Livelihood Strategies of Rural Households in Caprivi: Implications for Conservancies and Natural Resource Management

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EXECUTIVE SUMMARY

A: The need to understand household livelihood strategies

This paper examines how rural Caprivians secure their livelihoods, in order to understand how wildlife and other community based natural resource management (CBNRM) initiatives can "fit in" to current activities and the rural economy. The livelihoods and priorities of different types of households are assessed, and the many positive and negative impacts of CBNRM initiatives identified. The aim is to understand wildlife and CBNRM from householders' perspectives, and recommend how conservancies, and other natural resource management initiatives can be implemented in ways that maximise the positive impacts to rural livelihoods and minimise the negative impacts.

The paper first considers the wide range of resource uses and livelihood strategies employed by rural households: crop production, livestock, wage employment and cash remittances, harvesting of trees, plants and river resources, and wildlife/tourism enterprises. It then assesses how different households combine these various activities, and identifies the main factors affecting their options and choices. In the light of this overview of livelihood strategies, the significance of CBNRM activities to rural households is assessed and implications for conservancies and other natural resource management initiatives are identified.

B: Common needs, a range of livelihood strategies

The needs of rural households can be divided into physical needs -- food, energy, water, shelter -- and other livelihood needs -- cash, goods for barter/exchange, reserves, drought-coping strategies, production inputs, cultural assets (related to community membership) and community strength. The contribution of each economic activity to these needs is reviewed -- and quantified where possible -- in Section 2, and summarised here in Table I. Some key points that emerge include:

- *livestock* stand out for their contribution to virtually all household needs. Their direct production of food and cash is usually small, but their value for ploughing, transport, and as reserves and cultural assets is considerable. Those without livestock have lower crop production, greater dependence on off-farm cash income, and generally greater economic insecurity. However, data on livestock distribution is poor.

- *crop production,* undertaken by virtually all households, provides food but rarely cash. Variability in harvests between households and between years is striking, but much of the data indicates that *most* households in *most* years *cannot* produce the cereals they need for a year. i.e. their food deficit must be met through other means.

- *wages and pensions* provide regular cash income and relative economic security for an estimated 15-20% of rural households, enabling them to buy food and other essentials, invest in additional labour/oxen for crop production, build up reserves, cope with drought, and support others. Most regular jobs are in government and NGOs, with tourism the main expanding source of private sector employment in rural areas.

Table I: Contribution of various economic activities to rural household needs

BASIC NEEDS	CROPS	LIVESTOCK	WAGES, PENSIONS	TREES				Fish	Wildlife
				Wood	Veld products	Carving, weaving	Thatching grass		
Physical Needs									
Food	***	*	**		**			**	*
Water, energy, shelter		*		***			**		
Livelihood Needs									
Cash	*	*	***		*	**	**	*	***
Goods for barter, exchange	*	*		*	**		*	*	
Reserves & investment		***	**			*	*		
Drought buffer		**	***		**	**	*	**	**
Inputs to production		***	*						
Cultural & intangible assets	*	***							*
Community management capacity									**

*** indicates that the activities makes a major contribution to a need, and * minor (often indirect) contribution.

- *plant and river resources* are used for home consumption, local barter, and to earn cash through sale, particularly by those without regular cash income. Virtually all use timber, fuelwood and thatching grass, but fishing, veld food collection, basket making, craft production, and selling thatching grass are options that are exploited opportunistically by different households, according to resource availability (season and location), markets, skill, gender, time, and need. Constraints include high time input, limited or inaccessible markets, diminished access to resources. Other cash-earning options include selling beer, working for neighbours, and providing tourism services.

- *wildlife* and tourism provide three different types of cash income:
  - regular wages for those with jobs,
  - additional income opportunities from selling grass, food, wood, crafts etc,
  - collective income from fees, levies and profits for conservancies and other community institutions.

They also provide a buffer against drought, and non-cash benefits such as community strengthening and increased skills. However, costs include time, risk of wildlife damage, and the risk of increased conflict within or between communities.

When talking of "households" as the producing and decision-making unit, it is also essential to bear in mind that households comprise men, women, young, old ... various members with different needs, production responsibilities, cultural roles and shares of benefits.

C: Combining activities to meet needs -- determining factors

Most households rely on a *combination* of activities to meet their needs, but the combination varies enormously according to their opportunities, constraints, and preferences. To meet their food needs (estimated at 1000+kg of cereal per household per year) and cash needs (a bare minimum of a few hundred for essentials and up to N$1500 for a food deficit), the main options in declining order of preference are:

Meet food needs through:
- crop production
- buying food
- barter & exchange
- gather veld foods
- go without.

Meet cash needs through:
- regular wage and/or pension
- sale of gathered/processed natural resources
- reduce cash needs through barter
- sell off reserves
- go without.

The *key factors* determining whether a household can adopt the preferred strategies, rather than resort to those low on the lists, are:

1. Socio economic status

which depends mainly on whether households have:

- *livestock*

and

- *regular off-farm income (wage, pension).*

Those that have sufficient livestock for ploughing and providing emergency reserves, or who have stable off-farm income, are relatively secure economically. They will probably

still farm their fields and collect timber and some other resources, and may sell other goods opportunistically, but are not reliant on the time-consuming low return activities. Those with no cattle or regular income are least likely to cover their food needs, or to have reserves, so are highly dependent on subsistence and commercial use of other resources, and on support networks. Women-headed households and young families are least likely to have cattle and jobs, and also lack labour, so often fall into this vulnerable, insecure, category.

2. *Geography*
Access to natural resources such as fertile soil, woodland, and water varies across Caprivi, as do cultural traditions. Differences are most marked between east and west Caprivi (with livestock much less common and veld food collection more common in the west) and between riverine and inland communities (with floodplain cultivation, and harvesting of riverine resources boosting livelihoods in the former).

3. *Other factors* affecting households' choices of livelihood strategies include time constraints and skills, household size and composition, rainfall/drought, access to family support, social and cultural conditions, and external incentives and economic conditions. For example, women may well increase thatching grass collection if there is drought (higher cash needs), improvement in markets, transport or price, external facilitation, less time needed for other activities, decreased profitability/availability of other cash opportunities available to women.

The most vulnerable households would be those with few adult members (lack of labour), no men (unlikely to have cattle, lack labour), few skills for employment, little support from a family network or outside agency, and located away from the rivers and floodplains (more abundant and fertile natural resources) and main road (for transport and marketing).

D: Significance of wildlife and CBNRM initiatives

Support to livelihoods:

- *Cash boost*

Wildlife-based developments can significantly boost cash incomes in prime areas, as illustrated in Table II. Once community plans are implemented in prime wildlife areas, collective income could total a few hundred thousand dollars per year, amounting to a few hundred dollars per household per year, if used for household dividends. Such a sum would not change livelihood strategies, but could make a significant dent in cash needs, covering, for example, school fees and a couple of bags of grain. A small proportion of households (1-5% in prime areas), could gain permanent jobs from wildlife enterprises lifting them to economically secure. As many again could increase their occasional earnings (from sales of products/labour to the tourism sector) by a tens or hundreds of dollars a year.

Table II: Likely household income from planned wildlife enterprises in 5 Caprivian communities

	Total local income		% of residents earning	average amount per earner (N$/yr)
	per community (N$/yr)	% of total		
Collective income	97,000	58%	(up to) 100%	240
Regular wages	60,000	36%	4%	2,714
Sales earnings	10,000	6%	5%	520
Total	166,000	100%		

Assuming implementation of current community plans for wildlife-related enterprises in Bagani, Choi, Lianshulu/Sauzuo, Malengalenga area, and Salambala. Income from other CBNRM activities is not estimated. Averages hide wide variation in results between communities. See Section 2.7 and Appendix E for full details.

Plant-based CBNRM activities are particularly important for those who rely on occasional sales for their cash. Development of new products, processing techniques and markets, can help households to earn an extra few hundred dollars a year. Such amounts are small but could significantly reduce insecurity or the impact of drought for some in this vulnerable group.

The value of this cash boost cannot be measured only in dollars, but in the support given to other livelihood strategies such as drought proofing (because CBNRM incomes are less vulnerable to drought than agriculture), food security (using cash for food), building up reserves and production inputs (if cash is spent on livestock or labour), and supporting family and neighbours.

- *Improved resource management and use.*

For those with few cash-earning opportunities who are most dependent on the natural resource base, the major contribution of CBNRM initiatives is likely to be from improved management and utilisation of resources, or preventing further degradation or loss of access. Measures that secure a sustainable supply of grass, veld foods, raw materials for craft production, timber, or fish, will alleviate increasing pressures on poor households.

- *Community capacity and empowerment.*

Improved community management of resources arising from CBNRM can have intangible benefits -- sense of pride, greater cohesion, satisfaction from participation -- or quite tangible impacts -- new skills, rangeland management, greater capacity to deal with new problems and opportunities. Other intangible benefits can include increased sense of security from diversification of economic activities, and aesthetic or cultural values of natural resources.

Conflicts with current livelihood strategies:

- *wildlife damage to crops and livestock.*

Once wildlife management and use by conservancies increases, wildlife damage can be expected to increase. Although "average" cash earnings per household can significantly outweigh losses, some households may in fact lose more than they gain. Losses are not just cash losses, but undermine household strategies of food security (for crops) and

building up of reserves, production inputs and intangible assets (livestock), so may have greater significance to households than market prices indicate.

- *competing land uses.*

Development of wildlife and tourism can conflict with reliance on wild natural resources if it reduces access to key areas needed for resource harvesting (eg through declaration of core wildlife/tourism areas). This can undermine subsistence production and cash earnings through sales. There may also be competition between wildlife and livestock for water and grazing. However, further assessment is needed of the scale of conflict, the extent to which it can be mitigated with additional water points or other measures, and the significance of the impact, particularly to larger -- and probably more vocal -- livestock owners.

- *time and risk*

Time needed to develop wildlife and tourism enterprises competes with other household activities, while the financial risk involved counters the normal risk-averse survival strategies.

- *conflicts*

Intra- and inter-community conflict is likely to increase (over distribution of benefits and control of profitable resources) undermining undermine households' security in a wide range of ways.

E: Implications for maximising the benefits and minimising the costs of CBNRM to rural livelihoods.

- it is as important to support community management of *trees, plants, and veld and river products,* as to develop wildlife use. This is needed to slow or reverse pressures from increasing scarcity, and to secure sustainable supplies for the majority of households with no alternative. Expanding market opportunities for natural products (once management is sustainable) offers small but very significant cash benefits to poor households.

- it is as important to *reduce the costs of wildlife damage* to crops and livestock as to increase the cash benefits from wildlife and tourism enterprises.

- *competition between livestock and wildlife* for water and grazing needs to be addressed as wildlife use develops, particularly as success in boosting household income from wildlife is likely to lead to increased investment in livestock.

- *exclusive* wildlife/tourism areas can have much higher costs to households if *all* activities, including *access for resource harvesting,* are banned from the area. Access to alternatives, and trade-offs between benefits need to be considered carefully.

- impacts of various CBNRM initiatives will *vary markedly between people.* Those most skilled, entrepreneurial and employable will gain most in economic opportunities, and others gain socially from new opportunities for community involvement and status. Large livestock owners, and poor households dependent on wild resources, may suffer competition for access to resources. Poor households and

women are more likely to benefit if tourism is developed with attention to maximising local economic links (sales opportunities) and training, if plant-based CBNRM initiatives develop, community collective income is equally shared, wildlife damage to crops is minimised, and there is wide participation in decisions concerning changes in resource/land uses.

ie: it is possible for CBNRM to benefit a few at the expense of the majority, and equally it is possible for benefits to be diverse and reach all socio-economic sections (though not equally), and the outcome does not only depend on distribution of collective income but on the type and structure of activities pursued.

- the *time and risk* involved in developing CBNRM (particularly wildlife/tourism) may be a growing obstacle to realising the potential in the area, or at least to getting wide community participation. Measures that minimise unpaid time and risk, without reducing community ownership of initiatives, are important.

- Cash needs and scarcity of time *vary by seasons,* and are more acute in drought years. Therefore CBNRM initiatives that concentrate time inputs outside of the planting and harvesting seasons, and generate most benefits around Christmas, pre-harvest, and in drought years, will have more positive net impacts.

- as CBNRM generates more benefits from natural resource use, conflicts within and between communities may grow, hence making *conflict-resolution* skills more important.

- in assessing costs and benefits to rural households of wildlife, livestock, and other activities, the *intangible benefits* are difficult to quantify and can be difficult for outsiders to perceive, but are likely to be significant to residents. Decision-making processes need to provide scope for such perceived values to be taken into account.

- the relevance of CBNRM activities in Caprivi depends on the pace of *other developments* in Caprivi, including agricultural intensification and marketing, infrastructure development, and the rate of tourism development.

- livelihood strategies are combined and inter-woven by households. Therefore CBNRM initiatives cannot be assessed only in terms of their *direct* outputs or costs, but also by looking at their *indirect impacts on other household strategies.*

- given the high variability in needs and options between places and years, these conclusions provide no more than issues to consider when developing *site-specific solutions* based on more detailed understanding of local livelihood strategies and preferences.

Section 1. Livelihoods and Conservancies: An Introduction

> Livelihood: *"means of living; means of maintaining life; support of life; maintenance, subsistence, road, way"* (Universal Unabridged Dictionary)

Rural people do not live according to meetings, workplans, or agreements on flip-charts. Their priorities are to build secure livelihoods, by investing their time and the resources around them in whichever ways are most likely to meet household needs and preferences. The way they decide which activities to combine are complex, vary enormously across households, and change over time. But the decisions need to be understood if new initiatives are to be made as relevant as possible to rural people. Community investments in new initiatives, such as conservancy development, are unlikely if people don't perceive how and where it complements their livelihoods. Slight changes in implementation can sometimes boost the positive impact on livelihoods, and minimise the conflicts with other activities. Those designing or supporting new initiatives, therefore need to understand household perspectives and adapt to them.

The importance of understanding the household economy when supporting community-based natural resource management (CBNRM) activities can be illustrated by describing what could happen otherwise.

- A community wildlife project might focus on creating new economic opportunities through wildlife and, knowing the inevitable difficulties of compensation schemes, avoid the topic of wildlife damage altogether, as an inevitable problem, impossible to solve. Better understanding could show the significance of wildlife damage compared to wildlife benefits, and highlight the importance of reducing -- or at least avoiding an increase in -- wildlife damage to farmers.
- Planners might dismiss as "minor" the costs of designating an area as exclusively for wildlife or tourism, with no access for local people to harvest natural resources, as minor. Fuelwood, timber and veld foods are small proportions of the household economy and anyway are available elsewhere. However, better understanding could show that access to veld foods is critical for the poorest households both for food and entering into trade, that particular veld foods are found in particular areas and not just "anywhere", that any addition to the distance and hence time involved in collecting veld foods, fuelwood or timber could have a major impact on welfare.
- Planners might compare household income from a campsite or craft centre to average household income as estimated by the Central Statistics Office for Caprivi -- earnings of a few hundred dollars, or even less than a hundred, would appear insignificant compared to N$5479 per household per year. But that CSO average hides the much lower incomes common in rural areas, the very low incomes of the poorest, and the acute need for extra cash, which currently leads many to slaughter and sell a goat or cow to scrape together enough for school fees and other start-of-year costs -- to which well-timed campsite or craft earnings could make a big difference.

This paper uses the considerable knowledge of the rural household economy gathered by different institutions to build a picture of the various livelihood strategies used by rural households in Caprivi, and to define how different households combine strategies together. This assessment of the rural household economy is then used to address three questions:

i How can wildlife and tourism enterprises, and improved use of other wild resources enhance rural livelihoods in Caprivi?

ii To what extent are they complementary or in conflict with existing or potential livelihood strategies?

iii How can complementarities be maximised and conflicts minimised in the design and implementation of CBNRM initiatives, to enhance the appeal and significance to rural households?

Section 2 begins by listing the needs that we assume rural households are trying to meet. The main livelihood activities -- subsistence cropping, livestock tending, using or selling natural resources (NR), formal employment and remittances -- are then described, along with the emerging activity of wildlife/tourism. Each livelihood component is assessed in terms of who does it, which needs are met, advantages and disadvantages, inputs required, trends, and constraints. Estimates of cash returns to these activities in monetary terms are presented where possible, but intangible benefits and costs are also emphasised (such as: the need for "currencies" of local exchange, barter and reciprocation; the benefits of agriculture in maintaining access to communal land and cultural activities; and fulfilment of aspirations to build up skills, status, or community cohesion). These complexities and intangibles of rural livelihoods are difficult to simplify into generalities or "facts", but it would be a mistake to ignore them, so anecdotal evidence is used (and in all the simplifications that are presented, the more complex reality needs to be borne in mind).

Some activities -- such as crop production, fuelwood gathering, and cash generation -- are undertaken by virtually all rural households, and can be termed "core" activities. Others are undertaken by some households, from necessity, opportunity, or preference, and can be termed "additional" activities. What determines which activities households pursue, to what extent, and in what combination? Section 3 attempts to answer these questions by comparing the different strategies for meeting basic needs, and outlining the *key factors affecting decisions* on how to invest household time and resources. It highlights the great variation between households, in terms of what they do and their success in meeting basic needs.

Having described activities and how rural people combine them, Section 4 draws conclusions on the significance of community-based natural resource management (CBNRM) initiatives for rural livelihoods. Discussion to address question (i) above, is at the level of "nuts and bolts" -- how significant could income from employment in a lodge be, for example, in relation to other income sources? For how many people? Which households benefit from improved veld food management? It not only assesses the direct benefits and costs of CBNRM initiatives, but explores the various ways in which they *enhance or undermine other household activities* and strategies. It highlights key areas where the conflict or complementarity is marked or very variable. With this type of

analysis and discussion the answer to question (ii) above is explored.

The final section (5) draws implications for the CBNRM programme and other natural resource managers, looking at how conservancies and other natural resource initiatives can be designed to best fit with, and enhance, livelihoods. It assesses the conditions under which people are most likely to invest in CBNRM. More importantly, several problems and key issues are highlighted which need to be addressed to maximise complementarities and minimise conflicts between the new initiatives and existing livelihood strategies: time, risk, wildlife damage, competition for resources, distribution of benefits etc. Many of these key issues are already being addressed in some way within the CBNRM programme in Caprivi, but the conclusion tries to highlight those that will grow in importance in the next few years as conservancies develop, and in addition what implications could be drawn for other institutions or programmes managing resources and land in the region.

This report fundamentally serves two purposes which may be relevant to different readers. Firstly it provides an overview of household needs and livelihood strategies, and their significance to different households. This may be of interest to readers working in a range of rural development sectors, and will be found mainly in Sections 2 and 3. Secondly, it uses this overall picture of household economics to assess the significance of wildlife and natural resource initiatives, and identify implications for the CBNRM programme. Those involved in CBNRM initiatives may not need all the detail in sections 2 and 3, and will find Sections 4 and 5 most relevant.

In assessing how different households piece their livelihoods together, the difference between East and West Caprivi is evident in practice, but not always easy to establish in quantitative terms from available information. Given that averages and generalisations are mainly representative of East Caprivi, differences in West Caprivi are noted wherever possible. The far west of Caprivi, on the west bank of the Okavango River, is part of the Region and therefore included in Regional data, but is not otherwise focused on in this report due to lack of data.

In drawing implications from the analysis of livelihood strategies, the focus in on a wide range of activities relating to community-based management of natural resources. CBNRM is interpreted as covering new activities based on wildlife and tourism, and improvements in long-standing activities such as use of wild plants, trees, and river resources. There can be substantial differences between these two types of activities in terms of their impact, and these are also noted where relevant.

Section 2. Household Needs and Livelihood Strategies

2.1 Basic Household Needs

A review of the basic needs that rural households are trying to meet is essential, before assessing the contribution made by various resources and activities available to households. These can be grouped into physical needs, basic to survival, and livelihood needs, which can be regarded as essential for meeting basic family needs in the Caprivi context.

Physical needs

1. staple food

A household of 6 needs approximately 1000-1400 kg of grain per year[1], as well as protein (meat, fish, legumes), vitamins, minerals and a variety of foods (RDSP, 1997).

2. water

Water for household use (drinking, cooking, washing) is generally collected from boreholes or collected from rivers.

3. energy

The main household energy need is for cooking, which is met by fuelwood in rural homes. When needed, light and heat can also be met by fires (supplemented by candles or paraffin). Almost all households cook meals and light their homes without electricity or gas (94% and 96%, respectively (CSO 1996[a])).

4. shelter

Timber, mud and grass are needed for constructing homes, and for maintaining and repairing existing ones.

Livelihood needs

5. cash

Cash is needed for buying necessities -- including food if not enough can be grown, reared, or collected at home -- for paying school and clinic fees, buying clothes, and paying for small daily items such as soap, oil, and luxuries ranging from tobacco and tombo to radios and bicycles.

6. goods for barter and reciprocal exchange

For those with little cash, barter -- or swapping goods with a neighbour -- is an alternative means of acquiring goods that are needed. However, the trade is not always so explicit as "I'll give you a cup of mangetti nuts for a cup of maize." Sometimes goods are "given" as part of a network of reciprocal obligations in which those with a current surplus share with those in need, in recognition that the obligation works the other way round at other times.

7. inputs to production

Meeting the above needs through agriculture, use of natural resources, employment and

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[1] According to Ministry of Agriculture, Water and Rural Development (RDSP, 1997) estimated average staple grain consumption of 1200kg is drawn from several sources: shelled maize-400kg; green maize on the cob-150kg; threshed millet (as beer)-150kg; and threshed sorghum-500kg. For the purpose of this paper, a range consisting of the above estimate +/- 200 was used.

sales, requires inputs including time and skills (labour), means of tillage (draft power, hoe tilling, etc.) and transport, access to pasture and cropping land, and access and permission to consume natural resources. The latter is also termed "right to avail" of community resources[2], and depends on maintaining a presence and recognised membership of the community (related to need 11 below).

8. buffer against drought
Years of low rainfall when food needs cannot be met through agriculture are inevitable in Caprivi. Households need strategies for surviving these lean years by tapping other resources, though such strategies vary enormously.

9. savings/reserves
Whether it is to secure against future drought, or to build up wealth, most households need some way of saving assets for the future.

10. effective local governance and resource management
Community members need the community itself, and other tiers of governance, to have cohesion and institutional capacity. This management capacity is needed to provide the (formal or informal) framework in which individuals can operate. It is particularly important in relation to natural resource management in places like Caprivi, where people rely on resources that are common property and must be collectively managed, and where there are often multiple resources and tenure rights overlapping in any given area.

11. cultural and community assets
To participate in community activities and share the collective identity, usually some kind of asset (often a combination of material assets plus skills/beliefs/habits) is required. Cattle, for example, often serve this purpose particularly in East Caprivi. Defining ones membership of the community is important in many personal and spiritual ways, and is also important economically, to maintain right to avail of natural resources.

The extent of these needs varies between households, according to their preferences, expectations, family size and circumstances. Similarly, the strategies they use to meet needs varies. The following sections explore the various strategies through which these needs are met.

A note on data used and presented in this paper
Data incorporated into this paper are often from scattered, uncollated sources, sometimes based on anecdotal information, and rarely subjected to statistical validation. Data sets are often based on small samples. Intra-regional variation is great. Hence, different data sources often conflict on the same parameter (issue), such as average household size. These facts should be borne in mind, although attempts are made throughout the paper to document a cross-section of data sets, thus revealing some of the conflicts. It cannot be emphasised enough that several estimates and conclusions drawn in the paper depend on which data set(s) are used for making assumptions and calculations. ie. outcomes and conclusions can vary dramatically according to which data set is used to develop estimations!

[2] This concept is well explained in Low (1986) who describes it as providing each group member in a community with the right of accommodation, right of tillage, right of pasture, right of water, right to hunt, right of way, right to delve, and the right to collect (wild foods, wood, etc.).

2.2 Population data and key household characteristics

Population data for the whole of Caprivi Region is presented in Table 1.

Table 1: Summary population data for Caprivi Region, 1993/4

approximate population	91,000 persons
total number of households	16,884
average household size	5.4 persons

Note: only private households are covered. Institutions are excluded.
Source: Central Statistics Office (CSO, 1996[a])

Regional and rural/urban distribution

The population is unequally spread across Caprivi, with concentrations along the rivers, road, in Katima Mulilo, and in the eastern floodplains, and very low population density in West Caprivi. This can be clearly seen in the maps in Figures 1 and 2, showing results of a 1996 aerial census. Seven zones are also identified on the map, to categorise the spread of population into areas of different ecology and resource access (and to some extent different cultural/tribal identity, though there are no clear borders to these). The number of households in each of these zones is presented in Table 2.

