



Non-Timber Forest Products: Their Value to Rural Livelihoods

Christian Sloth, Khlok Bottra and Heov Kim Sreng discuss some of the initial findings of the research on assessment of the value of non-timber forest products (NTFPs) extracted from natural forests by rural people.*

Introduction

The objective of this research is to assess the economic consequences of forest conversion to other land uses. This is done by comparing the total economic value (TEV) of forests and relevant alternatives (e.g. sustainable forest management vs. oil palm plantation). As part of this economic analysis of land use options and changes, the natural resources and environment programme of CDRI has carried out a household survey in order to assess the value of non-timber forest products (NTFPs) extracted from natural forests by rural people.

This article summarises some of the initial findings of the research. The data analysis shows that the collection and use of NTFPs is very diverse and represents a considerable economic value to rural livelihoods.

We also briefly review other studies available on the collection, use and marketing of NTFPs. These confirm our findings that a majority of the rural population is using NTFPs as an important source of income and subsistence. Forest products are also considered to play a key role for food security in areas where seasonal food shortages occur, especially among poorer households. NTFPs therefore have particular significance for the poorest part of the population, and thus represent an important resource for the Cambodian economy.

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A Dipterocarp tree being tapped for resin near Snuol, Katie province

Methods and Study Sites

The household survey was carried out in the provinces of Pursat, Kratie, Monduliri and Kompong Cham and involved 504 households in 16 villages. Data was collected using three different approaches. The first focused on overall village level socio-economic data using a short structured questionnaire. The second concentrated on assessing total household livelihood, including cash and non-cash income from both NTFPs and off-

In This Issue

Non-Timber Forest Products	1
Trade Research Capacity-Building Needs	6
Development of Land Tenure Databases	9
Economy Watch	
— External Environment	13
— Domestic Performance	16
— Economic Indicators	18
CDRI Update	20

and on-farm employment. Values were assessed by recording observed market prices and amounts collected/produced over the past year. This led to the identification of total livelihood and the proportion made up by NTFPs. The third approach involved participatory ranking of NTFPs relative to the value of rice sufficiency for the household over a year.

The households were classified into three different income categories: poor, medium and rich. The classification was based on livestock, rice sufficiency (food security), land area and quality of house. Because only two households were classified as rich, this category was abandoned and those interviews are not included in the analysis. In total, 284 households (56.6 per cent) were classified as poor and 218 (43.4 per cent) as medium. All data presented here are based on reported market prices and actual amounts collected.

It should be noted that the field survey sites selected were not confined to areas where households are predominantly forest dependent. Data were also collected from areas with degraded and receding forest resources in order to increase the representativeness of the data.

Rural Livelihoods and NTFPs

In general, we found that rural people use a variety of different NTFPs, including firewood, resin, medicinal plants, wild meat, food plants, herbs, fibres, oils, gums, dyes, rattan and bamboo. In Cambodia, it is estimated that approximately 1,300 different plants species are used for food, medicine and condiments, as well as a range of animal species (RUPP, no year; MOE, 2005).

The large number of different products and species calls for a classification of products into broad categories. The following six categories of NTFPs were identified during data analysis as major contributors to rural livelihoods. The classification is based on functional role and origin:

- 1. Fuelwood (firewood and charcoal)** are the most important sources of fuel for cooking in Cambodia. In rural areas, approximately 97 percent of all households use firewood or charcoal as cooking fuel, and in urban areas the figure is 78 percent. This large-scale use of fuelwood in rural areas makes firewood and charcoal an important energy resource and income source for rural and peri-urban households with few alternatives for cash income (FAO, 1998; Heng, 2002). The data collected in the current study clearly support these findings, both in regard to the percentage of people using wood as fuel and to the value of wood as a source of energy.
- 2. Resin** collection provides a significant income to many Cambodian households, particularly in the eastern region and in other parts with forests containing resin trees. Resin is primarily collected from species of Dipterocarp trees. *Dipterocarpacea* is a family of trees commonly found in most deciduous and semi-evergreen forests in Cambodia. The resin is primarily collected for cash income and is mostly sold directly to visiting traders who transport and resell it for processing (Meng and Martin, 2002; Evans *et al.*,

2003; Prom and McKenney, 2003). A smaller amount of resin is also used by the households themselves, particularly among the poorer segment of the population (see Figure 6). Resin is used for lighting, caulking boats, paint and varnishes.

