

Switch from Non-Renewable Biomass to Lower Emission Fossil Fuels for Thermal Applications by the User

Technology/ Measure

1. This category comprises small appliances involving the switch from non-renewable biomass (such as fuelwood or charcoal) to lower-emission fossil fuel sources of energy such as kerosene or LPG. These technologies include kerosene or LPG stoves and other measures using lower-emission fossil fuels.

Boundary

2. The project boundary is the physical, geographical area of the use of non-renewable biomass or the lower-emission fossil fuel.

Baseline

3. It is assumed that in the absence of the project activity, the baseline scenario would be the mix of non-renewable biomass and fossil fuel use expected to be used in the baseline, within the project duration, by the local consumers, for meeting similar thermal energy needs. Project proponents must demonstrate that the biomass use claimed to be non-renewable is indeed non-renewable, following the EB 23 Annex 18 definition of “renewable biomass” (by inversion).

In order to avoid incentives to enhance deforestation and forest degradation in order to meet the conditions of “non-renewable biomass”, project proponents must, in addition, demonstrate that the biomass used by the project participants was non-renewable at the time of, or before, the adoption of this methodology (September 2006).

4. Emission reductions would be calculated as:

$$ER_y = B_y \cdot NCV_{\text{biomass}} \cdot EF_{\text{non-renewable biomass,CO}_2} \cdot 10^{-3} - PE_y$$

Note: $10^{-3} - PE_y$ added

where:

ER_y Emission reductions during the year y in t CO₂
 B_y Quantity of non-renewable biomass that is substituted or displaced in tonnes, calculated as:

- (i) the product of the number of appliances multiplied by the estimate of average annual consumption of non-renewable biomass per appliance (tonnes/year). This can be derived from historical data or a survey of local usage.

OR

- (ii) The quantity of renewable biomass used in the project activity corrected for differences in calorific values.

NCV_{biomass} Net calorific value of the non-renewable biomass that is substituted (IPCC default for wood fuel, 15 MJ/Kg).
 EF_{non-renewable biomass,CO₂} Emission factor for the substitution of non-renewable biomass by similar consumers locally, in t CO₂ / TJ biomass.
 PE_y Project emissions during the year y in t CO₂

$$EF_{\text{non-renewable biomass, CO}_2} = \frac{1}{2} \cdot (EF_{\text{CO}_2, \text{start}} + EF_{\text{CO}_2, \text{end}})$$

$$EF_{\text{CO}_2, \text{start}} = EF_{\text{CO}_2, \text{biomass}}$$

$$EF_{\text{CO}_2, \text{end}} = X \cdot \left(\frac{\varepsilon_{\text{stoves, biomass}}}{\varepsilon_{\text{stoves, fossil}}} \cdot EF_{\text{CO}_2, \text{fossil}} \right) + (1 - X) \cdot EF_{\text{CO}_2, \text{biomass}}$$

where:

$EF_{\text{CO}_2, \text{start}}$	CO ₂ emission factor of the baseline at the start of the project
$EF_{\text{CO}_2, \text{end}}$	CO ₂ emission factor of the baseline at the end of the project
$EF_{\text{CO}_2, \text{fossil}}$	CO ₂ emission factor for the fossil fuel; 71.5 tCO ₂ /TJ for Kerosene, 63.0 tCO ₂ /TJ for LPG or the IPCC default value of the fossil fuel commonly observed with local consumers
$EF_{\text{CO}_2, \text{biomass}}$	CO ₂ emission factor for the biomass fuel; 109.6 tCO ₂ /TJ (default for biomass from IPCC 1996 GL).
X	Share of fossil fuel used, in the baseline, by the “in-project” consumers at the time when the project ends, according to historical and/or current trends. X is to be determined as part of the PDD. By definition, at the beginning of the project all “in-project” consumers use non-renewable biomass.
$\varepsilon_{\text{stoves, biomass}}$	Average efficiency of stoves fired with biomass, use 20% as default value or local data if available
$\varepsilon_{\text{stoves, fossil}}$	Average efficiency of stoves fired with fossil fuels, use 50% as default value or local data if available

$$PE_y = FF_y \cdot NCV_{\text{fossil}} \cdot EF_{\text{lower emission fuel, CO}_2} \cdot 10^{-3}$$

where:

FF_y	Quantity of lower emission fossil fuel used in project in litres, calculated as the number of appliances times the estimated average annual consumption of lower emission fuel (fossil fuel) per appliance (litres/year). This can be derived from historical data or a survey of local usage.
NCV_{fossil}	Net calorific value of the lower emission fuel that is substituted (IPCC default for kerosene, 35.7 MJ/litre, LPG 24.8 MJ/litre)
$EF_{\text{lower emission fuel, CO}_2}$	CO ₂ emission factor for the fossil fuel; 71.5 tCO ₂ /TJ for Kerosene, 63.0 tCO ₂ /TJ for LPG or the IPCC default value of another fossil fuel used in the project by local consumers.

Leakage

5. If there is a possibility that the savings of non-renewable biomass due to the project activity lead to greater use of non-renewable biomass outside the project boundary, then a leakage deduction of 15% shall be applied.

Monitoring

6. Monitoring shall consist of an annual check of all appliances or a representative sample thereof to ensure that they are still operating or replaced by an equivalent in service appliance.

7. Monitoring should confirm the complete displacement or substitution of the non-renewable biomass at each location.

8. If the leakage deduction of 15% is not applied, monitoring shall demonstrate that greater use of non-renewable biomass outside the project boundary does not occur.