

Forest Resource Extraction and Rural Livelihood a Case Study in Southwestern Ethiopia

Alemayehu Mullatu; *Mulugeta Sisay & ¹Mekuria Argaw

*Correspondent author: mamuler@gmail.com

Dilla University, College of Agriculture and Natural Resources, P.O.Box 419

¹Addis Ababa University, College of Natural Sciences, Environmental Science Program, P.O.Box 1176

ABSTRACT

Forest resource provides livelihoods for hundreds of millions of people worldwide, through production of different products. The purpose of this study was to identify types of forest products extracted from the natural forest, to explore the degree of dependence of households on forest products and analyze the contribution of extracted forest resources for rural livelihoods in Masha and Andracha districts of Sheka Zone in the Southwestern Ethiopia. Systematic sampling and simple random sampling techniques were employed to conduct survey of households and markets, respectively. The result showed honey from beehives, kororima (*Aframomum corrorima*), timiz (*Piper capense*), wild honey and cultivated coffee were collected mainly for commercial purposes whereas bamboo Culm, fire wood, medicinal plants, wild gesho (*Rhamnus prinoides*), lianas and wild coffee were collected for subsistence. Income from forest products support 71% in Beto, 22.1% in Abelo, 74.6% in Chegecha and 26.8 % in Modi peasant association (PA) of the average annual income of local people. Analyzed market data results also showed honey, kororima (*Aframomum corrorima*), firewood, charcoal and local construction materials were major traded forest products in local markets. Therefore forests are sources of several goods and services that contribute to the rural livelihood in the study area especially those who reside near or in the forest. The forest with more forest products play important role on rural livelihoods, hence

conservation of forest is essential to sustain their livelihoods.

Key words: Natural forest; Forest resources; Livelihoods; Extraction; Rural

1. INTRODUCTION

Forests are the most diverse terrestrial ecosystems. Forest biodiversity also has important economic, social and cultural roles in the lives of many rural communities. Besides, its environmental services forest provides livelihoods for hundreds of millions of people worldwide, through production different products (Anonymous, 2008; IBC, 2013). According to the World Bank 2001 report, globally more than 1.6 billion people depend for varying degrees on forest for their livelihoods. About 60 million indigenous people are almost wholly dependent on forest. Some 350 million people who live within or adjacent to forests depend on them to a higher degree for subsistence and income.

In developing countries forest products are an integral component of the livelihoods of the majority of rural households, and a lower, although not insignificant, proportion of urban households (Byron and Arnold, 1999). In Ethiopia, forestry also plays a significant role in both national and local economic development. According to Sisay *et al.*, (2009) and Demel *et al.*, (2010) the forestry sector contribution to the GDP in the national accounting system is 5.7% and



9.0% respectively. Ethiopia is a country with a predominantly rural structure. Out of 74 million people, about 84% people reside in rural areas depending on crop and livestock farming and extraction of various products from forest, tree and other vegetation resources (CSA, 2008).

Access to forest resources helps rural households diversify their livelihood base and reduce their exposure to risk. Earnings from forest products are often important as a complement to other income. Very large numbers of households generate some of their income from selling forest products, often when farm production is not enough to provide self-sufficiency year round. Income from forest products is often used to purchase seeds, hire labor for cultivation, or generate working capital for trading activities (Warner *et al.*, 2008).

Alike to other forest area community, the livelihood of peoples in the study area largely depends on forest products. According to Aseffa (2007), people perceive forests as “pension card” passed to them from their parents, as it is everything to them and a range of values attached to the forest products that have socio-economic importance.

Depending on socioeconomic status of the households forest resource extraction play an important role in food security, mostly through income generation. For the poorer households, forest products provide a safety-net, especially through the open access condition of some of the products (NTFP R and D Project, 2005). Forest resources sometimes provide income that allows people to get out of poverty. Much often they help families to keep from falling further into poverty. They provide seasonal employment and food when the options are not available serve as, resources in periods of distress (e.g., war, economic crisis and drought).

According to Shylajan and Mythili, 2007, forest resource, in addition to providing food and other

basic needs to the rural population, is source of inputs into the agricultural system. However, these values are specific to a site and probably vary widely. The intensity of extraction of various products and forest dependency may vary among different communities, among households within communities and between locations in the forest.

