

Role of Non-Timber Forest Products to Local People Livelihoods in Melut Area, Upper Nile State, South Sudan

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ABSTRACT

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Non-timber forest products (NTFPs) play an important role in meeting subsistence needs, especially in a remote area of the Upper Nile State of South Sudan. Non-forest products are usually overlooked commodities although they are important products at both the local and national levels. Forests are also rich deposits of biological diversity and provide a large number of poor people with fuel for cooking food and heating their homes, while forest based give many others a source of cash income. This study was conducted in rural areas around Melut County, North Upper Nile State. The study investigated the non-timber forest products (NTFPs) for local people around the natural forest in melut area, Upper Nile State, South Sudan.

The income generated from the sale of NTFPs is important in covering expenses for other household needs. Besides, forest products contribute to people's cash needs, especially where other income-generating opportunities are absent. Such material, products not only include NTFPs but also timber products, while money can also be earned with forest-based services like quid work. Agriculture is the predominant activity in the study area and is a partnership activity to non-timber forest product exploitation. The study reveals that the local community of the study area depends on natural resources for wood, housing materials, and food. Households' assessment of the sale of the forest product, including gums and resins for various purposes. Agricultural income represented the second contribution to the household's income in the study site. Local people harvested forest products related products to meet their two demands, including for subsistence and generating income by selling timber and NTFPs.

Kereste Dışı Orman Ürünlerinin Melut Bölgesindeki Yerel Halkın Geçim Kaynaklarına Rolü, Upper Nile Eyaleti, Güney Sudan

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Kereste dışı orman ürünleri (NTFP'ler), Güney Sudan'ın Upper Nile Eyaleti'nin uzak bir bölgesinde, epik olarak geçim ihtiyaçlarının karşılanmasında önemli bir rol oynamaktadır. Orman dışı ürünler, hem yerel hem de ulusal düzeyde önemli ürünler olmalarına rağmen, genellikle göz ardı edilen mallardır. Ormanlar aynı zamanda biyolojik çeşitliliğin zengin yataklarıdır ve çok sayıda fakir insanlara yemek pişirmek ve evlerini ısıtmak için yakıt sağlarken, orman temelli birçok kişiye nakit gelir kaynağı sağlar. Bu çalışma, Kuzey Upper Nile Eyaleti, Melut İlçesi çevresindeki kırsal alanlarda gerçekleştirilmiştir. Çalışma, Güney Sudan'ın Upper Nile Eyaleti, Melut bölgesindeki doğal ormanın etrafındaki yerel halk için kereste dışı orman ürünlerini (NTFP'ler) araştırılmıştır.

NTFP'lerin satışından elde edilen gelir, diğer hane halkı ihtiyaçları için giderlerin karşılanmasında önemlidir. Ayrıca, orman ürünleri, özellikle diğer gelir getirici fırsatların bulunmadığı yerlerde, insanların nakit ihtiyaçlarına katkıda bulunmaktadır. Bu tür malzemeler, ürünler sadece NTFP'leri değil, aynı zamanda kereste ürünlerini de içerirken, karşılık işi gibi orman tabanlı hizmetlerle de para kazanılabilir. Tarım, çalışma alanında baskın faaliyettir ve kereste dışı orman ürünleri sömürüsüne yönelik bir ortaklık faaliyetidir. Bu çalışma, çalışma alanının yerel topluluğunun ahşap, konut malzemeleri ve yiyecek için doğal kaynaklara bağlı olduğunu ortaya koymaktadır. Hanehalklarının, çeşitli amaçlar için diş etleri ve reçineler de dahil olmak üzere orman ürününün satışına ilişkin değerlendirmeleri. Tarımsal gelir, çalışma alanındaki hanehalkının gelirine ikinci katkıyı temsil etmektedir. Yerel halk, geçim ve kereste ve NTFP'ler satarak gelir elde etmek de dahil olmak üzere iki talebini karşılamak için orman ürünleriyle ilgili ürünleri hasat etmiştir.



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INTRODUCTION

Forest represents an important source of fuel and energy for local populations, is an important source of biodiversity and provides important environmental benefits (e.g. Soil protection, water regulation, and carbon sequestration). Forest provides an important source of local employment as well. Forests are under increasing pressure from several sources, including illegal felling (mainly for fuel wood) and poor wildlife management (Babullo *et al.*, 2009).

Forests are important to sustainability of the earth and hence the existence of man. Broadly, functions of the forest can be categorized as environmental function which include; biodiversity protection and conservation, moderation of weather elements e.g rainfall, temperature etc., carbon sequestration and soil management, and socio-cultural function and economic function which include food security provision of medicinal products, source of fuelwood, source of employment and income, source of materials for industries, source of national revenue and exchange income earnings, provision and sporting (Olagnuju, 2015).

The forests and trees supply a variety of products and services for rural and urban communities. They form an integral part of the livelihood strategies of local communities who live within and /or around them. As a result of this, human impacts in the forests have increased mainly due to the growing demand for agricultural land as well as increased for forest products and services, both of which are partly a consequence of rising human population.

