Annex 17

GUIDELINES ON CONSERVATIVE CHOICE OF DATA WHEN ESTIMATING BIOMASS STOCKS AND CHANGE IN WOODY VEGETATION

(Version 01)

I. SCOPE

1. The guidelines provided in this document should be used to help ensure that default data to calculate biomass stocks and change *ex ante* are chosen in a conservative, but not overly conservative, manner.

II. PROCEDURE

Sources of Default Data

2. When using default data to estimate carbon or biomass stocks, and change, the following guidance should be applied when selecting sources of data:

- Values should if possible be species-specific, with selection from the following data sources (given in order of priority; highest first):
  - Local peer-reviewed studies under similar climate/soil conditions—provided the smaller datasets typical of local studies are considered sufficiently reliable; or
  - Regional or national forest or GHG inventory for the same ecological zone (that is, the same broad climate zone, and similar soil fertility and depth); or
  - International or global forest or GHG inventory, including IPCC literature, for the same ecological zone.
- If species-specific default data are not available, data may be selected from studies in the same ecological zone for the same *genus.*[1] Default data may also be selected from studies in the same ecological zone for the same *family,* provided the applicability of the data is validated (see Section 2.2.(ii), below). The priority for selection of default data sources should be that given in the last bullet point above.

Conservative Choice of Biomass-related Data

3. Default data should always be chosen in such a manner as to provide a conservative—but not overly conservative—estimate of net anthropogenic GHG removals by sinks. The guidelines below should be followed to ensure this occurs:

(i) If default data are available for conditions that are similar to the project (same vegetation *genus*; same ecological zone), then mean values of the data may be used and are considered conservative;

[1] See, for example, <http://www.treecanada.ca/trees/genus.php?sort=en_genus&lang=en>.

(ii) In all other circumstances, if mean values of default data are to be used, the applicability of the values must be established through verification against field measurements. Mean values of default data can be considered valid if the mean measured data[2] fall within ±10% of the mean default value—and provided that if any statistically significant bias is evident it results in a conservative estimate of project net anthropogenic GHG removals by sinks;

(iii) When project circumstances are not similar to those for which default data exist, or if the applicability of mean values of default data is not to be verified by field measurement, conservative values of default data should be selected. Conservative values are defined as being approximately one standard deviation above (or below, as appropriate) mean values. Estimates of standard deviations can be obtained as follows:

- If standard deviations are quoted then use these directly, or if a standard error is quoted then calculate the standard deviation by multiplying the standard error by the square root of the number of samples (if this is known);
- If a range of data is quoted, but without a standard deviation or other explanation being given, then assume the range represents the upper and lower 95% confidence limits of a normally distributed dataset. In this case the appropriate conservative value is that which falls half way between the mean and the limits of the range;
- To ensure estimates of parameters made using equations based on conservatively chosen variables do not become overly conservative, adopt the following convention:
    - For equations of the form $Y = A * B * C$: choose as the conservatively-valued variable whichever single variable of *A–C* has the largest standard deviation. Use mean values for the other variables;
    - For equations of the form $Y = A * B * C + D * E * F$: choose as the conservatively-valued variable whichever single variable in each of both *A–C* and *D–E* has the largest standard deviation. Use mean values for the other variables.

Nominal Values for Standard Deviations of Key Default Variables

4. If only mean data are quoted in reports or studies considered to otherwise contain credible data, or if the datasets are small and so it is considered the range of values may not be an adequate estimate of the standard deviation of the particular parameter, the following nominal values should be assumed for standard deviations, expressed here as percentages of the mean (as estimated from the range in IPCC data for these parameters[3]):

[2] A sample of at least 10 measurements must be used.

[3] IPCC default values for $G_{AB,j,t}$, $I_{V,j,t}$, R_j, $BEF_{1,j}$ and $BEF_{2,j}$ can be found in the *Good Practice Guidance for Land Use, Land-use Change and Forestry*. (*GPG-LULUCF*; IPCC 2003), with values also available in the *Guidelines for National Greenhouse Gas Inventory. Volume 4; Agriculture, Forestry and Other Land* (*AFOLU Guidelines*; IPCC 2006). See Tables 3A.1.5 to 3A.1.10 of the *GPG-LULUCF* (IPCC 2003), or Tables 4.4, 4.5, 4.9–4.11, 4.13, and 4.14 of the *AFOLU Guidelines* (IPCC 2006).

- Above-ground volume increment of existing woody vegetation: 50%;
- Above-ground biomass increment of existing woody vegetation: 50%;
- Above-ground biomass of existing woody vegetation: 50%;
- BEFs of existing woody vegetation based on biomass stocks: -40% below the mean to +100% above;
- BEFs of existing woody vegetation based on increment in biomass stocks: 10%;
- Root:shoot ratios for use in estimation of below-ground biomass: 35% for both trees and shrubs.

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History of the document

Version	Date	Nature of revision(s)
01	EB 46, Annex 17 25 March 2009	Initial adoption.