In the study area Sheka natural forest, is one of the remaining natural forests in Ethiopia, which has environmental, economical and social benefits at local and national level. Similar to other communities of developing countries dwelling in forest area, the livelihoods of Sheka people largely depends on forest resource extraction. Even though Sheka natural forests consist of different forest products of subsistence and commercial importance, these forests are under increasing pressure, primarily as a result of the clearance of land for smallholder agriculture due to population growth and in-migration, but there are also important losses of forest land for estates run by the state or investors (NTFP R and D Project, 2009). The deforestation and forest degradation not only threaten the ecological functions of the forests, but also impact on the livelihoods of rural communities. Moreover, the extent of people dependence on forest resources and the types of forest products extracted from forest and market for these products have great influence on the forest resources of the area.

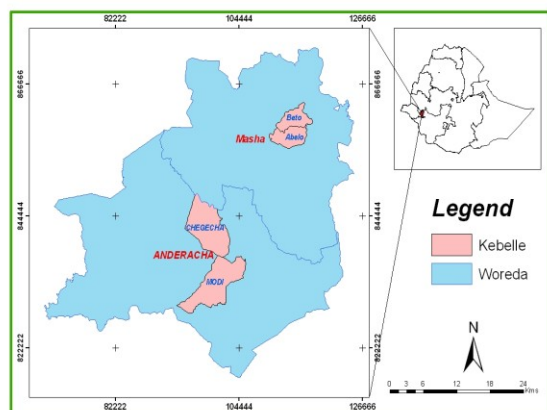
The types of forest products extracted are different from community to community, and the communities that have good access of None Timber Forest Products (NTFPs) impose less pressure on woody forest products. Those communities having less NTFPs like honey production depend on woody forest products for income generation. These extraction trends are aggravated by increase in population in rural and urban areas and some forest products provide immediate return for engaged households, which is another pulling factor of the forest. Therefore, this study attempts to assess the types of forest products extracted by households, contribution of

the extracted forest products to rural livelihoods, and to explore the degree of dependence of household on forest products.

2. MATERIAL AND METHODS

2.1. Description of the study area

Sheka Zone is located at about 670Km from Addis Ababa, in South Nations Nationalities and Peoples Regional State. Total area of Sheka is 2,175,327 ha. Geographically, the Sheka Zone lies between 7°24'–7°52' N latitude and 35°31'–35°35'E longitude. The Zone has three



1kebele: the lower administrative unit in Ethiopian government structure, 2Woreda: Equivalent to District

Figure 1 Map of the Study Area

With variation of altitude different forest types can be recognized in the study area. Accordingly, broad leaved Afro-mountain forest with coffee, broadleaved Afro-mountain forest without coffee and pure stands of highland bamboo (*Arundinaria alpina*) forests are found from lower to higher altitude.

The study area receives maximum monthly rainfall of 348 mm in the month of July with minimum monthly rainfall in February. The maximum and minimum temperature of the study area is 18.4°C between February and April and of

districts, namely: Masha, Andracha, and Yeki. The soils of the study area differ in color from black to red. Regarding the types Nitosols, Vertisols, Fluvisol, Cambisols are the dominant soils types of the study area.

Sheka zone has total population of 217,921, out of which 107,410 were female and 110,511 are male. The total population of Masha and Andracha districts is 36,716 and 26,449, respectively. Masha district has 18,038 male and 18,678 female and Andracha district has 13,291 male and 13,148 female (SZARDD, 2009).

15.7°C between Jun and august. Land use types of the study area are indicated in Table 1.

Table 1: Land use type in the study area

S.N	Type	Area in hectare
1	Cultivated land	47194
2	Forest land	94499
3	Grazing	4012
4	Cultivable	22933
4	uncultivable	4605

Source: SZARDD, 2009.

In the study area uncultivable land use type includes mainly wetlands and sacred land which has a total area of 4605 ha.