Table 2: Household numbers in different zones of Caprivi Region, 1996

Zone[1]	Description	No. of households
1	Far West Caprivi (West of the Okavango River)	4163
2	West Caprivi	1000[2]
3	East bank of the Kwando River (north of Mudumo National Park)	1240
4	along the tar highway, East Caprivi	1907
5	north of Mamili National Park (& south of Mudumo), as far east as Malengalenga	1004
6	along the Linyanti River/floodplains, and Linyanti road (from Malengalenga to Lake Liambezi)	1763
7	east of Lake Liambezi & eastern floodplains	5114
8	Katima Mulilo	4202

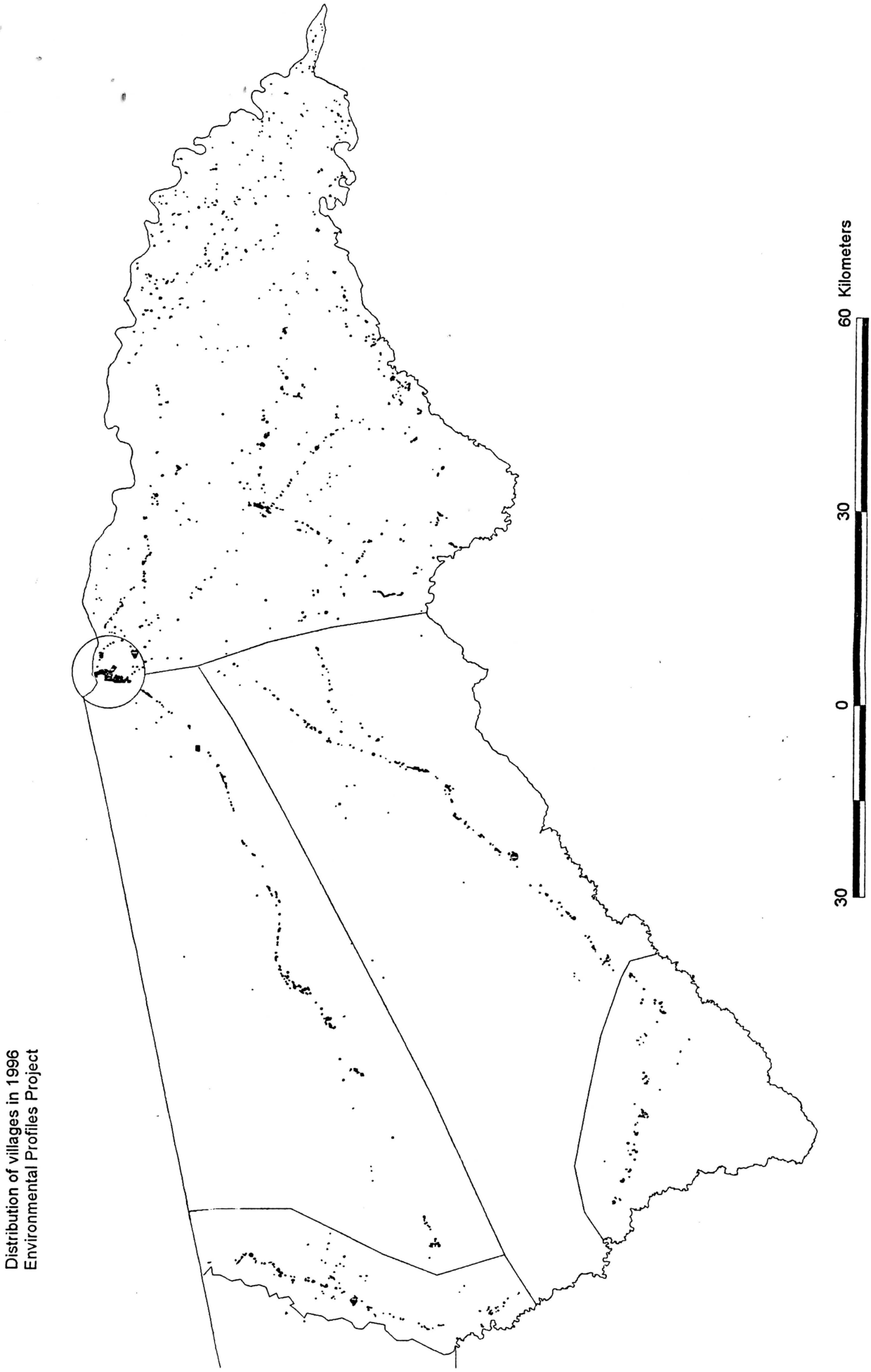
1 as marked on the maps in Figures 1 and 2.

2 approximately, based on 5800 people.

Source: aerial photography, 1996, Environmental Profiles Project

Figure 1: Map of Far West and West Caprivi showing household settlements

Figure 2: Map of East Caprivi showing household settlements



This gives a total of over 20,000 households, of which one fifth are in Katima, and around three quarters are in East Caprivi, as shown in Table 3, which summarises the data into the three main areas of Far West, West, and East Caprivi, and separates out the urban population.

Table 3: Population distribution: Far West, West, and East Caprivi, 1996

	Far West Caprivi	West Caprivi	Rural East Caprivi	Katima Mulilo	Total
Households:					
- number	4163	1,000	11,025	4,202	20,390
- percentage of total in Caprivi	20%	5%	54%	21%	100%

Source: Environmental Profiles Project 1996 Aerial Census.

Data for these four areas can also be extracted from the 1991 Census. Given different methodologies, the 1991 and 1996 data may not be comparable, but they do seem to indicate the fastest increase in household numbers in Far West Caprivi and Katima Mulilo, with little change in the West and rural East Caprivi (CSO Census data analysed by Environmental Profiles Project).

Rural and farming households

The vast majority of Caprivi households live in rural areas, and engage in farming. However, the data sources are contradictory on exact percentages and numbers[3].

Household Size

Rural households are likely to be slightly larger than CSO's regional average of 5.4, presented above, (CSO, 1996[a]) and in this paper an average of 6 is assumed[4].

Annual Income estimates:

CSO's National Household Income and Expenditure Survey (CSO 1996a) estimates average household income in Caprivi Region to be N$5,479 per year (of which a large portion is non-cash benefits, including in-kind goods/services valued usually valued using an approximation of market prices, where available). The 1996 Human Development Report for Namibia (UNDP, 1996) estimates per capita income in Caprivi to be N$1,598.

However, aggregate statistics for the region may not accurately represent rural parts of

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[3] According to the aerial survey, approximately 16,000 households, or 80% of the population, are outside Katima, so could be counted as "rural." The National Income and Expenditure Survey found an even higher percentage had access to fields, so could be counted as farming households (CSO 1996a). However, the 1994/5 Agricultural Census which aimed to cover all farm holdings, had a total sample of just under 10,000 "farming households" in Caprivi. It is not clear to what extent the differences are due to unreliable data, different definitions of household, rural and farming, different geographical coverage, or genuinely indicate a large number of non-farming households in the larger villages and along the highway.

[4] According to the Namibia Agricultural Census (CSO 1996b) Caprivi farming households are comprised as follows: 5% single person; 42% have 2-5 members; 33% have 6-9; 21% have over 10. Other data sources, such as the 1991 Census, indicate slightly smaller household size.

Caprivi because they are averages which include areas such as Katima Mulilo, where incomes are likely to be higher. Furthermore, they do not reflect the wide variability between rural households, and are greatly affected by whether and how unmarketed natural resources are valued.

Economic Activities

Few if any households can meet all their needs through one activity. The key characteristic of Caprivi livelihood strategies is that a *combination* of activities and resources are used. People seek to balance the time, resources and risk allocated to various activities, so that, in total, the wide range of needs cited above are met. Obviously they will prioritise essential needs hence some activities (such as fuelwood collection) can be regarded as core, while others are done if and when they can. The strategies employed adapt constantly to changing situations, and hence are *dynamic*. Another essential point is that there is enormous *variation* between households, areas, and years, in the type and balance of activities undertaken.

The main strategies used include subsistence agriculture (crops, livestock), wage employment, cash remittances, and "wild" natural resources, including trees, grasses, fish, nuts, fruits, and medicinal plants. Wildlife and tourism enterprises are currently small but growing additional elements. *The most ubiquitous activity is agriculture* -- virtually all households grow crops, and the majority in East Caprivi own or have access to livestock and crop fields (CSO 1996a). However, it is noticeable from the CSO Agricultural Census that almost all respondents (farm holders) identify agriculture as their main *activity,* but just over half rely on it as their main source of *income* (CSO 1996b) This indicates the inadequacy of agriculture as a source of cash income and widespread dependence on off-farm income. But it also shows that even those who have other main sources of income, still regard agriculture as a core activity.

Inequality

There are great differences between households in their levels of production, consumption, and economic security, which are usually hidden by "averages." For example, analysis of Caprivi data from the National Household Income and Expenditure Survey (CSO 1996a) by SIAPAC reveals the extremes behind the average household consumption of N$5,479 per year: the poorest 25% consume around N$1,500 (or less than a third of the average) per year, and the top 25% consume over N$13,000 per year (or two and a half times the Regional average and eight and a half times the average for the poorest 25%) (SIAPAC 1997). Table 4 shows consumption in dollars and as a percentage of total consumption, for each quartile.

Table 4: Annual household private consumption by quartile

Quartile group	Average yearly household consumption	Total consumption by quartile
Q 1 (poorest 25% of households)	1528	7%
Q 2	2632	12%
Q 3	4628	21%

Q4	13259	60%
Regional average	5479	100%

Source: SIAPAC, 1997

The activities and opportunities of each group also vary markedly. The majority (60%) of households in the bottom 50% rely on subsistence agriculture as their main source of income, whereas the majority of the top 50% (60% of Q3 and 80% of Q4) have cash -- from wages, business, pensions, or remittances -- as their main source of income (SIAPAC, 1997).

Other key characteristics to note include:

- heavy but variable dependence on natural resource. Dependence on rivers and floodplains is evident from the maps above. In addition to agriculture, many households rely on wild natural resources as well, particularly West Caprivi residents, and rural female-headed households and poor households, with severely limited options for obtaining food and basic necessities;

- large differences between different parts of the region, particulary between East and West Caprivi. Notably, poverty in West Caprivi is generally worse, income-earning opportunities more scarce, livestock are less of a mainstay, and veld foods are of relative greater importance than elsewhere. Intra-regional variation among rural communities is great because environmental factors determine the availability of agricultural resources (water, pasture, cropping areas) and natural resources (trees, fish, etc.) and hence their use and value to households;

- the rural economy is changing as a result of, among other things, easier and more consistent access to livestock markets, agricultural loans, the tar highway, and development of wildlife and NR-based enterprises.

The remainder of this section describes these various activities adopted by rural households. For each, it assesses which needs it can meet, to what extent, and for whom, noting particular advantages or disadvantages, inputs and constraints (comparisons between strategies are largely deferred until the next section). Quantifying the contribution made to livelihoods by any resource or activity is difficult. Even where cash is the main benefit (so can in theory be quantified in dollars), there is relatively little information about the size and distribution of earnings. Benefits of agriculture and natural resources that do not enter the market -- such as supporting subsistence consumption, drought-proofing, providing production inputs -- are even more difficult to assess and quantify. Conventional macroeconomic studies and surveys generally overlook their significance because they do not contribute significantly to gross domestic product, but in the review that follows, their significance in supporting livelihoods is evident, if not easily measured.

2.3 Crop Production

2.3.1 Introduction

Maize, mahangu (millet), and sorghum are the main grains cultivated, with vegetables and legumes as an addition. As maize requires more water it is more predominant in the wetter eastern areas, particularly planted on the floodplains as water recedes, while sorghum and millet are used more in the drier west. As maize can produce higher yields while sorghum and millet are more drought resistant, some farmers plant both to spread risk. Crop production systems in Caprivi can be generally characterized as low input/low output systems that do not incorporate inorganic or organic fertilizers or pesticides and infrequently use mechanized implements.

Summary data on subsistence cropping in Caprivi is presented in Table 5 below, followed by a general list of benefits realized through this livelihood option.

Table 5: Field size data

	Number	Total area (ha)
Fields cleared for crops	10,331	18,480
Fields planted	7,914	13,004
Average farm size	Roughly one third are each:	- under 1 ha - 1-2 ha - over 2 ha
No. of farming households	under 10,000	

Source: CSO 1996b.

Overall, according to this data, 95% of farms are just one field and are under 5ha, with average field size of under 2ha. However, other sources indicate larger field sizes: eg Ministry of Agriculture planning parameters (RDSP, 1997) assume that 10% of Caprivi farming households have a cropping area of less that 5ha, 60% have 5-10ha, and 30% have over 11 ha. Although this is *cleared* rather than *planted* area, it still indicates a significant difference. Aerial surveys show cleared areas of around 8-9 ha per household along the Okavango, Kwando, and golden highway, but reaching 25 ha per household in the Lake Liambezi area. However, these figures include land cleared decades ago and no longer used, in addition to recently cleared unplanted land, making comparability difficult (J. Mendelsohn, pers. comm).

2.3.2 Benefits

Crop production provides:

1. subsistence food products

Staple grains and vegetables are produced.

2. limited cash incomes

Surplus grains are sold (by a small proportion of farmers) or used to produce products (tombo-- beer brewed from sorghum[5], for example) for sale or in-kind trade. Only 4%

[5] Beer brewing adds value to staple grains and creates a product that can be sold, exchanged, or used to pay for services (building pole collection, for example). Little information was identified specific to the value and significance of beer brewing in Caprivi. However, a farm management survey for Okavango indicates that for households without livestock (and hence a more limited

of farming households identified cash cropping as the "main source of income" (CSO, 1996[b]). However, when oxen, land, labour and good conditions are available, significant income from sale of surplus grain can be earned by a fair proportion of farmers[6]. Income from beer brewing is likely to be significant, particularly to households with few other cash sources.

3. barter and reciprocal exchange

Grain or vegetables can be exchanged with family members or neighbours for other goods, such as veld foods, milk, different vegetables or fruits. Grain and particularly tombo (see footnote) are exchanged for use of livestock for ploughing, and to feed "work groups".

4. 'right to avail'

Retaining the right to avail (right to make use of natural resources available to the community) requires maintaining some presence on rural communal lands. This is commonly accomplished through cropping and livestock enterprises. Hence, even when a household head leaves communal land for employment purposes, it is of value for some members to remain on homelands and maintain the right to avail. *Consequently, small-scale holdings are valued for maintaining access to communal lands and the resources they contain.*

5. savings

Staple grains can be stored (with risk of spoilage) for future consumption or sale.

2.3.3 Inputs

The main inputs to crop production are labour (particularly women's labour) and draught power for ploughing. These determine the area that can be planted and tended. Use of mechanised and commercial inputs (fertilisers, irrigation, tractors) is low, not only because of limited availability and affordability, but because farmers adopt a low-risk approach ("low-input low-output"). A farmer investing in a costly practice to obtain higher yields loses that investment if adequate rain does not fall or if markets for surplus grains can not be accessed. Instead, most farmers minimize risk by incurring minimal capital and operational costs and emphasizing drought tolerance.

Labour

"Low-input" agriculture does not mean that the labour burden is light. Estimates of hours spent per hectare per season vary from 150-200 in Kavango (Farm Management Survey, Ministry of Agriculture, 1996a) to over 400 across northern communal regions (Northern

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production capability) and with a strong need for non-farm income, beer-brewing is the *major* cash source -- ranked above wages, remittances and pensions -- accounting for 24% of total household income (Ministry of Agriculture, 1996a). Another survey in Kavango reported that in approximately 20% of households, women were brewing and selling "seven days" beer, earnings monthly incomes of N$30-90, making it "*one of the most lucrative informal income generating activities found in the region*" (Naeraa et al, 1993). This is an important cash-earning and perhaps coping mechanism in need of further study.

[6] For example, in a 1995 survey in Choi, all respondents who grew crops had sold some that year, and one had sold 25 bags of maize and millet, earning around N$1,900 (in addition to the 5 bags given to relatives and 11 kept by the family) (Mosimane, 1996b).

Regions Development Programme). Labour demands vary seasonally, so can be intense at peak times. In Kavango, households were spending up to 40 "sessions" (one person for half a day) per 2-week period in the fields, in peak times of February/March and May/June. It was also noticeable that communities which enjoyed better rain invested considerably more time in the fields over the season, and planted larger areas. Given highly varied time inputs, yields, and prices, returns to labour cannot be estimated but clearly vary enormously[7].

2.3.4 Constraints

Low and variable yields

The main disadvantage of crop production is the high vulnerability to drought. Table 6 shows how yields over 5 years varied enormously according to one source. Other factors cause generally low yields including nutrient-poor sandy soils, low water retention, and high leaching rates, and damage from pests and wildlife. As a result, even 'normal' climatic variation can result in complete crop failure or a minimal harvest, leaving a household in need of cash to buy food (floodplain fields may be an exception).

Table 6: Range of reported rainfed crop yields -- Caprivi region 1990-95 (kg/ha)

mahangu	maize	sorghum
70-445	30-700	70-445

source: Namibia Early Warning and Food Information System, Crop & Food Security Bulletin 21 February, 1996

Limited Inputs

Given the absence of mechanized implements, the main constraints on expanded production are limited capacity to prepare land for planting (availability of traction) and, especially in floodplain areas, weeding capacity (women's labour time). It is interesting to note then that, although cash investment in mechanisation or irrigation is low, many of those with cash incomes pay neighbours to work their fields (van Rhyn 1995a, Nabane 1995). i.e. they are investing their wages in crop production. This indicates the importance of maintaining staple crop production, and the benefits of a larger field size -- once household needs are met, every addition can be sold for cash. Household that do not have livestock for ploughing and field preparation are heavily constrained in the area they can plant. Some borrow livestock, but may have to wait until the owner has ploughed his own field, missing the critical first rains. The substantial impact of cattle on production potential is discussed in section 2.4 on livestock.

2.3.5 Significance of crop production

Crops are consistently ranked first in the importance of incoming resources or activities, in participatory discussions at household and community level (eg in Choi (Mosimane 1996b), Bagani (van Rhyn 1995a), and Dwarspan (van Rhyn 1995b)) although this varies

[7] For example, the range is N$1.3 to N$6.6 per hour, using estimates of labour input per ha. given here, and estimates of a fair yield and using both producer (bulk) and retailer (local) prices presented below. As yields can collapse or multiply in bad and good years, so can labour returns. Other reports indicate returns to agricultural labour of $5-10 per day (Northern Regions Development Programme).

considerably between households. But how significant is crop production to maintaining food security, and meeting or minimising cash needs through sale of surplus grains or beer? Estimates of how much grain might be harvested relative to annual consumption needs, and the resulting surplus or deficit, are presented in Table 7.

Table 7: Grain deficit estimates under varying conditions

assumed household size	6		
assumed area planted	0.8 ha or 2.4 ha		
assumed yields	in bad/fair/good year: maize-50, 365, 700; millet and sorghum-70, 258, 445		
resulting production	*see note 1. below*		
staple grain need/ household of 6	1,095 kg		
	BAD YEAR	**FAIR YEAR**	**GOOD YEAR**
GRAIN DEFICIT	kg	kg	kg
0.8 ha field	1047	846	637
2.4 ha field	951	347	+279 (surplus)
COST TO BUY GRAIN DEFICIT			
0.8 ha field	N$1,885	N$1,523	N$1,146
2.4 ha field	N$1,712	N$625	earn up to N$279 cash

Notes:

1. Production: field size is area planted (range based on Table 5 above).

Grains planted: half maize, half either sorghum or millet.

Yields are based on Table 6 above

Resulting production is (maize kg + sorghum/millet kg):

	bad year	*fair year*	*good year*
0.8 ha field	*20+28*	*146+103*	*280+178*
2.4 ha field	*60+84*	*438+310*	*840+534*

2. Household food needs

Household size: 6 people (6 adult equivalents)

Grain consumption needed: 0.5 kg/person/day. 1,095 kg per household/year

All grains seen as equal in meeting staple cereal requirements.

3. Prices

when buying staple grains (retail price): N$ 90/50kg sack

when selling surplus (producer price): maize- 0.75/kg; millet/sorghum- 1/kg

Although based on surveys and reports, it should not be assumed that the estimates represent a "typical" household cropping enterprise. Intra-regional and climatic variation alone introduce so much variation that talking in terms of an average is meaningless. Furthermore, estimates are extremely sensitive to assumptions in terms of yield, prices, etc. Nonetheless, the hypothetical budget is a useful illustrative tool to show the significance of crops for different households and will be used in later sections to estimate cash needs and show the extent to which wildlife and NR-based enterprises may fill gaps.

Estimates are done for households with a small field (0.8 ha) and a medium field (2.4ha) -- based on data in Table 5, and using estimated yields in years of bad, fair, and good rain from Table 6 ("bad" rain scenario corresponding to a drought season). Table

7 shows the resulting food deficit (or surplus) in each case.

Table 7 estimates are rough but have clear implications:

- in most years, most households (with fields of 2.4 ha and less) will not meet their basic food needs from their harvest[8].
- the food deficit/surplus varies dramatically between good and bad years of rain.
- households able to cultivate more than 2 ha fare substantially better than those cultivating less than 1 ha (although in bad years, both households face a severe food deficit -- around 1,000 kg of grain).
- households which cultivate less than 1 ha (approximately one third according to CSO 1996b) are unlikely to generate surplus crops even in good rain years.
- crop production is only likely to be a regular source of income for households with considerably larger fields.

Different assumptions based on other data sources would significantly affect the level of production and deficit, though not the trends and marked variability. Using MAWRD planning parameter assumptions for an average farmer and a "mediocre" season ("transitional" farmers planting 7ha with yields of 450-700kg per ha), a farming household would produce a surplus of grain in excess of 2000 kg!

2.3.6 Trends

Caprivi has better (though still limited) potential than other parts of Namibia for improved crop production using irrigation, new crops, and additional inputs. For example, the Northern Regions Development Project estimates that traditional small-holders with livestock could increase their gross margin by 275% to N$859/ha and returns to labour by 195% to N$18.3 per day, by increasing cropping intensity and adding a sesame crop. However, it is also worth noting that to double the returns to labour, the farmer must triple the level of risk (NRDP).

2.3.7 Summary

Although yields are uncertain and hence risk is assumed, cropping is an essential livelihood component for virtually all rural households in order to:

- provide a portion of staple foods;
- minimize the need for survival cash;

[8] This is corroborated by estimates that domestically produced grain satisfies about half the market demand for the region and is supplemented with inexpensive Zambian maize imported illegally (Naeraa *et al.*, 1993).

- generate cash through sale of surplus grains or through trade/sale of products such as tombo,
- maintain right to avail (particularly important in drought years when access to other natural resources is more critical, and for absentee workers).

However, benefits vary enormously between households and between years, according to the cultivated area, rainfall, and other environmental factors. Given generally low and variable yields, inputs other than labour (including paid labour) are minimised, but crop production remains the fundamental activity of most rural households.

2.4 Livestock

2.4.1 Introduction

Data on the livestock population are variable and not necessarily very reliable. Veterinary Services data for east Caprivi indicate an increase in the cattle population from 35,000 in 1980 to 95,000 in 1994 (over 100,000 in 1993). The increase has been steady year-on-year except for slight dips in 1984, 1991 and 1994[9]. Cattle account for by far the majority of livestock, with few thousand goats and very few sheep, horses and donkeys counted (Veterinary Services Data compiled by the Natural Resource Accounting Project). The 1994/95 Namibia Agricultural Census (CSO, 1996[b]) suggests a total cattle population of only 68,000 animals in the Caprivi Region. There is no information on the distribution of animals between households, except that the vast majority of all (not just rural) Caprivi households report owning or having access to cattle and poultry, as shown in Table 8.

Table 8: Ownership and Access to Livestock in the Caprivi Region

Percent of all households owning or accessing livestock

	cattle	sheep	pigs	poultry	goats
owned	59	0	3	69	13
access	28	0	0	4	0

source: CSO, 1996[a]. Percentages are of the total 16,884 Caprivi households.

Assuming 59% of Caprivian households (9,961 households) own about 100,000 livestock animals, the average holding is almost 10 animals, mainly cattle. However, even if the survey data is correct, averages can be misleading, because cattle are concentrated in the east[3], and are distributed very unevenly between households. Nearly 40% of cattle herd owners (not randomly selected farmers) surveyed by Paskin *et al* (1995) in East Caprivi contained 50 head or less, and about 6% of them own herds of 200 head or more. Although not intended to be a statistically validated survey, its shows that a large proportion of the total herd could be accounted for by large holdings of a few, making the typical livestock holding much lower than 10, particularly in western parts of East Caprivi, and certainly in West Caprivi.

[9] Animals not making use of governments services would probably not be counted. Data for West Caprivi show just 300 head of cattle in 1994, while disaggregated figures for Far West Caprivi (formally in Kavango Region) are not available.

Livestock are traditionally kept for multiple goals related to basic needs (meat, milk, draught power), social and cultural activities, and consumption of luxury goods (prestige, bridewealth, status) (Low, 1986), rather than for maximising off-take and profit as in commercial holdings. Men traditionally have ownership of, and responsibility for, cattle and hence control of draft animals for ploughing and clearing land for cultivation, animals used as gifts or for a brideprice, and sales to generate cash.

Livestock are sold to local bush markets and the MeatCo company to earn cash. From 1992-96 annual cattle sales to MeatCo have generally ranged between 4,000 and 5,000 animals according to MeatCo Katima Mulilo Office. The scale of bush market sales is unknown. In some communities, bush markets are controlled by the Khuta and fees paid (eg at Choi, Mosimane 1996b). Average revenue from the sale of one "on the hoof" cow is about N$600-700 and can range from N$200 to N$1,100 (NEPRU, 1995b, Mosimane, 1996b). Considering the low offtake rates and small herds in the region, sale of more than one animal per year is unlikely in most households. Earnings from sale of other livestock are unknown but are likely to be insignificant.

An important aspect of cattle and Caprivi livelihoods is that the non-consumptive benefits from cattle depend on access, not just ownership. Benefits from large holdings especially are informally transferred to others through the *mafisa* system and sometimes as gifts. The *mafisa* tradition involves loaning and tending cattle. Generally, cattle tending is exchanged for milk, a percentage of calves born, and perhaps the opportunity to rent out oxen for ploughing. This system directly disperses benefits from large holdings to others in a community.

2.4.2 Benefits of cattle ownership and access

The value to livelihoods realized through cattle holdings, suggested by several studies (Low, 1986; Lawry, 1986; and LaFranchi, 1996b), is in terms of contributions to the following goods and services:

1. subsistence food products

Meat is occasionally acquired through slaughter; milk is produced regularly during about six months of the year.

2. limited cash incomes

Cattle are generally sold when cash is needed for a specific purpose, rather than for regular income. The most common reason in Caprivi seems to be for payment of school fees in January (Hines 1996, van Rhyn, 1995a)[10] or when cash is needed for medical expenses (van Rhyn, 1995a), to replenish food stocks, and other emergencies.

[10] eg. During structured interviews on the eastern floodplains in East Caprivi the first respondent replied to a question on livestock sales saying "the trouble is that everyone sells a the same time -- January -- so as to be able to pay for the school fees and clothing." This was echoed by the majority of other respondents (Hines, 1996). On the other hand, school fees are usually paid each term, not only in January, and are not so high relative to other cash expenditures (J Mendelsohn, pers. comm). So whether the issue is other school-related costs (uniform, books), or the stress of school fees is exaggerated, is not clear.

