



The relative importance of community forests, government forests, and private forests for household-level incomes in the Middle Hills of Nepal



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ABSTRACT

To investigate the household-level economic importance of income from forests under different tenure arrangements, data were collected from 304 stratified randomly sampled households within 10 villages with community forest user groups in Tanahun District, Western Nepal. We observed that forest income contributed 5.8% to total household income, ranging from 3.8% in the top income quartile to 17.4% in the lowest quartile. Analyses of poverty indices and Gini decomposition showed that incorporating forest incomes in total household income reduces measured rural poverty and income inequality. Community forestry income constituted 49.7% of forest income, followed by 27.5% from government-managed forest, and 22.8% from private forests/trees. Community forestry income, however, contributed more than other sources of forest income to income inequality, indicating elite capture. We argue that a full realisation of community forestry's poverty reduction and income equalizing potential requires modifications of rules that govern forest extraction and pricing at community forest user group level.

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1. Introduction

Forests provide a wide array of goods and services to local people and about one billion of the world's poor depend on forest resources to sustain their livelihoods (Scherr et al., 2003). Furthermore, substantial recent advances have been made in our understanding of the importance of environmental incomes (defined below) to rural households in developing countries. The methodological break-through came with the seminal work of Cavendish (2000, 2002) subsequently used by the Poverty Environment Network (PEN) to develop a standardized approach to design and implement household and village surveys aimed at collecting quantitative data on environmental incomes and rural livelihoods (Angelsen et al., 2011). Empirical findings from PEN, covering around 8000 households in 24 developing countries, indicated a high degree of environmental reliance among rural households: 28% of total household income was derived from environmental resources, with 81% coming from forests (Angelsen et al., 2014).

According to recent studies, forests hold additional qualities as they offer potentials for poverty alleviation and reduction of income inequality among the rural poor (Babulo et al., 2009; Cavendish, 2000; Das, 2010; Fisher, 2004; Reddy and Chakravarty, 1999). Meilby et al. (2014), using an environmentally augmented panel data set from

three sites in Nepal, reported relative environmental incomes from 9.1–12.7% of total household income. They do not report variations across households but this is at the lower boundary of the global PEN data set (Angelsen et al., 2014). Key environmental product groups in the Middle Hills of Nepal are timber, firewood, fodder, wild fruits, and medicinal and aromatic herbs. Previous studies have reported relatively low average environmental income shares among rural households in Nepal and although the figures are not directly comparable, due to differences in applied methods and definitions, they illustrate that average forest income shares vary from 5 to 8% (Adhikari, 2005), over 4–23% (Chhetri, 2005), and 6–22% (Aryal and Angelsen, 2007), to 12–31% (Rayamajhi et al., 2012). Yet, none of these studies report on the relative importance of income derived from forests under different tenure arrangements although the policy importance of who extracts what products from which forests and non-forest areas is rather obvious. Using the PEN data set, Jagger et al. (2014) found that state-owned forests generated higher forest income than community forests and private forests, both when reported per hectare and per household, and for cash as well as subsistence incomes. They did, however, not investigate how these patterns vary across income groups, nor did they look into the relative importance of forest product groups.

Realizing the gap in our knowledge regarding the relative economic importance to rural households of forests under different tenure arrangements, this paper focuses on how the relative economic importance varies with total household income and why. In support of this analysis, the paper also documents the individual contributions of

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product groups to household economies. Empirical data from the Middle Hills of Nepal are used for the analyses. This location is particularly relevant as (i) the mixed agricultural system of smallholders in a mosaic of small forest patches, terraced cropland and scattered common pastures makes households reliant on inputs from forests and trees across a range of tenure systems (e.g. Olsen, 1996); (ii) the presence of different tenure systems within short distances; and (iii) the existing literature on the household-level economic importance of environmental resources in the country allows an in-depth discussion of our findings. In addition, with 25% of the population in the country living below the official poverty line of USD 0.72/capita/yr (CBS, 2011), an improved understanding of rural incomes can contribute to the development of evidence-based policies that may help to reduce poverty.

2. Methods

2.1. Study area

Tanahun District in the Western Development Region of Nepal ($27^{\circ}74'–28^{\circ}13' N$ and $83^{\circ}94'–84^{\circ}56' E$, Fig. 1) covers an area of 1546 km², ranging from 200 to 2325 masl (DFO, 2009). The average annual rainfall is 1761 mm, with mean maximum and minimum temperatures of 38–48 °C and 5–6 °C, respectively. The total population is 323,288 with 55.6% female and 44.4% male; average household size and literacy rate are 4.13 and 85% (CBS, 2012). There are 41 Village Development Committees (VDCs, the lowest administrative unit in Nepal) and three municipalities. Tanahun District is traversed by the main road from Kathmandu to Pokhara and is representative of good access Middle Hill districts in Western Nepal. Most households are engaged in mixed farming that links crop production, animal husbandry, and forest

utilisation. The average landholding per household in the district is 0.92 ha, with a ratio of forest to cultivated land of 1.22 (DFO, 2013). About 82% of the total population has access to piped drinking water and 55% of households have electricity. In Tanahun District, about 14.8% of the population lives below the poverty line with a minimum of 4.0% in Dulegaunda VDC and a maximum of 38.5% in Chhimeshwari and Deurali VDCs. In our study sites, 6.4%, 14.1% and 11.5% of people live below the poverty line in Byas Municipality, Ghansikuwa and Kyamin VDCs, respectively (CBS, 2013). In current terms, the average per capita income in Tanahun in 2011 was US \$663 (DSO, 2015) up from US \$233 in 2001 (CBS, 2002).

