



environment, forestry & fisheries

Department:
Environment, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Calculation method in the MRV tool

The calculations for emissions from fires (S_{fires}) are based on the IPCC 2006 methodology (volume 4, chapter 2, equation 2.27). Emissions from fires are calculated based on the following equations:

$$L_{fire} = A_{disturbed} \times M_B \times C_f \times G_{ef} \times 10^{-3} \quad \text{Equation C.17}$$

Where:

- L_{fire} = amount of greenhouse gas emissions from fire, t's of each GHG e.g., t CH₄, t N₂O, etc.
- A = area burnt, hectares
- M_B = mass of fuel available for combustion, t d.m. ha⁻¹. This includes all biomass, ground litter and dead wood. When Tier 1 methods are used then litter and dead wood pools are assumed to be zero, except where there is a land-use change, therefore:
 - If the activity is Forest management, the total emissions from DOM burnt is assumed to be 0 for tier 1²². For higher tier total DOM C stock needs to be provided.
 - If Activity is Afforestation, then total C in DOM depends on the age of the afforestation.
 - If the activity is Deforestation, total C in DOM depends on the age of the afforestation or forest
- C_f = combustion factor, dimensionless. Tier 1 assumption uses the fraction biomass lost based on the type of disturbance and assume the same fraction for AGB and DOM.
- G_{ef} = emission factor, grams per kilogram of dry matter burnt (default values in Appendix C.1).

Wildfires - Data required for estimates in the MRV tool

The method requires data on the biomass burnt.

Table C.14: Data required for estimating emissions from wildfires.

| | |
|---|---|
| Facility ID | Enter the unique facility ID |
| Activity | Forest Management, Afforestation or Deforestation |
| Total area | Enter value in ha |
| Mass of fuel available for combustion, | It can be estimated based on total biomass and fraction damaged. |
| Area disturbed | Enter value in ha |
| Type of damage | Slight loss, Serious damage or Total loss. This is used to provide default values for the fraction of biomass lost, facility-specific values can be used instead of defaults. |

²² Because the C stock change in DOM in Forest management is 0, i.e. loss should not be reported because gains are not reported.