

**NONFARM EMPLOYMENT IN SMALL-SCALE FOREST-BASED ENTERPRISES:
POLICY AND ENVIRONMENTAL ISSUES**

By

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ABSTRACT

Employment and income from non-farm activities are of increasing importance in the rural economy of developing countries. Small forest-based enterprise activities constitute one of the largest sources of such income. They also account for a large part of the total harvest from forests in many areas.

Many agriculturalists supplement their income through gathering and trading products such as forest foods, medicinal plants, and fuel wood. Small-scale manufacturing of items such as furniture, baskets, mats, and craft goods constitute substantial informal sector industries. Income from these activities tends to be particularly important during seasonal shortfalls in food and cash crop income and in periods of drought or other emergencies.

Ease of access to forest raw materials means that forest-based activities are particularly important for the poor and for women. However, some of the simpler activities provide very low returns to labor, and may thus provide only minimal and short-lived livelihood contributions. Some of the most important saleable forest products face uncertain markets because of growing competition from industrial or synthetic alternatives or domesticated sources of the materials. As demand grows, some activities are also threatened by depletion of, or reduced access to, forest resources.

In developing policies in support of sustainable activities, it is therefore important to be able to distinguish between those that have a potential to grow and those that do not. Policy issues include regulations that discriminate against the informal sector, policies that result in the shift from managed to uncontrolled open access use of forest resources, and restrictions on private production and sale of forest products that impede the development of farm-based sources of these products.

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INTRODUCTION

Employment and income from small-scale nonfarm enterprise activities are becoming of growing importance in the rural economy of developing countries. In stagnant or slowly growing agricultural areas small enterprise activities provide employment to surplus labor; in conditions of growing agricultural incomes they contribute to the process of growth, diversification, and the shift to more productive uses of rural resources (Haggblade and Liedholm 1991).

It has been estimated that rural nonfarm work provides 20 to 45% of full-time employment in rural areas and 30 to 50% of rural household income (Kilby and Liedholm 1986, Haggblade and Hazell 1989). Despite its magnitude and importance the small enterprise sector has until recently been largely neglected. Information about the sector is therefore limited, though rapidly increasing.

Much of the early knowledge-generating effort has been devoted to census-type surveys, to determine the magnitude, structure and basic characteristics of the small enterprise sector. These studies have shown that small forest-based activities everywhere account for a substantial proportion of the total-- "around the world, three activities have consistently been identified as the most important categories among micro and small manufacturing enterprises: textiles and wearing apparel, food and beverages, and wood and forest products" (Liedholm and Mead 1992). This is as true of countries with limited forest resources (table 1) as of forest-rich countries.

Table 1. Sectoral breakdown of small manufacturing enterprises in rural areas in selected countries in Africa (percent of all enterprises).

| | Botswana | Lesotho | Malawi |
|----------------------|----------|---------|--------|
| Food, beverages | 52.7 | 62.4 | 31.1 |
| Textiles | 34.5 | 26.2 | 17.2 |
| Wood, grass products | 4.3 | 8.1 | 33.3 |
| Other | 8.5 | 3.3 | 18.4 |

| | Swaziland | Zimbabwe |
|----------------------|-----------|----------|
| Food, beverages | 12.1 | 15.6 |
| Textiles | 24.8 | 27.3 |
| Wood, grass products | 60.7 | 42.7 |
| Other | 2.4 | 14.4 |

Source: based on Liedholm and Mead 1992.

Forest-based enterprise activities are defined here as those that use any materials or products that occur in forests or woodland, or from trees outside the forest. There is a vast range of such forest-based products from which rural people, and especially the poor, derive income. Gathered products include fuelwood, rattan, bamboo, fibers, medicines, gums, and wild foods to name but a few. Forests also provide the raw materials for many small-scale rural processing and manufacturing enterprises, such as wood for furniture and implement making, canes, reeds and vines for basket, mat and handicraft production, wood for charcoal production, nuts and seeds for oil processing, and bark for tannin processing. In addition, fuelwood provides the main energy source for many other small-scale processing enterprises such as fish smoking, beer brewing, and brickmaking (Falconer and Arnold 1989).

The present paper is intended to bring together information that is available about small forest-based enterprises, and to examine their impact on sustainable development [note 1]. Such an exercise is necessarily shaped by the extent and quality of the data available. Because they operate from fixed locations, and are therefore more easily located and observed, most of the quantitative data on numbers of enterprises relate to processing, manufacturing and retailing activities. Information about gathering activities and activities such as fuelwood headloading that do not have fixed premises is mainly of a descriptive nature, from narrowly situation-specific studies. Both categories of information document the situation at a particular point in time, and can provide insights into the functioning of enterprises at that time, but seldom shed much light on the dynamics of change.

An added complication in understanding the functioning of forest-based small enterprises is the difficulty in defining boundaries around this type of activity. Many marketable products, particularly hunted and gathered foods and commodities such as fuelwood, are also used within the household. For many producers there is no clear distinction

between activities to meet their subsistence needs, and producing for the market; they sell what is surplus to their needs or in response to the opportunity selling provides to generate needed cash income. Similarly, much of the resource from which many nontimber forest products are harvested sits astride an often ill-defined boundary between farm and nonfarm -- being produced in managed fallow or farm bush for example. It is then difficult to separate nonfarm from farming activities. A related difficulty, common to all kinds of small rural enterprise, arises because a forest-based activity very often constitutes just one activity within an agricultural household. It then becomes difficult to separate out that part of household time, costs, returns, etc., that is attributable to just that activity.

Within the limits imposed by the above considerations, the present review is concerned only with income earning activities. The focus is also on rural enterprises. However, it should be kept in mind that forest-based small enterprises - in particular small woodworking enterprises also constitute a major part of the urban informal sector (Poschen 1987).

In addition to their importance as a source of rural employment and income, forest-based small enterprises account for much of the volume of wood products entering the economy, and constitute the main channel through which nontimber forest products enter the market. In aggregate, they can therefore be heavy users of forest resources, and may thus contribute to ecological change and environmental degradation.

In the next section we look at the nature and extent of forest-based small enterprise activities, and outline their main characteristics. The following section examines some of the main changes in small enterprise activity over time, and the section after that explores the extent of rural households' dependence on employment and income from these activities. The next section examines resource and environmental implications of small forest-based enterprise activities, the penultimate section looks at policy and institutional issues, and the final section draws together lessons that are emerging about constraints and potentials facing small forest-based enterprises in situations at different stages of development.

SIZE AND CHARACTERISTICS

There is no single universally accepted definition of what comprises a small-scale enterprise. A distinction is usually made between very small cottage activities characterized by household location and traditional artisanal techniques and somewhat larger workshop enterprises employing some modern techniques. A convenient dividing line between the two can be taken to be five workers, with 50 workers as the ceiling for small enterprises. As many small enterprises even if workshop-based continue to partly depend on a household base, it is not easy to neatly categorize cottage and workshop types.

Though the different categories overlap, it is useful to distinguish between enterprises that manufacture products from materials from the forest, and those that simply gather and sell forest products. This is partly in order to reflect differences in the data bases for the two, but mainly in order to be able to distinguish differences in the economic role and potential of these different categories of enterprise.

Processing Enterprises

Though the absolute numbers of those involved in small-scale forest-based processing may not be high in relation to the entire rural population, they form a large share of those employed outside agriculture. The estimated 90,000 persons employed in informal forest-based processing in the rural areas of Zambia in 1985, for example, accounted for one third of all rural manufacturing employment in the country (Fisseha and Milimo 1986). Of the 51,000 persons found to be employed in craft activities in Rufiji District in neighboring Tanzania, more than 70% were engaged in forest-based activities (table 2).

