_____

Community-based natural resource management in Namibia: Results of a 2006 household survey

Indongo N, Sweeney, LF, Baker, AC, Muteyauli PI & Nhuleipo, O

_____

Cover illustration by Nangombe Kapanda
Edited by LF Sweeney, JI Barnes and O Nhuleipo

Contact details

N Indongo
Head, Department of Statistics and Population Studies
Faculty of Science, University of Namibia
Private Bag 13301
Windhoek
Namibia
E-mail: < nkanime@unam.na >

LF Sweeney, AC Baker, PI Muteyauli and O Nhuleipo
Environmental Economics Unit
Ministry of Environment and Tourism
Private Bag 13306
Windhoek
Namibia
E-mail < pmuteyauli@yahoo.com.na >

Table of contents

List of Figures

Figure 1: Percent distribution of gender of head the household, 2006
Figure 2: Percentage distribution of education level of the head of household, 2006
Figure 3: Distribution of education attainment of head of household by region of residence, 2006
Figure 4: Distribution of conservancy membership status by gender of head of household (conservancy areas), 2006
Figure 5: Distribution of age of head of household by conservancy membership status (conservancy areas), 2006
Figure 6: Distribution of education attainment of head of household by conservancy membership status, 2006
Figure 7: Household awareness of land restriction in Kunene Region (conservancy areas), 2006
Figure 8: Household awareness of land restrictions in Caprivi Region (conservancy areas), 2006
Figure 9: Households awareness of wildlife restrictions in the Kunene region (conservancy areas), 2006
Figure 10: Household awareness of wildlife restrictions in the Caprivi Region (conservancy areas), 2006
Figure 11: Number of households who think that restrictions stop them from using the resource the way they want (conservancy areas), 2006
Figure 12: Number of households who think that restrictions stop them from using the resource the way they want in Caprivi region (conservancy areas), 2006
Figure 13: Number of households who think that restrictions stop them from using the resource the way they want in Kunene region (conservancy areas), 2006
Figure 14: Percent distribution of households who think that restrictions are õbeneficialö (conservancy areas), 2006
Figure 15: Distribution of household knowledge of conservancy in area by region, 2006 (conservancy residents)
Figure 16: Distribution of number of household with member (s) who know the name of conservancy by region, 2006 (conservancy residents)
Figure 17: Distribution of number of household with member (s) who know the conservancy establishment year by region, 2006 (conservancy residents)

List of Tables

Abbreviations

CBNRM – Community Based Natural Resource Management
CBOs – Community Based Organisations
ICEMA - Integrated Community-Based Eco-System Management
MET – Ministry of Environment and Tourism
PSU – Primary Sampling Unit
UNAM – University of Namibia

Abstract

In 2006, a survey of 940 households was conducted in the Kunene and Caprivi regions of Namibia. This was aimed at measuring the socio-economic and livelihood characteristics of households in the areas under varying degrees of development in the Community-Based Natural Resources Management (CBNRM) Programme. In each of the two regions the survey covered four conservancies and one control areas, outside conservancies. The survey follows a similar one carried out in 2002 in the same two regions. This report provides basic statistics for the survey, and comparative statistics for the two regions studied. A parallel analysis of the data specifically examined the impact of CBNRM on household livelihoods and welfare.

Between regions, the impact of climate can clearly be seen in the production systems observed, with Kunene being more livestock based and Caprivi more arable based. Overall and where comparable, the 2006 data has shown that there has been very little significant change in households in conservancies since 2001. Generally the households in conservancies in the Kunene region are wealthier. The head of the household in the regions surveyed are more likely to be male, above the age of 25 and below the age of 59, with little or no formal education. For this age group, significant proportions of the workforce listed their main activity as wage employment, livestock management or cropping. From data gathered in 2002 and analysed by Suich, the proportion of households headed by a woman appears to have declined.

Female heads of household are less likely to be members of the conservancy and educational attainment does not seem to have an impact on conservancy membership status. Data on household assets seem to show that by total value, residents in Kunene on average have a more valuable stock of assets. One of the findings from data regarding livelihoods of households is that for those items expected to be purchased on an annual basis, either the prices faced by those in the Kunene region are higher than in Caprivi, or the quantities consumed are greater. Monthly expenditure on consumables was again higher on average in Kunene, most notably on rent / house repairs, water and electricity. Expenditure on food items, based on purchases, consumption of own production and gifts was on average estimated to be over N$6,500 in the two weeks prior to the survey. Given that increased availability of game meat is one of the observed benefits of the CBNRM programme, the high value of the consumption of game meat can be seen as a direct benefit to households from the programme. As above regarding spending on monthly and annual goods, expenditure on food items is markedly higher in the Kunene than in the Caprivi region. It is likely that the high value of livestock production compared to arable farming and fishing in Kunene is a contributing factor.

Overall, the data shows that most households own cattle and poultry, with high numbers owning goats as well. More than half of households indicated that they had killed goats in the last 12 months. It is likely therefore that goat meat is the most important meat consumed in both regions, although the secondary milk production and egg production of cattle and poultry respectively may mean that they are more important as a food source. Most households produce maize, although mahangu and sorghum production is much more prevalent in the Caprivi region, which is as expected due to the wetter climate in that region. The average income from sale of the crops is lower than that received from livestock sales in general.

Elephants are by far the greatest cause of damage to households, with fencing and communal water infrastructure being particularly badly damaged. Damage by wildlife was much more likely in the Kunene region than in Caprivi, with around 19 percent of households suggesting they had experienced damage in Kunene versus 3 percent in Caprivi. Crop destruction, mostly caused by elephants , is much more likely in the Caprivi region, was also. In Caprivi, more than 50 percent of households experienced crop damage, highlighting both the difficulty of human/wildlife conflict and the potential benefits from preventing it.

Use of wood, wild foods, medicinal plants and forest products is much more important in the Caprivi region than in Kunene. Nearly 90 percent of households collect firewood, with some firewood being sold in Caprivi but none being sold in Kunene. natural resources are much more likely to be collected for own use in Kunene, whereas they are more likely to be sold in Caprivi (as well as collected for own use). The value of medicinal plant resources are very high for those that sell them, although it should be noted that only very few households indicated that they received income from selling the resource.

The awareness of resource restrictions was high in conservancy areas, although in Kunene a large number of households were not aware of restrictions on land. Most households felt that the restrictions prevented them from using resources how they would wish to, especially regarding wildlife. However this is a reflection of providing ownership of the resource. Without ownership, these resources would not be available to the same extent as they are now. This is acknowledged by survey respondents, the majority of whom suggested that restrictions are beneficial in conservancy areas.

Just fewer than 25 percent of households have members that are members of CBOs, with the largest number of households being involved in water point committees. Contributions to committees are almost ten times that received from committees, with contributions of members into farmers groups the largest. Despite this however, it is worth remembering that membership of committees would bring greater rewards than direct financial contributions for example in terms of knowledge sharing, equipment sharing, social benefits etc, which are not captured in the data.

Knowledge of the conservancy was good in both areas, although the number knowing the conservancy establishment year was low. Although knowledge of conservancy plans was good, with above 60 percent of households having at least one member being aware of all types of plans, involvement in setting out the plans was low. In part this reflects the low number of members of heads of household in the conservancy (less than 50 percent).

The community in general received substantial financial benefits from the conservancy in both regions, with cash dividends more likely to be received by those in Caprivi than in Kunene. On the other hand, non-cash dividends are much higher in Kunene.

1.   Introduction and objectives

This paper presents an analysis of the characteristics of households in community based natural resources management (CBNRM) areas in Namibia. The Namibian CBNRM programme has been described in detail by NACSO (2004, 2006, 2008). The basis for this analysis is a household survey carried out in 2006 in the Caprivi and Kunene regions by SIAPAC for the Ministry of Environment and Tourism (MET), with data entry and preliminary data analysis performed by the University of Namibia (UNAM).

One of the key principles underlying the CBNRM programme is the understanding that without the proper incentives, natural resources can become overused and poorly managed. One way of creating the incentive for good management practices is to assign ownership of the resource to an individual or group; ownership provides a legal framework of exclusivity to the resource, which in turn means that the benefits of good management can accrue to those managing the resource. Almost uniquely across the world, the CBNRM programme in Namibia has provided a framework for the provision of property rights to wildlife and land to local groups living on communal lands. Although there are several steps that need to be followed as part of the process of transferring rights, including the requirement that local peoples organise themselves into a formal management group called a conservancy, substantial benefits to the community and to the country in general have been observed. These benefits can include the revenues generated by tourism, craft sales and the sale of game as well as the non-income benefits of increased meat availability, institutional capacity development and infrastructural improvement. Since the conservancy concept was written into law in 1996, evidence of wildlife numbers and conservancy revenues over this time period show large improvements. For example, it is estimated that total CBNRM income has increased from N\$160,000 in 1996 to N\$41,889,000 in 2008, and that numbers of wildlife species such as Oryx, Springbok and Mountain Zebra have increased around threefold in north-western Namibia over the same period (NASCO, 2009). At time of writing, there are 59 conservancies in Namibia, of varying sizes and geographical location.

A formal study assessing the impact of CBNRM in improving the livelihoods of rural areas was analysed in the DFID funded Wildlife Integration for Livelihood Diversification (WILD) project, completed in 2004. Although the benefits in terms of wildlife numbers, income growth and capacity development in rural communities was palpable, the WILD project also highlighted some areas of concern regarding the programme. In particular one concern related to the

> í extent to which the benefits of CBNRM are being widely distributed among the rural populations; in some cases the extent to which decision-making is dominated by local political and wealthy eliteøs is also a concern. (Long, 2004, p162-163)

As part of that project, a detailed household survey of households in conservancies in the Caprivi and Kunene regions was performed by SIAPAC in 2002 and analysed by Suich (2003). As a follow-up to that study, a further survey was commissioned under the Integrated Community-Based Eco-System Management (ICEMA) project in 2006, covering many of the same themes to allow ease of comparison. SIAPAC were

commissioned to carry out the survey, which involved households from six of the original seven conservancies, with an additional two conservancies and two surrounding areas also surveyed. A detailed report on the field survey methodology and issues surrounding it was prepared by SIAPAC (2007). Although our paper is concerned with the livelihoods of those living within conservancy areas and surrounding areas together, a parallel, econometric study by Bandyopadhyay, Guzman and Lenelvo (Bandyopadhyay et al. 2009), making use of the same data base, explicitly looked at the differences in livelihoods between conservancy and non-conservancy areas.

In common with the Suich (2003) survey report, this paper breaks down the results into four general themes: demographics, livelihoods, natural resource use and the conservancy. The demographic section will cover information such as gender, age and education level of head of household, household assets and access to facilities. The livelihood section covers variables such as expenditure on goods and services, livestock and poultry ownership, household crop production and incidence of wildlife damage. Natural resource use will look at the distribution of wood resources, wild food resources, medicinal plants and forest products. The final conservancy section will discuss areas such as awareness of the conservancy, membership and opinions of the conservancy.

After presenting the results of the survey a discussion section will follow, drawing out key implications from the data and highlighting associated policy implications. As with the 2003 Suich report the focus of this paper will be to describe differences between the regions, however, where possible, consideration of the differences over time will also be provided.

2.   Method

The SIAPAC survey was completed in the Kunene and Caprivi regions of Namibia, covering eight conservancies and two control areas.

Table 1: Names, locations and types of areas surveyed[1]

Name	Region	Type
Ehirovapuka	Kunene	Conservancy
#Khoadi/Hoas	Kunene	Conservancy
Purros	Kunene	Conservancy
Torra	Kunene	Conservancy
Epupa	Kunene	Control area
Kasika	Caprivi	Conservancy
Kwandu	Caprivi	Conservancy
Mayuni	Caprivi	Conservancy
Salambala	Caprivi	Conservancy
Kabulabula	Caprivi	Control area

---

[1] See Appendix A for maps of the areas concerned.

Two types of questionnaire were administered: one type to households and another at a community level to leaders and committee members. The focus of this paper will be the data from the household survey only. Overall, 941 heads of households were interviewed face to face, with broadly equal numbers of households interviewed in each region. The survey was translated into Otjiherero, Afrikaans and siLozi to use where appropriate. Fieldwork was carried out by four Field Supervisors and sixteen Enumerators (broken into four teams of five members) and overseen by two Field Survey Co-ordinators.

2.1 Sampling method

Using data maps provided by the Central Bureau of Statistics (CBS), the associated geographical areas, defined as Primary Sampling Units, were determined for each area. For conservancy areas, the sample design for the survey was a two-stage cluster sample for each conservancy area. The first stage was to select sampling clusters within PSUs to be surveyed, which using 2001 census data was drawn based on population data (Probability Proportionate to Size). This meant that for some PSUs, multiple clusters were selected, due to their proportionately large populations. The second stage of sampling was to select the households to be surveyed within each cluster. This was completed on the ground by first selecting the direction for surveyors to travel from the centre of the PSU and then secondly by selecting the first household to be surveyed in that direction. Direction was chosen by a õspin the bottleö technique and the starting household by surveyors drawing numbers between 1 and 10 from a hat.

The sampling technique employed for conservancy and control areas was slightly different. In contrast to the conservancy areas, all PSUs within the control areas were sampled, but households to be surveyed were selected in the same way as in conservancy areas.

In the instance that a particular household could not be surveyed, the nearest household was surveyed instead. In total 73 PSUs were surveyed, 26 of which were within the Kunene Area and 47 within the Caprivi Area.

2.2 Key fieldwork issues

Although generally the fieldwork for the survey was competed without issue, a number of difficulties arose, which affected the sample taken. The key problems were as follows:

- In one control area, permission to carry out sampling in some PSUs was denied by one of the local Chiefs. This necessitated the replacement of three PSUs by other PSUs outside of he jurisdiction of the Chief.
- One PSU was deserted at the time of surveying and so was replaced by another PSU.
- Flooding in the Caprivi area meant that six PSUs were unreachable and needed to be replaced.
- Flooding also meant that in some cases all households within a village were sampled, rather than randomly selected.

Despite these issues, the sample taken is broadly representative of the regions surveyed.

3.   Results

The Figures, Tables and accompanying discussion below present some similarities and differences between households in the two regions and across time in the context of the four themes outlined in the introduction (demographics, livelihoods, natural resource use and the conservancy). It should be noted that in many instances, the data gathered in 2002 and in 2006 are not directly comparable and that some of the data gathered in 2006 was not gathered in 2002.

3.1   Demographics

The following Figures and Tables provide information on the demographic characteristics of households in the two regions. The topics can be split into two main sections. Firstly information regarding the gender, education, main economic activity and age of the head of household will be discussed. The second set of topics includes ownership of household assets and access to facilities in the two regions.

Figure 2: Percent distribution of gender of head the household, 2006
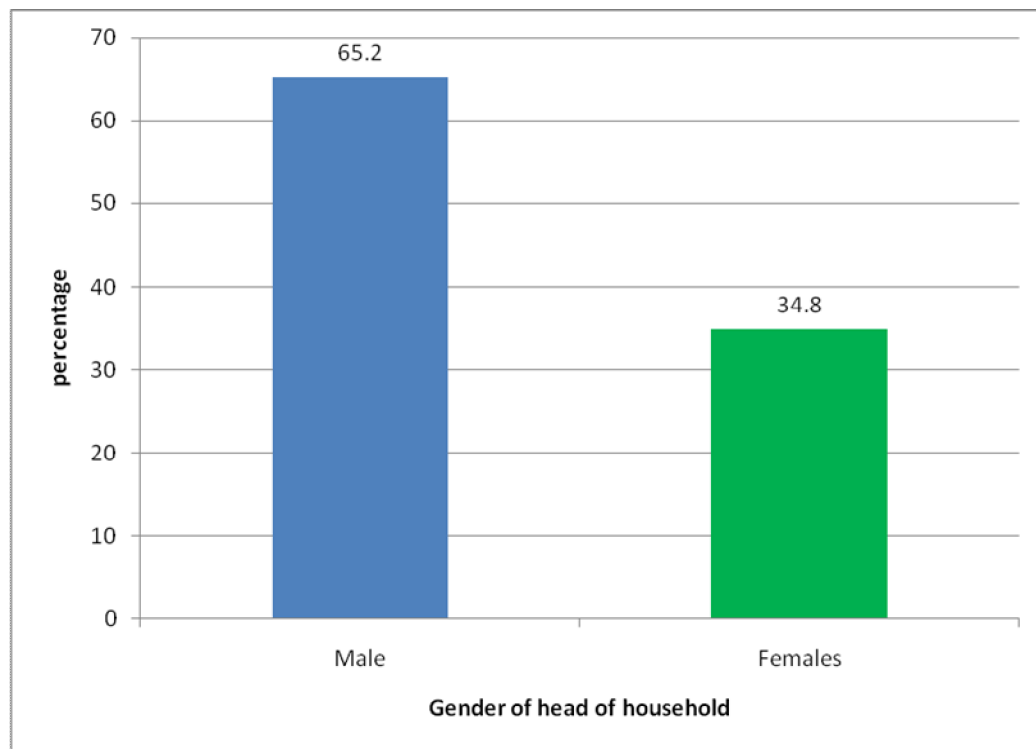
Overall, greater than two thirds of the sampled heads of household were male. This Figure is greater than the 58.1 percent of male-headed households reported in the 2003 Suich report (Suich, 2003).

