

SMALL-SCALE AND SUBSISTENCE USE OF NATURAL  
RESOURCES IN NAMIBIAN COMMUNAL AREAS:

*Summary of Findings and Recommendations Relevant to  
CBNRM, the LIFE Program, and LIFE Sub-grantee Activities*

(14)

*Estimating the value to livelihood of  
selected wild foods, medicinals, building  
and craft materials, and fuelwoods*

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## 1.0 INTRODUCTION

This report summarizes portions of a more extensive baseline study of natural resource use activities that are relevant to the Government of Namibia's community-based natural resource management program (CBNRM), the Living in a Finite Environment ("LIFE") program and LIFE sub-grantee project objectives and on-going activities.

The baseline study examines fourteen small-scale, non-agricultural, non-tourism resource use activities important to livelihoods at the household level. Resources assessed are used for subsistence and to bolster food security, to generate income, and to cope with the effects of drought. All study areas are located in northern Namibian communal areas.

General use patterns, operating costs, benefits, consumption levels and local level prices were assessed for resource use activities. Synopsized information for eight resource use activities are presented in this summary report.

Resource use activities examined in the study involve use of fuelwoods, construction wood poles, carving woods, thatching grass, freshwater fish, fruit and fruit seeds, insects, grass seeds, leafy vegetables, beans, tubers, and palm leaves. With few exceptions, all resources are renewable and indigenous to Namibia.

Namibia is the driest country in Sub-Saharan Africa and even small variations in rainfall can result in livestock losses and cause crops to fail. Benefits received from resource use activities, sometimes overlooked because they may be small in comparison to average household incomes, may be relatively enormous to poor families with severely limited options for obtaining food and basic necessities. They can provide a buffer against absolute poverty, especially when crops fail.

Unfortunately, they are frequently underrepresented in conventional economic methods and, hence, are sometimes not accounted for when decisions impinging upon the allocation of resources are made.

### Five Ways These Resources Contribute to Livelihoods

1. *Through Subsistence Use*
2. *By Bolstering Food Security*
3. *By Contributing to Drought Coping Mechanisms*
4. *Through Income Generation*
5. *Through Use by Rural Poor and Female-headed Household*

The study summarized is primarily an economic analysis of the direct commercial value of assessed resource use activities. Some non-commercial values are qualitatively assessed. Considering social, cultural, and environmental aspects is generally beyond the scope of the study. However, a more general approach incorporating *some* non-economic aspects is presented in Section 4.0.

## 2.0 PURPOSE AND METHODS USED

Information from this study supports the Namibian Government's Community-Based Natural Resource Management (CBNRM) program by contributing to case studies, economic models, and on-going activities at the Directorate of Environmental Affairs (DEA) and the LIFE program. Additionally, recommendations are made in relation to the achievement of LIFE sub-grantee project objectives.

The overall purpose of this study is to assess the value and overall importance of profiled resource use activities to livelihoods and household incomes. A large portion of this process involved estimating, discussing, or evaluating:

- commercial and in some cases, non-commercial values;
- returns to labor for income generating activities;
- the potential for development as commercial enterprises; and
- comparisons of commercial value estimates against average household consumption and expenditures reported by the Central Statistics Office (CSO), National Planning Commission, Republic of Namibia.

Data collection, field study, and preparation of reports was undertaken during a three month period beginning in November, 1996.

Data collected during limited field activities and available data and information from existing literature was synthesized and collated to develop resource use profiles. Information gathered during personal communication with knowledgeable individuals was also used. The entire study took place over a period of three months; field activities were conducted in less than three weeks time.

The selection of resource use activities was based on a subjective set of criteria related to perceived importance to livelihood and incomes, drought coping strategies, and potential for additional development as small-scale commercial enterprises.

This study is primarily focused on direct commercial value of selected natural resources but acknowledges that the "full" value of a resource encompasses many other values often termed "indirect" or "non-use" values which could include, but would not be limited to, soil conservation and nutrient inputs, water retention, inheritance value, aesthetics, cultural value, contribution to the welfare of grazing lands and wildlife enterprises, stabilization of downstream water flows, effects to evapotranspiration and rainwater infiltration rates.

### 3.0 RESOURCE USE ACTIVITIES

Following is a brief synopsis of eight resource use activities evaluated in the study, including key findings and recommendations. The objective of recommendations is generally to increase the flow of benefits to producers and support the maturation and stabilization of an income generating enterprise managed at the local level.

#### 3.1 Tree-based Products

Fuelwoods, construction poles, and carving woods were assessed.

According to the Central Statistics Office (CSO, 1995), at least three-quarters of the households in Caprivi and Otjozondjupa cook and light without gas or electricity. Clearly, there is an overwhelming dependence on fuelwoods. Fuelwood scarcities, documented in former Owamboland and the western catchments of Namibia, can result in foregone labor (due to an increase in collection time), use of animal dung for fuel rather than fertilizer, changes in cooking habits sometimes to the detriment of dietary habits, and the development of commercial fuelwood enterprises.

Little available data on use of construction poles specific to Namibia was identified in the literature; however, several general aspects of construction pole utilization are noteworthy. Fuelwood shortages can be offset by use of inferior quality shrubs and scrap wood. This is not possible in the case of construction poles which generally require felling standing trees (World Bank, 1993). Hence, they are a valuable resource in deforested areas (the demand for poles is high enough in parts of northern Namibia to support commercial operations).

