NON-TIMBER FOREST PRODUCTS (NTFPs): A PATHWAY FOR RURAL POVERTY REDUCTION IN NIGERIA

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ABSTRACT

Development strategies try to include local people in the management and utilization of natural resources such as forests so that they receive more of the benefits. Strategies that support, the collection, commercialization of NTFPs by local people have the potentials to provide an increased source of income for people living in the forest areas or near the forest. NTFPs have important subsistence uses. However, forest are being cleared as the global demand for timber rises and as ranching and large scale agricultural activities increase, many plants species become vulnerable to over exploitation and forest resources are increasingly declining. NTFPs are under threats. The paper set out to identify how the potentials posses by NTFPs can be used to reduce rural poverty in Nigeria, as in rural employment and income generation, household food security, household health, environmental amelioration and rural poverty reduction. The paper observed that better understanding of changing role of forest resources for local livelihoods are the road map to sustainability of NTFPs. The study has demonstrated that the non-timber forest products has use categories as food, traditional medicinal value, income generation as well as social/cultural and environmental values and the rural people depend on them directly and indirectly on daily basis. Forestry authorities in the country are advised to enact necessary laws that will recognize the multiple contributions of forests to the people's welfare and fund scientific research on the development of the resources to ensure their sustainability.

Keywords: *Non timber, Forest products, rural poverty reduction, Nigeria.*

INTRODUCTION

Poverty is a state of need or want or general inability to meet one's basic personal needs such as food, shelter, healthcare, clothing and education services. There is a standard of income below which it is believed that any individual will not be able to meet those basic needs and this is generally referred to as the poverty line. Anybody whose income falls below this line is considered poor. The definition and assessment of poverty has evolved from a classical income-based measure (the typical below 1$ per day or any other officially established income criteria) to a multidimensional perspective that includes income, health, cultural and social resilience, self-esteem and other parameters (World Bank, 2003). In Nigeria poverty incidence increased from 27.2% in 1980 to 65.6% in 1996 and declined to 54.4 in 2004 (FOS 1999 and 2005) table 1. About 70% of the rural population of sub-Saharan Africa live in poverty.

Table 1: Poverty incidence, estimated total population and poor population in Nigeria.

Year	Poverty Incidence	Estimated population (Millions)	Population in poverty (Millions)
1980	27.2	65.0	17.7
1985	46.3	75.0	34.7
1992	42.7	91.5	39.7
1996	65.6	102.3	67.1
2004	54.4	126.3	68.7

Source: FOS (1999) poverty profile for Nigeria 1980-96, Lagos and NBS (2005) poverty profile for Nigeria Abuja.

Following the reforms, the real growth rate became positive from 1988, turning from an average of 1.7 per cent in 1980/86 to 4.7 percent in 1986/92. The strong growth performance continued in the 1990s and into the 2000s, rising to 6.6 percent in 2002/2004 and 6.24 percent in 2004/2006. However, despite this strong growth performance, poverty incidence has remained high, rising from 42.7 percent in 1992 to 65.6 percent in 1996. Although estimated to have declined to 54.4 percent in 2004, poverty incidence could still be considered high. The decline gives an annual average of1.6 percentage points since 1997. Poverty is more widespread in the rural areas where the major sources of income are farming and such other low-income activities as harvesting of forest products.

Forest outputs are broadly classified into Timber and Non-Timber Forest Products (NTFPs). While the timber components have been widely acknowledged as great contributor to both national and local economies, the equally important of non-timber components have received little attention from social scientists and development planners until recently. Non-timber forest products (NTFPs) are any biological resources found in woodlands except timber. They include edible and medicinal plants, mushrooms, moss and lichen, bark, foliage and cones, wood products, wild and managed game as well as non-consumptive values contribution (services derived from forest) to human welfare. The non-consumptive uses may include; microclimatic amelioration, soil and water shed protection and conservation of biodiversity, aesthetic and cultural values.

