Ee-JRIF
Ethiopian e-Journal
for Research and Innovation Foresight

Ee-JRIF Vol 3, No 1 2011 – Agriculture and Forestry issue: pp (44-59)

The role of non-timber forest products for livelihood diversification in Southwest Ethiopia

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Abstract:

The use of Non Timber Forest Products (NTFPs) has received attention in light of their perceived potential to address both poverty reduction and tropical forest conservation. Based on a survey amongst 145 households, this paper describes the role and significance of NTFPs in the livelihoods of rural communities in the mid-hills and uplands of Southwest Ethiopia. The local people are engaged in multiple household activities including annual and perennial crop production, collection of forest products and off-farm employment. The present study shows that most NTFPs are collected and used locally, but forest coffee and honey are also marketed; their income represents almost 50% of total household cash income. These products are also locally produced through agroforestry practices. Three household strategies in respect to NTFP production are distinguished: a diversification strategy, a specialization strategy and a coping strategy. The value of the NTFPs is higher in mid-hills zones with a landscape mosaic of forests, agroforestry systems and agricultural fields than in the more remote upland zone with a much higher forest cover. The highest potential for NTFPs contributing to rural livelihoods is in forested landscapes rather than in large forest complexes.

Keywords: *livelihood strategies, forest income, NTFP production systems, coffee, honey*

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Introduction

Millions of people throughout the tropics make use of Non Timber Forest Products (NTFPs). The heightened international interest in NTFPs has developed after the seminal paper by Peters et al. (1989). They argued that tropical forests provide NTFPs of significant livelihood value, leading to consideration of NTFPs harvest as a strategy for sustainable use and conservation of forests. Since the publication of this article, much research on the potential of NTFPs for forest conservation and forest-based livelihood development has taken place focusing on both NTFPs production characteristics and household strategies in using NTFPs (Arnold & Ruiz Perez, 2001; Ros-Tonen & Wiersum, 2005; Kusters et al., 2006).Whereas initially many studies focused on estimating the combined values of NTFPs in specific forest areas (Peters et al., 1989; Godoy et al., 1993) gradually the attention became more focused on assessing the values of specific products (Belcher et al., 2005) and their roles at household level (Kusters et al., 2006; Shackleton et al., 2008). As a result of these studies, the original proposition of Peters et al (1989) has been amended.

New insights have been obtained in respect to the following issues (Shackleton *et al*., 2011). A great variety of NTFPs exist ranging from low-value products used for subsistence to high-value NTFPs providing good opportunities for income generation. High-value products tend to be managed intensively and yield substantially higher incomes than those generated by the less specialized producers of less-managed, low-value products (Ruiz-Perez et al., 2004; Belcher et al., 2005). Local communities may be engaged in a variety of livelihood strategies in using NTFPs. The extraction of subsistence-based and low value NTFPs mostly takes place within a coping strategy and is aimed at fulfilling safety and emergency needs. Whereas high-value NTFPs offer good scope for income generation within a diversification or specialization strategy (Shackleton et al., 2008). NTFP production normally is a component of a multi-enterprise livelihood system including also farming activities. The income earning opportunities from NTFPs are often greater in areas with forested landscapes consisting of a mosaic of forest and agricultural lands rather than remote forests areas (Ros-Tonen and Wiersum, 2005). In such forested landscapes a range of NTFPs production systems may co-exist ranging from extraction from natural forests to production in resource enriched forests and in agroforestry systems (Ros-Tonen and Wiersum, 2005). As a consequence, it is now considered that rather than assuming an universal positive relation between NTFP use, forest conservation and local livelihoods, a much more location- and product-specific approach is needed, in which not only attention is given to the ecological characteristics of specific NTFPs, but also to the nature of NTFP management practices and value chains (Belcher and Schreckenberg, 2007; Shackleton *et al*., 2011).