The pressure has intensified due to improper land use practices such as shifting cultivation that has been practiced on progressively short cycles, frequent and uncontrolled bush fires, lack of soil conservation measures, uncontrolled livestock grazing, and farming on marginal lands (Kowero *et al.*, 2009).

South Sudan has extensive and diverse forest and woodland resources that provide food, oils, medicines, timber, poles and firewood, as well as habitat for much of South Sudan wildlife.

The term non-timber forest products (NTFPs) are used by food and agricultural organization of the United Nations, and it refers to all plants and animal products derived from wild-sources and collected on forest lands and or/ from forest species. NTFPs can also be gathered from semi-domesticated plants in plantations or in agro-forestry schemes, or can be produced in intermediate production systems of varying degrees of domestications.

In rural areas of Upper Nile State NTFPs contribute significantly to household income and food security and thus; play an important role in income generation. In North Upper Nile State, rural households largely depend on agriculture and NTFPs as their source of income.

The objective of this study was to investigate the role of non-timber forest products (NTFPs) as used by local people around the natural forest, in the Melut area, Upper Nile State, South Sudan.

MATERIAL and METHOD

Study Area

Melut county is bordered by Manyo county across the Nile in the west, Maban county in the east, Balia county in the south and Renk county in the north, all in Upper Nile State. The county contains the payams of Melut, Paloch, Bemichuk, Galdora, Wunamom and Panamdit (OCHA, 2007).

The area is one of wide, flat and low lying plains with black cotton soils, covered by savannah grasslands and acacia trees. The river Nile is main transportation route. The largest communities in the county are Dinka, Shilluk, Burun and Nuer.

The majority of them are practicing traditional rain-fed agriculture through cultivation. In the study area, women have a vital role in agricultural practices, in addition to taking on their families.

Methodology

Both primary and secondary data were collected to address the specific objectives of the study. Primary data were collected through household interviews; focus group discussions and researcher observation. Secondary data were collected through a documentary review whereby various documents related to the study, including journals, articles, books, reports from government offices and electronic sources from the internet and published documents were used.

The main source of data collection was through a questionnaire using 50 households randomly chosen from three villages around Melut County. Also, group discussions were held out in this study to collect data from local people, elders and staff of forest administration at the Melut County through a checklist about the forests of the county, forest products, forest utilization, poles, timber, materials, income generation, and forest protection and planning.

Statistical Analysis

Statistical package for social science (SPSS, 2018) was used for the analysis of common NTFPs utilized in the household. Computer and software SPSS was used to analyse the numerical data collected. Results obtained from the analysis were presented in the forms of frequency tables.

RESULTS AND DISCUSSION

Characteristics of Respondents

The responds of the total selected respondents, males and females accounted for 70% and 30%, respectively. The respondents had an average family size of six. The interviewed respondents who can write and read were only 10%, indicating that a large proportion of the community did not receive a formal education.

Table 1. *Characteristics of Respondents in the Study Area*

Gender	Frequency	Percent
Male	35	70
Female	15	30
Total	50	100.0

Source: field data, 2016

Source of Income in the Study Area

Historically, forests have played a major role to influence patterns of economic development, supporting livelihoods, helping structure economic change, and promoting sustainable growth.

Forests also provide other sources of incomes and subsistence, generate informal work opportunities, and constitute reservoirs of economic values that help ameliorate shocks to household particularly in rural areas in poor countries (Chomitz and Kumari, 1998).

Households' assessment of the sale of the forest product, including gums and resins for various purposes. Agricultural income represented the second contribution to the household's income in the study site.

Results show that households use the income generated from the sale of forest products and non-timber forest products (NTFPs) including gums, and resins for various purposes. Households use the income for subsistence, to satisfy the daily needs of their families.

Results show that 54% of households used the income generated from the sale of non-timber

products including gums, and resins for various purposes. Households used the income for subsistence, to satisfy the daily needs of their families.

The finding revealed 26% assured their dependence on agricultural products as a source of income. Only 12% are trading goods and animal products as a source of income. Only 8% of the respondents as daily paid work and seasonal work and had a good income for their living.

The number of livestock is a reflection of family social status. Hence, even when members of a household need money, the sale of cattle is hardly possible.

Table 2. *Source of Income of Households in the Study Area*

Source of income	Frequency	Percent
Non-timber forest product	27	54
Agriculture products	13	26
Trading (goods & cattle)	06	12
Daily workers	04	8
Total	50	100.0

Source: field data, 2016

A collection of NTFPs including gums and resins is performed during the dry season when the trees have shed their leaves. NTFPs and services comprise different forest fruits, mushrooms, handcrafting from wooden and non-wood materials, and special services such as recreation and hunting (Table, 3).

Table 3. *Shows the Importance and Role of Ntfps for Local People in the Study Area*

The benefits of forest for local people	Frequency	Percent
Firewood	26	52
Fodder	9	18
Poles	11	22
Fruits	03	06
Honey	01	01
Total	50	100.0

Source: field data, 2016

Firewood

Wood is a traditional fuel and one of the major options for satisfying future energy demand from renewable sources. In many developing countries, wood energy produced with efficient technology is already competitive with fossil energy. As well as being economically attractive, wood energy can be a strategic option to increase energy security, which is particularly important in countries that have large forest areas, but that depend on energy imports. Fire wood value for chain operates under a variety of sectors where for instance wood production is under both of forest and agriculture, marketing/ trade and transport is under transport while uses is under energy.

