Miombo woodlands and rural livelihoods in Malawi

An in-depth analysis and critical review based on literature

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ACRONYMS AND ABBREVIATIONS

BCFP	*Blantyre City Fuelwood Project*
GDP	*Gross domestic product*
GOM	*Government of Malawi*
Hh	*Household*
MMFR	*Mulanje Mountain Forest Reserve*
MSE	*Micro and small enterprises*
MPRSP	*Malawi poverty reduction strategy paper*
NASFAM	*National Smallholder Farming Association of Malawi*
NSO	*National Statistics Office (Malawi Government)*
NTFP	*Non timber forest product*
SANPROTA	*Southern African Natural Products Trade Association*
WEF	*Wild edible fungi*
WSM	*Wildlife and Environment Society of Malawi*

EXECUTIVE SUMMARY

This paper presents the collection and analysis of a wide array of literature concerning the role of miombo woodlands in supporting rural livelihoods in Malawi. The intention is that this information can help us approach indigenous woodland management from a more informed point of view.

The Introduction describes in a general way the traditional relationship between people and forests in Malawi and shows that over time some dimensions of this relationship are becoming less important e.g. use of tree bark to make cloth and hunting, whilst other dimensions are increasing in importance e.g. trade in firewood and non-timber forest products. The introduction also describes the poverty profile of Malawi and explains that whilst the majority of the Malawian population are subsistence farmers most fail to produce enough food to last the year and must supplement their livelihoods with off-farm income. Alternative income sources e.g. trading in forest products are necessary not just to earn extra cash for miscellaneous items but to earn money to buy food in order to survive.

The second Section is dedicated to information pertaining to domestic use of woodland products and explores the consequences on rural life if these products are no longer available or difficult to obtain. The literature reveals that whilst having access to such products does not directly alleviate poverty, having reduced access to such products erodes the capability of subsistence farmers to manage their otherwise marginal livelihoods. There are a great many ways in which rural people adapt to the increasing scarcity of some products but there is little quantitative information showing the consequences of these coping strategies on human wellbeing.

Section Three presents details about the nature and extent of forest product trading in Malawi whilst Section Four discusses the contribution of forest-derived income to food security and rural livelihoods. The literature shows that the majority of those who engage in forest product selling do so because the resources are free and little skill or capital outlay is required and it is therefore a source of income for those who have no other option. Most of the money generated from selling forest produce is spent on meeting basic needs, especially food. Others who engage in bulk trading do so because they recognise a business opportunity when they see one but profits are still small and little is invested in developing the business.

Section Five discusses interventions required to maintain and enhance the contribution of miombo woodlands to rural livelihoods. The potential for boosting forest based business through technical, business and marketing support is analysed with the conclusion that gains can be made provided specific attention is paid to the business model to ensure sustainability. Promoting communal business ventures – some of which are little tried and tested, therefore risky - amongst the poorest people may not be the best business model. It is also vital not to forget that the existing contribution of the forests as a safety net needs protecting i.e. this is a case of maintaining the existing contribution rather than developing a new contribution. Finally the environmental services, particularly

maintenance of a healthy water catchment, provided by the woodlands should be emphasised. Damage to watersheds can undermine the entire basis on which rural people build their livelihoods much more seriously than a shortage of building poles and wild fruits. These benefits are the least easy to replace and have far reaching impacts, but because of the short-term planning framework typical of both the rural poor and Government of Malawi they are too often neglected.

SECTION ONE: INTRODUCTION

This case study is being prepared to provide readers with an understanding of the role played by miombo woodlands in supporting livelihoods and contributing to local and national economies in Malawi. Review of the existing literature quickly shows that these contributions consist of an intricate web of local use and trading activities which vary between geographical locations and sectors of the society. Before focussing on the forests and their products however we shall introduce the paper with a look at the existing livelihood and poverty profile of Malawian households.

Livelihoods in Malawi

In 1901 the population of Malawi was 737,153 whilst the latest census of 1998 reported a population of almost 10 million (NSO, 2000a). With increasing population more land has been opened up for agriculture with a resultant reduction in forest area. Agricultural land increased from 2,064,600 ha to 4,641,350 ha between 1965 and 1992 (Sambo, 1999). Unfortunately, for a nation of farmers, the largely agriculture based livelihood strategy is proving increasingly unable to feed the population. Figures show that per capita consumption of maize has declined from around 200kg/year in the early 1970s to 161 kg/year in 1995 and that maize production deficits on a national scale are increasing (Sambo, 1999). It is also estimated that only 4.8% of households in the country do not run out of self-produced food before the next harvest.

Given this dismal picture it is not surprising that recent figures report that 64.3% of the population of Malawi is poor. The poor in this case are defined as those whose daily consumption (food, non-food and non-monetary) is below the minimum estimated requirement at US $ 0.41 per person per day (GOM, 2002).

Food security implies availability, accessibility and affordability of sufficient food supplies of acceptable nutritional standard to all members of the household necessary for an active and healthy life. Food insecurity, which can occur if any of the above conditions can not be met, is considered to be a major attribute of the poor and generally poor households spend most of their income on food. In Malawi the poor spend about 76% of their income on food whilst the better off households spend about 55.4% (GOM, 2000). Despite declining per capita production subsistence agriculture is still the main source of food and income for the rural poor, but wages and salaries (including piece work) contribute most to cash incomes.

Malnutrition is both a cause and consequence of poverty and the immediate cause of malnutrition is inadequate dietary intake. About 49% of children are stunted; 25% are under weight and 6% are wasted. In addition, malnutrition has caused widespread mental retardation (GOM, 2002).

The Malawi Poverty Reduction Strategy Paper (MPRSP) also reports that some sections of society are difficult to assist through development programmes and can only be helped through direct support i.e. the provision of safety nets to the chronically poor who comprise 5-10% of the population (GOM, 2002). These especially vulnerable people

include households headed by orphaned children, female headed households, people with disabilities and the elderly. The report also points out the existence of the "transient poor" who when struck by disaster temporarily fall into the category of the "destitute". These people cannot cope, but they do survive, typically through the assistance of family members and neighbours.

It is within this context that this case study explores the role and importance of miombo forest products and services in modern day Malawi.

Forests and forest use.

Traditional farmers, whilst using the forests for numerable goods and services also perceived forests as something to be removed to make way for settlement and gardens. This clearance did not, in the past, jeopardise their continued reliance on the forests as there were always plenty more. However, given that 50% of the forest cover of Malawi in 1946 was lost by 1996 (Openshaw, 1997) and deforestation has been continuing at a rate of between 2-3% since that time, forests are no longer plentiful. The uneven distribution of population, fertile land and infrastructural development means we now have a situation whereby some communities live with almost no access to indigenous forest resources whilst some of those who live in the more inaccessible and infertile parts of the country still have considerable access e.g. some remote settlements in rural Karonga and Chitipa. For others the only accessible forest resources are those in protected areas.

Forest loss is not the only change. In many parts of the country forests also look different, with a greater proportion of the indigenous forest resources occurring on farm and in fields as opposed to in a forest. Within villages forest patches of young, regenerating woodland are typical and differ significantly from old growth mature forest stands, for example the customary land woodlands of the Chimaliro communities (Lowore *et al.*, 1995, Abbot, 1999b).

The link between livelihoods and forests.

The link between livelihoods and forests is as strong now in 2002 as it was in 1902 (or vice versa) but the relationship has undergone a dramatic change. We shall explore this change firstly from an historical point of view, but only in a general way as precise details are few.

In the past it is known that natural woodlands provided a fascinating array of products and services to support the lifestyles of the migrating / settling farmers (Williamson, 1975; Mwanyambo, 1994). Products such as materials for building houses, firewood for cooking, medicines for health were essential for everyday life. Bush meat was undoubtedly a significant source of protein (Morris, 1994a). Fibres, implements, foods, dyes, resins and livestock forage were sourced from the woodlands. The nature of this relationship was basically one of exploiting essential products from the woodlands in the vicinity although other dimensions of the relationship included selective retention of important tree species, use practices to promote regeneration as well as spiritual beliefs

associated with certain woodlands (Coote *et al.*, 1993a & b). Woodlands were constantly being removed and regenerated to such an extent that it is considered that almost no land in Malawi has not been cultivated at one time or another. The majority of products were collected by those who required them and were used in the home and the fields. Within-village trade and barter occurred where specialist skills in collection, capture, processing or administering precluded each and every person accessing the product themselves. Examples would have been hunting for bush meat and knowledge of herbs for medicine and their application and the making of some implements. Timber was little used within the village because local culture did not demand products such as door frames and school desks and tools with which to make them were lacking. Timber was however sought by traders and colonialists for many years.

Subsequently more communities settled and pre-urban settlements, infrastructural development and populations increased. This created new demands for more timber and perhaps charcoal to the urban settlements. Some uses died out such as the use of bark cloth for clothes and modern medicines were introduced, replacing the use of herbal medicines, to some extent. As populations expanded so the quantities for different uses expanded e.g. canoes for fishermen, firewood for smoking fish, poles for cattle kraals etc.

With the coming of forest protection in the form of forest reserves some activities such as traditional beekeeping and honey gathering were deliberately curtailed, as they were seen as destructive.

More recently still we have seen "new" uses such as poles and thatch grass being demanded for tobacco sheds and firewood for tobacco curing and brick burning. Increasingly pole and firewood demands are being met from planted trees and traditional medicines continue to be replaced by those with access to alternatives. Supplies of game have declined and large sizes of some tree species e.g. used for drums or pestles and mortars are simply not found in some places. The emergence of local scarcity, therefore demand, in some parts of the country has lead to an increase in trade in some products such as firewood and the development of markets in previously unmarketable products e.g. mushrooms and chiwale (raphia palm leaves) furniture. New products such as bamboo and cane furniture have emerged.

The various influences which have determined the change in forest use can be summarized as follows :

- Loss of woodland cover, mainly as a result of agricultural expansion
- Local scarcity, especially as a result of large settlements, creating a market for products
- The introduction of the wood-demanding tobacco crop
- Infrastructural development creating a demand for timber and burnt bricks (using firewood)
- Population increase leading to products being required in greater quantities
- Availability or not of affordable and viable substitutes
- Closure of access to some products

- Development of specialist markets e.g. for curios and cane furniture

This in turn has created a situation whereby some products and services have become more important, some have become less important and the way others are used has changed.

The importance of miombo for modern day livelihoods.

Direct consumption for household demands still occurs especially for products which have no viable or affordable substitutes and for those communities that still have access to reasonable areas of miombo. These contribute to assets, food security and manageable lifestyles in many different ways. For example foods available from the forests during a food shortage contribute directly to family nutrition. More indirectly however a woman who has access to firewood with 1km of her home will spend less time collecting firewood than a woman who must walk 4-5 km. The implications on the family may be significant. The woman might spend the extra time tending a vegetable garden for family food and income or less obviously may have time to cook breakfast for her children before they go to school which in turn enables them to perform better in school. Likewise having access to traditional medicines might be important for the health of the community but this depends on whether alternative medicines are available and affordable. If they are, the loss of the traditional is less important, if they are not the loss is more keenly felt. Having access to large canoes for fishing means the fishermen can fish further from the shore and haul in greater catches, if only small canoes are available their fishing effort is curtailed. Section Two of this case study is dedicated to exploring the role of direct consumption in present day livelihood strategies but little quantitative information seems available.

Trading activities, because they involve money are much easier to measure and have received the attention of more quantitative research. However the impact on livelihoods does vary from community to community and from sector to sector and is not necessarily only a function of total income earned. For one person mushroom selling enables him/her to buy a radio, for another, money to buy food to prevent starvation. Furthermore it is important not to forget that a great many Malawians are also customers and whilst they may sell one forest product they might buy another (Bone and Khofi, 1997). Section Three takes a look at the extent to which forest products are traded whilst Section Four discusses the contributions of the trade to household livelihoods.

Section Five discusses those interventions which might ensure that the benefits which accrue, particularly to the poor, can be safeguarded and, better still, increased.

All sections take note that woodland use and dependency varies for different peoples and at different seasons. Variation across sectors of society is examined on the basis of gender, geographical location and socio-economic status.

SECTION TWO: THE USE OF MIOMBO WOODLAND PRODUCTS FOR DOMESTIC PURPOSES

The traditional domestic uses of produce originating from miombo woodlands in Malawi are many and have been well documented (see Williamson, 1975; Morris 1994a & b, Peham 1996; Ngulube, 1999). What these studies often fail to reveal is the relative importance of one product or use compared with another and what impact reduced access is having on today's rural households. This section aims not only to describe how present-day rural communities use indigenous woodland resources for household purposes but also to reflect upon the importance of this dependency and to explore the degree of variation in use and dependency amongst different people.