The rural poor thus rely substantially on non-farm activities for household income supplement and food security particularly during the "Hungry Season", when food crops are out of season. Also because of the fact that orthodox medicine is far away from the rural areas and when available are unaffordable to the rural folks, majority of rural populace depends on herbs and other materials of forest origin for their healthcare needs. The contributions of non-timber forest products to poverty reduction in Nigeria are pertinent requiring critical evaluation to ensure sustainable utilization and management of forest resources.

Non-timber forest products in rural employment and income generation: Apart from the facts that the majority of rural households in Nigerian and a large proportion of urban household depend on forest products to meet some part of their nutritional needs, very large number of households generate part of their income from the sales

of tree products. According to Arnold (1994), employment and income from small-scale non-farm enterprises activities are nearly everywhere becoming increasingly important in the rural economy. A study by Kilby and Liedholm (1986) reveals that rural non-farm work often provides 20-45% of rural household income. A recent study in the tropical rainforests of Southern Cameroon revealed that local communities rely heavily on the use of forest products for their supplementary income. More than 500 plant species and 280 animal species are used in one way or another. About 20 non-timber forest products make it to the local markets and contribute significantly to the income of rural people (Van Dijk, 1999). Individual contribution of each NTFP may be little but collectively they contribute significantly to the rural economy and can add to export revenues. Many income generating activities in the rural areas are based specifically on the NTFPs. Nkwatoh (2000) in a study carried out on Ejagham forest reserve in Cameroon between 1995-1998 found that a total of 563,131kg of *Gnetum africanum,* 251,594.7kg of *Irvingia sp,* 119,112,288kg of *Capolobia sp.* and 1,109,367kg of *Massularia sp.* were extracted from the sales of these products generated at US$788,128.4.

Stems, fruits and seeds of various kinds all contribute to financial security of rural dwellers particularly during the emergency periods. In the high forest zones of Eastern and Western Nigeria, bush meat and snails, harvesting and sales are a major income generating activity almost all year round. In the savanna zone of the central and northern Nigeria, honey, fuel-wood, locust-bean seeds, gum Arabic and charcoal-making generate a lot of income to the rural dwellers. Hence, Egunjobi (1996) while reporting on the potentials of Non-timber forest products of Omo Forest reserve observed that the contributions of non-timber forest products to the rural economy in Nigeria is as much if not more than that of timber. Harvesting and processing of NTFPs in many places have graduated from the subsistence level of household dietary needs alone and sales at local market to international cross-boundary trades. There are a lot of forest products involved in cross boarder trading between Nigeria, Cameroon, Ghana and Benin Republic.

Obviously, the economic importance of non-timber forest products have been recognized globally, although economists may be of the opinion that the supply of most of them are rigid and that the increasing prices and the low competitiveness for them portray their extraction as an essentially primitive activity which is likely to give way to domestication and the cultivation of similar products. It is very crucial that the potentials of NTFPs in rural poverty reduction be appreciated and recognized.

Non timber forest products in rural poverty reduction: The contributions of non-timber forest products to the reduction of rural poverty in Nigeria are in two forms (direct and indirect contributions). The direct contribution includes the supply of products such as fruits, vegetables, resins, fibers, fuel-wood, charcoal, bush-meat and medicinal plants which could be marketed for money or consumed at the household level. Over 75% of the country's population lives in the rural areas and more than 80% of the rural inhabitants depend directly on wood energy for cooking

and preservation of foods and food accessories such as bush-meat. Many households subsist either wholly or partially on income derived from sale of firewood in Nigeria. Bush-meat marketing is another forest-based activity, which generates a lot of income for rural dwellers (Fig. 1).