Figure 2: Percentage distribution of education level of the head of household, 2006
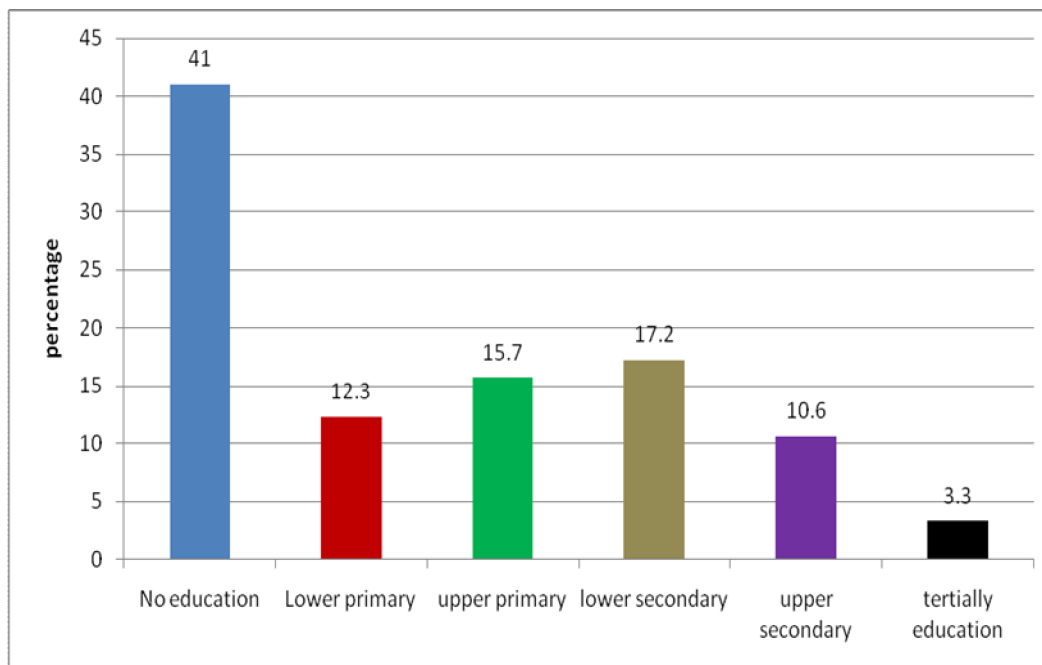
As shown in Figure 2, 41 percent of heads of households have no formal education in the regions surveyed, which is significantly larger than the next highest proportion of education level surveyed, lower secondary at 17 percent. Only 3 percent of the heads of household had tertiary education.

The number of heads of household with no education has marginally decreased since 2002, when 42 percent of heads of household were recorded as having had no formal education (Suich, 2003).

Table 2: Percentage distribution of age of head of household, 2006

Age	Total Percentage	Caprivi Percentage	Kunene Percentage
Less than 25	4.2	4.3	4.2
25-59	65.7	63.6	67.8
60+	30.1	32.0	28.1

As shown above, the majority of heads of household are between the ages of 25 to 59. Just less than a third of heads are older than 60, with only a small percentage younger than 25. Broadly speaking the age proportions in the Caprivi and Kunene regions are the same, although there does appear to be a slightly higher percentage of those between the ages of 25 and 59 in Kunene, with a commensurate smaller proportion of those above the age of 60.

Table 3: Distribution of age of head of household by highest level of education attained, 2006

Highest level of education attained	Less than 25	25-59	60+
No education	11.1	27.4	**68.9**
Lower primary	11.1	10.6	17.0
Upper primary	30.6	19.2	7.8
Lower secondary	22.2	23.5	4.2
Upper secondary	19.4	15.1	0.7
Tertiary education	5.6	4.2	1.4

Table 3 shows that there is a clear difference in education level of the head of household based on age group: generally, the younger the head of household, the more formal education they have received. Hence the proportion of heads of household that have had no formal education is much greater for those above the ages of 60 (69 percent) compared to the same Figure for household members between the ages of 25 and 59 (27 percent) and those below the ages of 25 (11 percent). Around 47 percent of those surveyed that are under the ages of 25 have at least lower secondary education, against 43 percent of those between the ages of 25 and 59 and 6 percent for those above the ages of 60.

The finding that the younger a generation the greater likelihood of greater formal education is perhaps not surprising: it simply shows the expansion of the availability of education within Namibia over time. Note that the incidence of educated individuals in the under 25 category may underestimate the difference in education availability between the age groups; those under 25 are much more likely to continue their education at a later date, compared to those in the other age groups.

Table 4: Distribution of age of household by main economic activity, 2006

Economic activity	Less than 25	25-59	60+
Wage employment	44.5	29.9	2.5
Own/Family business	11.1	7.1	1.1
Livestock	19.4	24.3	19.9
Cropping	13.9	23.8	21.4
Fishing	5.6	7.1	1.8
Retired/pensioner	-	2.5	51.6
Unemployed	5.6	5.2	1.8

It is much more likely that those household heads under the age of 25 are in wage employment compared to the other age categories (see Table 4). As shown above, 45 percent of under 25s are in wage employment, compared with 30 percent of 25 to 59 year olds and 2.5 percent of those older than 60. As expected, the majority of those aged above 60 are retired, although a large proportion still participate in livestock management and cropping. For those aged between 25 and 59, the most likely

economic activity is wage employment, followed by livestock and cropping (both 24 percent). Unemployment is highest amongst those heads of household less than 25, followed by those household heads between the ages of 25 and 59 and then those above 60.

Figure 3: Distribution of education attainment of head of household by region of residence, 2006
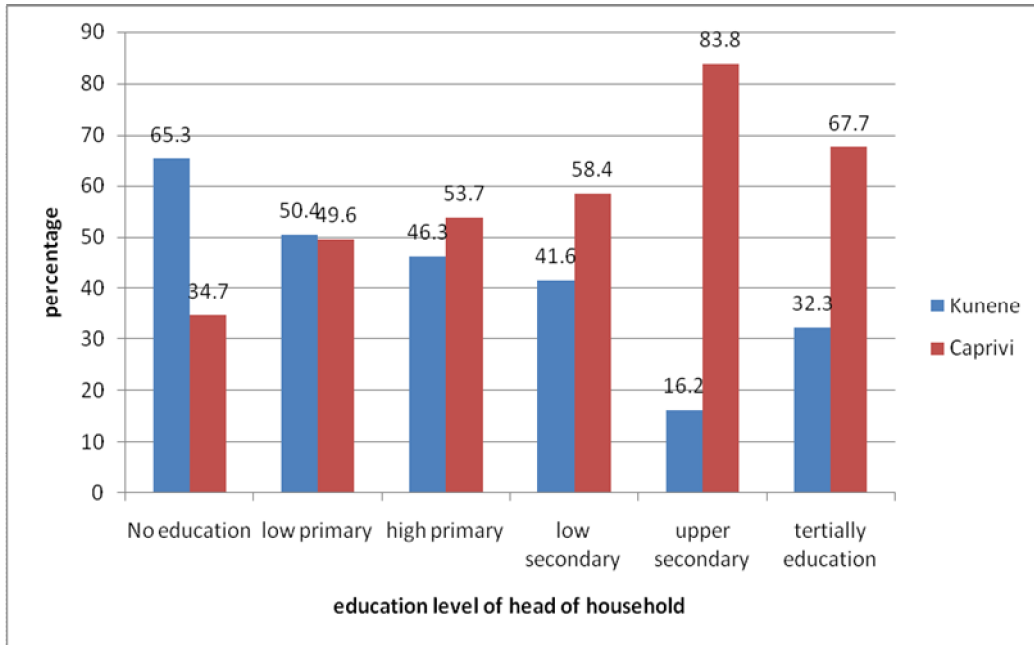
As shown in Figure 3 above, the formal educational attainment levels of heads of households in the Caprivi region appear to be greater than in the Kunene region. For example, of the total heads of household with no education in both regions, 65% are in the Kunene region; of the total heads of household with upper secondary education, only 16% are in the Kunene region. The data as analysed by Suich (2003) suggests that a similar picture existed in 2002: 63 percent of those heads of household surveyed in 2002 that were unemployed were in the Kunene region and that only 29 percent of the total of those having upper secondary education were in Kunene.

Figure 4: Distribution of conservancy membership status by gender of head of household (conservancy areas), 2006
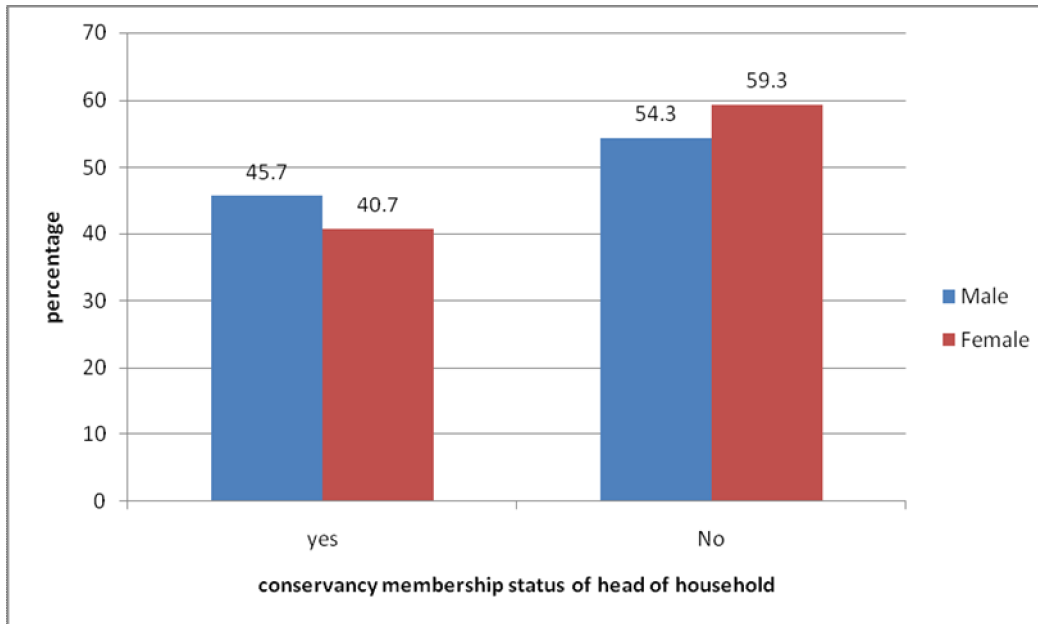
As shown in Figure 4 above, male heads of household are apparently more likely to be members of the conservancy than those households headed by a woman. It is also apparent that more heads of households are non-members of the conservancy than members.

Figure 5: Distribution of age of head of household by conservancy membership status (conservancy areas), 2006
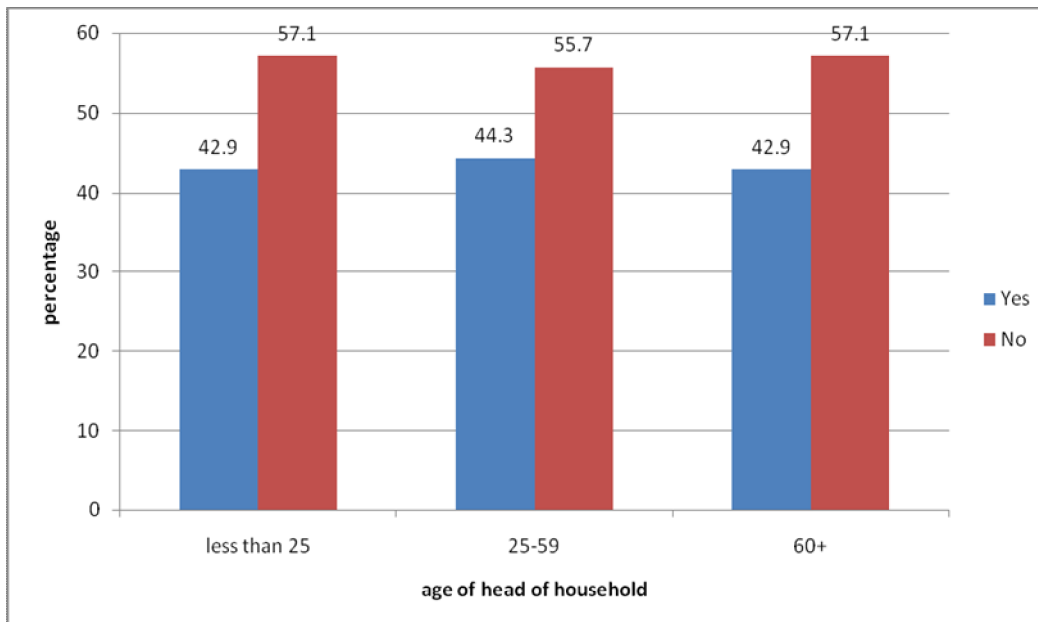
As shown above in Figure 5, the relationship between membership status and age of head of household is somewhat insignificant: age of the head of household appears to have little bearing on conservancy membership. 3 on average per household

Figure 6: Distribution of education attainment of head of household by conservancy membership status, 2006
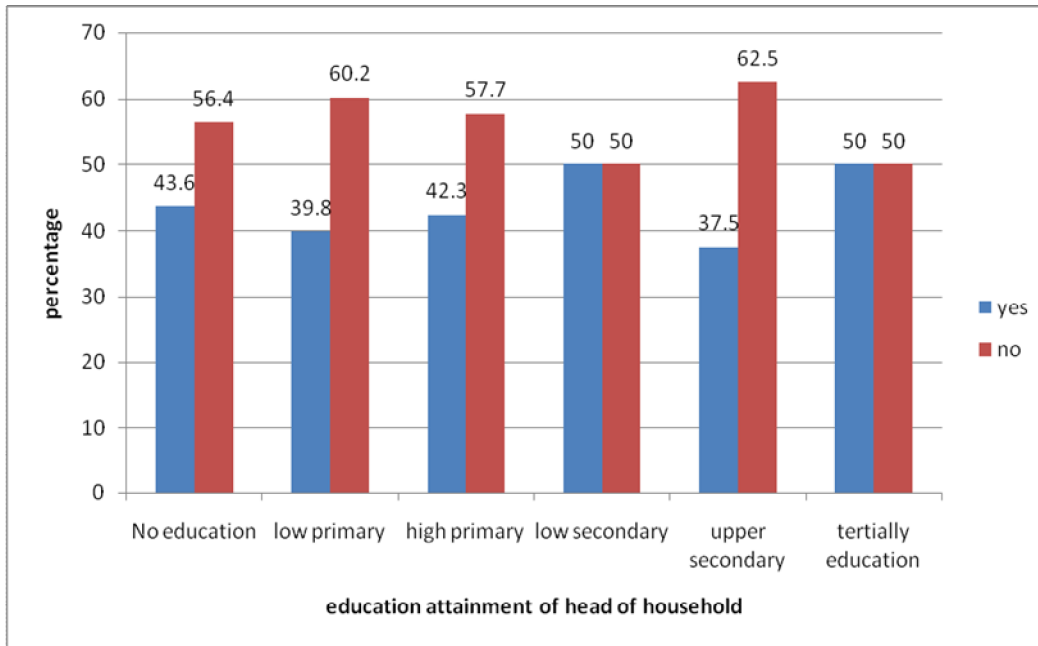
There does not appear to be a clear relationship between educational attainment and conservancy membership status (see Figure 6). Indeed, the relationship is not statistically significant (χ^2 value of 4.3 and P-value =0.50).

Table 5 (below) shows the distribution of household assets. The majority of surveyed households own an axe and a hoe, with the mean number of axes and hoes per household that owns them 1.77 and 2.55 respectively (see Table 5). As expected, the most valuable item, a tractor (mean value N\$115,000) is owned by very few (3) households, but the second most valuable item, a motor vehicle (mean value N\$35,000) is owned by around 11% of households. For those that own the assets in question, the highest average number of assets relates to oxen (7.73 head) and fishing equipment (5.31 items). In terms of communication, around 14.6% of households own at least 1 telephone, 9% own a television and only 1.6% owns a radio.

The average value of the total assets shown per household is estimated to be N\$48,000.

Table 5: Distribution of household assets, 2006

Asset	Number of household own a specified asset	% of household with specified asset	Average number of assets	Mean value (N$)
Plough	210	22.4	1.42	722.00
Hoe	487	52.0	2.55	53.37
Boat	6	0.6	1.50	1493.17
Canoe	117	12.4	1.38	634.36
Fishing equipment	160	17.0	5.31	322.00
Bicycle	111	11.8	1.09	548.20
Motor vehicle	104	11.1	1.25	35358.76
Tractor	3	0.3	1.33	115000.00
Sledge	138	14.7	1.26	180.04
Grinding/hammer mill	27	2.9	1.67	1383.46
Refrigerator	108	11.5	1.16	2631.48
Telephone	137	14.6	1.16	656.10
Sewing machine	179	19.0	1.19	1031.60
Donkey cart	181	19.2	1.23	1190.56
Donkeys	263	27.9	4.82	1754.87
Oxen	288	30.6	7.73	12271.07
Horses	100	10.6	2.87	2669.50
Livestock equipment	261	27.7	3.28	659.51
Axe	699	74.5	1.77	93.65
Gun	129	13.7	1.33	2535.87
Water pumps	12	1.3	1.00	5725.00
Hand hammer mills	112	11.9	1.59	146.23
Hand saw	291	31.0	1.46	101.20
Carpentry plane	14	1.5	1.14	353.57
Wheelbarrow	103	10.9	1.08	223.50
Furniture	406	43.1	4.58	3408.95
Television	85	9.0	1.14	2267.86
Pots	16	1.7	1.88	2832.50
radio	15	1.6	1.27	1260.00
DVD recorder	4	0.4	1.00	2625.00

Table 6: Household assets by region, 2006

Asset	Kunene			Caprivi		
	Number of household with specified asset	Average number of assets	Mean value (N$)	Number of household with specified asset	Average number of assets	Mean value (N$)
Plough	27	1.22	981	183.00	1.45	686
Hoe	66	1.88	96	421.00	2.65	47
Boat	-	-	-	6.00	1.50	1,493
Canoe	-	-	-	117.00	1.38	634
Fishing equipment	1	1.00	300	159.00	5.33	323
Bicycle	25	1.12	728	86.00	1.08	496
Motor vehicle	83	1.28	31,965	21.00	1.14	49,289
Tractor	1	1.00	45,000	2.00	1.50	150,000
Sledge	-	-	-	138.00	1.26	180
Grinding/hammer mill	1	1.00	200	26.00	1.69	1,431
Refrigerator	81	1.2	2,898	27.00	1.04	1,831
Telephone	54	1.2	814	86.00	1.13	552
Sewing machine	159	1.18	1,030	20.00	1.30	1,044
Donkey cart	169	1.22	1,165	12.00	1.25	1,582
Donkeys	259	4.87	1,774	4.00	1.50	500
Oxen	82	15.48	30,848	206.00	4.75	4,970
Horses	100	2.87	2,670	-	-	-
Livestock equipment	137	3.06	885	124.00	3.52	409
Axe	322	1.58	133	377.00	1.93	60
Gun	62	1.37	3,189	67.00	1.30	1,942
Water pumps	7	1.00	6,513	5.00	1.00	1,000
Hand hammer mills	32	1.63	432	80.00	1.58	42
Hand saw	185	1.57	126	106.00	1.27	56
Carpentry plane	5	1.00	658	9.00	1.22	184
Wheelbarrow	86	1.07	195	17.00	1.12	366
Furniture	253	3.51	4,304	153.00	6.35	1,852
Television	39	1.18	3,151	46.00	1.11	1,502
Pots	13	2.08	3,462	3.00	1.00	107
Radio	15	1.27	1,260	-	-	-
DVD recorder	4	1.00	2,625	-	-	-

The total average value of the assets listed per household for the Kunene region is estimated to be N$102,000 and for the Caprivi region N$21,000 (see Table 6). It is clear that ownership of some household production based items will vary between the regions due to the climactic and geographical differences inherent to the regions. Hence the ownership of fishing equipment and boats are much more prevalent in the Caprivi region. Likewise, the greater distances that may be required to be travelled in the Kunene region perhaps accounts for the greater ownership of motor vehicles (83 households versus 21 in Caprivi) and the less ownership of bicycles (25 households versus 86 in Caprivi).

