



OKACOM

The Human Environment (Botswanan Sector)

Specialist Report prepared by Lin Cassidy for :

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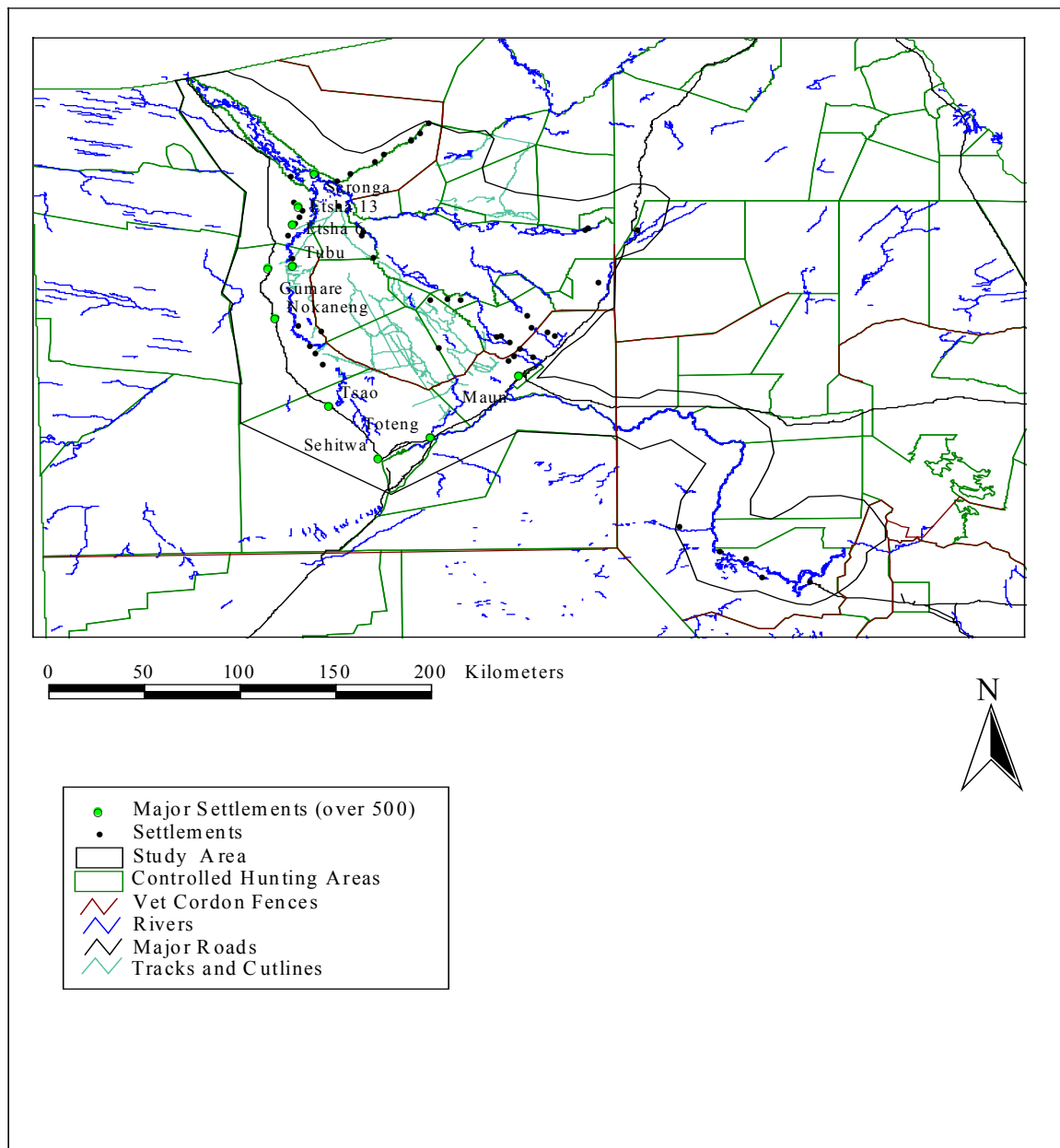
FIGURE 1: MAJOR INFRASTRUCTURE AND SETTLEMENT IN THE STUDY AREA

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FIGURE 2: CENSUS DISTRICTS

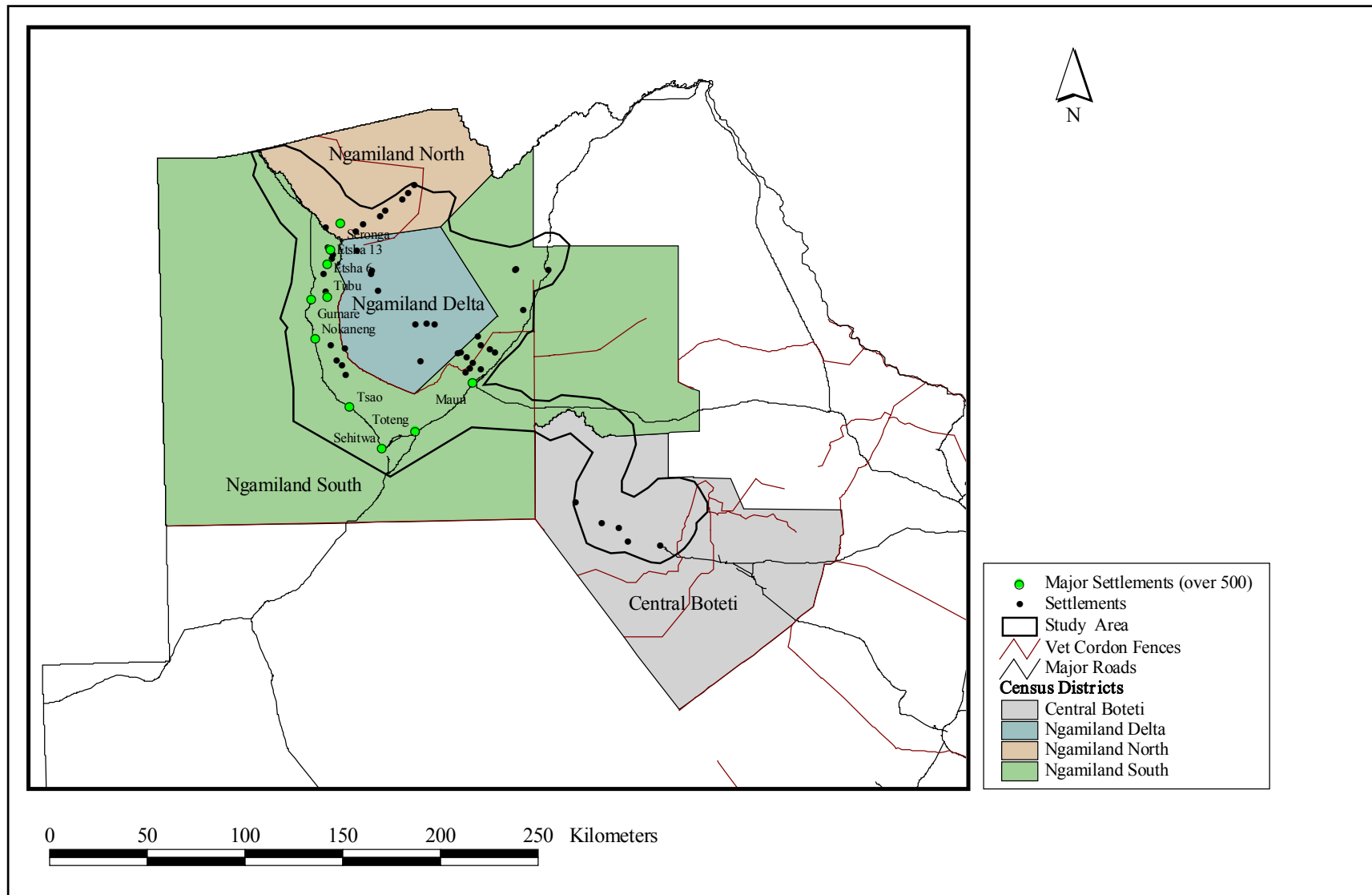
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Figure 1: Major Infrastructure and Settlement in the Study Area¹



¹ Please note that this map was made from existing coverages. Several settlements (particularly in the panhandle) are missing, as are key infrastructural services.

Figure 2: Census Districts



1 HUMAN ENVIRONMENT

Settlement in Botswana has largely been determined by the availability of water. Until the recent introduction of boreholes, this has meant that human habitation has been limited to places with reliable surface water. In the north-west, people are concentrated along bodies of permanent water, such as the Okavango and Chobe rivers. Full utilisation of the rivers and their resources has in the past been restricted by the presence of disease vectors such as tsetse fly and mosquitoes. Within and around the Delta, tsetse fly have had a significant role in determining settlement patterns.

1.1 Settlement History

Different San groups, including the BaNoka (River People), were the first to settle here. Early Stone Age implements found along the southern part of the Delta and the Boteti river show that the region has been inhabited for at least 100 000 years (Campbell, 1976). Sub-groups of the BaNoka are still living in the area, with the BaQanikhwe group to the north of the Delta, the BaGumahii scattered throughout and the BuGakhwe mainly in the Khwai area.

A full account of more recent settlement is given in Tlou (1985). A brief summary is provided here. During the first half of the 18th century, the expansion of the BaLozi state north of present-day Botswana caused both BaYei and HaMbukushu to move into the Delta area. While the BaYei also settled along the south-eastern edge of the Delta as well as in the north, the HaMbukushu settlements are mainly north of Sepopa. The BaYei also brought with them the *mokoro* (dug-out canoe) which enabled them to penetrate right into the Delta.

