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**Payments for ecosystem services under REDD+:  
Potentials for uplands watersheds in Northern Thailand**

Master Thesis by

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## **Abstract**

Thailand has achieved, as other countries in the region, a significant economic development, but has also undergone forest cover and biodiversity losses and degradation of soils. The 'Reducing Emissions from Deforestation and forest Degradation' (REDD+) program by the United Nations Framework Convention on Climate Change (UNFCCC) is promoted, in Southeast Asia and particularly in Thailand, as a viable option to improve food security, local livelihoods and to promote sustainable forest management strategies that can mitigate the effects of climate change. The needs of local communities are critical to develop REDD+ strategies that will be sustainable in the long run.

Hence, an integrated assessment framework is presented in this study to depict the social, economic, and environmental dimensions of REDD+ for a case study (total area: 22.4km<sup>2</sup>) in Northern Thailand. The approach combine Geographic Information Systems, participatory approaches to develop scenario storylines based on local stakeholder opinions and the Integrated Valuation of Ecosystem Services and Tradeoffs model (InVEST) to quantify environmental services and their tradeoffs as means decision support. Model input data were derived from participatory land use mapping procedures building on local key informants and expert interviews. Field studies and aerial photos were employed to update and validate existing spatial land use information serving as further model input datasets. Model simulations were conducted to assess different stakeholder-driven future REDD+ scenarios. The economic value of the carbon sequestered were used as benchmark indicators on different stakeholder-driven scenarios and to derive conclusions of the potential to establish a REDD+ project in the study area as means of rural development and food security.

The research work contributes to document the opportunity of realizing a REDD+ project in Northern Thailand, and similar environments of Southeast Asia. It supports land management decision processes by offering new development pathways that can increase the well-being of local communities and natural resources simultaneously.

**Key Words:** REDD+, Multi-criteria Evaluation, InVEST, Northern Thailand.