

The importance of trees for the survival of the poor in Annangland, Nigeria

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ABSTRACT

Okoji, M.A. 1998. The importance of trees for the survival of the poor in Annangland, Nigeria. *Ann. Trop. Res.* 20:1-16

Per capita income is low in Nigeria. In some rural areas it is below US \$30.00. This level of income has forced the rural poor to rely on accessible natural resources for survival. To find out the role of trees in this regard, six villages in each of the six local government areas of Annangland were studied. Fifteen households were interviewed per village, using the participatory rapid appraisal method of data collection. It became clear that the rural poor in Annangland planted trees and protected self-sown trees for commercial, medicinal, social and agricultural reasons in addition to varying their diets. Some policy measures are considered for purposes of conserving resources upon which the poor depend and of revisiting relevant regulations and traditions in the interest of the rural poor.

Keywords: natural resource conservation. participatory rapid appraisal. rural poor. trees.

INTRODUCTION

Nigeria is a low income per capita country characterized by a large degree of income-wealth inequality and by widespread poverty. In 1993, for example, it had a per capita income of as low as US \$310 (World Bank, 1995). As an average, this figure masks a lot of situations since a fair number of very wealthy people in the country can raise the average income higher than observation

might show. Indeed, a farm family budget survey in 1995 which the author participated in Ini, disclosed that about 73% of the households interviewed had an average income of ₦16,880.00 equivalent to about US \$211. With an average of eight persons per household (Olayide, 1980), the per capita income stood at US \$26.38. This is indicative of the level of poverty in parts of rural Nigeria.

The rural poor increasingly depend upon accessible natural resources to eke out meager income and for survival. Such resources include forests, rivers, and cultivated and semi wild trees. Women constitute the majority of the rural poor yet they have no land rights and therefore rely on trees that grow on common or public land such as village squares and forests for survival.

The intent of this paper is to discuss the realities of the value of trees and their products to the rural poor in Annangland, show the adverse effects of trees as the principal assets of the poor, and consider policy measures that may be adopted in order to narrow the restrictions barring the poor, notably women, from these resources.

METHODOLOGY

The study area

The ethno-geographic region called Annangland lies in Western Akwa Ibom State (AIS). It comprises six local government areas (LGAs) the most southernly of which, Oruk Anam, is largely riverine and with freshwater swamp forest in its southern extremity (Fig. 1). North of this LGA, precisely north of the Ekparakwa-Azumini road, the vegetation changes quite perceptibly to highly degraded moist lowland tropical forest with scattered groves of oil palm replacing this vegetation northwards up to the Nto Edino-Obot Akara area. From here the degraded moist lowland tropical forest reappears but with more and healthier oil palms than in its replica in the south.

Traditionally, settlements are nucleated and of mud-and-wattle structures. Five to eight or more of such structures, erected close to each other, constitute the compound. Around and sometimes within the compound, assorted trees are planted for their fruits, leaves or medicinal value. Such compounds can be