Some differences cannot so easily be so explained however, such as the apparent difference in wheelbarrow ownership (Kunene 86 households; Caprivi 17 households), pots (Kunene 13; Caprivi none) or radios (Kunene 15; Caprivi none). Unfortunately the data on asset holdings are not fully comparable with the data captured in 2002 and reported by Suich (2003) as the ownership of different assets

was more comprehensive in the latest survey. Some comparisons can be made however:

- In the Kunene region plough ownership appears to have risen from 2.9% of households owning the asset to 5.7% owning the asset. Motor vehicle ownership appears to have declined from 26.5% of households owning to 17.6% in 2006, which is a substantial fall for such a valuable asset. Ownership of radios seems also to have fallen, dramatically from over 80% of households owning the asset to just above 3%, implying perhaps a change in availability of broadcasts.

- In Caprivi the key changes relate to radio ownership and motor vehicle ownership. As in Kunene, radio ownership has decline dramatically, from 70.9% of households claiming ownership in 2002 to no households claiming ownership. Motor vehicle ownership has increased from 2.8% of households to 4.5% of households.

Table 7: Household access to facilities, 2006

Facility	Number of household whose people know where the facility is located	% of household whose people know where the facility is located	Average walking distance (hours)
Shop (with food and groceries)	910	97	2.40
Shop (Agricultural)	512	54	2.86
Post office	778	83	2.99
Primary school	930	99	2.48
High school	843	90	2.53
Health facility	920	98	2.70
Hammermill	333	35	2.59
Police station	867	92	2.92
Public transport	830	88	2.72
Public phone	632	67	2.57
Regional offices	785	83	3.28
Main gravel road	695	74	3.18
Tarred road	839	89	3.03
Agricultural extension office	762	81	3.03
Quarantine station	534	57	3.27
Craft market	515	55	2.58
Open market	410	44	3.44

As shown in Table 7, most of the households surveyed knew the location of nearly all the facilities listed with the exception of a hammermill (35%) and Open market (44%). Nearly all households knew the location of the nearest primary school (99%), health facility (98%), shop (97%) and police station (92%). On average the closest facility (for those that knew its location) was a shop, which was on average 2.4 hours

walking distance, followed by a high school, which was 2.53 hours away. The farthest facility on average was an open market, estimated to be 3.44 hours walk away.

Table 8: Access to facilities by region, 2006

Facility	Kunene			Caprivi		
	Number of household whose people know where the facility is located	% of household whose people know where the facility is located	Average walking distance (hours)	Number of household whose people know where the facility is located	% of household whose people know where the facility is located	Average walking distance (minutes)
Shop (with food and groceries)	470	98.9	3.02	440	94.4	2.09
Shop (Agricultural)	383	80.6	6.22	129	27.7	1.69
Post office	427	89.9	6.20	351	75.3	2.64
Primary school	466	98.1	4.91	464	99.6	1.88
High school	428	90.1	6.36	415	89.1	2.13
Health facility	468	98.5	4.81	452	97.0	2.24
Hammermill	98	20.6	5.11	235	50.4	2.30
Police station	466	98.1	4.19	401	86.1	2.63
Public transport	438	92.2	3.50	392	84.1	2.42
Public phone	427	89.9	3.90	205	44.0	2.09
Regional offices	448	94.3	5.16	337	72.3	2.74
Main gravel road	467	98.3	4.09	228	48.9	1.82
Tarred road	422	88.8	6.62	417	89.5	2.62
Agricultural extension office	434	91.4	4.85	328	70.4	2.60
Quarantine station	417	87.8	3.53	117	25.1	1.67
Craft market	218	45.9	6.18	297	63.7	2.11
Open market	242	50.9	7.00	168	36.1	2.26

For all of the facilities discussed, the distance to travel to facilities is further in the Kunene region than the Caprivi region (see Table 8). In the Kunene region, the farthest facility is registered as the open market, which is estimated to be 7 hours walk on average from households. In the Caprivi region the distance to the open market is one of the farthest facilities away as well, being 2.26 hours walk on average. The farthest facility on average in the Caprivi region is the regional office, which is 2.74 hours walk away (versus 5.11 in Kunene). The closest facility on average in the Kunene region is estimated to be a shop (including food and groceries), which is 3.02

hours walk away (2.09 in Caprivi), whereas the closest facility in Caprivi from the survey results is a quarantine station, which is 1.67 hour walk (3.53 in Kunene). In terms of knowledge of facilities, generally a greater number of households are aware of the locations of facilities in Kunene as opposed to Caprivi. For example, 80.6 percent of households know the location of a shop (agricultural) in Kunene as opposed to 27.7 percent in Caprivi; likewise 87.8 percent of households know the location of the quarantine station in Kunene, versus 25.1 percent of households in Caprivi. It may be the case therefore that the differences in average walking distances between the two regions are biased by the knowledge of locations: if a household does not know the location of a facility it may be that the nearest facility is too far away. There are some facilities however where households in Caprivi have a noticeable (i.e. non-negligible) greater knowledge of their location, such as a hammermill (50.4 percent versus 20.6 percent) and craft market (63.7 percent versus 45.9 percent). In both of these cases, the availability of wood is likely to be the underlying factor in explaining this disparity.

3.2   Livelihoods

The following Tables provide information regarding the livelihoods of households. Expenditure on certain items has been split into different Tables, based on whether they are purchased on general once a year, once a month, whether they are grains or whether they relate to foodstuffs for consumption. Ownership of livestock and poultry is then discussed followed by livestock production. The following Tables focus on household crop production, with the final set of Tables relating to destruction caused by wild animals.

Table 9: Average household expenditure per year by region, 2006 (for households that indicated that they spent on an item)

Item	Total (N$)	Kunene (N$)	Caprivi (N$)
School expenses	1129.35	1633.29	790.22
Books and stationeries	185.18	263.55	131.55
Other school expenses	302.84	372.25	210.80
Public Hospital	202.58	265.65	144.44
Private Hospital	1127.07	1224.55	776.75
Medicines	203.61	201.68	206.41
Traditional healers	1313.73	1571.53	1179.13
Clothing	974.39	1338.54	671.86
Tailoring	540.66	615.93	89.00
Blankets	461.26	359.63	539.46
Bed sheets	265.99	401.59	168.27
Pillows	73.85	112.00	47.00
Funeral expenses	1552.26	2021.01	689.77

The average annual expenditure on consumables that tend to be purchased once a year for both regions is highest for those that spend on items is on funeral expenses

(N\$1552), followed by expenditure on traditional healers (N\$1314) (see Table 8). The minimum expenditure was on pillows (N\$74) and books and stationery (N\$185). Note that this Table shows average expenditure for those who have purchased items only, rather than the average across all households

In all but two cases, expenditure on medicines and expenditure on blankets, those that purchased items did so for a higher price in the Kunene region as opposed to the Caprivi region. The difference was greatest with regards to expenditure on funerals; where N\$2021 is spend on average in Kunene and N\$690 in Caprivi.

Table 10: Monthly average household expenditure by region, 2006 (for households that indicated that they spent on an item)

Item	Total (N$)	Caprivi (N$)	Kunene (N$)
Home repairs/mortgage or rent	692.94	114.33	1506.59
Water	97.73	13.90	171.28
Electricity	91.56	42.03	146.59
Candles	25.66	20.41	36.56
Paraffin	33.37	24.78	37.34
Diesel/gas	124.69	80.82	134.16
Firewood	84.43	52.50	50.52
Telephone	204.00	88.53	82.26
Television	-	100.00	224.80
Cash remittance	510.37	368.78	598.07
In-kind contribution	355.56	132.51	464.42
Transport to and from work	296.36	486.43	106.29
Transport to and school	135.06	124.77	146.41
Transport to and from nearest town	121.65	108.49	141.74
Other transport expenses	111.08	67.36	191.22
Petrol	742.54	576.15	785.80
Donkey/Oxen cart repairs	73.00	-	73.03
Vehicle/motorbike maintenance and repairs	1803.50	1268.75	1941.61
Bicycle repairs	115.00	115.00	-
Boat/Canoe repairs	-	-	-
Toiletries, Cosmetics and Hair dressing	118.63	93.47	147.55
Washing clothes		47.04	56.86
Domestic worker/Gardener	211.04	228.82	143.62
Religious related expenditure	63.04	45.65	104.78
Batteries for radios, torches etc	51.00	49.27	52.26
Postage	15.33	22.14	6.25

Table 10 shows that the highest average total expenditures for both regions recorded were on vehicle/motorbike maintenance and repairs, with an average monthly spend of N$1804. However it is likely that this expenditure, unlike the expenditure on the other items shown, is carried out less frequently than a month, so may artificially overestimate the importance of this type of expenditure. The second highest expenditure shown is on petrol (N$743 per month), followed by home repairs/mortgage or rent (N$693). The lowest registered expenditure per month was N$26 on candles and N$33 on Paraffin. As with Table 8, the average expenditure is not the average expenditure per household but rather the average expenditure for those that spend money on items.

As with annual expenditures, for the majority of items purchased on a month basis expenditure in the Kunene region was higher than in the Caprivi region per household. It should be noted however that there were five types of item where expenditure was higher in Caprivi: firewood, telephone, transports to and from work, bicycle repairs, domestic worker/gardener and postage. Of these, only expenditure on transport to and from work (N$380 difference), spending on bicycle repairs (N$115 difference) and spending on domestic worker/gardener (N$85) are significantly different. The highest difference in expenditure between the Kunene and Caprivi regions was on home repairs/ mortgage rent, where N$1,392 more was spent in Kunene, followed by spending on vehicle/motorbike maintenance, where N$672 more was spent. Of note is the difference in expenditure on water and electricity in the two regions, which is substantially higher in Kunene than in Caprivi.

Table 11: Monthly household expenditure, 2006 (for households that indicated that they purchased an item)

Item	Average quantity purchased (Kg)	Average amount spent (N$)	Caprivi Region		Kunene Region	
			Average quantity purchased (Kg)	Average amount spend (N$)	Average quantity purchased (in Kg)	Average amount spend (N$)
Mealie meal	38.27	117.83	43.02	112.19	34.70	114.59
Maize grain	77.59	260.52	85.68	293.39	39.43	105.57
Bread flour	8.59	44.66	14.53	62.81	6.56	38.74
Grinding expenses	32.99	34.23	32.97	32.47	33.33	65.80

Data on the average monthly expenditures and quantities purchased of mealie meal, maize grain, bread flour and grinding expenses for those that purchased them shows that the average quantity purchased is highest for maize grain (see Table 11). This translates to the highest expenditure of these items per month in both regions. The lowest amount purchased was on bread flour in both regions, but presumably due to the cost, spending on bread flour is not the least. Grinding expenses is the lowest spending item in Caprivi, but bread flour is the lowest spending item in Kunene. It is noticeable that the spending on mealie meal is proportionately much greater in the Kunene than in the Caprivi region.

Table 12: Average household expenditure on food consumption (all regions), 2006

Food item	Cash purchase in last 2 weeks (N$)	Consumed from own production in last 2 weeks (N$)	Received as gift in last 2 weeks (N$)
Cassava	13.75	18.29	45.00
Millet/Mahangu	117.73	101.94	40.64
Sorghum	127.36	114.17	47.00
Rice	24.54	215.79	14.66
Sweet Potatoes	15.65	29.38	16.13
Potatoes	22.33	20.00	22.21
Ground nuts	12.16	33.44	11.40
Fish	27.48	97.05	39.58
Beef	45.26	41.46	67.86
Goat meat	109.51	252.21	73.34
Sheep meat	214.40	263.37	86.93
Pig meat	-	-	-
Game meat	44.67	500.00	250.13
Chicken	51.04	44.11	39.14
Beans	10.37	28.85	17.36
Tomatoes	10.57	25.22	18.15
Onions	9.77	25.10	7.61
Other vegetables	12.45	72.12	52.71
Bread	20.08	28.59	16.39
Fruits	17.00	42.00	61.58
Eggs	15.62	31.80	18.80
Milk	22.67	252.51	57.41
Milk powder	13.93	200.00	29.75
Butter/Jam	13.64	119.85	26.46
Sugar	26.05	57.35	27.30
Honey	12.69	-	2.50
Salt	9.19	1.57	10.13
Cooking Oil	16.53	16.79	16.40
Non alcoholic beverages	20.46	10.50	26.82
Tea/Coffee	14.64	81.50	15.04
Alcoholic beverages	173.42	125.09	60.25
Cigarettes/tobacco	31.69	32.00	25.63
Baby food	123.47	-	-
Edible insects/worms	23.44	394.38	10.00

Total expenditure on food consumption can be seen as the expenditure from directly cash purchasing items, consumption from own production and food received as a gift, with estimated expenditures on consumption from own production and food received as a gift based on equivalent cash purchase prices. As shown in Table 12, on average N$6,454 was spent on food directly and indirectly in the two weeks prior to the survey, with by far the greatest proportion based on consumption from own stock (59 per cent of the total), followed by cash purchase (22 percent) and then consumption of food gifts (19 percent). The most spent per food item in direct cash terms was on sheep meat on average, with spending of N$214, followed by spending on alcoholic beverages with spending of N$173. Pig meat was not consumed at any point during the last 2 weeks in any of the households in the two regions, and cash expenditure was lowest on salt (N$9). The value of goods consumed from own production was highest for beef (N$542), followed by game meat ($500). No pig meat, honey or baby food was consumed from own production and the lowest value consumption from own production was again salt (N$2). In terms of food received as a gift, the highest average value item for consumption was game meat with value N$250, followed by sheep meat with value N$87. Aside from pig meat and baby food, which were not received as gifts during this period, the lowest average value gift was honey, with a value N$3.

Overall, the highest total value good consumed was game meat (N$795), followed by beef (N$655). The lowest amount spent on consumption during 2 weeks running up to the survey (excluding spending on pig meat) was on honey, with spending of only $15.

Table 13: Average household expenditure on food consumption in Caprivi region, 2006

Food item	Cash purchase in last 2 weeks (N$)	Consumed from own production in last 2 weeks (N$)	Received as gift in last 2 weeks (N$)
Cassava	13.75	18.29	45
Millet/Mahangu	126.25	101.94	43.7
Sorghum	134.85	114.52	47
Rice	28.68	24.95	12.5
Sweet Potatoes	13.24	31.25	10
Potatoes	17.38	20	56.67
Ground nuts	11.21	34.46	13.33
Fish	28.79	89.88	39.24
Beef	40.85	208.93	55.3
Goat meat	26.50	141.25	12.5
Sheep meat	-	-	10
Pig meat	-	-	-
Game meat	$4.00	-	165
Chicken	56.92	48.14	50.42
Beans	10.03	26.61	13.36
Tomatoes	10.28	29.2	-
Onions	11.42	21.25	10
Other vegetables	9.66	36.73	14.88
Bread	21.76	23.2	41.14
Fruits	10.93	100	10
Eggs	12.00	52.16	60
Milk	10.96	36.16	13.46
Milk powder	12.59	-	-
Butter/Jam	9.85	-	25.95
Sugar	9.92	11.38	34.33
Honey	1.98	-	-
Salt	9.25	1.18	5.5
Cooking Oil	16.01	17.13	39.75
Non alcoholic beverages	17.39	19	104
Tea/Coffee	9.43	-	10
Alcoholic beverages	45.64	20	41
Cigarettes/tobacco	16.43	21.67	100.5
Baby food	79.57	-	-
Edible insects/worms	2.33	2.5	2

Table 14: Average household expenditure on food consumption in Kunene region, 2006

Food item	Cash purchase in last 2 weeks (N$)	Consumed from own production in last 2 weeks (N$)	Received as gift in last 2 weeks (N$)
Cassava	-	-	-
Millet/Mahangu	95	-	10
Sorghum	30	95	-
Rice	20.55	263.5	14.91
Sweet Potatoes	28.35	27.5	16.68
Potatoes	25.12	-	17.29
Ground nuts	13.4	10	5.6
Fish	22.65	850	40.57
Beef	66.75	1007	72.69
Goat meat	122.53	260.67	76.81
Sheep meat	214.4	263.33	92.85
Pig meat	-	-	-
Game meat	65	500	265.37
Chicken	38.35	31.68	25.6
Beans	11.38	55.67	22.45
Tomatoes	11.27	20.7	18.15
Onions	8.84	27.67	7.48
Other vegetables	24.79	141.48	76
Bread	16.84	29.15	9.17
Fruits	23.5	23.33	66.27
Eggs	19.41	18.07	8.5
Milk	56.42	336.7	63.9
Milk powder	17.49	200	29.75
Butter/Jam	15.81	119.85	26.5
Sugar	32.72	71.5	24.87
Honey	19.83	-	2.5
Salt	9.03	3.5	10.44
Cooking Oil	17.43	16.33	10.91
Non alcoholic beverages	22.47	2	9.01
Tea/Coffee	16.39	81.5	15.34
Alcoholic beverages	224.24	140.11	62.18
Cigarettes/tobacco	37.22	37.16	19.4
Baby food	147.1	-	-
Edible insects/worms	34	525	14

As shown in Tables 13 and 14, there is a marked difference between overall expenditure on food at the household level in Caprivi and Kunene, with households in Kunene spending more than double their Caprivian counterparts. One explanation for this disparity could simply be that prices in the Kunene region are generally higher than for the Caprivi region. An alternative suggestion, perhaps partially shown by the data, is that household spending on food items is proportionately more in the Caprivian region on less expensive grains and pulses. The value of household consumption expenditure on cassava, millet/mahangu, sorghum, potatoes and ground nuts is higher in the Caprivi region per household, although spending on rice and sweet potatoes is higher in the Kunene region. This in turn could simply be a reflection of the productive capacity differences in the two regions, which appears to be born out from the data for these goods mentioned: consumption from own production is higher on these less expensive grains and pulses which are more readily produced in Caprivi, and more expensive on higher value beef, game meat, sheep meat and goat meat which tend to be produced in the Kunene region. This explanation is given further credence when seen in relation to Table 13, showing the average amount spent on meals, grains and flour.