2.1 Domestic use products important for present day rural communities

Asking villagers to rank products, giving explanations of criteria used, is one way of assessing relative importance of products. Such an exercise was done by Simons (1997) with communities in Mwanza East which revealed that villagers first of all base their valuation on how important the product is for their basic survival. This resulted in firewood (energy and food), building poles and thatching grass (shelter) and forest medicines (health) being cited as the leading products. Firewood and building poles were also ranked high because villagers effectively have no substitutes for these products unlike medicine, as modern substitutes are increasingly available and medicines are not a daily requirement. The proportion of villagers that critically depended on a product for basic survival was also important in its ranking. Again, 100% of villagers use firewood, building materials and medicines. Another factor was seasonality. These top three products are not seasonal and are available throughout the year. These results are consistent with other studies where construction materials and firewood are repeatedly ranked as the most important uses of natural woodlands (Peham, 1996; Abbot, 1999b). This indication is supported by national statistics which reveal that 99% of all rural households use firewood (both indigenous and exotic) for cooking (NSO, 2000a).

Fruits and relishes tend to be ranked lower largely due to seasonality, relative ease of substitution and selectivity in consumption. In cases where villagers are involved in selling forest produce the picture changes and fruits and mushrooms, for example, become more important.

Firewood

In gender dis-aggregated studies, women, who shoulder the main responsibility for collecting firewood for domestic purposes (Peham, 1996; Simons, 1997; Konstant, 1999a), often rank firewood the most important domestic woodland product.

Women and girls collect firewood on a regular basis for cooking fuel. Men might be involved in collecting large logs which require the use of a sled or ox-cart. The gender differentiation is determined by mode of transport and end use, with men taking more responsibility for collecting fuel for building up a fuelwood store and brick-burning

(Abbot, 1999a). Konstant (1999a) notes that men in Mulanje only collect firewood for domestic purposes in special circumstances.

The consequences of diminishing fuelwood supplies result in women walking further and the collection of less preferred species as well as shapes and sizes – which in turn means they get less firewood energy per hour spent collecting the wood (Konstant, 1999a) and have less time available to engage in other productive activities. Use of alternatives is also prevalent such as eucalyptus and uprooted tea bushes in Mulanje (Konstant, 1999a) and maize husks and tobacco stalks in other communities. As firewood collection becomes more time consuming those community members who have "better things to do" find it more cost effective to buy firewood from others (Lowore *et al.*, 1999).

Construction materials

Poles are vital for a multitude of homestead constructions, including the traditional pole and earth dwelling house. Specific shapes, sizes and species are sought for particular end uses with durability against termites and rot and straightness being the most important characteristics (Lowore *et al*., 1995; Peham,1996).

In the Mwanza East study (Simons, 1997) it was recorded that most households collected their own poles and this was done by men. Pole production costs to the villagers means the labour involved in harvesting and carrying them home. By villagers' estimates (using the average land preparation daily wage) pole collection for an average house would cost about US$ 13 (10 days work at US$ 1.3 per day) in labour. This calculation tallied with what the villagers said they would be prepared to pay for poles for house-building if they were to do so, their figure being in the range of US$ 10-13 (Simons, 1997).

In another study of woodland product use in different sites (Ngulube, 1999) poles appeared low in the priority ranking of products sourced from indigenous woodlands. This was thought to be due to the high level of substitution which had already occurred given that good poles were hardly available on customary land and pole cutting from the forest reserves was prohibited. Poles were being sourced from planted eucalyptus, *Senna siamea* and *Gmelina arborea* in woodlots around the homestead.

Changes in housing styles seem to be occurring. The traditional pole and earth houses, are being replaced by houses built from pounded wet mud only or bricks. The villagers within the 1993 BCFP[1] study all built houses with poles and earth. In Chimaliro in 1995 housing styles were said to be changing whilst the 1998 MASAF[2] baseline study (eight sites countrywide and 1015 households) reported that just 12.3% of all houses were pole and earth (Zgovu and Mvula, 1998). Lowore *et al.* (1995) suggested the change was being driven by shortage of appropriate poles.

All joints in rural construction work (roofs, walls, fences, granaries etc) traditionally rely in binding with rope, nails are rarely used. Rope fibres are also used in mat making or

[1] Blantyre City Fuelwood Project [2] Malawi Social Action Fund

tying goats, bags and firewood. Rope fibre may be sourced from tree bark, shrub bark or fibres of indigenous or exotic agavaceae. *Brachystegia boehmii* is the preferred species but if unavailable or difficult to find other less preferred species will be used instead, and this will affect the durability of the joint and therefore the entire construction (Peham, 1996).

The costs of rope fibre and substitutes in Chaoni were worked out (Peham,1996). Within the village forest land the rope fibre is free whilst it costs US$ 0.3 for a day's unlimited collection of rope fibre from the forest reserve. Sisal is sold for US$ 0.003-0.007 per leaf in Chaoni whilst Linja (strips of rubber from car inner tubes) traded in Mpita market is worth US$ 0.07 per strip of 1m by 1-2 cm or 5-10 single strips. With increasing local scarcity in supply Linja was used increasingly but is restricted to those who can afford to spend money on rope. Sisal could serve as substitute for bark fibres but "poor people still rely on woodlands" (Peham, 1996). Other studies also revealed sisal to be a preferred substitute for bark fibre and it is sold widely in rural areas as well as peri-urban centres as a binding material (Ngulube, 1999).

Grass is still the dominant roofing material in Malawi and a range of species of varying qualities are collected for this purpose in the cold dry season (Coote *et al.,* 1993; Konstant 1999). Estimates suggest that 89% of the total rural population of the country use thatch for roofing their houses (Zgovu and Mvula, 1998) let alone other homestead structures. Traditionally grass is self-collected, but Konstant (1999) reported that in some villages in Mulanje up to 63% of those interviewed were engaged in selling thatch grass (also see Section 3).

In Mulanje thatch grass is in high demand to meet the needs of the large population. Those who live near the forest reserve cut and sell to those further away. It was reported however that for some who could not collect enough from "wild" sources it was more cost effective to buy plastic sheeting to reduce the need to buy thatch. The competition for collection of the wild resources means that people collect immature grass that is of poor quality. This means the roofs must be replaced more quickly therefore intensifying the competition and the rate of exhaustion of supplies. It was reported that people were willing to self-collect up to within about 3-4 km thereafter they would buy or use alternatives (Konstant, 1999).

Medicines

Plant medicines (see Williamson, 1975; Morris and Msonthi, 1992, for lists of Malawian medicinal plants) are collected and administered for a fee by herbalists and are also collected and used by ordinary men, women and children (Coote *et al.,* 1993a; Simons, 1997). Knowledge of medicines varies between men and women. Coote *et al.* (1993a) reported that there are certain medicines which only women know about such as those used for infections of babies navel cords whilst others are known only to men such as those used for potency and aphrodisiacs.

Respondents in Mwanza East (Simons 1997) considered that herbal and modern medicine to be equally effective and important but for different things. For malaria, people go to

hospitals if they can afford; for more complicated diseases such as bilharzia and fertility problems they go to the herbalists, some of whom specialise in certain problems. For witchcraft related ailments, they exclusively go to the traditional healer renowned for success with witchcraft.

Maliwichi (1997) concluded in her study of medicinal plants in Malawi that in rural areas the use of traditional medicines and herbalists exceeds the use of modern medical facilities but the MASAF baseline study (selected sites) showed that a low average of just 4.2% of households visited the traditional healers *first* although the percentage varied depending on the illness (Zgovu and Mvula, 1998). An explanation of the disparity may be that which was revealed in Mwanza where villagers are finding ways to combine modern and traditional practice as the need arises, using hospitals for diagnosis and traditional herbalists as pharmacists. For example one woman explained that "many of us go to Mtope hospital to be told what our problem is; but since the hospitals nowadays don't have medicine, we come back to the herbalist and he gets the right herbs from the forest. This is what helps is these days" (Simons, 1997).

For some the flexible pricing system of traditional healers offers a distinct advantage. They take account of the ability to pay and sometimes accept to be paid later on or in kind. Herbalists can however be very expensive if the required herb is difficult to find and for witchcraft illnesses (Simons, 1997).

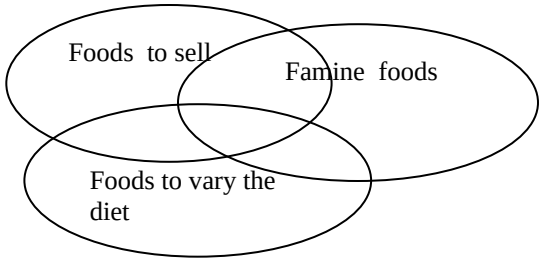
The continuing reliance on traditional medicine has led to the formation of some traditional medicine associations the largest being the Herbalists Association of Malawi with more than 2000 members (Maliwichi, 1997). Some communities in Chiradzulu and Blantyre have found that modern medical facilities are inadequate and have become involved in establishing community herb gardens (Hope Humana, 2002). The initial phase of this initiative was so "successful" that the owners of the herb gardens reported a high incidence of theft of plant material from the gardens.

2.2 Forests and foods

One detailed study of 36 farming households in Chimaliro revealed that during a continuous period of 25 months a total of 37 different leaf vegetables, 2 roots vegetables, 21 fruit and 23 mushrooms and 14 caterpillar species were collected, in addition to numerous small insect species (Abbot, 1999a). The most frequently collected were mushrooms, fruit and leafy vegetables in that order. A closer look at the leafy vegetable collection revealed that people collected for two main reasons - to vary the diet and as famine food.

This and other evidence supports the idea that forest foods can be categorized into three overlapping groups as shown in Figure 2.

Figure 1. Forest foods serve different purposes.



2.2.1 Famine foods

Information on famine foods is difficult to come by with most studies discussing forest foods in a general way rather than focussing on foods consumed in times of food shortage. Famine foods are recognised by the following characteristics:

- These are foods which are not normally eaten, except in times of food shortage
- May be the only foods eaten, at a given time of food shortage and therefore eaten in greater quantities than "usual" years.

Women in Mwanza East said that the nuts of the Msetanyani (*Sterculia quinqueloba*) tree were not normally eaten, except during intense famine (Simons, 1997). People in the BCFP area were badly affected by the 1991/92 drought and a villager reported that fruits from the Mchenje tree (*Diospyros kirkii)* helped a lot during the food shortage "if a few fruits are eaten in the morning a person can go the rest of the day without food" (Coote *et al.,* 1993b). Tamarind and baobab fruits are much liked in the Mwanza communities but in times of famine these are ground and made into porridge and may be eaten as the only meal of the day (Simons, 1997).

Tubers have been recorded as being important in times of seasonal food shortages (Seyani, 1988) and Williamson (1975) records 20 edible wild roots and tubers in Malawi. Mushrooms are eaten and enjoyed in normal years but not normally considered as "food" to allay hunger (Konstant, 1999a). In years of severe food shortage, however, they are sometimes one of the very few foods available. During the 2001/2002 food shortage reports of villagers "sleeping on mushrooms" (sleeping after having eaten only mushrooms) were common.

A study of forest food consumption within the Chimaliro villages (Abbot, 1999a) revealed that most households stored wild vegetables and mushrooms. The results suggested that such stores were made to add variety to the diet later in the year and the stores seemed less important to safeguard against food shortages. It seemed those who were deemed the poorest households stored less food than the better off households, this fact seeming to support the contention that poorer households have difficulty in coping with their poverty therefore reinforcing their status. On average households stored dried wild relish which when reconstituted was worth one month's total relish consumption implying that, excluding direct consumption, wild foods contributed to 8% of the year's relish intake.

2.2.2 Foods to supplement the diet

The exploitation of woodland foods broadens the food base for small holders whose farming may, at the best of times, be marginal.

Fruits

Whilst Malawi's miombo woodlands support more than 50 species of edible fruit (Magheme, 1994) some fruits are much more significant than others. Taste is of course important but it is the reliably high yielding fruits which are most important such as *Uapaca kirkiana* and *Parinari curatefolia* (Ngulube, 1999; Peham, 1996). Other important fruits are *Ximenia caffra, Flacourtica indica, Annona senegalensis* and *Vangueria infausta.*

Uapaca kirkiana is important throughout Malawi (Minae *et al.*, 1994; Ngulube 1995) and can be eaten fresh or processed into juice, wine, beer, porridge and jam (Seyani, 1988; Nglulube, 1995). *Uapaca kirkiana* is a good source of carbohydrate (86.5-92%) and minerals, iron (43.1-275 mg/100g[2]) in particular (Malaisse and Parent, 1985; Saka and Msonthi, 1994).

Parinari curatefolia is another heavily utilised indigenous fruit and exceeds other fruits as a source of carbohydrate (Malaisse and Parent, 1985; Saka and Msonthi, 1994). Mineral content is low but Vitamin C content is exceptional. *Parinari curatefolia* trees are abundant throughout the customary land of the Chimaliro communities and the fruit considered the most important wild fruit by the villagers (Ngulube, 1999). Although the fruits are taken fresh it is more common to pound them to separate flesh from the nut and mix it with water. The resultant mixture of pulp and water is called msongwe. Msongwe can than be squeezed and the fluid used to prepare a much loved sweet msongwe porridge. Msongwe can also be sun dried and stored for later consumption. The nuts are discarded but later in the year when the fruiting season (July to October) is over these nuts are collected by children and broken open and the dry kernel within eaten (Lowore *et al.*, 1995).

Mushrooms

Edible mushrooms are collected from forests and gardens during the months of November to April, the genera *Cantharellus, Amanita,* and *Termitomyces*, in that order, being the most preferred, followed by *Russula* and *Lactarius*. February and March are the peak months for most of the mushrooms with more than 70% of them being collected during this period in Kasungu and Machinga (Ngulube, 1999).

