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“Agricultural development within the rural-urban continuum”

Assessment of Ecosystem Services and Conflict of Goals in Rubber Cultivation via InVEST

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Abstract

SURUMER - Sustainable Rubber Cultivation in the Mekong Region – is a new project which operates in Xishuangbanna Dai Autonomous Prefecture, Yunnan Province, PR China. The aim is to develop an integrative, applicable, and stakeholder validated concept for sustainable rubber (*Hevea brasiliensis*) cultivation.

For this purpose, ecosystem functions and ecosystem services are studied in detail by various thematic subprojects to investigate differences in the ecosystem service provision of natural forests in comparison to rubber plantations. Each subproject is concentrating on a single ecosystem service. For decision-makers however, an integrated ecosystem service assessment analysing multiple ecosystem services is important. This is a precondition for trade-off analyses between different ecosystem services and important to provide a holistic view about the consequences of future land use change. Further, ecosystem service assessments allow studying off-site effects on urban populations. This information is valuable for regional policy makers for the development of policy mechanisms which aim at improving livelihoods and rural development in the region and at the same time accounting for ecosystem services provided by certain land use types.

The toolbox InVEST (Integrated Valuation of Environmental Services and Trade-offs) is developed by the Natural Capital Project (NatCap), a partnership among Stanford University, The Nature Conservancy, the World Wildlife Fund, and the University of Minnesota. InVEST provides various deterministic models to evaluate different ecosystem services biophysically and monetary. In our study we will use InVEST to model and assess abiotic ecosystem services e.g. carbon storage and sequestration, hydropower production, water purification / nutrient retention and sediment retention. First results of project outcome will be presented and visualised during the conference.

Keywords: Agro-ecosystem, ecosystem service assessment, environmental system, *Hevea brasiliensis*, InVEST, rubber