A century later, during the early 1800's, a succession dispute led to a split in the Ngwato tribe in the east of Botswana. The group led by Tawana eventually moved north-west to Kgwebe Hills and Lake Ngami, and established a village at Toteng. Notably, they had brought their cattle herds with them. The BaTawana expanded, and incorporated all the people settled in Ngamiland. During the early 1900's they began settling in Maun, which became (and remains) the area's major centre.

At the beginning of the 20th century, OvaHerero immigrated to Ngamiland in response to German rule and land expropriation. Like the BaTawana, they brought their cattle. The OvaHerero settled to the south-west of the Delta.

Under the influence of these 2 groups, land-use moved from being mainly hunter-gatherer and arable to predominantly livestock-oriented. This is important because people's settlement patterns became dependent on cattle related issues such as the presence (or absence) of tsetse fly and outbreaks of rinderpest disease.

Tsetse fly was the initial constraint to people (re-)settling along the north-eastern side of the Delta. As a result, infrastructure has tended to be to the south and along the south-western side, where more people were living. This in turn has limited the growth of north-eastern settlements, which still remain remote and difficult to reach.

More recently policies governing primary land use have also influenced settlement and with it, resource use. These are discussed in Section 7 below.

2 DEMOGRAPHIC CHARACTERISTICS

The last national census was carried out in 1991. Summary census data for the settlements in and along the Delta are covered by 2 major census areas: Ngamiland North and Ngamiland South. A third area, Ngamiland Delta exists, but has not been included in the census summary reports, creating gaps in information about this region.

The outflow of the Delta is covered by the census area Central Boteti. In all these districts, some settlements lie beyond the influence of the river system. An attempt will be made to identify where such settlements would affect the description of conditions along the river system. These districts will also form the basis for discussion and comparison in the sections below.

2.1 Population Composition

There are three main points of interest with regard to population composition. These are gender, age, and ethnicity. The availability of certain types of labour affects how and to what extent the resource base is used. Some activities are gender-specific (e.g. ploughing *vs.* weeding, hunting *vs.* gathering), while others require stamina and strength. Different cultural groups may also place varying emphasis on different resources.

2.1.1 Gender Composition

Men tend to be concentrated in cities and mining towns. While a shortage of men is normal at national level because of differing life expectancies, in Botswana the gap is larger due to male out-migration to South Africa for work. In rural areas, more men than women tend to be absent, mostly seeking work in larger towns.

Table 1: Gender Composition of 1991 Population (from CSO data)

Region	Total population	# of males	# of females	Sex ratio
Ngamiland North	39065	17540	21525	0.45
Ngamiland South	55469	26770	28699	0.48
Ngamiland Delta	2342	1191	1151	0.51
Central Boteti	35459	18635	16834	0.47
Country Total	1326796	634400	692396	0.48

The regions as presented in Table 1 above do not give a clear indication of the extent to which men are absent from their home villages. Both Ngamiland South and Central Boteti have large towns (Maun and Letlhakane respectively) with more employment opportunities. The situation in Ngamiland North is indicative of most small rural settlements with few opportunities for wage labour. The sex ratio for the Ngamiland Delta region is high because of the influence of tourism. This region incorporates safari camps which employ a high proportion of men. Also, existing villages have become foci for mokoro-based tourism and so attract men seeking this kind of work.

The effect on the household economy of male absenteeism is discussed below in Section 4.

2.1.2 Age Composition

Although age-group data have been collected in all regions, this information has only been presented in reports for the country as a whole.

Table 2: National Figures for Age Composition in 1991 and 2001* (from CSO data)

Age Group	1991 Population	% of 1991 Population	2001 Population	% of 2001 Population
0-14	567818	42.80	650409	38.40
15-49	611904	46.12	870174	51.37
50-64	85025	6.41	112732	6.66
65+	62049	4.68	60586	3.58
Total	1326796	100.00	1693901	100.00

* 2001 figures are CSO projections.

It is likely that in Ngamiland North and in the small settlements in Ngamiland South and Central Boteti, the proportion of the population in the 0-14 and 15-49 age groups is (and will remain) smaller than the national figures. This is due to out-migration to work and school, and means that the dependency ratios are likely to be much higher.

In Ngamiland Delta it is likely that the proportion in the 15-49 age group is slightly higher than for the country as a whole, because settlement here is so closely tied to cash employment options.

The decline in the 0-14 age group predicted for 2001 is due to reduced birth rates. In all the regions in the study area, this group is not likely to decline as much as at national level because birth rates tend to be higher in rural areas.

The effect of AIDS

As seen in Table 2, the proportion of the population in the sexually active age group is expected to increase in the short-term. This is probably because deaths from HIV-related causes could take some time to have an impact on the population (although not necessarily on the economy). While initially HIV infections are concentrated in Botswana's larger settlements, it is likely that they will eventually reach even the most remote settlements because of the high levels of migrant labour.

2.1.3 Ethnic Composition

As noted above, the main groups in the Delta area are BaTawana, BaYei, HaMbukushu and OvaHerero. While Afriyie (1976) and others have noted that ethnic composition is important because of the variation in economic activities and use of the Delta's resources, national census data on this issue are not collected. While not the most populous group in the study area, the BaTawana's history of political dominance has favoured their language and culture over others.

Like the Okavango Delta, the Boteti River is important because of its cultural diversity. BaKalanga are now the dominant group (van der Maas, 1995), but OvaHerero, BaSarwa, and BaTeti are all represented here.

While it may be possible to get an idea of a percentage breakdown of the various ethnic groups by looking at language, this can be misleading because Setswana is increasingly

replacing other mother tongues. It is not enough to take samples in a few villages and extrapolate this data: the composition varies considerably from settlement to settlement even within small areas.

The issue of ethnicity is important in determining how the resource base is used, and should always be borne in mind when implementing projects.

2.2 Population Distribution

The 1992 tarring of the main road from Maun to Nata finally linked the remote north-west of the country to the more developed south-east. Until that time, access to (and within) Ngamiland was difficult and this played a large part in limiting growth in the area.

Generally, the human population is divided over villages, lands areas and cattle posts. There is regular seasonal movement between the settlement types, particularly between villages and lands areas. The proportion of the population in major settlements is shown in Table 3 below.

Table 3: 1991 Population Density (from CSO data)

Region	Total population	# of people/km ²	# of villages of 500+	% of population in villages of 500+
Ngamiland North	39065	1.7	13	38.7%
Ngamiland South	55469	0.6	8	59%
Ngamiland Delta	2342	0.5*	0	0%
Central Boteti	35459	1.1	11	56%
Country Total	1326796	2.3	-	-

* Consultant's estimate. Figure for permanently resident population may be lower.

While the population density of all the regions is considerably lower than the national average, it must be noted that the distribution is far from even. In all areas settlement tends to be fairly linear and concentrated along the major river courses.

Settlement size is crucial to development. Government policy is to match level of service to size of population. This is reflected in the available census data: information on key indicators is only given for settlements of 500 and above. This is a serious gap because small settlements tend to have far less in terms of infrastructure and services. Major settlements *excluding those beyond the influence of the river system* are listed in Table 5, and are discussed in Section 2.3 and Section 3.

2.2.1 Ethnic Distribution

With improved access and communications, many cultural differences are being lost. There are, however, distinct geographic areas where the four major ethnic groups in the Delta are found. These areas to some extent reflect different relationships to the resource base. For example, the OvaHerero are found in areas with good grazing, predominantly to the south-west around Sehitwa and Toteng, and stretching north to Nokaneng. This reflects their main focus on cattle. The BaTawana stretch from Sehitwa and Toteng in the south-west towards Maun. This may reflect their attachment to that village as a tribal centre but may also be because they are both livestock and arable farmers.

The BaYei particularly have penetrated right into the Delta, perhaps because this environment was familiar to them from their origins in the middle Zambezi valley (Afriyie,

ibid.). They are also found along the Thamalakane fault line, and north-east of Maun, and along the Boteti River. It may be fair to say that the BaYei have more of a history of using the Delta's resources than the other ethnic groups. The BaYei favour flood recession farming. The HaMbukushu are found along both banks of the panhandle. They are dryland crop farmers, but also cultivated small gardens on termitaria islands in the floodplains. The Etsha villages, on the north-western edge of the seasonal swamps represent a major HaMbukushu settlement.

There is little data about the distribution of the Boteti region's different ethnic groups, and it would appear that most settlements are mixed and some intermarrying has occurred. There is a strong OvaHerero presence in Rakops and its surrounding cattle posts.

2.3 Population Trends

Population projections tend to reflect the country's declining birth rate. Some regions may also have marked changes in their growth rates due to inter-regional migration.

Table 4: Population Growth Rates and Projections (from CSO data)

Region	1981 total population	1991 total population	Ave. annual growth rate 1981-1991	2001 projected population	Ave. annual growth rate 1991-2001
Ngamiland North	28796	39065	2.5%	44201	1.9%
Ngamiland South	38443	55469	3.7%	66288*	1.4%
Ngamiland Delta	824	2342	11%	included above	included above
Central Boteti	26406	35459	3%	42674	1.9%
Country Total	941787	1326796	3.5%	1694000	2.5%

* The CSO projections for 2001 combine Ngamiland South and Ngamiland Delta

These CSO projections for both Ngamiland North and Ngamiland South/Delta seem too low in comparison to the Country Total when considering that this area is the focus for Botswana's tourist industry.