2.2. Design of the study

2.2.1. Reconnaissance survey

Reconnaissance survey was conducted in order to be familiar with the study area and to have an overview of major forest resources and their importance for local livelihoods. The Peasant Association (PAs) were selected based on the distance they take from the town of each district market places, the difference of forest products collected, proximity of two PAs to each other, and the population size of each PA, by using the captured secondary data from Sheka Zone, Masha and Andracha district Agriculture and Rural Development.

2.2.2. Household survey

In each PAs 30 households were selected by using systematic sampling method. Systematic sampling involves drawing a sample by taking every K^{th} case from a list of the population. This was done following [Ary et al. \(2002\)](#) steps.

$K = N/n$ Where, K = sampling interval; N = total households of the *Kebele*¹; n = sample size

Then the interview was conducted by using semi-structured questionnaire, and the interview focused on the types of forest products collected in the study area, and income generated from traded forest products.

2.2.3. Market survey

Market surveys were conducted in Masha and Gecha markets (local markets in the study area) for consecutive 8 market days in each market place to identify traded forest products. To know the income generated from each traded item and whether these forest products traders have another source of income a total of 30 forest product traders in Masha market and 25 traders in Gecha market were interviewed randomly by using the questionnaire developed for this purpose.

2.3. Data analysis

Data collected were checked, coded and encoded in a computer, which were then analyzed. The quantitative data acquired via household survey regarding income generated from forest products collection and market data were analyzed using SPSS software.

3. RESULTS

3.1. Forest products extracted in the study area

According to the household survey 11 forest products were collected in the study PAs in general (Table 2). Namely, wild honey, honey from beehives, *cardamom (Aframomum corrorima)*, *timiz (Piper capense)*, wild gesho (*Rhamus prinoides*), lianas, bamboo (*Arundinaria alpine*), medicinal plants, cultivated forest coffee, fire wood and wild coffee.

Local people collect these forest products for commercial or household consumption, most of the forest products support income generation and/or household consumption, while some of the forest products were not collected by all members of some PA at all or some members of the PAs as shown in Table 2. Some forest products used for income generation in one locality may not be used in other locality for income generation, for example, lianas were collected in Masha district for household consumption and income generation where as in Andracha district lianas were collected only for household use (consumption) purpose. The involvement of household in forest products collections varies with type of forest products in all PAs. For example, the involvement of households in collection of honey from beehives is highest in all PAs, while the involvement of household is in some forest products collection is lowest. This might be the preference of the households in terms of the amount of income generated from those products.

Table 2 Forest products available and extracted by households in the study area

Masha district				Andracha district				Average	Purpose
Beto		Abelo		Chegecha		Modi			
HH No	%	HH No	%	HH No	%	HH No	%		

WH	17	56.7	0	0.0	24	80.0	0	0.0	34	Com
	1	3.3	3	10.0	2	6.7.0	1	3.3	6	Sub
BH	12	40.0	27	90.0	4	13.3	29	96.7	60	Nc
	30	100.0	30	100.0	29	96.7	29	96.7	98	Com
	0	0.0	0	0.0	1	3.3	0	0.0	1	Sub
	0	0.0	0	0.0	0	0.0	1	3.3	1	Nc
	23	76.7	22	73.3	21	70.0	30	100.0	80	Nc
WG	1	3.3	0	0.0	3	10.0	0	0.0	3	Com
	3	10.0	0	0.0	6	20.0	0	0.0	7	Sub
	26	86.7	30	100.0	21	70.0	30	100.0	89	Nc
LI	8	26.7	3	10.0	0	0.0	0	0.0	9	Com
	22	73.3	26	86.7	30	100.0	30	100.0	90	Sub
	0	0.0	1	3.3	0	0.0	0	0.0	1	Nc
BA	7	23.3	4	13.3	29	96.7	20	66.7	50	Sub
	23	76.7	26	86.7	1	3.3	10	33.3	50	Nc
MP	2	6.7	6	20.0	1	3.3	4	13.3	11	Com
	9	30.0	13	43.3	7	23.3	3	10.0	26	Sub
	19	63.3	11	36.7	22	73.3	23	76.7	62	Nc
CC	1	3.3	2	6.7	2	6.7	0	0.0	4	Com
	3	10.0	5	16.7	8	26.7	0	0.0	13	Sub
	26	86.7	23	76.7	20	66.7	30	100.0	82	Nc
WC	1	3.3	0	0.0	2	6.7	0	0.0	2	Com
	3	10.0	0	0.0	5	16.7	0	0.0	7	Sub
	24	86.7	30	100.0	22	76.3	30	100.0	91	Nc
FW	30	100.0	30	100.0	30	100.0	30	100.0	100	Sub

