Journal of Biology, Agriculture and Healthcare
ISSN 2224-3208 (Paper) ISSN 2225-093X (Online)
Vol.4, No.17, 2014

Contribution of the Non Timber Forest Products to the Local Communities in the Case of Dodi Forest Tocha Woreda Dawro Zone, Ethiopia

Tamirat Solomon* Gebreslassie Welu Lemlem Tajebe
Wolaita Sodo University, College of Agriculture, Department of Natural Resources Management
*Correspondence: E-mail: tasolmame@gmail.com

Abstract
In this study Non timber resources potential and their income contribution to the local community in Dawro zone South Ethiopia were studied. The objective of the study was to study the contribution of Non Timber Forest Product resources in the study area. The study was designed to collect both vegetation and socioeconomic data. Tree species and products which are considered as NTFPs were collected from purposively selected primary natural forest named 'Dodi natural forest' by the help of local elders and development agents and taken to the national herbarium for the proper identification and naming. From a total of 215 HHs in the study area, randomly selected 41 HHs were selected and structured questionnaire was administered for individual households. A total of eleven (11) NTFPs were recorded from the study area which are serving for both subsistence as medicinal for human being, animals, windbreak and fencing, food additives like species and income sources. It was understood some products like spice species and forest coffee are in problem of mismanagement and Bamboo products were underutilized. On the other hand, majority of the respondents (31%) indicated that products extracted from the forest are used for home consumption and commercial purpose even though, medicinal plants identified in the area are seldom used as only 2.4% of the total respondents indicated. It was suggested that better management and utilization method has to be set for diversifying products benefit for the local community.
Keywords: NTFPS, value addition, primary forests, mismanagement

Introduction

Since prehistory, humans around the world have relied on products derived from forest species for their survival and well-being (Scarry 2003), and millions of people throughout the tropics make use of NTFPs (Mohammed and Freek, 2011). Non-timber forest products (NTFPs) are biological resources derived from natural forests, agro-forestry systems and plantations, including medicinal and edible plants, fruits, nuts, resins, latex, essential oils, fiber, fodder, fungi, fauna and small diameter wood used for crafts (Patricia et al., 2005). Differentiating between form and function of individual NTFPs is complex given that many NTFPs serve multiple functions (Rebecca and Eric, 2005). NTFPs are an indispensable part of the livelihood strategy of communities living in and near forests (Muzayen, 2009).

The growing appreciation for NTFPs stems from the realization that diverse investments and diverse ecosystems are a strong foundation for sustainable economic development (Hammet, 1999). From the economic viewpoint, NTFPs are equally important as wood based products even though estimating the contribution of NTFPs to national or regional economies is difficult due to the lack of broad-based systems for tracking the combined value of the hundreds of products that make up the various NTFP industries. About 150 types of NTFPs are significant in international trade (Adepoju, and Salau, 2007). They are also increasingly being acknowledged for their role in sustainable development and conservation of ecosystem. As mentioned above, up to 80 percent of the population in developing countries depends on NTFPs for subsistence, both economically and for nutrition.

Millions of people throughout the world make extensive use of biological products from the wild i.e. NTFPs. Because, non-timber forest products constitute a critical component of food security and it is an important source of income for the poor in many developing countries. Several opportunities for improved rural development are linked to NTFP (Alemayehu M., 2010). In many areas, rural populations are traditionally depended on local forest resources to provide additional income through collection and marketing of NTFPs.

Where employment opportunities from traditional industries are declining, workers looking for alternative income sources often turn to collection of these products from nearby forest. For example, in Nigeria, food security of rural dwellers is improved by growing trees in the home gardens and on farms. Leaves, rattan, honey, sap, gums from the small scale industries are important sources of income (Okafor *et al*., 1994). However, the potential areas and contribution of the products and their economic importance for the society especially in south Ethiopia has not been well studded. Therefore, this study aimed to assess the potential non timber forest products in Dawro zone and their income contribution to the local community. The general objective of this study was assessing the resource potential and economic role of non-timber forest products in Dawro Zone, Ethiopia. Specifically, the study aimed at 1) Identifying the NTFPs resources potential of the study area and 2)

Identifying the contribution of NTFPs to the subsistence income of the local people.