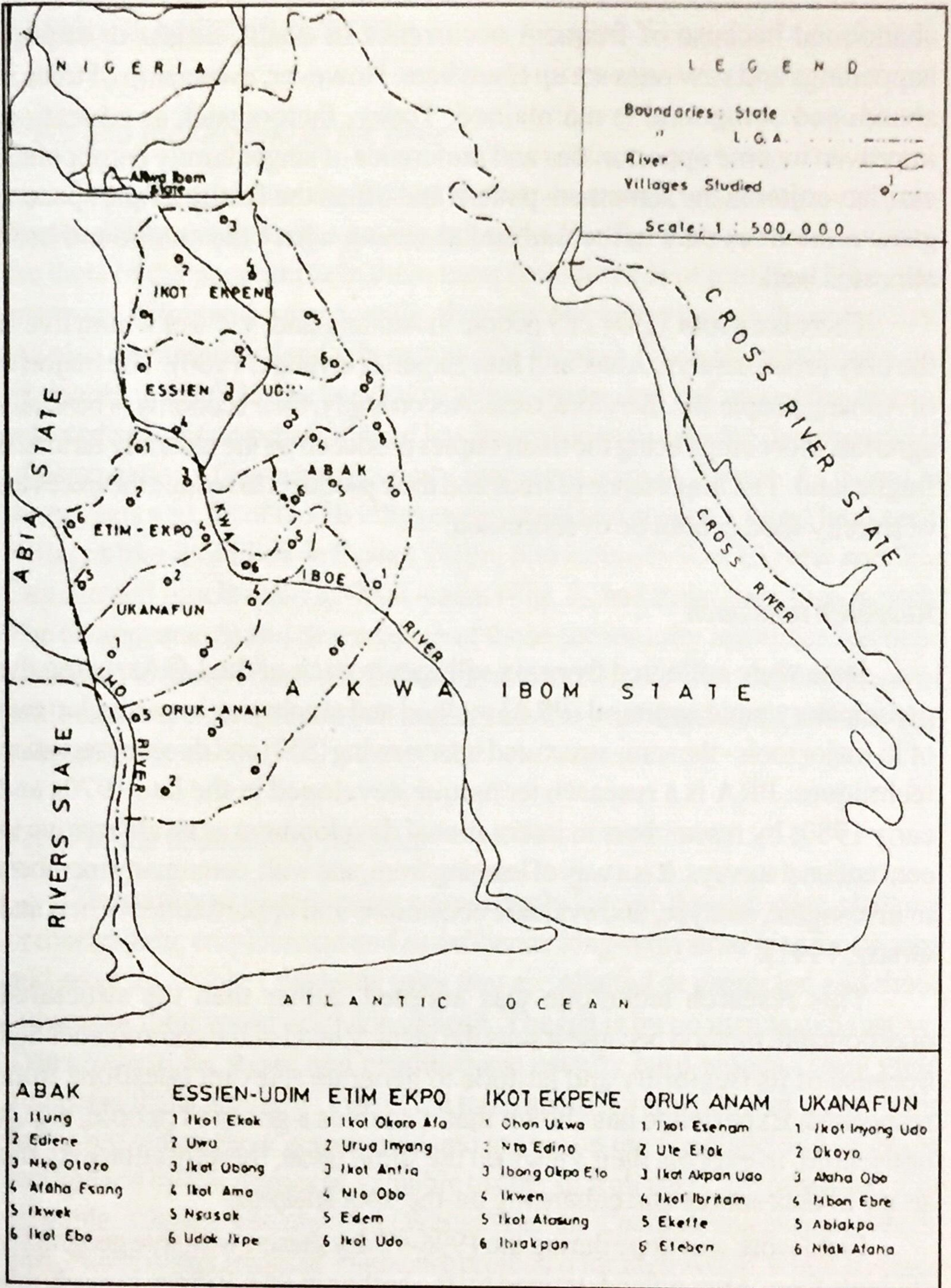


Fig. 1. Villages studied in each Local Government Area in Annangland, Nigeria

abandoned because of frequent occurrence of death, illness or strange happenings and new ones set up elsewhere. However, ownership of trees in abandoned compound is maintained. Today, factors such as education, improved income opportunities and preference of single family compounds, etc., have altered the settlement pattern and offers the family ample space to grow more trees than in the traditional setting where the compound head allocated land.

There are about 1,304,289 people in Annangland, 9.2% of whom live in the only urban centers, Abak and Ikot Ekpene (Uyanga, 1980). The majority of Annang people are, therefore, rural. Accordingly, their economy is basically agrarian, tuber crops being the main staples produced on the naturally fertilized fragile land. The importance of trees and their products to reduce the excesses of starchy food cannot be overstressed.

Research approach

Data were collected from six villages in each of the LGAs, using the participatory rapid appraisal (PRA) method and employing in particular, two of its major tools - the semi-structured interviewing (SSI) and direct observation techniques. PRA is a research technique developed in the late 1970s and early 1980s by researchers in international development as an alternative to conventional surveys. It is a way of learning from, and with, community members to investigate, analyze, and evaluate constraints and opportunities (Theis and Grady, 1991).

This research technique was adopted, rather than the structured questionnaire method because it suits the literacy level of the communities and because of its flexibility and latitude to generate relevant questions from responses. Experience has shown that it enables a group of people, e.g., a household, to express their views on the same issue, thereby enlarging the scope of data source and enhancing on-the-spot analysis.

