METHODOLOGY TO DIFFERENTIATE BETWEEN NON-RENEWABLE AND RENEWABLE BIOMASS

In order to claim emission reductions from the reduction in non-renewable biomass, project participants must demonstrate that the biomass consumption in the baseline is indeed non-renewable. This can be done either qualitatively, or quantitatively, depending on the data that is available. Project developers should chose one or other of these approaches, and justify their choice. For small scale projects, we propose that a simplified, qualitative approach be allowed, if sufficient data to use the quantitative approach below is not available. For large scale projects, the quantitative approach would be more suitable.

Qualitative indicator-based approach:

Data on biomass consumption, and on mean annual yield for forest and non forest areas in many developing countries is either difficult to obtain, lacks detail, or is not available at all. Therefore it is important that for small scale projects an alternative approach is available to demonstrate non-renewability that relies on qualitative indicators, which can act as a reliable proxy for whether biomass is renewable or non-renewable. Such an approach should be justified on a project by project basis with reference to the conditions and data availability in the country, and indicators should be chosen and justified that indicate whether biomass is renewable or non-renewable in the area surrounding the project activity. Here we give a list of possible indicators, but this is not intended to be a prescriptive or exhaustive list, since circumstances for each project will vary. Furthermore one indicator alone may not provide sufficient evidence that biomass in the region is indeed non-renewable, therefore project developers may need to use several indicators in order to demonstrate to a Designated Operational Entity that a non-renewable baseline choice is accurate. Such indicators could include:

- Deforestation rates
- Forest degradation rates
- Time spent by households for gathering fuel wood
- Distance traveled in order to collect fuel wood
- Significant trends in fuel wood price (e.g. sustained price rises), indicating scarcity
- Trends in the type of biomass collected by users, e.g. a switch from wood to small branches and twigs, or to non-woody biomass, suggesting scarcity of woody biomass

Quantitative approach

The following methodology deals with woody biomass only. Other methods would need to be proposed to deal with non-woody biomass. It defines a step-wise approach which can be followed in order to determine whether woody biomass is non-renewable. Similar basic steps are followed for biomass from forested areas, and from cropland/grassland areas.

The following text refers to ‘reachable harvesting area’. Reachable harvesting areas should be justified based on the type of biomass harvesters and the means of transport and harvesting methods they use, i.e. if the project activity is concerned with household cooking stoves, a reachable harvesting area should be defined based on the household’s harvesting methods. For example, household harvesting on foot will be confined to an area easily reachable on foot within

the time available for households to collect wood (defined by the average time per day an average household dedicates to wood gathering). Maps can be used to illustrate the harvesting area, where necessary.

1. Identify biomass types

Project participants should categorise the baseline sources of woody biomass into: woody biomass from forests and woodlands, woody biomass from croplands and/or grasslands, non-woody biomass from croplands and/or grass-lands, biomass residues, and non-fossil fraction of an industrial or municipal waste. Sources that are not significant (less than 5% of biomass consumed in the project) can be ignored. Biomass residues and any non-fossil fraction of industrial or municipal waste should be considered 100% renewable. Non-woody biomass should be assessed using an alternative method, since this methodology deals only with woody biomass.

2 Woody biomass from forests and woodland

The notion of non-renewable in the context of woody biomass consumption from forests and woodlands is understood as woody biomass consumption that contributes to deforestation or forest/woodland degradation. This is consistent with IPCC 2006 Guidelines for Greenhouse Gas Inventories in which the annual change in biomass is calculated from the difference between biomass growth and loss. The critical factor is whether the consumption of woody biomass is greater than the incremental woody biomass growth. The total stock of woody biomass would be reduced in absolute terms beginning at the point where the consumption of woody biomass exceeds the rate of growth, as illustrated by this simple equation:

$$Gb/Db < 1$$

Where
Gb = growth in woody biomass
Db = use of woody biomass.