Mushrooms collected from the indigenous forest are either destined for immediate consumption in the home, drying for future use within the home or immediate sales - mainly at the roadside or in local or urban markets. Sometimes dried mushrooms are also

[2] per 100g of dry weight of edible portion

sold. In communities where mushrooms are not sold they are generally not ranked highly largely due to their seasonal nature. Whilst mushrooms are valued as a source of relish when food is scarce their prominence as an important NTFP is reported to be due to their contribution to incomes during the same season (Ngulube, 1999).

Mushroom collection is traditionally a female dominated activity although men also collect mushrooms if they happen to find some. As their significance as a tradable good increases, men become more involved. One study showed that where mushrooms were not sold 83% of collection was done by women, whilst in an area where mushrooms were sold this percentage fell to 55%, with 45% being collected by men (Ngulube, 1999). The same trend was noticed in Mzimba where an incidence of poisoning had actually deterred some men from eating mushrooms whereas the female collectors and keepers of knowledge about identity showed no such reluctance (Lowore and Munthali, 2002).

Box 1. The traditional way to dry mushrooms

Miss Nancy Banda (20 years old) of Chigwere village lives with her grandmother and her 5 brothers and sisters whose ages range from 16 to 2 years. Throughout the mushroom season the family eat wild edible fungi (*wef*) perhaps 2-3 times per month. Nancy collects the *wef* together with her grandmother and in one trip they will try to fill a large basket. On returning home they set aside enough *wef* for 1-2 meals for the whole family and the rest will be dried. The family do not sell mushrooms but they eat about 8 different types. The types which they like best are *ndelema, matale, tundwe* and *masutwe*.

To process the *wef,* they are first boiled, drained and then put on a mat in the open sun for drying. The dry *wef* are put in *zikwatu* (bundle) using *masuku (Uapaca kirkiana)* leaves, which later are hung in the kitchen where the smoke preserves them. Some of the *zikwatu* are sold in town and others are eaten by the family.

Anne Longwe also eats and dries *wef* at home where she stays with her husband and three small children. They all eat *wef* when they are available but not more than 2-3 times in a month. Anne and her three year old like *wef* better than others in the family. She collects the *wef* herself, although her husband also occasionally collects. If she fills a big pot (*sufuria*) then she knows she has enough *wef* for two meals. *Utale* are large mushrooms and she knows that 3-4 large *utale* will provide for 2 or more meals for the whole family.

Anne also sells *wef* in Mzuzu and uses the money to buy soap, paraffin, food and clothes. The types she collects and eats in the home are *utale, mpofwa, manyame, mulye, kamchipapa* and *ndelema*. The family prefers *mpofwa* and *utale* and it is these types which she dries.

"I boil, prick them onto sticks and hang the stick in the kitchen so as to be smoked. After they are dry I make *zikwatu* using *masuku* leaves and hang them in the kitchen for preservation. If I need one I go into the kitchen and get one. Sometimes I sell a *chikwatu* in town – for US 0.6".

Miriam Mkandawire of Vwenyere village also preserves *wef* using the same general approach as the others but she sometimes makes a bench of thin poles – a drying rack – and underneath she makes a fire to speed up the drying process.

Source: Household interviews in Lowore and Munthali (2002)

Bush meat

Meat from the wild has long been an important source of protein for the rural communities. In traditional communities even if domestic animals are kept, these are

eaten only on festive occasions while bush meat is used throughout the year and indeed bush meat is actually preferred by many people adding flavour and diversity to diets (Morris, 1994).

Increases in human populations and loss of habitat means that wild game animals are very scarce in most parts of Malawi outside of protected areas. Recent studies of woodland use reveal that game species still available in some parts include klipspringer, bush-pig, hyraxes, hares, cane rat (Peham, 1996; Ngulube, 1999; Lowore *et al*., 1999). For some communities mice are the largest "wild animals" consumed. They are primarily found in fallow fields and their population is reported to be on the increase. The resource is heavily utilised and dried/smoked mice are often sold beside the road in Malawi. Several bird species are also eaten.

Evidence of the decline in availability comes from different sources. In many cases children report that they are "told about the large wild animals that used to be here" but have never seen them (Coote *et al*., 1993b). In a recent survey in Chimaliro, game was the woodland product most often cited by respondents as being "limited", with the decline in the larger game dating back to the 1960s (Kamoto, 2002b). The Chemba villagers reported that hunting, an only male activity, takes place during the dry season but that there was little left to hunt "and one woman commented derisively that men go hunting and come back with caterpillars" (Coote *et al.*, 1993a).

Box 2. Hunting in Mulanje

As part of the community consultations which were undertaken around Mulanje Mountain Forest Reserve (MMFR) in 1999 prior to drawing up a management plan for the area researchers visited the villages in the Fort Lister Gap near Phalombe. The researchers submitted the following report:
"The chief's brother commented that there were a lot of activities which were taking place in the area like hunting, pit sawing, mat making, chiwale (raphia palm) furniture making, firewood selling and honey collection. He introduced us to some hunters. There are many hunters in these villages – every family has a hunter. They spend most of their time farming and hunt on a part-time basis. The hunters are all men aged between 12 – 50 years and they usually go hunting when the need arises in groups of 3-5. They use dogs, traps, spears and bows and arrows but using dogs is most common. The animals hunted include rabbits, hyrax, common duickers, bush-bucks, baboons, monkeys, klipspringers, guinea fowl and wild pigs. They mostly hunt during the dry season after the forestry staff have started their early burning operations – then any fires they start they can blame on the forestry staff. They hunt during this period because it is easy to see and chase the animals. Fire is good because it encourages fresh grass growth. During the rainy season it is too difficult to run because it is slippery, it is breeding season and there is tall grass. Problems which they find are that the meat is sometimes confiscated by the forestry staff and that some people go missing as a result of bad spirits. The number of animals is declining because more and more hunters are coming into the area as everyone is looking for something to eat and something to sell. The Fort Lister hunters use their meat in the home".

Source: Lowore *et al.*, 1999

A recent survey of insect consumption and trade from the Mughese Forest in northern Malawi (Chitila and Meke, 2002) revealed that all members of the community eat insects at some time but only termites were considered preferred foods. By comparison with another site in the central region of Malawi the researchers noted that the Mughese communities consumed fewer types of insects than the Ntchisi communities. It was also

noted that the Mughese community were more self-sufficient in their own-grown food that the Ntchisi community.

Others

Hoe, axe and spear handles, pestles and mortars, cooking sticks, bowls, bows, arrows, drums, knob kerries, ox-harnesses and ox-carts are some common domestic implements. Making these items is usually the responsibility of men. All require specific attributes of the wood, for example, *Swartzia madagascariensis* produces dense heartwood and thus suitable for knob kerries, whereas *Diplorhyncus condylocarpon* is widely used for bows due to its light, durable and flexible wood (Ngulube, 1999). There are few substitutes for most of these implements yet most of the preferred species are becoming scarce. There is high demand for some of these implements in town such as cooking sticks and hoe handles. This is leading to replacement with unsuitable species.

2.3 Service functions

The maintenance of permanent rivers and streams and the prevention of flash floods have very significant implications for rural livelihoods.

One fascinating study of a community living on the slopes of the Misuku Hills in the far north of Malawi revealed that they have for years capitalised on the many streams flowing out of the forest by constructing gravity fed irrigation systems known as imbindulira with water channels flowing right into their homes, into irrigated gardens and fish ponds. Furrows are created to carry the water, sometimes as far as 5km and at times furrows cross stony ground via modified banana trunk sheaths. Given that this irrigation allows perennial cropping of both food and cash crops these communities ranked water as the most important woodland benefit (Shaba, 1999).

In Chaoni the role of woodlands in attracting rain was viewed as important especially by elder people. *Khaya anthotheca, Syzigium cordatum*, *Ficus sur* and *Pterocarpus angolensis* were said to “keep” or “give” water (Peham, 1996). The villagers in Chemba ranked “water giving” as the most important benefit of the naturally forested hills in their vicinity (Coote *et al*., 1993a) and Group village headman Chilingoma in Bwengu, Rumphi has as recently as 1999 initiated forest conservation within his area for the sole reason of water conservation (pers. obs. J. Lowore). In Zomba communities who lost their miombo woodlands to make way for eucalyptus plantations during the grand wood energy project of the 1980s now explain that streams emanating from the plantations have become seasonal whilst a stream which has its source in miombo is still perennial. One of the consequences of this was that yields from the vegetable gardens in the dambos (seasonally waterlogged areas) were decreasing because the dambos were drying out (Bone and Khofi, 1997).

Flooding also cause loss of homes and crops, damage to roads and bridges and siltation disrupts hydroelectric power stations. The costs to the nation are significant but rarely counted.

2.4 Implications of reduced access

Typically reduced availability of forest products occurs as settled farming populations expand. The consequences of the loss of, or reduced access to, forest products can indicate the significance of the product. In the face of product loss people are forced to adopt a certain range of strategies to cope with this change, such as:

- Using less ideal species and shapes and sizes – this can lead to increased frequency of collection e.g. if firewood burns quickly or poles rot quickly. Konstant (1999) reported that when looking for firewood women in Mulanje will collect whatever they can find near to their homes even if the quality is poor rather than walking far into the forest reserve.
- Substitution with another material – which may be less suitable or cost money. The alternative to using bamboo baskets is to use tin (8 times more expensive) or plastic tubs (3 times the price). With respect to granaries and fish traps, however, villagers maintained there was no substitute (Inada, 2000).
- Longer collection time – both distance to the collection site and time taken actually looking for the product. This affects labour availability to do other things.
- Reduced consumption or doing without e.g. no longer eating bush meat or wild fruits, and this effects nutrition and health
- Cultivation. Evidence from Mulanje shows that it is not unusual for some people to cultivate thatch grass in order to ensure an adequate supply, with nearly half of all villagers in some villages having cultivated thatch grass areas (Konstant,1999) and Inada (2000) also reported farmers planting indigenous bamboos on their farms as a response to scarcity in the forest. Many farmers plants trees for a wide range of purposes.

Substitution of indigenous firewood with species such as eucalyptus, is very common, but exotic species are considered poor quality firewood (Bone and Khofi, 1997). *Brachystegia* species are not ideal for poles but villagers in Chemba (Coote *et al*., 1993a) are increasingly being forced to use them, but they have to be de-barked and soaked in water for one or two months before use to deter weevils.

As settlement populations expand local shortages which inevitably occur are initially overcome simply by walking further. Subsequently other strategies are adopted, which vary with product. Peham (1996) reported that when preferred species or size were not found substitution with other species was the major strategy for firewood and bark fibre whereas 56% of respondents indicated they would buy poles if they could not easily find what they wanted.

2.5 Economic value of dependence on wood products

Another way to appreciate the value of domestic goods is to assign each with a monetary value worked out on the basis of the market value (see Table 1). The flaw in this approach is that where the products are in abundance market values are low but this does

not make the use of them any less important for the households concerned. Furthermore the market values vary widely from place to place.

Table 1. Value of consumption of domestic goods based on market values.

Mwanza East calculations – for one household				
Product	**Market price 1996**	**Amount/ hh/year**	**Total market value/yr/ hh**	**Equivalent in maize**
Firewood (headload)	MK 10 (US$ 0.66)	104	MK 1040 (US$ 69)	Half a years supply or 416 kg maize
Thatch grass (bundle)	MK 3 (US$ 0.2)	30	MK 90 (US$ 6)	

Source: From Simons 1997

Putting the household figures into perspective for those preoccupied with subsistence Simons (1997) calculated that the value of a year's supply of home-used firewood was enough to buy 416 kg of maize (using prices of 1996) or almost half years supply of maize for a reasonably sized household. If the value of firewood sales were added to household incomes this would double the contribution of woodland products to gross household income. Using the same approach for poles and it was calculated that the value of poles consumed by a household in a year can provide a household with sufficient maize for 120 days (Simons, 1997). These equivalent values, and especially with reference to an essential staple like maize, gives us a better impression of the relevance of these products.

Efforts to work out the economic benefits of natural resources have also been undertaken by the Department of National Parks and Wildlife in order to understand better the benefits local people get from utilizing resources legally from certain protected areas. The figures shown in Figures 2 and 3 are worked out from the results of a permit system which was installed in 1996, in specific resource utilization (RU) areas, and any "illegal" collection is unrecorded. The values used are derived from local market values but much of the produce was used domestically.