- 3. Wild meat (including fish)** represents a substantial value to rural households for both consumption and cash income. Other studies also mention the importance of wild game and fish (Desai and Lic, 1996; Lic and Martin, 2002). It should be underlined that protection of endangered species is a serious concern in connection with hunting wild animals.
- 4. Wild plants for consumption and medicinal purposes** are valued in most Cambodian communities as an important supplement to the daily diet and as an alternative and supplement to the official health care system. The reliance on medicinal plants by local communities may be far more important than is generally believed. Approximately 600 different species are reported to be used for medical purposes, including epiphytes, ferns, herbs, grasses, sedges and vines (Meng and Martin, 2002; Kham, 2004; Linddal and Outey, 2004). Wild plants include vegetables, such as rattan shoots, edible leaves, nuts, roots, perennial herbs, ferns, palm core, mushrooms, bamboo shoots, nuts and young leaves of woody climbers and trees and a range of edible fruits. They are collected and consumed on a daily basis and provide an important supplement to villagers' diets.
- 5. Construction materials (bamboo and wooden poles, small timber, leaves, grass, climbers)** are important contributions to many rural people's lives, supplying cheap and easily available building materials. Species of bamboo that are often used for construction include *Dendrocalamus giganteus*, *Dendrocalamus membranaceus*, *Bambusa vulgaris*, *Bambusa bambos* and *Bambusa arundinacea*. Bamboo is also used for making utensils such as farm and fishing tools, baskets, chopsticks, floor grating, and columns of cottages, carrying poles and others. Wooden poles are very commonly used to make gates and livestock cages, and are traded in many provinces. Building timber is used to make plywood for house walls and doors, while leaves and thatch are used to make roofs.
- 6. Honey and beeswax** were identified as a small but distinctive category used by a significant proportion of households.

Figure 1: Percentage of Poor and Medium Households that Collect Different Kinds of NTFPs

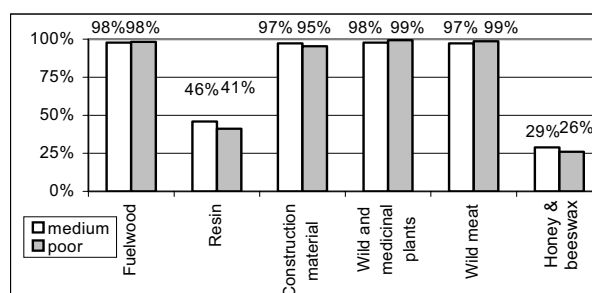


Figure 1 gives a clear indication of the scope of NTFP collection, demonstrating that a vast majority of the population in rural areas are involved in the collection of several different kinds of NTFPs.

The value of NTFPs to rural households

The classification of NTFPs outlined above is used in the following analysis of data. The contribution of natural resources to rural household incomes is found to be highest among poor households, although the total value of NTFPs collected is lower than for better off households. This high rate of dependency on natural resources for income and subsistence could be expected to increase in the future if the development of non-agricultural employment opportunities does not catch up with the general population growth of 2.5 percent per annum. Thus, it can be expected that the number of poor rural households dependent on natural resources for sustenance will increase in the near future, unless drastic changes occur in rural and urban development.

Based on the data collected, we have calculated the economic value of NTFPs on a household basis, including cash and subsistence values.

The total values of different NTFP categories, illustrated above, give a picture of the importance of each category. As can be seen, wild meat scores highest for both poor and medium income households. It is interesting to note that medium income households generally gain a higher value from NTFPs (apart from wild and medicinal plants) than poor households.