Table 15: Distribution of household livestock and poultry ownership, 2006

Livestock	Number of households owning livestock	Mean number per household which own	Mean number per all household	Number of households killed livestock in the last 12 months	Mean number of livestock killed per household in last 12 months
Cattle	583	36	22	198	4
Goats	411	50	22	257	11
Pigs	9	9	0.08	9	0
Sheep	153	25	4	67	7
Poultry	578	11	7	266	7
Horses	98	3	0.3	16	2
Donkeys	265	5	1.4	44	2

As shown above in Table 15, more than half of the households owned cattle (583 households) and/or poultry (578) at the time of the survey. In addition, a large number of households (411) suggested that they owned goats and for the households that own animals, the mean number of goats was highest of all animals owned per household. Pigs were the least owned animal, with only 9 households saying that they owned the animals, with the mean number of horses (3) for those that owned them being the lowest. Across all households, the mean number of cattle and goats was the highest (22 on average across all households), with pigs being the lowest (on average 0.08 per household). Despite the more widespread ownership of cattle, households slaughtered more goats in the last 12 months. More poultry were slaughtered than this however, with 266 households suggesting that they had slaughtered the animals in the last 12 months. The size of the animal is an obvious explanation, but unusually the number of

goats slaughtered per household in the last 12 months was higher than that for chickens (11 versus 7). This could reflect the secondary role of chickens as egg producers, which is likely to be more important than the secondary milk production by goats (especially considering the prevalence of cattle ownership).

Table 16: Distribution of household livestock and poultry ownership in Kunene region, 2006

Livestock	Number of households owning livestock	Average number per household which own	Average number per all households in region	Number of households killed livestock in the last 12 months	Average number of livestock killed per household in last 12 months
Cattle	294	51	31	97	5
Goats	356	56	41	230	12
Pigs	5	3	0.03	-	-
Sheep	152	25	8	67	7
Poultry	257	9	5	103	6
Horses	98	3	0.61	16	2
Donkeys	262	5	3	44	2

Table 17: Distribution of household livestock and poultry ownership in Caprivi region, 2006

Livestock	Number of households owning livestock	Average number per household which own	Average number per all households in region	Number of households killed livestock in the last 12 months	Average number of livestock killed per household in last 12 months
Cattle	289	21	13	101	3
Goats	55	10	1	27	4
Pigs	4	16	0.14	-	-
Sheep	1	1	0.002	-	-
Poultry	321	12	9	163	7
Horses	-	-	-	-	-
Donkeys	3	2	0.01	-	-

With the exception of cattle and poultry ownership, livestock ownership is much more prevalent in the Kunene region, with goats, sheep, horses and donkeys held by significantly more households (see Tables 16 and 17). The average number of animals for households that own them is similarly more for Kunene, with number of cattle held 2.5 times and number of goats held over 5 times that which is held in Caprivi. Sheep horses and donkeys are hardly held at all by Caprivian households. There are around 64 more households that own poultry in the Caprivi region and the average

number per household owning poultry is 25 percent greater. Broadly speaking the number of households that killed their livestock was proportionately the same in both regions.

Table 18: Distribution of household livestock production, 2006

Livestock	Mean number of livestock consumed per household that owns	Mean number of livestock sold per household that owns	Average income from sale of live livestock	Mean number of livestock slaughtered per household that owns	Average income from sale of slaughtered livestock
Cattle	0.4	2.6	N$7473.03	1.8	N$2081.65
Goats	2.3	3.7	N$1826.62	0.1	N$620.00
Pigs	0.7	0	N$764.17	-	-
Sheep	1.5	0.5	N$764.17	1.7	N$250.00
Poultry	2.2	0.9	N$106.93	0.04	N$108.25
Horses	0.03	0.04	N$526.92	0	-
Donkeys	0.2	0.1	N$1612.50	0.04	N$507.14

As shown above in Table 18, the total number of livestock consumed per household for both regions that owns was largest for goats, with 2.3 animals on average, followed by poultry with 2.2 consumed on average. As could perhaps be expected, very few horses and donkeys were consumed.

The average income from sales of live livestock was highest for cattle, both overall and per animal, with total income for goats second highest, but with the second highest sales per animal being attributable to donkey sales. The lowest value from sales was for poultry sales.

The average incomes from the sale of slaughtered livestock are generally much lower, both overall and per animal. This is not that surprising for three reasons: 1. It is not clear from the survey whether sales of slaughtered livestock means sales of complete carcasses or whether it simply means sections of slaughtered animals; 2. Not all animals are slaughtered (see Tables 14, 15 and 16), so purchasing them live allows the owners to use them as they see fit. 3. Live animals can be transported relatively easily, dead animals need to be eaten or refrigerated quickly.

Table 19: Distribution of household livestock production in Kunene region, 2006

Livestock	Mean number of livestock consumed per household that owns	Mean number of livestock sold per household that owns	Average income from sale of live livestock (N$)	Mean number of livestock slaughtered per household that owns	Average income from sale of slaughtered livestock (N$)
Cattle	0.34	3.72	9666.70	0.07	8383.33
Goats	2.24	3.83	1897.83	0.10	716.67
Pigs	1.00	-	-	-	-
Sheep	1.48	0.51	764.17	1.74	250.00
Poultry	1.34	0.47	75.68	-	-
Horses	0.20	0.09	526.92	-	-
Donkeys	0.03	0.04	1612.50	-	-

Table 20: Distribution of household livestock production in Caprivi region, 2006

Livestock	Mean number of livestock consumed per household	Mean number of livestock sold per household	Average income from sale of live livestock (N$)	Mean number of livestock slaughtered per household	Average income from sale of slaughtered livestock (N$)
Cattle	0.34	1.41	4212.16	3.82	1310.02
Goats	0.94	3.14	465.56	0.06	185.00
Pigs	-	-	-	-	-
Sheep	0.25	0.5	1400.00	-	-
Poultry	2.92	1.6	121.52	0.08	108.25
Horses	-	-	-	-	-
Donkeys	-	-	-	-	-

With the exception of poultry and cattle, the mean number of livestock consumed for those that own livestock was higher in the Kunene region (see Tables 19 and 20). The number of poultry consumed in the Caprivi region is 2.92 to the 1.34 consumed in the Kunene region, with the number sold over 3 times higher in Caprivi. A significantly higher number cattle are sold in the Kunene region, greater than 2.6 times, but the value from the sale of live livestock is less than this, at 2.3 times, implying that the price for sold live cattle is higher in the Caprivi region. Given the greater availability of cattle in the Kunene region (see Tables 18 and 19), this is perhaps not a surprise. The same can not however be said regarding the sale of goats, which generates much more revenue per goat in the Kunene region than the Caprivi region, despite the higher incidence of ownership in the Kunene region.

Table 21: Distribution of household crop production, 2006

Crop	Number of households producing crop	% of households producing crop	Average income from selling crop (N$)
Maize	503	53.5	2679.74
Mahangu	106	11.3	3317.17
Sorghum	154	16.4	1500.33
Beans	115	12.2	107.14
Groundnut	29	3.1	175.00
Spices	25	2.7	1225.00
Onions	10	1.1	
Sweet melons	15	1.6	9.67
Water melons	41	4.4	96.00
Pumpkins	74	7.9	131.67
Tomatoes	25	2.8	185.50
Calabash	7	0.7	
Beetroot	7	0.7	65.00
Carrots	8	0.9	
Cabbage	13	1.4	
Rape	9	1.0	
Sugar cane	9	1.0	
5 years cabbage	10	1.1	
Spinach	2	0.2	
Paw paw	4	0.4	230.00
Guava	5	0.5	
Unidentified vegetable	9	1.0	171.83
Unidentified fruit	4	0.4	
Yellow melon	13	1.4	
Unidentified others	2	0.2	
Lemon	1	0.1	
Oranges	4	0.4	
Sweet potatoes	4	0.4	
Bananas	1	0.1	
Cassava	1	0.1	
Mango	1	0.1	
Wheat	2	0.2	
Squash	1	0.1	
Tobacco	1	0.1	

The above Table shows that most households produce maize, with around 16 percent producing sorghum and just over 12 and 11 percent producing beans and mahangu respectively. Otherwise the number of households producing crops is low in the two regions. Despite the high production of maize, the average income from its sale is not the highest (from those that sell a crop, average income is N\$2780); the highest sales revenue is from the sale of mahangu. This implies that either maize is relatively cheap due to its prolificacy or that much more maize production is for own consumption than is the case for mahangu.

Table 22: Distribution of crop production in Kunene region, 2006

Crop	Number of households produce crops	Area under crop		Average Quantity harvested per household		Average Quantity sold		Income from sale
		Unit	Average area	Unit	Quantity	Unit	Quantity	
Maize	126	Acre Hectare M^2	2.8 1.9 957.7	Kg 25kg 50kg 60kg 35l number	25 5.3 38.4 - 53.9 22.3	Kg 50kg number	26 2 35	N\$92.40
Mahangu	5	Acre Hectare M^2	- 41 1095	Kg 25kg 50kg 60kg 35l	1 1 1.7 - -	Kg 25kg 50kg 60kg 35l	- - - - -	- - - - -
Sorghum	4	Acre Hectare M^2	- 2 53	Kg 25kg 50kg 60kg 35l	- 4 5 - -	Kg 25kg 50kg 60kg 35l	- - - - -	- - - - -

Table 23: Distribution of crop production in Caprivi region, 2006

Crop	Number of households produce crops	Area under crop		Average Quantity harvested per household		Average Quantity sold		Average income from sale
		Unit	Average area	Unit	Quantity	Unit	Quantity	
Maize	377	Acre Hectare M^2	4.8 3.65 37.77	Kg 25kg 50kg 60kg 35l number	11.1 1.76 16.16 19.75 5 -	Kg 25kg 50kg 60kg 35l number	- - 26.4 - - -	N$2910
Mahangu	101	Acre Hectare M^2	3.07 2.02 63.33	Kg 25kg 50kg 60kg 35l number	15 1.45 5.12 - 1 -	Kg 25kg 50kg 60kg 35l number	- - 18.4 - - -	N$3980.40
Sorghum	151	Acre Hectare M^2	2.71 2.36 33.5	Kg 25kg 50kg 60kg 35l number	2.67 7.95 4.15 1 1 6	Kg 25kg 50kg 60kg 35l number	11.5 - - - - -	N$2250

From Tables 22 and 23 it is clear that the number of households producing crops in the Caprivi region is higher than in the Kunene region, which contrasts with livestock ownership discussed previously. He different measurements for the area under crop and quantity sold makes comparison of these two aspect of crop production difficult and raises some questions about the reliability of the data regarding these aspects. In terms of the average income from sale of crops it is clear that the Caprivi region relies more heavily on general on crop production for income.

Table 24: Distribution of damage by wildlife, 2006

Damage	Number of household damaged	% of household damaged	Common animal caused damage
Overall	**105**	**11.2**	**-**
Fence damaged	60	57.1	Elephants (56)
Building/house damaged	9	8.6	Elephants (9)
Private water infrastructure	9	8.6	Elephants (8)
Communal water infrastructure	48	45.7	Elephants (46)
Other property damaged	4	3.8	Elephants (3)

Table 24 above shows that around 11 percent of householdsø infrastructure has been damaged in some respects by animals over the last year. The most common animal causing the damage in all cases has been elephants, particularly damaging fencing and communal water infrastructures.

Table 25: Distribution of damage by wildlife by region, 2006

Damage	Number and % of household damaged	
	Caprivi	Kunene
Overall	**15**	**90**
Fence damaged	7 (46.7)	53 (58.9)
Building/house damaged	7 (46.7)	2 (2.2)
Private water infrastructure	2 (13.3)	7 (7.8)
Communal water infrastructure	2 (13.3)	46 (51.1)
Other property damaged	1 (6.7)	3 (3.3)

Table 25 shows that destruction by animals is much more prevalent in the Kunene region, with six times more households reporting damage in this region due to animals than in Caprivi.

Table 26: Distribution of household crop destruction, 2006

Crop	Number of households with crop destroyed	% of household with crop destroyed	Most destructive animal
Overall	**319**		
Maize	279	56.3	Elephants (184)
Mahangu	52	50.9	Elephants (44)
Sorghum	100	66.2	Elephants (86)
Beans	52	46.1	Elephants (19)
Vegetables	34	-	Elephants (15)
Fruits	14	-	Elephants (5)
Pumpkins	10	13.5	Elephants (4)
Calabash	1	14.3	Worms (1)
Sugar cane	2	22.2	Worms (1)
Yellow melon	3	23.1	Worms (2)
Oranges	1	25.0	Elephants (1)
Banana	1	13.8	Elephants (1)
Guava	1	-	Elephants (1)
Ground nuts	4	13.8	-

Table 27: Distribution of household crop destruction by region, 2006

Crop	Number of households with crop destroyed	
	Caprivi	**Kunene**
Overall	**254**	**65**
Maize	224	55
Mahangu	51	1
Sorghum	99	1
Beans	38	14
Vegetables	3	31
Fruits	1	13
Pumpkins	2	8
Calabash	-	1
Sugar cane	-	2
Yellow melon	-	3

Except for the case of calabash, sugar cane and yellow melon where worms were the most damaging animal indicated, as before elephants were the most destructive (Tables 27 and 28). The majority of households producing maize, mahangu and sorghum indicated that some proportion of their crops had been destroyed by elephants, which highlights the difficulty of wildlife conflict in these areas. Regionally, Caprivi appears to experience greater crop destruction than Kunene, although by enlarge this is expected to reflect the difference in overall cop production in the two regions.

3.3   Natural Resource Use

Use of natural resources is described in the following Tables. The topics covered include use of wood resources, wild food, medicinal plants and forest products. Unfortunately, much of the data gathered n 2002 and analysed by Suich (2003) is not comparable in terms of the number of households participating in gathering resources; the data gathered in 2002 referred more generally to use of resources. However, in some instances the value of sold resources can be compared across time.

Table 28: Distribution of household wood resources in Caprivi Region, 2006

Wood type	Number of households which collected the resource	Average quantity collected		Number of households that sell wood resource	Average income per household from sale of wood resource
		Unit	Average household quantity		
Timber	3	Number	6	All (21))	N$345
Poles	94	Number	38	Half (1)	N$278.57
		Trees	120	All (6)	
		Sledge	21		
		Donkey cart	1		
Thin poles	96	Number	92	Half (1)	N$152.50
		Bundles	21	All (5)	
		Sledge	14		
		Donkey cart	1.5		
Fire wood	393	Number	79	<half (1)	N$201.67
		Trees	39	>half (1)	
		Bundles	108	All (3)	
		Sledge	16		
		Wheelbarrow	48		
		Donkey cart	13		
Wood for crafts	6	Number	5.5	All (1)	N$280
		Tree	4		
		bundles	148		

A number of households in the conservancy areas in Caprivi are dependent on forest products for variety of uses (see Table 28). About 393 households surveyed have collected firewood described as units of trees, bundles, sledges, wheelbarrows and on donkey carts. For those that sell firewood, this is estimated to have generated an average annual income of N$202.94 households have indicated that they collect poles, which are typically used for construction purposes, generating an average household income for those that sold poles of N$279.96 households have indicated that they have harvested thin poles, likewise used for construction, generating an average household income of N$153. Three households harvested forest for commercial timber and 6 for wood for crafts, generating N$345 and N$280 income respectively from sales.

The average sale value of firewood appears to have increased substantially since 2002 in Caprivi, where sale value average was N$85, compared to N$202 in 2006. Without further analysis it is difficult to account for this difference: it may imply a change in prices and or a change in the quantity sold.

Table 29: Distribution of household wood resources in Kunene Region, 2006

| Wood type | Number of households which collected the resource | Average quantity collected | | Number of households that sell wood resource | Average income per household from sale of wood resource |
		Unit	Average household quantity		
Timber	10	Number Donkey cart	153 3	-	-
Poles	90	Number Trees Bundles Donkey cart	127 50 21 10	All (3)	N$716.67
Thin poles	99	Number Bundles Donkey cart	234 39 29	All (2)	N$265.00
Fire wood	442	Number Trees Bundles Wheelbarrow Donkey cart	143 57 162 61 25	-	-
Wood for crafts	-	-	-	-	-

The most frequently gathered wood resource in the Kunene region is firewood, with 442 households suggesting that they have gathered firewood (see Table 29). 99 households in the Kunene region have also indicated that they have collect thin poles and about 10 households collect poles. Around 10 households have collected timber in Kunene, in the form of units of donkey carts, trees, bundles and wheelbarrows. 96 households indicated that they had gathered thin poles, the sales of which generated an income of N$265. Sales of bigger poles, collected by 90 households, generated an income of $717.

Table 30: Distribution of household wood resources, 2006

Resource	Number of households which collected the resource	% of households which collected the resource	Average income from sale of resource
Timber	13	1.4	N$ 345.00
Poles	184	19.6	N$ 410.00
Thin poles	195	20.7	N$ 180.63
Fire wood	835	88.7	N$ 201.67
Wood for crafts	6	0.6	N$ 280.00

Of the number of households that collected forest products for own use in the two study sites, 89 percent of households collected firewood, 21 percent thin poles and 20 percent bigger poles. The average income derived from the sale of wood resources ranged from N$181 to N$410 based on type of wood resource, showing the significance of wood resources to livelihoods.

Table 31: Distribution of household wild foods resources, 2006

Resource	Number of households which collected the resource	Average income from sale of resource
Green/leaves	77	N$ 209.09
Roots/Tubers	48	N$ 360.00
Edible ants	41	N$ 260.24
Wild fruits	195	N$ 181.25
Wild honey	2	-
Mushrooms	15	-
Other edible forest products	43	N$ 170.00

About 195 households indicated that they harvested wild fruit, both for own consumption and for sale, with an average income from forest resources amounting to N$181 (see Table 31). 77 households collected green/leaves, generating an average income from sales of N$209. Wild honey and mushrooms were collected by 2 and 15 households respectively, but were consumed by the household rather than sold.

Table 32: Distribution of household wild foods resources, 2006

Resource	Caprivi region		Kunene region	
	Number of households which collected the resource	Average income from sale of resource for households that sell	Number of households which collected the resource	Average income from sale of resource for households that sell
Green/leaves	67	N$209.09	10	-
Roots/Tubers	47	N$360.83	1	-
Edible ants	3	-	38	N$260.00
Wild fruits	101	N$155.46	94	N$265.00
Wild honey	-	-	2	-
Mushrooms	15	-	-	-
Other edible forest products	12	-	31	N$170.00

The numbers of households who make use of woodland resources by region are presented in Table 32. Of the total sample of households in the Caprivi region, 101

households responded that they collect wild fruit for both sale and own consumption, generating an income average of N$156. 67 households in the same region have indicated that they have collected green/leaves, which is a larger number than the number collecting roots/tubers (47). The average income generated from sales however is greater for roots/tubers than green/leaves (N$361 versus N$209), suggesting that either the sale prices or quantities gathered for roots/tubers are greater or that more green/leaves are consumed proportionately within the household.