In terms of wood carving, field data including local level prices and costs from East Caprivi were used to estimate labor returns to carving popular tourist items (animal figurines, walking sticks, and ornamental fork and spoon sets). Items are assumed to be marketed and sold through the Caprivi Arts and Crafts Association (CACA).

Preliminary estimates of hourly wages for carvers (not including wood procurement) are between N\$ 1 and N\$ 2. Findings suggest that carving is being used as a coping mechanism by low-skilled carvers while skilled carvers producing high quality unique items are earning much higher wages. A survey conducted by Harrison (1995) and the CACA identified carving as a "critical" source of income for some carvers, especially following droughts and crop failure.

*In East Caprivi, groups of carvers are earning an average of N\$ 220 per month and as much as N\$ 4000 in a month for a select few highly skilled carvers (Harrison, 1995). The average annual household income for Caprivi is N\$ 5479<sup>1</sup> (CSO, 1995).*

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<sup>1</sup> CSO estimates of annual incomes are regional averages which are not in most cases representative of rural poor incomes. Notably, incomes in some LIFE target areas, especially West Caprivi and the Nyae Nyae area, are known to be much less.

However, earnings are likely to be concentrated into several months of the year, especially July and August when tourist demand peaks. Earnings in other months are likely to be a small fraction of peak months. Problems with earning cash through carving are related to the uncertain and uneven nature of incomes, making financial planning difficult at the household level.

Carving the three popular tourist items analyzed in the study is an activity most likely to be undertaken by young men with few options for generating cash (*per. comm.*, Nasilele and Tubuzuze). Clearly, highly skilled carvers are able to produce items that command higher prices, especially in Windhoek markets where they come into contact with persons willing to pay higher prices. What are the costs and benefits of developing high-level skills (assuming this is an option)?

Reports of carvers with well-developed skills earning more than the reported average income for the Caprivi region suggest that the benefits of developing the skills outweigh the costs *if* markets for high quality goods are developed concurrently. Additional data is needed to be more conclusive.

However, economic benefits derived from using carving woods would most certainly increase since highly skilled carvers are likely to be in a position to increase the "value added" of each unit of wood harvested for carving. In other words, people would be receiving a better return from the use of a natural endowment.

#### RECOMMENDATIONS:

Presently, fuelwood and construction pole utilization are not primary targets of LIFE program ongoing activities. Recommendations for these two resources are based on the assumption that the program may decide to address use of fuelwood and construction poles in the future, especially considering its stated purpose to promote sustainable management of renewables.

Wood carving is an enterprise supported through LIFE and at least one baseline study has been conducted to determine the size of the resource base supporting carvers, number of carvers in target areas, and incomes generated through carving. Recommendations for this activity are stated separately.

#### *Recommendations: fuelwood and construction poles*

The purpose of the following recommendations is suggest how the LIFE program could integrate use of these resources into its program in the future, and why it needs to consider, at least peripherally, the current and potential effects of timber consumption in target areas.

Although the majority of people living in target areas rely upon fuelwood and local timber for construction poles, timber and fuelwood scarcities are less likely in those areas than in more populous areas with more depleted timber resources, including the former Owamboland where fuelwood and construction pole commercial enterprises are well established in response to resource depletion in the vicinity of settlements.

Areas were chosen as LIFE target areas based on a natural resource base that is perceived to be

able to support CBNRM activities, including enterprise development. Sustainable development requires that they stay that way. Obviously, unsustainable use of timber is in contradiction to IFE's purpose.

Enterprise development in target areas requires production inputs such as fuelwoods and construction poles which could be consumed in greater quantities if enterprises are successful. However, in the near term, enterprise development planning may not directly consider these resources for several reasons. First, evidence of scarcity is not currently being observed. Second, the effects to fuelwood and construction pole consumption levels resulting from CBNRM activities may not be clearly understood. Several simple steps could be taken to minimize the possibility of unknowingly promoting unsustainable patterns of timber consumption which include:

- using available data, roughly estimate current consumption levels;

- develop a general understanding of the "pressure" current consumption levels exert on the base of timber resources relative to other anthropogenic effects and natural effects, including damage caused by elephants, etc.;

- anticipate potential demand for timber resources in target areas originating outside target areas possibly resulting from acute scarcities or commercial developments in other areas;

- be aware of fuelwood scarcity indicators including the cutting of live wood (dead wood is normally collected because it is lighter to carry, easier to harvest and can be burned immediately); and

- anticipate when fuelwood and construction poles are or will be inputs to enterprise development, either directly or indirectly. For example, fuelwood consumption increases because it is an input into the production system of a saleable good (baskets and beer for example), or rising average incomes and increased access to vehicles and tools increases the demand for buildings requiring construction poles. Consider the combined effects of many small-scale projects in an area.

A possible advantage to taking steps outlined above is that they facilitate and promote proactive policies that seek to prevent problems. Reactive activities often require larger efforts to reestablish lost or depleted resources.

#### *Recommendations: carving woods*

While other aspects of enterprise development, including social aspects, are extremely important, they are beyond the scope of the study summarized.