Over a range of countries for which survey information exist (table 3), forest-based processing accounted for from 16% of total estimated employment in rural manufacturing in Honduras to 35% in Jamaica (FAO 1987). For Africa as a whole it has been estimated to be the second largest rural industry (Page and Steel 1984). Even in Egypt, a country practically devoid of wood resources of its own, manufacture of wooden furniture was the third largest industry outside large towns and cities (Mead 1982).

Small forest-based manufacturing enterprises process a wide range of materials from the forest. In rural areas, most produce either wooden or cane/rattan furniture, builder's woodwork, agricultural implements, vehicle parts, and other products of wood; or baskets, mats, and other products of canes, reeds, vines, grasses, and similar materials. Both of these product groups serve predominantly rural household and agricultural markets for which they are usually the principal sources of supply for processed forest products. A third main enterprise type is that of handicrafts (especially decorative ones), the outputs of which usually go largely to urban markets, to tourists and sometimes even to export destinations (FAO 1987).

Table 2. Distribution of employment in crafts and extractive activities in Rufiji District, Tanzania.

| Type of Activity | Men | Women | Total for Region |
|---|--------|--------|------------------|
| Craft activities | --- | --- | --- |
| Carpentry & other wood-based activities | 2,761 | --- | 2,761 |
| Canoe making | 881 | --- | 881 |
| Mat making | 789 | 12,177 | 12,966 |
| Basketry | 978 | 737 | 1,715 |
| Coconut oil production | 420 | 4,295 | 4,715 |
| Thatcher | 2,644 | 162 | 2,806 |
| Raffia | 576 | 10 | 586 |
| Extractive activities | | | |
| Honey collection | 450 | --- | 450 |
| Mangrove cutting | 3,098 | --- | 3,098 |
| Logging | 262 | --- | 262 |
| Charcoal production | 5,011 | 596 | 5,607 |
| Total in forest-based activities | 17,870 | 17,977 | 35,847 |
| Other craft activities* | 10,348 | 4,532 | 14,880 |
| Total in craft activities | 28,218 | 22,509 | 50,727 |

* Includes all nonforest-based activities such as blacksmithing, masonry, tailoring, jaggery, salt production, grain milling, bicycle repair and fishing.

Source: Havnevik 1980.

Table 3. Characteristics of small forest-based manufacturing enterprises in selected countries.

| | Jamaica | Honduras | Zambia |
|--|---------|--------------|------------|
| Share of total small enterprises | | | |
| value added (%) | 47 | 16 | --- |
| value of production (%) | 49 | 14 | --- |
| Employment | | | |
| total employment ('000) | 10.2 | --- | 137.4 |
| family members (%) | 82 | 51 | 86 |
| women employed (%) | 30 | 6 | 12 |
| women owners (%) | 32 | 10 | 12 |
| Size of enterprise | | | |
| workers per enterprise (no) | 2.2 | 2.2 | 1.7 |
| one-person operations (%) | 58 | 59 | 69 |
| home based (%) | 52 | 72 | 81 |
| average investment (US\$) | 3,030 | 1,055 | --- |
| Economic contribution | | | |
| rate of return on investment (%) | 33 | 42 | --- |
| net return to family labor (US\$) | 2,494 | 1,221 | --- |
| return to family labor as % of prevailing wage | 164 | 156 | --- |
| | Egypt | Sierra Leone | Bangladesh |
| Share of total small enterprises | | | |
| value added (%) | 18 | 23 | 18 |
| value of production (%) | 19 | 27 | --- |
| Employment | | | |
| total employment ('000) | --- | 18 | --- |
| family members (%) | 89 | (41) | 73 |
| women employed (%) | 31 | --- | 21 |
| women owners (%) | 65 | --- | (3) |
| Size of enterprise | | | |
| workers per enterprise (no) | 1.9 | 1.8 | 3.8 |
| one-person operations (%) | 69 | --- | 36 |
| home based (%) | 76 | --- | --- |
| average investment (US\$) | --- | 431 | 255 |
| Economic contribution | | | |
| rate of return on investment (%) | 28 | 32 | 54 |
| net return to family labor (US\$) | 495 | 371 | 30.8 |
| return to family labor as % of prevailing wage | 118 | 159 | 161 |

Source: derived from Fisseha 1987.

As is evident from table 4, there is considerable variation between countries -- even among quite similar countries. In regions within the forest zones other processing activities can loom large within the total. In West Africa, for example, major forest-based product activities include palm oil processing, other forest food processing, raffia and rattan basketry, woodworking, charcoal production and soap production (Falconer 1990). Fish smoking, another important activity,

depends on fuelwood, and cloth dyeing on bark and other vegetable dyes (Falconer 1990). Elsewhere, first-stage processing of raw materials for industrial use is important -- e.g., treating rattan to protect it and improve its color (Beer and McDermott 1989), and the extraction of kernels of fruits such as babacu palm (May 1985).

Table 4. Composition of the small forest-based manufacturing enterprise group [note a] in selected countries (percent of total number of enterprises).

| FBSSI types [note a] | Jamaica | Honduras | Zambia |
|--------------------------|---------|--------------|------------|
| Carpentry/furniture | 23.1 | 71.4 | 14.3 |
| Wood carving/bamboo/cane | 12.5 | 0.2 | 11.9 |
| Basket/mat/hat making | | | |
| Other [note b] | 0.9 | 17.8 | 13.5 |
| FBSSI types [note a] | Egypt | Sierra Leone | Bangladesh |
| Carpentry/furniture | 23.8 | 66.8 | 27.2 |
| Wood carving/bamboo/cane | --- | 5.9 | 11.6 |
| Basket/mat/hat making | | 23.8 | 32.4 |
| Other [note b] | 5.8 | 3.5 | 28.8 |

[Note a. Many enterprises do not specialize in the production of one item; so classification sometimes depends on the most dominant or important activity.]

[Note b. The "Other" category includes activities such as sawmilling and pitsawing, broom making in Honduras, fuelwood in Zambia, agricultural tools in Egypt, and container making and agricultural tools in Bangladesh.]

Source: based on Fisseha 1987.

Small forest-based processing enterprises are characterized by very small size, heavy reliance on entrepreneurs and members of their families for labor, technological simplicity of operations, low capital intensity, limited industrial and managerial skills, seasonality of activities (especially for the smallest ones), and rural locational bias. The average size of work force in the six countries featured in table 3 ranged from 1.7 to 3.8 persons. Over half the units were one-person, household-based operations, and less than one percent employed 10 workers or more. Up to nine in 10 persons working in the enterprises were the owners or members of their families, with the rest being mostly informal apprentices. Wages are usually very low, and working conditions poor.

The typical small forest-based enterprise thus depends heavily on inputs from the entrepreneur and his or her family. While likely to be technically proficient in craft skills acquired by working in other similar enterprises, the entrepreneur often lacks training in marketing or management but is nevertheless forced to deal with these in addition to being a production worker. Employees are generally without formal training in either the craft or management.

Such extreme smallness is most pronounced among forest-based small enterprises processing nonwood raw materials such as reeds and grasses; activities such as mat and basket making are predominantly household based and usually employ no powered equipment. Woodworking enterprises tend to be somewhat larger, and are more likely to be organized on a workshop basis with one or more machines. Production is rarely specialized and the products are more often than not made to order or in small batches, and work fluctuates seasonally in line with the patterns of agricultural income and activities. This pattern of production does not allow marked sharpening of any particular skill; the high cost of formal training is another barrier to acquisition of skills (FAO 1987).

