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Assessment of the Appropriateness of Compensation for Converted Slope Farmland in Yunnan Province, China

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The study assessed the appropriateness of compensation rates under the Upland Conversion Program (UCP) from the regional economy and farmer perspectives. The compensation rates were calculated according to the criterion that the compensation payments should at least offset the UCP's negative impacts on the regional gross output and farmers' income, respectively. A regional input-output model was developed to measure the economic impacts of the UCP. The results showed that the existing compensation rate was much higher than the calculated rates from both perspectives, and the calculated compensation rate from the regional economy perspective was higher than from the farmers' perspective. The results of the study have policy implications for improving the cost-effectiveness of the UCP. It is suggested that the compensation be paid in two parts, one for farmers to offset their income loss, and another for developing substitute industries to partially offset the negative impacts of the UCP on the regional economy.

Key Words: upland conversion program, input output analysis, compensation rate

Abbreviations: UCP – Upland Conversion Program, I-O model – input-output model, GRIT technique – Generating Regional Input-Output Tables technique

INTRODUCTION

In the course of economic development, industrialization and urbanization, many countries have first experienced deforestation and then forest recovery, or a process of forest transition which is characterized with a decline in forest cover followed by forest recovery (Mather 1990; Rudel 1998). Increases in forest cover can increase transpiration rates, reduce soil erosion, improve water quality and sequester carbon (Kramer et al. 1997; Ammer et al. 1995; Houghton et al. 2000). Thus, aside from the reason of increasing wood scarcity, forest transition is also pursued by many governments to address environmental problems and create a sustainable society (Kates et al. 2001; Rudel et al. 2005). In the United States, for example, the Department of Agriculture launched the Conservation Reserve Program under the Food Security Act of 1985 to protect farmland susceptible to erosion (Siegel and Johnson 1991).

China has experienced massive deforestation resulting from logging and agricultural expansion. A total of 2.26 billion m^3 of timber was harvested to support the economic growth of the country between 1949 and 2000 (Zhang 2002). From 1978 to 1998, China's economic growth rate was 9.55%, while the growth rate of forestry production was 16.52% (Wang 2003). As a result of grain shortage and a lack of other economic opportunities, large tracts of forest were also converted to farmland (Feng et al. 2005). Except for Xinjiang and Tibet, the cultivated sloping land accounts for more than half of the total agricultural land in the rest of the western provinces (Feng et al. 2005). As a consequence, ecological conditions have severely worsened, resulting in accelerated soil erosion, flooding and, ultimately, land degradation (Zhang 2002; Feng et al. 2005).

China has some 6.07 million ha of farmland with slopes greater than 25 degrees. About 2 billion tons of silt are deposited into the Yangtze and Yellow Rivers annually, with two-thirds of this coming from sloping farmland (SFA 2003). The problem of soil erosion is particularly severe in western China. For example, in the upper reaches of the Yangtze River, the rates of water and soil loss in Sichuan,