3. valuable inputs

Draft power is a critical input to crop production. The main determinant of the amount of land a household plants and harvests is the number and strength of oxen[11], at least in East Caprivi where cattle are common. A team of 4 is generally needed to plough a field (on the eastern floodplains). About 80% of farmers in Caprivi reportedly use cattle as the 'main facility' for field preparation (CSO, 1996[b]) although the majority also use hand hoeing as well. According to estimates made for Caprivi farmers cultivating sorghum and cowpea, those with livestock need 30% less labour to prepare a field -- or put the other way, *can plant almost half as much again* with the same labour time (NRDP).[12] A Farm Management Survey in Kavango shows that large cattle herd owners achieve crop production *several times higher* than those with no livestock (see Box 1 for more results (MAWRD, 1996a and 1997).

The timing of ploughing also matters -- "speed of ploughing around the time of first rains is absolutely crucial" stated an East Caprivi farmer in a recent survey (Hines, 1996). This means there is an advantage to owning your own cattle, rather than having to wait to borrow a neighbour's.

Transport provided by oxen is important for other livelihood strategies in addition to crop production. For those who need to carry timber, fuelwood or water over longer distances, sled transport has high value.

Another input provided by cattle to crop production is dung, used as fertilizer. However, this does not appear to be common in Caprivi, unlike other northern communal areas.

4. gifts and reciprocal exchange

Cattle owners share the use of cattle or their outputs. eg through mafisa, by contributing a cow for wedding or funeral, and by lending oxen to plough a relative or neighbours' field. This may be seen as a cost, not a benefit, of cattle. However, it can be in exchange for food and beer (Hines, 1996), and it is also a way of fulfilling familial obligations and building a social security network, and hence providing intangible benefits.[13]

5. store of wealth ('pension')

Putting something by for the future is important for all households, and those that have sufficient savings generally put them into cattle. This may appear risky in a drought-prone environment, but there are several reasons why cattle are an appropriate

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[11] although other constraints, such as the amount of household labour available for clearing the land and weeding, the amount of rain, and the amount of prime land allocated to community members, also affect the area ploughed. During the same structured interviews on the eastern floodplains, all but one respondents answered that the size of field is determined largely by the physical strength of oxen. (Hines, 1996)

[12] the sorghum yield is also estimated to be 100kg greater for those with livestock, worth N$81. The imputed value of the labour saved (input falls from 48 to 33 days) is N$65, making a total return of N$146 from the use of a team of livestock in crop production (NRDP).

[13] eg. according to a respondent in the Eastern floodplains: "If someone has only two oxen, then someone else will lend him another 2 to help out. This is just helping out -- no rent for this job -- that would be stealing. It is important you help other people -- tomorrow it may be you looking for help." (Hines, 1996)

Impact of cattle-holding on agricultural production and cash income

Data from the Kavango Farm Management Survey indicates the significance of cattle in boosting households' crop production and cash income. Although levels of income and production will be different in Caprivi, similar trends and magnitude of impact could be expected. The survey found that:

- consumption and production patterns *clearly differ* according to cattle ownership.
- households owning more cattle have *higher levels of production,* because they produce more crops, as well as more livestock and livestock products for consumption and sale. Total production for those with 11+ cattle was 2-3 times higher than for those with no cattle.
- households owning more cattle have *higher levels of consumption,* because their own-consumption of crops and livestock is higher, and so is their cash expenditure. Total consumption was over twice as high among those with 11+ cattle as among those with none.
- production and consumption is also noticeably *different between small and large herd owners* (up to 10 cattle, and 11+ cattle).
- total cash income is significantly higher for cattle owners versus non cattle owners because of the significant *income from livestock products*. Cash income from others sources (crop and non-farm) is similar for the two groups. ie. cattle are an important source of cash, in contrast to crops which are not.
- households with no cattle have smaller absolute levels of cash expenditure, but have to meet a *higher proportion of consumption requirements through cash* (72% compared to 50% for cattle owners) because of their lower production and consumption of crops and livestock. Just one third of their total production is agricultural (the rest is non-farm cash income), compared to a half for households with up to 10 cattle, and two-thirds for households with 11 cattle or more.

Implications:

- livestock ownership significantly boosts crop production and livestock-based cash earnings, enabling the household to enjoy higher production and consumption levels, and face less pressure for off-farm cash income.
- acquisition of cattle by households with no or few cattle would lead to increased agricultural production.
- development of non-farm cash opportunities is particularly important for the poorest rural households who have no cattle.

Source: MAWRD, 1997

investment: they can be converted into cash relatively easily[14] (though not always at the best price), they provide many other benefits on the hoof,(such as maintaining right to avail for those with jobs in town, and supporting crop production for those in rural households) which a savings account or other capital asset does not; the risk of the herd shrinking in drought is balanced by the chance of natural herd expansion; prices may

[14] it is difficult to assess how easily convertible (liquid) cattle is as an asset. The main limit on slaughter and sales is lack of supply: households usually only sell cattle when there is a specific need for cash. However, there are also complaints about limited demand making it difficult for farmers to sell when they want at the price they want. Meatco decide how many head they want to buy, and in some areas, headmen will allocate days for bushmeat sales so that everyone has a chance to sell (Hines 1996). This probably means that in some cases, farmers are forced to sell low quality stock at a bush market rather than at Meatco, earning a lower price, and that in January, even selling bush meat can be difficult.

fluctuate but cattle are likely to remain a valuable asset (and probably keep up with inflation better than a nominal interest rate at the bank); and they are more protected from claims of others. Cash on hand can easily be requested as loans and gifts by relatives, whereas with cattle, there is pressure to share the benefits, such as draught power, but not to slaughter them for cash to give to others.

6. drought-coping strategy

Cash incomes are of great importance in Caprivi, particularly during drought years. Cattle can be sold to buy staple grains when crops fail or when households run out of what they produce themselves. If necessary, reserves can be drawn down by selling cattle.

7. 'right to avail'

Maintaining livestock in a home areas helps maintain membership of the community and right to avail of its resources.

8. ceremonial uses and cultural assets

Cattle are often an important part of funerals, birth ceremonies and marriages. A brideprice (*lobola*) is traditionally paid with cattle (often around 15-20 head in Choi, East Caprivi (Mosimane, 1996b)). Hence, cattle are assets of community participation -- assets which enable owners to participate in events and conform to cultural traditions as a member of the community[15].

2.4.3 Inputs

The main inputs -- grazing and water -- are free to the farmer so long as his right to use communal natural resources is recognised, although seasonal variation can make it necessary to herd cattle to distant areas (it is not clear if scarcity of water or grazing is an actual constraint on increased cattle numbers). The other main input required is labour -- either household or paid -- which needs to be full-time if cattle need to be moved away in the dry season (although small herds can be managed together, and it is reported that Zambian herd boys can be hired relatively cheaply).

2.4.4 Constraints: Risk and Uncertainty

Although not as significant to livestock as it is to cropping, environmental and economic uncertainties impinge upon benefits realised through livestock holdings. During drought years, negative effects can include:

- lower availability of forage;
- lower than normal growth rates;
- worse animal health, increased mortality;
- negative impacts resulting from fires;
- lower lactation levels (milk production); and

[15] The need for cultural assets is true of all cultures, thought the assets needed vary enormously within as well as between cultures (ie are different for adults and children, men and women etc). eg. being recognised by ones peers may depend on having a dress in fashion, children, a marula tree, telephone, or the appropriate language and dialect, body scars, religious beliefs, or style of house.

- downward pressure on prices paid to producers (livestock owners for animal sales) resulting from large sell-offs and deteriorating animal condition.

It is noticeable that according to Veterinary Services data, the east Caprivi cattle population fell by nearly 9,000 or 8.5% between 1993 and 1994, presumably in large part due to mortalities or sales related to drought.

2.4.5 Summary

Although cattle holdings do not provide staple foods or a regular flow of cash, they satisfy key needs through critical inputs to crop production, building up reserves, and an important currency for many community exchanges and cultural traditions. *There is therefore likely to be significant differences between households with and without cattle, in terms of their needs and livelihood strategies.*

2.5 Wage employment and cash remittances

2.5.1 Introduction

Among "farming households," approximately 40% rely on cash as the *main* source of household income: 17% on wages, 16% on pensions, 5% on non-farming business, and 2% on cash remittances (CSO 1996b). However there is little data on how many others have access to these as *additional*, but not the main, source of income. Data for *all* Caprivi households show higher percentages with a major cash source (55%, CSO 1996a), but with clear differences between richer and poorer households. The majority of those relying on cash are in the top quartile, (Q4, most well-off), on remittances in Q3, on business in Q2, and on pensions in Q1 (least well-off) (SIAPAC, 1997). Other sources of information, some of which are discussed below, are more anecdotal and highly varied.

Wages

Overall, approximately one quarter or more of rural East Caprivi households and a lower proportion of West Caprivi households probably have access to wage income[16]. Perhaps half of these are substantial salaries of skilled workers, and half unskilled wages. 80% of the top quartile and only 13% of the bottom two quartiles (poorest 50% of households) rely on wages as their main source of income (SIAPAC, 1997).

Over half of employees are in government. In rural areas the majority of Government jobs are in schools and clinics, either as nurses, teachers, and extension officers, or in unskilled jobs such as cleaning and cooking. At the end of 1996 there were 1275 teachers in rural areas (for whom the *minimum* salary is N$24,000 per year), and probably several hundred more nurses, extension officers, and other employees (J Mendelsohn, pers, comm). This suggests that perhaps 10-15% of all rural households have a salary in the

[16] Naeraa et al (1993) found 28% of 54 households across East Caprivi had a fixed regular income, of whom almost three quarters were attached to the civil service. SSD (1995) and Tvedten et al (1994) also report 28%, possibly quoting from the same source. In West Caprivi, 1994 surveys in Bagani and in Dwarspan, Mashambu and Guiga, found that 40% and 9%, respectively, reported having a member in some form of employment (van Rhyn, 1995a and 1995b).

range of N$30,000 to 40,000 per year.

Private sector opportunities are very limited[17], though may increase with development of regional transport, marketing links and tourism. Non-governmental organisations (NGOs) are the other main, and increasing, source of jobs. This is particularly true in West Caprivi. For example, SSD surveys at Bagani found that of 8 people with jobs, 4 were in government and 4 with ELCIN (the Lutheran Church), while at Dwarspan, all of 8 jobs were with NGOs (6 Game Guards and Resource Monitors with Integrated Rural Development and Nature Conservation, and 2 with ELCIN) (SSD, 1995). Unemployment has increased in West Caprivi since the withdrawal of the military, although more recently, construction of the Trans-Caprivi highway has probably provided casual employment for several hundred people in West Caprivi (SSD, 1995). In general, jobs are concentrated at Bagani and Omega.

The incomes earned by those in employment vary enormously by job. Average monthly income for households with a member in permanent employment was found to be N$325 per month in 1993 (Devereux et al, 1993), and today unskilled wages of around N$400 per month are found, though no doubt some lower wages are still paid (and obviously technical staff in Katima will earn more than double that). In Bagani and Dwarspan, reported incomes ranged from N$120 to 600 per months (van Rhyn, 1995c). In Choi, reported salaries vary from N$400 to N$640 a month, for three respondents with government jobs (Mosimane, 1996b). All these reports are considerably lower than the professional salaries of N$2-3,000 per month mentioned above.

Cash remittances received from absent workers, are the *main* source of income for tiny minority (2% of farming households surveyed (CSO 1996b), 5% of all households in the region (CSO 1996a), and 8% of female-headed households (SIAPAC, 1997)). However, remittances probably provide an *additional* income for many more. SSD found in a survey of 200 households across East Caprivi that (in addition to the 28% receiving salaried income) 24% reported receiving remittances from friends/relatives (SSD, 1995). In these cases the income will only be a proportion of wage, and may or may not be regular.

Pensions are another key source of income because of their regularity, accounting for the main source of income in 16% of farming households (CSO 1996b), 18% of the poorest 25% of households and 22% of female-headed households (SIAPAC, 1997). No doubt they are an additional source of income for several more. The same 220-household survey in East Caprivi found 24% reported receiving pensions. In Dwarspan in 1994, 16% reported pensions (SSD, 1995). Those on state pensions receive N$120 per month, usually paid every 3 months. Former SADF employees receive N$59-63 per month (undated source quoted in TransCaprivi Highway Feasibility Study).

Overall, this suggests that the majority of rural households have regular access to some type of cash income. This will be the main source of income for less than half, and a supplement to agricultural production for many others. The size of this cash income can

[17] The tourism sector (mainly lodges) is estimated to provide around 270 jobs across Caprivi (MET 1997). Cuca shops and bottle stores provide a few more (possibly a dozen in total in West Caprivi (van Rhyn, 1995c).

vary enormously, from a hundred dollars or so a month (from unskilled work, remittances, or a pension), to a couple of thousand dollars as salary. Irrespective of the exact amounts and percentages, regular incomes make a substantial differences to households both for boosting their purchasing power, and for reducing the variability of household income and hence vulnerability. Those rural households with regular incomes, however many they are, have different levels of wealth and vulnerability, and different livelihood strategies.

2.5.2 Benefits

A regular cash income, particularly a wage, is likely to be sufficient to cover much of the cost of:

- filling a food deficit
- other cash needs, including clothes, school fees etc)
- investing in production and/or reserves.

If waged households can meet the first two needs, they are not under pressure to scrape together cash through sales of home-produced products, labour or assets, or rely just on subsistence resources, as other households are. If they still have enough for investing, they can purchase livestock or pay others to work or plough their field. For example, in Salambala, all of those with regular income (178 in total) reported spending it on food, and around four fifths spend on clinic and school fees, but it is also noteworthy that 18% reported spending on labour, 22% on saving, and 7% on other items which included cattle (Mosimane, 1996a). Similarly along the Kwando, Community Game Guards and Resource Monitors all ranked food and clothes as the most important items of expenditure, but also mentioned spending on ploughing and herd boys (Nabane, 1995). Investment in agriculture increases their annual agricultural production and the chance of producing a surplus for further sale. The other major benefit is the reliability of income, which reduces vulnerability. Furthermore, if income is invested in livestock, reserves increase, so both the regular wage and the livestock will boost their security in lean times.

To summarise the list of benefits of regular wages and pensions:

1. cash

for buying food, meeting other cash needs (school and clinic fees, clothes, daily necessities.

2. drought coping

Wages and pensions are usually unaffected by drought. Reserves built up with savings from wages will further assist.

3. build up of reserves

if enough can be saved from wages to invest in cattle, or other assets.

4. agricultural inputs

Those with cash can afford to purchase labour or draught power from others to expand

crop production, further boosting their food security and/or sales income.

The return to labour per hour is very variable -- N$400 per month for a 40 hour week translated into N$2.3 per hour, but many jobs are higher paid. The key point is the regularity and high volume of the income make waged labour preferable to other kinds of earnings.

2.5.3 Constraints

It is not only that there are not enough jobs, but also:

- even where a household member has a job, the wage may not be sufficient to meet cash needs. For example, in Bagani, households with employees at local school still sell veld foods for cash.

- wages may not meet all household cash needs, because earnings are regarded as belonging to the individual who earns it (Mosimane, 1996a). They are likely to support others in the household, but not necessarily pay for all their clothes and bills. On the other hand, the earner may find wages insufficient because they have to be shared with extended family, across several households. This might be particularly true in West Caprivi where social networks are strong and jobs more scarce. For example in surveys in Bagani and Dwarspan, respondents said that although income is important, it does not help that much as they have to support big families. It was ranked fourth and fifth in overall importance of incoming resources (van Rhyn, 1995c). These family demands mean cash is not a good store of wealth.

Alternative sources of cash

The main alternative sources of cash are piece-work (casual labour) and sales of home-produced products. Piece work includes clearing or ploughing land, building and repairing houses, herding cattle, domestic work, and assisting in shops. Cash payment is generally N$5-10 per day, but can be as little as N$10 per week, or payment may be a bag of maize or barrel of locally-brewed beer. Sales of home-produced products include beer, thatching grass, carved wooden utensils, firewood, baskets, and fish. These are covered in the relevant sub-sections of this section.

2.6 Harvesting of trees, plants and river resources

2.6.1 Introduction

Trees, other wild plants, and river resources provide many of the necessities of life for rural households, along with opportunities for barter, sales, and enterprise development. The plant products harvested include wood or timber products, and non-wood products such as leaves, fruits, nuts, bark and roots. Rivers and floodplains offer both plant (tubers, reeds) and animal (mainly but not only fish) resources. As a region, Caprivi has the highest density and variety of trees and plant in Namibia, and the richest endowment of rivers, but the availability of different resources varies widely across the region.

Some of the resources provide basic subsistence needs, such as fuelwood for cooking, timber and grass for construction. Hence harvesting these can be regarded as "core" activities undertaken by all households. Some other resources are used by most families to provide other household goods, such as wood for tools, palm leaves for baskets and veld products for food and medicines. However, some will buy from neighbours rather than collect their own, so collection for sale/exchange can be regarded as an "additional" activity, in that it is chosen by some households, according to their circumstances. More recently, some of these products such as thatching grass, baskets, and wood-carvings are being developed for commercial sale, providing opportunities for diversification and small-scale enterprise.

Given the wide variety of uses, and the fact that these resources are generally more drought-tolerant than cropping and livestock options, the resource-activities covered in this section are shown to be just as fundamental to rural life as agriculture. For those short of the necessary inputs for agriculture, such as the poorest and female-headed households, they are particularly important. However, quantifying their significance is generally difficult given the piecemeal information available.

2.6.2 Fuelwood and timber collection

Access to and use patterns of timber products is primarily understood through anecdotal information or data collected during brief visits to communities using surveys or participatory methods. Statistically significant data is not known to exist. Evidence is substantive but short of decisive.

Benefits

To summarise the needs met by collection of fuelwood and timber.

1. *subsistence needs:* energy and construction materials including fuel for cooking meals, brewing beer, firing pottery and heating homes and water; and material for structural framing (homes, kraals, fences, etc.).

2. *cash earnings:* as better-off neighbours start paying for poles, and possibly firewood) earning opportunities are created for others with time and transport.

3. *reciprocal exchange/barter*: similarly, as scarcity increases, the value of collecting poles (or possibly fuelwood) for a neighbour increases, and hence possible return, in beer, food, or gifts.

Fuelwood

Information collected in ten villages by LaFranchi (1997) over an area including East and West Caprivi and the Mukwe area using participatory methods and informal surveys (no statistically significant figures) suggests:

- availability of adequate supplies as measured by reported travel/collection time (to obtain a one or two day supply of fuelwood) varies from less than 15 minutes to half a day (about 4-6 hours);
- fuelwood is normally supplied by a member of the household about every other day or once or twice a week if a sledge is available;
- generally, women and girls collect fuelwood, although men and boys may participate in collection using an ox-drawn sledge if available; and
- people respond to scarcities in two ways: (i) increasing the amount of time spent on fuelwood collection, or using transport if available; and (ii) changing cooking habits and using alternative fuels to reduce wood consumption.

In some cases, other activities complement fuelwood collection (collecting veld foods, water, etc.); thus, time spent collecting fuelwood yields additional benefits. Nonetheless, the importance of fuelwood to livelihood, the problems of scarcity, and the dearth of *appealing* substitutes for satisfying energy needs, have been observed during field activities or reported during community participatory meetings.

Construction timber

Collection of construction poles is also a core subsistence activity, but different from fuelwood in that:

- it is generally collected on a periodical (not a regular) basis by men;
- it generally requires felling standing trees (not using dead wood).
- whereas fuelwood scarcities can be offset with alternative and often inferior materials, obtaining construction pole substitutes is more difficult. Commercial alternatives -- poles and wire fencing for fields, bricks for homes -- are not an option for the majority.

As accessible timber becomes more scarce, men have to travel further, or those that can have started acquiring poles from neighbours (purchase or exchange).

Inputs

The main *costs* are the input of time required, and increasingly, access to transport.

Constraints/Trends

Scarcities of these resources vary according to an area's soil type, incidence of flooding, tree species composition, proximity to a body of water, population density, and harvesting methods, but they are generally exacerbated by land clearing for agriculture (pasturage and cropping), fires, closure of areas to local access, and demands which exceed what is

supplied through natural regeneration. Because trees are often the only option for supplying energy and timber, the impact of scarcities is acutely felt and can affect people's investment in other livelihood strategies. The impacts include:

- more time spent on collection;
- increased need for cash used to purchase materials, or other products (eg beer) for in-kind payments.
- an increase in local exchange or trade in wood, and hence new enterprise opportunities;
- increased need for transport to travel greater distances to collection points, carry larger loads;
- changes in behaviour, such as substitution away from fuelwood, or changes in distribution of collection tasks between members.

2.6.3 Harvesting veld products

Veld products include wild fruits, nuts, berries, leaves, roots and barks collected to supplement diets, provide medicines, and other households items. Use across the region varies spatially and temporally according to availability, social and economic status, agricultural potential and yield, cultural patterns, and other factors. In much of West Caprivi, veld foods are a seasonal staple. In other areas they can be a regular dietary supplement, while elsewhere they are mainly a buffer against drought. The products are not only used for subsistence, but also for local exchange and sale. They are therefore most important for households with low crop output and few other opportunities for engaging in sale or trade.

A wide variety of products are harvested. In one afternoon, Community Resource Monitors from West Caprivi listed 44 different plants used (18 for food, 19 for medicine, and 7 as materials). Uses varied considerably between the 4 different communities represented, except that mangetti was the priority for all (Baird, 1995). Less is known about veld foods in East Caprivi, although a forestry assessment identified 17 fruit trees and 12 wild vegetables consumed there (UNEP, 1995)). Herd boys, in particular, consume wild fruits (Mosimane 1996a and 1996b).

Benefits

To summarise the main needs met by veld products:

1. subsistence food

Households commonly need to combine veld foods with harvested crop and purchased foods to obtain enough food with adequate levels of carbohydrates, proteins, fats, vitamins, and minerals. Mangetti nuts provide a relish, a variety of leafy greens enhance dietary nutrition, a long list of fruits and berries are collected seasonally to complement staple cereal grains and can be used to make juices and alcoholic beverages. Oils used for cooking and as a relish are expressed from nuts.

In West Caprivi, these foods can be seen as normal staples, along with crops, rather than occasional gap-fillers. For example, 10 out of 22 Bagani households involved in a

ranking exercise rated veld food as of equal or greater importance to crops as a source of food, although overall crops were ranked first (van Rhyn, 1995a). Mangetti nuts, in particular, provide critical food stores from December through February when cereals grown in the previous year may have been exhausted and supplies from a new cropping cycle are not yet available. Several households report using a 50kg bag of mangetti nuts per month (van Rhyn, 1995a and 1995b). The 1991 socio-ecological survey of West Caprivi estimated that at certain times of year, some communities relied on veld foods for at least 50% of their sustenance (Brown and Jones, 1994). In East Caprivi, veld foods are an occasional supplement, rather than a staple, although in riverine areas, water lillies can be critical for poor households (ranked the fourth most important resource by 10 respondents in Choi (Mosimane, 1996b)).

2. cash income

Especially in areas of abundance, foods are collected and sold to other households or in local markets for cash. For example, in Bagani, people report selling mangetti nuts for N$22 per bag, or N$1 per cup, earning money to buy maize, or to save up to buy clothes. They sell to Mbukushu as well as to their neighbours (van Rhyn, 1995a). For such households, there may be few other products or skills that they can translate into cash. Veld food consumption can also boost cash-earning power by enabling farmers to sell more of their cereal crop.

3. local barter and exchange

Veld foods are used as a currency of local exchange, especially in West Caprivi, where some of those with jobs demonstrate a willingness to trade for what they don't have time to collect (van Rhyn, 1995a). Often mangetti nuts are swapped for maize, cup for cup. Thus, veld foods can be a currency for resource-poor households to engage in barter, and turn time into necessities, reducing the need for cash.

4. drought-coping

Being generally more tolerant of drought than cereal crops, veld foods and river foods (particularly water lillies) are used to boost the diet, and displace the need for cash for maize. Mangetti nuts can also be stored in advance of lean times, while sales of veld foods help households survive drought.

Inputs

Collection of veld foods requires *time* and *access* to the resources. Both of these can be constrained.

Constraints/Trends

Collection time is often long, sometimes requiring overnight trips or even trips up to several weeks at a time (in West Caprivi where the resource are heavily relied upon). With a few exceptions the foods do not store well, so have to be collected as needed. Processing can also take time -- for example, 5 days to process a 12.5kg bag of mangetti nuts is reported (van Rhyn, 1995a). Therefore returns to labour are generally low, if travel, collection, and processing time are included, though very varied. Estimated returns to labour at Dwarspan for collecting mangetti nuts work out at N$1.7 per hour, excluding any time or money spent on marketing.

Access to good areas for harvesting veld food can also be a problem, for example lack of access to the core conservation area was mentioned at Bagani as a problem (van Rhyn, 1995a).

Another constraint is the lack of markets for selling veld food. Selling within the community is only possible if there are neighbours with some cash surplus nearby. It is noticeable that in Dwarspan, unlike Bagani, veld foods are not seen as a source of cash or exchange, and hence inferior to crops (van Rhyn, 1995c). Even at Bagani, earnings will be limited and seasonal, supplying cash for a few necessities, but probably not much more. Access to other local or international markets is generally very limited. Although national or international markets could or do exist, they require high initial set-up and transaction costs.

2.6.4 Carving, weaving and other crafts

Kitchen utensils and tools are carved from wood, and baskets are woven from palm leaves. These products are used at home and traded at the local-level, and have more recently been adapted for sale to outsiders, mainly tourists. Production is concentrated in areas where household members have appropriate skills and adequate raw materials (mainly the makalani palm and carving timber). Sale to tourists takes place mainly on the trans-Caprivi highway, in markets and hotels in Katima Mulilo, and through the Caprivi Arts and Crafts Association (CACA). Carving is generally undertaken by men, basket weaving by women (though large baskets are made by men).

The exact number of craft-makers producing for local consumption and sale to tourists is not known, although it is probably several hundred or a thousand or so individuals (see estimates in Appendix B) and the industry appears to be growing.

Benefits

1. subsistence household implements

Cups, bowls, eating utensils, food containers (baskets), agricultural tools (or parts thereof) including hoes and rakes -- all are produced by family members, displacing the need for cash purchases.