In addition to the employment and income that they generate, small manufacturing enterprises can introduce vital skills into rural areas, conserve scarce managerial abilities, promote indigenous entrepreneurial capabilities, and channel into industry capital that otherwise would not be available for investment in this sector (Page and Steel 1984). The limited evidence available suggests that some small enterprise activities can be at least as efficient as their larger-scale counterparts in the use capital and other resources (Liedholm and Mead 1987). Furthermore, being small, such enterprises are able to utilize valuable but scattered pockets of forest resources that might otherwise go to waste.

Gathering and Trading Enterprises

Gathering and selling forest products is an important economic activity for many rural people. It is often implied that the collection of forest products as a major source of income is limited to forest-dwelling peoples. While forest dwellers do rely to a large extent on forest products, the forest product gathering and processing industries are far from limited to this population. Table 5 indicates the numbers involved in a range of different situations.

Many agriculturalists supplement their income through gathering and trading forest products. The degree of involvement commonly depends on the alternatives available, labor availability, and access to markets and the resource. The products collected vary with the composition and conditions of the forest resource, and with demands from local and in some cases urban or export markets. In southern Ghana, for instance, forest products that are gathered and sold include medicines, fuelwood, resins, bushmeat, snails, mushrooms, seeds, fruit, honey, canes, and chewstick logs (Falconer 1991).

Because of their intermittent, often transitory nature, gathering activities are less visible, and therefore less easily identified and recorded. Information on overall magnitudes and patterns of enterprise activity of the kind that censuses and surveys have produced for processing activities are therefore not available for gathering

activities. What follows is drawn from case study examples from the literature that illustrate the nature, dimensions, and importance of employment and income from forest gathering activities.

Although most studies focus on products gathered for urban and export markets, these may not be the most important in terms of contribution to rural income and employment, or of quantities involved. Case study material suggests that the bulk of trade in gathered forest products is local--being sold between households or in village or other rural markets. Baskets, mats, household and farm implements, and forest foods tend to feature heavily at this level. The fact that producing and selling at this level escapes both census and market reporting mechanisms helps explain why they feature so thinly in statistics and survey reports. The survey of small forest-based enterprises in Zambia, for example, indicated the existence of a total of 2,147 wood fuel enterprises at a time when localized studies suggested that probably 25,000 people were engaged in this trade (Fisseha and Milimo 1986). It is therefore likely that the magnitude of domestic trading in such products is being generally underestimated.

Table 5. Estimates of employment in forest-based activities.

Source (region)

Employment and activity

Tewari, 1982 (India)

Tendu leaf collection provides part time employment to 7.5 million people; a further 3 million people are employed in bidi processing; 3 million people are involved in lac (resin) production; 735,000 people earn income from sericulture; 550,000 people are employed in bamboo-based craft enterprises.

Jha & Jha, 1985 (India)

126,000 households are involved in Tassar silk cultivation.

Tandon, 1991 (India)

Match production by cottage industries employs 50,000 people, and small-scale factory production a further 195,000.

Fisseha & Milimo, 1986 (Zambia)

25,000 are involved in the fuelwood trade.

Marks, et al., 1984 (Zambia)

48,000 people are employed in charcoal production (36,000 of them are part-time charcoal producers and traders); 11,500 people are involved with bee-keeping; 96,000 households earn income from handicraft production.

Peluso, 1986 (Indonesia)

83,000-100,000 people are engaged in collection, trade and processing of rattan

Kaye, 1988 (Cote d'Ivoire)

Estimates 65,000 people are involved in rattan cane basketry part-time while 1,500 are involved full-time.

Schwartzmann et al., 1987 (Amazon)

Estimates that half a million people depend on latex as their main source of income.

Browder, 1989 (Amazon)

Estimates 1.5 million people derive a significant proportion of their income from extractive activities.

Gathering and trade in some products has expanded greatly to support growing urban populations. These domestic trade flows have given rise to often complex structures of producers, traders, transporters, wholesalers, and retailers, that employ very large numbers of people. A study of forest product markets in Iquitos in Peru identified approximately 5,000 vendors of various forest products in the city in 1986, with the number having grown by nearly a quarter over the previous year. These vendors were supplied by a network of wholesalers, large merchants, and several levels of buyers and sellers down to the village. In 14 villages in the region that were surveyed, nearly all households gathered and sold some forest products; most selling to trading intermediaries in the village. The main products traded included fruits, leaves, and palm hearts; bags, baskets, and other handicrafts; thatch and other building materials; meat and skins; charcoal and fuelwood; and medicinal plants and fish (Padoch 1988, 1990).

Similar patterns exist elsewhere. Table 6 shows the situation in Kumasi, in the Ashante region of Ghana, in which there were on average 650 traders selling forest products in the city's main market during the period it was being studied, with an average of 70 traders bringing supplies in to the city daily. The Kumasi market serves as a hub for trade throughout the region, drawing goods into a central point and redistributing them to other markets. It was found that 68% of those interviewed in villages in the region got part of their income from forest-based activities (Falconer 1991).

The third main category of gathered and traded forest products comprises commodities that enter industrial use and international trade. A number of forest products--e.g., natural rubber and other exudates, fruits of various palms, and various vegetable oils--have been produced in this way in the past, but most such trades have been displaced by domesticated or synthetic alternatives. One of the most important such products at present, in terms of traded value, is the climbing palm rattan (subfamily Calamoideae). Produced in several countries of Southeast Asia (and with similar products harvested in other forest zones) the bulk of production comes from Kalimantan in Indonesia.

Table 6. Commonly traded forest products in Ashante and Western region markets, Ghana.

| | | |
|----------------|---------------------|---------------------|
| Foods: | Cola nut | Household goods: |
| Snails | Charcoal | Sponge |
| Bushmeat | Medicines: | Mortars |
| Fruit | Leaves | Spoons and utensils |
| Seeds | Bark | Wooden trays |
| Spices: | Seeds & Fruit | Grinders |
| Cloves | Animal products | Mats |
| Nutmeg | Prepared tonics | Baskets |
| Chewsticks | Marantaceae leaves | Tool handles |
| Chewing sponge | Other food wrappers | Rubber balls |

Source: based on Falconer 1991.

Most production of rattan is by collecting households that harvest the rattan from the natural forest, and from rattan gardens that are managed as part of their shifting cultivation system. Rattan collection is thus just one of the activities engaged in by the household; their involvement being determined by the demands and potentials of agricultural activities, access to and relationship with rattan buyers, and access to and property rights to rattan. Collectors sell to village intermediaries, who are commonly merchants or shopkeepers who provide goods to the collectors, often on credit to be repaid in rattan and other forest products. Village middlemen sell the rattan to river middlemen or trade boat operators who in turn sell to urban buyers who function as the link with industrial or export buyers. Traditionally supply has thus involved networks of local collectors and intermediaries bound by long-term (often debt-based) trading relationships (Peluso 1986, 1992). Very large numbers of people are involved in aggregate in this system (table 5), and in 1987 Indonesia exported 130,000 tons of rattan, valued at about US\$200 million. In addition large quantities are used domestically (Beer and McDermott 1989).

The collection and sale of nuts and palm oil seeds is another important enterprise in many parts of the world. It has been estimated that approximately 450,000 households in northeastern Brazil rely on cash earned from the sale of gathered and oil-processed kernels of the babacu palm ("Orbignya phalerata"). The majority of farmers in the area are poor tenants, and kernel collection is one of the few ways they can supplement their cash income. Both men and women are involved with the collection of babacu fruit though it is primarily the women who are involved with oil extraction from the kernels. The palm also provides many other products including thatch, basketry, charcoal, and food (May "et al." 1985).

