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The Role of Forest-Related Income in Household Economies and Rural Livelihoods in the Border-Region of Southern China

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Summary. — Quarterly socioeconomic data from 240 households are used to study the links between forest-related income and rural livelihoods in southern China. Results show average forest-related income shares of 31.5%, which was predominantly derived from cultivated non-timber sources. Forest-related income was important to households at all income levels, although lower income households were more dependent due to a lack of other sources. Higher income households monopolized off-farm income and had more land than low income households. Forest-related income could be increased by making forest land more accessible to the poor, improving productivity, and removing constraints to smallholder engagement in timber marketing.

Key words — Asia, China, poverty alleviation, off-farm income, NTFP, environmental income

1. INTRODUCTION

In the last decade the role of forest-related income in household economies and rural development has received increasing attention from the international community. This is largely in recognition of the significant relationship between forest areas and poverty (Sunderlin *et al*., 2008; World Bank, 2001a,b, 2004), and the emerging imperative that forests could, and should, have a far greater role in meeting the Millennium Development Goal's poverty alleviation targets (FAO, 2005; World Bank, 2001a). Hence governments, international donors, and NGOs are increasingly looking to the forestry sector for solutions to reduce poverty (Arnold, 2001), but progress is hampered by a distinct lack of empirically based knowledge about forest-related income in household economies and rural development (FAO, 2006, 2008; Oksanen, Pajari, & Tuomasjukka, 2003; RECOFTC, 2009). Systemic institutional failure to collect forest-related income data across the developing world has led to a significant underestimation of the forest sector's importance to rural livelihoods and economic development (FAO, 2008). The real value of forest goods and services is generally underestimated, wrongly attributed to other sectors, or entirely omitted (FAO, 2008; Vedeld, Angelsen, Bojöd, Sjaastad, & Kobugabe, 2004; PROFOR, 2008). This lack of quantitative data and readily available information is considered a major constraint to mainstreaming the use of forests in poverty alleviation, and therefore the potential of forests to alleviate poverty is largely unrealized (World Bank, 2008).

China makes for an interesting case study in this context. Since the post-Mao era economic reforms began in 1979, China's forest cover has rapidly increased due to large-scale conservation and afforestation efforts (FAO, 2010a), and at the same time a staggering half billion people were lifted from

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poverty (World Bank, 2009). Yet China still has hundreds of millions of people living below the poverty line (World Bank, 2009), a large concentration of which is located in mountainous, forested areas (ADB, 2008; Katsigris, Xu, White, Yang, & Qian, 2010; Li, 2004; World Bank, 2009). To tackle this persistent poverty the central government introduced a National Plan for Poverty Reduction in 1994 (the "8-7 Plan"), which among other things involved area-based targeting in officially designated "poor" counties [1] and the promotion of forest-based cash crops through supportive policies and other incentives (Ruiz-Pérez *et al*., 1996; Wang, Li, & Ren, 2004; World Bank, 2009). Furthermore, some clear links to poverty reduction were included in the nationwide Priority Forestry Programs introduced in 1998; including the Conversion of Cropland to Forests and Grasslands Program (CCFGP; an afforestation project involving 32 million rural households; Bennett, 2009; Liu *et al*., 2011). Despite China's efforts to integrate forests into the national poverty plan and poverty into the national forestry plan, the role of forest-related income in household economies and rural development remains poorly understood due to a distinct lack of empirical data on the subject (ADB, 2008; Katsigris *et al*., 2010; World Bank, 2005). This gap in the knowledge represents a significant barrier to policymaker and donor attempts to effectively incorporate forestry into China's targeted poverty alleviation strategy (World Bank, 2005).

In this paper, data from a targeted poor county in the Guangxi Zhuang Autonomous Region are used to study the role of forest-related income in household economies and rural livelihoods. The study is motivated by three research questions: (1) what are the livelihood strategies of the sample population in terms of income sources? (2) What is the specific role of forest-related income within the context of their wider livelihood strategy?, and (3) How do socioeconomic and policy factors influence forest-related income contributions? In addressing these research questions, a detailed account of forest-related income and the factors affecting it is provided. Such information is essential for guiding policies related to land-use, forest management, and forest-related poverty interventions. Addressing these research questions will improve our understanding of the current and potential role of forest-related income in reducing poverty; especially for remote, mountainous and impoverished areas such as the target areas of China's poverty alleviation programs. But given the dearth of information on the subject in general, this paper will also contribute toward understanding the wider issues of forest-related development challenges in China and beyond.