Plants such as *Chrysophyllum albidum* (white straw apple) *Dacryodes edulis* (native pear). *Treculia Africana* (African bread fruit), *Zobo plant* (Fig. 3), *Parkia biglobosa* (Locust bean) *Vitellaria paradoxum,* (Shear butter), *Annona mauricate* (sour sop), *Phoenix reclinata* (date plam) (Fig. 4), *Tetrepleura tetraptera, Xylopia aetiopica, Tamaridus indica* and *Irvingia sp.* (bush mango), and various spices of chewing stick and wrapping leaves constitute valuable sources of income particularly for rural women. Species such as *Gentum africaum, Carpolobia sp.* (Shepherds sticks) *Irvingia sp* and various species of bush meat are already involved in international trade along the west coast of Africa. Income is generated from their sales to supplement the farm income. In fact there are individuals who derive up to 80% of the incomes from the sales of these products (Jimoh, 2002). Other forest products such as honey, *Acacia Senegal* (gum Arabic), Chewing stick, Sannda sticks (Capolobia sp.) and medicinal plants of various kinds are major sources of income to both rural and urban dwellers. Forest-based activities such as mat-making and charcoal production also contribute significantly to rural income. The ability of non-timber forest products to directly enhance people's income is a significant contribution to poverty reduction in Nigeria.

There are also indirect contributions of non-timber forest products to poverty reduction. These include their various roles in the ecosystem such as pollination of useful plant by nectivorous insect, dispersal of seeds by frugivorous birds and animals; contribution to soil fertility by soil micro and macro-organisms, watershed protection and the various roles of plants and animals in succession and ecosystem renewal. These various contributions ensure that the ecosystem can continue to supply the various goods and services upon which the livelihood of the people depends. Though these indirect uses are often not easily quantifiable, yet their contributions to human welfare are no doubt enormous.

Fig. 1: Smoked animals displayed for sale at bush meat market

Fig 2: Medicinal Herbs

Fig. 3: Zobo Flowers (Rich in Vitamins), for sale in the market

Fig. 4: Date palm (Phoenix reclinata)

Non-timber forest products in household food security: Many products of both plant and animal origin are consumed by man either directly as food or as supplement to other food products. Some are eaten in raw form without prior cooking, boiling or processing while others are only consumable after processing. Whichever form, in which the products are consumed they play significant roles in supplementing household food in-take particularly during the period of scarcity of food when the previous year's crops are exhausted and the new crops are yet to mature.

Plants which contribute to food security may come in form of fruit such as: *Treculia africana, Carica papaya, Irvingia gabonesis, Adansonia digitata, Phoenix reclinata, Anana mauricata* and *Dacryoides eduli* which are either eaten as full meal or as snacks to ease hunger while on the farm before the actual meal is ready. They may also come in form of leafy vegetables such as Lactuca taraxaxifolia, Vitex doniana, Bombax, buonopozense. Adansonia digitata; Gnetum africamuum, sesamium radiatum and Moringa olivera. They can be sold to generate income to the peasants. These vegetables are available at the time when most cultivated vegetables are off-season. Hence, they come handy when they are most needed. Bush meat also contributes to household food security. Honey is an age long food which has retained its prime position in rural and urban diets. It has recently become more prominent in the diets of diabetic and hypertensive patients who use it in place of table sugar. The major sources of animal protein particularly in the rural areas are bush meat and fish.

According to Hoskins (1990), 80% of animal protein consumed by rural Nigerians in forest adjoining communities in varied forms either cooked, boiled, sun dried or smoked came from bush meat. Insects and birds are also consumed in many part of the country. Insects such as palm worm, flight termites, grasshoppers and crickets are consumed in various parts of the country and they contribute meaningfully to food intake. Condiments and flavour plants also play significant role in household dietary supplements. Species such as *Pipper guineense, Occimum gratismum, Allium sativum, Tetrapleura tetrapera indica* and *Aframomum meligueta* are added to food to impact certain characteristic aroma or taste on the food. Many of these local condiments also serve medicinal functions in the body.