In contrast, none of the surveyed households in the Kunene region indicated that they collected green/leaves or roots/tuber for sale, although 10 and 1 households collected for household consumption respectively. However, of the total sample, 94 households in the Kunene region indicated to have collected wild fruits, earning on average N$265 from sales. Additionally, 38 households in Kunene indicated that they had collected edible ants, generating N$260 income on from their sale.

Table 33: Distribution of household medicinal plants resource, 2006

Resource	Number of households which collected the resource	Average income from sale of resource for households that sell resource
Medicinal Barks	125	N$ 3000.00
Medicinal roots	192	N$ 8002.50
Medicinal leaves	210	N$ 10,286.67
Medicinal stem	14	-
Whole medicinal plant	9	-
Other medicinal products	6	-

Table 33 indicates the number of households in the sample that collected woodland resources for medicinal purposes. Of the total sample, 210 households indicated that they collect plant leaves for medicinal purposes, generating N$10,287 average income for those that sell the resource. Additionally, 192 households suggested that they had collected medicinal roots, earning an income average of N$8003 for those that sold the roots. 125 households collected tree barks for medicinal purposes, earning N$3000 on average from sales. Medicinal stems, whole medicinal plants and other medicinal products are collected by very few households and are used exclusively for own use.

Table 34: Distribution of household medicinal plants resource in Caprivi region, 2006

Wood type	Number of households which collected the resource	Average quantity collected		Number of households that sell medicinal plant	Average income for households that sell medicinal plants	Average income for all households that collect the resource
		Unit	Average household quantity			
Medicinal barks	70	Number	2	>half (1) All (1)	N$3000	N$85.71
		Handful	2			
		Bundles	3			
		Litres	7			
		Cups	5			
		50kg bag	2			
Medicinal roots	83	Number	5	>half (1) All (2)	N$10600.00	N$383.13
		Handfuls	2			
		Bundles	2			
		Litres	3			
		20l tins	2			
		12.5 kg cup	1			
		12.5kg bag	2			
		50kg bag	2			
Medicinal leaves	72	Number	2	<half (1) All (2)	N$15400.00	N$427.78
		Handfuls	2			
		Bundles	2			
		Litres	1.5			
		20l tins	1			
		Cups	2.5			
		12.5kg bag	3			
		50kg bag	1			
		kilograms	10			

Medicinal barks, medicinal roots and medicinal leaves are processed and measured into different measurements/ forms ranging from number, handful, bundles, litres, cups, 20l tins, 12.5 kg /bag, kilograms and in 50kg bags. This lack of standard measurement unfortunately prohibits the description of quantities collected per household. In the Caprivi region, 70 households indicated that they collected tree barks for medicines, generating average revenue from sales of N$3000 (See Table 34). However, the average income across all households from bark sales is substantially smaller, at N$86 for those that collect the resource. This implies that both a large number of households do not sell the resource, using it all for own consumption only and that some of those that sell the resource perhaps do so as an exclusive employment activity. The same can be said for roots and leaves, where the average incomes to those that sell the resource are much greater than the average incomes from sales across all households. Of the three main types of medicinal plants gathered, medicinal leaves was collected by the most number of households and

generated the largest incomes from their sale (for those that sold the leaves), at N$15,400 per annum.

The average value relating to sold medicinal plant was N$200 in 2002 in Caprivi (Suich, 2003), which is substantially lower than shown above. This implies that more commercial enterprises may have started exploiting medicinal plants in the Caprivi region since 2002.

Table 35: Distribution of household medicinal plants resource in Kunene region, 2006

Wood type	Number of households which collected the resource	Average quantity collected		Number of households that sell medicinal plants	Average income for households that sell medicinal plants	Average income for all households that collect the resource
		Unit	Average household quantity			
Medicinal barks	55	Number	7	-	-	
		Handfuls	4			
		Bundles	11			
		20 litres	1			
		Cups	10			
Medicinal roots	83	Number	9	Half (1)	N$ 210	N$2.53
		Handfuls	4			
		Bundles	18			
		Cups	23			
		12.5kg bag	1			
		Kilograms	4			
Medicinal leaves	72	Number	32	Half (1)	N$ 60	N$0.83
		Handfuls	7			
		20 litres	2			
		Cups	18			
		12.5kg bag	2			
		kilograms	4			

In the Kunene region, 55 households harvested tree bark for medicinal purposes, with no sales revenue indicated, suggesting households use medicinal barks for own purposes only (see Table 35). In the same region, 83 households confirmed that they harvest plant roots for medicinal use, with sales generating an average household income of N$210. Medicinal leaves where collected by 72 households in the region, with sales for those that sold the leaves generating a household in income on average of N$60. As with the Caprivi region, it is likely that only a small number of households sold medicinal resources, as the overall average income across all households for leaves and roots is substantially lower than that for those that sold the resource.

The average value from sales of medicinal plants in 2002 was estimated to be N$150 (Suich, 2003), which is slightly lower than measured in 2006, but of the same order of magnitude.

It is clear from these results that the value of medicinal roots in household income is much higher in the Caprivi region than in the Kunene region.

Table 36: Distribution of household non-timber forest products resources, 2006

Resource	Number of households which collected the resource	% of households which collected the resource	Average income from sale of resource
Thatching grass	266	28.3	N$ 496.72
Palm leaves	107	11.4	N$ 120.00
Reeds	114	12.1	N$ 425.88

Of those surveyed, 28 percent of households harvested thatching grass (see Table 36). Sales of thatching grass generated an average income of N$497 for those selling the resource. Palm leaves were collected by 11 percent of households. The income generated from the sale of reeds was on average N$426 for those households that collected and sold the resource.

Table 37: Distribution of household non-timber forest products resources by region, 2006

| Resource | Caprivi region | | Kunene region | |
	Number of households which collected the resource	Average income from sale of resource (N$)	Number of households which collected the resource	Average income from sale of resource (N$)
Thatching grass	239	291.14	27	40.00
Palm leaves	98	-	9	120.00
Reeds	101	425.88	13	-

Substantially more households make use of non-timber forest products in the Caprivi region than in the Kunene region (see Table 37). Of the total sample, 239 households in Caprivi harvested thatching grass compared to 27 households in the Kunene region. Earnings from sales of thatching grass in the Caprivi region for those that had collected it were N$291 on average, compared to N$40 in the Kunene region. Likewise, 101 households in Caprivi indicated to have collected reeds, compared to 13 in the Kunene region. These differences can almost entirely be attributed to the difference in geographical conditions between the regions.

In the Caprivi region, the value from sales of thatching grass appears to have risen from that measured in 2002, when the average value sold was N$229. No thatching grass was measured as sold by households in 2002, generating no income versus the

N$40 per annum measured in 2006. Palm leaves sold in the Caprivi region generated around N$93 per household on average in 2002, versus N$120 in 2006. In Kunene, the average income from the sale of reeds appears to have declined from on average N$400 in 2002 to no income in 2006, although it should be noted that only 2 households stated that they sold reeds in 2002. Reeds generated on average N$263 for the 116 households that sold them in 2002 on average, compared to N$426 in 2006.

Table 38: Awareness of resource restrictions, 2006

Resource	Number of household aware	Number of households not aware	Not stated	Total
Land	752	185	4	941
Wildlife	848	89	4	941
Other resources	695	242	4	941

The level of awareness on resources restrictions due to the conservancy was high (see Table 38). At least 80 percent of households claimed knowledge that land use was restricted, 90 percent know that the use of wildlife was restricted and 74 percent knew that the use of other resources was restricted. It should be noted that these Figures include the households surveyed in control areas. Overall the survey results point to the success of the environmental conservation awareness campaign.

As shown in Figure 7, about 75 percent of households in the Kunene Region in conservancy areas are aware of restriction on land while 25 percent said they are not aware of any restriction on land use.

Figure 7: Household awareness of land restriction in Kunene Region (conservancy areas), 2006
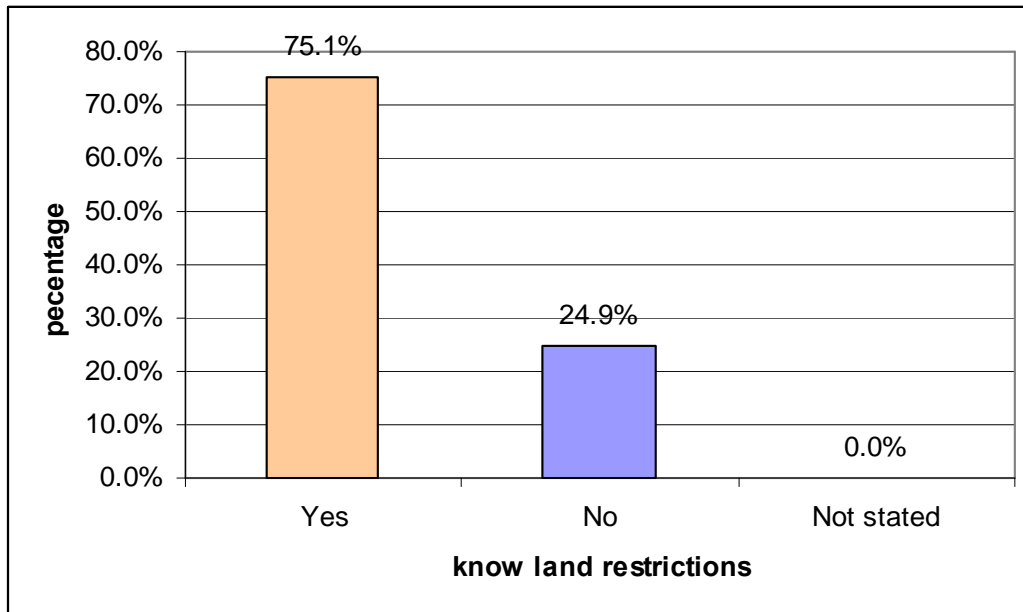
As shown in Figure 7, about 75 percent of households in the Kunene Region in conservancy areas are aware of restriction on land while 25 percent said they are not aware of any restriction on land use.

Figure 8: Household awareness of land restrictions in Caprivi Region (conservancy areas), 2006
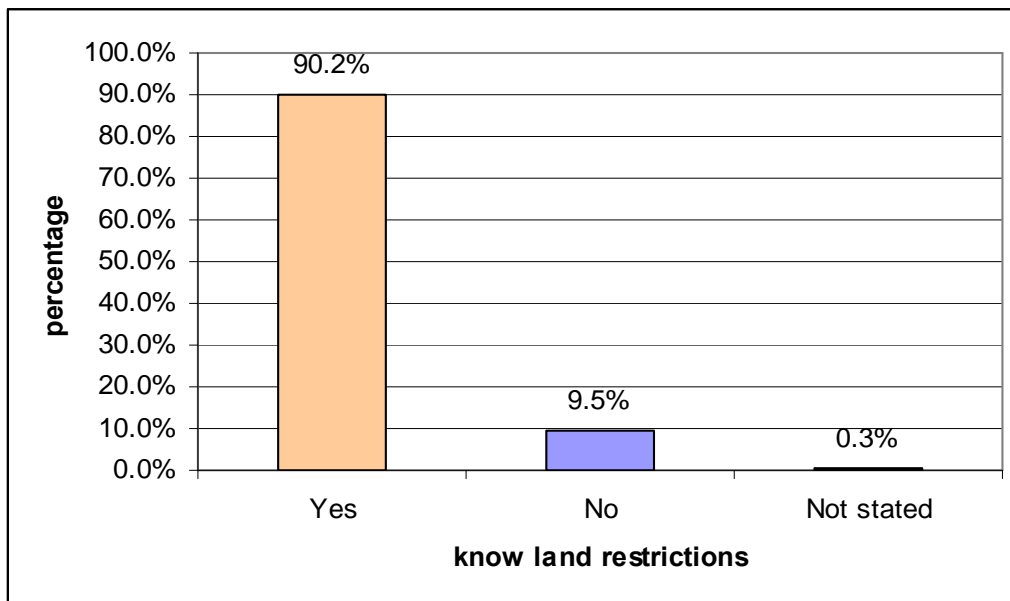
Figure 8 shows the percentage of households in the Caprivi in conservancy areas which acknowledged their awareness about land restriction representing 90 percent, while 9.5 percent said they are not aware of restrictions on land.

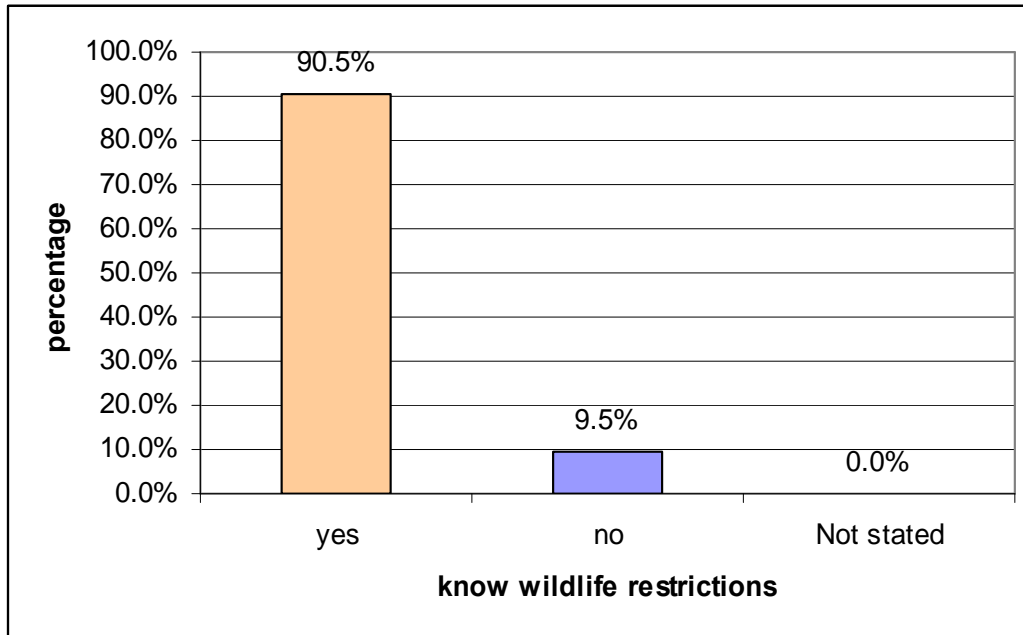**Figure 9: Households awareness of wildlife restrictions in the Kunene region (conservancy areas), 2006**

Figure 9 presents the percentage of household's awareness of wildlife restrictions in Kunene in conservancy areas. 91 percent of household's responded that they are aware of the restrictions on wildlife in Kunene region, while 10 percent are not aware of those restrictions.

Figure 10 indicates the percentage of household awareness about wildlife restrictions in Caprivi in conservancy areas. About 93 percent of households have admitted that they are aware of the restrictions on wildlife while 12.7 percent are not aware of those restrictions.

Figure 10: Household awareness of wildlife restrictions in the Caprivi Region (conservancy areas), 2006
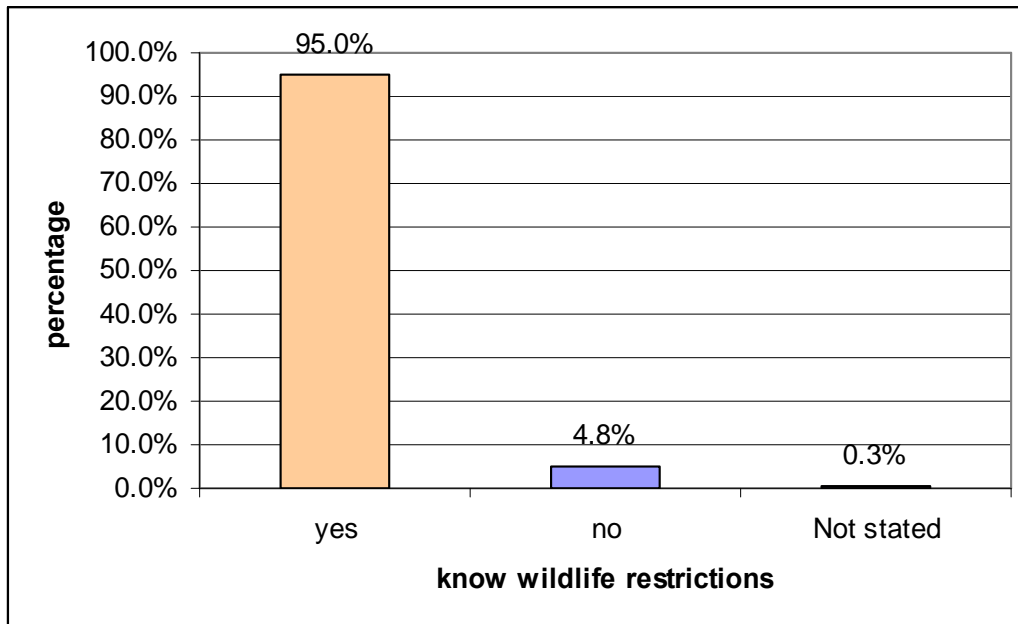
Figure 11: Number of households who think that restrictions stop them from using the resource the way they want (conservancy areas), 2006
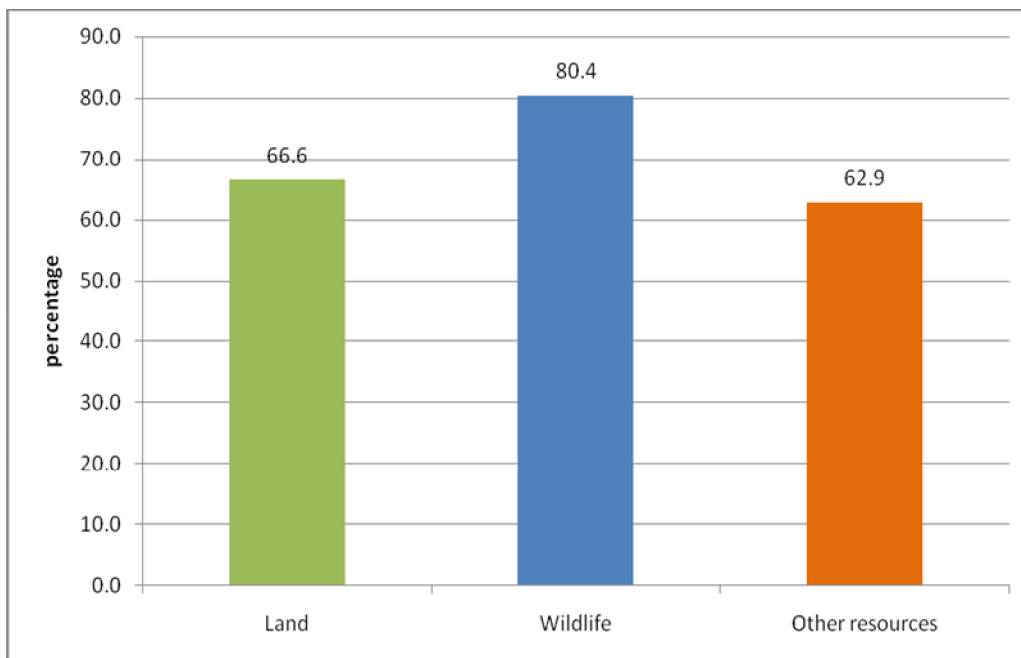

Figure 11 indicates that the majority of households feel that resources restrictions prevent them from using resources the way that they would wish. In terms of land, wildlife and other resource restriction, 67 percent, 80 percent and 63 percent

respectively felt that restriction prevented them from using them how they would want.