SMALL ENTERPRISES AND HOUSEHOLD SECURITY

The Contribution of Forest-based Income

Many rural households have diversified income earning strategies, and are involved in more than one principal activity. Characteristically, forest-based activities are only part of a household enterprise. In Zambia 64% of those enterprises operated by persons previously in farming were found to be run in conjunction with farming, and 30% of them with one or more other small enterprise activities. Of those where enterprise activity is the principal one, 56% also farm and 65% have other activities in addition to the forest-based one (Fisseha and Milimo 1986). This close integration with other household activities makes it very difficult to separate out income from the forest-based activity, and even more difficult to define how it contributes to rural household livelihoods. Few if any studies focus on how forest-based income is spent, nor on who spends it.

Income earning activities based on marketable forest products may be seasonal or year-round, or may be occasional when supplementary cash income is needed. The role of these forest-based activities varies depending on the availability and profitability of alternative employment (especially agricultural tasks), the seasonal availability of the forest products ("e.g.", fruiting seasons), the need for cash income ("e.g.", for school fees), access to the forest resource ("e.g.", restricted hunting regulations), the composition and condition of the forest resource, and access to markets (Falconer and Arnold 1989, Beer and McDermott 1989).

For some, the forest-based activity may be the sole or principal source of income. Rubber tappers in the Brazilian Amazon provide an example where this was until recently the case with a gathering activity. Sale of forest produce is also the principal source of income in many hunting communities. The larger and more profitable processing activities, such as wood working, and trading activities can also become the dominant household activity.

More widely, forest-based activities are engaged in part-time by farm households which cannot raise enough to be food self-sufficient year-round. A study of a lowland village in the Philippines found that 73% of the households could not generate enough food or cash income from agriculture to meet their basic needs. All village households collected forest products for supplementary and emergency income; with more than half depending on rattan collection and timber wage-labor as a primary source of livelihood (table 7). The average earnings from rattan collection was greater than the average wage for agriculture or timber production labor (Siebert and Belsky 1985).

Table 7. Forest product activity by household rice self-sufficiency [note a] in a Filipino village (percent of households).

 Forest Product Activity [note b]

| Use by household rice self-sufficiency status [note c] | Low (n-14) | Middle (n-27) | High (n-22) | Total (n-63) |
|--|------------|---------------|-------------|--------------|
| Rattan gathering | 57 | 37 | 9 | 32 |
| Employment as timber laborer | 43 | 33 | 36 | 37 |
| Either rattan or timber | 79 | 48 | 41 | 52 |

[Note a. Household rice self-sufficiency refers to the ability of a household to meet its rice consumption demands through rice farming (whether irrigated or rainfed, or as owner-cultivators and sharecroppers).]

[Note b. At lease one adult household member (15 years and older) gathers rattan on a weekly basis or accepts work as a timber wage laborer whenever work is available.]

[Note c. Low: no rice production; Middle: up to 50% self-sufficiency; high: more than 50% self-sufficiency. Rice self-sufficiency is a measure of a household's economic situation.]

 Source: Siebert and Belsky 1985.

In Sierra Leone, many people in villages near roads leading to towns were found to sell gather and fuelwood part-time in order to supplement their household income (Kamara 1986). On average more than half of the fuelwood collected by the household was sold, with the cash income earned playing an important role in the agricultural cycle. Fuelwood selling provided the first cash income from land cleared for rice production; subsequently fuelwood collection for the market was concentrated during the off-peak agriculture period, providing cash income in a period when food supplies are generally at their lowest.

There are several dimensions to the seasonality of forest-based income generating activities. Some activities are seasonal largely because the crop or material can only be gathered at certain times of year. The seasonality of others is directed by the seasonality of other activities ("e.g.", agricultural production), or seasonally induced cash needs ("i.e.", school fees), or seasonal demand, linked to availability of rural household cash income.

The collection and processing of babacu palm kernels is an example of an activity geared to the seasonal slack period in agriculture, which is also the period of most severe cash needs. Income from sale of kernels was found to account for 39% of cash income and 34% of total household income during this season (May 1985). Many of the poorer farmers were dependent on this cash for purchasing seed and other inputs for the new season's planting.

Although fuelwood is collected year round, there are often seasonal peaks to its collection. In rural Sierra Leone, Kamara (1986) found that the seasonality of fuelwood collection was closely related to the fluctuations in labor requirements for agricultural production. A study in the Philippines found that the majority of fuelwood sellers sold wood for less than three months in the year -- partly due to the demands on labor for other activities in other seasons and partly because of transportation difficulties during the rainy season (Hyman 1983).

Small manufacturing enterprises that produce for rural consumers are exposed to the additional seasonal constraint that incomes, being agriculture-based, have a short peak during which demand may exceed their capacity to supply. The resulting supply gap can provide an opportunity for external suppliers. It also forces small enterprises to invest in capacity that remains idle much of the year. Lack of working capital prevents small-scale enterprises from stocking adequate productive inputs to even out seasonal fluctuations in their markets. Their practice of producing on a one-off basis in response to individual orders also hinders them in coping with a seasonal flush of demand that would require organized batch or flowline production (Arnold "et al." 1987).

The third role of forest-based activities, as a source of income that people can fall back on in times of crop failure or shortfall, or in order to cope with some other form of emergency, can be very important. Many accounts recount how more people engage in the gathering and selling, or processing, of whatever forest product is traded locally during difficult times. In Ghana, for example, it has been reported that "the greatest function that forests serve to those living near them is a buffer: both environmentally and economically. They provide products and opportunities for income earning at times when other options fail" (Falconer 1991).

Dependence of the Poor and Women on Forest-based Income

The characteristics of forest resources, and of many of the commercial activities based on them, render them accessible to and appropriate for the poor. While forest gathering activities are not restricted to the latter, they do tend to rely on these activities for meeting a greater share of their basic needs. Forest resources have traditionally had unrestricted access, and poorer people have thus been able to exploit forests for marketable products. Similarly, most small-scale forest-based enterprises appear to be relatively accessible to the poor, requiring little in the way of capital or skills to enter.

Numerous studies of different communities and situations confirm this greater degree of involvement and dependence by the poor. The information in table 7 from the study in the Philippines demonstrates how employment in rattan collection and logging increases as the household's rice self-sufficiency

declines (Siebert and Belsky 1985). Similarly, Kamara (1986) found in Sierra Leone that the fuelwood trade is dominated by poorer households.

However, the poor are not always able to exploit the opportunities available from forest-based activities. In a study in an area of Orissa (India) where production and trade in forest products formed an important part of rural livelihood strategies, it was found that the wealthier categories of household collected and sold larger quantities of most products, because they could spend more time on collecting. The disadvantage of shortage of labor suffered by the poorer households was often compounded by restrictions on their access to the resource. Use of trees on village common land was monopolized by the rich and powerful, forcing the poor to collect from further afield (Fernandes "et al." 1988). Declining access by collectors due to deforestation and changes in land ownership and control has been reported from many countries.

Many authors have also noted that poor gatherers are often exploited by middlemen who control access to the market, or by those who control access to the resource. This is particularly a problem with extractive commodities where collectors depend on intermediaries both for access to markets and for supplies of goods. In the worst cases, such as the rubber tappers in the Brazilian Amazon, concessionaires traditionally took advantage of the virtual monopsony created by their control of the rubber stands to keep the collectors in a state approaching debt bondage (May 1992, Richards 1993). Even in less exploitative situations, collectors have little if any bargaining power in their transactions with merchants and traders, or with private owners and managers or public officials who control access to the resource.