FP=forest products, WH=wild honey, BH=honey from beehives, KO=cardamom TI=Timiz WG=wild gesho LI=lianas BA=bamboo culm MP= medicinal plants CC=cultivated coffee, WC=wild coffee, FW=Firewood, HH=household, Com=commercial, Sub=subsistence, “-“=None, HH N₀ =household number, Nc= Not collected

3.2. Contribution of forest products to rural livelihood

Livelihood strategies in the study area include forest products collection, crop production, livestock production, and off-farm activities (petty trading and daily labor) which are shown in Table

3. Among these livelihood strategies of local people, income from off- farm is relatively small in case of all PAs. In Beto and Chegecha PAs forest products contribute the highest share, but forest products contribute lower average percentage share in Abelo and Modi PAs, where animal production supports highest average percentage share.

Table3: Average Annual income of respondents from different sources in ETB

S.N	Means of Income	Masha Woreda		Andracha Woreda	
		Beto %	Abelo %	Chegecha %	Modi %
1	Forest products	2698	665	2729	724
2	Crop production	457	1020	378	642
3	Animal production	570	1235	421	1439
4	Off-farm activities	86	94	127	84
	Total	3811	3014	3655	2889

In Masha district 9 types of forest products contributed to annual average income of respondents from forest products, all of these forest products were contributed for income generation in Beto PA, where beehive honey, cardamom, and lianas were the top three forest products in decreasing order according to the income they contribute for households. But, only 6 items were recorded for average annual income from forest products in Abelo PA, where honey from beehives, cultivated coffee and cardamom were the top three forest products according to the income they contribute for respondents. The common items but collected and contributed different proportion for both PA to annual average

income from forest products were honey beehives, kororima (*Aframomum corrorima*), lianas, timiz (*Piper capense*), medicinal plants and cultivated coffee. On the other hand, wild honey, wild coffee and wild gesho (*Rhamnus prinoides*) which were covered 2.2% of Beto PA respondents average annual income from forest products didn't contribute to average income from forest products in Abelo PA. In both PAs Beto and Abelo honey from beehives covered the highest share, which were 76.4% and 85.2%, to the annual average income of Beto and Abelo respondents respectively. But the average annual income from beehives honey was 61,824 ETB and 17,008 ETB for Beto and Abelo PAs respectively.

Table 4 Forest products available and extracted by households in the study area

FP	Masha Woreda				Andracha Woreda				Average	Purpose
	Beto		Abelo		Chegecha		Modi			
	HH No	%	HH No	%	HH No	%	HH No	%		
KO	26	86.7	3	10.0	27	90.0	0	0.0	47	Com
	4	13.3	4	13.3	2	6.7	0	0.0	8	Sub
	0	0.0	23	76.7	1	3.3	30	100.0	45	Nc
TI	4	13.3	2	6.7	6	20.0	0	0.0	10	Com
	3	10.0	6	20.0	3	10.0	0	0.0	10	Sub
	23	76.7	22	73.3	21	70.0	30	100.0	80	Nc
WG	1	3.3	0	0.0	3	10.0	0	0.0	3	Com
	3	10.0	0	0.0	6	20.0	0	0.0	7	Sub
	26	86.7	30	100.0	21	70.0	30	100.0	89	Nc
LI	8	26.7	3	10.0	0	0.0	0	0.0	9	Com
	22	73.3	26	86.7	30	100.0	30	100.0	90	Sub