Ethiopia is one of the tropical countries in which NTFPs play a significant role in rural livelihoods (Wirtu, 2002; Chilalo et al., 2006). This is notably the case in the southwest highland of Ethiopia, where large tracts of mountain forests are present. This region is the area of origin of the *Coffea arabica* L and forest coffee is still extracted from the wild (Gole et al., 2001; Wiersum, 2010). In addition, also several other NTFPs are collected in the forests. An initial study indicated that in this region NTFPs contribute about 24 – 30% of the local household incomes (Bognetteau et al., 2007). These results were derived from participatory base-line studies; they indicated major differences in the contribution of NTFPs to household income between wealth categories and regions (Van Beijnen et al., 2004). The present study was undertaken to study the role of NTFPs in the local household livelihoods in the mid-hills and upland zones of the southwest Ethiopian highlands. The following questions are addressed:

(a) What are the main livelihood strategies and their related household incomes?
(b) What is the contribution of different income sources to overall household income?
(c) What is the contribution of specific NTFPs to household incomes?

Research Methods

Description of the study site

The study was conducted in the Southwest Ethiopia within the administrative region of the Southern Nations, People and Nationality province (Figure 1). This area lies in the latitude range of $6^0$45'-$8^0$00' N and longitude $35^0$00' E and is bounded from the north west by the Sudan, north and northeast by Oromia region, in the south Sudan and in the southeast by the Somali Nations and Nationality Regional state (Figure 1).

The area is part of the south western Ethiopian highlands, with an average altitude of about 2200 meters in the north declining to around 1300 m in the south. The mean annual rainfall is between 1100 to 2200mm/year); it has a bimodal distribution pattern. The wet season is between April/May and October/November. Its annual temperature ranges from 12 to 40 degrees with the average being 25 degrees. Masha and Andracha districts are the wettest part of Ethiopia where rain may fall every month, but most of the rain falls between March and November.