Materials and Methods

Description of the study area

The study was conducted in Dawro zone, , is located at 6.590 -7.340 N of latitude and 36.680 -37.520 E of longitude and at altitudinal range between 550-2820 meters above sea level in Southern Nations, Nationalities and Peoples Region (SNNPR).

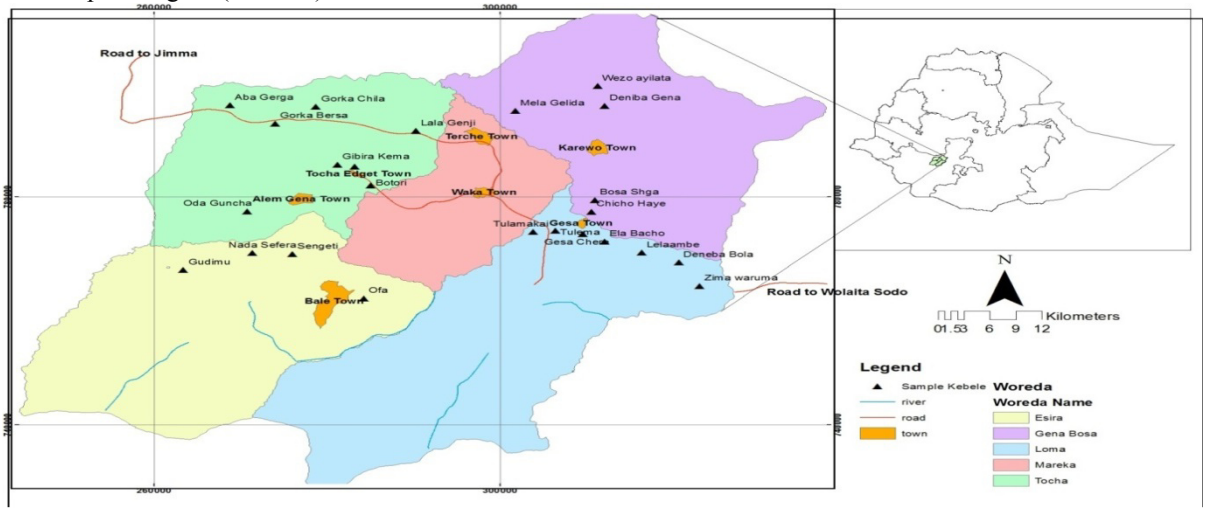

Figure 1: Location of the study area

Based on the 18 recently classified agroecological zones, the area consists of sub-humid types of agroecological zones containing deciduous woodland with elevation 550-2820m having Boswellia papyrifera, Combretum mole, Terminalia browni, Acacia senegal, Balanites aegyptica, Lannea fruticosa and others along the Omo and Gojeb river valleys (Mathewos et al., 2013).

Study Design and Sampling Methods

The study was designed to collect both the vegetative and socioeconomic data of NTFPs in the study area. Preliminary survey was made to identify sample area and gather general information regarding the proposed study.

Vegetative data was collected from purposively selected natural forest located near to Kechi Tuta town named as Dodi natural forest with the help of local elders and experts (DAs) from agricultural offices. The forest was selected due to its undisturbed diversity based on the information obtained from zone agricultural office personal observation. Sample species collected from the forest were taken to national herbarium in the department of biology in Addis Ababa University for further identification.

Local elders were selected based on their experience to the area with the help of development agents (DAs) in the kebele. Moreover, to assess the subsistence contribution obtained from NTFPs, structured questionnaire was administered for individual households. Additionally, market surveys were made and mean market prices were used to estimate income of the both commercial and subsistence NTFPs.