Infrastructure has played an important role in determining changes in population growth. For example, the tarred road along the south-west of the Delta means that villages on that side are likely to grow faster than those to the north-east. There are only 3 settlements with over 500 people on the north-eastern side of the Delta.

Table 5: Population Figures for Settlements Over 500 in 1991 (from CSO data)

Region	Village	1981 Population	1991 Population	Ave. Annual Growth Rate
Ngamiland North	Seronga	576	681	0.017
	Ngarange	151	533	0.134
	Mohembo W	502	578	0.014
	Sepopa	466	806	0.056
	Shakawe	1755	2198	0.023
	Mohembo E	312	573	0.063
	Nokaneng	643	1464	0.086
	Gomare	4711	3539	0.070
	Etsha (6)	985	820	-0.018
	Etsha 7	330	727	0.082
	Etsha 13	1076	1215	0.012
	Samochema	242	553	0.086
	Nxamasere	505	497	-0.002
	Tubu	331	508	0.044
Ngamiland South	Maun	14925	26769	0.060
	Shorobe	539	757	0.035
	Sehitwa	1452	1603	0.010
	Tsao	534	777	0.038
	Matlapana	530	974	0.063
	Boro	328	804	0.094
	Toteng	565	507	-0.011
Ngamiland Delta	0 settlements over 500	-	-	-
Central Boteti	Motopi	432	791	0.062
	Makalamabedi	537	883	0.051
	Mmadikola	660	646	-0.002
	Rakops	1938	3122	0.050
	Kedia	32	618	0.345
	Xhumo	903	1145	0.024
	Mokobaxane	180	614	0.131
	Mopipi	1540	2264	0.039

Settlements peripheral to administrative and/or economic centres are growing rapidly. There are a few places which show a decline in population. The most notable of these are Toteng and Etsha 6. However, Etsha 6's is probably not a real decline, especially when considered with the large increase in nearby Etsha 7's population. These figures either reflect changes in census enumeration boundaries, or if real, some localised movement.

Toteng is the main anomaly. It appears to have had a shrinking population for the past few years. This may be due in part to the recent reduction in outflow of the river channels to the south-west into Lake Ngami. (Nearby Sehitwa also has a very low growth rate.) It is highly likely that Toteng will continue to shrink because it has been by-passed by the tar road north to Shakawe, and will also be missed by the tar link south to Ghanzi in 1998.

In places such as along the Boteti River, options for land use are limited, and available arable and grazing lands are full. Settlements associated with these activities have hardly any growth. Instead, people move permanently to larger settlements trying to find alternative income opportunities.

2.4 Major Population Distribution and Growth Issues

Precisely because the main traditional land uses of crop production and cattle rearing are marginal, areas with greatest viability for these activities are full. This will probably lead to an increased concentration of people in larger settlements. Drought and an increasing need for cash are also affecting out-migration from rural areas.

The river itself makes the provision of services and infrastructure difficult, creating a situation that feeds on itself. Lack of services will keep settlements small, and small settlements do not qualify for infrastructure. This lack of physical development could be seen in a positive light at national level as it supports the “wilderness effect” on which Botswana’s tourism is dependent.

3 INFRASTRUCTURE AND SERVICES

As noted in Section 2.2, population density plays a large part in determining available infrastructure and services. This is particularly true for government efforts which are bound by policies developed for the nation as a whole.

3.1 Transport

3.1.1 Roads

In the eyes of most rural people, roads symbolise development and progress. This tends to be true even for those who cannot afford motor vehicles. Lifts in other people's vehicles is probably the most common form of transport for the majority of people in the study area. Roads give remote people access to higher levels of services and markets that are not available in smaller settlements.

Tar roads exist from:

- Mopipi to Rakops
- Motopi to Maun
- Maun to Shorobe
- Maun to Sehitwa
- Sehitwa to Mohembo

The link from Rakops to Motopi is currently being sealed. Elsewhere, roads are either sand tracks or poorly-maintained gravel. Road conditions are particularly poor on the north-eastern side of the Okavango.

Public transport services tend to be limited to tar roads. Most private vehicles are pick-ups with high clearance and/or four-wheel drive.

3.1.2 River transport

River transport types depend to a large extent on different water levels which change from place to place and from season to season. Only the larger main channels are suitable for small motor-boats. The *mokoro* (dug-out canoe) is perhaps the most common means of personal transport, particularly in the shallower flood-plains. It has also been adopted by the tourist industry as a way for tourists to experience the Delta. A ferry exists at Mohembo on the "Panhandle".

The extent of riverine transport was documented in the "Riverine Transport Study" Volume 2, by Knight Piesold (1994). Unfortunately this report did not record actual numbers of *mekoro*. This was done in Ecosurv's "Field Investigation into the Mekoro Industry" (1988), now in need of up-dating.

3.1.3 Air traffic facilities

There is an international airport in Maun. Government airfields have been provided at most larger villages. There are approximately 10 of these in the study area. A further 12 or so registered strips belonging to safari lodges or on private farms are scattered throughout the Delta and along the Boteti.

3.1.4 Railways

There are no railways in north-western Botswana.

3.2 Government Services

Government policy is to try and match services to settlement size. This is particularly relevant to health and education facilities. One of the first post-independence promises was to put basic health and education services within an ever-diminishing radius of reach of all people.

3.2.1 Schools

Generally, all settlements with at least 500 people have a primary school. Forms 1 and 2 are accommodated in Community Junior Secondary Schools (CJSSs) which are located only in larger villages. Most CJSSs have boarding facilities. There is only one Senior Secondary School in the study area. It is located in Maun. The next closest is in Letlhakane, beyond Rakops.

3.2.2 Health Facilities

The most basic service is a Mobile Clinic. Very small settlements do not have resident health staff, but are visited regularly. Settlements with over 500 people have Health Posts, which are staffed with one or two nurses and a Family Welfare Educator. Larger villages have Clinics, usually with maternity services. The staff here are led by a Nursing Sister. Maun has a hospital and dental clinic.

Destitutes and families needing welfare are the concern of the Department of Social and Community Development. Even smaller settlements usually have an officer from this department resident. The Drought Relief Programme provides subsidised labour to those families who have lost their crops to drought.

3.2.3 Electricity

Strictly speaking, this is a parastatal service. Only Maun currently has electricity. Elsewhere, secondary schools and some businesses rely on generators. It is thought that Rakops will soon be linked into the national grid.

3.2.4 Telecommunications

Telephones in north-western Botswana are linked to a microwave system and are of very high quality. Lines are also used for fax and internet/e-mail connections. Services are available in most settlements from Mohembo southwards on the south-western side of the Delta. Seronga, on the north-east of the river, also has telephones. Along the Boteti River, only Rakops and Motopi have telephone links. Throughout the study area there are very few private lines. Most belong to government departments. In Maun, the business sector accounts for a large proportion of lines. (Like electricity, telecommunications is provided by a parastatal organisation.)

3.2.5 Police and Justice

Most small settlements have 2 Tribal Police officers attached to the village Tribal Authority. In most small villages the chief is authorised to settle civil disputes. Police stations are found in most larger villages. Maun has a customary court, a magistrate's court and 2 prisons.

3.3 Economic Infrastructure

3.3.1 Shops and markets

Large and regular markets are not a feature of Setswana culture. However, street vendors are found in all settlements. Most of the products they sell are non-perishable food and cleaning staples. Fresh produce is often difficult to find away from the main centres such as Maun. Settlements with more than 500 people are usually supplied by a co-operative general dealer.

It is only in the main centres such as Maun that specialised shops (clothing, furniture, etc.) are found.

3.3.2 Tourist facilities

Tourist lodges tend to be isolated. Most tourist activities take place away from settlements. Maun, as the major point of access to the Delta, is the main beneficiary of the tourist industry. Curio shops, travel agents and hotels are located here.

3.3.3 Other industries and services

To a large extent, all other industries exist to support tourism. These include garages, office supplies shops, accounting services, etc. Small projects such as smithing, dress-making and bakeries do exist in most of the larger villages, but this is of little economic significance beyond the household level. The basket industry is centred around the HaMbukushu women in the Etsha villages. Most sales are through a single company which is based in Gaborone. Along the panhandle, *Pterocarpus angolensis* (mukwa) trees supported a number of pit sawyers until recently. However, commercial use of these trees has been frozen.

3.4 Infrastructural Issues

The remoteness of such a large percentage of the population is both a cause and effect of the lack of government services.

Economic assets tend to be concentrated in the hands of a few people. In the case of tourism and its related activities, these few people are mostly ex-patriates. This issue has become a political one in recent years, and is a constant source of social tension in the study area.

4 HOUSEHOLD STRUCTURES

Household structures are important because in most cases they are both economic and social units.

4.1 Heads of Households

In Botswana, and particularly in the rural areas there are few households headed by women in their own right. Female-headed households are worse off not only because men are considered to be major decision-makers, but also because such households tend to be smaller and do not have access to a third generation. Women heading households in their own right are left with the double burden of rearing children and earning a living. In addition, because they are smaller, they are less able to have diverse sources of income (see Section 4.2).

Table 6: 1991 Gender of Household Heads as Recorded by CSO

Region	% of Households Headed by Men	% of Households Headed by Women ⁺
Ngamiland North	43%	57%
Ngamiland South	52%	48%
Ngamiland Delta*	-	-
Central Boteti	46%	54%
Country Total	53%	47%

⁺ Unfortunately no break-down is given for whether women are heads of household in their own right or in the absence of their husbands. This issue is important because the former tend to be much worse off.