Figure 2: Total Values of Different NTFP Categories for Poor and Medium Income Households

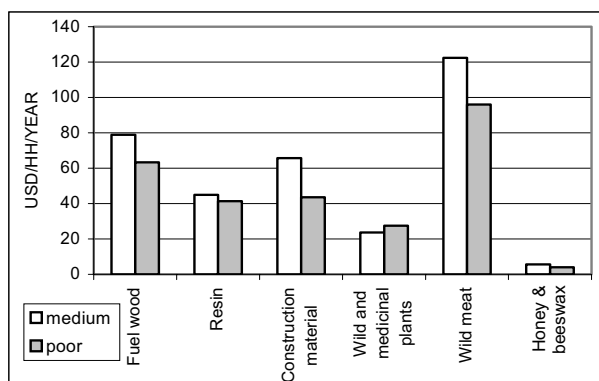


Figure 3 (a) and (b): Distribution of Relative Values of the Different NTFP Categories, in Poor and Medium Income Households.

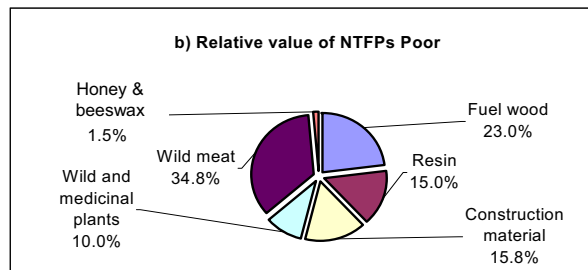
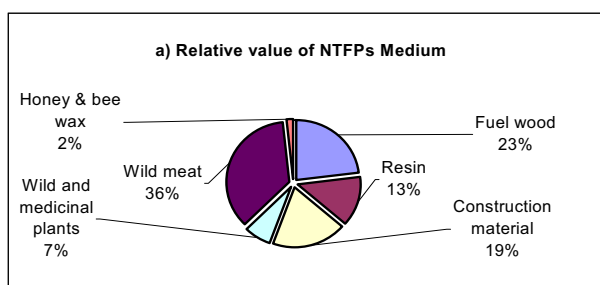
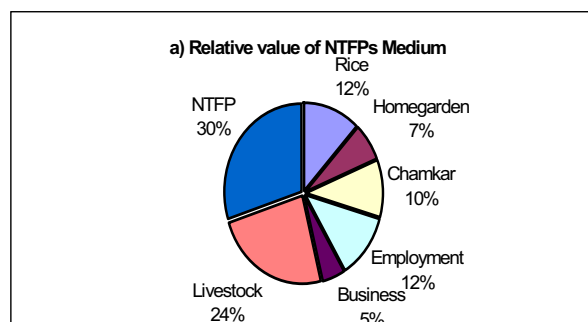


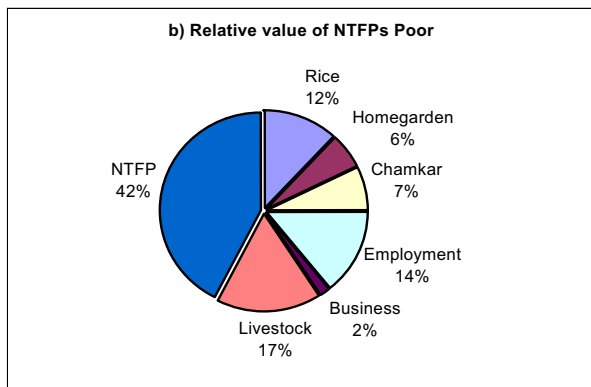
Figure 3 illustrates the relative importance of different NTFP categories for the two income categories. It can be seen that there is little difference in the distribution of collected products between poor and medium households. Again, it is evident that wild meat and fish constitute a significant percentage of the total value of all NTFPs collected (36 percent for both poor and medium households).