	0	0.0	1	3.3	0	0.0	0	0.0	1	Nc
BA	7	23.3	4	13.3	29	96.7	20	66.7	50	Sub
	23	76.7	26	86.7	1	3.3	10	33.3	50	Nc
MP	2	6.7	6	20.0	1	3.3	4	13.3	11	Com
	9	30.0	13	43.3	7	23.3	3	10.0	26	Sub
	19	63.3	11	36.7	22	73.3	23	76.7	62	Nc
CC	1	3.3	2	6.7	2	6.7	0	0.0	4	Com
	3	10.0	5	16.7	8	26.7	0	0.0	13	Sub
	26	86.7	23	76.7	20	66.7	30	100.0	82	Nc
WC	1	3.3	0	0.0	2	6.7	0	0.0	2	Com
	3	10.0	0	0.0	5	16.7	0	0.0	7	Sub
	24	86.7	30	100.0	22	76.3	30	100.0	91	Nc
FW	30	100.0	30	100.0	30	100.0	30	100.0	100	Sub

Na= not available

In Andracha district 8 forest products contributed average annual income of forest products. Honey from beehives, cardamom and cultivated coffee were the top three forest products that contribute income in decreasing order. Whereas, in Modi only three forest products contributed households' income. The collected forest products were different from one PAs to another. The number of households involved in forest products collection and the amount collected vary from one PAs to another.

3.3. Traded forest products in the local market

The market survey results of Masha and Gecha market places revealed that different types of forest products that were traded in these two market places. These two Markets places are larger local markets. Masha market place is the market place for Masha district, and Gecha market is for Andracha district.

Forest products traded in Masha market are shown in Table 5. In Masha market place honey, lianas, charcoal, firewood, cardamom, tool-handle, farm-implements, construction materials, baskets, coffee, pole and bamboo were traded. Some of these forest products were traded by Beto and Abelo PA members. Accordingly, honey, lianas, fire wood, and cardamom were traded from Beto PA, and lianas, fire wood, cardamom, farm implements and construction materials were traded from Abelo PA. Out of sampled 30 forest products traders in Masha market 26.7% were of Beto PA, of which 10.0% were honey traders, 6.7% were lianas traders, 6.7% were fire wood traders and 3.3% cardamom traders. Similarly, 16.7% forest traders were from Abelo PA of which 3.3 % lianas traders, 3.3% fire wood traders, 3.3% cardamom traders, 3.3% farm implement traders, and 3.3% were construction materials traders.

Table 5 Forest products traded in Masha market from different PA

Market day	Traders	FP	Amount/no	Price/ETB	Total value	PA
1	1	Honey	35 kg	17	595	Uwa
	2	Lianas	6	5	30	Beto
	3	Charcoal	25 Kg	34	34	Weloshoba
	4	Charcoal	40 Kg	23	46	Uwa
	5	Honey	41 kg	17	697	Beto
	6	Firewood	18 Kg	25	25	Abelo
	7	Cardamom	3 kg	32	96	Abelo
	8	Lianas	3	8	24	Abelo
	9	Honey	137 kg	19	2603	Beto
	10	Honey	13 kg	18	234	Weloshoba
2	1	Firewood	12 Kg	16	16	Keja
	2	Firewood	10 Kg	13	13	Beto
	3	Honey	9 kg	21	189	Uwa
	4	Lianas	7	3	21	Beto
	5	Charcoal	19 Kg	27	27	Keja
	6	Honey	11 Kg	17	187	Beto
	7	Firewood	20 Kg	23	23	Beto
3	1	Tool handle	3	4	12	Degele
	2	FI	1	14	14	Abelo
	3	Charcoal	21 Kg	37	37	Uwa
	4	Bamboo	3	4	12	Yina
	5	Cardamom	2 kg	36	72	Uwa
4	1	Lianas	2	8	16	Keja
	2	Pole	3	10	30	Weloshoba
	3	Charcoal	17 Kg	24	24	Keja
	4	CM	4	3	12	Abelo
	5	Mate	2	13	26	Atile
	6	Baskets	2	7	14	Keja
	7	Cardamom	1 kg	33	33	Beto
	8	Coffee	5 kg	21	105	Degele

FI= Farm-implements CM= Construction materials

Forest products traded in Gecha market are shown in Table 5. Alike to, Masha market coffee, honey, beehives, firewood, charcoal, construction materials and cardamom were traded. Out of sampled 25 forest products traders in Gecha market 40.0% were from Chegecha PA of which 12.0% were honey traders, 8.0 % were

fire wood traders, 4.0% were charcoal traders, 4.0% were mate traders, 4.0% construction materials traders, and 8.0 % were cardamom traders. Whereas, 12 % forest products traders were from Modi PA, which were fire wood traders.

