biomass used in the absence of the project activity in year *y* that can be established as non renewable as per the relevant provisions of AMS-I.E "Switch from Non-Renewable Biomass for Thermal Applications by the User". If neither of the two conditions in AMS-I.E. are fulfilled or if the displaced fuel is fossil fuel use a default value of 1.0
$EF_{projected\_fossilfuel}$	Emission factor as per AMS-I.E procedures when NRB is displaced or the emission factor of the fossil fuel substituted (tCO_2/TJ)

8. Specific energy consumption required to boil one litre of water is to be calculated as follows:

$$SEC = \left[WH * (T_f - T_i) + 0.01 * WHE \right] / n_{wb} \quad \textbf{(2)}$$

Where:

WH	Specific heat of water (kJ/L ^oC) Use a default value of 4.186 kJ/L ^0C
T_f	Final temperature (^oC) Use a default value of 100 °C[5]

[4] ~~Based on WHO recommendations (Domestic Water Quantity, Service Level and Health, Table 2: Volumes of water required for hydration, WHO 2003).~~

[5] Boiling point of water at standard conditions.

T_i	Initial temperature of water (°C) Use annual Average ambient temperature;[6] or Use a default value of 20 °C
WHE	Latent heat of water evaporation (kJ/L) Use a default value of 2260 kJ/L The latent heat required to boil one litre of water for five minutes is assumed to be equivalent to latent heat for the evaporation of 1% of the water volume (WHO recommends a minimum duration of five minutes of water boiling)[7]
η_{wb}	Efficiency of the water boiling systems being replaced Use one of the options below: 1. The efficiency of the water boiling system shall be established using representative sampling methods or based on referenced literature values (fraction), use weighted average values if more than one type of systems are encountered. Default value: 0.25 (to be reassessed by the SSC working group by 2014-12-31); 2. 0.10 default value may be optionally used if the replaced system or the system that would have been used is a three stone fire or a conventional system for woody biomass lacking improved combustion air supply mechanism and flue gas ventilation system i.e. without a grate as well as a chimney; for the rest of the systems using woody biomass 0.2 default value may be optionally used

Project emissions

9. If the operation of the project water purification system involves consumption of fossil fuels and/or electricity, project emissions include:

- CO_2 emissions from on-site consumption of fossil fuels due to the project activity shall be calculated using the latest version of the tool "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion";
- CO_2 emissions from electricity consumption by the project activity using the latest version of the tool "Tool to calculate baseline, project and/or leakage emissions from electricity consumption".

[6] Ambient temperature data must be from globally accepted data sources, e.g. data published by the National Aeronautics and Space Administration (NASA) or the National Renewable Energy Laboratory (NREL). Data can be used only if they are for a location that can be demonstrated to be representative of the project location.

[7] WHO guidelines for Emergency Treatment of drinking water at point of the use <http://www.searo.who.int/LinkFiles/List_of_Guidelines_for_Health_Emergency_Emergency_treatment_of_drinking_water.pdf>.

Indicative simplified baseline and monitoring methodologies
for selected small-scale CDM project activity categories

III.AV. Low greenhouse gas emitting water purification systems (cont)

~~**Leakage emissions**~~

10. ~~Where relevant leakage relating to the non-renewable woody biomass shall be assessed as per the relevant procedures of AMS-I.E.~~

Monitoring

11. Monitoring shall consist of checking of all appliances or a representative sample thereof, at least once every two years (biennial) to ensure that they are still operating or are replaced by an equivalent in service appliance as per the relevant sampling requirements of AMS-I.E.

12. The quantity of purified water in year *y* shall be monitored as per the following options:

(a) On continuous basis or a representative sample thereof;

(b) Derived from the capacity of the equipment established by manufacturers' specifications and the number of functional project appliances as per paragraph 11.

13. Monitoring shall include annual check if a public distribution network is installed.

14. For case 2 in paragraph 4 the total project population in year *y* shall be established using survey methods.

15. The water quality monitoring on sample basis as per paragraph 1.

16. The total fuel and electricity consumption in year *y* shall be monitored as per the relevant provisions of the tool "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" and the tool "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" respectively.

Project activity under a Programme of Activities

17. ~~The use of this methodology in a project of activity under a programme of activities is legitimate if the leakage is estimated and accounted for as per the relevant provisions of AMS-I.E under the section for Programme of Activities.~~No specific requirements.

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History of the document

Version	Date	Nature of revision
01	EB 60, Annex 19 15 April 2011	Initial adoption.
Decision Class: Regulatory **Document Type**: Standard **Business Function**: Methodology		