To achieve objectives, two broad-based tasks could be targeted including:

- (TASK ONE) a reduction in the time and cash required to legally procure carving wood; and
- (TASK TWO) increasing the "value added" to carved wood products.

Suggestions for each task appear below.

#### TASK ONE:

A successful permit process can be used to accurately monitor timber offtakes by species and location, and can be used as an effective management tool. Presently, permit acquisition necessitates a complex process of acquiring letters and permission from indunas, travel time to Katima Mulilo, paying a N\$ 10 permit fee, and at least some waiting. It appears that disincentives toward acquiring permits are significant.

#### TASK TWO:

Increasing value added of carved wood requires improving the quality and attractiveness of carvings, and developing a price-setting policy that can reap the returns of higher quality products. Less wood is required per unit of income earned and carvings can compete more favorably with carvings from other regions and other countries.

Several programs are already being supported by the CACA which support this goal. Skilled "master" carvers are instructing other carvers, and at least one carving event was held during which carvers were encouraged to expand the normal repertoire of carved pieces.

Presently, many carvers who belong to the CACA carve exclusively to supplement their incomes and might choose other forms of income generation if they were available (*per. comm.*, Moses Nasilele). A barrier to becoming a highly skilled carver is the investment of time and effort with little return in the short run.

The purpose of events hosted by CACA should be to assist in uncovering and developing artistic expression of carvers while tempering activities with information in relation to the economic realities associated with earning income through carving. Turning carving into an activity with non-economic rewards may facilitate in reaping greater overall economic returns from the activity, assuming added values can be realized from the perspective of marketing and sales.

This process could be facilitated by supporting regular carving "events" in which carvers are offered monetary and nonmonetary incentives for their participation. One purpose of events is to share the risk associated with spending extra time and energy developing carvings that are both different and more difficult to produce because quality and expression is highly prioritized.

Lack of quality tools was mentioned as a contributor to poor quality carvings. Opportunities for serious carvers to acquire better tools should be examined.

In combination with developing quality and scope of carvings, price-setting policies must be developed which maximize the return to producers while allowing the CACA to operate viably. Several information gaps were noted during field activities which would need to be filled if such a pricing policy is to be constructed. Gaps include, but are not limited to:

- an understanding of the fixed and operating costs of the CACA;
- a rough evaluation of the current and potential market demand for Caprivian carvings, including an understanding of major factors contributing to growth or decline in demand; and
- an estimate of current and potential production levels in target areas.



### 3.2 Freshwater Fish

In Caprivi, freshwater fish contribute to livelihoods as a direct addition to food supplies, as cash earned through sales and through trade to obtain staple foods such as maize meal.

*About 1500 mt of fish (Tvedten et al, 1994) valued at more than N\$ 6.75 million are consumed annually in the Caprivi region.*

However, CSO data suggests that the combined subsistence and commercial value of fish in Caprivi is less than 7% of the value of an annual household food expenditure. These estimates are useful but do not tell the whole story.

About 28% of households in Caprivi have a wage earner. Clearly, a significant portion of households rely upon subsistence or a combination of subsistence and cash earned by selling surplus goods. A survey conducted by I. Tvedten *et al* (1994) suggests that between 15% and 20% of households in the region see fishing as an important source of subsistence and income.

Fishing in the region is frequently an important component of subsistence resource utilization activities centered around aquatic habitats. On and around the river, residents collect a variety of plants used for food and medicine, thatch for roofing, poles for building, and reeds for making weaving baskets and traditional fishing gear. Fishing for own consumption or to sell the surplus for cash is woven into these activities. Especially in regard to low-income and cash poor households, fishing as a component of resource utilization, provides the following gains:

- food security stabilization and risk reduction;
- a food supply not entirely dependent upon local rainfall events (unlike agricultural activities);
- minimizing the risk of protein-deficiency disease; and
- provision of a food-earning activity that can be completely controlled at the individual level (especially important to households headed by women).

Marginal households may value fish as a source of protein over beef or other meats. It was reported that fish is the major source of protein for poor households in the region who frequently don't have money for meat after purchasing staple foods. While subsistence fishing cannot supply adequate levels of protein alone, consumed in combination with foods such as legumes it contributes substantially to avoidance of protein-deficiency.

Fishing as a resource use activity is becoming increasingly commercialized and has changed from an activity involving a whole village to an individual or household based activity (Tvedten *et al*, 1994).

In kind fish consumption levels estimated by the CSO (1995) may not be indicative of the true value to marginal households. Cropping fish is an activity that can be entirely controlled by a single individual, a woman head of household for example, and traded in small amounts for maize meal. Hence, although cash values may be small relative to average annual incomes, the value as a component of subsistence practices may be large, especially for poorer households.

## RECOMMENDATIONS:

Presently, use of freshwater fish for own consumption or to generate income in target areas is not a primary target of LIFE program ongoing activities. Recommendations with respect to this resource are based on the assumption that the program may decide to address it in the future, especially considering its stated purpose to promote sustainable management of renewables.

Evaluation and management of aquatic fisheries in Caprivi is complicated by the difficulty of understanding and managing a fishery utilized by people from several countries, and because some portions of the fishery do not exist in some years.

In terms of the LIFE program's purpose, several tasks could be set in the short-run including the following.