Field work was done during the 1996-97 dry season with five geography students from Annangland, trained by the author in SSI. Fifteen households were interviewed per village and six villages selected per LGA to present a fair spread in the different ecological zones. The villages were between 6 to 10.4 km from each other and a total 540 households were interviewed.

RESULTS AND DISCUSSION

Trees and the survival of the poor

Trees help to sustain the rural poor in a variety of ways, namely: economically, medicinally, socially and agriculturally. They also add variety to the diets of the poor and help them meet the demands of tradition. The poor are aware of this and consequently, they plant trees not only in the compound but also on their farmland where suitably located. From all indications and evidences in the field, the trend of planting, protecting and managing trees of selected species on personal land has increased owing to the disappearance of degradation of common property resources such as forests. As recent as thirty years ago, 28 of the 36 villages surveyed had at least a forest land each. Villages like Ikot Ebok in Essien Udim, Nto Edino in Ikot Ekpene and Ikot Esenam and Ikot Ibritam in Oruk Anam (Fig. 1), had three large forests each. The disappearance and degradation of these community resources has been attributed to the shortage of land for agricultural expansion and extension of settlement cores, both of which require the trees to be removed and the land to be utilized.

Trees in the economy of the poor

The rural poor plant or protect trees chiefly for cash through sales, pledging or mortgaging, employment and as deliberate long-term strategies for savings and security. Table 1 presents trees that are planted or protected and those valued for their wood products or both. The list is by no means exhaustive. Trees valued for wood and products are usually hard woods. They yield abundant fruits annually. Protected trees are often species that grow in the forest but which have germinated and grown on the farmland and on being recognized by the farmer as valuable timber or fruit trees, are protected. For example, *Chlorophora excelsa* (Welus.) Benth., *Coelacaryon preussii* Werb. and, *Pierocarpus soyauxii* Taub., are protected for their wood, while *Irvingia gabonensis* (Aubry-Lecombe ex O'Rorke) Baill. and *Tetrapleura tetraptera* (Schum. and Thonn.) Taub., are protected for their fruits. A few are protected and also planted - protected when they germinate and grow on their own, and

Table 1. Trees of economic value in Annangland, Nigeria

| Local Name (Protected/Planted)* | English Name | Botanical Name | Economic Name |
|------------------------------------|---------------|--|---------------|
| Afrijo (Pr.) | Not known | <i>Chlorophora excelsa</i> (Welw.) Benth. | wood |
| Ajop (Pr./pl.) | Oil palm | <i>Elais guinensis</i> Jacq. | fruits |
| Akara (Pr./Pl.) | Oil bean | <i>Pientaclethra macrophylla</i> Benth. | wood/fruits |
| Atama idim (Pl.) | Not known | <i>Heinsia erinita</i> | leaves |
| Eben (Pl.) | African pear | <i>Dacryodes edulis</i> (G. Don) H.J. Lam | wood/fruits |
| Eben Mbakara (Pl.) | Avocado pear | <i>Persea americana</i> Mill. | fruits |
| Efiat (Pl.) | Bitter kola | <i>Garcinia kola</i> Heckel | nuts |
| Ekom (Pl.) | Not known | <i>Coula edulis</i> Baill. | nuts |
| Etofia (Pr.) | Not known | <i>Distemonanthus benthamianus</i> Baill | wood |
| Ibong annang (Pl.) | Kola | <i>Cola acuminata</i> (P. Beauv.) Schott & Endl. | nuts |
| Ibong abaka (Pl.) | Kola | <i>Cola nitida</i> (Vent.) Schott & Endl. | nuts |
| Ichojop (Pl.) | Coconut | <i>Cocos nucifera</i> L. | nuts |
| Ikum eto (Pl.) | Not known | <i>Crescentia eujete</i> L. | pod |
| Mkpaferere (Pl.) | Not known | <i>Pierocarpus mildbraedii</i> Harms. | leaves |
| Nkarika (Pl.) | Not known | <i>Denettia tripetalia</i> Bak.f. | fruits |
| Ubong Onyong (Pl.) | Not known | <i>Artocarpus cominis</i> J.R. & G.Forst. | fruits |
| Udara (Pl.) | Star apple | <i>Chrysophyllum albidum</i> G. Don | fruits |
| Udia edi (Pl.) | Papaya | <i>Carica papaya</i> L. | fruits |
| Ujajak (Pr.) | Not known | <i>Tetrapleura tetraptera</i> (Schum. & Thonn.) Taub. | fruits |
| Ujo (Pr.) | Bush mango | <i>Irvingia gabonensis</i> (Aubry- Lecombe ex O'Rorke) Baill. | fruits |
| Ujo mbakara (Pl.) | Mango | <i>Mangifera indica</i> L. | fruits |
| Ukong (Pr.) | Not known | <i>Piptadeniastrum africanum</i> (Hook.f.) Brenav | wood |
| Ukot (Pr.) | Raffia palm | <i>Raphia hookeri</i> Mann & Wend | liquid/leaves |
| Ukpa (Pr.) | Red iron wood | <i>Pierocarpus soyauxii</i> Taub. | wood |
| Uno idim (Pr.) | Not known | <i>Coelocaryon preussii</i> Wanb. | wood |
| Urahaja (Pl.) | Orange | <i>Citrus sinensis</i> L. | fruits |