2. cash

The minority of highly-skilled carvers can earn a "regular income" from carving, equivalent to a wage (possibly up to N$1,000 per month (Harrison, 1995, La Franchi 1996a). However, the majority doing carving and basket weaving for sale make irregular and limited earnings, possibly around N$200-300 per month for the most active carvers or a few hundred dollars over the year for part-timers. Overall, it seems likely that craft earnings in the region are around N$300,000 to N$450,000 per year, divided amongst up to a thousand craft producers, earning on average, a few hundred dollars each per year, but with large variation between high-skilled high-input producers and those with low skill and devoting less time (see Appendix B for details and sources).

3. drought-coping strategy

Sales to neighbours will be reduced during droughts, as everyone's cash expenditure is squeezed, but sales to tourists and outsiders should be robust during drought, so provide a useful diversification of the household economy.

Another advantage of craft-making is that it can be done at home, and fitted in around other labour demands. Basket weaving, in particular, is not strenuous and can be done at home in a social setting.

Inputs

Necessary inputs include labour time and adequate supplies of raw materials

Constraints/Trends

Time: it can take around 20-25 hours to weave a N$25 basket, and 12 hours to carve an N$15 animal figure. In addition, collecting natural resources and marketing can take substantial amounts of time (although these can be shared amongst family members). Some minor material costs are also needed. Excluding the time taken to collect materials, returns to labour for weaving are estimated to be in the range N$1-1.5 per hour, and for carving N$1-2 per hour.

Access to raw materials: most raw materials are natural resources that are collected for free, but limited access may be a problem. For example, in planning discussions for the Kongola craft market, local producers noted that areas used to collect wood and reeds have been converted to either forest or core conservation areas (IRDNC, April 1996). Access to and supplies of makalani palm leaves (for basket weaving) is a particular constraint: often woman must arrange to purchase supplies, sometimes through the CACA, because the trees are not found in their area; improper harvesting methods can sharply curb a tree's ability to regenerate valuable leaves. Problems of overuse of Berchemia bark killing off the trees were noted in 1995 (IRDNC, August 1995). Efforts to regenerate resources -- such as the planting of 50 palm nuts at Nongozi in January of 1996 -- and to maintain access to resources -- for example, by making requests of MET -- have begun (IRDNC, January 1996).

Other constraints on these activities are:

Seasonal market demand: although products will generally store, cash cannot always be earned when needed to meet core needs, and products need to be stored and kept dry during slow seasons.

Limited access to markets: as soon as producers go beyond selling to neighbours, they need access to a commercial market. The CACA is beginning to fill this need but at a price -- producers must accept their mark-up which means producers must keep their own prices down. The alternative, self-sale, involves spending time at the roadside or in transporting goods, and may require investment funds for building an outlet.

Skills: without adequate carving skills, carvers cannot compete well in the regional tourist

market. Limited training opportunities are created and supported through the CACA which organizes and provides transport to "master carvers" (trainers) who share and help others develop skills in the region.

2.6.5 Collecting thatching grass

Grasses are collected between May and October (dry season) for use as roofing material (core subsistence activity) and, in some communities, to earn cash (optional activity). Collection is generally by women although men typically serve as middlemen for the newly developing thatching grass enterprises.

Enterprises are concentrated in East Caprivi in an area running North to South along the highway from Kongola to Sauzuo. Annual gross revenues have increased from about N$ 60,000 in 1994 to close to an estimated N$ 550,000 in 1996 (this could not be substantiated but is based on Rossing Foundation estimates). Private sector buyers have recognized the quality and commercial value of the grass; more recently, one buyer has negotiated a one-year contract with communities for the purchase of about 1 million bundles at a producer price N$ 0.55. The number of people harvesting and selling the grass is unknown.

Benefits

Needs met include:

1. subsistence use

For the majority of rural Caprivi households, thatching grass supplies the best roofing alternative.

2. cash

Estimates based on information collected after the dry season in 1995 by LaFranchi (1996[a]) suggest women can earn around N$ 15-22 per day -- high compared to most unskilled labour. Over the season, grass-collectors could therefore earn a few hundred dollars each if sufficient grass and markets exist. Grass collectors in Lizauli reported that in a non-drought year they would use their income to buy their own livestock, indicating that grass earnings can be sufficient to cover more than basic needs and can help build up reserves.

3. drought-coping

Grass is more resistant to low rainfall than crops and livestock, and cash-earning options at the end of the dry season can be particularly useful.

Inputs

In addition to the *time* spent harvesting grass, time to travel to the resource and the selling outlet, and to clean and tie the grass, is required. Activities are strenuous, demanding large blocks of time, and generally cannot be fitted in around other daily

tasks. On the other hand, it can be a social activity done with other women.

Constraints/Trends

Access to grass resources does not appear to be a problem at present, although may become so if profitability and demand increase, stimulating competition between suppliers.

The other main constraint is the market, which has been expanding in the last few years, but is dependent on trends in the construction and tourism trades. Furthermore, from the individual's point of view, even if the regional market is expanding, the collector often does not know if or when her grass will be purchased, or whether it will be damaged in the rain.

Returns to labour vary considerably depending on individual collection rates, distance from harvesting and stockpiling areas and other variable factors, but are estimated to be in the range of N$1.5 to N$2.8 per hour. Recently established contractual agreements between communities and a key buyer may have a stabilising effect on employment opportunities and wage rates.

2.6.6 Freshwater fishing

Fishing for own consumption or sale is a component of NR collection activities centred in aquatic habitats. A minority still use low efficiency traditional gear, most often employed by woman, children, and older men, while a majority, particularly unemployed men, use modern commercial gear (gill/drag nets), (Ministry of Fisheries and Marine Resources 1995, Tvedten et al, 1994). 96% of those who reported fishing activity in the 1991 Census were men, although this probably misses out many women for whom fishing is minor and occasional (UNEP et al quoting the 1991 Census).

Benefits

As an optional livelihood activity, fishing provides a food-earning activity that can be completely controlled at the individual level (especially important to households headed by women). Following is a list of needs met through this activity.

1. Subsistence food

It was reported (Tvedten *et al.* 1994) 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; however, 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.

2. Cash

Surplus fish can be sold to neighbours or in informal markets. However, the market in Katima Mulilo is the only regular market. Estimates of cash incomes are too rough to be reliable (see Appendix D).

3. Drought coping

Fish provide some cash and a food supply not entirely dependent upon local rainfall events, although they are likely to be least available during drought years or following protracted dry periods.

Constraints

Fishing activity varies between households and areas, and between seasons and years, in response to various factors, including:

- *flood levels*

Annual and long-term (time horizon in decades) flood levels affect natural stock levels. Several communities in proximity to Lake Liambezi report that natural stocks were high enough to support fishing as a main activity 30 or 40 years ago. The lake is currently dry, and agriculture the main activity. Hence, even though the resource may be marginally affected by local rainfall events, it is affected by events in distant (Zambian/ Angolan) catchments and perhaps anthropogenic effects outside the control of Namibians.

- *skill level of individuals*

It was commonly reported in communities that specialized skills, not known in all households, are often necessary to utilize this resource.

- *season*

Availability of the resource is normally seasonal, as fish are easier to catch as the waters recede.

- *extent/regeneration capacity of the resource*

Natural features and environmental factors influence available stocks.

- *distance to fishing area*

Of Caprivians surveyed for the CSO "Living Conditions in Namibia", 79% claim to have access to fishing grounds, with their annual output valued at N$ 368,266 for in-kind consumption and N$1.68 million for commercial consumption, respectively (CSO, 1996[a]). Methods used by the CSO to value in-kind fish consumption are unknown.

Inputs

Labour time, to fish and to access fishing waters, and gear (traditional or modern) are required. Access to fishing areas is regulated at the local level and in some cases may require compensating resident individuals or groups (in the case where an "outsider" wishes to access fishing areas).

Constraints/Trends

The main constraint is drought leading to low river levels and the disappearance of breeding habitat which reduces reproductive success (John Mendelsohn *per. comm.*).

Natural stock levels are more likely to be conserved or "managed" with use of traditional gear (low catch per unit effort) than with commercial equipment. An increase in commercial activity often results in over-fishing which depletes stocks and compromises the ability of fishers using traditional gear to catch fish. Specifically, there is a concern that growing commercialisation will eventually displace woman and children from the sector. Other factors which may be threatening fish habitats and stocks include over-grazing of riverbanks and flood plains leading to erosion and siltation, and the destruction of riverine vegetation and bush (Ministry of Fisheries and Marine Resources 1995).

2.7 Wildlife and tourism enterprises

2.7.1 Introduction

The tourism industry is growing rapidly in Caprivi, based on the region's wildlife, National Parks, riverine attractions, and location on the regional route to Victoria Falls and Chobe. The trophy hunting industry has been operating for some time, and may expand as wildlife numbers recover. These industries provide a wide range of earning opportunities for rural Caprivians, particularly as conservancies get established, although at present the potential is only just being explored and developed.

Opportunities to participate in tourism and wildlife enterprises are distributed very unevenly across Caprivi communities. The main areas of concentration are along the rivers -- Okavango, Kwando, Linyanti, Chobe and Zambezi -- inside and adjacent to the Parks and Reserves, and in Katima Mulilo, plus to a lesser extent along the newly tarred Trans-Caprivi Highway. Within the communities in those areas, those with relevant skills, such as speaking English, making crafts, or game-tracking, will have more opportunities. Given the high seasonality of tourism, earning opportunities will also fluctuate during the year. Year by year overall growth can be expected, but with temporary slumps in some years.

In terms of meeting basic needs, tourism and wildlife is primarily for cash rather than subsistence -- although meat from trophy hunting and community hunting could be a useful supplementary source of protein. However, it also addresses other needs and has disadvantages, particularly as it is an activity that, unusually, involves a high degree of community activity, rather than individual or household activity.

2.7.2 Benefits

The main benefits and needs met are:

SOURCES OF WILDLIFE AND TOURISM INCOME

- *wages from employment in lodges, camps, hotels.*

Typical wages seem to be in the region of N$400/month (plus or including food), with a typical up-market lodge employing 8-12 local staff, and a camp somewhat fewer.

- *sales of local products to tourist camps and lodges*

eg sale of chicken, fish, vegetables, thatching grass, poles, reeds -- each sale might be only N$5-50 but the total over a year could range from a couple of hundred to a couple of thousand per lodge, making purchases from up to a dozen local people.

- *sales and temporary employment for lodge construction*

During the construction period of a lodge, purchase of thatch and poles plus temporary labour could be around N$10-20,000 (half materials, half labour) over a couple of months.

- *seasonal employment in safari hunting camp*

eg a couple of camp attendants and a local guide might earn N$400-600 each for a six week season.

- *employment in National Park/Game Reserve*

Locally-recruited posts in small, relatively undeveloped parks such as Mudumo and Mamili, are likely to include around Labourer/Watchman/Scout posts, at around N$11-18,000 per year, and 2-3 positions at Ranger/Warden level.

- *employment as game guards, community resource monitors, conservancy manager*

These jobs can provide around 1-6 full-time and part-time regular wages in many communities in core areas, earning around N$400-500 per month full-time (or more for a conservancy manager). They are currently funded by NGOs but could become community positions.

- *craft sales to tourists* (covered in more depth above, in section 2.6).

Carvings, baskets and jewellery can be sold to tourists at a roadside, a lodge, traditional village, or craft centre, earning the makers a few hundred dollars per year each, on average.

- *community-run enterprises: campsites, traditional village.*

Such enterprises can earn collective profit for the community (a few thousand dollars a year), employ local people (from one to a dozen), and provide earnings opportunities to others, such as firewood sellers, craft-makers, guides, mokoro polers, dancers, food sellers, story tellers etc.

- *self-employment, eg tourism guides*

Although this does not exist yet, residents plan to offer guiding, mokoro-poling, singing, and other services. Guides could earn N$30 or more per trip, totalling several thousand a year if the service proves popular.

- *conservancy agreements and joint-ventures with lodge operators*

A conservancy could earn N$50-80,000 per year by leasing out a prime lodge site and entering a cooperation agreement with a developer. If an exclusive concession area is included, fees would be even higher ($20-40,000 higher), whereas for a tented camp or a contract with a pre-existing camp, they would be lower.

- *conservancy leasing of a trophy hunting quota*

For a 2-elephant trophy quota, a conservancy might earn around N$70,000 in fees, in addition to seasonal employment opportunities.

- *conservancy leasing of bird shooting rights*

bird shooting fees could be one or a few thousand dollars a year. If shooters stay at a joint-venture lodge, the additional revenue-share they bring in could amount to a great deal more.

Note: most of these except the last four are ***current*** *sources of income, though small and well below potential.*

1. cash needs

The various enterprises that act as sources of cash are outlined in Box 1. The cash benefits from these wildlife and tourism enterprises can be broadly classified into 3 types:

i *wages* from full-time employment: eg. employees in lodges and Parks, and Game Guards and Community Resource Monitors could earn a few thousand dollars a year

ii *occasional earnings* from sales of products and labour: eg: making crafts, guiding, selling food or grass to lodges, could bring in from a few dollars to several hundred per year.

iii *collective income* earned by a Conservancy or other Community body eg: profit from a community enterprise could be a few thousand dollars, income from tourism and hunting concession fees could be over N$100,000 per year.

These cash incomes can not only help meet daily cash needs, but probably other cash expenditures, such as building up reserves. These three types of income will be earned by differently people so have different types of impacts. Their significance to households is explored further below.

2. drought coping

Most wildlife-based income is relatively independent of annual variation in local rainfall (though is affected by long-term changes in water availability), and any effect it is likely to be lagged, so incomes during drought are robust.

3. intangible assets

These include;

- empowerment and other social benefits from the development of community conservancies and enterprises:

  eg institutional development, increased participation in community decisions, empowerment from exerting greater control over activities and resources in the area and controlling distribution of benefits, greater awareness of problems and solutions.

- training and skill development through participation both in tourism enterprises and in developing community institutions.

- cultural or aesthetic value of wildlife and natural resources (on the assumption that tourism/wildlife enterprises lead to increased wildlife in the area).[18]

Other *advantages* include:

- the industry is growing rapidly -- at between 10 and 20% per year (Ministry of Environment and Tourism 1997) in Caprivi, probably faster than any other income source;

[18] When Salambala residents were asked their expectations of the new conservancy, it is interesting to note that job creation was mentioned 101 times, improvement of livelihood 65 times, and return of wildlife 132 times (N = 200 or less) (Mosimane, 1996a).

- it is one of the few private industries to offer full-time employment based in rural areas, rather than in town. By bringing customers to inaccessible areas it overcomes the transport problem which constrains many other forms of enterprise development.

2.7.3 Costs

On the other hand there are some major tangible and intangible costs of investing in wildlife-based livelihoods, particularly:

i damage to crops and livestock caused by wildlife;

ii investment of time needed to develop tourism and wildlife enterprises, except for those run totally by outsiders;

iii loss of privacy, intrusion by tourists;

iv damage to resources, such as vegetation or water sources, due to tourist activities and supportive infrastructure.

v increased conflict with neighbours or outsiders, due to competition for profitable resources.

However, these costs are felt across the community, and not only by individuals engaging in wildlife-based tourism strategies. So although they might provide disincentives for investing in wildlife at a community level, they are unlikely to deter individuals from grasping income-generating opportunities when they exist.

Disadvantages include:

- Several of the income opportunities above require *collective action* to manage resources and generate income. This means it depends on community cohesiveness, which adds to the risk involved in any individual's investment of effort. There is also a risk of members trying to "free ride" -- gain the benefits without sharing any of the effort -- further discouraging those who are interested in being involved, because the links between the resource, activity and profit cannot be controlled at the individual level. This also raises the question of who will invest the time necessary for such projects, if the rewards are collective not individual.

- There can be a delay between investing time and earning cash -- for a carver or weaver, it could take a few months to sell a finished piece. For a conservancy, it could take a few years before significant cash income starts flowing from a new enterprise. The greater the initial investment and the longer the delay on returns, the greater the *risk* -- something which most rural households seek to avoid.

- The anticipated growth of tourism depends on developments in infrastructure and marketing, which depend on regional and national action, beyond the control of households or communities.

- Income can be very seasonal (although with peak periods in winter, this can complement agricultural seasonality) and the industry is subject to global cycles year-by-year.

2.7.4 Estimates of cash benefits

The non-cash benefits and costs are difficult to quantify, but need to be taken into account in comparing wildlife/tourism with other livelihood strategies. The cash benefits and costs of damage can be very roughly estimated, to help make comparisons with other sources of cash.

Previous estimates suggested that across Caprivi, residents are earning N$1-4 million per year from wildlife, mainly through tourism. Much of this is in the prime riverine areas where average household earnings from wildlife are probably around N$600-1,800 per year (see Appendix E for more details). However, assessing implications of this income for rural livelihood strategies depends not on averages, but on the distribution, regularity, and type of income for different households. Therefore, more focused estimates (explained in Appendix E) have been made for five Caprivian communities (shown in Figure 3), on the assumption that plans they are discussing or developing are realised:

- *Bagani* -- developing a campsite, with guides, and probably trophy hunting once a conservancy is established.
- the *Mayuni Conservancy* (Choi area) -- developing one or two joint ventures, possibly a campsite with guides, and recently established a craft market.
- *Lianshulu and Sauzuo* -- developing a joint venture lodge inside Mudumu National Park and planning a campsite with guides, already receive a bed levy share and some employment from the existing lodge.
- *Malengalenga* (or other villages north of Mamili National Park, establishing a campsite, with guides.
- *Salambala,* establishing a conservancy, joint venture lodge for tourism, hunting and bird shooting, and a community enterprise.

Table 9: Estimated wildlife/tourism income in 5 communities if current plans are realised[1]

Community	Total income (N$ per year)[2]	Average income per household (N$/yr)[3]	Assumed no. of households
Bagani	61,000 - 73,000	405-485	150
Mayuni conservancy	208,000-270,000	520	400
Lianshulu & Sauzuo	143,000 - 230,000	520-835	276
Malengalenga	12,000-23,000	20	600
Salambala	313,000-325,000	250	1250

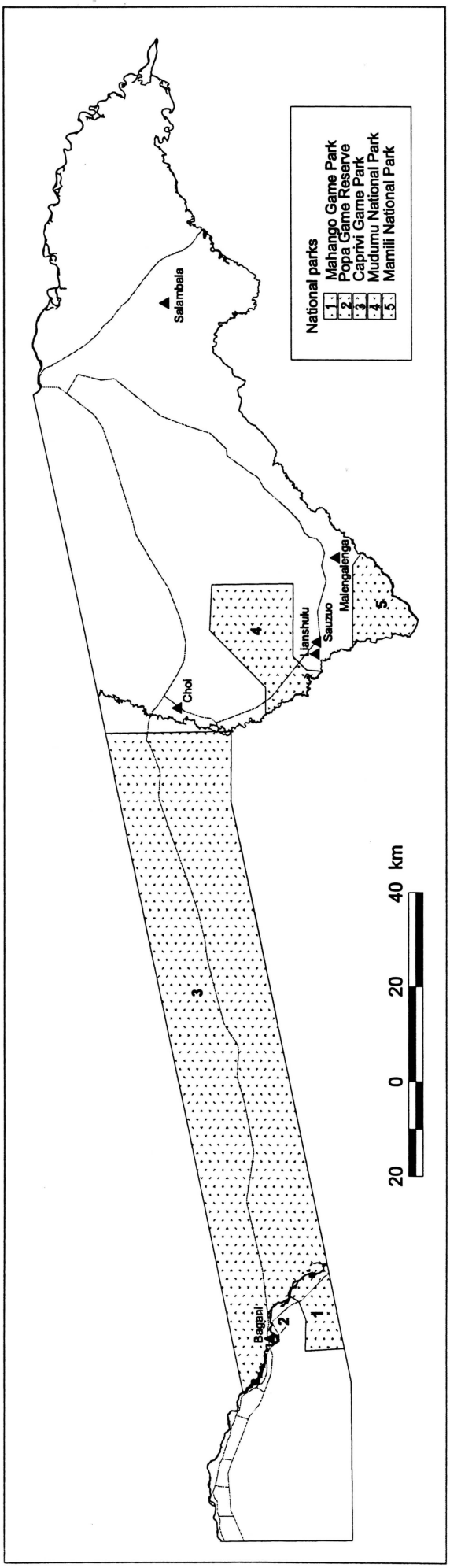
1 based on development of planned enterprises, controlled by the community or within the conservancy area, as listed for each community above. Income from other wildlife sources, such as employment in National Parks, in other lodges near to but not "within" the community's wildlife management area, or crafts made for sale in Katima are not included. Incomes of Game Guards and Resource Monitors are not included because these are also "costs" (see below).

2 rounded to the nearest N$1000.

3 rounded to the nearest N$5

For full details of estimates, sources, and methodology, see Appendix E.

Figure 3: Map showing location of 5 communities for which wildlife income was estimated.



Estimates for all forms of local income (collective income, wages, and other earnings), based on normal operation of *these* enterprises once plans are realised, are shown in Table 9. (Income that residents may earn from other wildlife-related work elsewhere - in Parks, other lodges, or Katima -- is not included. Income of community game guards and resource monitors is not included here but is discussed below). It can be seen that total local income from the planned wildlife enterprises can be substantial -- ranging from N$60,000 - N$325,000 per year -- in all except Malengalenga[19]. If population estimates are correct, this represents approximately N$250-N$800 per household per year.

However, most households would not in practice receive N$250-800 in cash during the year, because the *money is earned by the Conservancy* (or community institution), *employees and the self-employed.* As Table 10 shows, on average, approximately three fifths is collective income, which could be shared across all households, or might be used for community investment. Over one third of the estimated total income is wages, which will be earned by a small number of people. The remainder is other earnings, which is likely to comprise very small amounts earned by a slightly wider range of people[20]. However, if collective income is spent on local labour (game guards, casual labour etc) this ratio will change.

Table 10: Different types of local income from wildlife: averages for 5 communities

	Collective income	Wages	Sales earnings	TOTAL
Amount, N$/year	483,500	297,200	47,709	828,409
% of total	58%	36%	4%	100%

Collective income: includes net profit (not gross revenue - ie operating costs of enterprises have been deducted) from community enterprises, concession fees from lodges or hunting enterprises, and bed-night levies received by communities. Running costs of wildlife management and conservancy operation have not been deducted.

Wages: take-home wages of permanent employees (full-time or part-time). These may or may not include the value of food or other in-kind payment.

Sales earnings: income from doing casual piece-rate labour or selling gathered and home produced products, such as fish, grass, crafts etc.

Benefits at household level:

So the question is, from the perspective of different households, what could these enterprises contribute? The results are summarised in Table 11.

i *share of collective income*

If the collective income is distributed *equally across all households,* Table 11 shows that in the four communities earning concession fees, the annual household dividend ranges from around N$165 in Salambala, up to over N$400 in Lianshulu and Sauzuo. It is minimal in Malengalenga. Such cash-handouts of a few hundred dollars per year would be significant for all households: it would cover school fees and other school expenses if

[19] Under an alternative scenario, in which the community develops a joint venture lodge, probably through a concession inside the Park, Malengalenga income is also substantial, at N$76-125,000 per year.

[20] The Malengalenga example, based on only a campsite and guides, shows a very different pattern, in which most of the income accrues to individuals and very little collective profit to the community.

paid at Christmas, or could cover the cost of 1-3 months of grain in a deficit year, possibly alleviating the need to sell livestock.

Table 11: Benefits to Households from planned wildlife/tourism enterprises in 5 communities

	COLLECTIVE INCOME N$/household/yr	WAGES		OTHER EARNINGS		Total % of HHs earning
		no. of employees	% of households	no. of earners	% of households	
Bagani	355-385	2	1.3	5-9	4-7	5-8
Mayuni	230-315	23-28	6-7	23-44	6-11	12-18
Lianshulu/Sauzuo	290-480	14-19	5-7	9-25	2-8	8-16
Malengalenga	8-15	2	0.3	2-4	0.3-0.7	1
Salambala	165	22	2	28-33	2.5	4
Average	240	15	4	18	4	9
		avg. N$/employee/yr: N$2714		avg. N$/earner/yr: N$520		

If the collective income is used for a *community project,* it is impossible to assess its significance to household livelihoods, although it is worth noting that major investments could be funded from such sums. Any single investment, whether in a water pump, garden, grinding mill or enterprise is likely to have differential impact on residents, according to their location, gender, lifestyle and socio-economic status. But returns could be great: for example an improvement in water supply that saved 10 women half an hour a day could be valued at N$2,000 per year given the return to labour on sales activities.

If collective income is used to *fund conservancy operating costs,* such as game guards, resource monitors, water points, fencing, and committee operation, this could consume a considerable share. Estimates for Salambala, based roughly on current and planned expenditure, indicate that operating costs could amount to N$63,000 per year or 30% of collective income, (see Tables 6b, 6c and 6d in Appendix E). However, 95% of this expenditure is not "lost" to the community, but is converted into *wages and earnings* of *some* community members. Table 12 shows how this expenditure *substantially alters the distribution of wildlife income* between the collective, workers, and sellers. Operating expenditure would reduce collective income to less than half of total local income from wildlife, but would increase the number of permanent employees and wage earners from 22 to 26, and 28 to 81 respectively.

Rough estimates for the other communities, assuming somewhat lower running costs, show a similar effect. Collective income is reduced to around N$200 per year (wiped out in Malengalenga), and wages become the largest source of income, accounting for half of total local income from wildlife (see Table 8 in Appendix E). However, much obviously depends on how communities choose to run their conservancies and whether to pay committee members and other activists.

Table 12: Impact of spending collective income on conservancy operating costs

	Collective income		Wages		Other earnings		TOTAL
	Total N$	N$/household	Total wages, N$	no. of jobs	Total N$	no.of earners	N$
Ignoring conservancy operating costs (ie gross local income)	204,000	163	100,000	22	9,000	28	313,000
If operating costs are paid from collective income (ie net local income)	140,000	113	130,000	26	37,000	81	308,000
Difference: losses and gains due to operating expenditure	63,000	- 50	+30,000	+4	+28,000	+53	-5,000
% of total income:							
- gross	65%		32%		3%		100%
- net	46%		42%		12%		100%

Estimates rounded to the nearest thousand dollars. Other earnings includes fees paid to the 41 committee members (who account for most of the increase in "earners."