This picture changes somewhat when we look at the total household livelihood value, which is the combined value of all income and subsistence activities in the households, including off- and on-farm employment. We have divided farming and other income-generating activities into six different categories:

- 1. Rice farming**, including upland and paddy rice.
- 2. Home garden**, defined as the garden surrounding the house or residential area. The main crops of home gardens include fruits, vegetables and spices used in day-to-day housekeeping, such as lemons, papayas, mangoes, coconuts, pineapples, jackfruit and lemongrass.
- 3. Chamkar farming** is loosely defined as farming other than wet rice cultivation. Chamkar is usually found in more hilly locations and can be either permanently cropped or used under shifting cultivation. Some main crops of chamkar include soybeans, maize, cashews and cassava.
- 4. Employment**, defined as off-farm work, including seasonal and full-time employment.
- 5. Private business**, referring to small-scale home-based businesses such as retail stores, food stalls.
- 6. Livestock**, which includes all animals kept and consumed or sold by the household. Livestock thus re-

Figure 4 (a) and (b): Distribution of Total Livelihood Values for Farming and Other Income Generating Activities and NTFP Collection in Poor and Medium Income Households





fers to the chickens, cattle, buffalos and ducks that are consumed and sold, as well as kept for savings.

As is evident from Figure 4, there is a clear difference between the livelihood activities of poor and medium households. The largest differences are in the values of NTFP collection and livestock. Whereas medium households obtain 30 percent of their total livelihood from NTFPs, poor households obtain as much as 42 percent. The lower share of NTFP value in medium households is mainly offset by a higher value of livestock and private business. The reverse is observed in poor households, which generally obtain a smaller proportion of their livelihood value from livestock.

Trade and Marketing

Existing data on trade and marketing of NTFPs is scarce and basically consists of isolated case studies or limited statistics.

A few secondary sources are available on domestic trade of NTFPs (Dangal *et al.*, 2004; Linddal and Outey, 2004). An earlier study carried out by CDRI revealed that marketing of NTFPs is generally restricted by informal fee collection at different levels in the market chain (Prom and McKenney, 2003).

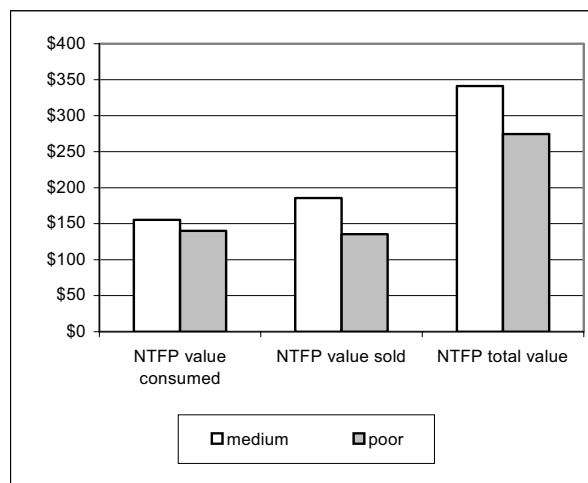
The most recent official statistics on external trade of NTFPs, from 2002, mention small amounts of mushrooms and rattan (DFW, 2003). Other products, such as resin, bamboo and medicinal plants, are known to be traded both domestically and internationally, but the actual size and potential of trade are still unknown (Prom and McKenney, 2003). Linddal and Outey (2004) suggest that exports of medicinal plants from Cambodia are significant, but no information is available on their size and character.

NTFPs for Cash and Subsistence

Although the current CDRI research does not include market research as such, information was collected on the proportion of NTFPs sold for cash and the proportion used for consumption. The data therefore create a picture of the importance of the sale of NTFPs, relative to subsistence uses.