Figure 2. Monetary value of natural resources collected from Vwaza Marsh Utilisation Area over a three year period

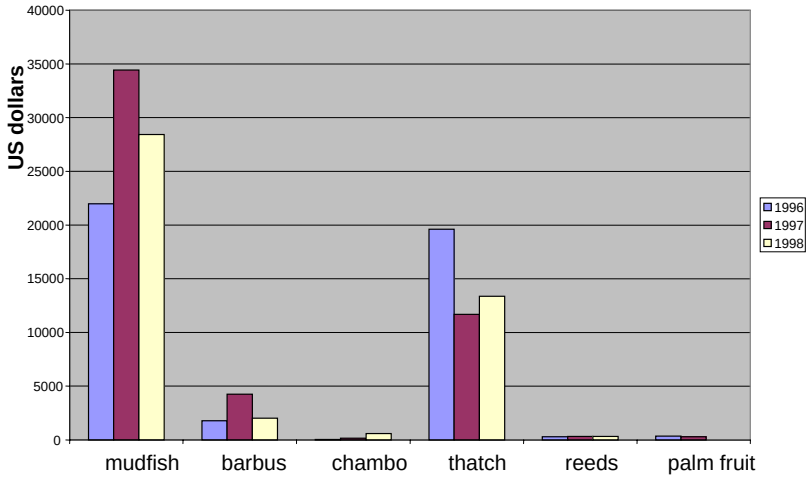
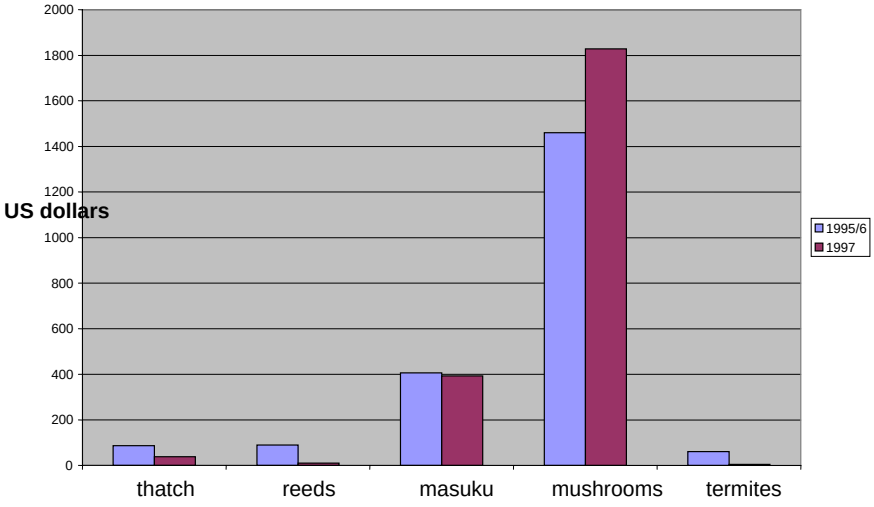
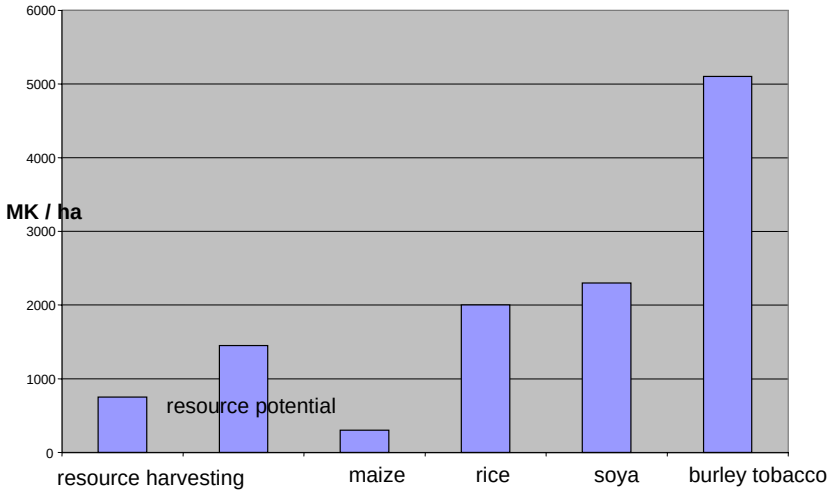


Figure 3. Monetary value of natural resources sourced from Nyika National Park Utilisation Area over a two year period



The RU area in Nyika is smaller than Vwaza which partly explains the disparity in value. The analysts went a step further and calculated monetary value per ha and then compared it with other land uses (Figure 4). The figure for resource potential is worked out on the basis that the actual offtake which was recorded using the permit system was less than that which the RU areas could potentially produce.

Figure 4. Comparison of the resource harvest yield with agricultural crop margins



The Malawi Poverty Reduction Strategy Paper (MPRSP) reports that urban households spend more on utilities and housing as compared to rural households and the urban poor spend more than the urban non-poor on fuels (Table 2). The former may well be accounted for by the fact that rural people source the supplies and other assets for free or more accurately through the expenditure of labour rather than cash e.g. water, fuel, houses and even some basic implements such as cooking sticks, tool handles, pestles and mortars. The latter may be accounted for by the fact that the poor cannot afford to make use of electricity and are forced to buy wood fuels in small quantities, often on a daily basis. This serves to show the value of firewood to the rural poor who can collect more fuel themselves.

Table 2. Top five household's expenditure categories (percent of total value of consumption)

Expenditure category	**Rural**		**Urban**	
	Poor	**Non-poor**	**Poor**	**Non-poor**
Food	80.9	69.7	57.5	29.8
Utilities and housing	0.6	2.8	11.2	21.3
Clothing	5.1	7.3	5.5	7.0
Gifts, transfers or loans	1.4	4.7	4.2	9.4
Fuels (including lighting)	3.5	3.6	7.7	3.0

Source: Government of Malawi (2000).

SECTION THREE: TRADING FOREST PRODUCE

Traditionally there has always been some within-community trade in forest products particularly in those cases where specialist skills are required for others to get the full benefit e.g. use of medicinal plants, baskets. However in the past the marketability of many woodland products was difficult because every community had a good supply of its own. This has changed a great deal with some communities and sectors of Malawian society now very far removed from natural woodlands either through deforestation or through economic status. This has created a market demand for certain products, thereby creating employment and income.

3.1 Employment and income generation from selling forest products

The results from an urban biomass study (Openshaw, 1997) undertaken in 1996 report that the woodfuel trade to urban centres provides full time employment for 40,000 (part-time 55,000) producers, transporters and traders. The total value of the wood fuels (charcoal and firewood) traded in the four cities of Malawi was estimated to be US$ 43.66 million in 1996. Given that some urban dwellers collect their own fuelwood the total value of all wood fuels was worked out to be US$ 44.31 million or 3.2% of GDP. This figure is only for those wood fuels consumed in the four largest cities and therefore is an underestimate for the country as whole. The same report indicated that 47% of this biomass came directly from natural forests, the remainder being sourced from farm trees, plantations and roadside trees.

A more recent survey of micro and small enterprises (MSE), in Malawi, the GEMINI survey (NSO, 2000b) also produced some statistics on the size of the forestry income generating activities and incomes generated. The GEMINI survey covered a range a forest-related MSE including primary production, vending and manufacturing. Some of the results are summarized in Table 3.

Table 3. Characteristics of the forestry-related MSEs.

MSE activity	Total no. in Malawi	% of total employment	Percent of all MSEs	Average annual profit	
				MK	US
Tree harvesting	856	0.05%	0.1%	7,813	97.6
Timber pole harvesting	133	0.02%	0.0%	3,742	46.8
Construction poles harvesting	135	0.02%	0.0%	-	
Firewood harvesting	5,111	0.32%	0.7%	31,322	392.0
Grass harvesting	2,683	0.19%	0.4%	11,455	143.2
Other forestry production	653	0.04%	0.1%	5,245	65.6
Saw milling	1,628	0.30%	0.2%	8,608	107.6
Carpentry	17,390	1.82%	2.3%	19,814	247.7
Wood carving	822*	0.08%	0.1%	18,728	234.1
Grass/bamboo/cane works	11,357	1.01%	1.5%	7,443	93.0
Charcoal production	2,556*	0.15%	0.3%	10,696	133.7
Traditional implements	2,006	0.15%	0.3%	14,325	179.0
Producing traditional medicine	576	0.03%	0.1%	1,674	20.9
Vending forest based products	14,538	1.62%	1.9%	25,228	315.4
Retail forest based products	2,162	0.26%	0.3%	2,825	53.3
Traditional healer	4,139	0.47%	0.6%	7,115	88.9

Source: GEMINI Survey, NSO 2000 *an underestimate according to other reports 1US$ = MK 80 at time of publishing the survey results

Activities such as brick making and drying fish are also highly dependent on firewood and it was reported that a large percentage of the MSE construction businesses are involved in building tobacco sheds and traditional houses which are also heavily dependent on forest products, both indigenous and exotic. The shaded activities are those which were categorized as forestry and were further analysed with results being recorded in Table 4. Given that firewood selling was placed in the Commerce category together with all other kinds of trade and vending and charcoal making was categorized with Manufacturing the details within Table 4 present only a partial picture of the forestry MSE sector.

Table 4. Profile of forestry sector MSEs

	Forestry	**Observation**	**Agricultural Crops**	**Commerce**
Average firm size	1.1	Smallest firm size	3.8	1.8
Start up costs (average per MSE)	US 2	Lowest of all sectors (next lowest is construction at US 12)	US 13	US 53
Profits as a percentage of sales (overall)	66%	2nd highest of all sectors (mining is first)	65%	22%
Use of profits for household needs (as opposed to re-investing in the same or other business or saving)	97.29%	highest of all sectors	70.97%	70.30
hourly profit / employee	US 0.12		US 0.07	US 0.17
No of MSEs with actual annual profits less than US 250 per year	91.4%	Of all sectors has the most with profits less than US 250	81.53 %	66.56%

Source: GEMINI Survey, NSO 2000b

In summary the information in Table 4 indicates that start up costs are low which means profits per kwacha invested are high but labour invested was not included as a cost in the cost/profit analysis. When returns are calculated on a basis of labour input (i.e. labour included) profits fall to the lowest of all sectors.

3.2 Firewood selling

Compared to other products firewood and charcoal have the most advanced market size and integration into the cash economy as seen by the results of the urban biomass study (Openshaw 1997) indicated in paragraph 3.1. PRAs conducted in 1996 in Mwanza East (in USAID 2001) revealed that sale of firewood and charcoal were the second most important source of livelihood for the target villages after farming (Table 5).

Table 5. Income sources for Chikwekwe Village, in Mwanza East.

	Charcoal / firewood	Sale of agricultural produce	Beer	Scones	Craftwork	Ganyu	Other
Score	38	47	4	4	3	11	5
Rank	2	1	5	5	6	3	4

Source: PRA report 1996 in USAID 2001.

Most of the firewood is sold at the roadside and hardly to fellow villagers although within-village sales and sales at semi-rural markets also occur. For example, Konstant (1999a) reported that firewood is bought by school teachers, other employed people and restaurant owners in market centres. Matola (informal public transport) operators also buy firewood along the road to sell elsewhere. Firewood for sale may be gathered in large amounts using ox-carts or bicycles but women regularly collect and sell firewood by the headload. Whilst a large proportion of firewood is sold to the final consumer by the collector, there is also a pronounced market chain leading from some rural sites to urban centres with the firewood changing hands up to three times between the collector and the final consumer.

The characteristics of firewood collection for sale and for home use vary. Firstly the "quantity", and Konstant (1999a) reports from Mulanje that 1 bundle a week might be used in the home but for sale 1 bundle is collected every day, or even more often than that. The "quality" is also a consideration and whilst for home use women will make-do with small twigs of less desirable species which can be found near the home they are prepared to go further into the forest reserve to look for good quality firewood for sale. Good firewood can fetch higher prices (up to 38% more) than poor quality firewood. After the bush fires of the dry season there is much dead wood in the forest reserves which then becomes a prime collection site for firewood sellers. In the rainy season firewood collection is difficult and the prices go up accordingly.

Clearly the opportunity to engage in selling firewood is determined by supply and some villagers in Mulanje with little access did not sell firewood because they were having problems even finding enough for their own domestic needs.

Box 3. Firewood collectors from Mpata

Many women from the villages of Kharama and Khamula collect firewood from Mulanje Mountain Forest Reserve (MMFR). They always collect deadwood and never cut trees. They use the wood at home for domestic purposes and also sell at Phalombe marker. For each headload they must pay US$ 0.1 to the Department of Forestry whom they cannot avoid as there is only one path down the mountain. They sell each headload for US$ 0.9. The women are organised into a group of 10 and they collect a head load every day. On each day they give all the profits to one lady so that on one day someone gets US 9, the next day all the profits go to a different woman. This way every ten days everyone gets US 9 in a lump sum which is much more useful for budgeting than getting a little everyday. The problems they face are just that it is a long way to go to get the firewood and that in the rainy season the paths are slippery and so it is difficult. During the dry season they are willing to travel far which means they can find a lot of firewood in a single area (i.e. walking takes a long time but the collection is easy).

Source: Lowore *et al* 1999

3.3 Fruits and mushrooms

Although difficult to make a direct comparison the woodland products which seem to be becoming more important with time and forest loss are fruit and mushrooms. This is due to their increasing potential for income generation.

In the Chaoni study (Peham, 1996) marketable products from the woodlands were dominated by fruits and mushrooms and it was observable that selling was an activity dominated by the young.

