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Policy brief

2011, No. 13

Evaluating Household Forest Dependency: A Case from Three Study Sites in Cambodia[1]

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KEY MESSAGES:

- Forest is a very important source of resources not only for supporting rural Cambodian livelihoods but also for regulating the climate.
- Rapid population growth and economic development are putting more pressure on remaining forest resources.
- Forest and non-timber forest products collected for supplying the market have been evaluated and documented. However, evaluation of products collected from forest and non forest environment for household subsistence (including consumption and trade) in Cambodia has not been comprehensively documented.
- Effective methods to assess the value of forest and non-forest environment to household livelihoods in Cambodia are needed to ensure quality data and accurate information to better inform decision makers so that these crucial resources can be managed sustainably.

THE PROBLEM

Hundreds of millions of poor people live within or adjacent to forest areas. There is evidence that forest products are harvested in significant quantities by a large number of households across virtually all forest types in developing countries (Scoones *et al.* 1992; Pérez & Arnold 1996; Neumann & Hirsch 2000; Cunningham 2001). Frameworks have been developed for analysing and understanding different types of forest reliance (Byron & Arnold 1999) and the continuum of forest-people interactions (Wiersum 1997). Research on the role and potential of forests in preventing and reducing poverty is, however, very limited and can be considered an emerging field of inquiry. Existing literature has been critically examined with the aim of understanding forest poverty linkages and the potential of forests in poverty alleviation (Arnold & Bird 1999; Arnold 2001; Wunder 2001; Angelsen & Wunder 2003; Scherr *et al.* 2004; Sunderlin & Ba 2005). A World Bank paper uses a meta-analysis of 54 case studies to assess rural reliance on forest income and make recommendations on appropriate research methodologies (Vedeld *et al.* 2004). They note that comparisons are generally not possible because of varying methods. Thus our knowledge of the actual and potential role of forests in poverty alleviation remains rudimentary, and views on the role of forests in providing pathways out of poverty range from sceptical (e.g. Wunder 2001) to optimistic (e.g. Scherr *et al.* 2004). Just comparing existing heterogeneous forest valuation studies is challenging if not impossible (Wollenberg & Nawir 1998; Sheil & Wunder 2002; Vedeld *et al.* 2004). To obtain a better understanding, new in-depth studies using best practice and unified methodologies that enable comparison and synthesis across a range of different sites are required.

THE CASE STUDY

This paper presents some of the key finding of a household survey conducted in 2008 in 15 villages

1 This policy brief is extracted from a working paper *Towards Understanding Household-level Forest Reliance in Cambodia- Study Site, Method, and Preliminary Findings,* by Koy Ra, Lonn Pichdara, Yem Dararath, Xi Jiao and Carsten Smith-Hall, Working Papers on Forest and Landscape 60/2011, Copenhangen University, Denmark.

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located in three communes. (i) Sangkae Satob commune in Kampong Speu is in the transition zone between the northern Cardamom mountain range and the lowlands of the Tonle Sap Lake. The dry season is shorter than four months with low annual rainfall ranging between 800 and 1400 mm (FA 2003). The area is dominated by deciduous forest, much of which is shrubland, and includes parts of the Phnom Aural Protected Area. (ii) Tum Ring commune is a lowland area in the remote part of Kampong Thom province. The area experiences a relatively long and intensive dry season of more than four months. Annual rainfall ranges from 1400 to 2000 mm with an average of 1700 mm (*ibid.)*. Until 2000, the area of the commune was dominated by evergreen and deciduous forests (FA 1999) and forest concessions (Colexim Enterprise, GAT International, and Mieng Ly Heng Investment) were present. Logging was banned in 2002 and forest areas were considered open access and consequently subject to considerable conversion. (iii) Takaen commune is in the remote part of Kampot province, in the coastal Cardamom area. Annual rainfall is relatively high, ranging from 2600 to 3200 mm (FA 2003). The area is dominated by deciduous forest, much of which is shrubland, and includes part of the Bokor National Park. Forests outside the park are open access and subject to high conversion pressure.

A total of 600 households were randomly selected: 200 households in each of the three study sites, with 40 households in each of the 15 villages (corresponding to 10 to 30 percent of households in each village). Before field work commenced, a complete list of households in all the selected villages was drawn up using the official record books kept by the village heads. The first household in each village was randomly drawn from the list, followed by selection of every x/40th household (with x being the total number of households in a village). A household is defined as a group of persons who commonly live together and take their meals from a common kitchen unless the demands of work prevent any of them from doing so (NIS 2007).

Survey interviews were conducted at quarterly intervals in 2008: the first quarter survey was done in early January and the second, third and fourth quarter rounds were completed in late March, July and October, respectively. The questionnaire was designed and translated focusing on the collection of products (processed and unprocessed) from forest environment, non-forest environment, agricultural crops (farm crop), and wage labour (non-farm). The data can be compared with that collected for other country studies under the Poverty and Environmental Network (PEN).

Three methods were employed to evaluate each product: local market valuation is based on farm-gate prices; substitute valuation is done through a close substitute at local market prices; and time spent valuation is based on labour time multiplied by the local daily wage rate (varies with season and gender).

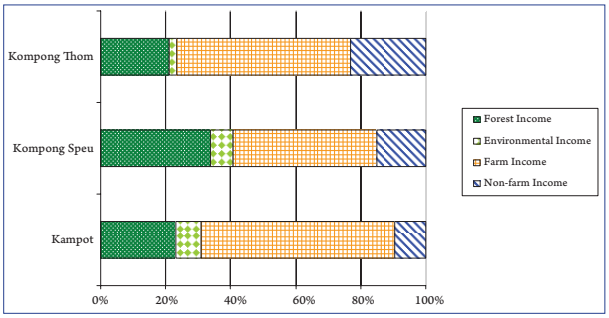
KEY FINDINGS

In total, 216 types of products and services were recorded in the surveys of which 82 are cultivated crops, 61 forest products, 59 environmental products and 14 livestock products and services. Forest and non-forest environmental products are commonly collected by households across all study sites. The most frequently collected non-timber forest products are firewood (85 percent), bamboo (42 percent) and wild vegetables (32 percent).