### TASK ONE:

Begin to develop a more detailed understanding of how important fishing is to specific groups inside target areas by measuring general indicators of subsistence fish consumption, and income derived from fishing (the study summarized offers a beginning to that process).

### TASK TWO:

Develop enterprise and conservancy plans and disseminate information that explicitly recognizes the importance of fish both as a coping mechanism used by rural poor, and as a source of income. Fish monitoring has recently begun on a limited scale. Synthesize, utilize, and disseminate this information as it becomes available. Contingent on available data, attempt to show economic losses that could result from inefficient harvesting practices.

### TASK THREE:

Should the program decide to target fish for study, management, or enterprise development, a first step must involve fostering consensus building and commitment by *all fishing groups* to ensuing management and enforcement policies.

## 3.3 Thatching Grass

Thatching grass provides a local level supply of roofing material and income through sales. A developing enterprise in East Caprivi earned more than N\$ 60,000 in 1994. Income from sales is reportedly most valuable as a method to cope with crop failures following drought. With the exception of drought years, women provide all or most of the harvesting and processing labor (Nabane, 1995).

Preliminary data presented in Nabane (1995) identified thatching grass collection as the "highest revenue generating activity" in Lizauli among other means of income generation including craft production, wood carving and formal employment opportunities.

Income generation requires travel to and from harvest sites, collecting and processing (cleaning) grass, and transporting grass bundles to dispatch sites where they are purchased by buyers. Collection of bundling material may also be necessary. Fixed costs include the cost of a sickle

(the only necessary tool identified), and payment of operator and community fund fees (N\$ 2 and N\$ 3, respectively). Hourly returns to labor (wages) are estimated to be between N\$ 1.5 and N\$ 2.8 (see technical document for full details including assumptions).

Although it is an important source of income, grass collecting is seen as strenuous because grass must be painstakingly cleaned, and collectors are frequently required to transport bundles on their heads long distances to dispatch sites (*per. comm.*, East Caprivi IRDNC resource monitors).

### Constraints and Opportunities

Information and data relevant to enterprise growth and sustainability constraints imposed by the size of the resource endowment were not identified in the literature. However, in the near term, availability of grass is not thought to be limiting production for several reasons including:

- grass that could be harvested was burned toward the end of the production season in August of 1995 (author's observation); and
- discussion of access to yet unused areas that support thatch grass is currently underway, supporting the assumption that there are potentially untapped reserves available.

The precise effects to the local environment resulting from thatch grass utilization also appear to be unknown or based on speculation. However, grass monitoring training for IRDNC resource monitors occurred in August 1995. Monitoring techniques are currently being applied in East Caprivi although findings have not yet been published. Harvesting grass at levels sufficient to support current commercial demand is thought to be a relatively environmentally benign practice with one exception. Nabane (1995) reports that trees are being stripped of bark at an increasing and unsustainable fashion to obtain bundling material.

Perceived enterprise constraints identified by IRDNC resource monitors are related to current production and pricing systems. Producers (grass collectors) may be able to raise the price per bundle paid to them and *still* offer buyers a situation that is competitive with others supplies. Also, enterprise growth may be constrained because of producers' preference for an income generating activity that is less physically demanding.

### RECOMMENDATIONS:

Note that secondary effects to gender roles and other social aspects of communities can occur and should be investigated. Consideration of such aspects, while extremely important, is beyond the scope of this study.

To achieve objectives, three broad-based tasks could be targeted including:

- (TASK ONE) a reduction in the physical demands required of producers;
- (TASK TWO) development of a price setting policy which maximizes economic returns to producers; and

(TASK THREE) development of a realistically achievable supply policy that attempts to strike a balance between the needs of producers at the household level, and the needs of local and Windhoek-based suppliers.

Suggestions for each goal appear below.

#### TASK ONE:

Minimizing transportation requirements would appear to increase earnings and make grass harvesting a more desirable activity. In the case of Windhoek-based suppliers, a hauling vehicle is used. IRDNC resource monitors report that for unknown reasons, suppliers using vehicles purchase grass at one (perhaps several) dispatch location. Armed with an understanding of buyer operating costs, a producer spokesperson could attempt to negotiate for an increase in the number and range of dispatch locations to reduce travel distances. Of course, any reluctance on the part of a buyer to accommodate is likely to be based on costs or convenience. Find out what they are and negotiate over that hurdle. All transport options could be considered. When cost or access appears to preclude options, organization by grass harvesters may provide a solution assuming harvesters can agree to trust each other and compatible needs exist.

Producers should be willing to sacrifice somewhere in order to reap the benefits of smaller travel distances and resulting labor time savings. Trucks and animal-drawn carts and sleds can move harvested bundles more efficiently than people can; therefore, it is likely that producers will sacrifice less (in terms of earnings) than they gain (in terms of productivity). The component of production that yields the greatest return is probably the harvesting and selling of grass, not transporting it. To maximize returns means maximizing the components of production that yield the greatest benefits while minimizing the others.

Use a creative approach to search for mutually advantageous agreements between buyers and producers. IRDNC resource monitors related one success story during field visits. On at least one occasion, arrangements were made for the buyer to arrive at a dispatch location with 50 kg bags of maize meal. As cash outlays were made, producers had the labor-saving option of buying a 50 kg bag of a food staple without traveling to market and transporting a heavy load home.