*Pl. = Planted

Pr. = Protected

planted when the same species are cultivated. Examples are *Elaeis guinensis* Jacq. and *Pientaclethra macrophylla* Benth.

The poor may obtain cash by selling the products of their tree all year round or seasonally. Trees like *Elaeis guinensis* Jacq. and *Cocos nucifera* L., bear fruits all year round and so are a continuous source of cash for the poor. On the other hand, others like *Chrysophyllum albidum* G. Don, *Citrus sinensis* L., *Cola natida* (Vent.) Schot and Endl., and *Dacryodes edulis* (G. Don) H.J. Lam, yield annually, thus keeping the farmers in expectation of cash earnings at a specific time of the year. However, individual farmers normally plant both all year fruiting trees and seasonal ones, thereby avoiding severe lack of cash at any time of the year. In Etim Ekpo, 82 or 91% of the households interviewed claimed their seasonal and all year yielding trees to be their main source of cash. Eight or 9% had sold or pledged their trees in order to raise cash for contingencies such as burial, illness and marriage.

In effect, therefore, cash derived from trees by the poor, comes not only from selling trees from their products but also from pledging or mortgaging them. Trees pledged are often those that bear fruits all year round and the pledgee is obliged to harvest the fruits for at least a year before they are redeemed, the fruits serving as interest on the money lent. Seasonal fruiting trees may also be mortgaged but for a longer period, usually two or three years. Although the poor are deprived of cash from their tree resources when they are pledged, they consider this more convenient and economical than borrowing from local money lenders who charge usury rates of ₦150 to ₦200 per ₦1000 lent per month, equivalent to an annual interest rate of 180% to 240%.

However, selling and mortgaging of trees is not peculiar to the poor in Annangland. They are common economic practices among the Swahili community in East Africa. They sell their coconut trees because of sheer lack of cash (Caplan, 1975). Also, the author's field experience in the South Province of Sierra Leone in 1970 revealed that the Mende farmers often mortgaged their coffee and coffee bushes to raise cash to buy rice when court cases rendered their cash resources very lean. Leach (1990) has observed an identical phenomenon in this tribal community.

In addition to raising cash from tree and their products, the rural poor in Annangland also earn some income through the utilization of trees and their

products. As noted by Arnold (1991), tree-based income and employment opportunities are particularly important for the survival of the poor because of the ease of access and very low thresholds of capital and skill required to enter and engage in most of them. Besides, they enable a high degree of participation by poor women, who often dominate in activities such as palm oil milling and processing of kola nuts, and who are breaking the gender barrier in the production of a local gin called *kaikai*, distilled from palm wine.

Although active participation of women in *kaikai* distillation is widening, tree-based self employment in wood carving, production of wooden musical instruments, carving of doors and stools, and small scale furniture industry is a special preserve of men. So also is the extraction of raffia fiber from the unfolding raffia fronds, with which assorted types of bags, mats, ornaments and toys are made at Ikot Ekpene, the only place known for these products in Nigeria.