If operating costs are funded by a grant from outside, as happens now, then the *benefits* to workers and sellers need to be included, without deducting any of the *costs to collective income*. This is the current situation. However, it is generally regarded as temporary, which is why it would be wrong to include incomes of game guards and resource monitors in the baseline estimates above, without balancing them as costs. However, it is perfectly possible than conservancies will be able to raise money from donors or NGOs to continue funding game guards and other operating costs, so as to maximise the socio-economic impact of their earnings.

ii *wages*

Wages from permanent employment would be a major boost to a small minority of individuals in each community, probably to their households given that the jobs are in the home rural area not away in town. The estimated number of full-time jobs per community varies between sites from 2 to 28, affecting from 1% to 7% of all households within a community (and would increase by another percent or so if incomes of game guards and resource monitors are included). The average income per worker per year is N$2,700, as this includes a mixture of full-time jobs (at around N$4,800) and part-time jobs. Even the other 93 to 99% of households are likely to benefit from the increased spending power of their employed neighbours, given that the total wage injection could be over N$100,000 per year (these second round effects have not been estimated).

iii *earnings from sales*

Other earnings might be only N$50 or so per year, for seasonal sales of fish to a lodge, or N$200 per year for a craft-maker, but the number of earners could range from 2 to 44 per community, affecting 1-11% of all households. For example, in Bagani, there are likely to be only two permanent jobs (half-time) at the campsite, but 6-10 people could earn money from services and sales at the campsite and temporary employment in safari hunting.

The final column of Table 11 shows that if jobs and earning opportunities are spread across the widest range of households, *the most optimistic estimate is that around 16-18%*

of households in Lianshulu/Sauzuo and Mayuni area could earn income directly from the currently-planned wildlife and tourism enterprises (or 21-22% including some community game guards and resource monitors). However, this is probably an under-estimate, because if and when the planned community initiatives succeed, new opportunities will be created -- and hopefully seized -- for individual entrepreneurs. For example, at Bagani, opportunities for selling drinks, traditional food, and crafts, story-telling and dancing, will expand if the camp-site is successful, but have not been included in these estimates.

Factors affecting incomes

Plans could, of course, change considerably, for many reasons, as could the tourism environment, so in practice local incomes could be quite different. Factors which could affect the estimates by at least a factor of 2 are explained in Appendix E. Some of the most important are:

- *tourism developments inside National Parks* affecting the potential of conservancy sites. For example, potential income at Mayuni could fall by two thirds if competing facilities are established over the river in the Park, but be roughly similar if such developments are a tripartite venture with the community. At Malengalenga, a private lodge inside Mamili National Park could increase total local income five-fold (due to wages) but a joint venture would increase it more than ten-fold.

- measures to increase *labour intensity* and local linkages of lodges and other enterprises, so that the estimates of maximum wages and earnings from wildlife enterprises (which are often twice the minimum) are achieved. Community agreements, government incentives/criteria, private sector attitudes, and market opportunities can affect the extent to which local sourcing of goods and services is maximised.

- *community and institutional* constraints or changes;
  Implementation may be quite different from current plans for a number of reasons.

- overall pace of *tourism expansion* in Caprivi.
  Market demand for these new ventures does appear to exist (MET, 1997). Furthermore, under a "tourism boom" scenario, the pace of development and hence medium to long term local enterprise opportunities could multiply well beyond what is envisaged here (MET 1997).

Benefits to households in other areas of Caprivi

The estimates for the 5 communities above are probably relevant to some other riverine areas not covered, such as the west banks of the Okavango and Kwando rivers, and eastern floodplains. However, for "inland" communities, wildlife/tourism opportunities are likely to be restricted to a share of trophy hunting fees, roadside sales, game guard and resource monitor wages, and remittances from household members working in Katima hotels, the parks, or lodges elsewhere.

2.7.5 Estimates of costs of wildlife and tourism

Time input

In addition to time spent by individuals earning wages or sales income, a considerable amount of time is needed to generate *collective income from wildlife*. For example, in developing the Lianshulu joint venture, it is estimated that the Chair of the Development Committee may well have spent a total of 35-40 full-time days between May and December. It's not surprising that his Committee role conflicted with his full-time job nor that other community members often failed to turn up to meetings. If another year of meetings is required before any tourism enterprise is established, total time input by local leaders and committee members could be 360-720 days.[21]

From the community's point of view, the return to the committee members' work is massive if it results in collective income of N$100,000 per year for ten years, plus wage/earning opportunities for individuals worth as much again. But from the individual's perspective, can such unpaid time be afforded? Even if s/he has spare time, does the expected return (whether it is status, a job, pride in community success, or a share of community income) make it worth it? But if not, how many communities can afford to pay their members to do such work before the returns to wildlife start flowing? Communities are used to supporting traditional leaders in various indirect ways (fees, fines, privileged access to resources) but not to paying a whole committee for a single task.

Wildlife damage

In the whole Kwando River region, crops lost to elephants in 1995 were worth around N$21,500 at market prices. In 1994, the worst year of lion predation recorded, the market value of lost livestock was around N$85,500 (O'Connell, 1995) These amounts are roughly similar to potential wildlife earnings of just one prime-sited Kwando community, such as a Mayuni conservancy or Lianshulu and Sauzuo. Thus *total* earnings from wildlife can far outweigh wildlife damage costs in the region (and are estimated to already do so, based mainly on wages from tourism lodges). However, for individual households, it is not the aggregates or averages that matter. Loss of N$245 worth of crops to elephants in one night, or a N$800 cow, can be devastating, and may well hit households that are not receiving "average" incomes from wildlife.

Competition for resources

Wildlife can compete with livestock for food and water, and can displace people and their farming, herding and gathering activities, in "exclusive" wildlife areas. There is little evidence of the former in Caprivi, and the only examples of the latter to data are the creation of the National Parks and now the Salambala core area. The cost of lost access depends on how easily available alternative resources are. No estimates have been made of this.

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[21] The Chairman had meetings with MET and LIFE staff on 21 days (some full-day meetings, some half-day). He probably as much time again or more on community activities between meetings, such as registering all members and holding village meetings, plus 9 days on an educational exchange visit, making a total of 35-40 full-time days over 8 months. ie up to 5 days per month. (Note there were also other reasons why his input conflicted with his full-time job). If the whole process requires a year and a half's work by 10 local leaders and committee members, putting in an average of 2-4 days per month each, the total is 360 to 720 days.

2.7.6 Trends and constraints

Market growth: as indicated above, the tourism industry is growing rapidly in Caprivi and surrounding region, and the pace of change could increase further given concerted government, local, and regional effort (MET 1997). Potential local incomes could therefore increase further.\

Outside support: although wildlife is not subsidised in the way that agriculture is (through, for example, price support and veterinary services), it is in fact being supported by considerable outside grants from international bodies, plus extension work by Government. Given the transaction costs of setting up conservancies and wildlife enterprises, particularly the time input mentioned above, development of the full potential of local wildlife use across a broader range of communities may depend on continued availability of such support for some years.

Natural resource base: decline or expansion of wildlife numbers and habitat will affect all the enterprises discussed. This in turn depends on the status of parks, the success of conservancies, behaviour of the Namibian and neighbouring governments, residents and private sector, water flow and climatic trends, and on interventions such as the proposed veterinary fence between west Caprivi and Botswana.

2.7.7 Summary of wildlife impacts on household needs

The estimates above are very rough, and could be half or double the reality that develops over the next few years. Nevertheless, a few implications emerge from the ball-park figures:

- collective income is likely to count for more than half of total local income from wildlife in conservancy areas offering concessions. If distributed as household dividends it could average N$200-300 per year, making a substantial dent in households' cash needs, covering school fees and/or bags of grain. The impact would be greatest in a dry year, or at Christmas, when cash needs are acute.

- for those who depend on casual labour and sales to meet cash needs, wildlife and tourism expands their opportunities by increasing the market for their products among both the tourism sector and local neighbours (with increased purchasing power). However, the tourism market can be seasonal. Cash/resource-poor households may also be hit by lost access to natural resources in exclusive wildlife areas.

- up to 7% of households within a community with luxury tourism enterprises could gain a permanent wage, with major impacts on living standards, outweighing effects from other types of wildlife/tourism income. Therefore competition for these jobs is likely to be acute.

- if collective income is spent on wildlife management and conservancy operation,

much of it will be spent within the community, for example on community game guards and resource monitors. So total local income falls little, but the distribution changes considerably. Operating costs funded by outsiders represent an additional boost (or subsidy) to local wildlife income.

- in those communities without concession or lease fees and without lodges, income from community enterprises and own sales could be noticeable for the few individuals most closely involved (eg workers and guides at a campsite), but not for the majority.

- within a community, jobs, opportunities, and hence cash benefits will be distributed quite unevenly (though dividends from collective income would smooth this out) so may cause conflict.

- the total amount and the average amount per household of wildlife damage costs is much less than income from wildlife and tourism, but because they are distributed differently, some households may suffer costs without commensurate benefits.

The time that needs to be invested in setting up community contracts and joint ventures with private operators is a problem. Although the returns to labour are massive from the community's perspective, the benefits are some years away, and in the meantime the community may not be able to reimburse individuals. Participation may therefore be limited and skewed to a few, or generally insufficient to implement plans.

The intangible benefits and costs, including aesthetic value of wildlife, increased community control and empowerment, or increased community conflict, cannot be valued but are likely to be significant in influencing behaviour.

2.8 Summary of livelihood strategies

The number of households engaging in each activity, and the amount of income or benefit they gain, is difficult to quantify due to lack of data. However, it is clear that virtually all households grow crops and harvest natural resources such as fuelwood and timber. A substantial majority have cattle and some sort of cash income. Activities such as selling veld foods, thatching grass, crafts and fishing are undertaken by a minority, according to their location and circumstances. It is also clear that each of these activities provides not just one but a *range of benefits*. These benefits are summarised in Table 13. The next section builds on this, to compare activities in their contribution to the main household needs, and to determine which factors affects household decisions on which activities and strategies to adopt.

Table 13: Summary of contribution to basic needs of each livelihood activity

BASIC NEEDS	CROPS	LIVESTOCK	WAGES, PENSIONS	TREES				Fish	Wildlife
				Wood	Veld products	Carving, weaving	Thatching grass		
Physical Needs									
Food	***	*	**		**			**	*
Water, energy, shelter		*		***			**		
Livelihood Needs									
Cash	*	*	***		*	**	**	*	***
Goods for barter, exchange	*	*		*	**		*	*	
Reserves & investment		***	**			*	*		
Drought buffer		**	***		**	**	*	**	**
Inputs to production		***	*						
Cultural & intangible assets	*	***							*
Community management capacity									**

*** indicates that the activities makes a major contribution to a need, and * minor (often indirect) contribution.

Section 3. Factors Influencing Household Choices

Section 2 has described the wide range of livelihood strategies used by rural Caprivians and the variety of benefits and costs, advantages and disadvantages associated with each. Few, if any, households, rely on a single strategy or on all of them. Each household invests its time and resources (financial and natural) in a combination of strategies, according to its needs, opportunities and preferences. Although needs and preferences vary (for example by household size, expectations, desire for leisure time), the largest differences occur in *the ability to meet needs* and hence in the strategies used. There are variations between households, areas, seasons, and years. Difference in needs, abilities and strategies between members *within households* also have a strong influence.

This section examines how different households *combine livelihood strategies* to meet their needs, focusing particulary on the needs for cash and food. For each of these, the range of options are compared and preferred options highlighted (ie Section 2 was looking down the columns of Table 13: for each livelihood activity, the needs it addressed were assessed. This section looks across the Table, comparing livelihood activities for meeting needs). Based on this the *key factors* that affect household which activities are pursued are analysed. The aim is to build a more rounded picture of rural livelihood strategies, highlighting key differences between households by socio-economic status and area. This will help identify the relative importance of various strategies, including wildlife, and also point to *unmet* needs, which wildlife developments may or may not be able to fulfil.

3.1 Combining options to meet basic needs

3.1.1 Meeting food needs

Strategies for meeting food needs, in generally declining order of preference, are:

i crop production
ii cash purchase
iii harvesting veld foods
iv local exchange, gifts, reciprocation
v reducing consumption.

Factors determining how different households adopt and combine these options are explored below.

Crop production

Virtually all households grow crops to help attain food security[22]. However, there is enormous variation in households' ability to grow sufficient food. The main factors are:

- access to cattle for draught power

[22] Even households with regular income often invest their earnings in paid labour for working their fields (van Rhyn, 1995a, Mosimane, 1996a). In West Caprivi, veld food collection is core food security strategy but one that varies according to crop production, rather than vice versa (van Rhyn, 1995a).

- labour available for crop production at peak times
- location and soil fertility
- rainfall and drought

Availability of land is generally less of a constraint than the ability to work it, although availability of the most fertile land (such as "sitapa" or recession soils) can be constrained (Hines, 1996, NRDP). This explains the high variation in the size of planted fields, reported in the Agricultural Census (CSO 1996b). Other factors, such as cultivation practices and use of inputs, have less of an influence on output, although the significance of such factors might increase as improved seeds, technologies and methods develop.

Therefore crop production is most limited in those households who are short of labour, access to cattle *and* off-farm income to provide food, beer or payment to others to supply labour and draft power. This is most likely among female-headed households (an estimated 42% of Caprivi households (CSO 1996a)), but will also include male-headed stockless households. Female households permanently headed by women, as opposed to those acting for absent males, are most likely to be the worst off. Such households cannot cultivate enough to satisfy subsistence food needs.

Households with a small cattle herd or limited off-farm income for buying or exchanging draught power will be able to plant a larger area and attain a harvest nearer to self-sufficiency. By contrast, those with sufficient cattle and regular wages are theoretically able to plough and tend a larger area, by buying labour, and therefore can generate a surplus. Based on the assumptions used in Section 2 above, a 5ha field would generate surplus grain of over 400kg. However, increasing farm production to produce surplus requires assuming risks which, compared to other options, may be unacceptable to some households. Whether households with access to labour and draft power to produce surplus grain allocate these resources to agriculture or other options is likely to depend on numerous conditions: wage employment and cash remittance opportunities, access to fertile land, market price of surplus grain, need to avoid risk, and other factors. Profitability and desirability of crop production does not necessarily improve with size. From a household point of view, crop production may be the main food security strategy up to a point, after which other strategies are more fruitfully applied.

It is impossible to estimate the percentage of households falling into each category, but the percentage in the "food deficit" groups will be lower in areas with higher cattle ownership/access, more fertile soil, and in good rain years. This suggests that villages near the eastern floodplain, where the majority of Caprivi's cattle are estimated to be and where fertile soil is available, are likely to have a higher percentage of food-sufficient households than inland areas. However, in all areas, there is likely to be a mixture of "always food deficit" "often food deficit" and "usually food sufficient" households, and given the high varability of yield and the estimates above (showing that even a 2.4 ha field will only generate a surplus in a good year), *the majority of households are likely to have a food deficit in some or most years*[23].

[23] Estimates in section 2 suggest the majority face a food deficit in a normal year. By contrast, planning parameters used by the Rural Development Support Programme categorise 10% of Caprivi households as "disadvantaged," meaning usually in food deficit, and 60% as "transitional," often having a surplus for sale (RDSP, 1997). These are based on substantially higher field size estimates (which contradict the Agricultural Census) as discussed above.

Buying food

This is likely to be the preferred option for those with regular income (options for earning cash are discussed further in 3.1.2 below). Many households will reduce other cash expenditure in order to be able to buy food in drought years. For example, thatching grass sellers reported spending their earnings on food in 1995 after the poor harvest, although they would normally want to spend it on livestock in a good year (Nabane, 1995). Some households will sell-off reserves to provide cash. However, those that do not have regular income, are likely to maximise gathering and exchanging food, in order to minimise reliance on cash or going without.

Increasing reliance on collected foods

Fish, veld foods and game can all help fill the food deficit. In West Caprivi, these foods can be seen as normal staples, along with crops, rather than occasional gap-fillers. For example, 10 out of 22 Bagani households involved in a ranking exercise rated veld food as of equal or greater importance to crops as a source of food, although overall crops were ranked first (van Rhyn, 1995a). Several households report using a 50kg bag of mangetti nuts per month as a relish in addition to grain. This can make the cereal harvest stretch further. However, to meet a 7 month food deficit without resorting to cash, veld food collection would need to be considerably higher -- and in some cases it no doubt is. The 1991 socio-ecological survey of West Caprivi estimated that at certain times of year, some communities relied on veld foods for at least 50% of their sustenance (Brown and Jones, 1994). Given that a 50kg bag of mangetti can take a few days to collect, heavy reliance on veld food demands a lot of time.

In East Caprivi, veld food is unlikely to provide such a substantial part of the diet, although increased time on collecting veld and river foods and fishing, are likely strategies for meeting a food deficit.

Relying on barter, reciprocal exchange, support networks

Households with severely limited cash resources can barter surplus subsistence goods (milk, labour, veld foods, crops, beer, etc.) to meet needs for scarce goods that otherwise might be purchased with cash. For example, some households have more vegetables, some more milk: both benefit from bartering. Building reciprocal exchange obligations is a similar process extended over time. If the exchange is with a relation, for example, the debtor may reciprocate with a cup of maize now, tomorrow, or late in the lean season. Although barter results in tangible assets whereas building up obligations for reciprocal exchange is an intangible asset, in practice the distinction is blurred. Support networks for poor relatives are reported to be stronger than in other regions, with non-cash transfers being more important than cash remittances (SIAPAC 1997).

Barter and reciprocal exchange are important for:

- enabling cash-poor households to get resources they lack without the need for cash or crops; this shows that veld products and household labour are not only important for meeting subsistence needs, but as currency for cash-poor households to enter the local economy.
- enabling those with a surplus of food or labour to "spend" in the local economy without

draining their cash or simply relying on trust and an expectation of future return; and

- maintaining a local social security and insurance system which spreads risk across households.

Nevertheless, they are unlikely to be sufficient to meet a food deficit of several months.

In conclusion, households with sufficient agricultural inputs are likely to be able to meet food needs in most year, and those with good access to cash earnings or substantial reserves will be able to purchase food to meet any deficit. But others will have to rely on gathered foods, barter and exchange. Even if a great deal of time is expended, these may be insufficient to prevent cuts in food consumption.

3.1.2 Meeting cash needs

All households need cash, though the amount regarded as essential will vary, according to harvest, household size, (mis)fortune, lifestyle etc[24]. Cash needs also vary with the time of year (with peaks in January, pre-harvest when food stocks are running out, and at times of emergency/major event). A rough indication of some basic cash needs over a year, given in the box, shows that around N$1500 would cover only essentials for a food-insecure household.

BASIC CASH NEEDS

Minimum basic needs per year could cost:

- school fees. eg N$40 for 2 local schools, N$100 for one hostel: N$180.
- clothes/uniforms: N$50-150
- clinic bills: N$60
- daily necessities: soap, oil, tobacco, tombo Assume 50c-$1/day: N$182-365
- one-off events and emergencies: funerals, weddings, major purchases: avg N$100/yr
- bus-fares: N$30
- extras N$50

Sub-total: N$ 650-930

Plus food deficit (N$625-1525 in a fair year)

Total: N$ 1277 -- 1810 per year, excluding any savings/investment, any expenditure on agricultural inputs, or many other "needs" which would no doubt still be experienced by a household affording the basics above.

Data averaged for all Caprivi households shows annual expenditure of around N$2,000 on food, N$370 on clothes, N$600 on household items, N$350 on transport, and N$175 and N$40 on education and health respectively, totalling over N$4,000 per year on average. This illustrates that the estimates above are for minimum needs only, though are probably more appropriate for many rural households, given that the top 25% of households account for 60% of total consumption of all Caprivian households, and the bottom 50% account for just 19% of the total (CSO, 1996a, see Appendix A for more details).

The four main sources of cash, in generally decreasing order of preference are:

i wages from regular employment

ii pensions and remittances

iii earning cash from sale of products and labour

iv selling off assets.

If these are insufficient, 2 strategies to minimise cash expenditure are:

v increase reliance on home-produced goods, barter or exchange

vi go without.

How households meet their cash needs through these strategies depend on their opportunities.

[24] Households with greater access to resources would need less cash for purchasing basic cereals than estimated above, but probably more for other expenditures, including paying labour, assisting other households.

Wages and pensions

Households with access to regular *employment* are able to cover much (though not necessarily all) of the above cash expenditures. As described in section 2, the bulk of rural earnings appear to be spent on food, but some is usually available for other items too. Within a household with an employed member, other members may still seek to boost food supply and cash incomes through collecting veld foods and selling products (much depends on the size of the income and how it is shared within the household). However, evidence that increased employment opportunities enable a reduction in other strategies comes from West Caprivi, where Game Guards commented that rising employment on the Trans-Caprivi highway led to decreased veld food collection and poaching of game (IRDNC).

Households which receive pensions or remittances from absent family members will be able to meet some of the basic needs (eg a pension provides N$1440 per year), but will probably still seek to supplement cash generation. Nevertheless, the cash income is highly valued for its *regularity and security.*

Earnings from sales

Households without sufficient regular income are more likely to try the second strategy -- earning cash from sale of products and labour -- before resorting to the third strategy -- selling off reserves. Those without reserves have not choice. The various options include carving, weaving, grass collection, tourism guide, selling fish, veld products, chickens or tombo, working for neighbours.

Choice is constrained by:

- location and resources: the availability of fish, thatching grass, carving woods, veld foods varies enormously by area, and in some cases has diminished.
- skills: weaving, carving, tourism guiding, and collecting veld foods and medicines need skills that only some people have.
- gender: men are unlikely to weave (except very large baskets) and women are unlikely to carve.
- market: this depends on location (eg near the road or tourism centres for craft makers), season, access to transport, and the number of neighbours who have a surplus to spend on purchasing goods or labour.
- time available (how much and at what times of day).
- seasonal availability of some natural resources.

If a choice remains open given these constraints, households are likely to choose activities according to the return to labour (or profitability), the effort or convenience of alternative options, whether the need for cash is immediate or can wait until the product is sold, and the match between time available and time needed (not only the total amount of time, but the flexibility and timing of labour input).

The relatively new activities of selling thatching grass and tourist crafts appear to be taking on a similar or greater significance to beer-brewing for those involved and replacing other

activities. For example, amongst grass-cutters in Lizauli, the majority said that grass was now their main or only source of income, whereas previously it was beer brewing. Grass cutters reported to IRDNC in winter 1996 that they "now spend so much time cutting grass, they do not have as much time to make mats and baskets" (IRDNC, September 1996). Among craft-makers in Lianshulu, crafts and beer were ranked as the first and second most important sources of income (accounting for 33% and 25% as measured by scoring with stones), while grass, knitting, chicken, and pensions were all more minor income sources (Nabane 1995)[25].

This suggests that women are responding to new opportunities by changing how they invest their time and switching to activities with higher returns: estimated returns to labour of N$1.55 per hour for carving and N$1.5-N$2 for grass collection, make it comparable to a day's casual labour for N$10/day, and higher than weaving at N$0.8-1.3 per hour[26]. However, profitability is not the only concern. Collecting thatching grass is strenuous, whereas weaving baskets is flexible work easy to fit in at home, so some women choose to continue the latter, despite lower returns per hour (LaFranchi 1996a).

For those with skills, access to natural resources, and commercial -- not just local -- markets, incomes can be a few or several hundred dollars a year, representing a significant portion of cash needs. However, for other households relying on *local markets* for sale of products or labour, opportunities will be more limited. Selling a cup of mangetti nuts for N$1, an axe for N$20, or a cup of milk for 50c to a neighbour (van Rhyn, 1995a) might or might not represent good returns to labour but would need a massive number of sales to make a dent in cash needs of over N$1000 per year. Home-made beer seems to be the only product with a sufficient local market to earn in the range of hundreds of dollars a year. Payment for agricultural work for neighbours is hard to estimate (in many cases it is just beer and food; one man in Bagani reports paying workers N$100 per month plus food (van Rhyn 1995a)), but in any case such work will be very seasonal -- and at a time when poor households also need to apply labour to their own plot.

Summary

Where possible, households will try to meet cash needs through regular employment, as this provides security and will usually be sufficient to build up reserves in fair years. However, this option is simply not available for many households. Several (probably a majority) will be able to rely on regular pensions or remittances, which will help substantially, but still leave them needing to earn additional cash from sales.

Those with least access to regular cash income will have greatest dependence on ad hoc earnings from selling products and labour. For them, these sales can be *critical* to making ends meet. Their choice of activity will vary enormously between areas according to the resources available and the size of accessible markets, and vary between households according to skills and time. A few activities, such as carving and selling thatching grass,

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[25] Commercial thatching grass purchases were much less south of Mudumo near Lianshulu, than north near Lizauli, so it is not surprising that grass income ranked lower.

[26] Returns to labour time depend so much on unknown and very variable factors: the individual's skill, and time spent gathering raw materials and selling finished products. Therefore comparison of estimated average returns to labour for each activity are of limited use in understanding individual choices.

can probably provide a significant proportion of cash needs in the minority of cases where outside markets exist. However, in the majority of cases, circulation of local cash surpluses is essential to provide a local market. In such situations earnings from sales are very unlikely to meet cash needs, so measures to reduce cash expenditure are also likely.

3.2 Factors influencing household choices of activities

The above comparison of strategies for meeting food and cash needs has highlighted the most important factor determining households' activities:

> *"The main causes of poverty and socio-economic differentiation are the lack of access to draught power and lack of reserves to be used in times of need, in the form of livestock ownership and/or sources of regular off-farm income. Female-headed HH -- divorcees and young widows who do not yet receive a pension - are in the worst predicament. If they have neither cattle -- which is usually the case -- nor access to draught power through family relations, they are unable to cultivate areas large enough to satisfy subsistence needs even in good years, let alone produce surpluses. The lack of reserves makes these HH*

3.2.1 access to livestock and regular off-farm income

Livestock and cash income are mutually reinforcing: income enables a household to expand its crop production and cattle herd; production of a crop surplus and herd off-take can generate more cash. However, those without either livestock or access to regular off-farm income must rely more heavily on all the other resources and strategies described. *These are therefore the major characteristics for categorising households by socio-economic status and vulnerability, and understanding their reliance on various livelihood strategies.* The way in which these two factors affect their food production, earnings, and resulting survival strategies is summarised in Table 14.

