



Tropentag, October 5-7, 2011, Bonn

“Development on the margin”

Multi-criteria Assessment of Landscape Vulnerability and Land Use Potentials in Central Vietnam

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Abstract

The Quang Nam province in Central Vietnam is highly impacted by the ongoing land use intensification, hydropower plant construction, establishment of a power supply network, gold mining and other activities promoting the economic growth of the province. These activities led to the expansion of the road system, of agricultural land use and of settlements and therefore to the fragmentation of natural landscape causing biodiversity loss, soil erosion and also contamination of soils and rivers. The present study aims at determining the vulnerability of the province's landscape and its future land use potentials.

The multi-criteria assessment of landscape vulnerability considers three important forms of landscape degradation in the region: soil erosion, forest degradation, and surface water contamination. Landscape vulnerability to soil erosion is assessed on the basis of the USLE-equation using secondary data and field data, including interviews with farmers and field observations for the consideration of management practices. The vulnerability of forest ecosystems is classified by means of the Vietnamese forest classification (rich, medium and poor forest, bare land forested and bare land classes) under consideration of vulnerability parameters for these forest types. Furthermore, areas with high vulnerability to water contamination, such as headwaters, floodplains, and wetlands are recorded. By combining the different layers, a vulnerability map is generated. This map pinpoints the areas which are most vulnerable and thus are in highest need of protection. The map also shows those areas for which more sustainable land use alternatives have to be developed.

Based on the different landscape vulnerability classes, recommendations for suitable land use practices are given. The obtained results provide guidance for land use planners and farmers in the Quang Nam province for a more sustainable use of the natural resources.

Keywords: Forest degradation, land use potential, soil erosion, vulnerability