

Review on the roles of NTFPs for Rural livelihood

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Abstract: Since the potential value and role of non-timber forest products (NTFPs) was first mooted in the 1980s, there has been a tremendous escalation in research, practice, and policy interest across numerous disciplines including conservation, livelihood studies, economics, forestry, and anthropology. Millions of rural and urban dwellers across the world make use of a wide diversity of forest products to fulfill several livelihood requirements, from direct household provisioning to cash income through selling non-timber forest products, cultural and spiritual needs, food like fruits, leaves, roots, medicine, and construction material and as a fall back in times of emergency or a means to income diversification. All these roles are significant, and often NTFPs perform multiple functions simultaneously. Valuing NTFPs therefore requires a holistic perspective that considers these products in relation to multiple livelihood strategies, and within particular contextual settings. The context within which people operate has major implications for the seeming significance and value of NTFPs.

Keywords: Harvest, Livelihood, NTFPs, Review, Rural, and Sustainable.

1. INTRODUCTION

Forest residents across the globe have a long history of dependence on a wide array of forest products for household nourishment and sale, with some 1.4–1.6 billion people worldwide estimated to make use of at least some non-timber forest products (NTFPs) as reported by (FAO, 2001). These products are collected from natural forests, woodlands, and other lands such as fallows, agro-forests, secondary forests and fields, surrounding dwellers' villages and homesteads, and may include wild foods, forage, medicinal plants, construction materials, fuel wood, raw materials for handicrafts like rattans, vines, bamboo, grasses, reeds, and other fibers, and other products such as resins and honey. While subsistence gathering for direct household provisioning tends to be the most widespread use of NTFPs including in developed countries, forest products are also often sold, in raw or processed form, in informal local and regional markets. In other instances, NTFPs may form the basis of small-scale commercial enterprises, with some commodities reaching high-value international markets. The value of these NTFP-based activities to households is significant, and they definitely contribute appreciably to the livelihood security and welfare of primarily poor, rural people (Bryon and Arnold 1999).

The latest work to place an economic value on both the auto-consumption subsistence and in-kind use and sale of NTFPs at household level has shown this to be attractive several hundreds of dollars per annum per household (Vedeld *et al*; 2004). Moreover, the income allocated percentage contribution to total income of these products can be as much as one third to one half (1/3-1/2), of total household income with an average contribution of about one fifth (Paumgarten and Shackleton, 2009). In many regions, the largest proportion of this value can be attributed to fuel wood consumption, followed by wild foods and construction materials and medicines (Vedeld *et al*; 2004; Paumgarten and Shackleton 2009). Disaggregation of these findings by household wealth status suggests that NTFPs are most significant for poorer households, although this does not mean they are not used and appreciated by wealthier groups (Rueff *et al*; 2009; Paumgarten and Shackleton, 2009). Cavendish, 2000 for instance, working in the savannas of While clearly there is a strong rural dependence on forests and their products, some NTFPs such as fuel wood, charcoal, bush meat, medicinal plants, construction timber, traditional brooms are also in demand in towns either because rural dwellers have migrated and still want to consume traditional forest products, or because town dwellers believe that these products are better or cheaper than mass manufactured alternatives.

Urban households thus benefit from the availability of a more affordable source of essential goods, as well as access to products of traditional significance. Furthermore, many poor urban men and women are processors, and end traders of high demand NTFPs such as medicinal plants, indigenous foods, charcoal, building materials, furniture, and crafts (Shackleton *et al.*; 2007b). About 60 million people, NTFPs are essential, while a further 350 million use NTFPs in times of crisis, such as a harvest failure or ill health that prevents them from working on farms. Between five hundred million and one billion people manage remnant forests for subsistence or sale of NTFPs, and a further 45 million people are artisans or employees transforming NTFPs into marketable products, often in urban centers.