To make this concept operational, non-renewable woody biomass consumption (B) is defined as any woody biomass consumption (C) beyond the level of renewable woody biomass production (A). See figure 1 below:

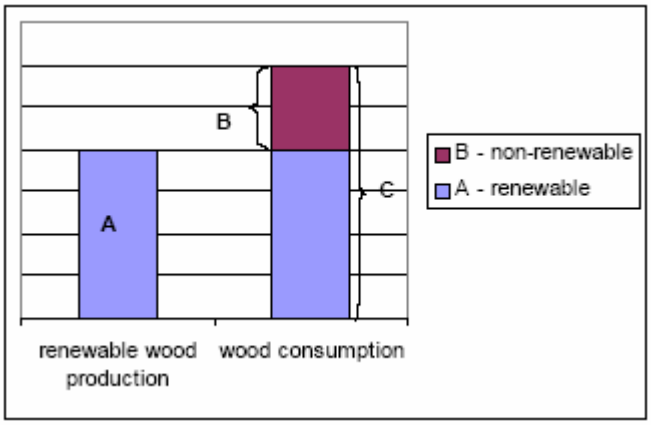

Figure 1

There are two conditions that must be assessed in order to determine whether woody biomass is renewable or non-renewable:

a) In the reachable harvesting area, does the consumption of woody biomass exceed the sustainable forest growth?
b) Does woody biomass consumption for fuel by the type of energy users associated with the project activity (e.g. by households) constitute a significant share of total woody biomass consumption?

Condition a: In the reachable harvesting area, does the consumption of woody biomass exceed the sustainable forest growth?

This condition is an operationalisation of the concept of non-renewable fuel wood. Sustainable forest growth is defined as the mean annual increment of reachable forest/woodland areas (reachable harvesting area). Consumption of woody biomass is defined as the sum of all woody biomass consumption, including use for timber, use for households etc (if insufficient data is available, insignificant sources of woody biomass consumption can be ignored as this is conservative). If relevant the project should also try to adjust for import and export out of the region.

This condition is met if:
Mean annual increment (A) < Total annual woody biomass consumption (C)

Calculation guidance:
A: Mean annual increment (tonnes/year) = reachable forest area (in ha) * mean annual increment/ha (m^3/ha/year) * average density of wood (tonnes/m^3)
The mean annual increment of the forest type in question may be derived from national or local statistics, or other sources of information such as remote sensing data or surveys.

C: Total annual woody biomass consumption (tons/year) = timber wood consumption (x) + industrial fuel wood consumption (y) + household fuel wood consumption (z) + other uses and net exports, as appropriate

Condition b: Does woody biomass consumption for fuel, by the type of energy users associated with the project activity (e.g. by households), constitute a significant share of total woody biomass consumption?

This condition has to be met in order to demonstrate that consumption by the type of energy users associated with the project activity is indeed a driver in significant deforestation / forest degradation. The project can demonstrate that a particular user type (e.g. households) has a significant share if it meets one of the following criteria (note, the word 'household' here could be replaced by other user types e.g. 'industrial users'):

- (Household) woody biomass consumption > Annual Increment (A)
- (Household) woody biomass consumption is the largest woody biomass consumption sector;
- Share of (household) woody biomass consumption as a proportion of total woody biomass consumption (C) is greater than 30%

3 Woody Biomass from croplands and/or grasslands

The notion of non-renewable in the context of woody biomass consumption from croplands and/or grasslands is understood as woody biomass consumption that contributes to a reduction in

tree and shrub cover on croplands and/or grasslands. The critical factor is again whether the consumption of woody biomass is greater than the incremental woody biomass growth. Again, the total stock of woody biomass would be reduced in absolute terms beginning at the point where the consumption of woody biomass exceeds the rate of growth, as illustrated in figure 1 above.

Similarly, there are two conditions that must be assessed in order to determine whether woody biomass is renewable or non-renewable:

a) In the reachable harvesting area, does the consumption of woody biomass exceed the sustainable woody biomass growth?
b) Does woody biomass consumption for fuel by the type of energy users associated with the project activity (e.g. by households) constitute a significant share of total woody biomass consumption?

Condition a: In the project area, does the consumption of woody biomass exceed the mean annual increment of the cropland/grassland area?

Consumption of woody biomass is defined as the sum of all woody biomass consumption, including use for timber, use for households etc (if insufficient data is available, insignificant sources of woody biomass consumption can be ignored as this is conservative). If relevant the project should also try to adjust for import and export out of the region.

