



Tropentag, October 9-11, 2007, Witzenhausen

“Utilisation of diversity in land use systems:
Sustainable and organic approaches to meet human needs”

Payments for Carbon Sequestration Services - A Solution to Stop the Deforestation of the Lore Lindu National Park in Indonesia?

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Abstract

Indonesia is one of the countries with the highest annual net forest loss, and during the last five years two percent of its remaining forest area were lost every year through deforestation, selective logging or human intervention. Deforestation in turn plays an important role in the global warming process, accounting for up to 20 percent of the global greenhouse gas emissions. Frequently smallholders' traditional land-use and forestry activities are partly responsible for deforestation. Therefore, when emission reductions are targeted, small farmers can make a positive contribution through the adoption of sustainable land-use practices.

The present research assesses whether payments for carbon sequestration activities can provide an incentive for forest conservation in the Lore Lindu National Park in Central Sulawesi, Indonesia. The encroachment on the forest margin of the Park through agricultural activities and especially cocoa production is occurring at an alarming rate. Hence, different forest management options and their potential carbon sequestration payments are appraised in the study. The net present value of the service payment was obtained, accounting for the carbon content of the agro-forestry systems, as well as the potential payments when avoiding further deforestation and the “saved” carbon. Consequently, the impact of the compensation payments on household incomes was assessed in diverse scenarios.

A household survey in the surroundings of the park was carried out to collect the data on the existing agricultural production systems. To analyse the households' behaviour and their resource allocation, a linear programming model was used. Four household categories were analysed, based on the dominant agroforestry type within their agricultural production system. The baseline situation for the four categories was generated and various scenarios were run for payment options. A sensitivity analysis took several carbon prices into account.

The research helps to develop instruments for the provision of environmental services, specifically carbon sequestration. It shows whether the current carbon prices are sufficient to compensate the opportunity costs of the farmers when they change their land-use practices, assist the conservation of the remaining forest and impede further resource degradation.

Keywords: Agroforestry, carbon sequestration, economic incentives, linear programming, payments for environmental services

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