The finding revealed that 52% of the respondents in the study area were collected from the forest. This implies that firewood is the major source of cooking fuel in the study area.

Charcoal and firewood were found to be the most common source of energy used. The collection of these resources has been detrimental to the environment to the environment since in most cases involves the clear felling of trees leading to the creation of forest products. The local people around the forest should be advised on harvesting that does not harm in forest source. The incomes generated from the sale of non-timber forest products are important in covering expenses for other household needs. People have produced and used charcoal as fuel for cooking in the study area.

Women and their children carry the burden of sourcing cooking fuel. Sourcing fire wood is a time consuming and exhanstive exercise that around three days. Young children involved in firewood collection because firewood as an opportunity socialize as the spend most of their time in farms.

Fodder

Livestock are key components of African farming systems and are increasingly viewed as important pathways for rural households to escape poverty (Hemme, 2010). Low quality and quantity of feeds are a magor constraint limiting livestock productivity among small farmers (Ayantunde *et al.*, 2005).

Forests support livestock population by providing fodder and grazing facilities. The fodder production has to be enhanced with the introduction of multipurpose trees and high yielding grasses. Fodder trees are important feed sources for livestock in a wide range of farming in the study area.

The finding reveals that 18% of respondents collect fodder from the forest. In the area, the rainy season starts in June and rural households depend on the perennial as sources of feed for livestock, mainly the small ruminants. Forest was the main source of food for animals in the area, particularly during periods of drought and summer. Most of the *Acacia* species produce leaves during the small rainy season, while others like *Ziziphus sp* and *Balanites aegyptiaca* as well as *Hyphaene thebaica* are evergreen plant species found in abundance in the study area.

Poles

The finding in the study area shows that 22% of the respondents collect poles. This implies that people in the study area collect many poles as a source of building materials, also many houses are constructed of poles and plastered with mud. The source of poles and firewood were indicated as parts of the forest adjacent to the village. The discussion revealed that in general, these resources were collected from wherever they were available even from village woodlands. For preferred sites and species, people went to the forest and sometimes ventured deeper into the forest in search of the desired goods. Poles were reported to be more difficult to find than firewood, even in the forest because of the need to be more selective.

Wild Fruits

A wild fruit tree can be defined as those trees which provide edible fruits or seeds, or their realtives are cultivated to produce edible fruit and seeds. These wild fruit trees are important as a food source for human frugivorous animals and also for genetic resources.

Most of the fruits in the village's forest in the study area are naturally grown, but some have grown with the community. The fruit of trees grown in this village may be consumed by anyone because the village forest is agreed on as a common property. In addition to fruit trees in the villages, there are other fruit trees belonging to individuals. The fruits that have been harvested are mostly consumed by the people themselves. In the study, area fruits were observed to be collected on a seasonal basis by children or both males and females, especially during food shortage periods.

The findings show that 6% of respondents collect fruits. This implies the majority of people collect fruits from the forest help them to supplement household security. The fruits collected include *Balanites aegyptica* (Higlig), *Ziziphus spinachristi* (Sider), *Hyphaene thebaica* (Dilep).

Honey

Hoenybees are insects that come under order Hymenoptera and family Apidae. Based on morphometric, behavioral and biogeographical studies, 26 subspecies have identified (Bulthgen and

Klein, 2011).

Forest products are relevant for apiculture as they provide the basic nutritional requirement for survival, reproduction and honey production. Therefore, honey production in South Sudan is fully dependent on forest-related honey-source plants. The vast woodland of South Sudan is ideal for honey production with many local communities keeping traditional hives.

There is great potential for the production of honey both for domestic and external markets. Currently is honey a source of income for rural communities, however, the quantity and quality of honey produced and sold are not documented. The study revealed that 1% collect honey from the forest. This implies that the collection of honey from the forest is low due to the fact the collection of honey is a difficult activity that engages a few people.

CONCLUSION and RECOMMENDATIONS

Conclusion

Forest products, which are mainly collected in the study area, are particularly important for local people. The result indicates that forest products play a vital role in functioning in the study area communities. Local people in the study area earn income from a variety of sources, including NTFPs, agricultural production, and wage employment. Forest incomes can be diverse, including the sale of firewood, charcoal, timber, crafts and tree products such as oils, nuts, fruits and vegetables, employment in forest-related and sale of agricultural produce under Agroforestry systems.

Recommendations

- ✓ Enhance the understanding of the importance of forests, trees, and biodiversity for ecosystem services and the sustainability of forests and trees.
- ✓ Fuel wood access must be included in agricultural systems and planning.
- ✓ Promote community and landscape levels to better achieve conservation and livelihoods.

ABBREVIATIONS

P: Percentage

GOSS: Government of Southern Sudan

FAO: Food and Agriculture Organization

MAF: Ministry of Agriculture and Forest

NTFPs: Non-timber Forest Products

UNDP: United Nations Development Program

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