However, the widely voiced criticism of intermediaries in many of these situations needs to be tempered by recognition of the difficulties, costs, and risks associated with trade in often seasonal and perishable products, production of which is widely dispersed across rural areas with limited transport infrastructure, with little if any access to storage or credit facilities, and serving poor markets in which large numbers of people are seeking to derive a living from the trade. Such market systems may be inefficient and unstable, with sharply fluctuating prices, but they are not necessarily exploitative--in the sense of intermediaries capturing an exorbitant share of the profit (Padoch 1988, 1990).

Nevertheless, prices to collectors are often a small fraction of the market value. Combined with unstable markets, this means that some forest product activities provide no more than marginal and uncertain returns to the producer. More than half of the persons engaged in the craft activities reported on in table 2 were in activities such as mat and basketmaking that provided returns to their labor equivalent to only about a third of the minimum wage rate (Havnevik 1980). Thus, while these forest-based activities provide some means of existence to the poorest, they may not provide any means for future investment (either in forest gathering or agriculture), or for improving their quality of life.

The characteristics of easy access to the resource and low entry thresholds that enable heavy participation in forest-based activities by the poor, mean that many women also depend on forest gathering activities for income generation. In addition, women traditionally use forest products to meet some of their household's basic needs ("e.g.", fuelwood, medicines, and foods). Thus gathering of forest products for the market can be accomplished in conjunction with other collecting activities. Also, forest product processing may often be performed at or near home, again allowing women to combine these income earning activities with other household chores ("i.e.", child care). Since women are generally responsible for feeding and clothing the family they tend to rely more frequently than men on forest-based activities for the generation of income (Falconer and Arnold 1989).

As is shown in table 3, the proportion of women in total employment in forest-based enterprises is high--both as owners and employed. However, their involvement is concentrated in particular activities. Women tend to be more involved in gathering and trading, while men dominate many processing activities. Within processing, women usually dominate labor intensive cottage industry activities such as mat and basketmaking. In addition, they commonly are involved with vending forest processed products. Women also market great quantities of processed foods which may be based on forest foods ("i.e.", traditional beers made from forest fruits). The fuelwood trade is also often dominated by women; the majority of fuelwood collectors and sellers being women in many situations, though men tend to take over as the fuelwood trade becomes more complex.

Their dependence on the more labor intensive low-return household-based activities means that women tend to be concentrated in the enterprise areas that are most exposed to shifts in markets, prices, or costs. They are therefore likely to be adversely affected by some of the changes that occur over time, as is discussed in the next section.

SMALL ENTERPRISES, GROWTH AND CHANGE

The rapid rise in nonfarm enterprise activity that has been recorded across all developing regions can reflect two quite different underlying developments. In regions where rural incomes are growing rapidly, consumption diversifies into more nonfood items, many of which will be produced in the rural areas. The growth in small enterprise activity in this case is likely to be accompanied by sharp changes in its structure; moving away as wages rise from low return activities and into higher return activities such as services. With improvements in rural infrastructure and incomes, manufacturing tends to become more concentrated in somewhat larger workshop scale enterprises located mainly in rural settlements and towns. Growth in nonfarm activity in economically stagnant regions, on the other hand, comes about as labor that cannot find

employment in agriculture moves into the nonfarm economy, being absorbed principally in labor-intensive low-return microenterprise activities (Haggblade and Hazell 1989, Haggblade and Liedholm 1990).

Small enterprise activities can be expected to occur where there are dispersed raw materials, small markets or high transport costs; where there are no diseconomies of small-scale, or of labor-intensive production processes. One of the reasons for the concentration of small-scale activities in the forest-based sector is evidently the relatively remote, often dispersed, occurrence of forest and tree resources across rural areas. Another is that these resources can provide the basis for production of a range of low cost products that enter widely into the consumption patterns of low income rural households--foods and medicines, fuel, building and packaging materials, household and agricultural furniture and implements, "etc."

Change in the situation of small enterprises is likely to be related to changes in these underlying factors. Some of the products used in poor households are inferior goods, consumption of which will decline as incomes rise. The markets for other products will be invaded as improved rural transport infrastructure reduces the costs of entry by cheaper or better products--though others could increase their market share as transport costs fall. Some of the production and processing activities provide very low returns to the labor employed and will be abandoned as more productive (or less arduous) employment opportunities emerge, and as rising labor costs--or rising raw material costs--erode their competitive advantage (Godoy "et al." 1991).

In the section that follows, we look at the evidence that could shed some light on the question of which types of activity are likely to prove sustainable and grow, and which are not. In doing so it will again be appropriate to separate gathering from processing activities, and within gathering to consider extractive activities serving external markets separately from those producing for local markets.

Processing Activities

The information about rates of growth in small enterprise activity is very limited. The aggregate figures from a few countries that are reproduced in table 8 show rapid growth, with forest-based activities generally growing at least as fast as small-scale manufacturing as a whole. However, broader studies indicate that there is great variability within totals (Liedholm and Mead 1992).

Table 8. Average annual growth rate in employment in small enterprises in selected countries in Africa (percent).

| | Botswana | Kenya | Lesotho |
|------------------------|----------|-------|---------|
| Wood & wood processing | 27.6 | 27.6 | 5.6 |
| All manufacturing | 11.9 | 26.3 | 4.0 |
| All enterprises | 11.4 | 21.2 | 5.9 |

| | South Africa | Swaziland | Zimbabwe |
|------------------------|--------------|-----------|----------|
| Wood & wood processing | 43.3 | 5.4 | 4.0 |
| All manufacturing | 21.1 | 5.6 | 5.6 |
| All enterprises | 23.9 | 6.6 | 7.4 |

Source: based on Liedholm and Mead 1992.

Of the two most frequently occurring types of forest-based enterprise, the limited evidence available indicates that those based on wood grow faster than those based on canes, reeds, grasses, "etc." The one-person mat and basket making activities that in most countries account for the largest share of the forest-based total, in terms of numbers of enterprises and persons engaged, are low-return activities, exposed to severe local competition because of their low skill and capital entry thresholds. They therefore tend to be abandoned as wages rise and alternative opportunities grow. They are also very vulnerable to outside competition from factory made alternatives, as these become more readily and cheaply available with improving road infrastructure. A study in Indonesia, for example, found that homemade bamboo umbrellas and wooden clogs were rapidly displaced by mass-produced products using metal and synthetic materials once these became available in rural markets (Hadi 1992).

The greater level of both skill and capital needed for successful entry into woodworking activities such as carpentry and furniture making help explain their greater resilience and viability. The study in Rufiji (Tanzania) reported on in table 2 found that returns to labor in these activities were roughly five times greater than in mat and basket making (Havnevick 1980). Data from other countries also show positive returns in small woodworking enterprises (Liedholm and Mead 1987).

Wood-based enterprises are also often exposed to increasing competition, both locally and from formal sector urban producers. However, there are several strategies that such enterprises can pursue in order to respond to changing supply and market conditions. They can improve technology, efficiency and scale of operation by adding better tools and eventually machines. They can concentrate on market niches in which factory products are not competitive, such as very low cost basic furniture items below the price range of the latter or high quality hand carved pieces. Alternatively, they can focus on products in which there is no competitive advantage from large-scale machine production, such as high value handicrafts. Another approach is to specialize in a particular product or process in order to get the advantages of longer production runs. Or they may use the improved road infrastructure to themselves penetrate other markets, in order to increase turnover (FAO 1987).