(a) *Studies on the role of forest-related income in rural livelihoods*

In recent years, research into the role of forest-related income in rural livelihoods has been gaining momentum. For example, a 24-country comparative study called the Poverty Environment Network (PEN, 2007a) is currently under way; focusing on household income generation from forest and environmental sources (data from this China case study are included). There are also a suite of recently published case-studies that investigate a range of forest-livelihood interactions, and show forest-related income contributions ranging from 6% to 45%; (Ambrose-Oji, 2003; Appiah *et al*., 2009; Babulo *et al*., 2008; Campbell & Luckert, 2002; Cavendish, 2000; Fisher, 2004; Illukpitiya & Yanagida, 2008; Mamo, Sjaastad, & Vedeld, 2007; McElwee, 2008; Shackleton, Shackleton, Buiten, & Bird, 2007; Takasaki, Barham, & Coomes, 2001; Tieguhong & Nkamgnia, 2012; Vedeld *et al*., 2004; Yemiru, Roos, Campbell, & Bohlin, 2010) levels that in some cases are equal to, or exceed the contributions from agriculture. The majority of such studies are, however, located in sub-Saharan African countries, and most are focused on forest-related income derived from natural forests only (i.e., environmental income). China makes for a special case study in this regard, having very little accessible natural forests and the world's largest plantation forest area (FAO, 2010c); hence the dynamics of forest income in rural livelihoods in China is very different to the above mentioned studies.

The previously mentioned lack of empirical data on the role of forest-related income in household economies and rural development in China is not due to a lack of published literature on the subject. Indeed Katsigris *et al*. (2010) did a literature review of 55 publications on the subject, but found that a substantial portion of the literature was qualitative and theoretical in nature. The majority of the reviewed literature was also published only in Chinese, and therefore effectively inaccessible to the international audience. Much of the literature that is accessible to the international audience is limited in focus to measuring the impacts of specific forest-related policies and projects on livelihoods (e.g., ADB, 2008; Bennett, 2008; Liu, Jinzhi, & Runsheng, 2010; Uchida, Xu, Xu, & Rozelle, 2007; World Bank, 2005; Xie *et al*., 2005; Zhang, 2000). Katsigris *et al*.'s 2010 study provides the only comprehensive overview of forests and livelihoods in China, which in addition to the literature review, is based on the available government data and an analysis of data from their own eight-province, 276-village household survey. Their key findings are that: (a) forests make a significant contribution to household income in China's forest areas, including those in poor areas; (b) average forest-related income contributions are in the range of 10–20% (although in a minority of study sites forest income contributes the major share of household income); and (c) the forest-related income share of "a very significant proportion of locales" was increasing (Katsigris *et al*., 2010, p. 3). Although very useful information for a general overview of the situation, by the author's own admission, the findings were limited to village averages (i.e., no household level analysis), had no clear analysis of the socioeconomic determinants of forest use, and did not disaggregate the types of forest products and services that make up total forest-related income.

Although limited to only one county, this study provides a new method for systematically quantifying the contribution of household level forest income in rural livelihoods in China. The data are broken down and analyzed according to income groups in order to provide an insight into the specific role of forest income to different socioeconomic groups. Forest-related income is disaggregated according to income groups to provide an insight into the types of forest products and services that contribute to incomes and livelihoods, and the policies that affect them. Furthermore, this study represents a unique contribution to the international literature on the subject, being focused on forest income that is predominantly derived from smallholder non-timber forest plantations.

2. STUDY SITE

The study site is in Tianlin County, which is located in the northwest corner of the Guangxi Zhuang Autonomous Region in southern China. Tianlin is wedged between Guizhou and Yunnan Provinces, and is part of the Greater Mekong sub-region, about 150 km north of the border with Vietnam. The climate is subtropical-monsoonal with hot-wet summers (seasonal flooding and landslides are common) and cool–dry