However, there are several other factors influencing household choices of which activities to pursue, which also need to be reviewed:

3.2.2 time constraints

Labour time necessary to complete core activities -- meeting energy, shelter and water needs -- constrains the choice of optional activities needed to "round out" household livelihoods. Core labour requirements vary across the region seasonally, annually, and by household, but conditions which make securing basic necessities more time-consuming include:

- lack of adult labour
- low access to agricultural and transportation inputs (draft power, fertile soils, sledges, etc.);
- absence of all cash-strategies except those with the lowest return/hour;
- long distances to water supplies, veld foods, and raw materials
- scarcity of fuelwood and other timber resources in the immediate area;
- few opportunities for mutually advantageous barter exchange.

Consequently poor households, especially those headed by women and lacking access to inputs and all but the lowest-paying cash-strategies, are likely to be constrained by time the most and thus have less time for other options[27].

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[27] The most time-consuming activities, such as gathering firewood, water, veld foods, and weeding are done disproportionately by women (along with other core activities like cooking), so *within* households women are likely to be under more time pressure.

Table 14: Types of household and their livelihood strategies in northern communal areas

Type:	A: very poor, female headed	B: very poor, male headed	C: poor	D: less poor	E: rural elite
Traits:	*No cattle, no off-farm income*	*No cattle, no off-farm income*	*small off-farm income or few cattle*	*regular income or medium cattle herd*	*large cattle herd owner*
Economic mainstay	crop production, gathering	crop production, gathering	crop production, off-farm income	crop production, livestock or wages	livestock, small & medium off-farm enterprise
Cropland size (ha)	1-1.5	1.5-2	2-3	3-6	6-20
Livestock: **- cattle** **- goats**	none	none	0-10 0-10	11-100 11-100	100+ 0-200
Labour supply	Inadequate. Lack of male labour, no hired labour or group exchange	Inadequate but more than A. No hired labour or group exchange	Limited. Can organise group work	Ample: from household or can be hired.	Hired
Main sources of cash income	sale of gathered and processed products, sale of labour	sale of gathered and processed products, sale of labour	pensions, minor remittances, sale of gathered and processed products	steady off-farm work of men, sale of cattle, cuca shops, pensions	non-farming enterprises, livestock sales
Annual cash income	under N$600	under N$800	N$1200-2000	N$2000-5000	N$5000+
Food self-sufficiency	no	no	only in very good years	in average and good years	yes
survival strategy apart from crops	gathering, labouring for others for cash or kind, reduced grain consumption	gathering, labouring for others for cash or kind, reduced grain consumption	off-farm income, gathering, working for others, reduced grain consumption	livestock is main security, plus regular off-farm income/pension	off-farm income/ pension and accumulated wealth

Note: as these estimates apply to former Ovambo, Kaokoland, Kavango and Caprivi, and were calculated in 1992, the amounts -- *of income or field size -- may not be appropriate for Caprivi today. But the classification into types of household and the* scale of difference *between them, probably is representative of Caprivi.*

Source: adapted from Northern Livestock Improvement Project: Socio-economic and Production Systems Diagnostic Study. IFAD report 121/92, FAO Rome, 1992.

Furthermore, these groups are most severely affected by economic and climatic "shocks" because of their limited ability to build reserves and create a robust safety net. They are likely to perceive time commitments to new initiatives (such as CBNRM) as more difficult to make, particularly if expected returns are low, risky and/or long-term.

Time constraints also vary in intensity over the course of the year. Time pressures are particularly likely to constrain available options and hence choices most when:

- ploughing and land preparation is undertaken;
- crops are growing well, nearly ready to be harvested, and must be protected from birds and other wildlife;
- copious amounts of rain has fallen and the need to weed fields is acute; and
- drought has reduced expected crop yields and time-intensive food-yielding alternatives must by employed.

3.2.3 drought

Drought resulting in crop failure or poor yields results in an increase in the need for cash to buy food. Devereux et al (1993) identifies four emergency sources of cash used by Caprivi households to boost food supplies in the 1992/3 drought: livestock sales, sale of assets, borrowing (cash or food), and informal and formal transfers. Households also reduced other cash expenditures, and adapted food consumption through using wild foods, migration of some family members, and rationing. Thus many of the strategies already described to make ends meet become more acute in periods of drought. A year-on-year drought period will have much greater impacts and require more extreme coping measures than a single year drought.

3.2.4 geography, environmental conditions

The range of environmental conditions in the region determines access to different types of resources and has implications for availability and selection of livelihood activities. Soil type and fertility, size and fertility of pasturage, tree species composition and regeneration rates, presence of flooded areas, proximity to major rivers -- all these attributes partially determine how valuable and available options are.

For example, households near a floodplain are likely to have the following advantages over households located on sandy soils far from regularly flooded areas or rivers:

- cropping land with higher nutrient levels, better water retention and availability for plants
- faster regeneration rates of livestock forage and valuable trees that provide timber and non-timber products, including a greater abundance of mopane trees (*Colophospermum mopane*)
- greater access to more abundant stocks of fish.

This suggests that core activities are naturally better buffered from drought in floodplain areas; hence, the demand for cash to cope with drought and the effects of aridity may be

smaller. It may mean that resource degradation will have a more limited effect, or it may mean that demographic changes are likely to lead to greater population pressure on resources in these areas.

3.2.5 social and cultural conditions

Factors pertaining to gender, the land management system employed by tribal authorities, and competition for finite resources affect peoples' options. Women may not have equal access to arable cropping land or pasturage, there may be a scarcity of the most valuable land, access to which will be more constrained for some than for others. Fishing resources, for example, may be controlled by "other" groups that allow access but for a "price" (some of the catch). Also, new resources may open for use: Lake Liambezi, now dry and situated between two cultural groups, offers fertile land for cropping. Unfortunately, two groups lay claim to this new cropping area and competition is vigorous. Such conditions and factors also determine selection of livelihood options by making options more valuable for some households and less valuable or accessible to others.

3.2.6 outside support, incentives

This includes the effects of government agricultural subsidies, introduction of yield-improving cropping methods, availability of agricultural and business-related loans, and government-sponsored or directed water-point programmes. Several initiatives include:

- making loans available to small-scale farmers for cropping;
- subsidised livestock sales during droughts;
- continued development and refinement of livestock markets in the region.

Developing markets and subsidising livestock sales during droughts reduces risk posed by drought, depressed livestock prices, and the possibility of inaccessible markets. Making loans available could reduce some capital constraints and encourage farmers to assume more risk (from droughts and economic misfortunes). Generally, these conditions are likely to result in greater incentives to allocate additional resources to agricultural practices. To the extent that such initiatives are developed, they could result in farmers producing a larger proportion of food needs, switching to cash crops, greater levels of "distress" sales of livestock during droughts, and/or an increase in value of livestock holdings in terms of ready cash assets.

These types of interventions will have a variety of results. They are likely to have the greatest effect on households with the means to qualify for loans and sufficient livestock holdings to take advantage of subsidies and improved marketing conditions. In the case of households with small livestock holdings, subsidised "distress sales" may reduce the ill effects of drought by providing a means to sell animals at a "fair" price that might otherwise be completely lost. For households without livestock or the means to qualify for loans, such subsidies are likely to have no direct benefits. However, such households could realize indirect benefits resulting from a greater capacity on the part of wealthier households to provide informal employment or other opportunities.

3.2.7 general economic factors

Access to markets, market expansion, prices and subsidies affect the earning power and cash needs of households, and may make some activities more or less profitable or essential. For example, the value of thatching grass as a cash strategy depends on a steady and firm domestic market for this product, which in turn depends on the national economy, national transport, and international competition. The value of selling mangetti nuts depends on the accessibility of markets at which they can be sold, in which case improved transport opportunities could be significant[28]. A dramatic increase in the price of a 50 kg sack of maize meal makes extra effort to grow more food worthwhile; an increase in the cost of renting oxen for ploughing (say, due to a scarcity of oxen caused by drought or subsidized sales) will have the opposite effect. Various new opportunities are emerging to earn cash income and derive other benefits as a result of conservancy and tourism legislation. For detailed discussion, see Section 4.

3.2.8 summary

To summarise, some of the main factors affecting households' choice of livelihood strategies:

i access to livestock for crop production
ii access to regular off-farm income
iii time constraints
iv drought
v location and geography
vi social and cultural conditions
vii outside support
viii general economic factors.
ix new or emerging opportunities

As these conditions vary, so will the options available and used, and so will the significance of CBNRM ctivities.

[28] The transportation issue has additional aspects. The prohibitive cost of 4WD transportation, in the absence of graded roads, restricts access to markets and some raw materials and opportunities to undertake activities that may provide new ideas (e.g. travelling to Katima Mulilo to observe how crafts are sold).

Section 4. Conclusions on the significance of CBNRM activities to rural livelihoods

The previous sections have shown that rural households adopt complex, diverse, risk-prone, and evolving strategies to secure their livelihoods, with varying degrees of success. Any new opportunities will be integrated into these strategies, in different ways by different people, according to how they complement or conflict with existing livelihoods and needs. Previous sections also estimated the range of likely costs and benefits of new natural resource management initiatives (CBNRM), both plant-based and wildlife-based. This section therefore assesses the *significance to households* of opportunities emerging from CBNRM.

The main *direct* benefits and costs which CBNRM activities can provide are summarised in the Box, based on sections 2.6 and 2.7. But it is a mistake to simply assess costs and benefits without exploring how these relate to needs and how they interact with other components of livelihoods and hence the overall security of the household. Table 15 compares the costs and benefits of CBNRM to household needs and strategies, to highlight the numerous positive and negative effects. It shows that CBNRM can have both positive and negative affects on virtually every livelihood strategy. Several points are worth highlighting and analysing further.

4.1 Variable and conflicting impacts on food security

CBNRM initiatives can boost two of the main food security strategies -- earning cash to purchase food (either through permanent employment or occasional sales), and relying more on veld products (either for own consumption or for sale). The cash boost indirectly supports two other food security strategies if it enables households with no or few cattle to build up their herd: it increases their ploughing (and hence crop production) capacity, and builds up their reserves for bad years. However, wildlife damage to crops and livestock also conflicts with these two important food security strategies of crop production and building up reserves. Whether the positive effects outweigh the negative varies enormously by area and between households[29].

4.2 Significant boost to meeting cash needs

In assessing the significance of CBNRM as a source of cash, it is important to note that the three types of cash earnings (collective income, wages, and other earnings) have quite different impacts for different groups.

For the 1-5% of households in some communities who could gain *permanent employment* in wildlife based enterprises a regular wage averaging N$400/month could lift them from "usually insecure" to "usually secure" (or out of the "poor" and "very poor" categories of Table 14). On the other hand, the jobs could be concentrated amongst those who are already from more secure, better educated and resourced households. Although the percentage of households who gain jobs is small, an additional 2-30 jobs is significant in a community, given the scarcity of rural jobs.

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[29] In an area with high wildlife density, communities need a lodge or hunting concessions for total cash benefits to exceed damage costs. At the household level, benefits are likely to outweigh costs for those with new jobs, may well for those with new sales earnings or household dividend and few livestock, but may often be less than costs for those with large herds but no new employment.

SUMMARY OF BENEFITS AND COSTS OF CBNRM ACTIVITIES

x *wages from permanent employment.* In prime tourism areas with lodges, up to 7% of households in any one area are likely to secure new jobs, earning around N$4-5000 per year for full-time work. These jobs are particularly important because unlike most private sector jobs, they are based in rural areas.

- *increased earning opportunities from sales of products and labour.* Interventions focusing on veld products and forest can improve earnings by developing new commercial markets (eg thatching grass companies), increasing profitability (eg sale of processed veld products), or maintaining the resource base and preventing degradation (eg improved management of hyphaenae palm). Wildlife and tourism developments expand the market both directly (new customers, new activities) and indirectly (more purchasing power amongst neighbours with jobs).
- *collective community income.* Concession fees and conservancy profits provide one of the few sources of income for community institutions for investing in infrastructure, sharing among members, and/or paying conservancy operating costs.
- *a buffer against drought.* Incomes are relatively independent of annual rainfall variation (or at least the effect is lagged in the case of wildlife-based enterprises, and less acute than in agriculture in the case of plant-based enterprises) so boost food-security and drought-coping strategies. In addition, cash incomes can be spent on boosting reserves.
- *increased empowerment, collective identity/pride and institutional capacity.* This can have intangible value to residents, or could lead to quite tangible improvements in how the community manages its resources and works together.
- *improvement in the natural resource base.* Benefits can include improved environmental functioning and aesthetic or cultural values, in addition to the tangible benefits of expanding resource-based production opportunities.
- *training and skill development:* eg for game guards, resource monitors, employees, committee members. Improved capacity to deal with challenges and earn a livelihood is one of the intangible assets households seek.

However, the costs can include:

x *increased wildlife damage* to crops, livestock and threats to people gathering veld products. This is on the assumption that development of wildlife-based enterprises leads to higher wildlife populations than would otherwise have existed.

- *investment of time* in setting up community institutions and enterprises, and in developing skills.

x *competition between livestock and wildlife* for water or grazing, or loss of grazing in core wildlife/tourism areas.

x *reduced collection of plant or river resources* in exclusive wildlife/tourism areas

- *risk of failure* resulting in a waste of time and loss of money.
- *increased community conflict* over management of resources, poaching, or the distribution of costs and benefits, within the community or between communities, affecting other activities too.
- *over-use of natural resources* and degradation due to increased profitability of harvesting without sufficient resource management.

NB: those marked x are specific to wildlife-based developments, others will also occur (possibly less markedly) with developments based on plants/trees/fish.

Table 15: Possible positive and negative effects of CBNRM activities on household strategies and needs

HOUSEHOLD		EFFECTS OF CBNRM ACTIVITIES	
NEED	**STRATEGY**	**POSITIVE**	**NEGATIVE**
Food security	crop production		wildlife damage to crops
	earn cash to buy food	significant -- see "Cash" below	
	eat more veld foods/fish	improved management of, or access to, resources	reduced access in exclusive WL/Tm areas; increased wildlife threats to collectors; loss of resources through overuse.
	rely on local exchange/gifts	increased opportunities to swap veld products due to improved supply/productivity of VP, and/or increased demand from new local wage earners.	
	then if necessary:		
	sell off reserves	cash boosts reserves	
	reduce consumption		
Other subsistence essentials	Collect fuelwood and timber (or buy locally)	improved management of, and access to, trees	reduced access to trees either in core WL/Tm areas or due to overuse
	Collect water	(if collective income spent on improving community water supply)	more demands on household labour and time availability
Cash	employment	new jobs for lodge staff, guides, game guards, resource monitors.	
	sales of natural products or labour	expanded commercial and local market, new product opportunities	reduced access to raw materials in exclusive WL/Tm areas, increased wildlife threats to collectors, loss through overuse.
	reduce cash needs through barter/gifts	increased opportunities to swap veld products (improved supply) or labour (more demand).	
		+ new strategy: household dividend from collective income	
Build up reserves	buy livestock	increased cash surplus for investment	predation and competition for land/water
	store grain		
	invest income in expanding cultivation	increased cash surplus for paying labour/draught power	crop damage by wildlife

Build up intangible assets	accumulate LS and other cultural assets	- increased cash surplus - new opportunities for community status through participation/positions	predation and competition for land/water
	develop obligations for reciprocal exchange	increased opportunities to share cash earnings, work for community, or swap veld foods or labour.	
	develop community strength	institutional development, increased skills, community earning power	exacerbated community conflict
		increased returns to education	
Secure necessary production inputs	increase access to livestock	increased cash surplus for investing in livestock	predation and competition for land/water
	increase household labour -- through family, paid, or exchange labour	increased cash for paying labour (or providing food/beer) LR: reduced migration of skilled household members?	heavy investment of time in developing new natural-resource based activities.
	develop skills	training and learning of employees and programme participants LR: greater incentives for training	
	maintain right to avail	registration (eg of conservancy members) formalises residence of absentee farmers[30]	
		+ use of collective income for productive investments	
Cope with drought	diversify reduce risk and vulnerability (develop all the above)	new opportunities relatively independent of rainfall	

LR = in the long run. LS = livestock. WL/Tm = wildlife/tourism VP = veld products

For those *without* regular employment, the other two types of income -- increased earnings from sales of goods/labour[31] and a share of collective income -- could each amount to up to a few hundred dollars a year. Section 3 estimated that resource poor households would need approximately N$1,800 to purchase their food deficit and other basic needs, but in practice, they are likely to earn under N$1,000[32], meaning approximately half must be met

[30] CBNRM activities increase the *need* of absentee residents to maintain their right to avail, so as to secure a share of collective CBNRM incomes.

[31] an individual's annual income from selling crafts to tourists, grass to companies, food to lodges... could be several hundred dollars a year, but it is unknown how much of this is *additional* activity and income, and how much *replaces* other, lower-paying work (ie has an opportunity cost to be taken into account).

[32] N$600-800 according to NOLIDEP estimate in 1992 (NRDP).

in-kind or done without. This is the gap which CBNRM cash can help to fill. An extra few hundred dollars per year would not lift them from "insecure" to "secure" or change their survival strategies, but could cover some critical cash needs. In emergencies it could limit the need to sell off reserves, take children out of school, or simply go without. ie. for these households, *CBNRM does not change their livelihood strategy but provides a vital expansion to their basket of cash opportunities.*

4.3 Boosting or constraining livestock use?

If households invest their wildlife income in livestock they can boost their food security, reserves, cultural assets, production inputs, and right to avail all at once. High cash benefits from CBNRM should therefore be expected to *increase* livestock ownership. For those who have no livestock, this can mark the transition from "always insecure" to "often insecure" given the importance of draught power. The lack of other savings options and limits of cash as a store of wealth, make cattle an obvious investment option for those with surplus cash. So what is often regarded by conservationists as an unwanted result can be seen to be a sign of *success*, from a livelihoods perspective.

Conversely, if wildlife enterprises reduce land or water available for grazing, and increase predation of livestock, they will constrain all these household strategies, imposing severe costs. Competition will depend on whether *additional* water and forage are available nearby, as wildlife populations expand or core areas develop (water is reported to be the main constraining factor). It is likely to be concentrated on key patchy resources used in times of stress (end of dry season and drought years) (Scoones et al, 1996), so will depend on the extent of farmers' reliance on these. The costs are likely to be felt more by the better off, who have more livestock, although if the poor lose access to neighbours' cattle, their food security will be undermined.

4.4 Cost of investing time

The considerable time investment that CBNRM activities require is a major obstacle for three reasons: time given to CBNRM takes time away from the other livelihood strategies summarised above. Those who don't have spare time -- the resource poor, women, and employees -- are least likely to participate in CBNRM. Time needed for setting up conservancies, concessions and joint ventures is so substantial, risky, and usually unpaid, that there simply may not be enough community members able or willing to invest sufficient time to get ventures of the ground. Yet these time-consuming collective ventures offer the potential for high future benefits and will act as a catalyst for other opportunities.

4.5 Importance of trees, veld products, river resources.

These resources already underpin rural livelihood strategies. However, the significance of activities to *further improve* their management and use is clear for at least three reasons.

Firstly, these products provide household necessities (energy, shelter, food supplements and products for exchange or sale), yet many appear to be facing degradation or loss of access. As supplies become scarcer, households will have to spend more time on gathering, or will

have to adjust consumption of these staples. Simply *maintaining current access* by enhancing recruitment rates, managing harvesting patterns, or preventing reduced access to core wildlife areas is important to livelihoods, particularly of those least able to afford transport or purchase of alternatives.

Secondly, the limited local market demand for veld foods, baskets, carved tools, thatching grass is a constraint on the earning capacity of poor households[33]. This means that CBNRM initiatives to *expand the market* for wild products can significantly expand cash-earning options and drought-coping strategies of the poor. Where products involving more processing and value-added are developed, cash earnings can increase without a proportionate increase in time demands.

Thirdly, use of plant and river resources will always affect the vast majority of households in a community, whereas only a minority are likely to be involved in wildlife enterprises. The latter are more likely to be male and skilled, the former will include women, unskilled and the poor. Development of common property resource management of plant and river resources therefore gives a much *wider range of households* a stake in new initiatives.

However, some of the difficulties are also greatest to the poorest households. *Time* is needed to develop activities, and the high-return options, such as commercial marketing of plant extracts and other veld products, involve financial risk. Increased profitability can stimulate *over-exploitation and degradation* which can mean the least powerful lose access to essential subsistence resources as commercial harvesters take control. Therefore where resources are limited, enterprise development needs to lag behind common property resource management, and such management systems need to include -- or at least listen to -- women and poorer households.

4.6 Different impacts for different households and members

A distinguishing feature of CBNRM is the potential for *all members* of a community to benefit -- both from the collective income earned, and from empowerment and community strengthening. On the other hand, it is also clear from the above that other benefits and costs of CBNRM activities are unevenly spread within households, between households, and between communities.

Within households, responsibilities are clearly divided between men and women, and cash income earned by one member is not necessarily shared with all members. Therefore who benefits will depend on the type of CBNRM activities developed. Women are more likely to benefit from activities that improve veld product harvesting, marketing of products made or gathered by women (eg grass, baskets), reduce crop damage, and involve "women's jobs) eg cooking in a lodge).

Within a community, gainers are likely to be those with suitable skills (whether in carving, weaving, tracking, community organisation, or hospitality), and those most able to take risks.

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[33] lack of demand is apparently more of a constraint than limited time to boost supply, given that where commercial grass and craft sales have developed, women's input and earnings have increased significantly.

The most likely losers are those who lose access to vital resources, suffer wildlife damage, or risk and fail. Given the livelihood strategies described above, *poor households are most likely to gain from CBNRM activities if:*

- opportunities for earnings from sales are expanded;
- opportunities for women expand (not only because female-headed households are likely to be in the poor category, but also because poor households are relatively more reliant on women's subsistence and commercial activities);
- poor households participate in decisions concerning changes in access to land and resources;
- wildlife damage is minimised, particularly to crops;
- collective income is shared, or invested in assets used by the poor and by women;
- collective income shares and sales opportunities are available (or preferably increased) at lean times.

The *better-off households* are likely to benefit from wildlife-based enterprises that provide new jobs and enterprise opportunities, and to suffer from an increase in wildlife conflicts with livestock[34].

Differences between communities arise because some areas have a much stronger natural resource base and much greater potential for enterprise development. Even within an area, there can be large differences between neighbouring communities, due to accessibility to a main road, proximity to a park, or access to external support.

One implication of this uneven distribution of benefits is that homogeneity cannot be assumed: exploring perspectives of different stakeholders within households, communities, and a region is more useful than assessing averages.

Another implication of the variable distribution of benefits is the high risk of *exacerbating conflict* within or between communities, particularly when the larger money-spinners (concession fees and jobs) are involved. This can undermine both development and conservation. Differences between communities also make it difficult to manage conservation of the large migratory species, and raise the prospect of people migrating from one are to another.[35]

4.7 Boosting natural resource management capacity

Community capacity to manage natural resources is not only essential for wildlife initiatives, but underpins more basic livelihood activities, including livestock and forest use. Effective *negotiation of resource use* is seen as essential (Scoones et al 1997, Sullivan, 1996) in areas where there are multiple resources with overlapping tenure rights, and where mobility is

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[34] If they suffer disproportionately (eg from moving livestock out of a wildlife area) this may threaten the activities of, and benefits to, all members, given that the economically powerful are usually also more politically powerful. This highlights the importance of assessing benefits for non-poor households as well, on grounds of pragmatism if not of principle.

[35] current wildlife-based income estimates are not large enough to cause major demographic movements, but can encourage communities to seek to adjust their borders to boost their claim to profitable resources. Under a long-term boom scenario, tourism income could have stronger effects on human settlement or migration.

critical to cope with variability (more critical in western drier parts of Namibia but still relevant in Caprivi). Therefore, if CBNRM strengthens communities' capacity to manage and negotiate natural resource use, it boosts several aspects of livelihoods.

4.8 Importance of other intangible benefits and costs

It is difficult to assess the significance of the intangibles, such as community capacity to manage resources, pride in exerting more control over developments in their area, the satisfaction and status an individual gains from participating in a conservancy committee, or the damaging effect of community conflict. However, there is good reason to think these are of considerable importance. Tangible and intangible benefits are difficult to compare, but probably both are needed -- an increase in earnings from resources *and* a sense of ownership and responsibility are mutually reinforcing[36].

4.9 Overview: balancing the positive and negative effects of CBNRM

A strategy common to all households is to reduce their vulnerability to climatic and economic shocks *diversifying* and spreading risk. CBNRM increases options, so helps diversification. Beyond that, wildlife- and plant-based CBNRM activities affect livelihoods in fairly different ways. Wildlife-based development is mainly a cash-earner, while plant-based activities generate smaller amounts of cash but also support subsistence production. Both, however, interact with a range of other household needs and activities.

By boosting cash incomes, wildlife activities also support food security and other household strategies such as building reserves and drought-proofing. However, any conflict between wildlife and agriculture undermines these same strategies, because crop deficits leave households food insecure and dependent on reserves, while livestock are fundamental to boosting crop output and reserves. In the aggregate, cash income from wildlife outweigh damage costs, but the costs of resource competition are not known, nor how households themselves weigh the relative value of cash income over agricultural loss (the extent of competition and the relative values will obviously vary from place to place).

In areas where plant-based resources are the CBNRM focus, the benefits can be very significant to resource poor households. Activities that enhance management of natural resources and market opportunities boost the major coping strategies of poor households (those with least crops, livestock and jobs), which are gathering, barter, and earning cash through sales. But activities that increase competition or decrease resource access undermine livelihoods.

Both wildlife- and plant-based activities can have significant intangible affects -- such as stronger collective management and capacity, but also increased conflict within or between communities -- which will affect many other aspects of rural livelihoods.

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[36] It can be hypothesised that collective income earned by a community, *if* well used, is more valuable, dollar for dollar, than wages earned by individuals, *because* it offers both tangible (cash injection) and intangible (a visible demonstration of a community's role and reward) benefits.

Section 5. Implications for conservancies, CBNRM, and others

Better understanding of households' needs, livelihood strategies, and perspectives on CBNRM, can help conservancies and programmes of outsiders to enhance their impact: to identify ways to provide maximum support and minimal disruption to current livelihood strategies, and offer greater appeal and benefit to target groups, within their broad objectives[37]. This concluding section therefore answers two questions relevant to those implementing or supporting conservancies and improved resource management in Caprivi:

i under what circumstances are households most likely to integrate CBNRM activities into their livelihood strategies?

ii what implications can be drawn for adapting programmes or policies, to increase their appeal and positive impacts for rural people?