During the agricultural slack period (October-January), the rural poor including men, women and children, engage themselves in income-generating tree-based activities. Some men produce mortars from *Dacryodes edulis* (G. Don) H.J. Lam. for the kitchen and *Pierocarpus soyauxii* Taub. for palm oil processing. Some structure or restructure mud-and-wattle buildings, while others lumber or *Pientaclethra macrophylla* for *kaikai* distillation or extract industrial raw materials from the *Raffia hookeri*. Women dye raffia fibre, process palm kernels and stock firewood for sale. The children, notably girls, go out each morning gathering palm nuts which in time accumulate and are processed for sale. The boys weave baskets from oil palm branches, an important trade product demanded by women within and outside Annangland during this period. These tree-based activities provide one of the largest sources of non-agricultural employment and income to the rural poor and at a time they look to nonfarm employment and income for a large share of their total livelihood (Kilby and Liedholm, 1986).

Trees are often planted as part of deliberate long-term strategies for savings and security (Chambers *et al.*, 1993). Throughout Annangland, trees are raised as an investment to meet specific foreseen needs including buying of bicycles, goats, sewing machines and for wines and children's education. For example, 62% of the interviewees at Afaha Esang (Abak) planted oil palms to pay school fees, while the target of 20% was to redeem pledged land. At

Obon Ukwa (Ikot Ekpene), 70% planted kola to buy bicycles, 18% to meet community levies and 10% to buy goats. In Ukanafun, the ambition of young married men was to purchase Zuzuki motorcycles or Singer sewing machines for their wives from the proceeds of their scattered oil palm plots. There were many examples in the 36 villages where trees such as *Musa sapienta*, *Carcina cola* and *Cocos nucifera* L. were used as collateral for loans.

It must be stressed that trees, especially their branches, serve as fuelwood which is of great domestic importance and is commercialized near urban centers.

Trees as source of medicine

There are 6 hospitals and 24 health centers serving more than 1.3 million people in Annangland. Private clinics and maternity homes, which are mainly in the towns, are not included because the poor can hardly afford the cost of services. The hospitals are not only few but far apart. In principle, every clan or district is supposed to have a health center. The structures are there with one or two nurses in each but are ill-equipped and seldom visited by the doctor. At the hospitals patients wait the whole day to receive treatment when the drugs are available.

These conditions deter the poor from going to the hospitals or health centers. Rather they rely on herbal medicines from forests and planted trees. Table 2 gives the medicinal value of some planted trees and parts of the tree that serve the purpose.

In addition to the parts of trees shown in column 4, seeds, wood and flowers of certain trees are used as medicine, even the soil under them. Indeed, if all known medicinal plants, including food crops, climbers, creepers, grasses and shrubs were listed, it would be clear that Annang people originally had the herbal cure for common ailments. At Mbon Ebre (Ukanafun) an old man remarked, "before the introduction of European medicines, plants served us in everything medicinal".

Associated with medicines derived from trees is food obtained from forest and planted trees which add variety to diets, improve taste, and supply essential vitamins, protein and calories. Some trees are purposely planted to serve these ends particularly during the "hunger periods". For example, trees like *Pierocarpus mildbraedii* Harms. are specifically planted in compounds

Table 2. Some planted trees of medicinal value

| Local Name | English Name | Botanical name | Medical Function | Part of tree |
|-------------|---------------|-------------------------------|--|--------------|
| Ujo mbakara | Mango | <i>Mangifera indica</i> L. | Cure for malaria | bark/leaves |
| Ichojop | Coconut | <i>Cocos nucifera</i> L. | Cures hernia | milk |
| Ibong | Kola | <i>Cola acuminata</i> | Cures gonorrhoea | roots |
| Uno | Umbrella tree | <i>Musanga cecropoides</i> | Lessens labor, pain, cures eye ailment | fruits/roots |
| Eto Okom | Neem | <i>Azadirachta indica</i> | Cures malaria | leaves |
| Asakon | Lime | <i>Citrus aurantifolia</i> L. | Induces abortion | fruits/roots |

to provide leafy vegetables in the dry season when farm sources of vegetables are lean. *Pentaclethra macrophylla* splits early in the dry season, liberating its beans for the use of the poor, while *Mangifera indica* and *Chrysophyllum albidum* ripen towards the end of the dry season when other fruits are scarce or unavailable. The quantity of these foods consumed is usually not much compared with the main food staples, but they often reduce the deficiencies of otherwise bland and nutritionally poor diets. Apart from this upgrading role, food from trees help to minimize the impact of food shortages at certain seasons of the year when stored food supplies dwindle and the next harvest is still months away.