Table 6: Forest products traded in Gecha market from different PAs

Market day	trader	FP	Amount	Price/ETB	Total value	PA
1	1	Coffee	36 kg	17	756	Goja
	2	Honey	79 kg	18	1422	Shera
	3	Coffee	7 kg	17	119	Shekibedo
	4	Beehives	2	13	26	Duina
	5	Honey	13 kg	19	147	Chegecha
	6	Honey	146 kg	18	2628	Goja
	7	Firewood	11 Kg	17	17	Chegecha
2	1	Coffee	5 kg	16	80	Geyi
	2	Cardamom	7 kg	30	210	Chegecha
	3	Firewood	10 Kg	12	12	Modi
	4	Coffee	18 kg	18	224	Yokchicha
	5	Honey	3 kg	19	57	Chegecha
3	1	Mate	1	8	8	Goja
	2	Coffee	42 kg	17	714	Shekibedo
	3	Charcoal	16 Kg	20	20	Chegecha
	4	Firewood	11 Kg	13	13	Modi
	5	Beehive	1	12	12	Getba
	6	Honey	24 kg	18	432	Chegecha
	7	CM	8	2	16	Modi
4	1	Coffee	6 kg	16	96	Yokchicha
	2	Cardamom	1.5 kg	28	42	Chegecha
	3	Coffee	62 kg	17	1054	Gemadro
	4	Firewood	9 Kg	10	10	Chegecha
	5	Firewood	12 Kg	13	13	Modi
	6	Mate	2	9	18	Chegecha

4. DISCUSSION

Forests are sources of several goods and services that contribute to the rural livelihood especially those who reside near or in the forest (Thomas and Eric, 2001). In Ethiopia forests and trees provide a wide range of environmental, social and economic opportunities for tens of thousands of people. It provides free of charge services worth hundreds of billions of Ethiopian Birr every year that are crucial to the livelihood of Ethiopia's society.

The findings of this study demonstrated that in the study area local people collect different forest products for income generation and

households' consumption, and this activity is the integral part of livelihood strategies. Local people who live in forest environments and who practice collecting forest product draws heavily on forest products, not only for subsistence but also as source of income (Shepherd *et al.*, 1999). Hundreds of farming community members in different parts of rural Ethiopia depends on forest products as an important source of income to support their livelihood (Daba, 2002). This is money that is mostly earned by small holder farmers and poor households that live near or in the forest and produce products such as forest coffee, spices, bamboo, honey, herbal medicines, and the like. Different studies that carried in



different parts of the country reveal differently. [Getachew et al., \(2007\)](#) at Chilimo forest reveal about 39% of household income is generated from the forest products, [Asfaw, \(2008\)](#) stated that the forest product contribute 29.09% to the rural household income at Arsi Negele, [Arsema \(2008\)](#) showed that on average 47% of the annual income of households is derived from bamboo sale in Shedem PA of Goba district in Bale. [Neima \(2008\)](#) also reported that NTFPs alone contribute on average to 54% of household total annual income, which was greater than the income from agriculture that contributed only to 38% of the total annual household income. [Mohammed et al., \(2006\)](#) also reveal about 52% annual cash income obtained from NTFPs in Bench Maji zone.

Forests provide food directly thereby supporting food security. Edible fruits, seeds, nuts, roots, leaves, mushroom, gum and sap are some of the diverse food used by communities in many parts of the country. More than 480 species of wild trees and shrubs have been recorded as important traditional or forest-food sources in the country ([Asfaw and Tadesse, 2001](#)). According to [Daba, \(2002\)](#) edible forest foods are used either as supplement to the diets or eaten as a main source of diet. Money earned from extracting and selling of forest products also used to buy food for current consumption and invest in future food production ([Viveropol, 2002](#)).

The contribution of forest product to household energy supply is essential particularly in Africa and will remain so for the foreseeable future ([Jenne and Menalie, 1996](#)). Ethiopia is the largest user of fuelwood even at African standard accounting for 78% of the total domestic energy consumption which woody biomass from the forest ([WBISPP, 2004](#)).

