TOOL30

Methodological tool

Calculation of the fraction of non-renewable biomass

Version 01.0

United Nations
Framework Convention on
Climate Change

TABLE OF CONTENTS **Page**

1. Introduction

1. The methodological tool determines fraction of woody biomass that can be established as non-renewable biomass (fNRB).

2. Scope, applicability, and entry into force

2.1. Scope

2. This tool provides guidance and a step-wise procedure/method to calculate values of fNRB. The tool may be applied when calculating baseline emissions in applicable methodologies (e.g. AMS-I.E, AMS-II.G, AMS-III.Z, AMS-III.AV) for a project activity or a Programmes of Activities (PoA) that displaces the use of non-renewable biomass.

2.2. Applicability

3. This tool may be used by:

    (a)   DNAs to submit region/country-specific default fNRB values, following the procedures for development, revision, clarification and update of standardized baselines (SB procedures); or

    (b)   project proponents to calculate project or PoA-specific fNRB values.

4. For the case in paragraph 3 (a), DNAs shall provide justifications on the selected geographical disaggregation.

5. For the case in paragraph 3 (b), project proponents shall consider the area where biomass is sourced and justify the selection of the area in CDM project design documents.

2.3. Entry into force

6. The date of entry into force is the date of the publication of the EB 97 meeting report on 1 November 2017.

3. Normative references

7. This methodology refers to the CDM methodological tool "Project and leakage emissions from biomass".

4. Procedure

8. The shares of renewable and non-renewable woody biomass in the quantity of woody biomass consumption shall be determined following the steps described below. Alternatively, a conservative default fNRB value of 0.3 may be used.

9. The fraction of woody biomass that can be established as non-renewable, is:

$$fNRB = \frac{NRB}{NRB + RB} \qquad\qquad \text{Equation (1)}$$

Where:

fNRB	=	Fraction of non-renewable biomass (fraction or %)
NRB	=	Quantity of non-renewable biomass (t/yr) determined as per paragraphs 10 and 11 below
RB	=	Quantity of renewable biomass determined as per section 4.2 below (t/yr)

10. On a country- or region-specific basis, quantity of NRB shall be determined by calculating the total consumption of wood (H) in the country or region and then deducting the quantity of renewable biomass (RB) from it.

$$NRB = H - RB \qquad \text{Equation (2)}$$

Where:

H	=	Total annual consumption of wood in the absence of the project activity, determined as per section 4.1 below (t/yr)

11. On a project-specific basis, a value of fNRB can be derived by calculating the total woody biomass consumption used in the absence of the project activity ($B_{old,total}$) and estimating the potential supply of renewable biomass (RB).

$$NRB = B_{old,total} - RB \qquad \text{Equation (3)}$$

Where:

$B_{old,\,total}$	=	Total annual consumption of wood in the project area in the absence of the project activity, as determined using the step wise procedure provided in the section 4.1 below (t/yr)

4.1. Procedure to estimate consumption of woody biomass (H and $_{Bold,total}$)

12. Estimate the overall consumption for woody biomass, using one of the following options:

    (a) Official statistics or reports or peer-reviewed literature;

    (b) Based on the number of households and other consumers of woody biomass in the country or region (H) or project area ($B_{old,total}$) as per the procedure in paragraph 13.

13. H is calculated using equation (4), accounting for all consumptions within the country/region (not only woodfuel but also timber and industrial consumption).

$$H = HW_{region} \times N_{region} + TI_{region} \qquad \text{Equation (4)}$$

Where:

HW_{region}	=	Average household woodfuel consumption, including fuelwood and charcoal as per paragraph 15 below (t/yr/household)

TI_{region}	=	Non-domestic wood consumption for energy applications (e.g. commercial, industrial or institutional uses of wood in ovens, boilers etc.) and all wood consumption for non-energy applications (e.g. construction, furniture) that are extracted from forests or land areas in the country/region for which the estimate of fNRB is to be made (t/yr)[1]
N_{region}	=	Number of households consuming woodfuel for thermal applications within the country/region (households)[1]

14.   Similarly, $B_{old,total}$ is estimated using equation (5), based on the overall wood consumption in the area where the project is proposed.