Sample households which are situated near to the natural forests were randomly selected to conduct interview and from a total of 215 households in the study area about 41 sample households were included on the study.

Data Analyses

To meet the objectives of the study descriptive statistics was employed. The data collected was analyzed using Statistical Package for Social Sciences (SPSS) version 16 and Excel 2007 and vegetative data gathered from the natural forest was taken to national herbarium in the department of biology in Addis Ababa University, for proper identification of scientific names of sample species and analyzed qualitatively.

Result and Discussion

Contribution of NTFPs for the local community

Tropical forests provide ample goods and services; these mainly include timber and Non-Timber Forest Products (NTFPs) (Mohammed and Freerk, 2011 and Muzayen, 2009). Non-timber forest products (NTFPs) constitute an important source of livelihood for millions of people across the world (Pimentel et al., 1997 and Patricia et al., 2005). For example, in India alone, it is estimated that over 50 million people are dependent on NTFPs for their subsistence and cash income (Mukherjee, 1994).

For many Ethiopians, the money earned from collecting, selling or processing forest products provide an indispensable contribution to household income and food security (Alemayehu, 2010). In the study area, the majorities of the respondents indicated that non timber forest products extracted from the forest are used for their subsistence consumption and for commercial uses. It was identified that the community uses the non timber

forest products for their home or subsistence, medicinal, commercial and the combined purposes as home and commercial and commercial, home and medicinal (Figure 2).
Among the non timber forest products, honey production specially hanging bee heaves in the forest, spice and forest coffees are the major products used from the forest. Respondents produce and extract NTFPs (Table 2) in a uniform manner as to forest coffee and spice while there is variation in extraction and utilization of Honey product.

Item	Min	Max	Mean	Std. Dev
Honey	10	100	45.5	27.94589
Spice	5	130	27.1	24.28413
Forest Coffee	5	50	20.4	14.03

Table 13: Resource Productions from Dodi Natural Forest

As shown in the figure below majority of the respondents (31%) indicated that products extracted from the forest are used for home consumption and commercial purpose. However, medicinal plants identified in the area are seldom used and only 2.4% of the total respondents indicated that they use the products. It was stated that there is management problem or mismanagement for some products especially for forest coffee and spices due to their benefit to the local people.