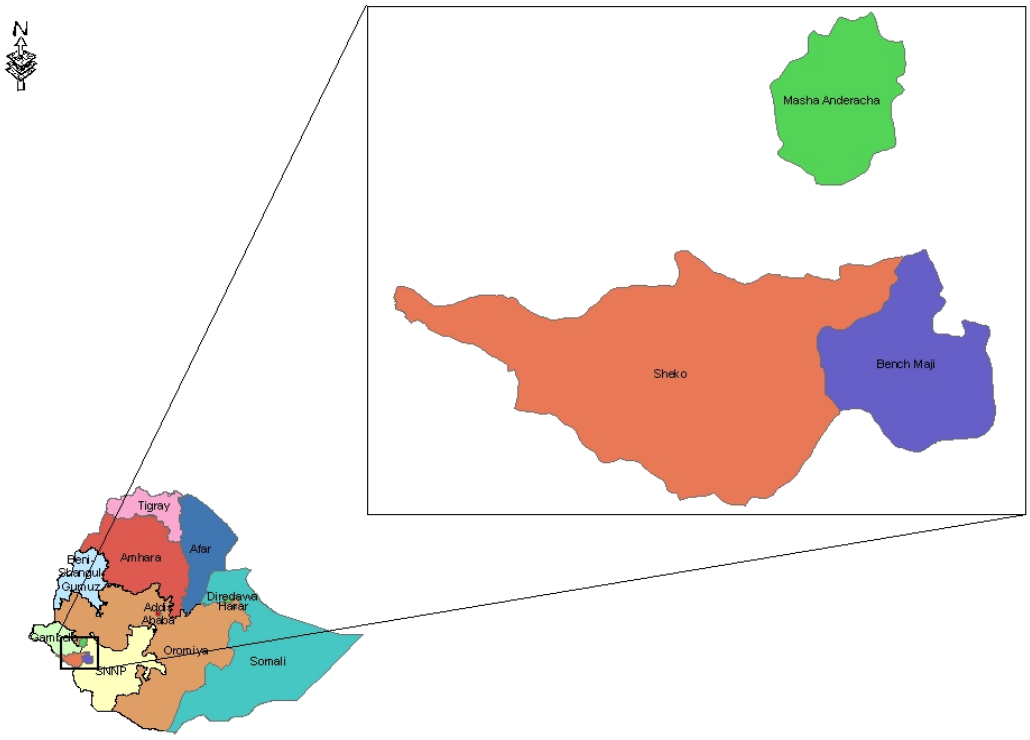

Figure 1: Map of study area

Forest condition and land use characteristics

The larger of the two remaining continuous blocks of Afromontane forest vegetation in Ethiopia is found in the southwest highlands. The forests in this region do not only play a major role in water-tower of the country, but this region is also a UNESCO designated Biodiversity Hotspot of global interest with *Coffea arabica* as a flagship species. Historically, the region was rather less developed compared to the main populated regions in Ethiopia. Consequently, the local communities are highly dependent on the forest resources for their livelihoods, with coffee forming the most important non-timber forest product.

Due to the differences in altitude, in the study area various types of forests can be distinguished. In the mid-hill area (lower altitude) mixed deciduous forests with coffee as a characteristic understorey crop occur. In the upland area (higher altitude) coffee is absent and deciduous forests are complemented by bamboo forests. In addition, differences in land- and forest-use patterns occur. In the mid-hills areas the forest cover is relatively low due to the conversion of forests to smallholder agricultural lands and various garden and plantation coffee systems. In the uplands the forest cover is much denser and most agriculture is subsistence oriented. In this

area wild honey traditionally is the main NTFP (Belay, 2005).

Table 1 Main characteristics of the land-use zones studied

	Upland zone	**Mid-hill zone**
Administrative zone	Sheka	Bench Maji
Elevation	1800 – 2600 masl	900 – 1800 masl
Natural vegetation	Mixed deciduous forest Bamboo forests	Mixed deciduous forests with coffee as a characteristic under-storey species
Forest cover	About 50-60%	About 15%
Population	Sheka and Kefa honey producers Menjo forest dwellers	Sheko and Bench agriculturalist Menet and Mejengre hunter/gatherers Immigrant settlers, mainly Amhara
Land use	Forest use Small-scale subsistence oriented agriculture	Various types of coffee exploitation: Wild coffee extraction Garden coffee cultivation Coffee plantations Small scale agriculture, with some locally marketable products
Average size cropland/household		
Rich households	3.1 ha	9 ha, mainly coffee land
Medium rich households	2.2 ha	4.2 ha, mainly coffee land
Poor households	0.8 ha	0.7 ha
Estimated contribution of farming activities to livelihoods		
Main food crop production	31%	17%
Livestock production	17%	10%
NTFPs	24%	30%

Source : Bognetteau et al. 2007.

In addition to coffee and honey, also several other NTFPs are collected, such as cardamom (*Aframomum corrorima*); wild pepper and long pepper (*Piper capense*), and turmeric (*Curcuma longa*).

Coffee is not just collected in the forests from wild plants, but its production may be stimulated by different management practices such as removal of shade competition and transplanting of wildlings (Gole et al., 2001; Schmitt, 2006; Senbeta and Denich, 2006; Wiersum, 2010). Honey production is stimulated by hanging traditional beehives in the forests. The importance of this practice is demonstrated

by the presence of local regulations regarding access and use rights (locally called *kobo* rights) to either forest plots or specific trees for hanging bee hives (Wakjira and Gole, 2007). In addition to the extraction from the forests, coffee and honey are also produced in cultivation systems outside the forest (Wiersum, 2010). Coffee is grown mostly in mixed garden coffee cultivation systems, but also some coffee plantations exist. Recently also new techniques for honey production using modern beehives were introduced. These modern beehives are mainly located in the farmyards, but the bees still depend on the forests for most of their foraging.