* Data not available, figures probably similar to those of Ngamiland South

Studies were done by the University of Utrecht (van Hoof *et al.*, 1991 and University of Utrecht, 1993) in Ngamiland's Second Communal Development Areas (east and west of the Okavango River). They recorded that the percentage of households headed by men is more than 60 % in nearly all settlements in the areas.

Although data do exist on percentages of male- and female-headed households with members involved in crop production and in livestock farming, they are not available in printed reports. Most households will have some arable land, and some livestock. Generally, female-headed households are likely to have fewer cattle, while still having access to small-stock.

The proportion of all households with no cash-earners is very high. In Table 7 it appears as though a higher percentage of households in Ngamiland South and Central Boteti have a cash-earner than at national level. However, this is largely due to the influence of Letlhakane (which lies beyond the study area) and Maun. These towns have greater employment opportunities because they are district administrative centres.

Table 7 also shows that, with the exception of those in Ngamiland South, female-headed households are less likely to have a cash-earner than male-headed households.

Table 7: 1991 Households with one or more Cash-earner (from CSO data)

Region	% of Male-headed Households with Cash-earner(s)	% of ⁺ Female-headed Households with Cash-earner(s)	% of All Households with Cash-earner(s)
Ngamiland North	47%	32%	37%
Ngamiland South	60%	68%	52%
Ngamiland Delta*	65%	30%	60%
Central Boteti	73%	54%	62%
Country Total	75%	54%	45%

⁺ Unfortunately no break-down is given for whether women are heads of household in their own right or in the absence of their husbands. This issue is important because the former tend to be much worse off.

* Data not available, figures are consultant's estimates

4.2 Household Size and Labour Availability

Households are typically large: in smaller settlements they have on average 7 members². They also usually incorporate three generations. Were it not for this, the number of female-headed households would probably be much higher. In many cases where men are absent, they are from the second generation, and the male head of household remains to represent the interests of his family.

A larger household allows labour resources to be pooled. The household can spread its income risks by being involved in more than one economic activity. This is particularly important where people are still reliant on (marginal) subsistence activities for a large portion of the household's food income. Typically, households need members who can share in crop production, care of livestock, collection of veld products, fishing and hunting. In remote areas such as along the Okavango Delta and its rivers, dependence on natural resources is high. For example, reeds, thatching grass and poles must be used for building houses because manufactured alternatives are not available. Both the collection and the processing of such items are labour intensive.

The large household as an economic unit is under increasing pressure. Children who would traditionally have carried out certain tasks such as herding, are now absent at school. The need for cash has encouraged younger adults to leave their home villages.

4.3 Major Issues Surrounding Changes to Household Structures

Households are likely to get smaller. A major problem facing them is a reduction in labour availability. This is particularly true for *de jure* female-headed households. Because the main activities of crop production and livestock-keeping are marginal, households need to keep a diversified economy. This is not possible without a large labour pool. At the same time, it is becoming increasingly difficult for people to survive outside the cash economy.

² These figures are skewed in CSO reports because of the use of the "mean" for averaging in census data analysis, in which the number of people are simply divided by the number of households. All larger villages have government workers who tend to live alone. If these people are excluded from analysis, or if an alternative method such as the "mode" is used, households are generally found to be large.

5 ECONOMIC ACTIVITIES

As noted above, a large portion of a household's income is as direct subsistence rather than cash. However, there is a growing need for cash at the household level.

5.1 Cash Income and Wage Employment

Most cash income is in the form of wage labour. Only a very small minority own small businesses such as trading stores or bars, or provide skilled services (see Section 3.3). Larger businesses, especially those in the tourist industry, tend to be owned by ex-patriates or citizens from other parts of the country.

Much wage labour is outside the study area, in larger centres and at mines elsewhere in Botswana or in South Africa. Little information exists on what proportion of work is located in the Delta, although statistics would not be difficult to obtain for analysis. Most employment takes place outside people's home villages, so migration is an issue even within the study area.

Table 8 shows cash employment for those resident in the study area. It must be remembered that this is summary data, and the inclusion of large centres both within and beyond the study area (Maun, Letlhakane, etc.) will affect the data for smaller settlements.

Table 8: Men and Women in the 15-64 Age Group Working for Cash in 1991 (CSO data)

Region	% of Men Aged 15-49	% of Women Aged 15-49	% of Total Population Aged 15-49
Ngamiland North	47%	51%	48%
Ngamiland South	65%	64%	64%
Ngamiland Delta*	-	-	-
Central Boteti	70%	63%	67%
Country Total	73%	69%	71%

* Data not available, figures probably lie between those for Ngamiland South and Ngamiland North

Wage labour within the study area tends to be concentrated in administrative centres (e.g. Maun, Gomare, Rakops), and in association with tourism activities. New Camp (and other lower Boro villages), Sedibana, and Ditshipi are settlements where people seeking casual employment in mokoro-based tourism are concentrated. Employment by tour operators accounts for a high proportion of jobs, but is rivalled by government employment particularly when including subsidised labour projects.

The seasonal nature of tourism is well suited to those people from households with a mixed economy. During summer few tourists visit, and some lodges shut down from December to February. It is during this off-season that many people need to return home to plough and plant crops.

5.2 Crop Production

This activity is heavily subsidised by the Botswana Government. Without these subsidies, arable agriculture would in most cases not be viable. Erratic rainfall, poor soils and depredation by wild animals are serious constraints to farming. In many instances the

involvement of people in crop farming is based on traditional and historical practices dating back to when people lived in more fertile places with higher rainfall.

Main crops in all areas are sorghum, millet and maize, with some inter-cropping of melons and sweet reed. Cow-peas are also grown. Although attempts have been made to introduce row-planting, the majority of farmers continue to sow by broadcasting.

Along the Boteti river, the average field size per household is small, ranging between 0.3 to 5 ha. Both dryland (rain-fed) and *molapo* (flood recession) fields are cultivated. Soils in the latter are more fertile with a higher potential productivity. Even in years of sufficient rain and/or flood, yields tend to be low at an average of 2 to 3 bags/ha. In recent years this limited crop farming has been further reduced by successive drought and dry river conditions. Nearly all *molapo* land has been allocated. While there is a lot of dryland available, poor soils and unpredictable rain make it an unappealing option.

In the northern parts of the Delta, most people tend to rely more on rains than on floods for crop irrigation. Average rainfall along the panhandle is higher than in the regions further south. Field size per household tends to be larger in the western than in the eastern villages (an average of 4.98 ha as opposed to an average of 3.75 ha). This is partly due to ethnic differences: HaMbukushu and BaYei tend to have larger fields than BaSarwa, for example. BaYei fields are also usually closer to the river. As with the Boteti region, crop yields are low at about 2 bags/ha on average.

No recent documentation has been (currently) located for crop production in Ngamiland South, although good records are kept for all regions by the Regional and District Agriculture Offices. Various localised reports from the 1970's and 1980's indicate that the further south and west people live, the less people are engaged in arable agriculture. This is in part due to decreasing viability linked to decreasing average rainfall and floods. However, the main reason is that the people living further south such as the BaTawana and OvaHerero are more involved in livestock farming.

The average field size per household is probably similar to those in other regions, although BaYei settlements are likely to cultivate larger areas. For example figures of 2 ha are given for Etsha, and 4 ha for Shorobe (Bendsen, 1983 and 1987).

Hardly any crop production takes place in the settlements of the Ngamiland Delta region. This is primarily due to depredation by wild animals, and more recently because of land use policies (see Section 7).

5.3 Livestock Production

Cattle are the main livestock animals. Small stock, particularly goats, are also common but not valued as highly. Donkeys are owned but infrequently used for transport and rarely for ploughing. Regular livestock censuses are carried out, but these do not record ownership. As with elsewhere in Africa, cattle are more than an economic asset. They also provide social status, and are of cultural importance beyond monetary value.

In Botswana the average number of cattle per household provides a misleading picture of the socio-economic situation in most settlements. This is because ownership of cattle is concentrated in the hands of very few people. More than 60% of households in most settlements do not own enough cattle to plough (6 head). Female-headed households are also

far less likely to own cattle. As noted in Section 1.1, ethnic distribution is also an important factor in the distribution of cattle.

In Ngamiland in 1995 and 1996, all cattle were slaughtered as part of a campaign to eradicate Contagious Bovine Pleuro-Pneumonia (CBPP). Restocking has begun, but it is thought that most small farmers will have taken all their compensation as cash, and that it is mostly the few larger herd owners who will have waited to be re-supplied with cattle. Detailed records of this exercise are being kept, and with appropriate authorisation can be released.

Cattle in Ngamiland North are usually not kept at separate cattle posts, but rather near the arable lands. They are generally not herded. However, in the villages east of Seronga this is not the case, due to the high risk of predation. Much of the value of cattle in this area is from the draught power and milk they provide. The majority of people do not sell cattle on a regular basis, but only when they need cash. Most of the people living in this area do not have a long history of pastoralism.

Most BaTswana and OvaHerero live in Ngamiland South, so livestock keeping is of extreme social and economic importance in most settlements in this region. Cattle farmers are predominantly found in the south-west of this region, and this is where the larger herds are found. The distribution of cattle posts was originally determined by tsetse fly; now it is controlled by the presence of the so-called "buffalo fence", built to stop the spread of foot-and-mouth disease from wild animals to domestic stock. Floodplains provide good grazing, but access to these is limited by the fence, diseases and in some years by high floods. The buffalo fence has also provided cattle farmers with some protection from predation.