As can be seen in figure 5, there are significant differences in the total value and the distribution of

Figure 5: Comparison of Average Total Cash and Subsistence Values of NTFP in Poor and Medium Households

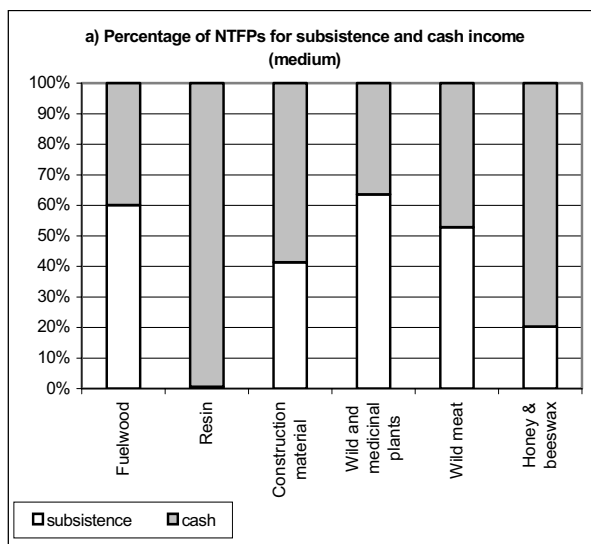


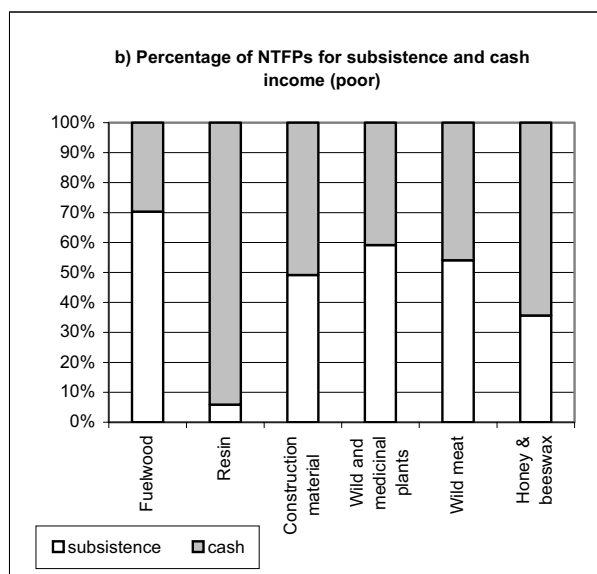
cash and subsistence values between the two income categories. Medium income households collect NTFPs with an average total value of \$345 per year. Poor households collect products with an average total value of \$280.

The two income categories also differ in the proportion of collected NTFPs that are sold or used for subsistence. Medium income households sell 55 percent of the total NTFP value, while poor households sell 50 percent.

These figures clearly indicate the importance for rural households of cash income from NTFPs, and thus the importance of sales and marketing. The proportion of products sold or directly consumed also depends on the nature of the product.

Figure 6: Percentage of Different NTFP Categories Consumed or Sold by Medium (a) and Poor (b) Households





In general, it is evident that all NTFP categories have a significant value for both sale and consumption. Figure 6 also underlines that poor household's use a larger proportion of collected produce for subsistence than do medium households. The most important products for cash income, resin and honey and beeswax, are mainly collected by a smaller number of people, pointing to a certain specialisation in collection and trade (Figure 1).

Concluding remarks

As evident from the above data analysis, NTFPs constitute an important resource for rural households. Not only are NTFPs an important source of subsistence products; they also contribute significantly to cash income. It can therefore be concluded that NTFPs are not merely an "emergency resource" used in case of food shortages, but an integrated part of the livelihood strategies of rural households. The proportion of cash income points to the importance of trade and marketing of NTFPs, though little is known of the size and structure of these markets.

Although the consumption and sale of NTFPs might not be the answer to poverty reduction and development, there is no doubt that the contribution of these resources to the rural household economy is much larger than reflected in official statistics. This means that the value of NTFPs is real, and should be included as an economic parameter in policy and decision making along with agricultural production and timber harvesting.

The results of this survey will be analysed in more detail by CDRI and used in further modelling of economic consequences of forest conversion to other uses.

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