Mushrooms, traditionally important for home consumption, have taken on a new dimension with a recent sharp increase in their marketability. Mushroom selling is an activity which has grown rapidly over the last decade and are now sold widely in Malawi particularly along roadside sites and in urban and semi-urban markets. Machinga is one site where mushrooms are sold in large quantities. Mushrooms easily rank number one, (by 73% of respondents), over all other forest products for their contribution to income (Ngulube, 1999). The most preferred species for sale in Machinga are from the genus *Cantharellus,* and more than 60% of all mushrooms sold are of one species of *Cantharellus* alone. One reason for the popularity of the *Cantharellus* is their long season December to April, their abundance and ease of identification. Mushroom sales along the road at Machinga is a flourishing business and large amounts are bought on wholesale basis by traders for sale in the cities of Blantyre and Zomba. Prices vary, being higher during the beginning and end of the season compared to the peak period. Dried mushrooms can also be found on sale at a higher price per plate but probably lower price per kg of fresh mushroom as drying for sale is usually only done as a rescue option if fresh mushrooms remain unsold.

Box 4. The mushroom collector

Kuluwani has been collecting mushrooms since she was a girl and she learnt from older members of her family. When she started selling mushrooms only a few people were doing so and it was not common to see them by the side of the road. These days they are available for sale in vast quantities. In the past when people sold less, many mushrooms simply rotted in the forest.

In one day she can collect one basket-full or 40 plates which are sold at between US$ 0.25 – 0.38 per plate. She shares a selling site with several other women and men, sometimes there might be 11 vendors sharing the same site. Having a good number at one site attracts customers who are drawn to the large quantity. Sometimes there might be 4 cars all stopped at the same time and one customer might spend up to US$ 5 – although this is exceptional. Unsold mushrooms can be kept for sale the next day or if still unsold after 2 days they will be boiled and dried for home use and for sale.

She goes collecting maybe 3-4 times a week and the place to go and the time it takes depends on the season. At the end of the season it takes time to reach the good places – she may be out from 5.00am to 11.00am or 12.00pm. “I keep on changing the places I go to, to give a chance for the small to grow big. If I find someone has got there before me – well that is just bad luck, I must go to another place. From year to year the quantity of mushrooms varies with the rain but always the species are the same. The same species grow in their own places, that never changes. This year is a good year, the rains are going on for a long time. This time last year the mushrooms were almost over.” She explained that she cannot come back with an empty basket but if she can literally only find a handful of mushrooms she knows that the season is over for the year.

For Kuluwani mushroom selling is a good income earner. She has no husband but has four children still dependent on her. Two of her married daughters had babies just last month and she was able to help them with clothes and other necessities. This season she has saved more than US$ 140. At other times of year she must do other things such as selling mangos, selling pumpkins and even she goes to Ntcheu to buy cabbages and tomatoes for sale. Mushroom selling is the No. 1 profitable activity with mango selling No.2 .

Kuluwani explained that her daughter who is in Standard 6 accompanies her on the mushroom collection trips at the weekend when she is not in school. This way she also learns about mushroom collection.

There are wholesalers who come to buy mushrooms for sale elsewhere. They mainly sell in Zomba although one or two come from Blantyre. These can pay US$ 0.25 per plate and sell in Blantyre for US$ 0.63 per plate.
Interview by J. Lowore near Machinga, April 2001 in Lowore and Boa 2001

The recent studies (Lowore and Boa 2001, Lowore and Munthali 2002) also showed that for a seasonal product such as mushroom selling the activity tends to be supplementary to other sources of income such as farming, firewood selling (all year round) and trading in other vegetables. This seasonality factor makes it difficult for vendors to compare the relative importance of selling mushrooms to other sources of income but many said that mushroom selling is a good business because turnover is rapid and one can make more than a dollar a day (also see Section 2).

Wholesale mushroom selling

Within the last 2-3 years mushroom selling has attracted the attention of entrepreneurs and traders who have chosen to engage in their bulk trading. In the northern region of Malawi two types of activities which involve the middleman were described in a recent study (Lowore and Munthali 2002).

The first is where the collectors bring the mushrooms to the city and sell to a local vendor. In Mzuzu the vendors themselves would often go out of their way to meet the collectors at certain busy trading sites whereas in Mzimba the vendors set up a stall at a permanent place and the collectors come to them to sell the mushrooms. It was also learnt that during the *utale* season (December) some Mzuzu-based vendors travel to collector-villages to buy the mushrooms directly from the vendors thereby shouldering the responsibility of transporting the mushrooms to market. The willingness of the town-based vendor to travel to where the collectors are indicates that there is competition amongst the vendors and this puts the collectors in a better bargaining position.

The second wholesaling type activity was found in Perekezi forest reserve where certain enterprising individuals with a little bit of capital buy large quantities of mushrooms from the collectors who sell at the roadside and then board a bus/car to the bigger towns where they sell the mushrooms directly to customers. Some of these wholesalers are coming from the same villages as the collectors and may have been collectors at one stage, whilst others are coming from other areas. The wholesalers may make wholesale trips two or three times in a week and although it is a temporal business it is nevertheless attractive and more and more individuals are becoming involved. The vendors at one roadside site,

Lundadzi turnoff, said they may see up to three wholesalers in a day. Wholesalers are also found in Machinga in increasing numbers.

Fruit selling

Wild miombo fruits, another seasonal product, have been recorded as being locally important for sales with masuku dominating in most cases (Ngulube, 1999; Konstant, 1999a) whereas baobab and tamarind are important in the drier forests. Interest in fruit selling depends upon local supply and access to markets. One study in Mwanza (Simons 1997) revealed that about 40% of the villagers sell fruit at one time or another, usually to get income to buy maize. The most important sellers of wild fruits are boys. Women more than men tend to sell fruit locally "to get money to buy food", food meaning maize or maize flour. However this tends to be done by the poorest women.

In Mulanje daily earnings from selling fruit ranged from US$ 0.05 to US$ 0.5 per day depending upon the local market and masuku was the only fruit for which villagers would make a special trip into the forest to collect, although other fruits were eaten "whilst in the forest doing something else" (Konstant, 1999a).

3.4 Woodcarving

It is thought that commercial woodcarving started in Malawi in 1920s, copied from the Tanzanian Makonde carvers but persisted as only a minor activity until perhaps the 1970s when Malawi's most famous carved item, the chief's chair emerged as a potentially lucrative tourist souvenir. Today the industry engages a large number of people using primitive methods and working individually or as a family.

A recent study of the curio industry in Malawi (Marshall *et al.,* 2000) revealed that manufacture and trade in curios is dynamic and whilst some carvers source timber, carve and sell the end product themselves the activity usually comprises two main stakeholder groups. The primary producers source the raw material and sell either the raw timber or semi-finished products. Secondary producers buy the semi-finished product, sometimes in bulk, and then finish and sell the product. Key selling points are those which are on the main tourists routes but increasingly the raw materials are being sourced from forests elsewhere. Woodcarvers situated in resource-poor areas are able to acquire timber from districts and neighbouring countries (Mozambique) where forests are able to supply the preferred species (in particular *Dalbergia melanoxylon, Combretum imberbe* and *Pericopsis angolensis*), and transport or purchase the timber from these areas to where they operate. Resource-rich areas are generally typified by fewer customers, as these areas are off the tourist route, however it is increasingly evident that buyers travel to these regions to purchase woodcarvings in bulk.

Across all groups of stakeholders men dominate almost exclusively. Given the increasing localised scarcity of preferred curio species and the unpredictability of markets the carvers tend to be quite mobile with a large number of participants indicating they had migrated within the last 4-5 years.

The majority of woodcarvers interviewed during this survey regard the woodcarving profession as a long-term employment option. Out of the 271 people queried about the number of years in the business, 203 stated that they had been involved for over five years, while 50 said that they had been in the business for two to four years, the remaining 18 being new to the profession. Those woodcarvers who were working near their homes combined the activity with farming but for many, especially the young, they entered into the business for want of any other opportunity. Such carvers were found working away from their homes in good vending locations or where tree stocks are good. They say that the income is unsatisfactory but most are willing to continue (for want of anything else to do).

Wood carvers are not organised therefore it is difficult to know the numbers involved, and whilst those who sell curios directly at the key vending sites may be counted, the primary producers who source the trees and produce semi-finished products are scattered, village-based and harder to quantify. Nevertheless the study suggests that the number of woodcarvers and vendors directly involved in the industry could easily be as high as 5000 (Marshall *et al*., 2000).

Significant quantities of woodcarvings are sold within the country, customers include residents and tourists who buy as souvenirs and traders (both local and foreign) who purchase woodcarvings for export. The domestic trade in woodcarvings is sporadic and unpredictable and dependent on tourist arrivals and occasional visits by bulk buyers. Numerous woodcarvers mentioned that in some months they would sell virtually nothing but otherwise no more than 20 small items or 10 larger items per month. This might amount to anything from 0 to US$ 80 per month. The prices varied and were dictated by market forces more than by working out a specific profit margin over and above production costs and it would appear that the profits are marginal.

Business persons and tourists are key players in the international trade of woodcarvings from Malawi. Respondents noted that whilst the majority of tourists normally purchase a few pieces as momentos, businesspersons purchase woodcarvings in bulk for resale in established foreign markets, with South Africa being the main regional destination. SteenKamp *et al* (1996 in Marshall *et al*. 2000) noted that Malawi is estimated to account for approximately 30.73% of all woodcarving imports to South Africa.

Table 6. Malawi's top three importers, by weight and value, and percent of total, 1995-1998

1995	**1st country**	**2nd country**	**3rd country**	**TOTAL for all 3**	**% of ALL**
KG	South Africa 267,838 Kg	Zimbabwe 23,272 Kg	United Kingdom 14,439 Kg	305,549 Kg	All: 350,123 kg 87%
VALUE	South Africa US$ 79,070	United Kingdom US$ 17,758	USA US$ 17,748	US$ 114,576	All:US$ 161,873 70%
1996					
KG	South Africa 211,454 Kg	United Kingdom 37,579 Kg	China (Taiwan) 19,535 Kg	268,568 Kg	All:342,653 kg 78%
VALUE	South Africa US$ 153,564	Cyprus US$ 65,524	United Kingdom US$ 42,057	US$ 261,145	All: US$377,296 69%
1997					

KG	South Africa 101,769 Kg	United Kingdom 44,587 Kg	USA 18,532 Kg	164,888 Kg	All: 242,905 kg 67%
VALUE	Germany US$ 225,378	USA US$ 121,335	United Kingdom US$ 88,525	US$ 435,238	All: US$699,035 62%
1998					
KG	South Africa 71,467 Kg	United Kingdom 20,936 Kg	USA 9,940 Kg	102,343 Kg	All:123,872 kg 82%
VALUE	USA US$ 40,879	United Kingdom US$ 29,920	South Africa US$ 19,510	US$ 90,309	All: US$133,683 67%

Source: Marshall *et al* 2000

Wood scarcity is an increasing problem which is handled mainly in one of two ways: migrating and using less preferred species (e.g. *Toona ciliata, Gmelina arborea, Uapaca kirkiana* and even some *Brachystegia spp.* in Liwonde). Finally some people actually give up the activity if they find a more secure type of activity e.g. some wood carvers in Mwanza are starting to turn to stone carving (Marshall *et al*., 2000) and one in Machinga had actually given up in favour of farming and mushroom vending (Lowore and Boa, 2001)

3.5 Handicrafts

There are a large number of people engaged in making and selling traditional and semi-traditional craft items in Malawi. Typically a craftsperson learns the skill from a family member and the nature of the skill means the activity is not quickly accessible by the masses in times of need. In each village there are a few people with these skills who are also farmers and earn some extra money from their craft. Traditionally the demand for products was local but increasingly such products are sold at the roadside and bought and sold in bulk by traders who transport the goods to town. Items such as hoe handles, mats, chiwale furniture, basket chairs, brooms and baskets are in demand throughout the country and provide a direct financial benefit to the few who produce them and an indirect benefit to the many who buy them. Although few of the basket makers in the Chaoni villages made baskets purely for commercial reasons it was worked out that net income per day from making bamboo baskets was US$ 0.5 (almost twice what one could earn selling bananas) and that the most active baskets might work nearly 14 days in a month making baskets. Other basket makers made baskets for home use and for family members only (Inada, 2000).

Two main reasons prevent these products from being displaced by modern alternatives - one is price and one their suitability for the job.

3.6. Gender issues and forest product trading

The GEMINI study reported on gender involvement in a whole range of activities as shown in Table 6, although the involvement is not differentiated into production and vending. Makungwa (1997) for example reported that women are involved in selling charcoal at the roadside on behalf of their husbands, but are not involved in production.