Several grass collectors are known to have exceptional skills enabling them to collect grass at about twice the average rate. It may be advantageous to examine the possibility of arranging brief training meetings to try and transfer these skills to collectors with a desire to increase their harvesting capabilities. Trainers should be compensated for benefits they provide.

#### TASK TWO:

Examine the basic operating costs of buyers, retail prices paid in Windhoek and elsewhere, and prices buyers pay to producers in South Africa and perhaps elsewhere. Assess the market for the product by looking at how and where it is used and in what quantities. Using this information, look for a pricing strategy that will set the highest producer price possible while still enabling Caprivi grass to appear more desirable to buyers than grass produced by other suppliers.

#### TASK THREE:

Achieving this task requires interaction between suppliers and producers. Participation at the local level is critical. Optimally, producers could build consensus among themselves about how much to supply in relation to needs related to cash demands, lifestyle, the timing of cash outlays

to pay for specific items such as school fees and food items, etc. It may be helpful to develop contingencies for special conditions such as drought years. The needs and absolute requirements of buyers including transport and operational costs, timing of pick-up, quality of product required, anticipated minimum and maximum supply level needs over time and other factors should be integrated into supply policy if it is to be viable. Also, developing supply policy and negotiating prices need to be integrated because of the obvious relationship between both of them.

### 3.4 Makalani Palm

Study of palm utilization focuses on use of leaves to make baskets for own use and sale. Numerous additional uses of the palm are listed in the technical report.

A group of at least 148 basket weavers in East Caprivi are reportedly earning between N\$ 300 and 700 annually from basket sales (Harrison, 1995). Basket production for own use and trade also contributes to direct value. Basket weaving is an opportunistic activity which supplements subsistence farming, household work and other activities. It is normally undertaken after the completion of more highly prioritized and perhaps physically demanding work. Production of baskets for sale may increase dramatically in response to drought and crop failure in order to provide cash for food and other basic necessities.

Baskets produced in East Caprivi are generally sold through the CACA, local markets in Katima Mulilo, or to tourists from the main highway (Kongola - Katima - Ngoma).

Production of baskets for sale requires collection of leaves, processing raw materials and actual weaving. Fixed costs include the cost of obtaining and maintaining an ax, hoe, knife, sickle, boiling pot, root pounder, and razor blade. Fixed cost price data were not available; for the purpose of estimating labor returns, a cost of 3% of the price paid to producers was assumed. Returns to labor for an average basket (35 cm - 40 cm in diameter), estimated under several scenarios outlined in the technical report, were between N\$ 0.79 and N\$ 1.34 per hour.

### Constraints and Opportunities

Experience from Botswana, where rapid commercialization of enterprises has occurred, suggests that the development of basket industry can have environmental costs. Rapid expansion of palm and dye collection for basketry has meant that such resources are increasingly scarce in areas where commercial marketing is well developed (Cunningham, 1992).

Harrison (1995) reports an increase in the number of women undertaking the activity in the last several years, although the data is not entirely conclusive. Clearly, it is necessary to learn whether the current endowment can sustain current production levels before the costs and benefits of promoting an increase in production can be assessed.

Among six income sources available to women in Nongozi village in East Caprivi, crafts were ranked as "most important" (Nabane, 1995). However, women are now walking greater distances to obtain palm leaves, ostensibly, because most of the nearby trees have been stripped (Wyckoff-

Baird, 1995).

Although the three East Caprivi villages profiled have adjacent palm resources upon which to draw, numerous villages in the region do not have such endowments. Weavers from these villages are forced to either buy palm leaves from the CACA or some other source or arrange to receive them from relatives living in villages within range of a palm leaf supply. In fact, 114 out of the estimated 148 weavers of commercial baskets report having limited or no access to local palm resources. Clearly, the endowments of a few villages are currently supporting basket production of the entire East Caprivi region.

Limited palm propagation trials are currently being undertaken by IRDNC resource monitors in East Caprivi.

Pressure levels on natural capital (palm trees) necessary to support the industry as a result of current harvesting practices is not exactly known and certainly varies among communities. In order to gauge whether the endowment of palm trees in their current state will support current and perhaps increased production levels, Harrison (1995) indicates that several critical pieces of information must be collected including:

- palm growth and leaf yield data relevant to the resource in East Caprivi, factoring in potential damage caused by elephants and people using undesirable harvesting methods; and
- an understanding of the status and dynamics of palm leaf sales and trading currently supporting basket production in villages where palm leaves are not readily available.

Options for the development of sustainable use patterns specific to East Caprivi are presented in Harrison (1994), pp. 50.

#### RECOMMENDATIONS:

Although returns to labor appear small relative to other activities profiled in this study, benefits accrued from this activity may actually be large. Unlike several other resource use activities profiled, many components of basket production can be undertaken in combination with other activities.

Problems, constraints and possible solutions in relation to marketing and pricing, including recommendations are thoroughly discussed beginning on pp. 64 of Terry *et al* (1994).