Wild foods are effectively free other than the opportunity costs of labor, and if a forest dweller had to choose between gathering food from the forest or spending more time and limited cash resources going to town to purchase commercially grown alternatives, it is rational to choose the first option. Medicinal plants offer free self-medication, while rattan, bamboo, wood, vines, and grasses are free raw materials from which people can make baskets, mats, fences, roofs, walls and agricultural implements, and wood provides a free or cheap energy source. Such daily subsistence use of NTFPs allows households to save their meager cash resources for goods and services that cannot be obtained locally and now a days Over the last two decades, the importance of non-timber forest products (NTFPs) to rural livelihoods, income generation, local economies, and in some instances forest conservation has become increasingly recognized and appreciated in both the research and policy sectors (Shackleton and Shackleton 2004).

2. CONCEPTS AND DEFINITIONS ON NTFP

It is not easy to define NTFPs. The most intuitive and widely known definition of NTFPs is “all biological materials other than timber which are extracted from forests for human use” (Grosskinsky, 2000). In line with this definition, many researchers agree that NTFPs include floral products such as grasses, roots, flowers, fruits, and bamboo which people use for a variety of purposes e.g., as food for themselves and their domesticated animals, as medicinal plants, as ornaments, as raw material for tools, as well as faunal products such as insects, birds, fish, or game. However, considerable debate and inconsistencies arise when considering the woody portion of plants, such as the stems, branches, and bark of trees or shrubs. Include all wood products as NTFPs, except those extracted and sold by large-scale capital intensive commercial interests and fuel, construction, tools or crafts, medicines, and carving would be considered NTFPs, provided it is by local subsistence users or small-scale local traders and large-scale fuel wood harvesting for urban markets and the use of timber in rural house construction should be excluded from the category of NTFPs (Grosskinsky, 2000).

The role NTFPs for Food:

Forest and woodlands offer rural dwellers a wide variety of foods, and contribute to food security and nutrition directly and indirectly by providing fruits, seeds, leaves, bulbs, mushrooms, honey, beverages, bush meat and fish, forage for domestic animals, and tools and equipment needed for farming, hunting, and fishing. This food security dimension of forests is important; for example in the Gash-Barka administrative zone of Eritrea, local people rated the provision of wild foods as the most important ecosystem service provided by riverside forests (Araia2005). Wild foods are commonly eaten because they are nutritious and rich in vitamins and supplement cultivated staples (Grosskinsky, 2000), and because isolation from markets precludes people from buying food. (Delang, 2006) has shown that a group of forest dwellers in Thailand would need ten times more time to work for cash and buy food in the market than they need to gather fairly similar food in the forest.

Shifting cultivators in Laos obtain a range of species from fallow areas, which change as the fallow ages (Delang 2007). Plans by the government to reduce the period of fallow to 3 years will thus have negative consequences on people’s nutrition, as the number of edible plants available in the fallows would decline. While wild foods are commonly a regular part of the diet, their consumption may be extended to additional species or become more frequent during droughts, floods, or other lean times, or they may substitute for purchased products during cash flow crises (Kaimowitz 2003)

In the dry forest regions wild foods are important in supplementing people’s diets, and may assume greater significance in the dry season or dry years when they substitute for failed crops (Addis *et al.* 2005). The so-called “famine foods” of the Sahel region are wild foods obtained from drought resistant dry forest species that may only be consumed in years of severe drought, but are vital for food security during these times (Guinand and Lemessa 2001). In this way these NTFPs help insure against food insecurity; something that may assume magnified significance under the threats of climate change.

Wild foods are often consumed most frequently by women and children; although this does not necessarily apply in all countries. Wild food resources also tend to be most important for vulnerable households. For example, data from South Africa show that 62% of 850 children surveyed were supplementing their diets with wild foods; and for 30% over half their diet was formed by these resources (McGarry and Shackleton 2009a). Furthermore, highly vulnerable children i.e., those in households with high HIV/AIDS proxies were found to consume more forest foods in their diet than those from less vulnerable households, with hunting of small animals providing an essential source of protein (McGarry and Shackleton 2009b).