As with elsewhere in the country, boreholes supplying year-round water have opened up grazing areas away from surface water, particularly west of the Delta.

Cattle and goats are not allowed in the Ngamiland Delta region. This region falls within the buffalo fence.

In the Boteti region, little information about cattle ownership has been collected, but the skewed distribution across households seen elsewhere in the country probably exists. Due to labour shortages, cattle are generally not herded. After being let out to graze in the morning, they return to the river to drink in the evening before being kraaled. There is also some seasonal movement of stock from between the western sandveld and the river front. In addition, water from boreholes in the sandveld has opened that area to year-round grazing. Between Moreomaoto and Khumaga, predators are seen as a large threat to livestock. (The stretch of river between these settlements forms part of the western boundary of Makgadikgadi National Park.) Arntzen *et al* (1994) report that along the river, cattle are being replaced by small stock which are more affordable and which do better in dry conditions.

5.4 Natural Resources Use

Natural resources play a large role in the economy of people living in the study area. Of major importance are resources used for building, such as reeds, thatching grass and poles. Fish are a key source of protein, and many fruits are collected and eaten. Palm leaves are used for making baskets.

Until recently, natural resources use has predominantly been a subsistence activity. The main exception to this is the basket industry based in the Etsha villages. In the last few years there

has been a rapid growth in the commercialisation of thatching grass, reeds and fish. This is worrying because such goods are being extracted at little cost, and then sold for a much higher amount with very little labour-value added. Traditional brewing of beers and palm wine have also become small commercial industries.

No quantitative data exist on natural resources use. Good summaries of the types of Delta resources and their uses can be found in Murray-Hudson *et al* (1994) and in Okavango Community Consultants (1995). Some mapping of the location of certain key species such as thatching grass was done for the Ecological Zoning study (SMEC, 1989). Cunningham (1992) and Terry (various dates) have recorded extensively the plants used in basket-making. A list of main veld products in the Boteti River area is given in Arntzen (1994).

5.5 Major Issues Surrounding Economic Activities

Of serious concern is that the use of natural resources is not properly monitored or regulated. This issue is particularly important with the increase in commercial off-takes of certain key resources. The depletion of palms and dye-producing plants due to the commercialisation of basketry has been well documented. Currently, large quantities of thatching grass and reeds are being collected for sale in larger villages. Information on the location, extent, seasonality and frequency of off-take is urgently needed.

The continued subsidisation of arable agriculture is problematic. It discourages people from looking at more appropriate land-use alternatives, and at national level fuels the conflict between government departments with different ideas of sustainable development of the Okavango Delta and its outflow rivers.

The skewed distribution of cattle is symptomatic of the growing gap between the rich few and the poor majority. It is problematic for two reasons:

- The majority lose - in practice - access to and use of land that is theoretically “common” or “tribal” land,
- Rich people also tend to be those who make decisions, at both national and community level. They may also make land use decisions that do not reflect the wishes and needs of those who are most dependent on the resource base.

6 SOCIAL AND ECONOMIC STRATIFICATION

Economic stratification in Botswana is related to remoteness and ethnicity. This is because development has (obviously) been focused on more viable areas. Poverty and remoteness are therefore linked through the limited potential of the land. For various historical reasons, the inhabitants of these marginal areas are largely BaSarwa, who have also lost their traditional nomadic lifestyle without having found adequate alternative means of income.

At the same time economic stratification also occurs within villages. The rich-poor gap is reflected at community, regional, district and national levels.

Social stratification largely follows economic lines, without necessarily being caused by differences in wealth. In the rural context, historical dominance of some ethnic group by others has been reinforced by ownership of cattle. Those who own cattle have status, and only some groups have a tradition of pastoralism. While cattle ownership would be a very useful single indicator of wealth and social stratification, accurate data on this is hard to locate. Even field surveys would yield questionable results as cattle ownership is regularly mis-represented to protect owners from taxation and intrusion into what is considered a private matter.

Increasingly other factors are playing a part in changing economic and social status. Better health and an education have long been regarded by the Botswana Government as the first steps to improving people's living conditions and options. The need for cash has further increased people's desire for basic reading and writing skills.

6.1 Wealth

Few useful existing indicators on wealth at regional level were found. Part of the problem is that it is difficult to distinguish between whether resources are unavailable or merely unaffordable. Table 9 and Table 10 show clearly that the further north-west one travels, the more people have to rely on cheaper and more readily available sources of fuel. It is thought that the completion of the new tar road from Maun to Molembo since 1991 may mean that regional disparities will decrease.

Table 9: 1991 Principal Fuels Used for Lighting (from CSO data)

Region	% Households Using Paraffin	% Households Using Wood	% Households Using Candles
Ngamiland North	28.7%	48%	17.6%
Ngamiland South	58.2%	12.3%	18.3%
Ngamiland Delta*	-	-	-
Central Boteti	59.8%	30.1%	6%
Country Total	64.5%	11.8%	11.8%

* Data not available, figures probably lie between those for Ngamiland South and Ngamiland North

Table 10: 1991 Principal Fuels Used for Cooking (from CSO data)

Region	% Households Using Wood	% Households Using Paraffin	% Households Using Gas
Ngamiland North	94.9%	0.8%	4.1%
Ngamiland South	81.5%	3.6%	13.5%
Ngamiland Delta*	-	-	-
Central Boteti	66.6%	8.5%	23.2%
Country Total	31%	10.7%	21.6%

* Data not available, figures probably lie between those for Ngamiland South and Ngamiland North

While living closer to the Delta may provide people with greater food security, it does not appear to have a significant relationship to wealth.

6.2 Education

Education is also to some extent related to remoteness and ethnicity. Children from the smaller ethnic groups, particularly Basarwa, are also less likely to attend school. This is partly due to language difficulties: teaching in primary schools is done in Setswana.

Table 11: Levels of education in 1991 (from CSO data)

Region	% of 7-13 year olds never attended school	% of 15-49 year olds attaining Form 1
Ngamiland North	29%	12%
Ngamiland South	15%	22%
Ngamiland Delta*	-	-
Central Boteti	18%	20%
Country Total	12%	27%

* Data not available, figures probably lie between those for Ngamiland South and Ngamiland North

Only in Ngamiland South was there a difference between the proportion of men and women attaining Form 1 education, with the percentage of women slightly higher.

6.3 Health

While limited access to health facilities may play some part in the poorer health of those in Ngamiland North, the presence of diseases less prevalent elsewhere is probably also a cause. Malaria is endemic in all of the regions, but has a much higher incidence in Ngamiland North. This is probably due to higher rainfall and temperatures.

Table 12: 1991 Life expectancy and Infant Mortality Rates (from CSO data)

Region	Life Expectancy (years)	Infant Mortality (probability of dying before age 5)
Ngamiland North	55.3	132/1000
Ngamiland South	62.9	76/1000
Ngamiland Delta*	-	-
Central Boteti	65	63/1000
Country Total	65.2	62/1000

* Data not available, figures probably lie between those for Ngamiland South and Ngamiland North

The infant mortality rate in Ngamiland North is more than double the national figure. Malnutrition and unattended births are probably major contributing factors.

6.4 Implications of Stratification

The issue raised in Section 5.5 on the potential for cattle owners to gain *de facto* control over common resources is important here too. Both traditional and western systems of economy are probably going to increase wealth disparities.

7 ACCESS TO AND CONTROL OF RESOURCES

All the land in the study area is tribal land. Previously rights and access to land and the resources on it were controlled by the Chief. The Chief, directly and through his headmen, acted as main custodian of the land in trust for the benefit of the tribe. According to Schapera (1938) the BaTswana utilised their land in many ways, some of which were:

- residential purposes
- arable farming
- stock grazing
- hunting
- gathering
- collecting firewood
- cutting trees and grass for building
- water use
- fishing
- collecting soil for building and making pots
- using plant material for medicine and basket-making.

Customary use of these resources continues today. Schapera (*ibid.*) notes that it was only for residential and arable purposes that allocation of land by the Chief was required. Grazing land was (and in most cases still is) held communally. Other uses of the land's resources were generally not controlled.

Some restrictions were, however, placed on the use of certain resources. For example, reeds and thatching grass should not be harvested before they had set seed. Hunting and tree felling were also subject to conditions set by the Chief. To a large extent, most natural resources were considered common property.

The idea of common property of and traditional rights to natural resources continues today. For example, in 1993/4 the first of several large areas of land in and around the Delta were to be leased out to safari operators for commercial use. There was a outcry in response to the perceived threat that land was being stolen from the people, and that their "traditional rights" would be removed. (A document - Murray-Hudson *et al.*, 1994 - was produced to clarify the situation and it provides a useful synopsis of the laws governing various resources and attempts to define traditional rights in terms of natural resources use.)

The current legal situation of access to and control over resources is described below. Sections 7.1 and 7.2 were taken from Murray-Hudson *et al.*, 1994.

7.1 Relevant Legislation

7.1.1 The Tribal Land Act (Cap. 32:02)

The actual land use types of tribesmen in tribal areas did not change when the Tribal Land Act (TLA) was set into operation in 1970. The TLA shifted the responsibility of controlling, allocating and administering tribal land from the Chiefs to the tribal Land Boards which it established.

The main object of the TLA was thus to establish Land Boards and vest title to tribal land in them, "for the benefit and advantage of the tribesmen of that area and for the purpose of promoting the economic and social development of all the peoples of Botswana" (Section 10, our emphasis).