Figure 12: Number of households who think that restrictions stop them from using the resource the way they want in Caprivi region (conservancy areas), 2006
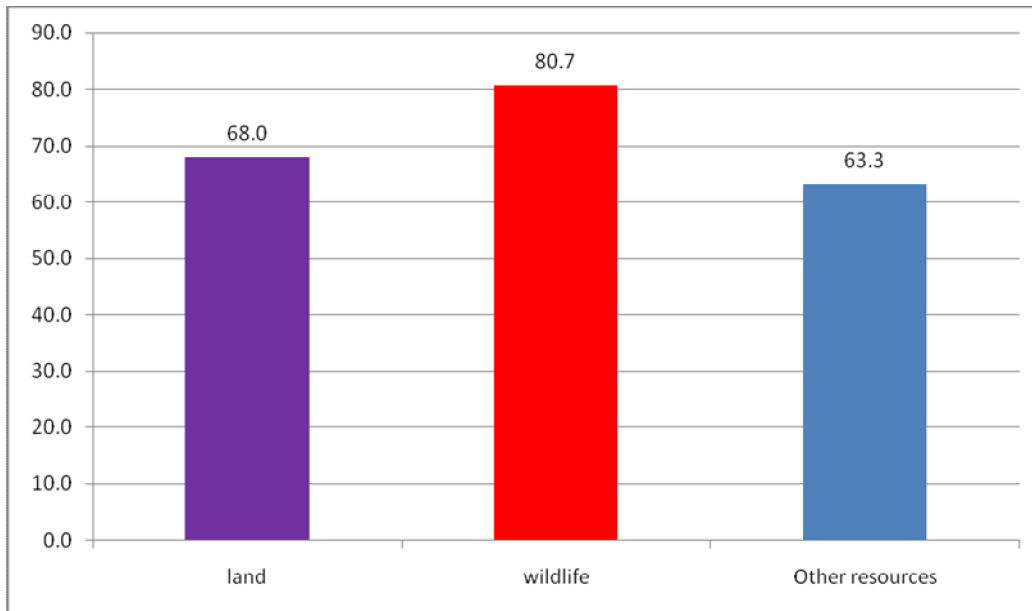
Figure 13: Number of households who think that restrictions stop them from using the resource the way they want in Kunene region (conservancy areas), 2006
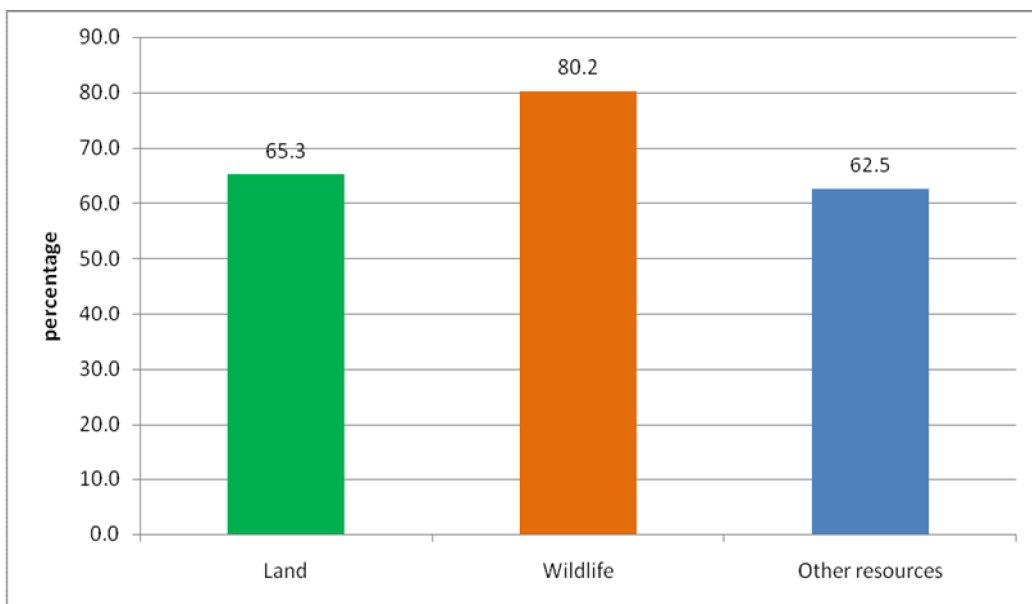

As shown in Figures 12 and 13, broadly the number of households that think that restrictions prevent them from using the resource how they would want is the same in

the Caprivi and Kunene regions in conservancy areas. Marginally more households believe that restrictions prevent them from using resources how they would with in Caprivi on all three resource types, but the difference is not significant.

Figure 14: Percent distribution of households who think that restrictions are "beneficial" (conservancy areas), 2006
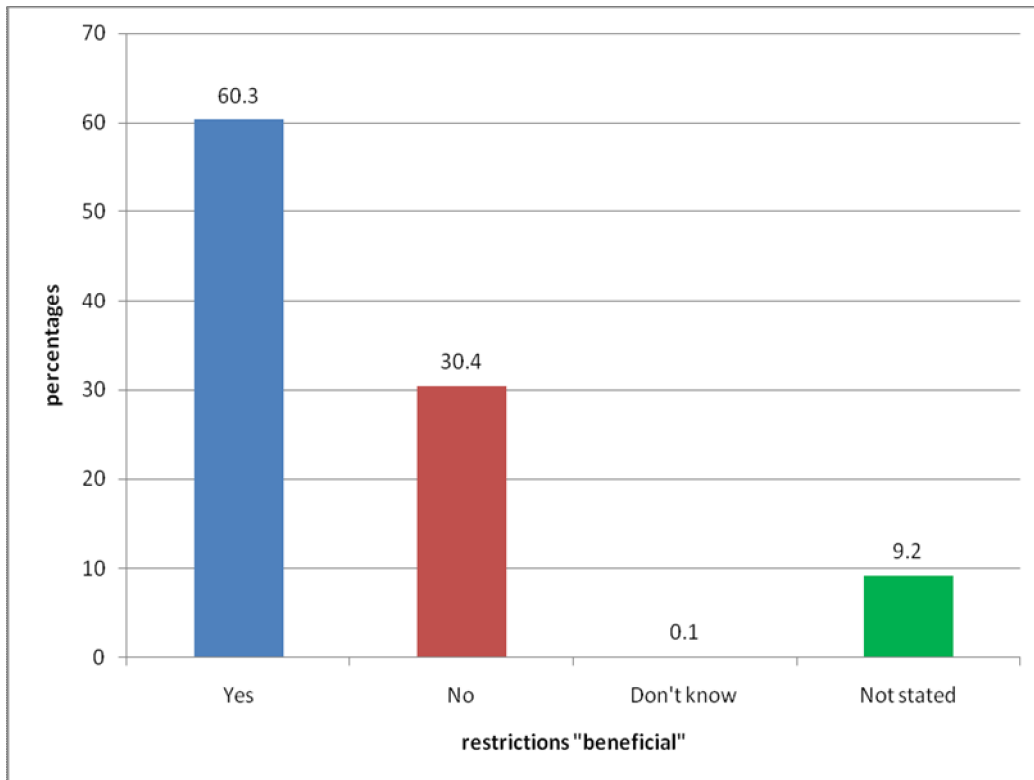
Encouragingly, the majority of households believe that resource restrictions are beneficial, which when seen against the proportions that believe that the restrictions prevent them from using the resources the way that they would wish is positive (see Figure 14). That 30 percent believe that the restrictions are not beneficial requires further analysis: it my be the case that they believe restrictions are not beneficial to them, but perhaps might be viewed as beneficial to the community as a whole, or it may be that they genuinely think the restrictions are bad for the community and them.

3.4   The Conservancy

This final section deals with statistics regarding the conservancy. The Table and Figures that follow include information on household participation of the conservancy, cursory knowledge of the conservancy, more in depth knowledge and involvement regarding plans and finally benefits from the conservancy, bother perceived and observed.

Table 39: Household participation in community-based organisations (CBOs), 2006
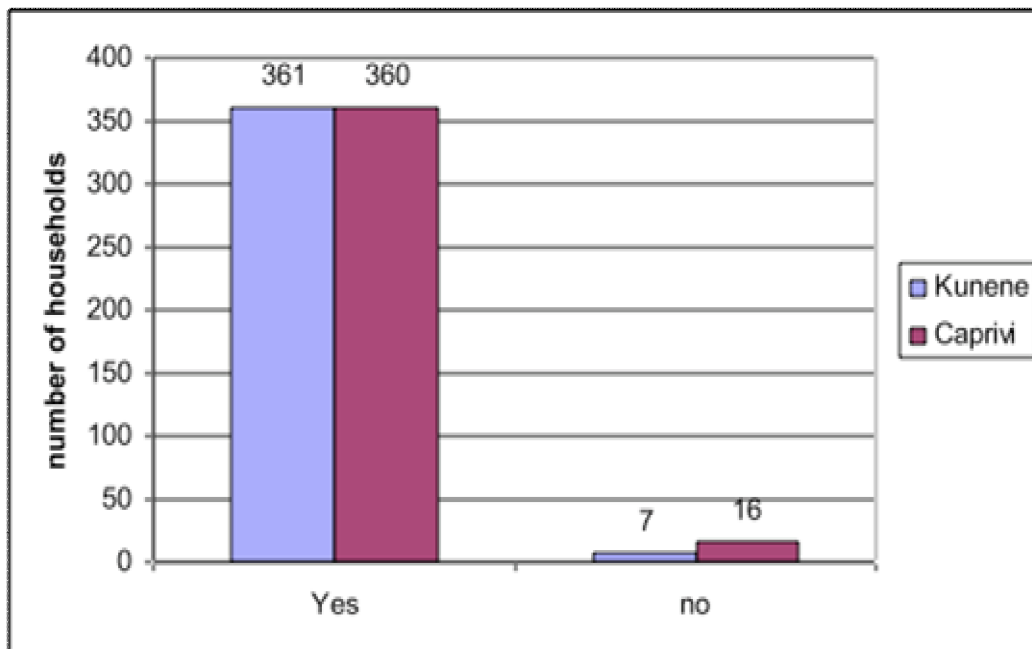
CBO	Number of households with members of CBO	Average period of the longest serving member (months)	Number of household made contribution to CBO	Average household contribution to CBO	Number of households received contribution from CBO	Average amount received
Community forest	19	25			2	N$69.00
Community fish						
Fishing group						
Funeral society						
Beer making group						
Farmers group	65	644	26	N$451.54		
Women's group	20	42				
Credit group						
Peer educators	4	226			3	N$480.00
Drama group	4	22	3	N$80.00		
Football group	26	56	18	N$ 157.78	5	N$620.00
Wood carving group	1	90				
Basket group	4	30				
Other crafts group						
Beekeeping group						
Water point committee	99	179	43	N$141.05	6	N$375.00
Crash pan	4	25				
Development committee	9	12	2	N$72.50		
Community police	2	26				
School board	9	34	3	N$673.33		
Church group	8	40	6	N$255.00		
Traditional council	3	15				
Red cross	1	60				
Youth group	4	16				
Traditional music dancing	2	21				
Unidentified group	1	24				
Drought relief committee	1	24				

Table 39 shows householdsø participation in various Community Based Organisations (CBOs), which help to drive the process of community development. There are various types of CBOs: cultural, educational, income generating, social and resource management based. Some (56) households have indicated that they have members in several CBOs; as such there are 223 households have members of CBOs. The CBO type that involved the highest number of households was water point committee, which had 99 households participating. These households contributed on average N$141 per annum, of the 6 households that received contributions from the committee, the average income was N$375. About 65 households indicated that they participated in farmers groups and 26 household participated in football groups. Football groups provided the highest contribution to participating households, with 5 households receiving on average N$620 per annum. The average period for the longest serving member was longest for Farmers groups, with members on average serving for 644 months.

Figure 15 shows the number of households who knew or have knowledge of the conservancy in their area both in Caprivi and Kunene regions (n.b. excluding those residing in control areas). Broadly speaking, knowledge of the conservancy is excellent, with 361 households and 360 households knowing about the conservancy in the Kunene and Caprivi regions respectively.

This knowledge compares favourably to that observed in 2002. Then, 23 percent of respondents in the Kunene region and 28 percent of respondents in the Caprivi region were not aware of the conservancy in 2002 (Suich, 2003).

Figure 15: Distribution of household knowledge of conservancy in area by region, 2006 (conservancy residents)

Figure 16: Distribution of number of household with member (s) who know the name of conservancy by region, 2006 (conservancy residents)
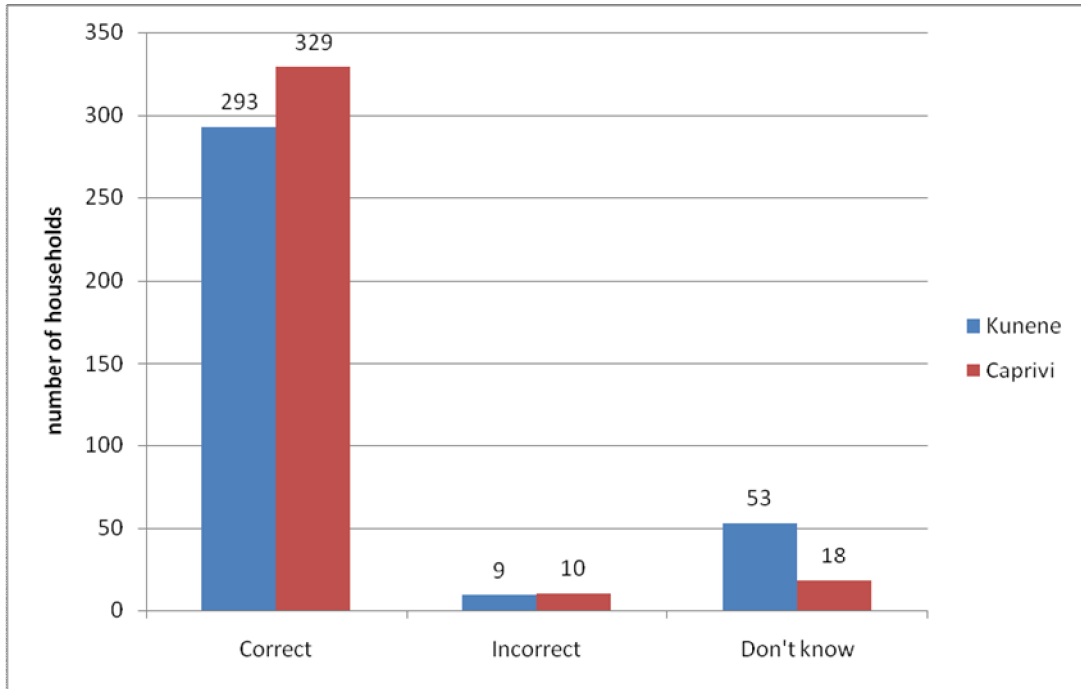

Figure 16 shows the distribution of the number of households who knew the name of conservancy in the area in which they live (n.b. for those that live I conservancy areas only). In Kunene 293 households knew the name of the conservancy while 329 households in the Caprivi region also correctly mention the name of the conservancy. 9 households in Kunene and 10 households in Caprivi incorrectly mention the name of the conservancy in their vicinity. On the other hand 53 household in Kunene and 18 households in Caprivi do not know the name of the conservancy.

Figure 17: Distribution of number of household with member (s) who know the conservancy establishment year by region, 2006 (conservancy residents)
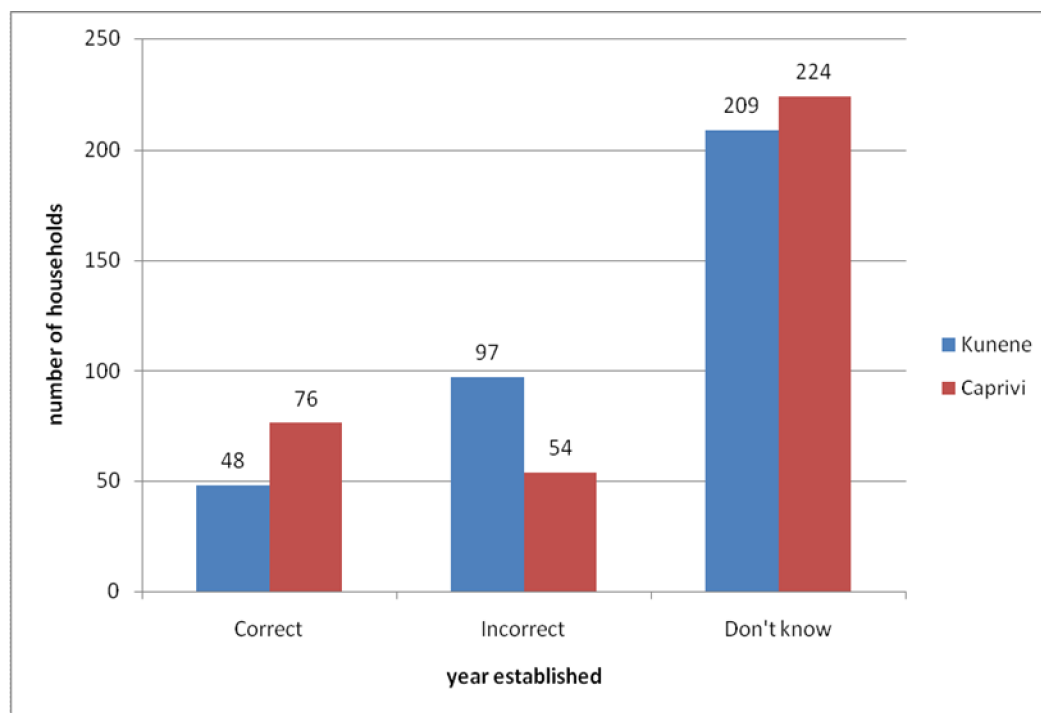
In conservancies in the Kunene region, 48 households were able to correctly state the date that the conservancy was established. Approximately double this number incorrectly stated the year established, with a far greater number, 209 not knowing the establishment date. A similar picture existed in Caprivi, although a greater number of households were able to correctly state the year of conservancy establishment than those who suggested an incorrect date. As with Kunene, a large number of households did not know the year of conservancy establishment.