Social importance

Trees are of social importance for the poor in a number of ways, including the maintenance of traditional communal life, the generation of funds for community development, and the recording of the community's historical events and activities.

As regards communal life maintenance, a product of the raffia palm provides a classic example. Raffia palm is not planted by all the poor nor is the wine extracted from it everytime it is collected. But on two of the seven-day week, palm wine may not be sold, but presented to the compound or extended

family head for all, even women, to share in it. After the seventh presentation, depending on the financial strength of the relevant head, a "feast" is held for all that can attend even though many may have just a piece of meat or fish with the palm wine.

Trees also serve the poor in generating funds for community projects like the building of village halls, schools and markets. Usually timber is obtained for free or at very low cost (free from communal land and at rock bottom price from private land). To raise money for other requirements, each adult is normally asked to pay a stipulated levy and harvest self-sown oil palms that have remained unharvested for four weeks. More often than not they gain on the levy.

With reference to traditional records and trees, several villages in Annangland have huge "talking drums" fashioned in the form of a man or woman. On them are carved historical scenes and activities of the community e.g. the founding of the village, road and bridge construction, hunting, wrestling and burial. In addition to recording these historical events, these drums, made from the trunks of very huge hardwood trees, serve also as a means of sending information to villages within 12 kilometer radius, about the outbreak of disorder, bus fire or death of an eminent traditional ruler. This mode of communication gives the poor services that would otherwise require letter writing, telephoning or courier delivery.

Although Christianity has gained firm roots in the region, paganism still features throughout Annangland. A large number of pagans acknowledge trees or objects made from wood as their gods. Trees such as ukum (*Ceba pentandra*), ukpa (*Pierocarpus sayauxii*) and etofia (*Distemonanthus benthamianus*) are worshipped and sacrifices offered with religious rites. Field enquiries revealed that these trees are deified for their size and firmness judged from the buttresses. Indeed, rarely are pagan shrines in Annangland without one of these trees like ukpo (*Alstonia boonel*) or uno idim (*Coelocaryon preussii*).

Agricultural importance of trees

The poor who have land to cultivate, have little or no money to spend on fertilizer which now costs ₦850.00 (US \$10.62) per 50kg bag. They rely

on trees for the maintenance or improvement of the fertility and physical conditions of their soils. Some of these trees are the African pear, umbrella tree, and oil bean tree.

Trees maintain or improve soil nutrient status principally by maintaining or increasing soil organic matter and by nutrient uptake. The fact that trees maintain or increase soil fertility through the supply of organic matter underlies the bush fallow system of agriculture as well as agroforestry in Annangland. It justifies the severe penalty Annang communities adjudge those who accidentally or otherwise burn fallow land. It further explains the cultivation of crops under pruned oil palm trees and trees associated with agroforestry. In this connection, Altieri *et al.* (1987) have shown empirically, through tree-soil-transects, that soil fertility is higher under trees than the surrounding area without tree cover. And Young (1994) attributes such soil enrichment to stemflow from tree trunk, preferential trapping of atmospheric inputs, enhanced nutrient uptake from depth, reduction in leaching loss by tree roots, or effects of birds and animals.

The concept of nutrient uptake is based on the knowledge that rock weathering releases elements like potassium, phosphorus, bases and micronutrients which are absorbed by deep roots and later discharged on the soil through twig and litter fall, thus enhancing soil fertility.

Nutrient loss is reduced by trees because of their ability to check erosion through the protection afforded by their canopies but more notably through the effect of the ground surface cover of litter. Also, the lateral spread of the root system of many trees can cover a large area. In such areas, nutrients that would otherwise have been lost in leaching are intercepted and retrieved for use and eventually released to the soil.

Trees also maintain or improve soil physical conditions like structure, porosity, moisture characteristics and resistance to erosion. Once they are removed, the soil becomes degraded. Evidence of this consequences was observed at Ikot Okoro Ata (Etim Ekpo) where a farmer discontinued with agroforestry and removed the trees in order to build on the land. Unable to afford the cost, he exposed the land to rains which in part eroded it and in part collected on the surface having interfered with soil porosity. Rills showing the effect of erosion were still noticeable in the dry season.