Two systems governing the granting of land rights in tribal areas have been established.

1. Customary land tenure reaffirms those rights of citizens which were previously controlled by the chief, with exemptions to non-citizens grantable by the Minister. Customary law grants can only be made for residential, arable and, to a small extent, grazing purposes. There is no specific provision for granting land for gathering or hunting purposes. Historically, as it has been noted above, any member of the tribe was entitled to have access to hunting and gathering areas and could generally use wood, fruits, fish, grass and other natural resources without permission. It should be noted that once a right or obligation is officially recorded, it falls in the domain of statutory law, and is no longer customary.
2. Common law land tenure covers those sections not covered under customary law, namely: trading, manufacturing or other business or commercial purposes (Section 20). Under Section 24 the Land Board has power to grant rights to land for these purposes to any person whether citizen or non-citizen.

Section 17 of the amended TLA (1993) imposes a further duty on the Land Board - to define land use zones within the tribal areas. The Okavango and Kwando Wildlife Management Areas (WMAs) are part of this land use zoning.

Conflict Resolution Mechanisms

The TLA has made provision for the resolution of disputes. Prior to the 1993 amendment to the Act, disputes or appeals from subordinate land boards went to the main land board and thereafter appeals were heard by the Minister. Now, in terms of section 40 of the amended Act, the Minister has been empowered to establish land tribunals for the resolution of land disputes. Pending the establishment of these tribunals, any appeal to the Minister or any dispute should now be lodged with the District Commissioner.

7.1.2 The Wildlife Conservation and National Parks Act 28 of 1992

This Act is of fundamental importance to land use in the study area. It delineates national parks, game reserves, Wildlife Management Areas (WMAs) and Controlled Hunting Areas (CHAs). *The Minister is empowered to make regulations controlling, among other things, the erection of any building, or the residence therein of any person, the size of settlements, the grazing of stock, cultivation of land, or the entry or presence of persons in the area.* The director of DWNP is bound to consult Land Board and Council under Section 15(4) where his duties relate to the development of the Wildlife Management Areas, their management plans and their administration.

CHAs are established under Section 16 of the Act. Hunting in a CHA is regulated by Section 16(3). According to this provision, all hunting licenses are issued specific to a particular CHA.

It is important to note that whereas the land board has the power to grant rights to use land in WMAs or CHAs, it does not have the power to grant rights to utilise the wildlife resources in the areas. This authority lies with the Department of Wildlife and National Parks. Written permission to enter land for the purpose of hunting must be obtained from the owner or occupier of that land (Section 49(1)), unless the owner/occupier or his representative accompanies the person wishing to hunt. This places the control of hunting on any land with the owner/occupier. However, in the case of tribal land, Section 53 of the Act states: "Where under this Act the authority or permission of the owner or occupier of land is required for the doing of an act, such authority or permission shall, in the case of any tribal area, unless otherwise specifically provided in this Act, be valid for the purposes of this Act only if given by the land board established in respect of that tribal area, or by any person authorised by that land board to give such authority or permission." Under section 53, the Land Board can overrule stipulations made by the lessee, provided that the lessee is not substantially prejudiced by the giving of such permission.

Another provision of this Act which merits attention is Section 30. This deals with the issuing of special licenses to persons who are principally dependent on hunting and gathering veld produce for their food. In terms of this provision the Minister is empowered to make regulations specifying, among other things, the number of animals and the area where the license holder is to hunt. A holder of a license in terms of this provision is therefore exempt from the conditions of Section 16(3). This has implications for resource management, as no legal mechanisms exist requiring returns of details regarding offtake (see Chapter 3 below).

7.1.3 The Agricultural Resources Conservation Act (Cap. 35:06)

This Act is significant to the control of natural resources. Section 2 of the Act defines agricultural resources as animals, birds, plants, waters, soils, vegetation and vegetation products, fish, insects, etc. The Act has established an Agricultural Resources Board whose duties include:

- the supervision of the agricultural resources of Botswana,
- advising the Minister of Agriculture on supervision of resources and on the nature of legislation necessary to secure or promote the proper conservation, use and improvement of agricultural resources,
- issuing conservation orders and making conservation regulations, and, more importantly,
- under Section 9(h) of the Act, the Agricultural Resources Board may, after consultation with the land board and the district council, give directions to such land board concerning the proper use of any land within such tribal area. In terms of Section 21(d), any conservation committee established by the Minister may recommend restrictions to be attached to the granting of both customary and common law land rights.

It can be seen that although the land board is the owner - in trust - of tribal land, it can be directed by the Agricultural Resources Board on how such land should be used to promote the conservation of resources in or on the land. Thus the Agricultural Resources Board carries considerable power, and is the primary body concerned with control over natural resources.

7.1.4 The Herbage Preservation Act (Prevention of Fires) Act (Cap 38:02)

This Act was established to prevent and control bush and other fires. It is important because the issue of veld burning is a potential source of conflict between the lessee and traditional users of the area. In terms of section 4 of this Act, no person may set to any vegetation on land of which he is not the owner or in lawful occupation. Since the Act makes no specific reference to tribal land, it may be assumed that the lessee is the lawful occupier, and no vegetation burning can be undertaken without his permission.

7.1.5 The Water Act (Cap 34:05)

This Act states that there shall be no right of property in public water. Section 5 entitles any person while at any place where he has lawful access (see TLA above) to a public stream or to a natural lake, pan or swamp, to take and use public water therein for the immediate purpose of watering stock, drinking, washing, cooking, or for use in a vehicle.

7.1.6 The Tourism Act 22 of 1992

This Act was enacted to regulate and develop the tourism industry. The Act has set up the Tourism Industry Licensing Board to grant licenses for the conduct of tourist enterprises or activities. This Act is relevant to the wildlife management leases because it is one of the pieces of legislation that will enable the lessee of the CHA to put the purpose of the lease into effect.

7.1.7 The Forest Act (Cap 38:04)

This legislation deals with the establishment of Forest Reserves. On tribal land, this can only be done with the approval of the relevant land board. The declaration of any tree as a protected species on any tribal land can only be made with the approval of the land board (Section 11(1)(a)). The Act only controls the use of forest produce in all Forest Reserves, whether on state, private or tribal land. Although Section 13(b) clearly provides for subsistence use of such produce, it is of little relevance here.

7.1.8 The State Land Act (Cap 32:01)

This Act applies to land that was characterised as Crown land prior to independence. The power to grant rights to use land in these areas is vested in the President. Certain settlements are allowed on state land, and the State has the power to decide what communities should or should not settle on this land. The Act is of concern only in terms of the possible acquisition of tribal land by the state under Section 32(1) of the Tribal Land Act.

7.2 Discussion of Rights and Use

In this section, a discussion of the issues involved with the legally prescribed and actual levels of traditional resource use is given. In the context of the multiple use CHAs, it is important that a clear understanding is reached of how traditional use and the lessee's use are related. This can only be done when an acceptable definition of the parameters of traditional resource use is found. This discussion only presents the issues in an attempt to initiate some thought and direction for research.

7.2.1 Traditional Rights

Traditional rights are usually linked to historical practices, and form part of a complex social system of duties, responsibilities and benefits. It is considered that customary may be a more appropriate description of the rights being exercised, since this is the term used to describe the law system. In this discussion the terms are interchangeable.

One view is that customary rights to the resources of an area accrue as a result of habitation. People who have lived in an area for any length of time have rights to the resources in a given area extending out from the centre of their settlement. In the case of semi-nomadic people, rights would refer to the resources within their range. This has particular relevance to the historical patterns of habitation and movement of people in Ngamiland, and the waves of immigration. The influences of biotic factors such as the rinderpest pandemic and tsetse fly are also important (see Chapter 1 above).

Traditional use rights, then, are the rights that inhabitants of tribal areas have, by custom, to use natural resources as part of their livelihoods. Historically, rural people in and around the WMAs have used the resources not only for their own consumption or use, but also for exchange. In more recent times, these exchange activities have come to include a cash component.

Under the 1993 amendment to the TLA, customary land rights no longer have any tribal connotations, nor are they geographically determined. These rights now belong equally to all BaTswana. Specific protection for local residents within or peripheral to the CHAs does not exist. This affects all parties concerned. In the Wildlife Management Lease the Tawana Land Board undertakes to limit further extension of agricultural use of these areas, and to create optimum conditions for the lessee's business. Citizens who are locally resident have no more right than the rest of the nation, and may have to compete with them for resources that are a critical part of their economy. This also raises the crucial issue of the potential for over-exploitation of resources, due to the "tragedy of the commons" phenomenon ("communal area means that nobody has to ask anybody" - Habu farmer, in Bendsen and Gelmroth, 1983). The lessee's business depends on the ability to market an aesthetic quality - the "wilderness" appeal, which is sensitive to over-exploitation. The only legal recourse the lessee has over this issue is to the Agricultural Resource Conservation Act.

In terms of the TLA, customary rights appear to be dependent on the level of usage. Relevant rights include, but are not limited to:

- the right of residence
- the right of access
- the right of transit
- the right to harvest natural plant and insect resources
- the right to hunt
- the right to fish
- the right of casual use of public water.