Non-timber forest products in environmental amelioration: Many forest species both within and outside forest environments contribute immensely towards making our environment conducive for human beings as well as other members of the ecosystem. Species such as *Bamboosa vulgaris, Azardiracta indica, Acioa barterii* and *Eucalyptus sp* have been found useful in controlling gully and wind erosion in different parts of Nigeria. Many plant species also provide cover and breeding grounds for other plants and animals. Animals such as tree squirrel (Funisciurus sp.), Pangoline (Manis tricupsis), Porcupines (Artherurus sp) and tree hyrax (Dendohyrax dorsalis) leave either partly or entirely on trees. Many mangrove (Rhizophora sp.) species provide spawning grounds for various species of fish. In many parts of the world, trees are used in microclimatic amelioration such as provision of shade, wind breaks

and soil stabilsation. Some plant species help to reduce particulates in the air. Some may reduce Nitrogen oxides (NO and NO_2) through foliar uptake while others are able to remove carbon from the atmosphere in form of Carbon monoxide (Co) (Smith, 1978). Most plants fix carbon dioxide in the process of photosynthesis. This is very vital in reducing the risk of global warming. Landscaping is rapidly gaining acceptance in most of Nigeria urban centers. Beautiful sceneries in dwelling places stimulate mental relaxation while the gaseous exchange between the plants and the atmosphere enhance good body functioning. These services function of the forest translates to improved productivity and healthy living environment, hence, reduces poverty incidence.

Non-timber forest products and household health: It has been said that 80% of total households particularly in the rural areas depend on natural herbs for medication (Ransome-Kuti, 1991). Recent trends have confirmed this observation, as the number of people depending on herbs for their health needs keeps increasing. This is due in part to the worsening poverty situation in the country, which makes orthodox medicine unaffordable to the rural poor. Often times, the distances between rural communities and orthodox medical centers are quite considerable, hence, rural dwellers naturally rely on traditional herbs when the need arises. It is only when the situation gets out of hand that they seek modern medicinal assistance, for example, during complicated labour, fetal accidents and chronic illnesses.

As observed by Hoskins (1990), there is no clear distinction between food and medicine. Most products, which are consumed directly as part of daily meals or as supplement to other diets, do have medicinal properties. Examples of these include *Vernoia amygdalena* (Bitter leaves), *Zingiber offficinale*, *Pipper guineense*, *Tetrapleura tertraptera* (Aridan plant), *Aframonum melegueta*, *Xylopia aethiopica* (Guinea pepper), *Alium sp* and honey. When medicinal plants are referred to, these definitely include those used for the treatment of both human and animal ailments. Herbal medicines, especially local herbal remedies have always attracted a great deal of interest to the layman. People use a range of treatment healthcare options, depending on their particular ailment, their socio-economic status or past experiences. Falconer (1991) reported that all the people interviewed in a study area in Ghana used herbal medicines while 80% of them rely on wild plants as their main medicine source. Generally, many Africans believe that certain illnesses are best treated using traditional medicines and these may include goiter, epilepsy, mental disorder and spiritual problems. The use of herbs in treatment of ailments thus saves rural dwellers the expenses they would have incurred in hospitals thereby boasting their economy.

The use of traditional medicine is not restricted to developing countries. According to FAO (2000), at least 25% of drugs used in modern pharmacopoeia are derived from plants, while many others are synthetic analogues built on prototype compounds isolated from plants. Few medicinal plants are cultivated, because the low price of materials harvested from the wild still makes cultivation financially unattractive. However, as natural forests are being lost to deforestation, through

lumbering, fueling, agriculture, etc., it is obvious that more species will have to be domesticated in the nearest future. For now wild sources of medicinal plants are important and will continue to be at least in the developing counties for some times. Some species will be difficult to cultivate or synthesis of their active ingredients will be problematic. FAO (2000) has thus recommended a combination of cultivation and/or sustainable wild harvesting of medicinal plants. In addition to the fact that millions of people depend on medicinal plants for household health, commercial harvesting of medicinal plants may be one of the few opportunities for paid employment or for earning supplementary income in the rural areas.

