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**Assessment of Land Cover Change in Chieng Khoi Commune,
Northern Viet Nam by Combining Remote Sensing Tools and
Historical Local Knowledge**

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Abstract

In Viet Nam, upland areas are the dominating land form providing natural resources for all kinds of human activities and playing a crucial role in rural development. With increasing population, market access and economic development, forest and traditional swidden agriculture systems were converted into tree plantations and continuous maize cropping systems during the past decades. Watershed-wide effects of land use intensification have been reported to affect agricultural productivity and thus human livelihoods in positive and negative ways. Research at plot level has been conducted, but upland-lowland interactions such as erosion, siltation and macronutrient fluxes still remain poorly understood. This study was carried out within the SFB 564 Uplands Program and generated part of the data base for an integrated modelling approach on up- and lowlands biophysical connectivity in Chieng Khoi commune, Son La province, Northwest Viet Nam.

Due to limited availability of remote sensing data, a hybrid approach of satellite imagery and participatory methods was chosen to obtain spatially explicit and continuous information on land use history. Satellite images taken from 1993, 1999 and in 2007 were classified as reference points in time. Ground truthing included collecting GPS points along plot boundaries and farmer interviews of land use during those years covered by the satellite images. Missing ground truthing points in the past were complemented with land use history obtained from interviews for geo-referenced plots. Additionally, land use reports from commune committees, local soil maps and cropping rules were employed to reconstruct land use history over the last three decades. Crop yields associated with land uses over time were complemented through individual interviews with experienced local farmers. At landscape level information on land use history was obtained during transect walks and group discussions.

Land use maps obtained during this study will serve as input data of cropping systems development for the Land Use Change Impact Assessment (LUCIA) model to assess the impacts and consequences of land use cover change at landscape level on system productivity and environmental services. In addition, crop productivity levels under the given land use trajectory will serve as validation data sets for inverse modelling of soil fertility.

Keywords: Historical knowledge, land use/cover, satellite images, Viet Nam