5.1 Under what conditions are households more likely to invest in CBNRM?

A simple answer is that households will invest if "the benefits (of all kinds) exceed the costs (of all kinds)" or "if they want to." But what makes this likely in practice? The list below identifies some circumstances in which households are most likely to value the benefits available from CBNRM and be able to minimise the costs. Such conditions cannot necessarily be created by conservancy managers or outsiders, but the list can help in analysing the areas or constraints most needing attention.

Assuming natural resources are available in the area, households are more likely to invest in developing CBNRM activities if:

- *Felt/unmet needs include those which can be addressed by CBNRM:*
  - cash needs are high;
  - acute need for drought-coping strategies *and* there is a good chance of getting cash at needy times from CBNRM;
  - problems of degradation are already felt, eg loss of palms;
  - there is a perceived need to do something different and new -- either optimism to diversify or pessimism that old ways aren't working;

- *Inputs are available and manageable*
  - time needed is low, or can be easily incorporated into other daily activities, or occurs in seasons when other time demands are low;

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[37] We assume that such programmes have *development* objectives -- so want to benefit the poor -- and also *conservation* objectives -- creating incentives for participation in improved resource management by reaching all households. Therefore the distribution of benefits across different types of households is also addressed.

- risk is perceived to be not too high, or if it is, it is borne in part by others;
- there are individuals with appropriate skills, and institutional capacity for managing resources and initiatives;
- a few individuals exist who will invest more time in the hope of future return, or as part of their existing leadership duties; or if the community has funds to reimburse members for CBNRM development work;
- community members identify themselves as "stakeholders," with responsibility and control;
- the community is sufficiently cohesive that neighbours can be expected to do their share, not "free ride;"

- *Benefits are highly valued*
  - clear potential rewards are visible and valued: eg if there is capacity to use collective income well and collective income is valued; if benefits have been demonstrated elsewhere;
  - different stakeholders within the community perceive how they will benefit.
  - local value of the tangible and intangible benefits and costs is such that, overall, the benefits are perceived to outweigh the costs.

- *CBNRM activities largely complement, rather than displace, existing core activities;*
  - in terms of time inputs, use of scarce natural resources, benefits gained, limited wildlife damage,

These factors will clearly vary between households as well as between communities. Those that have more time available, willingness to take on risk, skills appropriate to participation, perception of benefits ... are more likely to participate. Whether they then carry "the community" into participation depends on internal community dynamics.

Considering *wildlife* specifically, a community is more likely to support investing community land in wildlife if:

- it doesn't significantly reduce opportunities for resource harvesting (or if it does, those making decisions -- men -- are not those responsible for most resource harvesting -- women!)

- it doesn't significantly reduce livestock access to water and grazing (or if it does, livestock holders receive a sufficiently substantial share of the benefits to make it worth their while to move livestock elsewhere!)

These are not "determinants" of success of conservancies, but where these conditions exist and of course where natural resources are available for development, CBNRM opportunities are more likely to be taken up[38].

[38] Excluding harvesters from decisions that reduce their access may prevent initial obstacles to a wildlife-development, but is not, of course, recommended as a condition for long-term success.

5.2 Implications for conservancies and CBNRM

The preceding section showed that CBNRM activities can both complement and conflict with current rural livelihood strategies, and that various factors affect how appealing and beneficial the activities are to households. So the question for conservancy managers and for those supporting CBNRM activities is *how to increase complementarities and reduce the conflicts?*

Several issues emerge:

5.2.1 *Addressing competition with livestock and other resource use.*

Competition for resources between wildlife, livestock, and access to other products, needs to be minimised, particularly when core wildlife areas or exclusive tourism concessions are designated. The costs of wildlife development to local residents jump rapidly if access for livestock or resource harvesting is reduced, therefore these costs need to be fully explored by communities before making long-term land use commitments. There is generally a lack of information on the scarcity of grazing, water, and resource-harvesting areas, the extent of competition with wildlife, and ways to minimise it. Providing game water points may be the best way of accommodating increasing wildlife numbers without increasing competition with livestock. Given that loss of access hits households different, communities needs ways to ensure that these costs are assessed and taken into account in decisions.

The likelihood that households will want to invest CBNRM earnings in more livestock needs to be recognised. If this will exacerbate problems, alternative investment opportunities could be explored.

5.2.2 *Minimising wildlife damage*

This can be just as important as expanding cash earning opportunities. Reducing crop damage is particularly important for boosting food security of the most vulnerable, and reducing livestock predation for gaining support of the better-resourced households. Benefits may be reflected in reduced stress for farmers, as well as reduced agricultural losses.

5.2.3 *Expanding informal sales, not just formal sector jobs*

For benefitting poor households, expanding *opportunities to earn small amounts of cash from sales* is just as important as expanding permanent jobs. eg joint venture agreements could seek to maximise purchases of local goods, as well maximise employment and training of employees[39].

5.2.4 *Developing plant-based activities*

Activities focused on *tree/veld/river products* are just as important as wildlife-focused developments. Although the subsistence or cash gains might be small compared to wildlife activities, the benefits are more widespread (both within communities and across Caprivi),

[39] However, the "trickle-down" value of creating full-time jobs for a few households should not be ignored, as poor households need to sell goods and labour to richer neighbours.

and can make a big difference to cash-strapped households.

Strategies to enhance management and use of plant resources need to include at least 3 components:

- maintaining *access* of users (amplifying their voice in land use decisions)[40];
- preventing *unsustainable* use (by improving recruitment or managing harvesting);
- expanding the *market* for sales of plant products.

The third must be accompanied by the first two if resources are scarce and business will lead to increased competition.

5.2.5 *Assessing differences between stakeholders and benefit distribution*

It is clear that the differences between stakeholders in how they benefit from CBNRM will affect developments and need to be taken into account. It is also clear that the process of CBNRM decision-making and the type and structure of CBNRM enterprises, can have a significant impact on the distribution of costs and benefits. It is possible to follow -- or to avoid -- patterns seen in other countries, where political and economic control of natural resource initiatives is concentrated with an elite, leading to disenfranchisement of the majority (eg Berger, 1996, discussing development of safari hunting in Maasai areas). However, further on-site analysis is needed of how various CBNRM options can lead to different benefit distributions.

Whether and how to seek to *influence* the distribution of CBNRM impacts poses dilemmas. To what extent should greater equity be pursued? Development objectives call for a focus on the needs of the *poor*, but conservation based on common property resource management requires *all* resource users to benefit, and perhaps larger livestock owners even need a disproportionate share of the benefits. The same principle applies to differences *within households:* if women have the greatest need for benefits but face more constraints to participation, their problems are only exacerbated if their men feel excluded and hence are opposed to the activities. Another dilemma for external supporters of CBNRM is whether to seek to influence distribution, and how to help communities assess and resolve distribution issues themselves. However, outsiders should bear in mind that they will influence distribution simply by what activities they support, even if communities decide themselves on the distribution of collective income.

5.2.6 *Valuing intangible costs and benefits*

Intangible benefits, such as empowerment, skill development, perceptions of (in)security, community cohesion or conflict.... are difficult to quantify and sometimes difficult for outsiders to perceive, but are likely to be significant to residents. It is therefore important that there is scope for such values to be taken into account in decision-making, and that efforts to increase benefits to address intangibles and well as tangibles.

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[40] For example, IRDNC's action in raising awareness that the proposed Lianshulu campsite threatened access to reeds and water lilies, among both women harvesters and men campsite committee members, is just as important as improvements in production, harvesting and marketing of the resources.

5.2.7 *Reducing conflicts*

Conflicts over control of profitable resources and distribution of benefits are likely to arise between households and communities, leading not only to mis-management of common property resources, but many other problems. Conflict-resolution skills may well become more important.

5.2.8 *Enhancing capacity to use collective income well*

The fact that much CBNRM income, in wildlife-rich areas, will be earned as *collective income,* has potential benefits and problems. It could be just as substantial as wage incomes, and also has added intangible values of pride, visibility, and potentially egalitarian distribution. However, there is a risk of mis-use and hence wastage. Also the fact that it is not controlled at the individual level, so reward is not directly related to input, can be a disincentive for action. Therefore, as concession fees and other conservancy incomes develop over the next few years, the capacity to use collective income well will have a big effect on the benefits that households perceive and gain from wildlife developments.

5.2.9 *Timing and seasonality*

The need for cash and scarcity of time vary over the seasons, and are more acute in drought years. If collective income is distributed in January, if participatory efforts occur outside harvesting and planting seasons, and if joint venture partnerships can agree to extra dividends or local purchases in drought years, the positive impact on livelihoods will be greater.

5.2.10 *Alleviating time and risk constraints*

Costs of time and risk reduce or unbalance community participation. A challenge is for outsiders to alleviate the time constraint -- for example by helping communities to reimburse their members in any appropriate way -- but without removing responsibility and avoiding paying residents to do "outsiders' work."[41] A similar challenge is to reduce the *risk* involved in setting up new CBNRM enterprises, without removing responsibility.[42]

5.2.11 *Responding to outside influences*

The relevance of CBNRM activities depends on the pace of *other developments* in Caprivi, such as agricultural loans, new cropping practices, and market access. Wildlife developments will also depend on the overall pace of tourism development. If the optimistic "boom" scenario comes about, wildlife incomes could be much higher than estimated to date. Therefore these exogenous factors need to be taken into account in flexible planning.

5.2.12 *Site- and time-specific actions*

The high variability in household needs and options between places and between years indicates the need for CBNRM initiatives to be adapted and tailored to specific circumstances, taking into account both the short term and long-term impacts on livelihoods.

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[41] Current ways of doing this -- including funding Game Guards and Community Resource Monitors who report to the Induna, assisting with funding applications to donors, and helping communities earn their own income to pay their representatives -- are probably very important in alleviating the time constraint. The latter has least risk of removing responsibility, and should become more possible once conservancies are established.

[42] Joint ventures with the private sector, and non-commercial loans from NGOs can do this -- there may be other roles of NGOs, Government, and private sector to explore.

Generalised "solutions" cannot be formed.

These pointers suggest various ways in which CBNRM activities can best fit with rural livelihoods. What's clear is that the CBNRM programme in Caprivi has already moved in most of these directions: developing craft and thatching grass enterprises while monitoring the resource base, addressing wildlife damage, working with communities on use of collective income, reducing risk and covering the costs of time inputs. Over the next few years as conservancies develop and high-value wildlife-based opportunities emerge, many of these needs will become more acute, particularly the need to address competition for land and water, wildlife damage, use of collective income, distribution of benefits, and avoidance/resolution of conflict.

5.3 Implications for management of protected areas

Most of the implications above apply to all institutions involved in managing natural resources in Caprivi where there is any degree of community involvement -- whether inside or outside protected areas. However, a few points specifically relevant to protected areas (parks or forest) can be highlighted:

5.3.1 Providing *access* for harvesting and veld products and other natural resources could make a substantial difference to livelihoods of neighbours, and be an affordable way of improving park-neighbour relations. The cost of lost access to plant and river resources can be just as great as the cost of lost access to grazing.

5.3.2 *Reducing wildlife damage* can make as much of a difference to livelihoods of nearby residents as assisting with new enterprise developments.

5.3.3 *Tourism developments* inside parks dramatically affect the tourism potential of communities and conservancies outside parks. Development of a prime site inside a park can reduce the market value of a nearby conservancy site. On the other hand, it can create new opportunities and a critical mass for an area. This needs to be taken into account in planning. It is particularly important not to undermine conservancy developments that are already far down the planning stage, so consultation is essential.

It should also be noted that it is not just conservancies, CBNRM staff and park or forest managers that need to take into account how they affect rural household needs and livelihood strategies. Other decisions affecting land uses and management of natural resources, such as new tenure and land-use planning policies, agricultural schemes, PTO decisions -- will affect households' opportunities to secure their livelihoods. Therefore these decisions also need to take into account rural households' dependence on crops, livestock, plant and river resources, their substantial new opportunities from wildlife, the constraints on their time and access to resources, and their need to cope with drought, and maintain what security they have while also diversifying into new opportunities.

Finally, this review of livelihood strategies and the complementarities with CBNRM has simply revealed how many complex and important issues are involved. The "answers" are no more than pointers, and the main implication is the need to explore some issues further, particularly the values of agricultural activities and non-marketed products to households, the nature of the conflicts between wildlife and other land uses, and how to minimise them. At any specific location, understanding how CBNRM affects local livelihoods depends on site-specific understanding of issues such as the key activities of different types of households, use of resources by wildlife, livestock, and resource-harvesters, the range of cash-generating options in the locality and constraints to their expansion, trickle-down effects and exchange/support networks within the community, institutional dynamics, and residents' major unmet needs and expectations.

APPENDICES

APPENDIX A: INCOME, ACTIVITIES, AND CONSUMPTION DATA

1. Data for Caprivi Region from the Agricultural Census 1994/5

Reference frame is "farming households" estimated to be 9875 in Caprivi Region.

Table A1 Main Source of Household Income		
Source	*Number of Households*	*Percent of Total*
Subsistence Farming (crops/animals)	5470	56
Cash Cropping	385	4
Wages in Cash	1710	17
Non-Farming Business	510	5
Pension	1566	16
Cash Remittances	234	2
Source: CSO Communal Agriculture Census (1994/95) -- (CSO, 1996[b])		

Table A2 Main Activity of Household		
Source	*Number of Households*	*Percent of Total*
Cropping	5893	60
Livestock	441	4
Livestock and Cropping	3348	34
Non-Agricultural Activities	233	2
Source: CSO Communal Agriculture Census (1994/95) -- (CSO, 1996[b])		

The tables show that ninety-four percent (94%) of farming households surveyed in Caprivi identified agriculture (cropping, livestock, or both) as the 'main activity of the household' but only fifty-six percent (56%) report subsistence farming as the 'main source of household income.' i.e. 38% of households chose agriculture as the main activity but cash wages, pensions, and non-farming business as the main source of income.

2. Data from National Household Income and Expenditure Survey 1993/4

Reference frame is *all* (private) households in Caprivi Region. The survey reported that average annual household consumption reported for Caprivi Region is N$ 5479 (CSO, 1996[a]). However, cash income accounted for only half of this. The other half was the estimated value of products produced by the household, NR-based products, or goods received in kind with no cash transaction (CSO 1996a). Table 3 shows these and other interesting findings.

Notes to the table:

The survey covered only private households. Residents of institutions are excluded.

Employed: paid or unpaid (family) work.

Unemployed: not working but looking for work.

Economically active = employed + unemployed.

Source: CSO, 1996a.

Table A3: Socio-economic data for Caprivi Region Households

No. of households	16,885	
No. of people in private households	91,434	
Main source of household income	as % of 16,884 households:	
- subsistence farming	45%	
- wages in cash	33%	
- business	5%	
- pensions	12%	
- cash remittances	5%	
People over 15-years old	49,960	
of which:		
- economically active	31,658 (63%)	
- economically inactive	18,039 (36%)	
Of those economically active:		
- employed	28,350 (90%)	
- unemployed	3,218 (10%)	
Of those employed:		
% underemployed	22,094 (78%)	
Education level of those over 6 years old:		
- none	17%	
- primary	45%	
- secondary	34%	
- tertiary	2%	
Livestock ownership/access (% of HH)	Ownership	Access
- cattle	59%	28%
- goats	13%	0%
- poultry	69%	4%
Durable goods:	Ownership	Access
- radio	56%	12%
- TV	2%	0%
- donkey/ox cart	2%	4%
- bicycle	12%	4%
Consumption per year		
- average per household	N$5,479	
- average per capita	N$1,012	
Of which, consumption in-kind (not cash)	27%	
Main items of cash consumption:	N$ per year	% of total
- cereals and bread	984	24
- meat & fish	419	10
- sugar	145	4
- other food	399	10
- alcohol and tobacco	131	3
Sub-total: food	2078	51
- clothes	367	9
- housing	151	4
- household items	599	15
- medical care	40	1
- transport	351	9
- education	175	4
- other consumption	351	9
TOTAL	4112	100
% of female-headed households	42%	

APPENDIX B: ESTIMATES OF CRAFT-MAKERS AND INCOME

There is no single reliable estimate of the number of craft-makers in Caprivi nor of their incomes. Various sources are reviewed here to show the range.

1. *Reports of the number of craft-makers:*

- CACA had 200 members in 1995, which the Director estimated to be one third of potential (UNEP et al, 1995)
- Harrison surveyed 148 basket-weavers in West Caprivi in 1995 (Harrison, 1995)
- Lizauli Traditional Village has 98 women making crafts (IRDNC July 1995)
- Choyi crafts group has 13 members (IRDNC July 96)
- only 3 carvers are active in the Bagani area (IRDNC September 1996).

Note: the latter points out the fact that some people are "craft-makers" in terms of their skill, but may not be active at any given time.

By comparison, in Kavango there are estimated to be 300-1000 carvers.

Implication: several hundred carvers, weavers, and other craft-makers in Caprivi. Quite possibly over a thousand with only a proportion active at any one time.

2. *Estimates of earnings*

- a basket that took about 20-25 hours of labor to produce can be sold at the roadside for N$ 25-30. However, taking into account time for collecting and processing materials, and using prices received if sold through CACA (as otherwise marketing time also needs to be added in) gives a return to labor of N$ 0.8 - 1.15 per hour (LaFranchi, 1996a)
- results of a survey of 148 woman weavers in East Caprivi by Harrison (1995) suggest that they are earning about N $400-500 annually; it is not known how many active months of work this involved.
- returns for labor to carvers producing figurines, walking sticks and spoon and fork sets -- all for tourists -- are estimated to be about N$ 1-2 per hour (LaFranchi,1996a)
- active carvers can earn N$ 200-300 per month according to the survey by Harrison (1995), although it is not known how many months this income may be realized out of each year;
- returns to highly skilled carving would be much higher. Harrison (1995) reports monthly incomes of up to N$ 1000 for highly skilled carvers.
- the Caprivi tourism plan estimates that foreign tourists spend $13-18 per day on crafts, suggesting total earnings by Caprivi craft-makers of around $400,000 in 1995.[43] This means that if there were 1000 craft makers, this would average out at $400 each per year. This estimate of total earnings also shows that earnings of $220 per month for 12 months per year are *not* typical, as this would give an estimate of only 150 craft-makers in the whole of Caprivi.

Implications:

It therefore seems likely that craft earnings in the region are around $300,000 to $450,000 per year, divided amongst a few hundred, or up to a thousand, craft producers, earning on average, a few hundred dollars each, but with large variation between high-skilled high input producers and those with low skill and devoting less time.

Relatively unskilled carvers are realizing returns similar to other activities (approximately extremely low returns and using carving as a mechanism to cope with drought or severely limited access to other livelihood options while skilled carvers can earn income equivalent to full-time wages.

For example, putting together data on returns per hour and tourist expenditure per day, a group of 13 women could earn N$400-500 per year each, if they spend the equivalent of 3-months full-time craft making and take it in turns to sell on behalf of the group. This would require their craft centre to average slightly more than one $15-sale per day (390 sales per year). In fact, a larger scale of production (more producers or more regular production) might be necessary to create critical mass for a sales outlet to work and to justify the investment in marketing.

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[43] there were 82,000 bednights of overseas visitors in Caprivi/Kavango in 1995, of which half were in Caprivi. If craft expenditure is N$15 per day per person (ie per bednight), total craft expenditure in Caprivi was $615,000. Assuming one third of expenditure goes on marketing costs and retailer mark-up, leaving two thirds for the producer, then Caprivian craft producers earned around $400,000 in 1995 in total. This seems an acceptable revision of Barnes' estimates for 1994/5, which were based on one craft marketing outlet (CACA) and approximately 159 household craft producers (certainly an under-estimate by now), and estimated total craft earnings in Caprivi of $281,580 per year.

APPENDIX C: VALUE OF VELD FOODS

Revised estimates of return to labour from Mangetti nut collection.
NB these estimates correct and should replace those in LeFranchi 1996a.

Time to collect 50 kg sack:

- 32 hours for collection
- 56 hours for processing

Total: 88 hours

Value of 50 kg sack:

- 56 household meals of 1 500 ml cup (ie 2 meals per day for one month).
- $112 (selling each 500 ml cup for $2.

Approximate return to labour: **$112 for 88 hours labour = $1.3 per hour.**

But: travel time, processing time and sale price are very variable. It's not clear that prices are for processed or unprocessed nuts. So the estimate is rough!

For example, variable data are reported in a 20 HH survey at Bagani (van Rhyn, 1995a)

Prices:

- $100 for a 50kg bag
- $22, $20, $10 for 12.5kg bag of mangetti nuts
- large cup (fendera) $1-2
- small cup 50c

Time:

- collect 3 bags of mangetti nuts per month
- collect 3-4 times a week (no overnight trips) and collect 3-4 bags per week.
- 3-4 day trip to collect mangetti
- 1 month trip, collect 10 bags of mangetti
- Collect 12.5kg bag. Takes 5 days to process fruits.

Collection of Cheu (berries).

At Dwarspan (van Rhyn, 1995b): one HH reports collecting 2 x 25kg bags spending a few nights away (enough to last 1+ month).

Other HHs report selling 12.5kg bag for $25, and 25kg bag for $36.

i.e. $36-50 return for a few days work -- well below $1 per hour, but other products were probably collected at the same time, so actual return is higher.

APPENDIX D: FISH CATCHES

30% of catches are reported to be over 15kg per trip.

Market prices are reported to be $3 and $5 per kg (LaFranchi 1996a quoting Tvedten et al).

This suggest earnings of $60 for a good trip.

If average catch is 10kg (sometimes 5 and sometimes 15), average return is $40 -- high return on a day's work.

But what does "per trip" mean -- some local fishers go out in boats, but is it applying to tourists?

Alternative estimate: catch per 50m net per night varies from 2.4kg on the Linyaniti to 13.8 kg on the Zambezi (UNEP et al Forestry Report quoting Van der Waal, 1990).

Conclusion: returns vary enormously between the different rivers as well as over time. Optimistic estimate of $40 per trip is probably at the high end of the range.

APPENDIX E: ESTIMATES OF LOCAL INCOME FROM WILDLIFE AND TOURISM

1. Aggregates for Caprivi

In 1994/5 Barnes and Ashley estimated that rural residents were earning around N$1 million dollars a year from 15 different types of consumptive and non-consumptive wildlife enterprises (excluding earnings in Katima), and that this could increase to N$2.4 million a year with sustainable use of the existing resource base. The Caprivi Tourism Development Plan estimates that around N$3-4 million of tourism expenditure stays in the region each year, including the Katima area and various non-wildlife enterprises servicing tourists which were not included by Barnes and Ashley.[44]

The Barnes/Ashley estimates of potential income averaged out at around N$30 per rural Caprivian, or more realistically N$100-300 per person in riverine areas (N$600-1,8000 per household), with higher figures in prime wildlife areas, and virtually nothing away from the water and parks.

2. Estimates for 5 communities in wildlife areas developing conservancies and/or tourism ventures.

Estimates were made for 5 communities based on developments that they have been discussing or planning, refined with some estimates of what is viable -- eg additions of guides and firewood sales at campsites.

Methodology

1. Estimates per enterprise

a For each enterprise type, the amount of local income likely to be generated is estimated. Distinction is drawn between collective income (such concession fees), wages of local residents in full-time jobs, and local earnings from sale of products (such as grass, crafts, occasional labour). Income from seasonal wage labour is included in "earnings" not in wages, as its scale and signficance to households is more similar to other small earnings than full-time wages. The number of local people with jobs and making sales is also estimated. These estimates and their assumptions are presented in Table 1.

b The estimates are based on normal operation of the enterprise -- ie not the first few months or years.

c Estimates for a given type of enterprise (eg a joint venture lodge or a craft market) are the same across all communities. Wherever possible, differences in the scale of enterprise planned have been dealt with by creating a new enterprise type for analysis (eg a developed campsite as well as basic campsite).

d In many cases the range of possible income is too great to be ignored by presenting one average. In the tables, the range is shown, with the top figure being the beginning of the range, and the more optimistic figure below.

e All estimates are gross income -- ie the cash that the community or individual receives before paying any costs. Conservancy costs in monitoring wildlife or paying members to supervise joint ventures, or earners costs in producting items for sale, are not included. In the case of community enterprises, the estimate represents profit (ie operating costs have been deducted), but any other other community costs of supervising the enterprise are not coverd.

2. Estimates per community

a Estimates for each community are presented in tables 2-6. In each, the type of enterprise involved, the estimates of income of each type (plus total income), and the numbers of employees and sellers involved are presented.

b At the bottom of each table, totals are calculated and then divided by the estimated number of households, to indicate the average income per household and the percentage of HH gaining jobs or sales money. However, population estimates are very rough (based on van Rhyn 1995a for Bagani, community meetings and assumptions for Lianshulu and Sauzuo, and personal communication from Mathew Rice and Chris Weaver for the other three).

c At Mayuni Conservancy and Malengalenga different scenarios are presented, dependent on what develops inside the adjacent national parks.

d At Salambala, conservancy operating expenditure are estimated (based on Chris Weaver pers. comm) and the impact on local incomes esimated (tables 6b, 6c, and 6d).

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[44] An estimated N$6-8 mn stays in the "study area" of the Caprivi Tourism Plan, which stretches as far West as Rundu. Given that 48% of bed-nights in the study area are in Kavango, it is assumed that Caprivi's share of the N$6-8 mn is around 50%.

3 Comparison of totals per community and per household

a Finally, the amount and type of income, and the number of people with jobs and earnings, in each community are summarised and compared.

b Table 7a summarises the estimated total local income and total income per household in the 5 communities. It uses scenario 1 from Mayuni and Malengalenga.

c Table 7b presents the breakdown of total local income into the 3 types of income source (collective, wages and earnings), showing the percentage derived from each in the five communities. Where an income range was esimated previously, this table uses an average of the low and high estimates.

Table 7c presents benefits to households in each of the five communities: the amount of collective income per HH, the number and percentage of households with jobs, and the number and percentage of households with sales earnings. Table 7d summarises the average for all 5 communities of the amount of each type of income and the percentage of households that could earn it.

