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A Negotiation Support Tool for Assessment of Land Use Change Impacts on Erosion in a Previously Forested Watershed in Lampung, Sumatra, Indonesia

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Abstract: Land use is changing rapidly in SE-Asia from forest to landscape mosaics with various degrees of tree cover. The relations between impacts at these different scales should recognize a range of 'lateral flow' and 'filter' phenomena. To develop concepts and an appropriate methodology, ICRAF and partner institutions study land use and its change in Sumberjaya, West-Lampung, Sumatra an area of about 730 km2, which encompasses a watershed, that was transformed in the past three decades from a large forest cover to a mosaic of coffee farms with rice paddies in the valleys and which has seen quite some conflict over the past 10 years. For risk assessment of erosion and consequent delineation of protection areas various stakeholders convinced of their own 'rightness' often only use their own mental model, often based only on strong perceptions and beliefs. The (weak) knowledge base used for evaluating these issues for landscape mosaics covering the wide range between pure forests and purely cropped lands is now challenged by the development of different erosion equations and models over the past ten years. In an erosion modeling exercise various scenarios for the USLE, WEPP and GUEST (Rose) equations are compared at different scales. Results are strikingly different. The methodology is inspired by the one developed for 'Sustainable coastal-zone management, a case study for Southwest Sulawesi'. Aim is to test and validate that methodology in a completely different setting and use it as a discussion tool for various stakeholders.

Keywords: Negotiation support model; Erosion; Watershed functions; Land use change

1   INTRODUCTION

The general problem can be defined as the perceived unsustainable use of natural resources (forest conversion) and the negative impacts this has on external stakeholders. The perception may or may not be based on causal relationships and facts. Forest conversion in much of Southeast Asia is not a black-or-white deforestation process, but a gradual loss of 'forest functions' in changing agroforestry landscape mosaics. Existing institutions and policies are largely based on a forest - agricultural land use dichotomy and this may lead to an unnecessary sense of conflict. The issue is of particular relevance where supposed 'watershed protection functions' have been the basis for regulations of access to land.

Key hypothesis in our current research is that some farmer-developed agroforestry mosaics are as effective in watershed protection functions as the original forest cover. Hence conflicts between state forest managers and local population can be resolved to mutual benefit. The problems are clearly represented in the Sumberjaya watershed, an area of about 50.000 ha at the forest fringe with the Bukit Barisan National Park in Lampung, Sumatra, Indonesia and there is no easy solution. Until now the outcome was often sub-optimal - a euphemism for violent eviction of thousands of farmers in the early nineties [Kusworo, 2000]! The Forest department wants to conserve the protection forest, next to the National Park and has evicted farmers in the past. Farmers need a living and come back, often under silent approval of local government that needs income and wants to see economic development ... This scenario might be representative of possible future trajectories for many other watersheds all over Sumatra. The underlying causes of conflict are probably even more generic and are related to the lack of insight to what extent does a landscape - and its various elements - function properly in providing certain