Increasing economic returns can be achieved either by increasing production levels while expanding markets or increasing the real returns to labor, or by a combination of both methods. However, these are broad overall goals for long term development. In the immediate future several short term tasks could be targeted including:

- (TASK ONE) establish a mechanism at the community level for matching producers with quantified estimates of a palm resource adequate in size and average annual palm leaf yield to sustainably meet a specified basket production level (preliminary findings indicate

that palm leaf yield varies relatively little from year to year due to the drought resistant qualities of the makalani palm (*per. comm.*, Adam Harrison)); and

- (TASK TWO) ensure that the CACA can continue working toward establishing local and perhaps national markets, and providing market services to producers as *a financially viable, stand-alone enterprise*.

Suggestions for each goal appear below.

#### TASK ONE:

Defining and inventorying palm resources and estimating leaf yields is tedious but necessary if producers aim to establish leaf supplies to meet long term demands. Producers, perhaps assisted by resource monitors, could use local knowledge to conduct an initial inventory and follow up with monitoring which would require little effort if conducted in combination with regular collecting trips. Obviously, producers have the greatest stake in surveying and monitoring the resource. Their stake will grow as the CACA establishes secure markets and demonstrates ability to provide useful and dependable services to producers.

#### TASK TWO:

Assisting the CACA should involve two thrusts: promoting competitive business practices, and helping the CACA satisfy their clients (the producers). The CACA should examine and establish a system for tracking operating costs and procedures and ensure that revenues from retail sales can comfortably cover operating expenses. When operating expenses and revenues are quantified and transparent, the CACA will have a firm basis for mark-up levels. From this point, the tools are in place for a process of working with producers to optimize a system in which producers can work with the CACA to strike a balance between developing a financially viable business and providing services to producers at the lowest cost.

### 3.5 Marula Tree

Use of marula fruits and seeds in the production of beverages and oil for own use and sale in Omusati was examined. Oil sale and consumption patterns, and local level prices were used to estimate labor returns for a set of producers in the study area, and the value of average annual oil consumption. *Oil consumed annually by four households surveyed in Omusati during field activities is valued at more than N\$ 370 per household. Labor return estimates suggest that hourly wages in excess of N\$ 4.0 are realistically achievable in the presence of established markets and marula trees. Returns would be seasonal and based on annual fruit yields.* Fruit-bearing marula trees reportedly exist in significant quantities in several portions of LIFE target areas. Preliminary data collected during field activities suggest that while people are exploiting marula fruits and seeds for their own consumptions, they are generally unaware that a local level market demand (or potential demand) exists for marula products.

#### Constraints and Opportunities

The value of marula trees is well known to people who use them in Omusati. People at the local

level appear to conserve and protect them accordingly. During field visits, marula and other valuable trees, including the makalani palm, were commonly observed in fields that had been cleared for agriculture.

Because the marula tree appears to be protected, utilized, and its products sold in local markets, the potential for enhancement of economic benefits appears to be small relative to benefits already being received (in former Owamboland).

However, areas with marula endowments exist in which fruits and seeds are not exploited for commercial gain. In these areas lie the greatest potential for development of small-scale enterprises, especially for the sale of processed and unprocessed nuts that can be milled on an as-needed basis into marula oil. Initial estimates suggest production and sale of marula products could result in higher labor returns than at least some income generating activities currently undertaken in LIFE target areas.

It should be noted that while the resource may exist, markets for the ensuing products do not necessarily exist. Exploitation of marula fruits and seeds for commercial gain would require establishment or identification of suitable markets.

#### RECOMMENDATIONS:

Several tasks could be targeted in the short term including:

- (TASK ONE) share information about production of and established demands for marula products in former Owamboland and perhaps locally with people in LIFE target areas currently using or in the vicinity of an endowment of marula trees; and
- (TASK TWO) examine the costs and benefits of using existing marula endowments to produce products for undeveloped markets in LIFE target areas or to supply markets in former Owamboland, Okavango, and other regions.

### 3.6 Mangetti Tree

Field data was collected for sites in West Caprivi and East Otjozondjupa where mangetti fruit and seeds are used to produce beverages and a porridge or relish. In study areas mangetti nuts are a staple food supply or significant food supplement. In the East Otjozondjupa village studied, mangetti nuts were identified as the *sole* food staple. It is also sold sporadically in local markets earning producers an estimated N\$ 2.3 to N\$ 7.3 in hourly wages (estimated labor returns) depending on local level prices, the efficiency of production, and the availability of harvestable nuts.

#### RECOMMENDATIONS

The study acknowledges that provisions need to be made, before the enterprise is developed and



enhanced, for the continued use of this resource by poor households, especially during periods of drought or difficult economic times resulting from other events. Without such provisions, enterprise development could compromise benefits mangetti nuts provide as a coping mechanism.

Based on interviews and observations made in study areas, several constraints appear to be inhibiting economic returns from the resource. The following tasks could be targeted to reduce constraints and assist in achieving the overall goal:

- (TASK ONE) develop an adequate and reliable means to transport goods to markets;
- (TASK TWO) examine current and potential market demand in relation to supply and subsistence use; and
- (TASK THREE) develop pricing strategies considering task one and using information from task two.

Suggestions for each task appear below.