The role of NTFPs for Medicine:

Medicinal plants have been important in human healthcare throughout history, and continue to play a key role amongst forest communities. For rural populations, modern medicine and healthcare services are often difficult to access and unaffordable, and thus beyond most people's reach (Maundu *et al.*; 2005). Traditional medicines, on the other hand, are locally available and free or of low cost. For example, users in Chitwan Nepal save 80% of costs by using herbal treatments provided by the Guraus local faith healers rather than commercial alternatives bought in pharmacies. Although in some regions medicinal plants are gradually being replaced by commercial pharmaceuticals the use of traditional medicines is still sizeable in many countries. For example, 90% of rural and 40% of urban Nigerians use medicinal plant products as reported by (Osemeobo and Ujor 1999). In Ethiopia, over 85% of the rural population, plus an increasing number of people in urban centers, use traditional medicinal plants for their primary healthcare (Deffar 1998). Moreover, there is evidence to indicate that some plants used for cultural and ritual medicinal purposes are not substitutable and thus continue to be significant for all wealth groups in both rural and urban populations (Cocks and Dold 2006).

The role of NTFPs in Construction and Craft:

In terms of construction material, NTFPs play an important, although in some areas declining, role in building and fencing. Bamboo is one of the main materials for construction (Pant 2007). Easily gathered and transported to the village, it can be used for the support poles, walls, or roof of a house and is the preferred material for the farmland hut, which is occupied for 5 months every year between rice sowing and harvesting. Bamboo is sometimes also used to build the first house for a newly married couple, before the necessary construction wood can be cut, accumulated, and brought from the forest (Pant 2007). Palm leaves are also used in house construction for both walls plaited sheets and roofing in Asia and Africa. In Eritrea, the average traditional house requires some ten "camel loads" of palm leaves a year for routine maintenance (Araia 2005).

Historically, natural fibers from forest plants provided the raw material for a wide range of utilitarian goods such as clothing, ropes, basketry, fishing nets, brooms, mats, and construction materials. Today, a number of alternative products have replaced functions typically provided by fiber products. For instance, bought fabrics have replaced home produced natural fabrics. Cheap or free plastic bags and plastic or metal storage bins now substitute for baskets (Kgathi *et al.*, 2005). As reported by Araia 2005, Nylon ropes have replaced hand woven bark rope. However, fiber use still remains an option for those too poor to afford alternatives or in isolated communities. For example, communities living close to riverside forests in western Eritrea use 21 different household items made from palm, with the direct-use value of these being the highest of all NTFPs surveyed, at USD 80 per household per year. Woven mats, ropes, and basketry products are now often traded both within local and regional markets for cultural and traditional purposes and in nontraditional and tourist markets for their decorative and novelty value (Pereira *et al.*, 2006).

The role of NTFPs for Cash:

Apart from subsistence consumption, the sale of NTFPs offers an important means for rural and urban individuals and households to generate cash income (Shackleton *et al.*, 2007a, b). For example, in sub-Saharan Africa alone it is estimated that several million people earn their primary cash income from the sale of forest products. In the forest zone of southern Ghana about 20% of the economically active population earns income from selling forest products, while in the Brazilian Amazon about 1.5 million people derive part of their earnings from NTFPs (Ruiz Perez and Byron 1999).

Growth is being driven at the local level by a greater need for cash income as households become more integrated into the market economy and have higher expectations, and by economic hardship and increased vulnerability due to, among other factors, unemployment, withdrawal of agricultural subsidies, and HIV/AIDS (Monela *et al.*, 1999).

NTFPs for Energy:

Fuel wood and charcoal are used by the majority of rural, and in some cases urban, households across the developing world. For example, in South Africa (one of the more developed African nations) over 80% of rural households still use fuel wood to some extent (Williams and Shackleton 2002). Nearly all of this, some 10 million tons annually, is supplied from indigenous forests and savannas and has a gross national value of approximately USD 0.40 billion annually, or just under USD 182 per using household per year some 23% of the minimum wage. In Nepal, over 13 million tons of fuel wood is consumed annually, with the residential sector accounting for over 91% of use. It has been estimated that more than 2.4 billion people in Nepal rely directly on traditional biomass fuels for their cooking and heating (IEA 2002). A shortage of fuel wood can result in changed cooking patterns with potentially ill effects on household nutrition and health (Brouwer et al. 1997)