Sampling techniques and data collection

Multistage stratified sampling techniques were used to select the study population. This has been done in the following procedure: First 4 districts namely Bench, Sheko, Masha and Anderacha districts were selected purposefully on the bases of socioeconomic characteristics, involvement in forest collection, agricultural practices, and ethnic composition. The first two districts were selected from Bench-Maji zone while the later two from Sheka zone. Next, from the selected district, a total of 6 Peasants Associations (PAs) based on their dependency on NTFP were selected. From the selected PAs sample households were selected using probabilities proportional to size technique based on the number of farm households in PAs, so that, all sample units would have equal chances of being selected. The proportional sampling was applied within a district (Table 2).

Table 2: Sample frame

No.	Zone	Districts	Peasant Association	No. of sample units
1	Benchi-Maji	Bench	Fanika	45
			Kabarta	32
		Sheko	Shayita	12
2.	Sheka	Masha	Beto	16
			Gada	21
		Anderacha	Yokachichi	24
Total				150

A household in this research was defined as a group of people living in the same house and sharing a common cooking pot. Normally in Ethiopian case, most household members are also kin, and

contribute labour for their common livelihood strategy up on which a household head becomes the main decision maker. The lists of the names of registered household heads in each district who are permanent residents of the selected PAs in the district

thus were used as a sampling frame. The name lists of the sampled households in the PAs were obtained from district agricultural offices. Prior to formal data collection a reconnaissance survey was undertaken to prepare sample frame of the households in PAs.

The data were collected using structured and semi structured

questionnaires. The process of questionnaire design was greatly facilitated by employing survey instruments that pursue similar objectives and that have been adapted, tested, and successfully used to generate data in similar cultural, economic, and agro ecological settings. Based on the sample frame the questionnaires were administered on randomly selected 150 sample households on a face-to-face interview bases.

The questionnaire included questions on household characteristics, socioeconomic and farming conditions, sources of household livelihood and income, as well as characteristics of NTFPs utilization. Regarding coffee production a distinction was made between coffee production in forests (categorized as NTFP production) and coffee cultivation in garden or plantation systems (categorized as farming production).

In order to estimate household income, each household was asked to give an estimate of how much of a product obtained from each source of income during the year preceding the interview. This includes all that obtained which either could be for consumption or sell, if any. The reliability of the data depends on the respondent's estimation of the amount harvested, collected, consumed and sold rather than experimental measurement. This field data collection was done from July – August 2005 using pre-tested questionnaires.

Data analysis

Data collected was checked, corrected if any, systematically coded and captured using Statistical package for social sciences (SPSS). Statistical Software for Professionals (STATA) was used to analyze the empirical data.

After critical analysis five sample households' data were found to be incomplete/outlier and are discarded, so only 145 observations were used for final analysis. Data from selling farm animals were not included in the household income calculations.

Results

Major Non-timber forest products in the research area and their characteristics

The forests in southwest Ethiopia are an important natural resource rendering households high value and low value NTFP products. High value products are those products that have commercial value and low value products are those that only serve households for subsistence purposes. The main categories of products are summarized in Table 3. The main commercial NTFPs are forest coffee, honey, spices and bamboo.

Table 3. Major NTFPs in the study area

Household requirement	Type of NTFP	Remark
Earning cash	Forest coffee, honey, spices	Coffee and honey have the highest potential and economic viability
Nutrition/food	Taro, spices, yams, fruits, lianas etc	Mainly used for subsistence purposes providing side dishes, snack and fruit; some are marketed when available in surplus
Health/medicinal	Medicinal herbs, part of woody perennials, palm, wines etc	Serve as medicinal
Construction	Bamboo, climber	House construction, beehive making, flooring, fencing; in addition bamboo is used for making of household equipments and utensils
Agricultural input	Farm implements from forest	Oxen driven farm equipments
Energy	Dead tree, branches, small tree etc	All households collect year round for their energy consumption
Livestock feed	Fodder	This fodder is very important especially for calves which are kept at home