4. Assessment of impact of conservancy running costs

Tables 8 (a,b,c and d) assess the impact of local incomes if collective conservancy income is spent on opertating costs (very roughly estimated in Table 8a).

Factors that could considerably effect actual incomes.

- Community plans may change, for whatever reasons, and implementation may be quite different. These estimates assume current plans are realised and ignore the institutional and other constraints involved in reaching normal operating capacity.

- developments inside National Parks and reserves affect the viability of ventures in conservancy areas. eg If a lodge and campsite were developed inside the Golden Triangle by the Ministry of Environment and Tourism, making it impossible for the Mayuni conservancy on the West Bank to develop more than one tented camp, the conservancies income could fall from around $100,000 to under N$40,000. Equally in the Malengalenga area, current campsites undermine campsite effforts outside the Park, unless the provide quite different attractions and services, whereas a concession inside the park for communities to develop joint venture lodges, would stimulate earnings similar to the estimates for the other four communities.

- wildlife and tourism enterprises can vary in labour intensity and linkages to the local economy, as shown by the low and high estimates of local earnings and wages. These can be significantly increased (at least doubled) through negotiation between investors and the community, and through development of local skills.

- the cost of earning collective income need to be deducted, and these could vary considerably. eg if collective income is distributed, the amount households actually receive will be lower than the estimates above, depending on how high the running costs of the conservancy or community venture are.

- the overall pace of tourism development in Caprivi and Namibia. The estimates are based only on short-medium term expansion plans and not on long-term potential. These plans do not appear to be overly ambitious, in that there is good reason to think that the *market* exists for these plans to be implemented.

  The estimates assume 4 or 5 new lodges in total in the 5 communities, *increasing total bed stock by around 80-100 beds*, and 5 new campsites. The draft Caprivi Tourism Development Plan (MET) notes that the current bed-stock of 551 *needs to increase by 200 beds* between 1996 and 2000 under a "laissez faire" approach, and by 450 beds under a "tourist boom" scenario. Although it notes that demand for 1997 and possibly 1998 can be met by current plans (some of which presumably include community plans analysed here) it also notes the concern "*that most of the development takes place in the Rundu Area, with hardly any development at the core attraction areas of Bagani/Mahango and Kwando/Kongola. The pressure on the few facilities in these areas will therefore be further intensified.*" Given that the estimates above are for five of the prime areas of the riverine system, it is not unrealistic to think they should supply 100 of the 200-450 additional beds needed over the next few years. Campsite demand is expected to increase by 16 to 42% by 2000, so the campsite development plans are probably also viable.

  The estimates above assume that plans are realised but not that tourism "take-off" in Caprivi in the way that it has done so over the river around Chobe. The CTDP estimates for the medium-long term are that by 2005, bed-stock will need to triple to 1852 beds under the tourist boom scenario. Given that the majority of the beds should be on the rivers, but are not at present, this means more than tripling bed numbers there. Such a tourism boom would multiply the opportunities for local income generation and indicate cash estimates of a different order of magnitude to those given above. i.e. there is potential for developments and hence local incomes to expand considerably beyond what is currently planned and estimated.

Table 1

ESTIMATES OF LOCAL INCOMES FROM VARIOUS WILDLIFE AND TOURISM ENTERPRISES

N$ per year (1996 prices)

Notes	Source	Collective income N$	JOBS wages N$	no. of employees	Earnings N$	earners	TOTAL N$
1	**Joint venture lodge**	50,000	33,600	7	220	2	**83,820**
	eg Somewhere	80,000	57,600	12	2,020	14	**139,620**
2	**Concession area w. lodge**	21,000					**21,000**
	eg Salambala	40,000					**40,000**
3	**Joint venture tented camp**	32,000	38,400	8	132	1	**70,532**
					1,212	8	**71,612**
4	**Private camp with contract**	5,000	28,800	6	540	4	**34,340**
	eg Mazambala Island						
5	**Community campsite basic**	500	4,000	2	1,200	2	**5,700**
		5,000				4	**10,200**
6	**Community campsite**	5,000	4,000	2	1,200	2	**10,200**
	developed	9,000				4	**14,200**
7	**Guides at community campsite**				1,440	1	**1,440**
					9,000	3	**9,000**
8	**Craft market (self sale)**				7,800	13	**7,800**
	eg Kongola						
9	**Traditional village**	4,800			10,000	5	**14,800**
10	**2 elephant trophy quota**	70,000			1,500	3	**71,500**
11	**bird shooting**	1,000			2,800	8	**3,800**
	inc. camp	28,000					**30,800**
12	**Private lodge**		22,800	5	560	4	**23,360**
	half employees from community						

NB "Jobs" are full-time employment.
"Earnings" are income from sales, self-employment, and seasonal waged labour.

Where the possible income range varies considerably, depending on the size and success of development, the low end of the range is listed first (on top) and the high end of the range listed below.

Assumptions

1 Average monthly wage for local staff: $400 per month.

Grass purchases: 8 bundles per m^2, repair 5 m^2 per year, makes 400 bundles per year, at 55c each: total expenditure of $220 per year.

Fish purchases: 2 kg per week on average (with seasonal variation); $5 per kg; total $520 per year.

Meat purchases: 2 chickens per week, $10 per chicken *(to check)*: total $1040 per year,

Vegetables: $30 per week for 8 weeks of the year: total $240 per year.

Low estimate: grass sales only, buying from 2 sellers.

High estimate: grass and food sales, buying from 14 sellers.

Concession fee: 5-10% of turnover of a medium-luxury lodge.

2. due to extra revenue from more exclusive lodge. eg Salambala were offered approximately $12,000 more than would be estimated for a lodge without concession (ignoring trophy fee arrangements). In Ward 11, $40,000 per year difference between fees offered at DeRiet without concession and Poacher's Camp with concession.

3. assume half the investment of a lodge, half the revenue share, and 60% of the food purchases.

4. Collective income: eg 7% of turnover from a 5-site camp charging $150 per night (including food) with 25% occupancy. Total: $4,791.

Food purchases: 30% of purchases of lodge.

5. Collective income: low -- 20 groups/month, $30 per site: annual profit of $500.

High -- 30 groups/month, $20 per site: annual profit of $5,000.

Wages: 1 job shared between two staff, open 10 months of the year.

Sales earnings: 15 groups/month buy fuelwood, $8 per bundle.

6. 20 groups/month, $50 per site: annual profit of $5,000. 30 groups/month, $50 per site, annual profit of $8,500.

Wages and earnings as for basic campsite.

7. low: 20 groups/month, 20% take guides, $30 per trip: total $1440 per year.

high: 30 groups/month, 50% take guides, $50 per trip: total $9,000 per year.

8. 13 craft-makers earning $200 per month for 3 months of the year.

9. 80 visitors/month, $20/visit, open 10 months of the year.

5 staff earnings $200 per month. Other costs of $1,200 per year. Profit: $4,800.

10. $50,000 trophy fee per elephant, 70% paid on to conservancy.

6 weeks employment for 2 attendants, $450 each, and 1 guide, $600.

11. 8 temporary jobs for 1 month, earning $350 each.

Low: bird shooting fees - few dollars per bird, max $1,000.

High: share of revenue from lodge accomodating shooters: 10% of $280,000 (Peddie estimate).

12. 10 jobs and $1020 of local purchases (averages for JV lodge above) of which 50% comes from this community, 50% from another community.

Table 2: BAGANI: ESTIMATES OF CONSERVANCY INCOME

Scenario:	collective income N$	N$ per HH	Full-time wages N$	jobs employe	Earnings N$	earners	TOTAL N$
Community campsite basic	500	3	4,000	2	1,200	2	5,700
	5,000	33				4	10,200
Guides at community campsite					1,440	1	1,440
					9,000	3	9,000
1.5 elephant trophy quota	52,500	350			1,125	2	53,625
TOTAL	**53,000**	**353**	**4,000**	**2**	**3,765**	**5**	**60,765**
	57,500	**383**			**11,325**	**9**	**72,825**
avge N$/HH	$353		$27		$25		$405
	$383				$76		$486
% of HH earning				1.3%		3.5%	
						6.2%	
No. of HH	150						

Assume trophy quota for Mukwe constituency (far west Caprivi and west Caprivi up to Omega) continues at 5/year.
Assume 60% of the quota is found in West Caprivi (ie east not west of the Okavango) and 50% of fees paid to West Caprivi.
Assume 50% of West Caprivi's share is earned by Bagani community
Elephant quotas earned by Bagani: 1.5
This assumes conservancies can lease trophy quotas, even through elephants are not"huntable game."

Table 3. LIANSHULU & SAUZUO: ESTIMATES OF COMMUNITY WILDLIFE INCOME

Scenario:	collective income N$	N$ per HH	Full-time wages N$	jobs employees	Earnings N$	earners	TOTAL N$
Community campsite basic	500	2	4,000	2	1,200	2	5,700
	5,000	18				4	10,200
Guides at community campsite					1,440	1	1,440
					9,000	3	9,000
Joint venture lodge	50,000	181	33,600	7	220	2	83,820
in Mudumo NP	80,000	290	57,600	12	2,020	14	139,620
Concession area w. lodge	21,000	76					21,000
	40,000	145					40,000
Private lodge in Mudumo NP	8,000	29	22,800	5	560	4	31,360
half employees, plus bed-night levy							
TOTAL	**79,500**	**288**	**60,400**	**14**	**3,420**	**9**	**143,320**
	133,000	**482**	**84,400**	**19**	**12,780**	**25**	**230,180**
avge N$/HH	288		219		12		519
	482		306		46		834
% of HH earning				5%		3%	
				7%		9%	
No. of HH	276						

Population estimate is rough.
648+ people in Lianshulu = approx 120 HH. Assume 1.3 times as many in Sauzuo (inc Mambasi)
Estimates for income from a private lodge in Mudumu NP are based on the 'Private lodge, half employees from community' entry in Table 1 with the addition of a bed-night levy as collective income.

Table 4a: MAYUNI AREA: ESTIMATES OF CONSERVANCY INCOME, SCENARIO 1

Scenario 1:	collective income N$	N$ per HH	Full-time wages N$	jobs employees	Earnings N$	earners	TOTAL N$
Joint venture lodge	50,000	125	33,600	7	220	2	83,820
	80,000	200	57,600	12	2,020	14	139,620
Joint venture tented camp	32,000	80	38,400	8	132	1	70,532
					1,212	8	71,612
Community campsite	5,000	13	4,000	2	1,200	2	10,200
developed	9,000	23				4	14,200
Guides at community campsite					1,440	1	1,440
Private camp with contract	5,000	13	28,800	6	540	4	34,340
eg Mazambala Island							
Craft market (self sale)					7,800	13	7,800
eg Kongola							
TOTAL	**92,000**	**230**	**104,800**	**23**	**11,332**	**23**	**208,132**
	126,000	**315**	**128,800**	**28**	**14,212**	**44**	**269,012**
avge N$/HH	230		262		28		520
	315		322		36		673
% of HH earning				5.8%		5.8%	
				7.0%		11.1%	
No. of HH	400						

Assumption: whole area (east and west bank of Kwando) can support 1 lodge, 1 tented camp, 1 campsite, with sites inside Park being most competiti

SCENARIO 1 -- MET DOES NOT DEVELOP NAMBWA AND DOPPIES
Conservancy develops:
1 lodge eg at Somewhere
1 tented camp, eg Somewhere else
1 campsite with facilities eg Farmer George/Paradise Island
makes contract with Mazambala Island camp
Craft sales at Kongola

SCENARIO 2 -- MET DOES DEVELOP NAMBWA AND DOPPIES
ie lodge at Nambwa, campsite w. facilities at Doppies, half employees from Mayuni area
Conservancy develops:
one tented camp eg at Somewhere
makes contract with Mazambala Island camp
Craft sales at Kongola

SCENARIO 3 - MET DEVELOPS NAMBWA AND DOPPIES WITH COMMUNITIES
ie lodge at Nambwa, campsite w. facilities at Doppies, w. benefits to Mayuni Conservancy and West Caprivi
Conservancy develops:
onetented camp eg at Somewhere
makes contract with Mazambala Island camp
Craft sales at Kongola

Assumed no. of HH 400

All three scenarios exclude developments outside the conservancy boundary (eg Namushasha lodge, Open Sky campsite).
However, these would add to local wages significantly.

Table 4b: Ma e 4b: Mayunia area conservancy income estimates if MET develops park facilities (scenario 2)

Scenario 2: nario 2:	collective income N$	N$ per HH	Full-time wages N$	jobs employees	Earnings N$	earners	TOTAL N$
Joint venture: venture tented camp	32,000	0	38,400	8	132	1	70,532
Private camp te camp with contract eg Mazamba lazambala Island	5,000	13	28,800	6	540	4	34,340
Private lodge te lodge half employe employees from community			22,800	5	560	4	23,360
Craft market market (self sale) eg Kongola ongola					7,800	13	7,800
TOTAL AL	**37,000**	**93**	**90,000**	**19**	**9,032**	**22**	**136,032**
avge N$/HH N$/HH	93		225		23		340
% of HH ear HH earning				4.7%		5.6%	
No. of HH f HH	400						

Table 4c: M e 4c: Mayuni area conservancy income estimates, with joint ventures inside Park (scenario 3).

Scenario 3 ario 3	collective income N$	N$ per HH	Full-time wages N$	jobs employees	Earnings N$	earners	TOTAL N$
quarter ven er venture lodge inside Park e Park	40,000	100	28,800	6	1,010	7	69,810
quarter ven er venture campsite inside Park e Park	4,500	11	2,000	1	600	2	7,100
Joint ventu venture tented camp	32,000	0	38,400	8	132	1	70,532
Private cam e camp with contract eg Mazamb azambala Island	5,000	13	28,800	6	540	4	34,340
Craft marke market (self sale)					7,800	13	7,800
TOTAL LL	**81,500**	**204**	**98,000**	**21**	**10,082**	**27**	**189,582**
avge N$/H N$/HH	$204		$245		$25		$474
% of HH ea HH earning				5.3%		6.8%	
No. of HH HH	400						

Table 4d: 4d: COMPARISON OF THREE SCENARIOS

Scenario rio	collective income N$	N$ per HH	Full-time wages N$	jobs employees	% of HH w. jobs	Earnings N$	earners	% of HH earning	TOTAL N$/YR	N$ per HH
scenario 1 rio 1 - low	92,000	230	104,800	23	6%	11,332	23	6%	208,132	520
scenario 1 rio 1 - high	126,000	315	128,800	28	7%	14,212	44	11%	269,012	673
scenario 2 rio 2	37,000	93	90,000	19	5%	9,032	22	6%	136,032	340
scenario 3 rio 3	81,500	204	98,000	21	5%	10,082	27	7%	189,582	474

Table 5a. MALENGALENGA AREA COMMUNITY WILDLIFE INCOME ESTIMATES, CURRENT SCENARIO

Scenario 1:	collective income N$	N$ per HH	Full-time wages N$	jobs employees	Earnings N$	earners	TOTAL N$
Community campsite	5,000	0	4,000	2	1,200	2	10,200
developed	9,000	0	0	0	0	4	14,200
Guides at community campsite					1,440	1	1,440
					9,000	3	9,000
TOTAL	**5,000**	**8**	**4,000**	**2**	**2,640**	**2**	**11,640**
	9,000	**15**			**10,200**	**4**	**23,200**
avge N$/HH	8		7		4		19
	15		0		17		39
% of HH earning				0%		0%	
						1%	
No. of HH	600						

Scenario 1
Current basic park campsites maintained: community must compete with alternativapproach.

Scenario 2
Concession for community and partner inside Park.
Possibly developed campsite also in park, or on border.

Table 5b: MALENGALENGA WILDLIFE INCOME ESTIMATES, WITH JOINT VENTURE INSIDE PARK (scenario 2)

Scenario 2	collective income N$	N$ per HH	Full-time wages N$	jobs employees	Earnings N$	earners	TOTAL N$
Community campsite	5,000	0	4,000	2	1,200	2	10,200
developed	9,000	0	0	0	0	4	14,200
Guides at community campsite					1,440	1	1,440
					9,000	3	9,000
Joint venture lodge	50,000	83	33,600	7	220	2	83,820
in Mamili NP	80,000	133	57,600	12	2,020	14	139,620
Concession area w. lodge	21,000	35					21,000
	40,000	67					40,000
TOTAL	**76,000**	**127**	**37,600**	**9**	**2,860**	**5**	**116,460**
	129,000	**215**	**61,600**	**14**	**12,220**	**21**	**202,820**
avge N$/HH	127		63		5		194
	215		103		20		338
% of HH earning				2%		1%	
				2%		4%	
No. of HH	600						

Note: no. of households in only indicative, not based on estimates for a precisely defined community.

Table 6a: SALAMBALAN CONSERVANCY INCOME ESTIMATES

Scenario:	collective income N$	N$ per HH	Full-time wages N$	jobs employees	Earnings N$	earners	TOTAL N$
Joint venture lodge & tented camp	80,000	64	96,000	20	2,152	15	178,152
Concession area w. lodge	21,000	17					21,000
2 elephant trophy quota	70,000	56			1,500	3	71,500
bird shooting	28,000	22			2,800	8	30,800
Community campsite	5,000	4	4,000	2	1,200	2	10,200
developed	9,000	7				4	14,200
Guides at community campsite					1,440	1	1,440
					9,000	3	9,000
TOTAL	**204,000**	**163**	**100,000**	**22**	**9,092**	**28**	**313,092**
	208,000	**166**			**16,652**	**33**	**324,652**
avge N$/HH	163		80		7		250
	166				13		260
% of HH earning				2%		2%	
						3%	
No. of HH	1,250						

Income from lodge, area, trophy and bird shooting roughly totals Peddie's offer.
Breakdown is fairly abitrary.

Table 6b: SALAMBALA CONSERVANCY RUNNING COSTS

	Unit costs per month	per year	No.	Total	No. of wage earners
1 Manager	1,000		1	12,000	1
2 Game Guards	500		2	12,000	2
3 Resource Monitors	500		1	6,000	1
4 Casual labour		3,000	1	3,000	10
5 Borehole maintenance		500	5	2,500	2
6 Communications, committee ops.		500	1	500	
7 Committee member fees	50		41	24,600	41
8 Transport		2,500	1	2,500	
TOTAL				**63,100**	**57**
of which:			% of total		
salaries to community members			48%	30,000	4
occasional wages/fees to community members			45%	28,100	53
spent outside the community			8%	5,000	

NOTES

4 *for example, mending fences*

5 *assuming 5 boreholes in the Conservancy. Assume 20% on wages, 80% equipment.*

7 *assuming the 41 members meet for two days per month, every month.*

The table shows that total running costs of the conservancy could amount to over N$63,000 per year. However, over 90% of this is spent internally, as salaries, wages and fees to community members.

Table 6c: NET AND GROSS COLLECTIVE INCOME AT SALAMBALA

	N$ per year	N$ per household
Gross collective income	204,000	163
Operating costs	63,100	50
of which:		
operating costs spent within the community	*58,100*	
Net collective income	140,900	113
Net collective income plus expenditure spent internally	199,000	159

i.e Operating costs make net collective income substantially lower than gross collective income.
However, the large proportion spent on local wages needs to be added back in as a benefit, and a contributor to total community income.

Table 6d. Impact of conservancy running costs on different types of community income at Salambala.

	collective income N$	N$ per HH	Full-time wages N$	jobs employees	Earnings N$	earners	TOTAL N$
Ignoring conservancy running costs (gross income)	204,000	163	100,000	22	9,092	28	313,092
Assuming running costs paid from gross income (net income)	140,900	113	130,000	26	37,192	81	308,092
Difference income (losses) and gains due to running costs	(63,100)	(50)	30,000	4	28,100	53	(5,000)
% of total income							
- of gross income	65%		32%		3%		100%
- of net income	46%		42%		12%		100%

Expenditure on running costs reduces collective income by over N$63,000, or N$50 per household.
But it increase wage income and other earnings by nearly N$30,000 each per year, so TOTAL community income is only down by N$5,000.
It therefore substantially alters the proportionate breakdown of total income, reducing the share earned collectively from three quarters to a half.

7: SUMMARY TABLES OF POTENTIAL LOCAL INCOME FROM WILDLIFE/TOURISM ENTERPRISES IN FIVE COMMUNITIES OF CAPRIVI

Table 7a: TOTAL INCOME PER COMMUNITY AND PER HOUSEHOLD

	TOTAL INCOME range (N$/year)			INCOME PER HOUSEHOLD range (N$/year)			ASSUMPTIONS no. of HH	Enterprises
Bagani	60,765	-	72,825	405	486		150	community campsite, guides & trophy hunting
Mayuni	208,132	-	269,012	520			400	JV lodge, contract with camp, community campsite, guides, crafts.
Lianshulu/Sauzuo	143,320	-	230,180	519	834		276	JV lodge and private lodge in Mudumo NP, community campsite, guides.
Malengalenga area	11,640	-	23,200	19			600	Community campsite, guides.
Salambala	313,092	-	324,652	250	260		1,250	JV tourism/hunting lodge with concession, community campsite, guides.

Table 7b. COMPONENTS OF INCOME: COLLECTIVE INCOME, WAGES, AND OTHER EARNINGS

	COLLECTIVE INCOME		FULL TIME WAGES		OTHER EARNINGS		TOTAL
	N$	% of total	N$	% of total	N$	% of total	
Bagani	55,250	83%	4,000	6%	7,545	11%	66,795
Mayuni	109,000	46%	116,800	49%	12,772	5%	238,572
Lianshulu/Sauzuo	106,250	57%	72,400	39%	8,100	4%	186,750
Malengalenga area	7,000	40%	4,000	23%	6,420	37%	17,420
Salambala	206,000	65%	100,000	31%	12,872	4%	318,872
Total/average	**483,500**	**58%**	**297,200**	**36%**	**47,709**	**6%**	**828,409**

Note: where a range of income was estimated, the average of the low and high estimates has been used.

The table shows that collective income accounts for more than half of all local income in most communities.
Wages of permanent employees are also a considerable share, and other earnings a small share of the total.

Table 7c: SUMMARY OF BENEFITS TO HOUSEHOLDS

	COLLECTIVE INCOME N$ per HH per year	WAGES no. of employees	% of HH	OTHER EARNINGS no. of earners	% of HH	total % of HH with wages or earnings min	max
Bagani	353	2	1.3%	5	3.5%	5%	8%
	383			9	6.2%		
Mayuni	230	23	5.8%	23	5.8%	12%	18%
	315	28	7.0%	44	11.1%		
Lianshulu/Sauzuo	288	14	5.0%	9	3.3%	8%	16%
	482	19	6.8%	25	9.1%		
Malengalenga area	8	2	0.3%	2	0.3%	1%	1%
	15			4	0.7%		
Salambala	163	22	1.8%	28	2.3%	4%	4%
	166			33	2.7%		

Looking at how many households benefit by how much:
The table shows that if all households share in collective income, dividends are in the range of a few hundred dollars in most cases.
Wages (half-time or full-time permanent work, $2-5,000 per year) will be earned by 0-7% of households within a community.
Sales earnings (considerably smaller than wages) could be earned by slightly more people -- up to 11% in Mayuni area.

Table 7d: percentage of residents earning each type of income, average for 5 communities

	Income earned			
	Amount N$	% of total	% of residents earning	average amount per earner (N$/yr)
Collective income	483,500	58%	100% (up to)	240
Wages	297,200	36%	4%	2,714
Sales earnings	47,709	6%	4%	520
Total	828,409	100%		

Wages is income from permanent, regular, full-time and half-time jobs.

Table 8: Summary results if conservancy running costs are paid from collective income

Table 8a. Assumed expenditure of collective income, and increase in wages and earnings:

	Collective expenditure		wages	no. workers		earnings, fees	no. earners
Salamabala	(63,100)		30,000	4		28,100	53
Other communities	(31,550)		15,000	2		7,025	13

ie assume other conservancies/communities have half as many permanent employees (CGGs, CRMs, Manager), and a quarter as many residents doing casual labour or paid committee work, as in Salambala.

Table 8b. COMPONENTS OF INCOME: COLLECTIVE INCOME, WAGES, AND OTHER EARNINGS (assuming running costs paid from collective income)

	COLLECTIVE INCOME		FULL TIME WAGES		OTHER EARNINGS		TOTAL
	N$	% of total	N$	% of total	N$	% of total	
Bagani	23,700	41%	19,000	33%	14,570	25%	57,270
Mayuni	77,450	34%	131,800	58%	19,797	9%	229,047
Lianshulu/Sauzuo	74,700	42%	87,400	49%	15,125	9%	177,225
Malengalenga area	(24,550)	-311%	19,000	241%	13,445	170%	7,895
Salambala	142,900	46%	130,000	41%	40,972	13%	313,872
Total/average	**294,200**	**37%**	**387,200**	**49%**	**103,909**	**13%**	**785,309**

Table 8c. BENEFITS TO HOUSEHOLDS (assuming running costs paid from collective income)

	COLLECTIVE INCOME N$ per HH per year	WAGES (avg $4,800/yr) no. of employees	% of HH	OTHER EARNINGS no. of earners	% of HH	total % of HH with wages or earnings min	max
Bagani	158	4	3%	19	12%	15%	18%
				23	15%		
Mayuni	194	25	6%	36	9%	15%	22%
		30	8%	58	14%		
Lianshulu/Sauzuo	271	16	6%	22	8%	14%	21%
		21	8%	38	14%		
Malengalenga area	(41)	4	1%	15	3%	3%	4%
				17	3%		
Salambala	114	26	2%	81	6%	9%	7%
		4	0%	86	7%		

The impact of running costs can be seen by comparing these results to tables 8 and 9.
Collective income per household has been severely reduced, and in some places would be entirely consumed by such running costs.
However, the amount of wages/earnings and the number of employees and earners have increased.

Table 8d: Types of income, averaged across 5 communities, if running costs are paid.

	Income earned Amount N$	% of total	% of residents earning	average amount per earner (N$/yr)
Collective income	294,200	37%	100% (up to)	87
Wages	387,200	49%	4%	3,085
Sales earnings	103,909	13%	9%	736
Total	785,309	100%		

Comparison with table 7d, shows that collective income has fallen from 59% to just 37% of total income, while the share of wages and earnings have correspondingly risen.

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