The average annual household income in the three study sites ranges from 2.33 million riels (USD573) to 2.78 million riels (USD684). Not surprisingly, *farming* is the major source of income in all three sites, contributing from 44 percent (in Kampong Speu) to 60 percent (in Kampot) to the total annual household income. However, the *forest* also plays an important role in income generation; its share accounts for 34 percent of total annual income in Kampong Speu, 21 percent in Kampong Thom and 23 percent in Kampot. The share of *environmental sources* in all three sites is relatively small, accounting for 7 to 8 percent of total income in Kampong Speu and Kampot and 2 percent in Kampong Thom. The share of *non-farm income* varies across the sites; it is highest in Kampong Thom (23 percent), where it is slightly higher than forest income (21percent), while it accounts for much less in Kampot (9 percent). Figure 1 shows the composition of the different income sources at each study site.

There are seasonal changes in the amount of income generated. However, agricultural production or farming is the primary source of income in all three sites, while forestry resources are the second income source for almost all sites (Figure 2).

Figure 1: Total Annual Household Share of Income by Source, 2008



In Kampot study site, there seems to be an increasing trend in the share of forest income from 17 percent to 26 percent in the lowest to the top quartile income group; in absolute terms, forest income doubles between each quartile (thus being around eight times higher in the top quartile than the lowest quartile. The major contribution is from unprocessed forest products, making up 51 percent to 73 percent of total forest income. The importance of processed forest product income increases with total household income.

In Kampong Speu, the forest plays a very important role and accounts for between 29 and 36 percent of total household income in the study site. In absolute value, forest income in Khampong Speu is also higher than in the other two sites across all income quartiles. Income from processed forest products is the major contributor (more than 60 percent) to forest income, except for the lowest quartile where unprocessed forest products are equally important.

In the Kampong Thom study site, forest income also constitutes an important income source and accounts for 20 to 23 percent of total household income, though it represents the lowest absolute value among all three study sites across all income quartiles. The major source of forest income is from unprocessed forest products. Forest related wage income contributes 8 to 10 percent of the total income in the three lower income groups, which is much higher than in the other two sites. Income from processed forest products gains importance in the top quartile.

It was reported that all study sites have encountered some crises as well as uncertain climate which resulted in loss of assets and agricultural production. Local villagers have used many strategies to cope with these crises. Common coping responses outlined in Table 1 include spending cash savings (23 percent), harvesting more forest products (19 percent), doing extra casual labour (13 percent), and selling assets (12 percent). This clearly demonstrates that besides providing important sources of subsistence and cash income, forest resources provide a vital buffer for households against ex-post shocks in Cambodia.

POLICY IMPLICATIONS

- Evaluation using quarterly interviews produces more accurate data and information which can better inform policy makers.
- Forest and other environmental resources play a critical role in preventing and reducing poverty. Therefore, forest and non-forest environmental products should be integrated into development planning in order to benefit rural communities and households.

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Figure 2: Total Annual Household Income by Source and Quarter, 2008

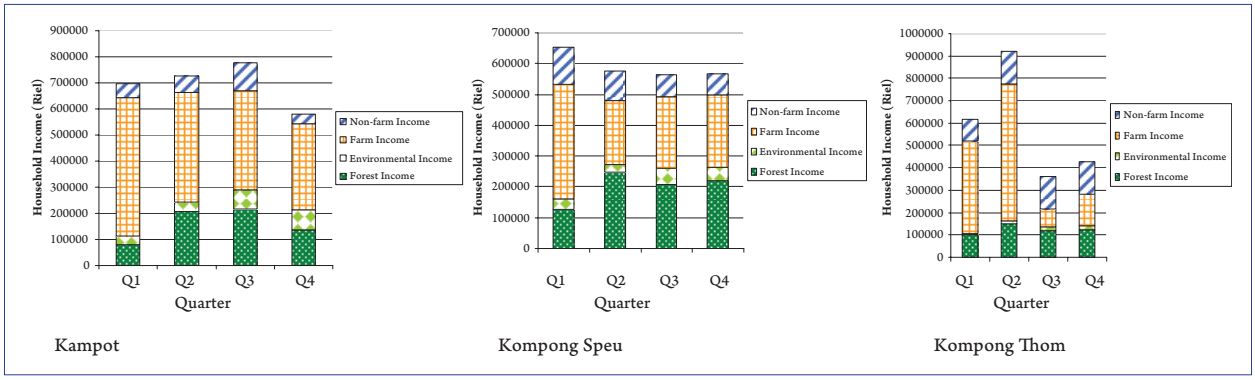

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Table 1: Overview of Frequency of Coping Responses to Crises

How do you cope with lost income loss or higher costs?	Frequency	Percent
Harvest more forest products	96	18.9
Harvest more non-forest wild products	5	1.0
Harvest more agricultural products	28	5.5
Spend cash savings	115	22.6
Sell assets (land, livestock)	59	11.6
Do extra casual paid labour	64	12.6
Assistance from friends and relatives	29	5.7
Assistance from NGO, community organisation	7	1.4
Loan from money lender, credit association	44	8.6
Reduce household spending	1	0.2
Do nothing in particular	44	8.6
Other	17	3.3
Total	**509**	**100.0**

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