An example of development based both on selecting market niches above and below those occupied by factory made products, and of specialization, is provided by the small-scale furniture industry in Egypt. Even the manufacture of items such as chairs is distributed between different units specializing either in particular parts such as legs or seats, or in different stages in the production process, such as primary processing, assembling or finishing (Mead 1982). In north Thailand, small village-based entrepreneurs have taken advantage of the improved roads in their region to jointly truck the furniture they produce to towns or busy roadsides where they assemble and finish it for sale. In this way they compete effectively with furniture from large urban producers and have expanded their markets (Boomgard 1983).

The decline in labor-intensive one-person activities as rural economies prosper is of concern for the erosion of income earning opportunities that it implies for the very poor, and in particular for women. Women widely rely on their income to ensure the household's food and welfare situation. Though they often capture a large share of some expanding areas, such as food processing, and the trade and vending of some products, they tend to be displaced from higher value forest products processing activities. As the lac-turnery cottage industry in India, for example, shifted increasingly from hand lathes to machine lathes women found it difficult to get access to the necessary training and have been progressively displaced and marginalized (Campbell 1991).

Gathering and Trading Activities Within the Local Economy

The commercialization of gathered forest products is affected principally by the growth in urban markets. Products that were not previously sold in rural areas, such as fuelwood, acquire commercial value as urban demand emerges, and commercial products are traded in rapidly growing quantities. As was noted earlier, this creates growing part-time income earning opportunities for rural collectors and hunters, and the emergence of employment, often on a considerable scale, in trade and vending.

Changes in the value of particular products have altered the way they are used. Commercialization of some products is accompanied by a decline in rural subsistence use of forest products, and the diversion of supplies of saleable products from use by the collecting household to the market. Fruits, meats and fuelwood feature widely in accounts of such diversion; for example, rising urban demand and prices for bushmeat in west Africa have led to overexploitation, and to people in rural areas reducing their consumption just to what they cannot sell (Falconer 1990).

Growth in forest-based product trade also alters relationships and rights. As pressures on a resource rise, traditional rights of use tend to become circumscribed or removed. Some of the longer established trades, that were earlier based on barter and credit-based personal ties of mutual obligation,

are increasingly based on short-term competitively established relationships of expediency (Beer and McDermott 1989). As quantities, and values, grow, urban traders and wholesalers tend to exercise closer control over their supplies by hiring people to collect on their behalf rather than buying from local gatherers. Changes are also discernible in the balance between gender roles. As trade in fuel-wood, which was traditionally controlled by women in many situations, expands and becomes more complex it tends to be taken over by men. Thus, though the growing intrusion of organized trading systems into the rural areas as the value of forest products rises may create additional rural employment and income, it can also divert control and access from those who earlier benefitted from the production and trade of these products.

The strong growth in urban demand for forest products is largely based on products that formed part of rural use patterns, and which continue to be consumed as people move to the towns -- despite the existence of urban alternatives that might be considered to be cheaper or more convenient. In southern Ghana, for instance, although the modern substitute of toothbrush and toothpaste is available everywhere, 95% of the population use chewsticks; and comparison with an earlier study suggests that there has been little change over the past 15 years (Falconer 1991). Although market demand for such products thus seems well established, there must be a question mark as to how long they will maintain their position. The experience of fast growing economies of countries in eastern Asia suggests that urban consumption of some traditional forest products can decline rapidly as consumer preferences change with substantial increases in income, and as rising wages encourage rural people to move out of relatively labor-intensive low-return activities.

Extraction and Trade in Industrial Products

In contrast to the major products traded and consumed domestically, which generally face expanding markets, most forest products gathered for sale for industrial use face very uncertain market prospects. The history of extractive products records that, once a product achieves commercial importance, industry seeks to bring production and production costs under control by replacing supplies from wild sources by plantation sources or synthetics. The greater the success of a product the more likely this is to happen. The market for the forest-based product then collapses. This boom-and-bust sequence may provide significant employment and income initially, but in the longer term is likely to be extremely disruptive for rural economies, encouraging people to move away from more diversified and less risky agriculture-based livelihoods (Beer and McDermott 1989, Richards 1993).

Oil palm and rubber are but two of the many forest products that have been largely displaced by production from cultivated sources. The babacu oil industry, once the largest oilseed industry in the world based on harvest from a wild plant, has declined rapidly since the mid-1980s due to substitution by

synthetic detergents and less fatty edible oils (Richards 1993). Synthetics have also replaced or greatly reduced the market for a long list of other extractive products of the forest that at one time figured prominently among the products of one or other of the tropical forest zones.

Extractive supply systems are also threatened by inelasticities of supply inherent in them. When, in the 1970s, demand for babacu oilseed was growing rapidly, expansion in production was constrained by the farmers' need to give priority to their rice crop; labor for nut extraction becoming available only when weeding of rice had been completed. Supply therefore proved inelastic in the periods of growth in demand, causing processors to shift from manual to industrial processing. This led to men displacing women as the main income earners from babacu (May 1992, Richards 1993).

The production of extractives in the Amazon basin has been further disrupted by developments accompanying the building of roads through the area. With improved links between the producer and market areas, trade in extractives became less dependent on networks of gatherers and intermediaries. More fundamentally, the enhanced land values in areas opened up by roads lessened landowners' interest in extractive income, in favor of other land uses, so that gatherers were widely deprived of access and had earlier usufruct rights withdrawn. Increased commercialization and access to markets also expanded the range of options open to gatherers. Agriculture became more attractive, and job opportunities in towns led to large scale migration from the rural areas. The numbers engaged in extractive activities in the Brazilian Amazon have been steadily declining, as people reduce their dependence on low-margin activities and products facing unstable markets, and a way of life that was "often poorly remunerated, lonely and isolated" (Richards 1993).

The evolution of production and trade in rattan in Kalimantan shares some of these characteristics, but in a number of respects is proving more robust. Collection is just one of the activities practiced by producers, being usually combined with agriculture. Collector-trader relationships were less exploitative than in the Amazon. Access to land and the resource was based on established local rights rather than landlord-tenant relationships. Rattan lends itself to smallholder cultivation and was widely being raised in individual rattan gardens as well as being harvested from the wild resource. The output, in addition to being sold to industry and exported, provides the raw material for a substantial household-based small enterprise activity in the manufacture of rattan carpets and other products (Weinstock 1983, Peluso 1986).

Nevertheless, the system has recently come under severe pressure. As demand for other gathered forest products declined in face of competition from synthetics, collectors became increasingly dependent on sale of rattan--demand for which has been growing rapidly. With growing demand for rattan, and the opening up of the forests in order to exploit timber, short-term traders entered the market, raising prices to producers and stimulating increased harvesting. The

construction of industrial processing plants in Kalimantan has raised output to levels that observers consider are unlikely to be sustainable (Peluso 1992).

RESOURCE AND ENVIRONMENTAL ISSUES

Impact of Resource Depletion on Small Enterprises

The overcutting of rattan stocks reflects one of the most widespread problems facing small forest-based enterprises. Nearly everywhere users of forest products are faced with a decline in the size of the resource from which they obtain their supplies. Shortages of raw materials are exacerbated for small enterprises by their lack of working capital, which prevents them holding stocks. Nor are they usually able to invest in the resource itself. Their small size and simple technical base similarly often makes it difficult for them to substitute other materials when their traditional inputs become hard to obtain.