Forest also provides wood, climbers, roofing grass and other products used for construction of houses, storage facilities, fences, and farm implements. According to [Getachew et al., \(2007\)](#) the contribution forest for construction materials

and agricultural inputs were the second most important of forest contribution after household energy contribution.

5. SUMMERY AND RECOMMENDATION

In developing country forest products plays an important role in rural livelihood. In Ethiopia the forest products complement the household livelihood in many directions. Forest can provide income that enables the either to buy the scarce resource or to accumulate an asset.

The major forest products collected in the study area were honey from beehives, wild honey, cardamom, timiz, wild gesho, bamboo, medicinal plants, cultivated coffee, wild coffee, lianas and fuel wood. Honey from beehives, cardamom, timiz, wild honey and cultivated coffee are collected mainly for commercial purpose. Bamboo, fire wood, medicinal plants, wild gesho, lianas and wild coffee were collected for subsistence, but many of the forest products were used for both household consumption and income generation. Income from forest products support 71% in Beto, 22.1% in Abelo, 74.6% in Chegecha and 26.8% in Modi PA average annual income of local people.

Honey, cardamom, firewood, charcoal and local construction materials are mainly traded forest products in Masha and Gecha market. The same forest products which were traded by one PA might not be traded by another PA, which implies forest products tradability is not only influenced by its availability but also the locality.

The difference in extractive forest products availability did not create variation between Beto and Abelo, the former with more extractive forest product and the latter relatively with less extractive forest products.



6. RECOMMENDATION

- ✓ Forest products contribute large share of rural community livelihoods. The conservation of forests is thus very essential to sustain rural people livelihoods.
- ✓ The trading of some forest products like charcoal, local construction materials and firewood which are relatively destructive may threaten the forests; hence the collection of other NTFPs should be encouraged in the study area.
- ✓ Further research should be conducted in the study area to examine the level to which fuel wood (Fire wood and charcoal), local construction material, traditional beehives preparation from wood can mask (influence) the contribution of NTFPs to forest conservation.

REFERENCES

- [1] Anonymous (2006). 'Analysis of selected sub sector in Kafa Zone of Ethiopia: forest coffee, honey and cardamom', unpublished consultancy report for SOS Sahel Ethiopia.
- [2] Arsema Andargachew (2008). Value Chain Analysis for Bamboo Originating from Shedem Kebele, Bale Zone. Msc. thesis, Addis Ababa University, Ethiopia.
- [3] Ary D., Jacobs L.C., and Razavieh A. (2002). Introduction to research in education Belmont, CA: Wadsworth/Thomson Learning.
- [4] Asfaw Tefera (2008). The Contribution of Forest Resources to Rural Livelihoods in Ashoka Area of Arsi Negele District, West Arsi Zone of Oromia Regional State, Ethiopia. MSc. Thesis. Wondo Genet College of Forestry and Natural Resources, Hawassa University, Ethiopia.
- [5] Aseffa Seyoum (2007). Economic value of afro-montane natural forest in Sheka Zone, southwest Ethiopia Pp 183-219: In Forest of Sheka: Multidisciplinary case studies on Land use/Land cover changes, Southwest Ethiopia, MelcaMahber, Addis Ababa.
- [6] Asfaw Zemedede and Tadesse Mesfin (2001). Prospects for Sustainable Use and Development of Wild Food plants in Ethiopia. Economic Botany. 2001: 55:47-62.
- [7] Byron N. and Arnold J.E.M. (1999). What futures for the people of the tropical forests? World Development, 27(5): 789-805.
- [8] CSA (Central Statistics Authority) (2008). Summary and Statistical Report of the 2007 Population and Housing Census Results. Government of federal democratic republic of Ethiopia. December, 2008. Addis Abeba, Ethiopia.
- [9] Daba Wirtu (2002). Forests and forestry's role in food security: the forgotten intervention in food security efforts. In: Conference on Forests and Environment, Addis Ababa, January, 2002. Forests and Environment. Demel, T., Yonas, Y. pp 32 – 37.
- [10] Demel Teketay, Mulugeta Lemenih Tesfaye Bekele; Yonas Yemshaw, Sisay Feleke, Wubalem Tadesse, Yitebetu Moges, Tesfaye Hunde, Demeke Nigussie (2010). Forest Resources and Challenges of Sustainable Forest Management and Conservation in Ethiopia. Pp 19 In *Degraded forest in Eastern Africa: Management and Restoration*. Edi.: Frans Bongers and Timm Tennigkeit (2010) Earthscan NY.
- [11] Getachew Mamo, Sjaastad E., Vedeld P. (2007). Economic dependence of forest resources: A case from Dendi District, Ethiopia. Forest Policy and Economics 9: 916 – 927.
- [12] IBC (Institute of Biodiversity Conservation) (2013). National biodiversity strategy and action plan government of the federal democratic republic of Ethiopia. Addis Ababa, Ethiopia.
- [13] Jenne H.D and Melanie J.M. (1996). The economic value of Non-Wood Forest Products in