Socioeconomic characteristics, main livelihood strategies and household income

The majority of the respondents (92%) consisted of people from indigenous groups. These are the Sheka, (38%), Bench (24%), Sheko (13%), Keffa (8.9%) and Mejengre (7.5%). The rest are immigrants from other parts of the country. Immigrants consisting of Oromo (2.7%), Amhara (2.1%) and others groups (3.4%) recently settled in the area as a result of government resettlement programs or individual immigration are mainly agriculturists. Some indigenous groups such as the Mejengre and the Menjo are still hunter-gatherers making of their living in forests, but most groups are basically agriculturists. Nonetheless, also for the last groups the forests still have an important productive and cultural significance (Bognetteau et al., 2007; Wakjira and Gole, 2007). Most respondents were between 20 and 50 years of age (85%) and have only primary education (75%) and are mostly male headed (88%). We also found that on average a household has a

family size of 5.6 people with standard deviation of 0.2.

Households in the study area engaged in a variety of farm and non-farm activities. When asked to prioritize the most important activities to their livelihood, 47% of the respondents indicated that food crop production was most important, followed by forest coffee (39%), and honey (12%) production. In addition, forest products such as spices and bamboo, several edible wild plants, medicinal plants, and wild plants are produced/ collected. About 90% of the household indicated that food crops are mostly consumed at home. In contrast, forest products form an important means for obtaining an income through either informal local trade or formal commercialization.

Regarding their livelihood strategies different types of single or multi-enterprise farming practices are present (Table 4). The majority of the respondents (48%) reported that their main occupation is agriculture in the form of food crop and garden coffee production, whereas 25% of the respondents were engaged in both agricultural production and forest product extraction. Only 27% were engaged in the sole collection of forest coffee (22%) and honey (5%), i.e these respondents totally derive their living from coffee collection or honey production. The other respondents reported a mixture of activities including off-farm work. Generally, maize (Zea mays L. ssp. mays) and enset (Enset ventricosum) were the major food crops and forest coffee and honey the main non-timber forest products.

Table 4 Main types of livelihood activities and annual income (ETB/year)

Activities[1]	No. households	Percentage	Mean revenues (ETB[2]/year)
Farming and forest coffee plus honey production	6	4	3,614
Forest coffee production	32	22	2,700
Farming and forest coffee production	5	4	2,700
Honey production	7	5	2,224
Farming combined with production of forest coffee, honey, spices and bamboo	10	7	1,489
Farming and honey production	15	10	1,444
Farming	70	48	1,317

1 The categories of activities indicate the respondents' opinions with respect to their major occupation. The categorization does not preclude households being engaged in minor additional activities.
2 ETB = Ethiopian Birr, in the year of research the exchange was approximately US$1 = 8.5 ETB.

The farm production systems include not only food crop production and garden coffee production, but also maintenance of farm animals for soil tillage and manure. Only 42 % of sample households have oxen; the minimum and maximum oxen holding for households who own oxen are 0.5 and 3 respectively. The value 0.5 indicates there are households who share a single ox. About 5.5% of the respondents do not have any livestock.

In addition to farming activities 23% of the respondents are also engaged in off-farm activities. The off-farm activities reported are manufacturing and petty trading of pottery, mats or local beer, sale of fruits and vegetable, and wage labor work.

Contribution of different income sources to household income

The importance of the different household activities on household income can further be assessed by considering the incomes derived from the separate livelihood activities (Table 5). The income from farm production is relatively low as reflected by the finding that these activities only contributed for 48% to the household cash income. On average about 73% of the crop produced was consumed within the households. The major sources of cash income for the households are NTFPs. The contribution of NTFPs to total household cash income (49%) is slightly higher than the contribution of farm production. Although not well developed, households were also deriving some limited income (on average 1%) from off-farm activities and remittances each.