3. CHALLENGES OF SUSTAINABLE NTFPS HARVESTING

Although it is clear that many non-cultivated NTFP populations are overharvested and declining from time to time. When collection from wild populations is controlled and populations are tended through management practices, a diversity of species can withstand fairly heavy rates of harvest. These include some species harvested for parts predicted to have medium or high ecological impacts, such as leaves, bark, and whole plants (Guedge *et al.*, 2007; Zuidema *et al.*, 2007). However, an important challenge is that many wild-harvested NTFPs are now open-access resources because controlled harvesting usually requires some kind of informal or formal tenural arrangements, and these can be especially difficult to maintain or develop in socio-ecological contexts characterized by decreasing land-bases increasing harvest pressure, changing cultural practices, among other factors.

Clearing natural vegetation to grow NTFPs in monocultures or low diversity production systems can clearly have negative ecological impacts, NTFPs grown in diverse home gardens, fallows, agroforestry systems, or enrichment plantings offer much potential for sustainability (Bhagwat *et al.*, 2008). It requires secure tenure, which limits landless people from participating. In addition, although cultivation can help save threatened species, it can have negative consequences for conservation on a larger scale. This is because maintaining controlled harvesting from wild populations can provide harvesters with important economic incentives to conserve the forests or other habitat in which NTFPs grow (Shackleton 2001).

Although there is large growing literature on how to achieve sustainability harvesting and management NTFP, there still, remain significant knowledge gaps. Most studies to date have been short-term, yet the few longer term studies that exist illustrate that harvest impacts may only become apparent after multiple years (Endress *et al.*, 2006). The lack of long-term data is particularly important for NTFP populations that may respond to harvesting in a non-linear fashion, such that decline is only evident once some threshold is reached. There still is relatively little information on the ecological impacts of harvesting some of the most frequently used plant parts such as bark, exudates, and underground organs. Many studies on the ecological impacts of NTFP harvesting have focused on populations in natural habitats, but most NTFPs are collected or grown in a variety of habitats subject to multiple anthropogenic disturbances. Approaches that consider the diversity of habitats in which NTFPs are harvested, tended, and cultivated, as well as the interconnections among them, can provide better insight on current sustainability and how future changes in landscape use or climate may affect it (Pulido and Caballero 2006). Similarly, more studies at the community and ecosystem levels can provide insight on NTFP cultivation systems that can best conserve biodiversity while maintaining productivity.

4. CONCLUSION

It is apparent that the relationship between people and forest resources is extremely complex, multifaceted, and dynamic. Households are constantly adapting their livelihood strategies to changing circumstances, taking up or dropping their use of and trade in these products in response to a variety of factors. This complexity undermines and confounds the ability to obtain a comprehensive understanding and generalized picture of the extent to which NTFPs can secure livelihoods, alleviate poverty, and reduce vulnerability and research.

Overall, NTFPs tend to be more influential in mitigating or preventing the intensification of poverty than providing pathways out of poverty. This does not, however, mean that they are unimportant and should be dismissed as having little potential in addressing the Millennium Development Goals. Indeed, NTFPs contribute to the welfare of millions of

household's worldwide, households that would be a lot worse off if they did not have access to these products for daily use, or as a form of insurance in hard times. There is thus a need and obligation for governments worldwide to underpin the safety net offered by forest biodiversity, and to recognize its key importance in subsistence and poverty prevention. At the same time, it is essential to support those people who have turned to NTFP trading as a means to make ends meet in the absence of alternatives and under increasingly harsh economic conditions. The opportunities offered by NTFP commercialization should be seen not as single approach but rather as one component of a multi-sectoral approach for tackling rural and, increasingly, urban poverty. Thus, NTFP trading alone is not the answer, but nor is arable production, livestock rearing, migrancy, or state welfare grants. It is only through the integration of these livelihood sectors that there will be any lasting positive impact on the welfare of the rural poor

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