Table 40: Distribution of number of household with members who know conservancy plans, 2006

	Yes	%	No	%	Don't know	%
Constitution	530	74.3	7	1.0	177	24.8
Conservancy Committee	579	81.2	9	1.3	124	17.4
Natural Resource Management	476	66.8	12	1.7	226	31.7
Financial Management Plan	467	65.5	22	3.1	225	31.6
Tourism Management Plan	454	63.7	19	2.7	240	33.7
Zonation/Land Use Plan	448	62.8	16	2.2	250	35.1
Game Guards/Resource Monitors	589	82.6	15	2.1	108	15.1

About 81 percent of respondents knew the existence of a conservancy committee, while 74 percent knew about the conservancy constitution (see Table 39). 67 percent of household heads indicated knowledge regarding conservancy plans on natural

resources management. About 83 percent responses affirmed their knowledge about game and resources monitors.

Table 41: Involvement of household members in the development of conservancy plans, 2006

	Yes	%	No	%	Don't know	%
Constitution	113	21.4	407	76.9	9	1.7
Natural Resource Mgmt Plan	99	20.6	371	77.3	10	2.1
Financial Management Plan	101	21.0	374	77.8	6	1.
Tourism management Plan	100	21.7	355	77.0	6	1.3
Zonation / Land Use Plan	102	22.3	350	76.4	6	1.3

The involvement of household members in the development of conservancy plans was low in general, with more than 75 percent of respondents stating they were not involved in any way (see Table 40).

Table 42: Household benefits from conservancy by region, 2006

Benefit	Caprivi region		Kunene region	
	Number of households	Estimated cash income/expenditure	Number of households	Estimated cash income/expenditure
Households with members employed	18	N$ 1773.64	30	N$ 5003.26
Households received a non-cash dividend	42	N$ 191.71	232	N$ 319.92
Households received cash dividends	16	N$ 449.13	2	N$ 30.00
Households contributed in cash	3	N$ 18.33	6	N$ 1379.17
Households contribute in kind	2	N$ 14.50	2	N$ 185.00
Community level pay-outs from the conservancy	62	N$ 2789.10	23	N$ 8856.86
Training received	14	-	32	-
Developmental activities implemented	68	-	84	-
Any Club/Group formed	22	-	46	-

Table 42 shows the number of households who receive direct benefits from conservancies in the form of income and in kind benefits. The Kunene region has the largest number of households with members (30) employed in the conservancies, earning an estimated N$5003 per annum. This compares with 18 households in Caprivi earning an estimated income of N$1773. At least 62 households in Caprivi received payout from conservancies amounting to N$2789 on average, compared to 23 households in Kunene region receiving N$8857 in cash from conservancies.

A greater number of households reported that they had a member employed in the conservancy in the Caprivi region in 2006 than in 2002, when 8 households reported a

member being employed versus 18 in 2006. In contrast, the number of households reporting a member being employed by the conservancy in 2002 was greater in the Kunene region than in 2006, when 40 households reported employment versus 30 in 2006. It should however be noted that a larger number of households were surveyed in 2002 than in 2006, hence the proportions having a member employed are almost the same (64-65 percent).

Table 43: CBNRM development by Conservancy, 2006

Conservancy	% of household reported developmental activities through conservancy	% of households reported member employed by the conservancy	% of households received training from conservancy	% of households reported community payout from conservancy
Kunene region				
Torra	21.3	17.0	8.5	6.4
Khoadi//Hoas	28.0	6.3	3.7	7.9
Purros	13.3	6.7	13.3	26.7
Ehirovapuka	17.1	7.2	17.1	0.9
Epupa	-	0.9	-	-
Caprivi region				
Salambala	14.3	2.5	2.5	26.6
Mayuni	34.9	4.7	4.7	14.0
Kwandu	13.2	5.3	5.3	-
Kasika	34.4	15.6	9.4	-
Kabulabula	1.0	-	-	-

Table 43 shows the percentage of households which report development activities through conservancies, employment, training and financial payments from conservancies in both the Caprivi and Kunene Region. In the Kunene Region 28 percent of households reported that they had been involved in conservancy development activities in Khoadi//Hoas and 27 percent of households reported to have received financial payments from Purros conservancy. The greatest number of households reporting that members had received training was in the Ehirovapuka conservancy, and employment in the conservancy was reported to be highest in the Torra conservancy. Note that some households in Epupa reported to have a household member employed by a conservancy, despite not being part of a conservancy themselves.

In Caprivi 27 percent of Salambala conservancy households received cash payment from the conservancy, compared to 14 percent of households in Mayuni conservancy. The likelihood of developmental activities through the conservancy was highest in the Mayuni and Kasika conservancies. In the areas of employment 16 percent of households reported to have members employed in Kasika conservancy. In the

Kunene region, training of household members was most likely to have occurred in the Kasika conservancy (9 percent).

4. Discussion and Conclusions

Overall and where comparable, the 2006 data has shown that there has been very little significant change in households in conservancies since 2002. Between regions, the impact of climate can clearly be seen in the production systems observed, with Kunene being more livestock based and Caprivi more arable based. Additionally, in terms of the ownership of assets and consumption data, it would seem as though generally the households in conservancies in the Kunene region are wealthier (although price differences may account for a significant portion of any difference: indeed expenditure statistics could in future provide greater depth as to whether differences reflect price or quantity differences). Heads of households themselves seem broadly similar across the two regions and experiences and opinions of the conservancy are likewise similar.

Looking at the findings in greater depth, the data on demographics shows that the head of the household in the regions surveyed are more likely to be male, above the age of 25 and below the age of 59, with little or no formal education. For this age group, significant proportions of the workforce listed their main activity as wage employment, livestock management or cropping. From data gathered in 2002 and analysed by Suich, the proportion of households headed by a woman appears to have declined, which is somewhat of a surprise, but perhaps could indicate a great likelihood of younger males becoming heads, or perhaps a greater number of smaller households. Female heads of household are less likely to be members of the conservancy and educational attainment does not seem to have an impact on conservancy membership status. In terms of education, it is likely that future generations of household heads will have improved formal education levels, given the improvements in education availability across Namibia over time. It is interesting to note the apparent minor disparity between education levels in Caprivi and Kunene, which perhaps could merit further analysis. It is difficult to assess whether the main economic activity of the heads of household will change over time, as the high proportion of households heads that are under 25 that are in wage employment may simply reflect the greater likelihood that heads of that age are involved in that form of economic activity.

Data on household assets seems to show that by total value, residents in Kunene on average have a more valuable stock of assets. As expected, the ownership of specific assets simply reflect the different geographical conditions and hence production systems in each region. In general, facilities are much closer in the Caprivi region than in the Kunene region. It is likely that this is a reflection of the greater spread of inhabitants in the Kunene region.

One of the findings from data regarding livelihoods of households is that for those items expected to be purchased on an annual basis, either the prices faced by those in the Kunene region are higher than in Caprivi, or the quantities consumed are greater. Given the greater access to shops in the Caprivi region, if this difference is based on price, it could perhaps reflect greater competition and local demand that exists in

Caprivi. Monthly expenditure on consumables was again higher on average in Kunene, most notably on rent / house repairs, water and electricity. Without further information, it is difficult to surmise why this might be the case, but it would be interesting to see the availability of rental accommodation, water and electricity in the two regions. Given the greater rainfall patterns and river flow in the Caprivi region, it is likely that water would be cheaper than in Kunene. The availability of electricity may also be greater in Caprivi, which would have a similar impact on prices.

Expenditure on food items, based on purchases, consumption of own production and gifts was on average estimated to be over N$6,500 in the two weeks prior to the survey. The finding that spending on alcohol was second highest in this period overall could perhaps be seen as a concern. The highest value good consumed was game meat, followed by beef. Given that increased availability of game meat is one of the observed benefits of the CBNRM programme, the high value of the consumption of game meat can be seen as a direct benefit to households from the programme. As above regarding spending on monthly and annual goods, expenditure on food items is markedly in the Kunene than in the Caprivi region. There are several potential explanations for this, including price differences, productive capacities and system differences and tastes. It is likely that the high value of livestock production compared to arable farming and fishing is a strong reason for this disparity.

Overall, the data shows that most households own cattle and poultry, with high numbers owning goats as well. For those households that own livestock, the average number of goats per household was the highest of the species measured. More than half of households indicated that they had killed goats in the last 12 months and the mean number of goats slaughtered per household was highest for goats also. It is likely therefore that goat meat is the most important meat consumed in both regions, although the secondary milk production and egg production of cattle and poultry respectively may mean that they are more important as a food source

Most households produce maize, although the revenue received from its sale was not the highest. Mahangu and sorghum production is much more prevalent in the Caprivi region, which is as expected due to the different climate in the two regions. The average income from sale of the crops is lower than that received from livestock sales in general.

Elephants are by far the greatest cause of damage to households, with fencing and communal water infrastructure being particularly badly damaged. Damage by wildlife was much more likely in the Kunene region than in Caprivi, with around 19 percent of households suggesting they had experienced damage in Kunene versus 3 percent in Caprivi. Crop destruction, which due to differences in production systems is much more likely in the Caprivi region, was also mostly caused by elephants. For the important crops of maize, mahangu and sorghum, more than 50 percent of the crop was destroyed if wildlife destroyed any of the crops on average. In Caprivi, more than 50 percent of households experienced crop damage, highlighting both the difficulty of human/wildlife conflict and the potential benefits from preventing this issue.

As expected, climatic differences mean that the use of wood, wild foods, medicinal plants and forest products is much more important in the Caprivi region than in Kunene. Nearly 90 percent of households collect firewood, with some firewood being

sold in Caprivi but none being sold in Kunene. Generally this is a similar pattern for most natural resources in the two regions: natural resources are much more likely to be collected for own use in Kunene, whereas they are more likely to be sold in Caprivi (as well as collected for own use). The value of medicinal plant resources are very high for those that sell them, although it should be noted that only very few households indicated that they received income from selling the resource.

The awareness of resource restrictions was high in conservancy areas, although in Kunene a large number of households were not aware of restrictions on land. Most households felt that the restrictions prevented them from using resources how they would wish to, especially regarding wildlife. However this is a simple reflection of providing ownership of the resource; as discussed in the introduction, without ownership, these resources would not be available to the same extent as they are now. This is acknowledged by survey respondents, the majority of whom suggested that restrictions are beneficial in conservancy areas.

Just fewer than 25 percent of households have members that are members of CBOs, with the largest number of households being involved in water point committees. Contributions to committees are almost ten times that received from committees, with contributions of members into farmers groups the largest. Despite this however, it is worth remembering that membership of committees would bring greater rewards than direct financial contributions for example in terms of knowledge sharing, equipment sharing, social benefits etc, which are not captured in the data. Knowledge of the conservancy was good in both areas, although the number knowing the conservancy establishment year was low. Although knowledge of conservancy plans was good, with above 60 percent of households having at least one member being aware of all types of plans, involvement in setting out the plans was low. In part this reflects the low number of members of heads of household in the conservancy (less than 50 percent). The community in general received substantial financial aid from the conservancy in both regions, with cash dividends more likely to be received by those in Caprivi than in Kunene. On the other hand, non-cash dividends are much higher in Kunene.

5. References

Bandyopadhyay, S, Guman, JC & Lendelvo, S. 2009. Communal conservancies and household welfare in Namibia. *Research Discussion Paper No 82*, Directorate of Environmental Affairs, Ministry of Environment and Tourism, Windhoek Namibia. 23pp.

Long, S.A. (Ed). 2004. *Livelihoods and CBNRM in Namibia: the findings of the WILD Project.* Wildlife Integration for Livelihood Diversification (WILD) Project, Ministry of Environment and Tourism, Windhoek, Namibia. 289pp.

NACSO. 2004. Namibiaøs communal conservancies: a review of progress and challenges. Namibian Association of CBNRM Support Organisations, Windhoek, Namibia. 80pp.

NACSO. 2006. Namibiaøs communal conservancies: a review of progress and challenges in 2005. Namibian Association of CBNRM Support Organisations, Windhoek, Namibia. 104pp.

NACSO. 2008. Namibiaøs communal conservancies: a review of progress and challenges in 2007. Namibian Association of CBNRM Support Organisations (NACSO), Windhoek, Namibia. 120pp.

NACSO. 2009. Namibiaøs communal conservancies: a review of progress, 2008. Namibian Association of CBNRM Support Organisations (NACSO), Windhoek, Namibia. 32pp.

SIAPAC, 2007. Study on characteristics of demand of tourists and use patterns of protected areas in Namibia. Unpublished Report, Ministry of Environment and Tourism, Windhoek, Namibia. 154pp.

Suich, H. 2003 Summary of partial results from the socio-economic household survey regarding community-based natural resource management and livelihoods in Caprivi and Kunene. *WILD Working Paper No. 12*, Directorate of Environmental Affairs, Ministry of Environment and Tourism, Windhoek, Namibia. 274pp.

Appendix A: Maps of the Areas surveyed[2]

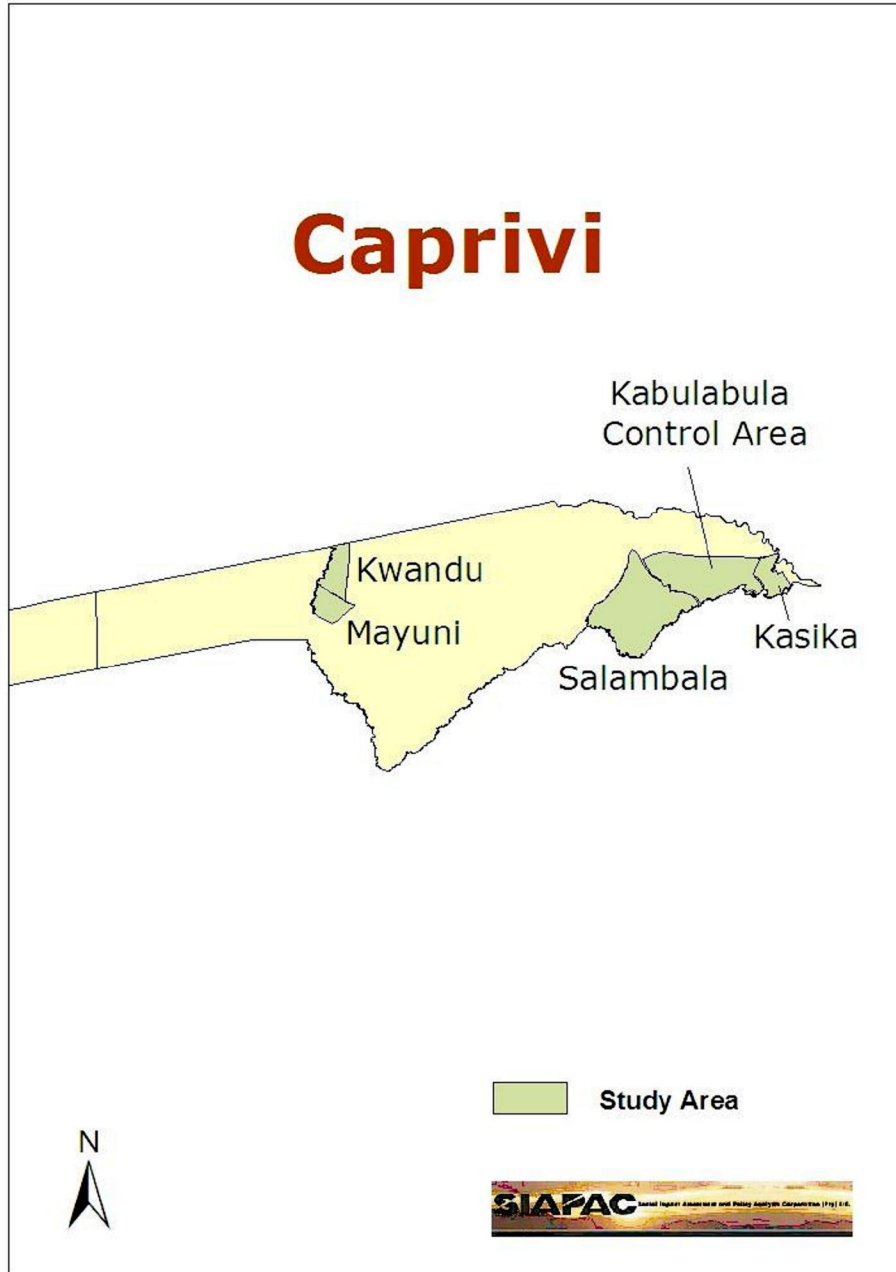**Map 1: Map of Namibia Highlighting Kunene Region and Caprivi Region**