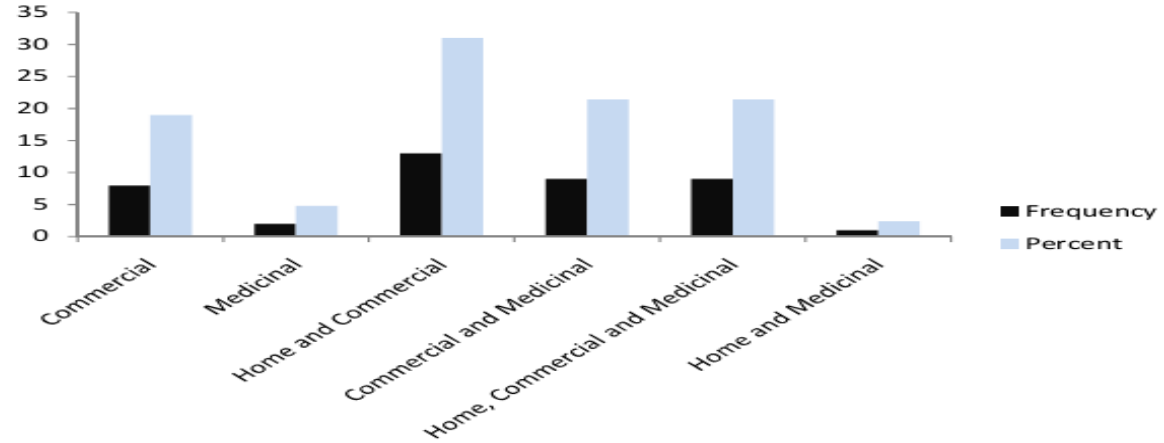

Figure 7: Purpose of the NTFPs extraction from Dodi Natural Forest

Moreover, Bamboo, which is one of the known NTFPs which is domesticated in their home garden, is used as fencing and windbreak only. NTFP production normally is a component of a multi-enterprise livelihood system including farming activities (Mohammed and Freerk, 2011) and it was identified that the study area has a great bamboo resources. Bamboo remains an important and promising resource for tropical Africa. It has immense potential added value for development compared to many other forest resources. Furthermore, as a plantation crop, bamboo has great prospects for advancing local forestry (Bernard, 2007). Even though Bamboo has a great benefit as a raw material and in the form of value added products, the status of using the resource for different purpose was not promising except using the products for limited purposes.
Beyond the benefits that obtained from bamboo, respondents in the study area obtained substantial advantage from forest coffee. Thus, it used as source of cash income and for household consumption. From the total sampled households, 48% were engaged in forest coffee collection. The average forest coffee harvested annually per user household was 20.4kg. Farmers sell coffee with the average price of 70 birr/K.g.

Forest Coffee	**Minimum**	**Maximum**	**Mean**	**Std. Dev**
Forest coffee extracted per annum/K.g	5	50	20.4	14
Forest coffee average price/unit	60	75	70	6.3
Total money obtained from forest coffee	375	3500	1412.5	993.9

Table 14: Forest coffee production in Dawro Zone, Dodi Natural Forest

Because extraction households are often the poorest in rural communities (Pouliot, 2012) incomes generated from NTFPs have the potential of reducing absolute poverty and changing income distribution. Extractors earn cash from the sale of products such as latex and medicinal; they gather free food in the form of fruits and tubers;

they acquire energy from fuel wood; they collect free medicines from plant leaves and roots and bark; they acquire free thatch and construction poles from palm fronds and stems; and/or they obtain free ornamental decoration from wild foliage and orchids (Neumann and Hirsch, 2000; Senarathne et al., 2003). Not all forest products are sold, but they nonetheless provide alternative use values to households that eliminate the need for market purchases. Unlike market items, however, extractive resources used in personal consumption and use must be priced through shadow prices of a substitute product, the loss of alternative earnings involved with collection time, or contingent valuation

From the total sampled households (69%) sixty nine percent of the respondents participated in honey production and produced, on average, about 46 kg per household per year from traditional beehives hanged on trees in the forest. By using the local average market price of Birr 22.00 per k.g, the total income was Birr 976 per user household in a year.

Honey Production	Minimum	Maximum	Mean	Std. Dev
Honey Extracted per Annum/K.g	10	100	45.5	27.9
Honey average price /K.g	18	30	21.7	3.09
Total Money from Honey	200	2000	975.8	559.6

Table 15: Honey production in Dawro Zone, Dodi Natural Forest

Farmers harvest fuel wood as a source of energy from near communal or state forests every day to prepare any household food and related activities. During fuel wood extraction women's and children are engaged and took a lion of share. According to the study, almost all households harvest one bundle of fire wood every day.

Conclusion and Recommendations

Conclusion

Non timber forest products came from a large variety of plant parts and are formed into a diverse set of products: leaves & twigs that may be component of decorative arrangements, food items such as fruits, fungi and juices, wood carved or woven into pieces of art or utilitarian objects and roots, leaves and bark processed into herbal remedies or medicines. Like timber, NTFPs may further be processed into consumer oriented products.

NTFPs are a dependable source of income and food supply in the rural areas. However, it is a diminishing resource as a result of its dependency on land which is known to be under pressure of depletion from agriculture and development of public infrastructures. The contribution of NTFPs to improved livelihoods can best be assured through a process of gradual domestication of NTFPs in human-modified agroforestry types; and the way NTFPs contribute to peoples' livelihoods.

Generally, the study area has a diversity of NTFPs which gives immense contribution to the local community in the form of home consumption, commercial, medicinal, protection purpose and etc. Common NTFPs identified in the study area includes Honey, Spice, fuel wood, Bamboo, Medicinal plants, however, the result has indicated there is disparity in production/extraction and utilization.