The Tribal Land Act controls issues of residence. Hunting rights are regulated by the WC&NP Act. Customary rights to harvest veld products have no specific legislative provision on tribal land. Customary land rights are provided for under the Tribal Land Act. The right to use tribal land (including its resources) for commercial purposes is not a customary right, and must be granted under the common law provision of the TLA. This is a significant distinction and requires further clarification. As outlined above, traditional use of resources does involve trade. The point at which the traditional use of the natural resources becomes a commercial activity is clearly an important one both legally and for management purposes. However, because the range between pure subsistence (*sensu stricto*) and commercial use is broad and complex, without hard economic information, definition of this point is purely arbitrary. In strict economic terms, the two extremes of use types are as follows:

7.2.2 Subsistence Use

This is an idealised term in which the use of resources is seen as purely for the purpose of subsistence. In this model, therefore, subsistence use refers to use for the harvester's own consumption.

In reality, however, traditional resource use is not limited to immediate use. Closer definition thus requires an economic or financial definition of the point at which a household or individual economy makes the transition from subsistence to commercial.

Where this applies to the use of natural resources, this definition is further confined by the existence of certain legislation. Subsistence hunting can only be undertaken with a Special Game License, in terms of the Wildlife Conservation and National Parks Act. Offtakes of veld products at subsistence levels are currently not regulated (although a bye-law was proposed - GoB, 1992), with the exception of certain trees protected under the Forest Act. However, as noted above, the Agricultural Resource Conservation Act could be applied to limit the extraction of any natural resource.

7.2.3 Commercial Use

Use of a resource can be considered to be commercial when it is carried out at a level that allows for a profit to be generated. This means the realising of a return greater than the value of the investment (whether this be in terms of cash or time and effort). Commercial use falls outside the definition of customary law, and as such cannot be said to be a traditional right. Commercial utilisation of natural resources is bound by common or statutory law. Again, the most important legislation is the Wildlife Conservation and National Parks Act, and the Agricultural Resources Conservation Act.

From the above, it can be seen that a strictly economic definition of the terms subsistence and commercial is a false dichotomy which is not sensitive to the actual conditions of traditional resource use in northern Botswana.

Despite the legal importance of this distinction, in practical terms it does not require immediate definition. Use of a rigid financial or economic definition is both premature and undesirable in the framework of current policy and development initiatives such as the Wildlife Conservation Policy (1986) and National Conservation Strategy (1990, 1992). In addition to this, the resource base does not appear to be in any immediate danger of depletion (although very little is known about productivity and sustainable offtake levels). What is required is the institution of a process of research to determine a framework of use and offtake that will allow the integration of traditional and leasehold resource use in these areas. In the present circumstances, the distinction is better left flexible. Where uncertainty arises, this should be arbitrated by TLB according to the provisions of the TLA and judgement of the members of the board.

7.3 Discussion of *De Facto* Control of the Resource Base

Individual rights to land are given for residential and arable farming purposes. Presently there are no serious land shortages in rural Botswana, and most people have land for their personal use. Land held in this manner is only a small proportion of all communal land, and the rest can be used by anyone (within the limitations of the above-mentioned laws).

The law is quite clear that all citizens are equal in their rights to use the country's natural resources. However, not all people are in a position to take advantage of these rights. Differences in ability to use the resources can be seen in terms of gender, ethnicity and social class. These differences relate to the way the various groups of these three categories use the resource base. Women, BaSarwa, and non-cattle owners are less likely to be able to get what they need. Actual control of most resources is based on the "tragedy of the commons". People with less means of using the resource base tend to be squeezed out by those who can exploit it more fully. The latter are usually men, cattle-owners and from a dominant ethnic group.

7.4 Major Issues of Control of and Access to the Resource Base

Precisely because people retain the *right* to access while losing actual access, growing inequalities and marginalisation are not fully perceived. It is also those who depend most on natural resources use who are losing access to them.

8 GAPS IN INFORMATION

There are two levels of missing data. Firstly, there are areas in which no data have ever been collected, or where the data are not accessible. Secondly, there is a lot of “unprocessed” data available that has yet to be analysed or used. Often such information is in the form of statistical records kept by various government departments, and can be released under proper authorisation.

8.1 Demographic Data

Census data are recorded and stored at all levels from household upwards. However, only summary information has been published. A particular issue is that much information is only published for settlements of over 500 people. In rural Botswana few villages have reached that size. Data for smaller settlements could be obtained in digital format and analysed.

No information is collected on ethnicity. This would have to be gathered.

8.2 Economic Activities

Information on the extent of involvement in crop production is now being collected, but is not yet available in published form. These data include: number of farmers, number of fields/hectares per farmer and total area under arable crops.

Cattle census data are not easily available, but will be released with proper authorisation. There is no way of gaining an accurate picture of cattle ownership. This tends to be a touchy subject, and people lie and under-represent for fear of taxation and appearing much wealthier than neighbours. For the three regions in Ngamiland, quite detailed information has been collected as part of the re-stocking exercise, and this should allow for more accurate ownership data.

8.3 Social and Economic Stratification

Very little information exists on changes in the distribution of wealth and assets. In the few settlements where socio-economic studies have been repeated, it appears that wealth is being concentrated in the hands of a few. It is also not known to what extent resources are becoming controlled by these few.

No detailed socio-economic report has been found for the Boteti river settlements. Information such as the actual percentage ethnic composition, household structures, degree of participation in various economic activities is not available. A socio-economic baseline and land inventory study was carried out in the early 1990's (van der Maas *et al*, 1995³) by the University of Utrecht, but this has yet to be located.

³ This document has subsequently been located. For annotation, please refer to the bibliography attached to the Environmental Studies Botswana report.

8.4 Natural Resources Use

No survey on the extent of subsistence and commercial use of and dependency on key natural resources has been done. No quantitative data exist on rates of extraction for any plant species. This is an issue of major concern because of the large increase in commercial off-takes of reeds and thatching grass for sale in main centres such as Maun.

8.5 Maps and GIS Data

The last aerial photograph survey was carried out in 1991. However, this did not cover the whole region. Maps produced by the Department of Surveys and Mapping (DSM) are all based on surveys in the 1970's and early 1980's. This means that their representation of infrastructure is dated.

Recently DSM and some private sector companies have begun digitising these maps and generating new coverages from GPS data. It is not known whether the Department's digital data is publicly available. Private sector coverages tend to be job and study area specific. This means that they are often not complete at national or even district level.

9 APPENDIX 1 ASSESSMENT OF AVAILABLE DOCUMENTATION ON HUMAN ENVIRONMENT

Author	Date	Title	Publisher/Location	No Pages	Annotation	Ranking	Discipline
Afriyie, E.K.	1976	Human Resources of the Okavango Area: Some Implications for Development Projects	In: Symposium on the Okavango Delta, The Botswana Society, Gaborone	7	The paper intended to highlight human factors of the Okavango area, and their implications for the development of the resources of the Delta. Points included: location of people, social and cultural considerations, and major economic activities.	2	SOC
Arntzen J, Chanda R, Nkambwe M, Ringrose S, Sefe F, and C Vanderpost	1994	Desertification and Possible Solutions in the Mid-Boteti River Area, Volume 1	University of Botswana, Gaborone	164	The reports covers the Botswana case study for the Intergovernmental Convention to Combat Desertification (INCD). The specific objectives were: to determine the extent and the elements of desertification; to assess local perceptions about desertification and its consequences; and to involve the local population in assessing the desirability of abatement measures and the options for alternative sources of income.	2	SOC
Bendsen, H.	1985	Ngamiland Water Point Survey (computerised database)	Ngamiland DLUPU, Maun / DTRP, Gaborone		Survey of known water points in Northwest District.		PHYS
Bendsen, H.	1987	Land Use Trends and Problems in the Shorobe Area	MoA, Gaborone	21	The report was done to provide background information to support the Molapo Development Project. It concentrates on the spacial distribution aspects of certain activities as well as trends and problems in the project area.	2	SOC
Bendsen, H.	1983	Land Use Planning Ngamiland Communal First Development Area	MLGL&H, Gaborone/Tawana Land Board, Maun	163	The report provides an assessment and analysis of land use needs of the local communities, the formulation of planning aims, and the designing of alternatives and planning proposals. One of the main components of the report is a detailed land use map.	3	SOC
Cambell, A.C.	1976	Traditional Utilisation of the Okavango Delta	In: Symposium on the Okavango Delta, The Botswana Society, Gaborone	11	Discusses the history of settlement, environmental changes, rights of land use, fishing, hunting and gathering, and agricultural activities.		SOC

Author	Date	Title	Publisher/Location	No Pages	Annotation	Ranking	Discipline
Cassidy, L.	1997	Socio-Economic Models of Representative Households in Selected Settlements Associated with the Controlled Hunting Areas Designated for Community Use	IFAD, Rome / c/o Ecosurv, Gaborone	8	Compares typical households in 5 rural settlements in terms of sources and amounts of food and cash income. Attempts to relate this income to the country's Poverty Datum Line.		SOC
Central Statistics Office	1992	Population of Towns, Villages and Associated Localities in August 1991	CSO, Gaborone	314	Provides basic demographic data for all villages and settlements giving total population, number of males, and number of females. Codes are given for a definition by land use type of each locality, such as urban area, lands, cattle post, etc.		SOC
Central Statistics Office	1983	Guide to the Villages and Towns of Botswana - (1981 Population and Housing Census)	CSO, Gaborone	407	Provides basic demographic data for all villages and settlements giving total population, number of males, and number of females. Codes are given for a definition by land use type of each locality, such as urban area, lands, cattle post, etc. For larger villages infrastructure is also described.		SOC
Central Statistics Office	1994	Summary Statistics on Small Areas - Vol. 5 (1991 Population and Housing Census)	CSO, Gaborone	503			SOC
Central Statistics Office	1995	Household Income and Expenditure Survey: 1993/4	CSO, Gaborone	212	Provides summary data for different settlement types on consumption patterns, sources of income, income levels, etc.		SOC
Central Statistics Office / UNICEF	1994	Selected Statistics for Villages and Localities in Ngamiland District - 1991 Population and Housing Census (Vol. 2.8)	CSO / UNICEF, Gaborone	10	Presents in tabular form selected statistics from the 1991 census. These are for major villages (i.e. population more than 500) and include enrolment in formal education, gender of household heads, cash income, disabilities, access to toilet facilities and access to potable water.		SOC
Central Statistics Office/UNICEF	1994	Selected Statistics for Villages and Localities in Central District - 1991 Population and Housing Census (Vol. 2.7)	CSO / UNICEF, Gaborone	33	Presents in tabular form selected statistics from the 1991 census. These are for major villages (i.e. population more than 500) and include enrolment in formal education, gender of household heads, cash income, disabilities, access to toilet facilities and access to potable water.		SOC