Table 5: Mean annual household cash income (Birr/year and relative contribution) by livelihood activities

Income source	Uplands (N=55)	Mid hill Zone (N=90)	Mean (N=145)
Total cash income	1038	1878	1560
NTFP income	428 (41%)	980 (52%)	771 (49%)
Farming income	559 (54%)	858 (46%)	745 (48%)
Off-farm income	22 (2%)	23 (1%)	22 (1%)
Other(remittance)	29 (3%)	22 (1%)	22 (1%)

Between the upland and mid-hill zones clear differences in the contribution of farming production and NTFPs extraction to household incomes are present (Table 5). The average annual household cash income from both agriculture and NTFPs collection is almost twice as high in the mid-hills as in the uplands. In the mid-hills, the relative contribution of the NTFPs to households (52%) is higher than in the uplands (41%). As will be further discussed below, this reflects the lower commercial value of the main upland NTFP honey in comparison with the main mid-hill NTFP coffee as well

as the less favourable marketing infrastructure.

Contribution of specific NTFP to household income

Table 6: Major NTFP, sale, and their average annual income among collectors

Type of product	Sold by percentage of households		Average income (ETB/yr)		Average income for all households selling the product (ETB/yr)
	Uplands	Mid hill zone	Uplands	Mid hill zone	
Forest coffee	13%	69%	653	1249	1188
Honey	73%	24%	464	405	443
Spices	25%	4%	25	268	84

A further indication of the importance of different NTFPs can be obtained by considering the incomes obtained by the actual collectors[1] from selling specific NTFPs. Table 6 summarizes data on the percentage of households selling NTFPs in the two zones and the average incomes for the collectors derived from various NTFP products. These amounts are higher than indicated in Table 3, as that table refers to the average income of all respondents, including respondents who did not collect NTFPs.

Regarding the collection and sale of different NTFPs in the two zones the following details can be given:

- Forest coffee is the major commercial NTFPs in the study area with a mean income of 1188 ETB. In the uplands, only 13% of the sample households were involved in the collection and sale of forest coffee with a mean annual income of 653 ETB. In contrast, in the mid-hill zone 69% of the sample households were involved in the collection and sale of forest coffee with a mean annual income of 1249 ETB.
- Next to forest coffee, honey is the major NTFPs in the study area. About 42 % of the respondents were involved in honey production providing them with an average household income of 443 ETB. Some honey collection still involves the collection of honey from bee colonies nesting in trees. However, most honey collection involves the hanging of traditional beehives in trees under the local *kobo*

[1] Actual collectors are households actually engaged in the collection of NTFPs, this category of respondents excludes households that are not engaged in NTFP collection.

arrangements for allotting bee hiving rights to either forest plots or specific trees. The honey production is most important in the upland zone, where 73% of the respondents were involved in the collection and sale of honey with a mean income of 464 ETB per year. In contrast, in the mid-hill zone only 24% of the respondents were involved in the collection and sale of honey with a mean income of 405 ETB per year. The variation in honey prices is much lower than for coffee, and the lower importance of honey production in the mid-hills as compared to the highlands can be attributed to the presence of the more financially lucrative forest coffee production options. In contrast to coffee, the production, processing and marketing conditions for honey are still poorly developed. Due to the traditional production and processing techniques, the quality of the honey is low, and this limits marketing beyond the local markets (Bognetteau et al., 2007).

- In addition to coffee and honey, several other NTFPs are also collected. Spices (*Timiz* or long pepper, *Piper capense*, and *Korerima* or Ethiopian cardamom, *Aframomum corrorima*) are the most important amongst these minor NTFPs. Only a relatively small number of households (25% in the uplands and 4% in mid-hills) were involved in the collection and sale of spices with an average income per collector of 84 ETB. The sale of spices is not well-developed and mostly focuses on local markets. This is partly caused by the lack of recognition of the indigenous spices and competition by locally-cultivated exotic spices.
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The importance of NTFPs as a livelihood source supplementing agriculture is reflected by comparing average household incomes derived from coffee (1188 ETB), honey (443 ETB) and for spices (84 ETB) respectively with the income of off-farm averaging 157 ETB.