This condition is met if:
Mean annual increment (A) < Total annual woody biomass consumption (C)

Calculation guidance:
A: Mean annual increment (tonnes/year) = reachable harvesting area (in ha) * mean annual increment/ha (m^3/ha/year) * average density of wood (tonnes/m^3)
The mean annual increment of the cropland/grassland in question may be derived from national or local statistics, or other sources of information such as remote sensing or survey data

C: Total annual wood consumption (tons/year) = timber wood consumption (x) + industrial fuel wood consumption (y) + household fuel wood consumption (z) + other uses and net exports, as appropriate

Condition b: Does woody biomass consumption for fuel, by the type of energy users associated with the project activity (e.g. by households), constitute a significant share of total woody biomass consumption?

The project can demonstrate that a particular user type (e.g. households) has a significant share if it meets one of the following criteria (note, the word ‘household’ here could be replaced by other user types e.g. ‘industrial users’):

- (Household) woody biomass consumption > Annual Increment (A)
- (Household) woody biomass consumption is the largest woody biomass consumption sector;
- Share of (household) woody biomass consumption as a proportion of total woody biomass consumption (C) is greater than 30%

4 Emission reductions can only be claimed in proportion to the reduction of non-renewable biomass

This condition ensures that the maximum emission reductions to be claimed cannot be more than the total emission reductions from non-renewable biomass.

The project can only claim emission reductions insofar it leads to a reduction in the unsustainable portion of biomass. This is illustrated in the figure below using two project examples. Project X can claim all emission reductions related to reduction in biomass consumption, because all reductions in biomass consumption are reductions in non-renewable sources of biomass. Project Y, instead, can claim only 67% of its emission reductions, since the total reduction in biomass attributable to the Project is larger than the amount of non-renewable biomass consumption in the baseline. That means that also a part (33%) of the *renewable* fuel wood consumption has been reduced. For this latter part, emission reductions cannot be claimed.

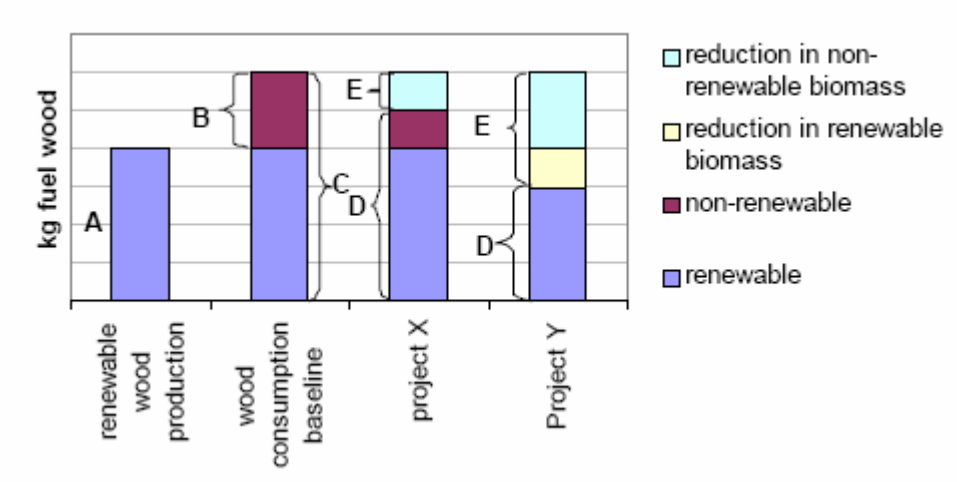

Figure 2

The project can claim emission reductions if it follows the following criteria:

a) The project can claim all emission reductions from its fuel wood savings if:
- the projected biomass consumption by the project (*after* the implementation of the project) (D) > Annual Increment (A); or
- the projected biomass reduction (E) < non-renewable fuel wood consumption in the baseline (B)

b) The project can claim emission reductions in proportion to the share of reduction in non-renewable fuel wood as part of the total fuel wood reductions (B/E) if:
- The projected fuel wood consumption after the implementation of the project (D) < Annual Increment (A) or
- The projected biomass reduction (E) > non-renewable fuel wood consumption in the baseline (B)