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"Bridging the gap between increasing knowledge and decreasing resources"

Linking REDD+ with SFM – A Case Study from the Fiji Islands

Michael Mussong[1], Setareki Qaliduadua[2]

[1] *Eberswalde University for Sustainable Development, Fac. of Forest and Environment, Germany*
[2] *Fiji Forestry Department, Forestry Research Division, Fiji*

Abstract

REDD+ (Reducing Emissions from Deforestation and Forest Degradation) is an emerging mechanism, designed to offer incentives to conserve and enhance forest carbon stocks in developing countries. Sustainable forest management (SFM) is one out of five eligible activities under the REDD+ scheme. Regarding a community orientated SFM-development Fiji is a leading country in the South Pacific. To develop a SFM-system a research area was established already in 1989. Between 1992 and 1994 three different SFM-orientated treatments (removing approx. 1/6, 1/3 and 1/2 of the standing volume of all trees ≥35 cm dbh) where applied in seven compartments. For control purposes another three compartments kept untouched and two compartments where harvested according to the "conventional" logging procedure removing approx. 80 % of the standing volume.

Twenty year after the first harvest a carbon inventory was carried out in the same area. Systematically distributed circular sample plots were established covering the carbon pools of litter, small debris (<10 cm diameter), ground vegetation as well as shrubs and trees from seedlings up to 34 cm dbh. The trees ≥35 cm dbh where recorded in a full enumeration. For lying deadwood ≥10 cm diameter a line intersect method was chosen. The conversion into dry biomass was carried out by using oven dried samples (for litter etc.), the conversion model for trees after Chave et al. (2005), and a common shoot to root ratio of 1:0.24 for below ground biomass. Soil carbon was not yet investigated.

The results show that during a 20 year felling cycle the average carbon stock for a medium SFM-treatment is only 3 % less than in the untouched stand while the conventional logging leads to 23 % less carbon. Further investigations indicate that there will be no net emission of carbon dioxide through the applied SFM-treatment if ≥33 % of the removed wood is still existing 20 years after harvesting (e.g. as furniture) or was used to replace fossil energy.

Keywords: Carbon dioxide emission, carbon stock, Fiji, REDD+, SFM, sustainable forest management

Contact Address: Michael Mussong, Eberswalde University for Sustainable Development, Fac. of Forest and Environment, Alfred-Möller-Str. 1, 16225 Eberswalde, Germany, e-mail: mmussong@hnee.de