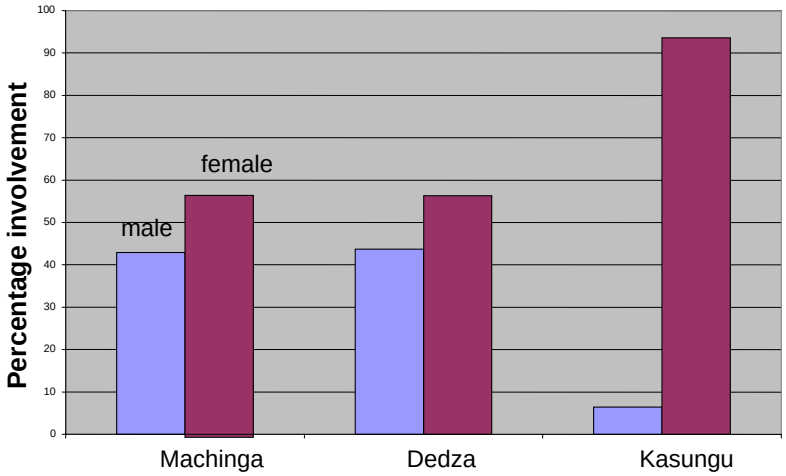
Table 7. Percent female employment in a range of forest related MSEs

MSE	% female involvement*
Producing traditional medicine	0
Brick making	0
Carpentry	2
Sawmilling	4
Charcoal production	8
Woodcarving	11
Grass/bamboo/cane	15
Traditional implements	55
Firewood harvesting	54
Grass harvesting	55
Vending forest products	51
Distilling	52
Traditional healer	50
Beer brewing	77

Source: GEMINI 2000

It is has been observed that the traditional gender balance with respect to a forest activity sometimes changes as an activity becomes commercialised, a good example being firewood collection. Konstant (1999a) reported that in Mulanje whilst women collect firewood for home use and sale, men collect for sale only. The results of a three site NTFP study (Figure 2) revealed that in sites where the firewood market was vibrant men and women were both heavily involved in firewood collection unlike the site (Kasungu) with no market (Ngulube, 1999).

Figure 5. Involvement in firewood collection by gender in three sites in Malawi



Source: Ngulube 1999

The trend is the similar for mushrooms. Mushroom collection has traditionally been undertaken by women, although not exclusively, but with increased commercialisation

more men are becoming involved in mushroom collection and vending. Evidence is beginning to emerge that, except perhaps in Liwonde where mushroom selling is particularly vibrant, the collection is still dominated by women with men more likely to become engaged in petty and bulk trading than women.

Table 8. Gender profile of mushroom collector and vendors at 5 sites in Malawi.

	Dzalanyama (n= 54)		**Liwonde (n=281)**		**Perekezi (n=526)**		**Mzuzu city (n=39)**		**Mzimba (n=10)**
	F	M	F	M	F	M	F	M	
% of roadside vendors/ collectors	72 %	28 %	52%	48%	62%	38%	30*	1*	All women – most sold direct to vendors
Vendors only			All wholesalers interviewed in 2001 were men		Of 4-5 wholesalers identified, 1 was a woman		4	4	All men

Source: Munthali in Boa *et al* 2000, Lowore and Munthali 2002
* actual number

It is interesting that whilst men may enter a female dominated activity it is difficult for the reverse to happen.

SECTION FOUR. THE IMPORTANCE OF FOREST-DERIVED INCOME TO FOOD SECURITY

4.1 Levels of forestry micro enterprises and livelihood strategies

In order to appreciate the importance of selling miombo produce to achieving food security three different tools are employed

- the livelihood strategy continuum identified by Devereux
- the business ladder developed by Orr and Makawa
- conventional wealth ranking
- use of proceeds from forest-related IGA

The livelihood strategy continuum (Columns 4 and 5 in Table 9) is the overarching framework within which households function with enterprises being just one of the elements within the strategy. Devereux notes that accumulation and adaptation are more proactive and positive strategies while coping and survival are more defensive and reactive and associated with a reduction in assets (which can include natural capital). In an attempt to relate these livelihood strategies with forest-based enterprises it is useful to look at the relationship between this livelihood strategy continuum and the business ladder developed by Orr and Makawa (2000). The relationship was described in the analysis of GEMINI survey (NSO 2000b) and is shown in Table 9 with indications of how different enterprise levels correspond to different livelihood strategies. By looking closer at the forest product vending activities and their characteristics according to the business ladder it should be possible to identify which activities are helping people to survive, assisting people to cope, enabling people to adapt or finally to accumulate.

The GEMINI characteristics for forestry MSEs shown in Tables 3 and 4 would suggest that most of the forestry vending activities fall into the subsistence entrepreneur level. Other indicators are the degree of roadside sales and the reliance of family members to help. It is also notable that forest product vendors, even those who are curio sellers and cane furniture makers, say that they embark upon the activity because of poverty i.e. an indication that it is a coping activity rather than motivated by profit (Phiri, 2000). The subsistence entrepreneur level corresponds to the coping livelihood strategy which by definition implies that income generating activities are undertaken to reduce vulnerability.

The GEMINI report also yields further insights. Given that 90% of the forest based MSEs yield less than MK 20,000 (US$ 250) per year and each MSE employs on average 1.1 persons, we see that this income alone does not pull the workers above the poverty line of US$ 0.41 per capita per day (assuming each worker has more than 1 dependant) (GOM 2002). However as several studies reveal (Openshaw, 1997; Lowore and Munthali, 2002) for many people, selling forestry produce is rarely their sole activity but it may assist them to cope better with poverty by reducing their vulnerable status.

Table 9. Micro enterprise ladder and how it corresponds with Devereux's Livelihood Strategies Continuum

Micro enterprise Business Ladder (after Orr and Makawa 2000)			**Characteristics of Livelihood Strategies (after Devereux 1999)**	
Small-scale entrepreneurs 10-49 employees Annual sales of more than $10,000		Partial correspondence between indicators	Accumulative	Increase in stocks of assets through profitable enterprises
Micro-entrepreneurs – Growth More than 5 employees Annual sales of more than $ 5,000 Multiple businesses. Expanded business, requires good knowledge of products and markets. Able to get loan and service it	• Qualifies for a loan from a larger financial institution such as commercial banks. • Financed from savings, retained earnings and enterprises. • Stable ventures with potential for diversification and specialisation growth • Mainly second generation enterprises such as trucking and trading in specialised agricultural products, second hand clothes etc			
Micro-entrepreneurs – Stable Runs business alone or with family. Starts to employ 1 or 2 people. Fixed place of work No operating license. Self-raised capital in business. Asset base of $ 200 - $ 1000. Capital required for expansion	• Difficult to get loans from bank • Women able to access group loans Financed by savings, retained earnings and the enterprise itself • Owners tend to work independently unless they want to grow then they seek financial assistance • Basic business training and credit management necessary • Available assistance focuses on credit rather than training and technical assistance.		Adaptive	Risk-spreading diversification
Subsistence entrepreneur Self-employed, independent income generation. Short-term goals. Roadside sales. Start-up funds come from savings or informal loan	• Inexperienced in business management and still need general support and training in technical as well as management skills. • Rely on family labour where necessary • Assistance project combines training and some credit.		Coping	Minimisation of the costs of adverse livelihoods shocks, such that future livelihood capacity is not seriously impaired
Pre-entrepreneur Women's group. Group income generation	• Not yet in a position to take up independent economic activities. • Assistance focuses on social welfare, consciousness raising, health etc. with some focus on income generation.		Survival	Erosion of assets to prevent destitution or death
Basic survival Domestic activities no economic independence	• Isolated from market centres, unaware of their own potential, illiterate • No income generating activities.			

The role miombo product selling plays in livelihood strategies is supported by other studies such as that done in a very densely populated and food insecure part of the country - Mulanje. Here an enterprise analysis was done for some villages which revealed that there was a high correspondence between the proportion of businesses of different sizes and the proportion of people in different wealth categories. The wealth ranking and the enterprise profile were compiled in different but related studies. It is clear from the summary that different forestry activities are associated with different wealth categories.

Mulanje is a district with problems. The wealth ranking figures in Column 1 Table 10 show 77% of the population to be poor or very poor whilst the Malawi Atlas of Social Statistics (NSO 2000c) shows that the poverty headcount for wards near Mulanje Mountain range from 70% to more than 80%. For those living near the forest reserve it is clear that forest products are important assets to relieve their vulnerability (Lowore *et al.*, 2000; De Gabrielle, 1999).

Table 10. Livelihood strategies amongst wealth categories of villagers living near Mulanje mountain forest reserve

The wealth categories and their characteristics as provided by the villagers	**Level of enterprise (% engaged) and *livelihood strategy***	**Food security**	**Motivation**	**Their interaction with woodland**
Better off – able to get food all year through farming (have livestock, adequate land and fertiliser) or through wages or a reliable business. Eat and live well with enough to eat, a brick house with iron sheets. Have furniture and good clothes, maybe even a bike, radio. Employ people. (6%)	Micro-enterprise growth (5%) *Accumulative*	Have food all year round from farming or reliable business	Want to make profits	The tour guides fall into this category. Might buy a tree from the forest to make furniture. Buy firewood with cash or maize. Some pitsawyers – employ the poor as plank carriers.
Fair – can source money easily by getting engaged in money generating activities and selling some few agricultural products. Harvested food might last 2 – 6 months. Have some livestock and a brick house with thatch grass roof. (17%)	Micro-enterprise – stable (25%) *Adaptive*	Own food stocks last 2-6 months and have some income generating activities	Want to supplement their income	Collect or buy firewood and thatch grass (don't sell). Some pitsawyers – employ the poor as plank carriers. May be timber merchants.
Poor – May be estate workers but money does not go far or have very little land which yields food to last not more than 2 months. Plant late because doing piece work for the richer folk. Cannot afford fertiliser. Have houses with leaky grass roofs. Get additional money to buy food any way they can. (56%)	Subsistence entrepreneur (50%) *Coping*	Own food stocks last 0-3 months. Work as labourers to get money to survive	Want to supplement their income and obtain basic subsistence needs	Might do piece work (plank carrying or sawing) for the pitsawyers (saw owners). Sell and barter firewood and thatch grass with richer households. Also fruits and bamboo.
Very poor – lack means of survival. Orphans, sick, weak, aged, handicapped – also women headed households. Have problems to find food and housing. Depend on handouts. (21%)	No income generation (20%) *Survival*	No reliable source of food	Want to supplement their food intake and obtain basic subsistence needs	May be too weak to engage in forest product collection although some collect and sell firewood and broom grass. Might beg firewood for cooking or use maize stalks or uprooted tea plants.
	The micro enterprise information in this column came from a different study at the same site and is placed here to help analysis. The livelihood strategy is superimposed.			

Sources: Lowore *et al.,* 1999; Orr *et al* 2000.,; GEMINI survey NSO 2000b

Another indicator of contribution to food security is that which shows what proceeds are used for. The GEMINI survey results indicate that forestry MSE operators spend 96% of proceeds on households' needs, mainly food, with only a fraction reinvested in the business. This reinforces the view that these are coping strategies. This also tallies with the low start up costs (little need to reinvest to keep going) but also has implications for whether the businesses are well placed to grow and develop (see Section 5).

This evidence would suggest that forest related income generating activities contribute much to food security and are activities undertaken largely by the coping strategists. The findings of this study are consistent with the general argument that in Malawi, MSEs are intricately inter-woven with the livelihood strategies of especially the poor (NSO, 2000b).

The business ladder (Table 9) suggests that the on the lowest rung of the ladder, which corresponds with the survival livelihood strategy, no economic activity occurs at all. The Mulanje study (Table 10) partially supported this in that some of the poorest people did not even sell firewood. There are, however, a number of indications that forest product vending is undertaken by those who lack other means of support and that the activity helps them to survive. For example research undertaken in Mzimba (see Box 5 for some extracts) revealed that for some people selling mushrooms in 2001/2002 was their only source of food, through income generation, as their harvest was exhausted and they had no other means of making money (Lowore and Munthali, 2002).

Box 5 Mushroom proceeds for food

- Two respondents, an elderly lady and young girl, selling wild edible fungi (*wef)* in Ekwendeni said they had not eaten for three days. They earned about MK 40 (US$ 0.5) on the day in question.
- Two young girls from a semi-urban high density residential area said selling *wef* was the only source of income (and food) at this time for the whole family
- A lady from rural Mzimba, with no means of support, said she wanted to find labouring work but she could not, therefore decided to collect *wef* for sale – but there were too many collectors and finding *wef* was getting difficult
- A young girl from rural Mzimba said that with the MK 15 (US$ 0.2) earned from sale of *wef* on the day of the interview, MK 10 would be spent on maize, MK 0.5 on milling it and MK 4.50 on salt.
- Some vendors preferred to sell *wef* house to house in residential areas because that way one could exchange the *wef* for maize flour (1 plate for 1 plate) unlike those who sold as a market site.

Source: Interviews with mushroom vendors in Mzuzu, Ekwendeni and Mzimba. Feb 2002. Lowore and Munthali 2002.

4.2 Fortunes differ

The Mulanje work suggests that for some people forestry related enterprises are sufficiently profitable to enable them to be labeled "well off", although as we shall see later it is more likely that being well off enabled them to buy into a profitable enterprise and certainly being well established businessmen and women they would have abandoned the activity if it did not show profits. By contrast the statements in Box 5 describe people who are relying on forest product selling to stay alive. This section uses

examples from mushroom vending to show just how differently people engage in and benefit from an activity.