#### TASK ONE:

Knowledge of transportation options and the costs and benefits of each option appear to be unexamined in both study areas. Identifying and examining the costs and benefits of each option is the first step in the process of selecting an option that is both realistic and can be sustained without subsidization or assistance from parties outside the community. Community benefits will be maximized and made most consistent when the means of transportation is controlled and managed from inside the community by producers.

#### TASK TWO:

Securing adequate and reliable transportation is likely to facilitate an understanding of localized market demands and a feel for how demand for mangetti products changes as prices change. With adequate access to markets, producers are likely to "feel" market demand levels and fluctuations because of increased contact with buyers.

#### TASK THREE:

With information in relation to market demand, producers have the means to organize and strategize with respect to prices, assuming they intend to maximize cash earned per unit of effort expended. Thus, it desirable is to "set" prices that reflect an equilibrium supply-demand interaction. Focused effort may be necessary to organize producers with an aim toward setting prices that will maximize producer returns. To achieve this outcome, it would be necessary to enact measures designed to suppress price undercutting and perhaps hoarding by individual producers seeking to satisfy extremely strong demands for immediate cash returns. Minimum levels of trust and commitment are required on behalf of producers.

In combination with above stated activities, quantification of endowments utilized by defined sets of producers should be undertaken. Additionally, well defined monitoring activities should be undertaken with management strategies designed to promote sustainable use patterns and patterns that will be adjusted during periods in which low yields are expected.

### 3.7 Morethlwa or N/n Berries (Grewia flava)

Grewia flava can be eaten fresh or dried and stored; where markets exist they are sold to earn cash. Heavy use by several groups of Ju/'hoansi and East Caprivians was noted during field activities.

An advantage of Grewia berries is that they stay on the branch and are available during the dry season. Unfortunately, they are small, have large stones or pits, and contain more roughage than nourishing pulp (Marshall, 1976).

#### **Morethlwa Contribution to the Livelihood of the Ju'hoansi in East Otjozondjupa**

During field activities, morethlwa berry use data were collected at Makuri village in East Otjozondjupa (former east Bushmanland). The following information is compiled from responses given by village leaders with input from various village inhabitants during a meeting involving the entire village. About 36 people comprise 6 households in the village which is located in the central portion of the region inhabited by the Ju'hoansi.

Baobab fruits, morethlwa berries, mangetti nuts, marula nuts and venison were identified as the most important wild foods utilized in the past several years. Craft and berry sales are the most common sources of cash. There is no known competition for the resource.

Berries are eaten fresh, dried, or dried and soaked in water then consumed. They are harvested normally in December for a period of time that is variable and reportedly dependent on climatic conditions.

Assuming normal conditions and yields, it takes the average person in Makuri about one full day of collecting to fill a 25 kg bag (formerly containing maize meal).

When the berries are ready to be harvested, everyone (or nearly everyone) collects them for own use or for sale to earn cash. Surplus berries are transported, usually on foot or by hitching, to Tsumkwe markets where they are sold for N\$ 1 per 1300 ml cup full. The exact number of 1300 ml cup fulls yielded by one 25 kg bag is unknown. Cash earnings from the sale of one bag were also unknown. For about the last two years, market demand for the berries has increased because "outsiders" are increasingly using the berries to brew an alcoholic drink. Berries can also be traded for the drink.

### 3.8 Devil's Claw (Harpagophytum procumbens)

Harpagophytum procumbens is alleged to have medicinal properties. In the early 1960's, extracts from secondary tubers were shown to have anti-inflammatory and analgetic effects. The plant has been exploited beginning in 1962 for medicinal purposes. Plant tubers are collected, sliced and dried in the sun by harvesters in rural areas before being purchased by buyers for processing into tea, and other products for export. Exportation of secondary tubers, mainly to Germany, has gradually increased resulting in pressure on the resource that may cause a scarcity of it in the future, especially in view of destructive harvesting techniques currently practiced by some

collectors. Although there is no annual quota for harvesting Devil's claw in Namibia, collectors and exporters must obtain necessary permits (Strohbach-Fricke, 1995).

The plant's medicinal properties are attributed to several substances described in Strohbach-Fricke (1995) which also occur in the closely-related Harpagophytum zeyheri subsp. sublobatum found in northern Namibia.

### **Contribution to Economies in Rural Namibia and Botswana**

Unless otherwise noted, the following information is compiled from Strohbach-Fricke (1995). Most tubers exported from Namibia beginning in 1986 came from the Omusati, Ohangwena, Oshana, Oshikoto, and Okavango regions. Quality material was purchased in 1986 for N\$ 5 - N\$ 6.5 per kilogram; however, the average price has dropped to about N\$ 1 as a result of ineffective harvesting and processing methods. Lower prices result when collectors sell material containing the wrong type of tubers, and/or the material has not been sliced and dried properly. Higher prices are still paid for high quality material.

Collectors in Namibia are predominantly from poor rural households located in communal areas. Collecting is normally opportunistic and limited by transport and hauling constraints as it frequently occurs long distances from settlements.

Between August 1994 and August 1995, 543,710 kg of dried tubers were exported earning collectors between N\$ 1,087,420 and N\$ 8,155,650, and possibly earning Namibia N\$ 10,874,200 (assuming an export price of N\$ 20 per kg).