Discussion and conclusions

Our data indicate a differentiated role of the NTFPs in local livelihoods. As indicated in Table 4, highest incomes are obtained in case of a diversified livelihood strategy combining farming production and production of the commercial NTFPs coffee and honey. This indicated the good potential of a diversified livelihood strategy with high-value NTFP production supplementing agricultural production. Farmers with a more specialized livelihood strategy in respect to NTFP production are predominantly engaged in forest coffee or honey production, possibly combined with some farming; they earn a medium income. This indicates that such a specialization livelihood strategy provides fair livelihood options. Farmers specialized in honey production often manufacture the honey into the local honey beer, thus adding value to their honey production. In contrast, spices and bamboo are relatively low-value NTFPs and farmers who collect those, often in combination with smaller amounts of coffee and honey, have a relatively low income. In

this case, NTFPs collection can be considered as a coping strategy.

Our findings confirm the earlier studies in the study site about the important role of NTFPs in providing household security and income. Bognetteau et al. (2007) reported a contribution of honey and forest coffee to local livelihoods of 18% and 6% respectively in the uplands and 8% and 22% respectively in the mid-hills. As these estimates relate to net household incomes rather than gross household incomes as in this study, they cannot be compared directly to the results of this study. Nonetheless, the trends are similar with a greater livelihood impact of NTFPs in the mid-hills as compared to the uplands and a greater importance of coffee in the mid-hills against honey in the uplands.

The data about the role of NTFPs for household income are consistent with results from other Ethiopia studies. Even though, the results of various studies are not directly comparable due to different calculation methods, the data indicate that in mountain forest areas the NTFP-based incomes may be as important as incomes derived from crop and animal production. In the Dendi district NTFPs were found to contribute 39% to household income, and crop and animal production 40% (Mamo et al., 2007). And in the Bonga region coffee and honey contributed 18.5% to household income, crop production and livestock 19.5% and fuelwood and charcoal 60% (Gobeze et al., 2009).The contribution of the forest products to the livelihoods changed considerably after the start of a participatory forest management project. As a result of the new management arrangements, the livelihood contribution of coffee and honey increased from 18.5% to 40%. This indicates the importance of well-adjusted management practices stimulating NTFP production. And under a participatory forest management project in the Bale highlands forest products in the form of both non-timber forest products and wood products contributed 34% to overall household income (Yemiru et al., 2010). Also in the dry woodlands areas NTFPs have been reported to contribute from 27% (Lemenih et al., 2004) to 32.6% (Babulo et al., 2007) of household income. In dry woodland region of Tigray it was noted that the contribution of forest incomes was higher in the middle highlands (28%) than in the upper highlands (25%). This was attributed to more intensive management with larger areas reserved for forest production and better market access (Babulo et al., 2009). These findings are consistent with our findings that the more intensive management of the commercial NTFPs in both forest and agroforestry systems in the well-accessible midhill area as compared to the less intensive management in the less accessible uplands resulted in a greater contribution to local livelihoods.

These findings illustrate the great importance of forests to local livelihoods. In a recent meta-analysis of 51 case studies from 17 countries about the role of forest incomes for local livelihoods, a mean forest-based income dependency of 22% was found (Vedeld et al., 2007). Three categories of a low, medium and high relative forest-based income (RFI) of 5%, 19% and 42% respectively were identified. The low RFI

cases were characterized by a relatively high man-to-forest ration and a higher elevation, and the high RFI cases by medium man-to-forest ratio and lower elevation. These findings are comparable with our findings about the greater importance of forest-based incomes in the mid-hills compared to the uplands. The low RFI cases were often located in areas with a relatively high total income, whereas high RFI cases were located in regions with relatively low household income. Even though RFI is influenced by many contextual factors, this finding suggests that the overall high livelihood importance of NTFPs in Ethiopia is at least partly related to the still low degree of rural development in the country.