Adverse effects of trees on the poor

One of the cardinal reasons why the poor adopt any farming system is to feed the household. Trees can have direct adverse effects on the full realization of this objective and so persuade the farmer to eliminate them. Prominent among such pressures are competition between trees and crops, suppression of crops by trees, and production of substances which inhibit germination and growth.

As regards competition, the problem becomes serious if the root system of trees can dominate that of seasonal crops. When this happens, the trees may overpower crops in their competition for light, moisture and nutrients. Farmers can do little to control this situation because, whereas lateral spread of the canopy can be restricted by pruning, root pruning is generally too expensive to be practicable (Young, 1994). If left to grow unchecked, the combined pressure from both lateral root and canopy spread can overwhelm crops to the point of absolute elimination. Examples of these phenomena were so many in the field that no specific districts could be singled out.

Unlike competition and crop suppression, which were common in the field, inhibition of germination or growth by substances produced by trees was not common place. However, it was noticed at Ikot Ebok that a hedge row of *Lantana camara* Thimb. planted under a species of *Casuarina equisetifolia* L., was knee high and had been trimmed a number of times. No annual herbs germinated or grew under these trees. At Nsasak, crops like *Citrus sinensis* L. and *Psidium guajava* L. planted near similar trees were stunted and fruitless.

From a different point of view is the loss of organic matter and nutrients when trees are harvested. Trees assemble considerable quantities of nutrients in their biomass. When they are harvested either for staking, firewood or fodder, part of the biomass and, invariably, the nutrients, are removed. When a whole tree like the oil bean tree is cut down for fuelwood (the trunk), stakes (the branches) and fodder (the foliage), hardly is anything returned to the soil. Above all, the soil is deprived of nitrogen that is claimed to be fixed by this tree. Available nutrients from the tree is thus completely lost.

Policy Implications

From the preceding analysis, it is evident that community forest lands have virtually disappeared; the poor grow trees on their private land. Fallow duration is dwindling and the consequent deteriorating potential of the land to support more trees is progressive. The need for policy consideration is therefore crucial.

In Annangland, small ruminants, notably sheep, are tethered in bushes during the day but released at night to feed free range. These animals destroy browseable trees in their early stages of growth. The local governments through the cooperation of district and village heads should ensure permanent restriction of these animals by enforcing stall feeding and creating vigilant groups in the districts to facilitate compliance with regulations.

When trees are older and more valuable especially if they bear edible fruits, theft may become a problem. Such a problem may increase if the trees are some distance from where the owners live, as reported by Shah (1988). However, this can be controlled through the vigilante groups above.

In Akwa Ibom State, government restricts the cutting, transport and sale of trees even by the owners who are expected to obtain permits. Unsure if they can cut and sell their trees, farmers cut and sell them while they can, but are discouraged to plant more. They cannot afford the long waiting and bribes involved in obtaining permits. Government should revisit the relevant regulations in the interest of the rural poor and to conserve the fragile soils.

Rather than the above restrictions, government should also help the farmers to market their tree products by providing information about market trends (FAO, 1986) and encouraging the coordination of their marketing activities, preferably through cooperatives. Such cooperatives may go beyond the marketing realm to provide improved planting materials and thereby increase yields and income for the poor.

Traditionally, Annang people cultivate their land in blocks. Where land is abundant, special blocks, possibly in the periphery of the settlement core should be allocated for tree cultivation and the vigilante group given charge of security.

CONCLUSION

Trees have several advantages for the rural poor. They are cheap to establish, usually appreciate in value with age and care and are in manageable and divisible units. Some of them can regenerate after cutting. In many ways they are better substitutes for small ruminants and stock which are costly to acquire, require feed, shelter and treatment when infected. Besides the rate of appreciation of trees can be much faster than land or bank deposits provided the prices of trees and their products are stable.

Trees have the capacity to retrieve nutrients from deeper soil layers to enhance soil productivity. Therefore, in many parts of Annangland, the potential seems large for trees to provide the rural poor with more income and savings which they need now more than ever. But as observed by Chambers *et al.* (1993), changes in government policies could help thousands of the rural poor to struggle up out of indebtedness and dependence, and to gain self-respect, independence and freedom.

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