$$B_{old,total} = HW_{project} \times N_{project} + TI_{project}$$ Equation (5)

Where:

$HW_{project}$	=	Average household woodfuel consumption, including fuelwood and charcoal in the project area, as per paragraph 15 below (t/yr/household)
$TI_{project}$	=	Non-domestic wood consumption (e.g. commercial, industrial or institutional uses of wood either as energy sources (ovens, boilers, etc.) and all wood consumption for non-energy applications (construction, furniture, etc.) that are extracted from forests or land areas in the project area for which the estimate of fNRB is to be made (t/yr)[2]
$N_{project}$	=	Number of households consuming woodfuel for thermal applications within the project area (households)[2]

15.   Average household consumption of woody biomass (HW_{region} and $HW_{project}$) shall be determined using one of the following options:

(a)   Approved standardized baselines valid for the country/region/area; or

(b)   Official statistics or reports or peer-reviewed literature; or

(c)   Results of a sampling survey conducted as per the latest version of "sampling and surveys for CDM project activities and programme of activities"; or

(d)   Default values adopted within CDM framework valid for the country/region/area (e.g. a default value of 0.5 tonnes/capita per year under AMS-II.G).

16.   For the purpose of this tool, wherever charcoal is used for domestic or non-domestic applications, the quantity of woody biomass related to it shall be determined by using a default wood to charcoal conversion factor of 6 kg of firewood (wet basis) per kg of charcoal (dry basis)[3]. Alternatively, credible local conversion factors (e.g. determined from a field study or literature) may be applied.

---

[1]   This parameter may be determined through existing studies or government data or surveys.

[2]   This parameter may be determined through surveys.

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

4.2. Procedure to estimate RB

17. Renewable biomass (RB) in the country/region/area is estimated using the equation below.

$$RB = \sum \left(MAI_{forest,i} \times (F_{forest,i} - P_{forest})\right)$$
$$+ \sum (MAI_{other,i} \times (F_{other,i} - P_{other}))$$

Equation (6)

Where:

$MAI_{forest,i}$	=	Mean Annual Increment of woody biomass growth per hectare in sub-category i of forest areas (t/ha/yr)
$MAI_{other,i}$	=	Mean Annual Increment of woody biomass growth per hectare in sub-category i of other wooded land areas (t/ha/yr)
$F_{forest,i}$	=	Extent of forest in sub-category i (ha)[4]
$F_{other,i}$	=	Extent of other wooded land in sub-category i (ha)[4]
P_{forest}	=	Extent of non-accessible area (e.g. protected area where extraction of wood is prohibited, geographically remote area) within forest areas (ha)[5]
P_{other}	=	Extent of non-accessible area (e.g. protected area where extraction of wood is prohibited, geographically remote area) within other wooded land areas (ha)[5]
i	=	Sub-category i of forest areas and other wooded land areas

18. For estimation of the extent of forest areas, other wooded land areas, and protected areas, the following data source may be used:

    (a) Global Forest Resources Assessment 2015 by the Food and Agriculture Organization of the United Nations (FAO)

19. For estimation of Mean Annual Increment, the following data source may be used:

    (a) Global Forest Resources Assessment 2000 by the FAO for "Distribution of total forest area by ecological zone" (Table 14); and/or

    (b) 2006 IPCC Guidelines for National Greenhouse Gas Inventories for "Above-ground biomass growth rates (t/ha-yr) for different ecological zones" (Chapter 4, Table 4.9).

- - - - -

---

[4] Forest and non-forest areas for which products or by-products are not available for meeting thermal uses as per AMS-I.E and AMS-II.G (e.g. commercial forests for plywood or for industrial use, or dedicated pastures or agricultural areas not accessible to wood biomass collection) may be excluded in this estimate, as long as the products and by-products of these areas are also not accounted for in the estimation of the consumption for biomass in Section 4.1.

[5] Consideration of this parameter is optional. If DNAs or PPs wish to consider non-accessible areas, they shall provide justifications.

Document information

Version	Date	Description
01.0	1 November 2017	EB 97, Annex 9
		Initial adoption.

Decision Class: Regulatory
Document Type: Tool
Business Function: Methodology
Keywords: biomass, fraction of non-renewable biomass, wood products