The principal causes of raw material shortages are usually connected with developments other than harvesting by or for the small enterprise activities. Timber harvesting in the forest is likely to damage or destroy other components of the forest that provide products for small enterprises. Clearance of land for agriculture and pasture reduces the extent of the resource, distances users from remaining supplies, and is likely to result in more intensive use of what remains.

The opening up of forest areas is likely to precipitate other changes that make inroads on the resource. As logging roads were built in Kalimantan, alternative employment opportunities emerged, reducing interest in rattan collection (Peluso 1992). The same happened in the Amazon, where the road infrastructure also dramatically enhanced the value of agricultural and pasture uses of forest land, undermining many extractive forest product activities--but stimulating those such as babacu oil-seed production that could be operated on an industrial scale.

However, opening up of forest cover can also lead to changes in the plant and animal populations in the area that increase the supply of some products. For example, populations of grasscutter, the rodent that forms a large part of the supply of bushmeat in west Africa, is found only under open cover; it does not occur in the closed forest (Davies and Richards 1991).

Access and Use Rights

Increasing pressures on the resource are also related to another widespread change--restrictions or removal of users' access and rights to harvest. The greater part of the raw material supplies that small forest-based enterprises use comes from land that they do not control--privately owned land or land controlled by private concessionaires, state land managed by forest services or other government departments, or common pool land operated under collective control or without any form of control at all (open access). They are therefore very vulnerable to changes in land use. Loss of use rights as land owners shifted to other land uses, and withdrew rights of access from the tappers and collectors, has been a major factor in undermining rubber tapping and babacu kernel collection in the Amazon. Lack of security of access to future forest product harvests influences household decisions in favor of the short term results to be obtained from shifting cultivation rather than extractive activities (Pinez-Vasquez "et al." 1990).

The commercialization of those of their outputs that were previously collected for own use puts pressure on collective management systems and encourages their privatization. Land reform in India has transferred from communal control to private ownership, and thereby from forest product to agricultural use, a very large part of the village lands on which the poor depended for much of their income, and for fuelwood and other subsistence biomass products (Jodha 1990). The example from Orissa cited earlier (Fernandes "et al." 1988) is but one of many where, even when the resource remains in the public domain, as its value rises access to the harvest is effectively captured for the benefit of just the wealthier and more powerful within the community.

There are also numerous instances where use or harvesting rights to particular products on private land--for example fuelwood and postharvest grazing--are withdrawn once those products acquire significant market value (Jodha 1990, Falconer 1990, Beer and McDermott 1989). Though villages in Kalimantan still retain rights to rattan and other forest products on adjacent lands, in practice they are now often unable to exercise these rights in the face of gangs of collectors retained to procure supplies for the rattan processing factories, or uncooperative logging companies with rights to harvest timber on the same area (Peluso 1992).

Impacts of Harvesting by Small Enterprises

Some small enterprise activities can be as destructive of forest resources as other forms of deforestation--notably fuelwood harvesting and charcoal production. Numerous instances have been documented of regions close to large urban centers that have been denuded of tree cover to supply wood fuel markets. The impact of most small enterprise activities though is more selective, with the impact varying widely with

the type of product, harvesting, and parent resource. The felling of whole trees of "Garcinia epunctata" and "G. afzelia" that provide the logs from which the chewsticks of Ghana are produced is likely to have a quite different impact on the sustainability of the resource than the harvest of canes and rattans, which can regenerate readily and regrow in a few years, or the harvesting of the leaves from the species in the Marantaceae family that are widely used in Ghana for food wrapping--a product that can be harvested repeatedly from the plant without destroying it (Falconer 1991). However, rapidly growing demand can result in unsustainable harvesting of even the most readily regenerated resources.

The impact of harvesting will also vary with the frequency of occurrence, and distribution, of the resource species. The "acai" palm (edible fruits and palm hearts), which is the forest product with the largest market value at present in the Amazon, is largely confined to the limited area of floodplain forests in the river basin--as are several other of the economically sought after Amazon species (Anderson and Ioris 1992). The concentration of research studies in such rich areas ("e.g.", Peters "et al." 1989) can therefore give the impression that the occurrence and concentration of forest products of commercial value is much greater than it is (Richards 1993).

The selective reduction or removal of particular species by product harvesting can also have knock-on effects on the forest that could affect its economic and ecological value. The increase in hunting of forest animals as markets for bushmeat (and other animal products) have grown, has been concentrated on the larger animals. A recent study has pointed out that many of these play important roles in seed dispersion, herbivory and predation--and that their removal can have striking effects on the ecology of the forest (Redford 1991).

The Shift in Tree Resources from Forest to Farm

In addition to the domestication as plantation crops of a number of species of considerable economic importance, such as rubber and oil palm, there has been growing domestication of a wide range of forest species at the farm level. As public lands diminish, and the natural resources on them recede or are degraded, or are withdrawn from use by outsiders, farmers have shifted to managing trees on their own land. They have done so by protecting, planting, and managing trees of selected species of importance to them (Arnold and Dewees forthcoming).

Recent studies in West Africa have found that the bulk of forest products gathered are in fact collected from fallow and farm bush and other forms of tree cover that are managed to encourage desired species (Davies and Richards 1991, Falconer 1991). The babacu palm in northeast Brazil has long been integrated into local farmers' shifting cultivation system (May "et al." 1985), and farmers in the floodplain forests of

the Amazon area manage them to favor the economically more valuable species they contain (Anderson and Ioris 1992). Planted fruit trees appear everywhere at a very early stage in agricultural settlement, and as natural tree stocks diminish the amount and range of planting generally increases. Though the main impetus for this domestication is to meet household needs, it can include species intended for nonfarm enterprise activities. The expansion of household level cultivation in Kalimantan of rattan, first as rattan gardens incorporated into shifting cultivation systems, and then as a smallholder crop, illustrates the impact that commercialization can have on encouraging production of products that are suitable for cultivation at this scale and level (Godoy and Feaw 1991, Peluso 1991).

POLICY ISSUES

Small enterprises in general have to operate within a policy environment that is oriented towards large modern sector industry. Thus, small enterprises often face subsidized credit allocation regulations and tax concessions aimed at firms above a particular size. Even where such overt restrictions do not occur, licensing and other burdensome bureaucratic procedures tend to exclude them from access to available incentives or assistance (Liedholm and Mead 1987). A widespread issue is therefore to achieve a more neutral policy environment, in order to remove inadvertent bias against the small enterprise sector.

Within the forest products sector, measures favoring formal sector firms could bias competition against small enterprises producing comparable products. The Indonesian ban on rattan exports, for example, encouraged investment in factories to produce a product, rattan carpets, already produced widely at a cottage industry level. Although this was very successful in raising domestic production, and created considerable employment, it also caused prices of rattan raw material to fall, affecting returns to gathering and trading enterprises, and to smallholder growers of rattan.

Within the small forest-based enterprise sector, entrepreneurs themselves most commonly cite finance as the principal problem they encounter in maintaining their competitive position, with raw material shortages being mentioned most often as the second most important (table 9). Finance, however, while a real problem in its own right, is also often a symptom of other difficulties which can include insecure and intermittent markets and raw material supplies, lack of suitable tools and skills with which to improve productivity, managerial weaknesses, and inability to make effective use of available support services (FAO 1987).

Table 9. Ranking of entrepreneur perceptions of main problems facing small forest-based manufacturing enterprises.

| Problem area | Ranking of problem | | | |
|---------------|--------------------|--------|-------|--------------|
| | Jamaica | Zambia | Egypt | Sierra Leone |
| Finance | 1 | 3 | -- | 1 |
| Raw material | 2 | 2 | 1 | 2 |
| Demand/market | 3 | 4 | 2 | 3 |
| Others | -- | 1 | 3 | -- |

Source: based on Fisseha 1987.

