

Developing Country Level Emission Factors

¹Philip, E, ²Samsuanuar Nawi and ³A.Muhammad Ridzwan

¹*Forest Research Institute Malaysia, 52109 Kepong, Selangor, Malaysia.*

²*Forestry Department Peninsular Malaysia, Jalan Sultan Salahuddin, 50660 Kuala Lumpur, Malaysia.*

³*A.Muhammad Ridzwan. Ministry of Natural Resources and Environment, Malaysia, 62574 Putrajaya, Malaysia*

Abstract

Malaysia used country specific emission factors for LULUCF. Emission factors and activity data are applied were based the most important land uses/activities. Emission factors for croplands, rubber and oil palm were derived from field measurements and since published. This paper will highlight the methodology applied in constructing country specific emission factors for the forest activity data.

Malaysia has been conducting National Forest Inventory (NFI) since 1972 and since conducted it every ten years once. The National Forest Inventory initially covered only the logged Inland Forest and Peat swamp forest. However, in 2002, the NFI covered Protected Areas and State Land Forest. The Inventory plots were stratified following the forest category and type.

Emission factors were generated from the National Forest Inventory, by calculating the mean increment between 2002 and 2012 NFI data. Changes are then estimated by calculating the difference between the state at time $t + 1$ from the state at time t . Three common sampling designs can be used for change estimation with the same sampling units in most cases with exception of a few sampling units can be replaced between occasions. Mortality rate was between 0.9 -1.1%.

Above-ground biomass (AGB) increments cannot be directly measured but estimated by applying allometric relationships relating stem diameter, height and wood density to AGB. The increment was calculated by comparing the growth difference in AGB. The increment was determined for each diameter class and forest stratification between 2002 and 2012 Inventory cycle. For means of comparison, biomass increment was also calculated using the equation presented by Brown (1997).

Biomass density of a strata is estimated using the equation above. Number of trees/ha is obtained from the Forest inventories and the mid point of biomass class is determined. Biomass of tree at mid point is determined using the equation above and biomass of all trees is determined by multiplying the number of trees with the biomass of tree at mid point.

The emission factors derived for Inland forest are 9.3t/ha/yr and Peat swamp forest 9.2 t/ha/yr respectively. This values were consistent with the those obtained by Banin et al (2013) for Inland forest in Sabah.