southeastern Asia, World Conservation Union, IUCN, Amsterdam.

[14] Mohammed Adilo, Tadesse Woldemariam and Abebe Yadessa (2006). Counting of Forests: Non-timber forest products and their role in the households and national economy in Ethiopia. Proceedings of *the 8th Annual Conference of Agricultural Economics Society of Ethiopia*: pp. 179–196. Held on February 24–26, Addis Ababa, Ethiopia.

[15] Neima Aliyi (2008). An analysis of socio-economic importance of Non-timber forest products for rural households: A case study of Bale Mountain National Park. MSc thesis, Copenhagen University, Copenhagen, Denmark.

[16] NTFP R and D Project (2005). Non-Timber Forest Products Research and Development Project in South-West Ethiopia; Strategy framework, July 2003-July 2007, Mizan Teferi and Hudders field.

[17] NTFP R and D Project (2009). Non-Timber Forest Products Research and Development Project South-West Ethiopia; Forest landscape sustainability and improved livelihoods through non-timber forest - product development and payment for environmental services Grant ENV/2006/114-229, Year Two Annual Report 1st July-30th June 2009, Mizan Teferi and Huddersfield.

[18] Shepherd G., Arnold J.E.M. and Bass, S. (1999). Forest and sustainable livelihoods. Background document, World Bank Forest Policy Implementation Review and Strategy. Internet document:

<http://www.wbln0018.worldbank.org/essd/forestpole.Nsf/mainview> (Accessed on May 21, 2014).

[19] Shylajan C.S. and Mythis G. (2007). Community Dependence on Non-timber Forest Products: A Household Analysis and its Implication for Forest Conservation, Indira

Gandhi Institute of Development Research, Mumbai.

[20] Sisay Nune, Menale Kassie and Mungatana E. (2009). Forestry Resources Accounting: the experiences of Ethiopia. Environmental Economic Policy Forum for Ethiopia (EEPFE), Addis Ababa Ethiopia. Paper No 72, Brighton: IDS.

[21] SZARDD (2009). Sheka Zone Agriculture and Rural Development Department, Annual Report.

[22] Thomas L. and Eric JT. (2001). Why is NTFP Harvesting an 'Issue'? Excluding Local Knowledge and the Paradigm Crisis of Temperate Forestry. *Journal of Sustainable Forestry* 13 (3/4):105-121. Special issue on North American non-timber forest products.

[23] Viveropol J.L. (2002). Forest is not only wood: the importance of non-wood forest products for the food security of rural households in Ethiopia. In: Conference on Forests and Environment, Addis Ababa, January, 2002. *Forests and Environment*. Demel, T., Yonas, Y. pp 16-31.

[24] Warner K., McCall E. and Garner S. (2008). The Role of NTFPs in Poverty Alleviation and Biodiversity Conservation. Proceedings of the international workshop on the theme in Ha Noi, Ha Noi, Viet Nam.

[25] WBISPP (Woody Biomass Inventory and Strategic Planning Project), (2004). Forest Resources of Ethiopia. MoARD, Addis Ababa, Ethiopia.

[26] World Bank (2001). A revised forest strategy for the World Bank group. World Bank, Washington D.C.