Of these factors, market prospects and ability to achieve low production costs are likely to be the most important. Small-scale forest-based processing activities are therefore likely to benefit from interventions that focus on these factors. Within the forest-based aggregate, support activities need to differentiate between the micro household units, many of which use nonwood raw materials, and the somewhat larger and more technologically advanced group of woodworking enterprises operating at a workshop level. While the latter may be able to benefit from certain existing support services the former will usually not be able to and will require other modes of assistance. In addition, enterprises that are in the process of moving up from the household to the workshop scale are also likely to require special attention, as they may be unable to use effectively the support appropriate for either the micro or the workshop-scale units.

The greater part of the support needed is likely to be best provided by existing organizations that assist small rural enterprises in general, rather than by setting up special extension entities for those enterprises producing forest products. Extension services usually already exist to help small enterprises improve their access to formal sources of finance, to provide market and product information, and to train entrepreneurs and their employees in technical and management skills. However, the micro units that figure so prominently in the forest-based aggregate are unlikely to be able to make use of these services unless they are grouped together, and will probably need help in doing so (FAO 1987).

Initiatives focused more narrowly on forest-based enterprises may be required in order to alleviate their raw material problems. These are often worsened by unfavorable forest policies and policy enforcement practices--which can include unfavorable harvesting controls favoring timber production, exclusive allocation of timber to large users, complicated licensing or auctioning procedures, plus demands for heavy deposits or other insurmountable preconditions, high prices due to state monopolies, and monopoly distribution systems. In a survey among furniture makers in northeast Thailand, for example, problems with forestry regulations were cited by nearly half the enterprises as the main negative factor affecting their operations (Boomgard 1983).

Some of these distortions reflect the pressures on forest services to produce revenue from forest products disposal; this is more easily achieved from a small number of large

enterprises than from many small ones. Similarly, many users of the forest are more difficult and costly to control and service, raising difficult issues of how to ensure conservation of the resource and environmental stability.

Perhaps the main factor eroding both small enterprise access to raw materials and consequent overexploitation and resource degradation is the progressive weakening and breakdown of indigenous control and management systems. Collapse of local collective control, erosion of rights of access and usage, and privatization of previously common pool resources are among the developments that have had adverse consequences of this nature. Underlying them are an array of powerful economic and political forces that are difficult to reverse or arrest--as has been evident from opposition to moves to provide legal enforcement of collectors' use rights in extractive reserves in the Brazilian Amazon. The case for strengthening user rights is likely to be strongest where the economic case is also strong; securing their access to the resource may not be of much benefit to producers if this still leaves them facing unstable markets and uncertain returns.

The decline in availability of forest resources in the public sector is focusing increasing attention on the creation of tree resources in the farm sector. Policy related issues affecting the development of farm tree products that could supply small enterprises include the impediments caused by regulations that impede private production and sale of wood, and pricing policies that subsidize competing supplies from state forests.

DISCUSSION AND CONCLUSIONS

In the more heavily forested areas within the developing world, collection, processing and trade of forest products are usually the main source of nonfarm income, with much of the rural population depending upon it to some extent. In all developing countries, even those with little in the way of forest resources, small forest-based enterprise activities form one of the largest sources of rural nonfarm employment. Most such activity constitutes just one of several activities carried out by the household, part of a diversified livelihood system that enables them to adjust to seasonal or intermittent fluctuations in agricultural income.

Employment in forest-based activities is often growing rapidly. In considering how it is likely to evolve in the future, and what interventions might be needed, it is important to be able to distinguish between those activities that have the potential for sustainable and viable development when exposed to the pressures of growth and change, and those that are unlikely to be able to do so. In pursuing this aim it is useful to distinguish three different basic situations within which small enterprise activities are prominent:

* in economies where population is growing faster than per capita incomes, growth in nonfarm employment reflects its function as a sponge; absorbing people unable to obtain employment, or sufficient employment, in agriculture in labor-intensive low-return, typically household-based activities such as collecting and mat making;

* in situations where per capita incomes are rising, small enterprise growth is likely to be in activities to meet growing and diversifying rural demands, and in higher-return activities such as vending, trading and other service roles; this is likely to be accompanied by a reduction in the share of low return activities; and

* overlapping with the other two, forest-based activities often play an important buffer role during the process of growth and change; providing a source of income on which rural people can fall back during periods when crop failure, poor markets or prices, or other setbacks, adversely affect their livelihood system.

These different situations evidently have different potentials, and limitations, and call for different responses. Many of the low-return activities typical of the first situation defined above offer no more than a marginal, fragile livelihood, and seldom provide a base for sustained improvement. They are commonly available to the poor because they are in isolated regions or because their extraction and processing is difficult and/or unpleasant. Support to such activities once higher return or less arduous alternatives emerge could impede the emergence of better livelihood systems for the participants.

On the other hand, in the situations where they are found in large numbers they can still be hugely important, in particular to women. Providing support to such activities in situations where they are still the best, or only, alternative faces the particular difficulties of helping micro-enterprises. It is also activities at this level that are most threatened by broader shifts in use of land and land-based resources, and by the political and institutional changes that reduce people's access to resources or markets and that are likely to require interventions at the policy rather than sectoral level. The reasons for doing so may be more humanitarian and strategic than economic (Hecht 1992).

As rural nonfarm economies develop away from this basic situation, other issues arise that can have consequences for intervention strategies. In the first stages of expansion beyond household operation, small enterprises may fail because of the added overhead expenses of creating and maintaining a workshop infrastructure, and the loss of the implicit subsidy derived from operation within a household. Access to long-maturity finance may be crucial at this stage for those enterprises that have a potential to expand.

Another matter of concern is the reduction in income earning opportunities for women in small forest-based activities that seems to occur as development takes place. Not only do

activities that they dominate, such as mat making, decline in size and importance, and other women-dominated activities such as fuelwood selling get taken over by men as they become more commercialized, but women all too often have difficulty in getting access to employment in expanding more dynamic enterprise activities. Particular gender-focused interventions may be necessary to overcome this.

In examining experience to date, the small enterprise activities that have grown consistently tend to be those that

(1) involve products that are staples of domestic demand, such as fuelwood, processed foods and furniture;

(2) require certain skills or inputs, or involve flexible production processes that can be upgraded and expanded readily, or that do not suffer diseconomies of small-scale of operation; and/or

(3) use raw materials that are widely available, or that regenerate readily and quickly, and/or that can be brought under local or household management.

However, while this may provide useful pointers to longer term potentials, it is clear that growth of activities that exhibit these characteristics will continue to be accompanied by a huge number of other, often more transitory or less robust, enterprise activities that emerge in response to needs and opportunities in particular situations and particular stages in the development process.

NOTES

1. This paper draws in part on an earlier study on small-scale forest-based industries carried out with Yacob Fisseha and Mafa Chipeta, and on a study on income and employment, forestry and food security with Julia Falconer. Both studies were supported by the United Nations Food and Agriculture Organization. Research for the present paper has been carried out with the assistance of Ian Townson.

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This bibliography contains items identified during the preparation of the attached Working Paper. As that study builds on earlier work, in particular two studies carried out in the mid-1980s, [note 1] the selection of documents presented here concentrates on material published after 1986. It also reflects the range of libraries and institutions accessible to the compiler, which were principally those in the United Kingdom.

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