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## **Economic Innovation and Land Use Change in the Northwestern Uplands of Vietnam: a Case Study in Son La province.**

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### **Abstract**

Land use in the northwestern upland region of Vietnam has changed rapidly since the Government started innovating the country's economy or “doimoi” in mid 1980s. This paper investigates the patterns and determinants of land use change in 75 communes of 4 districts with different geographical, agro-ecological, and socio-economic conditions in Son La province from 1989 to 2000. The aerial photographs and satellite images taken in 1989, 1995 and 2000 are interpreted to detect land use changes in two time periods. The land use data is supplemented by socio-economic, soil, rainfall and topographical data. All data are geo-referenced and spatially analysed by using Geographical Information System (GIS) and statistical software.

The results show that agricultural cultivated area increased dramatically from 1989 to 1995 under slogan “produce enough food to eat by anyways”. The terrain characteristics prevent local inhabitants to expand crop area in the lowland. Most staple foods are, therefore, based on slop land cultivation. This led to a vast area of forests was cleared or degraded. However, agricultural expansion was slow down in period of 1995 – 2000 while population is still growing. Forest regeneration is found in some commune. The findings of the study suggests that individualised land use rights, improvement of access to available technologies, liberalization of agricultural market and population growth are principal causing factors of land use changes in this area. Changes in access to technology and market promoted the farmers to intensify crop production and reduced pressure on forests. It is clearly observed that patterns of land use change are not homogeneous. They are different from commune to commune and are likely dependent upon the market, agro-ecological and traditional culture context and implementation of reform policies as well.

**Keywords:** Agricultural intensification, economic innovation, Geographical Information System, land use change, remote sensing, spatial analysis, Vietnam