A large number of rural people, and interestingly in Mzuzu, also urban people, collect mushrooms and sell them either at the side of the road or at informal or formal market places. Some of these collectors have recognized that selling mushrooms is a reliable business and engage in the activity on an almost full time basis during the season. However mushroom collectors are constrained in the amount of money they can make because collecting mushrooms is time consuming, and one can only sell what he or she has got time to collect. Some collectors try to overcome this problem by working with a family member, while one is collecting the other is selling. Some villagers from near Mzuzu have become quite organized. The husbands collect the mushrooms and the wives travel daily into town to sell the previous days collection. They often choose to sell wholesale to a town-based vendors so they have time to do others things and still get back home in time. The town based vendors recognize that mushrooms sell quickly and are therefore willing to buy wholesale from collectors. Where there is competition the town based vendors will go out of their way to find the collectors, where competition is less they wait for the collectors to find them. One entrepreneur in Machinga noted that at the end of each day the road side stalls often were not sold out and decided to buy up the leftovers and take them to town. Some roadside vendors resisted his offer as he was not willing to pay normal prices, but others were keen because it meant they were free to go back to the forest to collect more mushrooms. Table 11 gives some examples of incomes earned as a result of different levels of engagement and marketing strategies. Fortunes vary considerably but for some such as Kuluwani Kabotondo (see Box 1) mushroom incomes allow her to earn well above the poverty threshold, at least for the duration of the *wef* season (which is the most difficult time of year).

Table 11. Some information about an individuals' income and profits (in US$) from the wild mushroom business.

Category of activity	**Place**	**Details of income and profit** (where indicated daily this is only for the duration of the season)
Collector selling direct to vendor	Mzimba	Sell *wef* worth 0.06 – 1 (not daily)
	Mzuzu	Sell *wef* worth 1 – 1.3 in day. (sometimes daily)
Collector / vendor	Mzuzu	Sell *wef* worth about 1 – 2.5 in a day. (some sell daily, some do not)
	Ekwendeni	Sell *wef* worth 0.3 – 0.4 in a day (2-3 times a week)
	Machinga	Sell *wef* worth 1-3 in a day (some daily, most not)
Vendor only (buys *wef* from collectors)	Mzimba	Make between 1.3 – 3.2 per day (daily)
	Mzuzu	Make between 1.3 – 2.6 in a day (sometimes daily)
	Perekezi to town	Can make 13 in a day (2-3 times a week)
	Zomba	Can make 1.2 – US 8 in a day (sometimes daily)
	Blantyre	Max figure indicated was 30 per day
	Machinga to town	Can make 10 per day (only at the height of the season will this be daily)

Sources: Lowore and Boa 2001, Lowore and Munthali 2002.

The Devereux continuum can be used to capture some of these activities as shown in Box 6.

Box 6. Selling mushrooms has a role to play in very different livelihood strategies

Surviving - Mushroom selling provides some desperate people with a chance to earn some money to buy food.

Nyabanda from Yohani Chisi village had collected a whole bowl of *manyame* from woodlands some distance from her village and she wanted at least MK 50 for them so that she could buy some *ngaiwa (*whole ground maize). She had already sold a quantity for MK 20 on the way here and now wanted to sell the rest to the vendors for MK 50. The vendor offered her only MK 20 saying that the *wef* were broken. Nyabanda is a single mother with two children – she is separated from her husband. She had no capital to do any business and had wanted *ganyu* (piece work) but because she could not find any she thought of selling *bowa*. She does not think it a very good business but it at least helps a little bit. She collects and sells just once a week because the *wef* are scarce and there are too many other people also collecting them, maybe more than 20 from the same area. Last year Nyabanda sold bananas to get some money. Next year she does not know what she will do.
[Interview: Mzimba market Feb 2002] [MK 75 = US$ 1]

Coping - Other people see that mushroom selling can make a genuinely important contribution at a difficult time of year.

A normal collection trip for Kenasi Affad is about 5-6 hours and he will not go home until he has collected a full basket or about 15 plates. On his return Kenasi fills his plates, places them on his roadside stall and waits for customers. He usually sells for two days then goes back to collect more mushrooms when all are sold or, if not sold, used at home or dried for later. He may sell between 5-10 plates during the height of the season but on other days he may sell just 1-2. He sometimes travels to Zomba to sell mushrooms to vendors in the town there but whilst he can sell a large quantity quickly the price is low. Roadside sales are good because car customers are well off. "when the *bowa* season is over I buy fish from the lake and sell. Later I sell cassava. The lake is closed to fishing at about the time the mushrooms are ready. The most profitable business is fish selling, followed by *bowa* selling. During the season I can make from MK350-400 (US$ 4.4 – US$ 5) per week".
[Interview: Roadside Liwonde, April 2001]

Adapting - Some local vendors branch out into mushroom selling as they see profits can be made quickly.

On 15th Feb 2002 Thomson Nthala (26 years old) had 9 heaps of *masutwe* and 2 of *manyame* for sale on his stall in Mzimba market. He explained that the *wef* were left over from a purchase the day before (overnight *wef* are stored spread out on a mat in an airy place) when he bought a quantity of *wef* for MK 150. These he divided into heaps priced at MK 5 each. Yesterday he sold MK220 worth (44 heaps) for cash and MK 80 worth on credit to someone who works at the hospital who wanted to send them to relatives in Lilongwe. He spent the money he earned on maize and was now expecting to sell all the remainder today. He had worked out that he would sell what he bought for MK 150 for MK 450 therefore making MK 300 profit. Whilst talking to him a young woman collector arrived and offered to sell her *wef* for MK 40, Thomson however offered MK 15 which she accepted, saying he would sell them for MK 35. Thomson said mushroom selling is a good business because one can make a profit from very little capital, MK 100 is enough to start off with at the start of the season. When *wef* are out of season he sells agricultural crops, beans, cassava and sweet potatoes etc. The money he generates is used to pay rent and keep his family – two children and his wife. He even bought a radio with the profits as well. [Interview: Mzimba market, Feb 2002]

Accumulating - With some entrepreneurial flair mushroom selling is a promising not-fully saturated market opportunity.

Mr. Kalize is a second hand clothes dealer who lives in Mzimba. As an alternative IGA he also trades in mushrooms, buying *wef* from Perekezi and selling them in Kasungu. Second hand clothes (*kaunjika*) selling is a reasonably sound activity but there is a lot of competition. Mr. Kalize therefore brings his unsold clothes to Perekezi where he offers to exchange them for mushrooms which he takes to Kasungu, and sometimes Dowa, where they usually sell quickly. He will pay cash for the *wef* if the collectors so prefer. He also trys to sell the second hand clothes to those collectors who are earning money from direct sales of *wef*. If he doesn't manage to sell all the *wef* which he buys he dries them and sells them later, to avoid wastage.
Selling *wef* was profitable for Mr. Kalize. Usually he spends MK 600 on 2-3 baskets of *wef* which he then sells for MK 2000 in Kasungu. In addition to buying more *wef* he may spend MK 400 on transport and something to eat whilst in Kasungu, therefore making MK 1000 profit in one day – maybe as often as three times in a week. This is more than he can make selling *kaunjika*. Last year 2000/2001 he started with MK 300 at the start of the season and had made MK 18,000 by February which enabled him to buy four bales of *kaunjika*.
[Interview: Roadside Perekezi Forest Reserve, Feb 2001]

4.3 Change over time

The mushroom marketing studies indicate that mushroom selling has been increasing steadily for the past decade or so. In Machinga one informant explained that mushroom selling at the roadside was unheard of before 1987 but in that year one man started selling dried mushrooms. Other people followed his example and then moved onto fresh *wef* which now appear more marketable than the dried. Kuluwani Kabotondo of Liwonde also explained "over the years the number of people selling mushrooms has increased a lot. It is a generation thing – these days people are always in need of money. It is the same with mangoes, we never used to sell mangoes like we do today". In the north the trade started later with sales first appearing around 1996 but increasing rapidly since 1999. This was further supported by evidence that several of the interviewed vendors had only been selling *wef* for one or two years and although the selection of respondents was random two were selling *wef* for the very first time ever on the day they were interviewed!

The main reason for the increase given by the respondents was poverty and the need to find money overlooking the fact that the demand must also have increased. The most likely explanation for an increase in demand is the increased alienation between some sectors of the Malawian society and forests. The urban middle classes and the urban less well off all buy mushrooms because they are liked, affordable, easy to cook and their seasonality renders them a bit "special". One vendor in Zomba explained that he sets his mushroom price for his market, selling at a high price outside the supermarkets but at a low price in the high density residential areas. Car customers stopping at Perekezi FR in north of Malawi said the mushrooms were fresh, delicious and cheap and not found around Lilongwe where many of the buyers originate (Lowore and Munthali, 2002).

With respect to other products firewood vending in Malawi's cities must be growing as 84% of the urban population use firewood for cooking and the urban population is growing faster than the national average i.e. 4.7% as compared to 2% which is the national population growth rate (NSO 2000a).

The increasing importance of forest products for income was also revealed in a study which explored community use in three different locations in the country. The results showed that income from woodland produce has risen from 6th place to 3rd place between 1992 and 1996 (Luhanga *et al*.,1997).

SECTION FIVE: FORESTS AND WELL BEING – OPPORTUNITIES FOR INTERVENTIONS

This case study has highlighted the different ways miombo woodlands contribute to different livelihood strategies. First and foremost the woodlands provide a store of items necessary for day to day, mainly agricultural, rural life. In times of stress the woodlands provide some wild foods and those available during periods of food scarcity are traditionally highly appreciated. In the recent past the importance of woodlands as a source of tradable items, has increased. This enables people whose agricultural efforts are marginal to earn supplementary income. This opportunity has come about as a result of a reduction in woodland in many locations making free collection impossible for some people. This opportunity for trade is appreciated during times of hunger by some, in times of temporary impecuniary for many and almost a fulltime livelihood option for others. Those with a particular skill such as woodcarving or making bamboo furniture do slightly better than those who sell raw materials. Those who make the most money are those who engage in bulk trading.

This section attempts to tease apart these complicated dependencies and opportunities in order that we might be better placed to answer questions such as:

"how can woodlands contribute more to rural livelihoods?"
"what should indigenous woodlands be managed for?"
"can indigenous woodlands pay their way?"

5.1 Forests for business development

Increasingly development planners are looking at the role of forest produce as an income earner and asking whether people can be assisted to make more money from the resource and thereby alleviate poverty. The issue is, can natural resource based enterprises be upgraded from subsistence activities to economic activities i.e. push them up the micro enterprise ladder (see Table 9, Section 4)? If the key to this upgrading can be found then development planners believe that the poverty of many can be alleviated.

The challenge

In Malawi up until this time there are very few examples of where development assistance has managed to bring about such a change, the flagship effort in this area, the Wildlife Society of Malawi project in Mwanza East has lead to mixed result. Others such as the GTZ Beekeeping project and the COMPASS small grant programme have not enabled communities to significantly increase their incomes.

Box 7. The Sustainable Management of Forests project in Mwanza East (WSM-GTZ)

Efforts were made to introduce alternative sources of income from natural resources to reduce charcoal making which, though profitable, was leading to severe deforestation and thereby undermining the resource base on which the villagers depended. A number of options were attempted including the making of cane furniture, beekeeping, guinea fowl rearing and indigenous fruit juice production. The latter two options

were reasonably successful. Guinea fowl rearing has proved simple and easily adopted by community members, men and women alike. A high growth rate was seen within a four year period. Several individuals were identified who had generated enough income to build brick house with iron sheets i.e. income was more than that required for daily domestic needs. 42 clubs with about 10 members each were recorded in 5 villages (USAID 2001), with others raising the birds on an individual basis.

The juice production has by and large been handled by the project itself with community members being employed as workers in the workshop. Such workers earn about US$ 2 per day which is more than many other alternative earning opportunities but the work rotates between a large number of people so the regularity of this income for any given household is low. The recent USAID evaluation was unable to obtain the necessary figures on which to basis an overall cost benefit analysis so it is not known to what extent the production is profitable or still relying on project subsidy.

The success mentioned above not withstanding it is also important to consider the impact of these activities on woodlands and forests. The guinea fowl rearing although much acclaimed as being a natural resource activity is in fact little different from any other livestock activity and does not depend on natural woodlands. The fruit juice operation only affects two tree species and evidence shows that these fruit species have always been highly valued and preserved. Furthermore villagers note that there are sufficient trees already standing to produce enough fruit (at current production) for 50 years even without planting. The main benefit from the adoption of the activities are as alternatives sources of income to charcoal production which is commendable but any type of enterprise could have served (i.e. did not have to be a natural resource based enterprise) this purpose. However it would seem unlikely that the income raised as result of the juice production and guinea fowl rearing negates the need for additional income which could be earned through charcoal production – after all not everyone is involved in the "new" enterprises.

It seems likely that the main reason why charcoal burning seems to be have reduced is through the development of appropriate management institutions, introduction of community regulations and an awareness of knock-on consequences of environmental degradation by the communities – which is also encouraging.
Source. USAID 2001 and author's own analysis

Forest product markets are characterised by low prices that do not reflect the true costs of producing these products. One reason for these low prices is that the sale of these products is mainly driven by the need to augment survival, not necessarily to maximize profits. Another reason is that they are obtained for free, excepting labour, and therefore not valued highly by both the vendor and the customer. For many, sales are associated with economic stress, poverty and general hardship. Prices are also kept down by the lack of demand within the village, too many producers for each product type and the exploitative behaviour of profit seeking merchants from urban areas.