Recommendations

Non-timber forest products constitute a critical component of food security and it is an important source of income for the poor in many developing countries. Several opportunities for improved rural development are linked to NTFP. Therefore, the study forwards the following recommending remarks.

Efforts such as planting of the most utilized species on adjacent farms should be encouraged as alternatives to NTFP extraction from the forest. Concentrating on NTFPs that are sufficiently valuable to local communities would likely enhance such practices

Bamboo has been used for different purposes in different areas and value addition process and diversification of the products value has to be developed in the study area.

Reference

Adepoju, A. A. and Salau, A. S., 2007. Economic Valuation of Non-Timber Forest Products (NTFPs), MPRA (Munich Personal RePEc Archive) Paper No. 2689, University Of Technology &Univeristy of Ibadan.

Alemayehu Mullatu, 2010. Contribution of Forest Products Extraction to Livelihood Support and Forest Conservation in Masha and Andracha Woredas in SouthWestern, Ethiopia.

Bernard K., 2007. Guidelines for Growing Bamboo. KEFRI Guideline Series: No.4. Kenya Forestry Research

Institute; Nairobi, Kenya.
Hammet T., 1999. Special Forest Products: Identifying Opportunities for Sustainable Forest-based Development. Virginia Landowner Update, Virginia Tech.
Mathewos Agize, Sebsebe Demissew and Zemede Asfaw, 2013. Ethnobotany of Medicinal Plants in Loma and Gena Bosa Districts (Woredas) of Dawro Zone, Southern Ethiopia. Topclass Journal of Herbal Medicine Vol. 2(9) pp. 194-212, 26 Sept., 2013.
Mohammed C. and Freerk K., 2011. The role of non-timber forest products for livelihood diversification in Southwest Ethiopia. Ee-JRIF Vol 3, No 1 2011 – Agriculture and Forestry issue: pp (44-59).
Mukherjee, A.K. 1994. India's forests: a status report: concepts, definitions, trends, controversies. Paper presented at the International Workshop on India's Forests Management and Ecological Revival. New Delhi.
Muzayen S., 2009. The Role of Non Timber Forest Products to Rural Livelihoods and Forest Conservation: A Case Study at Harana Bulluk District Oromia National Regional State, Ethiopia.
Neumann R, Hirsch E., 2000. Commercialisation of non-timber forest products: Review and analysis of research. CIFOR and FAO, Bogor, Indonesia.
Okafor J.C., Omoradion F.I. and Amaja (1994): *Non-Timber Forest Products (Nigeria):* Consultancy Paper prepared by the Tropical Forest Action Programme.
Patricia Shanley, Alan Pierce and Sarah Laird, 2005. Beyond Timber: Certification of Non-Timber Forest Products. NTFP Certification Case Studies. Bogor, Indonesia: CIFOR.
Pimentel, D., Mcnair, M., Buck, L., Pimentel, M. and Kamil, J. 1997. The value of forests to world food security. *Human Ecology* 25(**1**): 91–120.
Pouliot, M., 2012. Contribution of "women's gold" to West African livelihoods: The case of shea (*Vitellaria paradoxa*) in Burkina Faso. *Economic Botany* 63(3): 237-248.
Scarry, M.C. 2003. Patterns of wild plant utilization in the prehistoric eastern woodlands. In: Minnis, P.E., ed. People and plants in ancient eastern North America. Washington, DC: Smithsonian Books: 50–104.
Senarathne A, Abeygunawardena P, Jayatilake W., 2003. Changing role of non-timber forest products (NTFP) in rural household economy: The case of Sinharaja World Heritage Site in Sri Lanka. *Environmental Management* 32: 559-571.

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:
http://www.iiste.org

CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

Prospective authors of journals can find the submission instruction on the following page: http://www.iiste.org/journals/ All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: http://www.iiste.org/book/

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digtial Library , NewJour, Google Scholar