2.2. Data collection

The present study is part of a larger project on community forestry in Nepal. Hence data collection took point of departure in Community Forest User Groups (CFUGs), self-governing local institutions responsible for managing handed-over national forests. We retrieved information on key variables (e.g. date of establishment, area, no. of members, and location) of all community forests in Tanahun District and categorized them as close to or far from the nearest market centre. In a sub-set of three local administrative units (Byas Municipality and Kyamin and Ghansikuwa VDCs), that were considered easily accessible and hence selected for logistical reasons, ten community forests were purposely selected to ensure variation in establishment date, forest area, and market access (Table 1). The four CFUGs in the municipality are considered market close and the six in the VDCs market far. The CFUG forests are either dominated by *Shorea robusta* and/or *Schima-Castanopsis*, and range in size from 30.6–183.7 ha, or 0.14–0.96 ha/hh. In comparison, the 4571

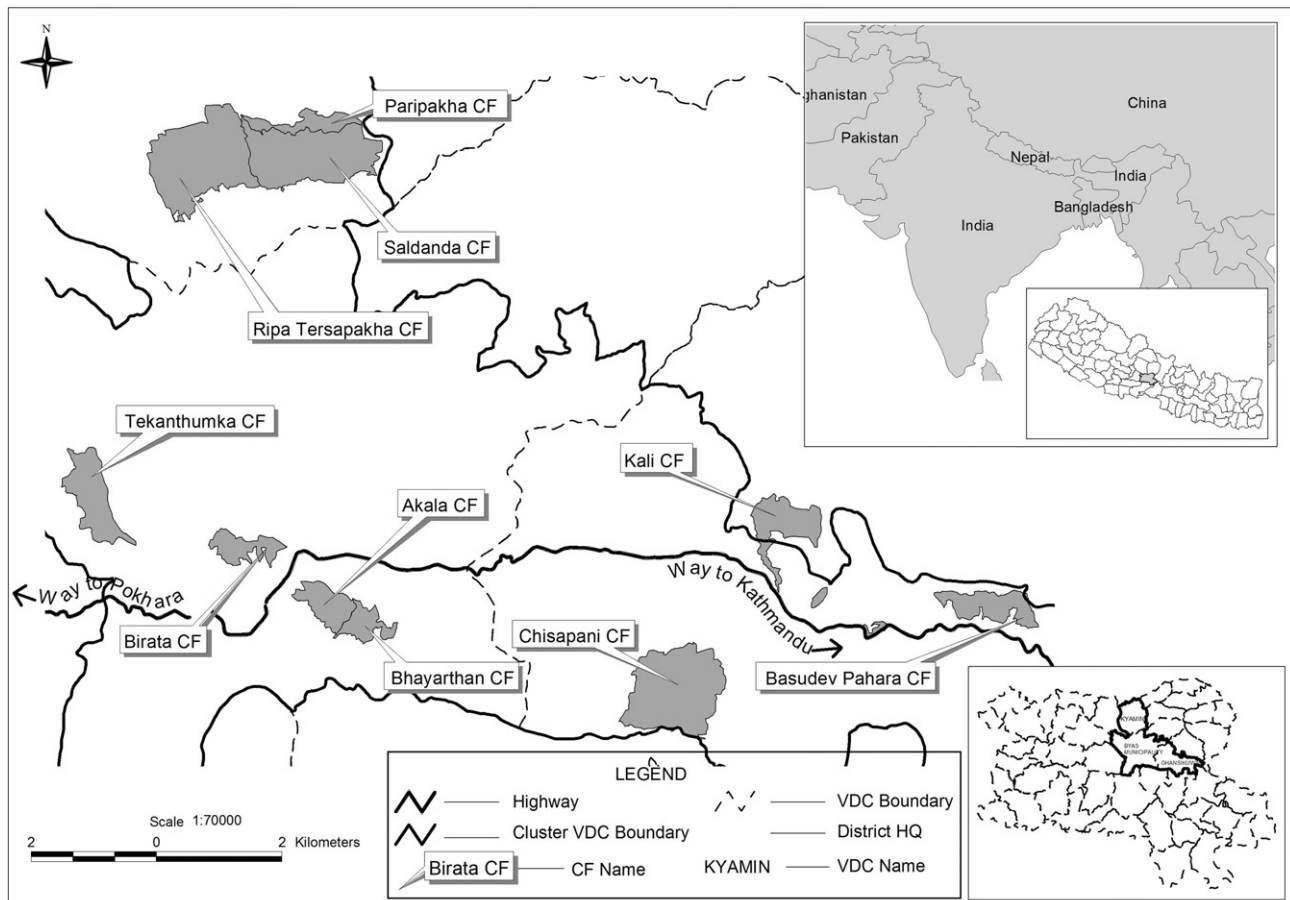


Fig. 1. Location of the study site and the sampled community forests.

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