The plant is used throughout Botswana domestically by traditional doctors and harvested in large quantities for commercial purposes. Unless noted otherwise, the following paragraphs are compiled from Ntseane (1993). Harvesting tubers to generate cash is especially prevalent in rural areas known as Remote Area Development (RAD) settlements where it is cited as a major source of income for groups characterized by poverty and high illiteracy rates. Sixty-eight percent of respondents to a survey conducted in rural Botswana villages containing RADs say they have harvested devil's claw, 93% said the purpose was commercial. Of 465 households surveyed, 71% are female-headed. In the four districts surveyed, income from devil's claw contributed as much or more to livelihood, in most cases, as the other three main forms of income which include beer brewing, drought relief aid, and crop farming.

### **Commercial Potential**

Estimates of the sustainability of current practices and the potential for commercial expansion is currently constrained by information gaps including:

- an estimate of the size of the resource base and the effects of cultivation and harvesting practices to that base;
- an understanding of collector and exporter earnings as well as an estimate of the economic

benefits to Namibia; and

- an understanding of current and potential product substitutes, in terms of preferences and prices, that may impinge upon future market demands.

Clearly, the benefits of studying and improving the efficiency of devil's claw exploitation will outweigh the costs.

#### 4.0 ENTERPRISE DEVELOPMENT: Steps Toward Evaluating and Monitoring Enterprises and Expanding Markets

This section provides a general framework that can be used in combination with resource use recommendations to generate constructive enterprise development plans to meet the needs of producers.

#### EVALUATION AND PLANNING

Following are suggested steps that can be taken toward developing small-scale enterprises. Unless noted otherwise, steps are adapted from methods presented in PACT (1987).

##### **STEP ONE: Identify Target Resource Use Activities**

*This step should involve collection of pertinent information in relation to and comparison of possible income generating activities at the local level. Carefully choose and prioritize objectives of enterprise development. SOME HIGHLY PRIORITIZED OBJECTIVES SHOULD BE NON-MONETARY (skills enhancement, trust and group cooperation, for example). It may also be helpful to identify which activities will not be targeted. Clearly state the basis for selections.*

#### **BOX 1**

**To compare and assess the feasibility of available options try to understand:**

- necessary tools, materials, fuels, dedicated space in structures;
- skill requirements (weaving, carving, collecting, for example);
- raw resource requirements (leaves, wood, thatching grass, fruits and seeds, for example);
- labor time requirements (collection, processing, traveling to resource and markets, for example); and
- current and potential market demand (steps seven through nine).

## STEP TWO: Assess Potential Negative Effects of Enterprise Development

*Attempt to anticipate problems associated with gender roles, income disparity, erosion of a resource base, displacement of important activities (to livelihood, to family, relevant to culture, etc.), work loads, or other factors that contribute to community welfare. Can problems be prevented before they occur?*

## STEP THREE: Identify Products and Skills Necessary to Produce Them

*Describe how products are to be produced in relation to local level skills bases. Identify as many details of labor requirements and the fixed cost of tools, materials, space, and any other requirements necessary. Pay attention to as many details as possible, quantifying costs and labor time when possible.*

## STEP FOUR: Identify Enterprise Stakeholders

*Who are the stakeholder (producers) in each village and what are their needs? What are the key questions stakeholders need answered in order to assist them in meeting their needs? For example, what type of market information do producers of mangetti products in East Otjozondjupa desire? What are the potential conflicts with other affected stakeholders?*

## MONITORING

### STEP FIVE: Identify Economic and Social Indicators to be Monitored

*Examples of social indicators that could be monitored include attitudes, skills, trust levels, group cooperation, and gender issues. Examples of economic indicators include employment levels, income, distribution, and timing of benefits and savings. Identify which tools and methods will be used and who will collect and record information. **SELECTED INDICATORS SHOULD BE TIED TO OBJECTIVES DEFINED AS PART OF STEP ONE.***

### STEP SIX: Identify Measures of Success

*Form goals for each group of producers and state how monitoring indicators will reveal success or failure. Choose goals that are realistic in the short-term and can be modified over time to adapt to unforeseen events or even changes in the aspirations of producers.*

## MARKETS

Understanding and promoting markets need not involve complex analysis and projections. A short story form example of local level enterprise feasibility and market assessment is found in OEF International<sup>A</sup> (1987), pp.36. Some steps outlined below are adapted from OEF International<sup>B</sup> (1987).

**STEP SEVEN: Evaluate Markets**

*Visit the local market(s) where products are to be sold and observe which products are sold and at what prices. Talk to people selling and shopping. Try to understand as much as possible about the need and desire for the product you wish to sell. If possible, take some of your products with you to markets and let potential buyers see and perhaps taste or handle them.*

**STEP EIGHT: Examine Profitability**

*Add up all the labor time and fixed costs (costs that don't change such as the cost of tools) necessary to produce the product. Considering all that goes into a product, think of the lowest price that would give a satisfactory income to producers (relative to other activities they could be doing instead). Using information collected in Step Seven, determine whether buyers are likely to buy the product at that price. If not, this activity probably isn't profitable and another activity should be chosen.*

**STEP NINE: Think About Market Demand (how much of the product people will buy)**

*Quantify producers and gauge production levels (even roughly) if possible. Will anticipated local markets support estimated production levels? What will happen at local markets if "everyone" decides to try to earn money the same way?*

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