The fact that many people engage in forest related trading activities to satisfy basic needs rather than being driven by normal business forces is both a cause and a reason for the poverty in which they find themselves. They are poor therefore have no capital or other assets which would enable them to enter into a more profitable enterprise and as a result of the characteristics of the IGA and lack of investment means they do not make very much money.

5.2 Meeting the challenge

As Orr *et al* (2000) reports with reference to Mulanje forest businesses (not IGAs) "the distinguishing feature of these activities is that they require more organisation, skills,

capital and wider linkages to markets than those at the IGA level. In order to develop business at this level support services are required that are able to address the particular needs" (Orr *et al.,* 2000). These particular needs, and others are discussed here.

Business skills and the business environment

It is rather discouraging that despite an increase in business service providers in Malawi in recent years the GEMINI survey reported that these services were reaching very few people and among those that received some kind of support in terms of credit, training and other support services the impact appears to be extremely small (NSO, 2002b).

On the plus side, however, in a recent study on micro-entrepreneurship it was revealed that Malawians felt that the government has provided an atmosphere conducive to conducting business at the informal level. This is in contrast to the more restrictive regulations governing small businesses once they become formal (e.g. licensing , taxation).

Factors promoting informal sector enterprises have been identified as:
- New business support organisations
- More people in business acting as role models
- Improved transport and communication
- Increased status of women
- Increased provision of services such as schools and health clinics

Inhibiting factors were identified as:
- Inflation
- Small markets in rural areas
- Loans for working capital and investment (as opposed to start-up) difficult
- Jealousy and witchcraft
- Lack of know-how for value added production.

(Orr and Makawa 2000)

Another key to interventions which can lead to successful "upgrading" of a typical IGA is the model to follow. Traditionally development initiatives – within the natural resources sector – have encouraged communal activities in the interests of equity and reaching many people (see Box 7). In reality it might be more effective to work with individual entrepreneurs. This is supported by the GEMINI report which found that the duration of a business was lowest amongst "multiple owners".

Marketing

Many reports on the subject of natural resource based enterprises (Simons, 1997; Orr *et al.,* 2000; Lowore, 2001a) mention the importance of improving marketing skills of primary producers. However it is first importance to recognize that marketing is the service which is being provided by the much maligned middlemen and bulk traders. Such

people have a vital role to play to market goods which primary producers otherwise have difficulty selling. It is almost certainly true that it is lack of middlemen in the beekeeping industry which is preventing it from developing in Malawi and it would be a highly positive development should such middlemen emerge, and indeed should development efforts be directed towards assisting them this would have immediate beneficial consequences for the village based beekeepers.

The GTZ Beekeeping Project did attempt to address the lack of a marketing structure for honey and established a Beekeepers Association of Malawi (BAM) in 1992. Perhaps because it was driven by a project, rather than honey producing members or by a serious businessperson, BAM folded after a few years leaving a void as yet unfilled.

Despite the failure of BAM marketing associations are important and viable and are proving successful in the field of marketing agricultural produce e.g. NASFAM. Marketing associations can bring benefits to the primary producers who may still sell to the bulk traders but at prices which they can control. Marketing associations may or may not become involved in processing.

Adding value to the product through processing

Pre-1990s Malawi's development strategy was primarily aimed at maintaining macroeconomic stability and promoting growth through the expansion of estate agriculture and investments in supporting infrastructure and little attention was paid to broadening and diversifying the country's agriculture base into value adding agro-processing. Primary agriculture still dominated (Marshall *et al.,* 2000). This legacy of policy influence is still with us and a quick look at the agriculture sector shows us how little processing is undertaken by smallholders which makes adding value to natural products through enhanced processing and marketing a step many farmers have little or no experience of.

A recent study on micro-entrepreneurship in Malawi reported that, "production technology is limited. The main focus is on trading. Production takes more skills and more capital – it implies that more time is involved in one particular enterprise. Moving towards production has implications for time, capital and thus the business portfolio" (Orr and Makawa).

In short adding value through processing is an important but by no means easy step. A whole range of projects have recommended adding value through processing, such as: drying wild mushrooms, making fruit jam, juice and wine, making honey and bee products, improving the design and quality of wood carvings, cane and bamboo furniture and others.

Increasing incomes for the primary producers

Given that primary production (harvesting and collecting) will remain an important activity for many rural people changes which can increase the bargaining powers of the

rural producers would be important. The establishment of producer associations is useful in this regard but requires organisational skills, planning skills and overhead costs all of which are lacking amongst the poorest sections of society. Prices can increase however if the middlemen who trade and process any given product make more money and the business becomes sufficiently competitive. In such cases the primary producers may be able to sell the primary product to the highest bidder in turn pushing up the prices.

WAY FORWARD – BOOSTING BUSINESSES

An appropriate model is that the primary producers collect the produce and sell to an intermediate private entrepreneur. For the benefits to the primary producers to increase they would need to be organised into associations thereby gaining some bargaining powers over price and perhaps undertake some preliminary processing. The responsibility for maintaining the resource base would fall to the primary producers and so it important that their income is sufficient to make this worthwhile and institutional arrangements are such that they are given the rights to do this. There are perhaps two models which can cater for an increase in the cost of the primary product.

- The primary producers to charge the intermediary an additional green tax which would be spent directly on securing the resource base. The intermediary would probably pass the increase onto the customer who in some cases will be willing to pay more from a product coming from a sustainable source.
- The intermediary pays more for the product but they may save money if the producers are better organised. If the honey, for example, is available in the right quantity, at one pick-up point and at the right time then the intermediary also saves money.

Care would have to be taken however to make sure that in the process of becoming organised the more disadvantaged collectors are not excluded.

Changes needed: Primary producers to be organised and to undertake preliminary processing. To make the connection between the business and the resource base.

The intermediaries are those whom should be assisted with business skills training, business services, advice with marketing, links with markets and technologies for processing and adding value. Clearly they want to keep their costs down and so having a better organised supply system – even if the prices go up – will also be to their advantage as they spend less time and money sourcing their raw material.

Changes needed: Information and support concerning technologies, marketing and business skills and loans provided to entrepreneurs. Customers to be encouraged to buy Malawian produce from managed forests.

5.3 Forests for the poor

Even without transforming a forest based IGA into a profitable business the income from a subsistence level IGA is still extremely important and will remain very important for many of the rural poor. In some cases the maintenance of the existing contribution of forests, which can be achieved through achieving maintenance of sufficient forest cover is challenge enough, quite apart from the task of upgrading the IGA into a business.

Direct consumption and maintenance of environmental integrity

The non-income forest product uses also have large implications for rural economies and livelihoods. Using woodland products for household needs does not alleviate poverty – but an erosion of availability may contribute to poverty. If women must spend 16 hours a week looking for firewood as opposed to 8 hours a week this has implications for their opportunity to engage in economic activities or even non-economic activities like making sure their children have breakfast and get to school on time. There are no known studies which have explored the consequences for livelihoods of the result of the strategies people adopt in face of shortages of forest products for domestic use e.g. buying poles or using crop residues instead of firewood.

If access becomes difficult the not-so-poor can buy the necessary produce from others or they can buy alternatives. They may also have more money, land, labour and access to extension support which means they are better able to diversify their farming system to cultivate required produce. In this respect the maintenance of common property wild resources is one way of preventing increased hardship for the poorest within the community.

The role forests play in providing food for direct consumption in time of hunger i.e. famine foods is recognized but hardly quantified. The number of people who benefit and the difference it makes to their nutritional status is not known. Finally there are significant direct and indirect benefits derived from forests in terms of services, the most notable being maintenance of healthy water catchment and prevention of soil erosion, flooding and landslides. A healthy water catchment maintains permanent streams and rivers, which are used for irrigation, watering livestock as well as household water supplies. Seasonally wet areas (dambos) which are highly valued for dry season food production are also maintained as a result of a healthy water catchment. Once again there appears to be have been little work done to quantify these socio-economic benefits, but given that forest maintenance is the only way to preserve these essential benefits it may certainly be true that these water and soil related service functions of miombo are more important than any other benefit

WAY FORWARD - DIRECT CONSUMPTION AND MAINTENANCE OF ENVIRONMENTAL INTEGRITY

Whether poor villagers are willing to bear the cost of maintaining some indigenous woodlands as a supply of goods and services depends on a great many factors such as the cost (if firewood markets are close by the opportunity costs of not overexploiting to meet the demand is greater than if there is no local market of any size) and whether there are other more effective ways of the getting the same goods and services. It also probably depends on to what extent the owner-villagers share a common vision or not.

What is required. The best way to support communities faced with these dilemmas (to maintain or not to maintain) is to first of all make them aware of the dilemma or in other words make them aware that they have a choice. It is also important to help them understand what the consequences of forest loss and the consequences of forest management are for the community. They may need help to analyse the consequences for their well being if the products they currently collect from the woodland must be sourced from elsewhere or grown on farm. Technical and capacity building support should be provided if needed. The extension service needs to be skilled enough to realise that no blueprints exist and that each community may have a different way of approaching the issue. The formation of interest groups may be useful and capacity to deal with conflict resolution is also important. Everyone be they rich or poor require the environmental services woodlands provide so whilst these non-tangible benefits may seem the least likely of all incentives to motivate communities to manage woodlands they may in the end provide the best incentive. Income incentives may appear to be the most forceful but they may be the most divisive.

5.4 The costs of woodland management

Indigenous wild resources which occur within the agricultural landscape tend to be managed together with the entire farm production system but those which occur in the "bush" are managed much less intensively and it is these resources, where they remain, which are most vulnerable to overexploitation but are most accessible by the very poor.

The need for managing village forests is emphasised in the current forest policy where it is suggested that this responsibility falls to the owner-villages. Management however always has associated costs which include the following:

- Opportunity costs of not overexploiting the woody resources
- Labour and time to regulate the activities of users
- Time and skills to draw up a management plan
- Labour to implement the management plan
- Time and patience to deal with conflicts

The questions we are struggling with are which of the incentives mentioned in paragraphs 5.3 and 5.4 are of sufficient interest to communities so that they are willing to bear these

costs, bearing in mind of course that amongst any village community different people have different interests and varying means.
If it follows that woodlands must be managed and that those who benefit most should bear the costs of management then we soon perceive that the costs of forest management must then fall onto the shoulders of the poorest. It is likely however that these people are the least able to take on this responsibility. Should such people have any spare time or energy they are more likely to invest it in meeting their immediate needs than thinking of managing woodlands to which they do not have exclusive rights of access anyway. It has been noticed, for example, that at certain times of year only those who are slightly better off are able to participate in development activities because the poorest people are busy doing piece work.

5.5 Poverty traps

A final mention should be made to the fact that in some cases forest product based IGAs can become poverty traps in themselves. Low prices mean that the sale of forest products only makes limited contributions to alleviating villagers poverty, while at the same time – in the case of firewood and charcoal selling – increasing the rate of deforestation. This effectively establishes a positive linkage between rural poverty and forest degradation, plunging village life into a poverty-degradation vicious cycle hard to break.

Furthermore an activity such as firewood selling is sometimes adopted by people who are suffering a temporary hardship but then becomes a habit. Time is spent collecting and selling firewood and income is earned – which is immediately used for food. The following day the activity is repeated. Such an activity drains the productive capacity of rural people who find themselves dedicating less and less time to farming in the search for immediate income for survival. In time their livelihood base becomes increasingly eroded as other potentially more productive activities are abandoned in favour of the hand-to-mouth IGA from which they can then never escape.

SECTION SIX: CONCLUDING REMARKS

The information and analysis presented in this booklet is intended to help us approach indigenous woodland management from a more informed point of view. Given the complexity of the issue it is by no means easy however to come up with blueprint recommendations. In summary however it is useful to keep in mind the following key conclusions:

- The relationship between the rural villagers and indigenous woodlands has changed a great deal over the past decades, in particular local scarcity and pockets of intense demand for products has kick-started a dynamic trade in a wide range of miombo-derived products.
- Forests still provide domestic products but increasingly villagers are learning how to adapt and source the same produce elsewhere as scarcities set in. Some of the adaptations however are more easily adopted by the slightly better off e.g. purchasing or cultivating
- Forests provide livelihood opportunities to a range of different people. The majority of those who engage in forest product selling do so because the resources are free and little skill or capital outlay is required and most of the money generated from selling forest produce is spent on meeting basic needs, especially food. Others who engage in bulk trading do so because they recognise a business opportunity when they see one but profits are still small and little is invested in developing the business. Finally there are some very disadvantaged people who normally fail to engage in any economic activity at all, for these people selling forest products is one of the few options open to them in times of intense stress. The forest is their safety net.
- There is undoubtedly potential for boosting forest based business through technical, business and marketing support but great attention should be paid to the business model to ensure sustainability. Promoting communal business ventures – some of which are little tried and tested, therefore risky - amongst the poorest people may not be the best business model.
- Whilst income is important, evidence would suggest that some communities are nevertheless willing to manage their woodlands for subsistence and environmental purposes alone. The challenge is that those who benefit most are perhaps the least well placed to tackle this complex task.
- Woodland maintenance and management involves associated costs and whether the benefits are worth the costs will vary greatly from one community or interest group to another. Factors such as social organisation, value judgements and cost-benefit analyses will influence the outcome.

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