CONCLUSION AND RECOMMENDATIONS

The study has demonstrated that the non-timber forest products has use categories as food, traditional medicinal value, income generation as well as social/cultural and environmental values and the rural people depend on them directly and indirectly on daily basis. It is hoped that this highlight of the great potentials of non-timber forest products contribution to poverty reduction will attract meaningful attention from policy makers, generate research interest in the areas of selection, breeding, improvement and domestication of valuable wild products. Forestry authorities in the country are advised to enact necessary laws that will recognize the multiple contributions of forests to the people's welfare and fund scientific research on the development of the resources to ensure their sustainability. The following measures could be very useful to sustain the contribution of NTFPs.

Economic empowerment of rural people: One of the incentives for unsustainable forest harvesting is rural poverty. The urge to encroach into forestland could be reduced via the creation of alternative Income-Generating Activities (IGRAs) outside the forest. Rural based activities such as cassava processing, poultry, piggery, snailry, and bee keeping have helped significantly to reduce pressures on natural forests in various parts of the country (Morakinyo, 1994).

Regular detailed inventory of forest resources: Harvesting of non-timber forest products has not been based on adequate information on available resources. This has resulted in arbitrary harvests leading to over-exploitation. Permanent/semi permanent sample plots may be established within which the production potential of each of the valuable species of interest might be determined through experimental harvesting. This will assist managers to fix sustainable harvesting regime for the species.

Integration of non-timber forest products into existing forest plantation: When natural forests are cleared to raise mono-specific plantation many variable species of NTFPs are lost in the process. It is however, gratifying to note that there are many species of NTFPs which are capable of growing alongside plantation trees as they explore different horizons of the ecosystem. Therefore, species such as *Thaumatocos danielii, Pippers guineense, Zingiber officinalis, Pipper umbelaturm, Aframomum*

melegueta and *Momordica angutiisephalas* should be raised in plantations. These are characteristics of under growth species and climbers, which would not pose serious threats to development of forest plantation but could contribute immensely to maximize the output per unit area of forestlands. This approach would also help in genetic resources conservation. The long gestation period of most forest species has often been a disincentive to private participation in forest development. Integration of non-timber forest products into forest plantations would encourage private participation as intermediate earnings could be obtained from these non-timber forest products, which could be used to defray the cost management. The little income derived from non-timber forest products harvesting could also serve as a financial succor to farmers while the timber component matures. In addition it would assist in conserving forest biodiversity as it simulates the natural forest where many species subsist within the ecosystem with each species occupying a niche and the different species exploring different horizon of the forest ecosystem.

Domestication of non-timber forest products: Many species of plants and animals could be domesticated and produced under intensive management system. Species of everyday importance such as *Vernoia amygdalina, Ocimum sp. Treculia africana, Aframomum meligueta, Pipper guineense* etc. could be raised in home gardens and compound farms. It may even be profitable to raise some medicinal plant species in large farms from where they may be harvested for domestic or commercial purposes. Snail farming, bee farming, fish farming and wildlife farming could be very useful in producing the all important honey and animal protein in order to supplement the output from the natural forest.

Improved product handling: Only a small percentage of what is harvested from the forest is eventually utilized. A larger percentage is wasted during storage and processing. Users particularly of medicinal plants should be trained on how to extract the active ingredients totally from the harvested plant parts. Also the wastage between the harvest time and the time of utilization could be reduced through post harvest preservation methods such as Sun-dry, cold storage and oven-dry. These measures will reduce wastage of resources thereby reducing frequency at which harvesters need to go to the forest for harvest and the harvesting pressures on the natural stocks. Non consumptive uses of the forest such as recreation, tourism, environmental amelioration and soil conservation are equally important and should be built into management plans right from the onset. This approach to forest management in addition to being environmentally friendly is also economically attractive and socially desirable. This is the centerpiece of sustainable forest management.

Forest legislation: Forest regulatory laws should be reviewed or formulated where necessary to set the limit to what level of resources could be removed from the forest land at a given time in order to ensure that the resources are not over harvested. Furthermore, punishments for forest offences should be such that they would serve as deterrent to others.

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