---
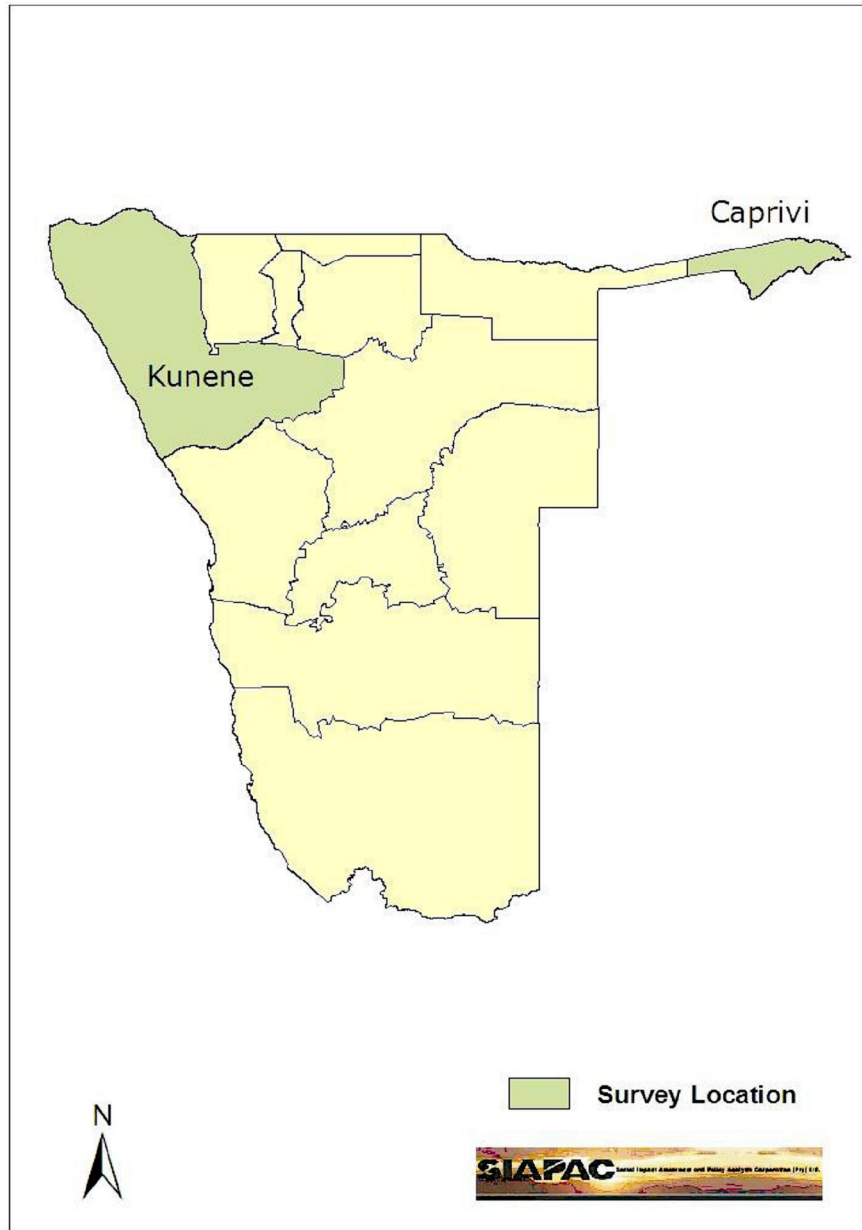
[2] Maps taken from the SIAPAC Final Report: Socio-economic household survey: integrated community-based eco-system management (SIAPAC 2007).

ap 2: Map Showing Conservancies in Kunene Region

Map 3: Map Showing Conservancies in Caprivi Region

DIRECTORATE OF ENVIRONMENTAL AFFAIRS

Research Discussion Papers available in this series

1. Ashley, C. 1994. Population growth and renewable resource management: The challenge of sustaining people and the environment. *DEA Research Discussion Paper* 1. 40 pp.

2. Ashley, C, Barnes, J and Healy, T. 1994. Profits, equity, growth and sustainability: The potential role of wildlife enterprises in Caprivi and other communal areas of Namibia. *DEA Research Discussion Paper* 2. 25 pp.

3. Quan, J, Barton, D and Conroy, C (Ashley, C, ed.). 1994. A preliminary assessment of the economic impact of desertification in Namibia. *DEA Research Discussion Paper* 3. 150 pp.
    a. Northern commercial areas: Okahandja, Otjiwarongo and Grootfontein. 33 pp.
    b. Communal and commercial areas of southern Namibia. 42 pp.
    c. Northern communal areas: Uukwaluudhi. 35 pp.

4. Ashley, C and Garland, E. 1994. Promoting community-based tourism development: Why, what and how?. *DEA Research Discussion Paper* 4. 37 pp.

5. Jones, BTB. 1995. Wildlife management, utilisation and tourism in communal areas: Benefits to communities and improved resource management. *DEA Research Discussion Paper* 5. 37 pp.

6. Barnes, JI. 1995. The value of non-agricultural land use in some Namibian communal areas: A data base for planning. *DEA Research Discussion Paper* 6. 21 pp.

7. Ashley, C, Müller, H and Harris, M. 1995. Population dynamics, the environment and demand for water and energy in Namibia. *DEA Research Discussion Paper* 7. 37 pp.

8. Barnes, JI and de Jager, JLV. 1995. Economic and financial incentives for wildlife use on private land in Namibia and the implications for policy. *DEA Research Discussion Paper* 8. 21 pp.

9. Rodwell, TC, Tagg, J and Grobler, M. 1995. Wildlife resources in Caprivi, Namibia: The results of an aerial census in 1994 and comparisons with past surveys. *DEA Research Discussion Paper* 9. 29 pp.

10. Ashley, C. 1995. Tourism, communities and the potential impacts on local incomes and conservation. *DEA Research Discussion Paper* 10. 51 pp.

11. Jones, BTB. 1996. Institutional relationships, capacity and sustainability: Lessons learned from a community-based conservation project, eastern Tsumkwe District, Namibia, 1991ó96. *DEA Research Discussion Paper* 11. 43 pp.

12. Ashley, C and Barnes, JI. 1996. Wildlife use for economic gain: The potential for wildlife to contribute to development in Namibia. *DEA Research Discussion Paper* 12. 23 pp.

13. Ashley, C. 1996. Incentives affecting biodiversity conservation and sustainable use: The case of land use options in Namibia. *DEA Research Discussion Paper* 13. 21 pp.

Continued overleaf ...

Other *Research Discussion Papers* in this series (continued)

14. Jarvis, AM and Robertson, A. 1997. Endemic birds of Namibia: Evaluating their status and mapping biodiversity hotspots. *DEA Research Discussion Paper* 14. 103 pp.

15. Barnes, JI, Schier, C and van Rooy, G. 1997. Tourists' willingness to pay for wildlife viewing and wildlife conservation in Namibia. *DEA Research Discussion Paper* 15. 24 pp.

16. Ashley, C, Barnes, JI, Brown, CJ and Jones, BTB. 1997. Using resource economics for natural resource management: Namibia's experience. *DEA Research Discussion Paper* 16. 23 pp.

17. Lange, GM, Barnes, JI and Motinga, DJ. 1997. Cattle numbers, biomass, productivity and land degradation in the commercial farming sector of Namibia, 1915 to 1995. *DEA Research Discussion Paper* 17. 28 pp.

18. Lange, GM. 1997. An approach to sustainable water management using natural resource accounts: The use of water, the economic value of water and implications for policy. *DEA Research Discussion Paper* 18. 39 pp.

19. Lange, GM and Motinga, DJ. 1997. The contribution of resource rents from minerals and fisheries to sustainable economic development in Namibia. *DEA Research Discussion Paper* 19. 32 pp.

20. Ashley, C and LaFranchi, C. 1997. Livelihood strategies of rural households in Caprivi: Implications for conservancies and natural resource management. *DEA Research Discussion Paper* 20. 96 pp.

21. Byers, BA (Roberts, CS, ed.). 1997. Environmental threats and opportunities in Namibia: A comprehensive assessment. *DEA Research Discussion Paper* 21. 65 pp.

22. Day, JA (Barnard, P, ed.). 1997. The status of freshwater resources in Namibia. *DEA Research Discussion Paper* 22. 46 pp.

23. O'Toole, MJ (Barnard, P, ed.). 1997. Marine environmental threats in Namibia. *DEA Research Discussion Paper* 23. 48 pp.

24. Jones, BTB. 1997. Parks and resident peoples. Linking Namibian protected areas with local communities. *DEA Research Discussion Paper* 24. 39 pp.

25. Environmental Evaluation Unit, University of Cape Town (Tarr, JG, ed.). 1998. Summary report of a retrospective study of the environmental impacts of emergency borehole supply in the Gam and Khorixas areas of Namibia. *DEA Research Discussion Paper* 25. 27 pp.

26. Auer, C. 1998. Water availability and chemical water quality as important factors for sustainable wildlife management in the Etosha National Park and for domestic stock in farming areas of Namibia. *DEA Research Discussion Paper* 26. 30 pp.

27. Barnes, JI. 1998. Wildlife conservation and utilisation as complements to agriculture in southern African development. *DEA Research Discussion Paper* 27. 18 pp.

Continued overleaf ...

Other *Research Discussion Papers* in this series (continued)

28.   Blackie, R and Tarr, P. 1999. Government policies on sustainable development in Namibia. *DEA Research Discussion Paper* 28. 21 pp.

29.   Blackie, R. 1999. Communities and natural resources: Trends in equiTable and efficient use. *DEA Research Discussion Paper* 29. 20 pp.

30.   Tarr, P. 2000. Knowledge, opinions and attitudes regarding Environmental Assessment in Namibia: Results of a national survey conducted in 1997. *DEA Research Discussion Paper* 30. 20 pp.

31.   Simmons, RE, Barnes, KN, Jarvis, AM and Robertson, A. 1999. Important bird areas in Namibia. *DEA Research Discussion Paper* 31. 66 pp.

32.   Environmental and Geographical Science Masters Students, University of Cape Town (Blackie, R, ed.). 1999. A preliminary environmental assessment of Namibia's resettlement programme. *DEA Research Discussion Paper* 32, 29 pp.

33.   Robertson, A and Jarvis, AM. 1999. Bird data in Namibia: A model for biodiversity information system development. Avifaunal database user manual. *DEA Research Discussion Paper* 33. 122 pp.

34.   Tarr, P and Figueira, M. 1999. Namibia's Environmental Assessment framework: The evolution of policy and practice. *DEA Research Discussion Paper* 34. 20 pp.

35.   Margules, CR (Barnard, P, ed.). 1999. Biodiversity planning and monitoring in Namibia. *DEA Research Discussion Paper* 35. 27 pp.

36.   Nghileendele, NP and Uisso, V. 1999. The state of Namibia's freshwater environment. *DEA Research Discussion Paper* 36. [In print].

37.   Nghileendele, NP and Uisso, V. 1999. The state of Namibia's socio-economic environment. *DEA Research Discussion Paper* 37. [In print].

38.   McGann, JA. 1999. The Environmental Investment Fund: An initiative for the conservation and protection of the environmental and natural resource base of Namibia. *DEA Research Discussion Paper* 38. 57 pp.

39.   McGann, JA. 1999. Towards the establishment of the Environmental Investment Fund: Opportunities, constraints, and lessons learned. *DEA Research Discussion Paper* 39. 47 pp.

40.   Jones, BTB and Mosimane, A. 2000. Empowering communities to manage natural resources: Where does the new power lie? Case studies from Namibia. *DEA Research Discussion Paper* 40. 32 pp.

41.   Corbett, A and Jones, BTB. 2000. The legal aspects of governance in CBNRM in Namibia. *DEA Research Discussion Paper* 41. 25 pp.

Other *Research Discussion Papers* in this series (continued)

42. Barnes, JI, MacGregor, J and Weaver, LC. 2001. Economic analysis of community wildlife use initiatives in Namibia. *DEA Research Discussion Paper* 42. 20 pp.

43. Poonyth, D, Barnes, JI, Suich, H and Monamati, M. 2001. Satellite and resource accounting as tools for tourism planning in southern Africa. *DEA Research Discussion Paper* 43. 21 pp.

44. Suich, H. 2001. Development of preliminary tourism satellite accounts for Namibia. *DEA Research Discussion Paper* 44. 20 pp.

45. Krug, W, Suich, H and Haimbodi, N. 2002. Park pricing and economic efficiency in Namibia. *DEA Research Discussion Paper* 45. 31 pp.

46. Krugman, H. 2001. Fundamental issues and the threats to sustainable development in Namibia. *DEA Research Discussion Paper* 46. 50 pp.

47. Humavindu, MN. 2002. An econometric analysis of fixed investment in Namibia. *DEA Research Discussion Paper* 47. 22 pp.

48. Suich, H and Murphy, C. 2002. Crafty women: The livelihood impact of craft income in Caprivi. *DEA Research Discussion Paper* 48. 31 pp.

49. Humavindu, MN. 2002. Economics without markets: Policy inferences from nature-based tourism studies in Namibia. *DEA Research Discussion Paper* 49. 23 pp.

50. Barnes, JI, Zeybrandt, F, Kirchner, CH and Sakko, AL. 2002. The economic value of Namibia's recreational shore fishery: A review. *DEA Research Discussion Paper* 50. 21 pp.

51. Purvis, J. 2002. Postharvest fisheries on the eastern floodplains, Caprivi. *DEA Research Discussion Paper* 51. 29 pp.

52. Purvis, J. 2002. Fish and livelihoods: Fisheries on the eastern floodplains, Caprivi. *DEA Research Discussion Paper* 52. 44 pp.

53. Long, SA. 2002. Disentangling benefits: Livelihoods, natural resource management and managing revenue from tourism. The experience of the Torra Conservancy, Namibia. *DEA Research Discussion Paper* 53. 22 pp.

54. Lange, G-M. 2003. The contribution of minerals to sustainable economic development: Mineral resource accounts in Namibia. *DEA Research Discussion Paper* 54. 29 pp.

55. Lange, G-M. 2003. The value of Namibia's commercial fisheries. *DEA Research Discussion Paper* 55. 19 pp.

56. Lange, G-M. 2003. National wealth, natural capital and sustainable development in Namibia. *DEA Research Discussion Paper* 56. 15 pp.

Other *Research Discussion Papers* in this series (continued)

57. Murphy, C and Suich, H. 2003. Mashi Craft Market ó Crafts and livelihoods in Caprivi. *DEA Research Discussion Paper* 57. 29 pp.

58. Abbott, J with Hay, C, Kalonga, M, Naesje, T and Purvis, J. 2003. The 2002 joint frame survey of fisheries of the Upper Zambezi River (Namibia/Zambia). *DEA Research Discussion Paper* 58. 39 pp.

59. Mulonga, S, Suich, H and Murphy, C. 2003. The conflict continues: Human wildlife conflict and livelihoods in Caprivi. *DEA Research Discussion Paper* 59. 29 pp.

60. Halstead, L. 2003. Making community-based tourism work: An assessment of factors contributing to successful community-owned tourism development in Caprivi. *DEA Research Discussion Paper* 60. 35 pp.

61. Murphy, C and Halstead, L. 2003. õThe person with the idea for the campsite is a heroö: Institutional arrangements and livelihood change of community-owned tourism enterprises in Namibia. *DEA Research Discussion Paper* 61. 42 pp.

62. Mulonga, S. 2003. Wild food: Use of natural resources for food in eastern Caprivi. *DEA Research Discussion Paper* 62. 41 pp.

63. Mulonga, S and Murphy, C. 2003. Spending the money: The experience of conservancy benefit distribution in Namibia up to mid-2003. *DEA Research Discussion Paper* 63. 27 pp.

64. Murphy, C. 2003. Community tourism in Kunene: A review of five case studies for the WILD Project. *DEA Research Discussion Paper* 64. 27 pp.

65. Li, BML and Vaughan, C. 2003. Social relations and water management: The impact of community-based water management in the ǂKhoadi //Hôas Conservancy of north-west Namibia. *DEA Research Discussion Paper* 65. 23 pp.

66. Krugmann, H, Cole, D and du Plessis, P. 2003. Access and benefit-sharing mechanisms for the use of botanical resources in Namibia. *DEA Research Discussion Paper* 66. 52 pp.

67. Schiffer, E. 2004. How does community-based natural resource management in Namibia change the distribution of power and influence? Preliminary findings. *DEA Research Discussion Paper* 67. 43 pp.

68. Bandyopadhyay, S, Shyamsundar, P, Wang, L and Humavindu, MN. 2004. Do households gain from community-based natural resource management? An evaluation of community conservancies in Namibia. *DEA Research Discussion Paper* 68. 21 pp.

69. Sutton, WR, Larson, DM and Jarvis, LS. 2004. A new approach to assessing the costs of living with wildlife in developing countries. *DEA Research Discussion Paper* 69. 21 pp.

70. Barnes, JI, Nhuleipo, O, Muteyauli, PI and MacGregor, J. 2005. Preliminary economic asset and flow accounts for forest resources in Namibia. *DEA Research Discussion Paper* 70. 20 pp.

Other *Research Discussion Papers* in this series (continued)

71. Kirchner, CH and Stage, J. 2005. An economic comparison of the commercial and recreational line fisheries in Namibia. *DEA Research Discussion Paper* 71. 14 pp.

72. Fleermuys, FN. 2005. The balance of payment as a monetary phenomenon: An econometric study of Namibia. *DEA Research Discussion Paper* 72. 27 pp.

73. Turpie, J, Lange, G-M, Martin, R, Davies, R and Barnes, J. 2005. Namibia's protected areas: Their economic worth and the feasibility of their financing. *DEA Research Discussion Paper* 73. 22 pp.

74. Samuelsson, E and Stage, J. 2006. The size and distribution of the economic impacts of Namibian hunting tourism. *DEA Research Discussion Paper* 74. 13 pp.

75. Humavindu, MN and Barnes, JI. 2006. The identification and the quantification of 'best practice' in innovative financing for biodiversity conservation and sustainable use in Namibia. *DEA Research Discussion Paper* 75. 25 pp.

76. Ministry of Environment and Tourism and Ministry of Lands and Resettlement. 2007. Namibia: Land use planning and environmental sustainability – Contributions to an analytical framework for sustainable land management. *DEA Research Discussion Paper* 76. 95 pp.

77. Alberts, M. and Barnes, JI. 2008. Sustainable tourism options for the coastal zone of Namibia. *DEA Research Discussion Paper* 77. 26 pp.

78. Barnes, JI and Alberts, M. 2008. Sustainable natural resource use on the coast of Namibia. *DEA Research Paper* 78. 32 pp.

79. Barnes, JI, Nhuleipo, O, Baker, AC, Muteyauli, PI and Shigwedha, V. 2009. Wildlife resource accounts for Namibia, 2004. *DEA Research Discussion Paper* 79. 26 pp.

80. Baker, AC, Muteyauli, PI, Shigwedha, V and Sweeney, LF. 2009. Domestic tourism in Namibia: The results of a 2006/7 survey. *DEA Research Discussion Paper* 80. 35pp.

81. Indongo, N, Sweeney, LF, Baker, AC, Muteyauli, PI and Nhuleipo, O. 2010. Community-based natural resource management in Namibia: Results of a 2006 household survey. *DEA Research Discussion Paper* 81. 62pp.