Our data also provide information on the scope of NTFPs for contributing to the combined goals of forest conservation and local livelihoods. As indicated in the introduction, recently three new insights evolved in respect to the variety of NTFPs with different value chains, the role of NTFPs in different livelihood strategies and the importance of forested landscapes for improving NTFPs income earning opportunities.

Our data clearly illustrate the variety in NTFP value chains with NTFPs ranging from low-value products used for subsistence purposes to high-value NTFPs providing good opportunities for income generation (Belcher et al., 2005). As demonstrated by the example of forest coffee, high value is not only related to product characteristics, but also to marketing conditions, including local experiences with quality criteria for production and local processing. Consequently, it is possible to identify not only high and low value products, but also high and low potential production areas. The example of forest coffee demonstrates that as a result of high NTFPs values, farmers may be stimulated to gradually domesticate those NTFPs and cultivate them in garden or plantation systems (Wiersum, 2010). It is sometimes considered that such cultivation will displace the natural forests or the forest extraction systems, but this was not found to be the case for forest coffee. Notwithstanding its domestication, forest coffee still plays an important production role in Ethiopia, and recently this form of coffee production is being stimulated as a contribution towards forest and biodiversity conservation (Gole et al., 2001; Wiersum, et al., 2008). Forest coffee can relatively easily be taken up by the well-establishing coffee marketing structure, and hence forest coffee production seems to profit from rather than to compete with the marketing of domesticated coffee. The marketing structure for honey is much less developed than for coffee. In the case of the spices, the marketing of local spices is even negatively effected by the existing marketing of exotic spices. These examples illustrate that the marketing conditions for NTFPs are mostly product specific, and that a well-established market for one type of NTFPs does not guarantee good marketing conditions for other NTFPs as well.

Our data also illustrate how different NTFPs may be used in different types of livelihood strategies (Ros-Tonen and Wiersum, 2005; Belcher and Schreckenberg, 2007; Shackleton et al., 2008). The

combination of agriculture and production of high-value NTFPs provides higher incomes than agricultural production only. It illustrates the good scope for NTFPs production within a livelihood diversification strategy. The income derived in case that households are engaged in coffee extraction or honey production only is also relatively high, but this specialization strategy concerns few households only. However, in case that households collect low value NTFPs such as spices and bamboo, the household income equals the incomes of households engaged in agriculture only. In this case, the NTFPs production forms part of a coping strategy and serves to earn some cash to compliment subsistence agricultural production. The diversification strategy predominates in the high-potential mid-hill areas and the coping strategies in lower potential upland areas. Markets thus do not only drive the specialization strategies of NTFPs collectors (Ruiz Perez et al., 2004), but also their diversification strategies.

Finally, our data regarding the greater livelihood role of NTFPs in the mid-hills covered with a mosaic of forest lands, agroforestry systems and crop lands as compared to the highlands with a much higher forest cover, adds to the growing evidence that the highest potential for NTFPs production are not situated in (remote) forest areas, but rather in forested landscapes (Ros-Tonen and Wiersum, 2005). Such forested landscapes offer good opportunities for incorporating NTFP production in household diversification strategies within the setting of a multi-enterprise livelihood system. Moreover, as discussed above, they may provide scope for synergy in marketing of both wild and (semi)domesticated NTFPs.

Acknowledgements

The authors thank the two anonymous reviewers, the staff of the Non-timber Forest Products Research and Development Project in South West Ethiopia for their information, and study cooperation as well as all the people in the field who helped with and participated in the survey. The assistance of the Ethiopian Agricultural Research Organization for providing logistics for survey data collection is gratefully acknowledged. We also thank African Academy of Sciences/African Forestry Research Network and Wageningen University for funding the research.

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