Author	Date	Title	Publisher/Location	No Pages	Annotation	Ranking	Discipline
Central Statistics Office/UNICEF	1994	Selected Demographic and Socio-economic Indicators, National Summary Data by Districts - 1991 Population and Housing Census (Vol. 1.0)	CSO / UNICEF, Gaborone	38	Presents in tabular form selected statistics from the 1991 census. These are for main census districts only but provide overviews on: enrolment in formal education, gender of household heads, cash income, disabilities, access to toilet facilities and access to potable water.		SOC
Cunningham, A.B.	1992	People and Palms: palm cultivation evaluation and review of basketry resources management in Ngamiland, Botswana (1972-1992)	Botswanacraft, Gaborone	31	The study arose as a result of pressure on the various veld products used in basketry. It addresses issues of palm cultivation and dye resources.	2	SOC
Ecosurv	1988	Field Investigation into the Mokoro Industry	KCS, Gaborone	22	The study aimed at to assess of the impact of mokoro production on the riparian woodland of the Okavango, and to examine alternatives to sustained resource availability.		SOC
Ecosurv (Pty) Ltd	1997	Social and Ecological Status of Controlled Hunting Areas for Community Use	IFAD, Rome / DWNP, Gaborone	181	An extensive description and assessment of all controlled hunting areas in Botswana set aside for management by local communities. The document provides an outline of the legislative and institutional issues and an overview of CBNRM. It provides a methodology for ranking and comparing the areas and a summary of current status of the controlled hunting areas. An annex for each area describing characteristics, environmental conditions, legal status, socio-economic characteristics, wildlife status and a map is given.		PLAN
Fisheries Unit (GoB)	annual	Fisheries Unit Annual Reports	MoA, Gaborone	10	These reports detail the activities of the Government Fisheries Unit as they implement the development and management of the country's fish resources. Progress and constraints in commercial fish production and extension programmes are documented.		SOC
Government of Botswana	1996	Tourism Act (Act No. 22 of 1992)	Government Printers, Gaborone	12	A regulatory act requiring all tourist enterprises to be licensed. This act enables the National Advisory Council on Tourism to administer the implementation of various aspects of the Tourism Policy (also in this bibliography).		REGU

Author	Date	Title	Publisher/Location	No Pages	Annotation	Ranking	Discipline
Government of Botswana	1979	Unified Hunting Regulations (SI No. 19)	Government Printers, Gaborone		An attempt to simplify the hunting licensing system and to make it more equitable resulted in the promulgation of the Unified Hunting Regulations (UHR), giving all citizens theoretically equal access to wildlife resources on hunting quotas throughout the country. Remote area dweller (RAD) subsistence hunters were first licensed to hunt under the UHR, but were restricted to use of traditional weapons and were not allowed to trade freely in wildlife products, as was originally proposed.		REGU
Government of Botswana	1970	Tribal Land Act (Cap 32:02) 1968 as amended by Act No. 48 of 1969; Tribal Land S.I. of 1970; Land Regulations S.I. No. 7 of 1970	Government Printers, Gaborone	15	An Act whose main object was to establish Land Boards and vest title to tribal land in them "for the benefit and advantage of the tribesmen of that area and for the purpose of promoting the economic and social development of all the peoples of Botswana." The 1993 amendment changed (among other things) the use of the wording "tribesmen of that area" to applying to "all peoples of Botswana". A far-reaching and powerful set of legislation, as Land Boards are responsible for the use and management of the land, particularly when applied in conjunction with the Agricultural Resources Conservation legislation.		REGU
Government of Botswana	1995	Local Authority Key Issues Papers for District Development Plan 5 and Urban Development Plan 1 - April 1997 to March 2003	MLGLH, Gaborone	184	The document details the key (development) issues for districts and urban areas in Botswana to form the basis of the District and National Development Plans. The document is developed from consultation at the village level through the participation of various committees.		PLAN
Knight Piesold Botswana / Natural Resource Services (Pty) Ltd	1994	Riverine Transport Study - Final Report : Volume 1 - Main Report	Dept. of National Transport & Communications, Gaborone	68	The objectives of the study were to survey the present physical and legal water transport situation, determine future demands, and prepare drafting instructions for a Riverine Transport Act and Regulations.		SOC
Knight Piesold Botswana / Natural Resource Services (Pty) Ltd	1994	Riverine Transport Study - Final Report : Volume 2 - Appendices	Dept. of National Transport & Communications, Gaborone	122	This volume contains field survey reports, including traffic surveys, operation surveys, perceived impact survey and a physical survey for evidence of environmental damage. It also summarises existing legislation and regulations relating to water traffic.		SOC

Author	Date	Title	Publisher/Location	No Pages	Annotation	Ranking	Discipline
Knight Piesold Botswana / Ecosurv	1994	Environmental and Archaeological Impact Studies for Selected Road Projects: Rakops - Motopi	Dept of Roads, Gaborone	75	Details potential impacts on the environmental, socio-economic and archaeological aspects of the area following the Boteti River from Motopi to Rakops. Contains useful descriptions of existing land use and settlement.		ECOL
Lambrecht, F.	1968	Notes on the History of Sleeping Sickness	Botswana Notes and Records, Vol. 1, pp 41- 49, The Botswana Society, Gaborone	9	Historical distribution of Tsetse fly, sleeping sickness and nagana in Africa and specifically in northern Botswana are discussed. Limited distribution following the rinderpest epidemic, medical surveys and efforts to limit the spread of Tsetse fly, including establishment of the TFC units are outlined.		ZOO
Langdale-Brown, I. & P.J. Spooner	1963	Land Use Prospects of Northern Bechuanaland.	Directorate of Overseas Surveys, Land Resources Division, Surbiton, Surrey, UK	142	Land use planning proposals for northern Bechuanaland based on an interim report on land systems and vegetation communities of Chobe and Ngamiland Districts.		PLAN
Larson, T.J.	1969	The Hambukushu of Ngamiland	Botswana Notes and Records, Vol. 2, pp 29- 44. The Botswana Society, Gaborone	16	Details of the contemporary social, political and economic structure of Hambukushu settlements on the Okavango river and elsewhere in Ngamiland are describe.		SOC
Larson, T.J.	1975	Craftwork of the Hambukushu of Botswana	Botswana Notes and Records, Vol. 7, pp 109-120, The Botswana Society, Gaborone	22	Craftwork and utensils made and used by the Hambukushu are described, with methods and materials, changes in design resulting from acculturation and the availability of processed goods discussed in some detail.		SOC
Larson, T.J.	1981	Hambukushu Ethno-Botany	Botswana Notes and Records, Vol. 13, pp 145-148, The Botswana Society, Gaborone	4	Brief descriptions of traditional uses for 76 plant species, including foods, medicines, dyes, clothing and building materials, etc. are provided.		SOC
Larson, T.J.	1989	The BaYeyi of Ngamiland	Botswana Notes and Records, Vol. 21, pp 23-42, The Botswana Society, Gaborone	20	Detailed information is provided on the history, social organisation, kinship terminology, demography, political structure, traditions, beliefs and subsistence activities of the BaYeyi.		SOC

Author	Date	Title	Publisher/Location	No Pages	Annotation	Ranking	Discipline
Linyanti Explorations	1994	Management Plan for NG/ 16	Tawana Land Board, Maun / DWNP, Gaborone		A development and management plan for CHA NG/16 on the lower Selinda Spillway, a multiple use controlled hunting area. Includes details of camp/lodge site development, roads and tracks, camp water supply and sanitation, and monitoring system proposals as required by the tender documentation. The plan and development are based on a geographic information system and seasonal monitoring programmes.		PLAN
Maar, A.	1965	Report on Fisheries Survey in Bechuanaland BP in the years 1963/63.	Oxfam, London		The survey assessed fisheries resources in the Okavango and Kwando/Linyanti/Liambezi/Chobe systems. Based on estimated resource potential, a commercial fisheries development plan was proposed following more detailed research.		ZOO
Murray-Hudson M., Parry D., Moeletsi B., Cassidy L. & M. Murray	1994	Natural Resource Utilisation : A Compilation of Documented Natural Resource Use in the Multiple Use CHAs of the Okavango & Kwando WMAs	Tawana Land Board, Maun / DWNP, Gaborone	60	A compilation of documented natural resource use, traditional rights and access in the multiple use (commercial) controlled hunting areas of the Okavango and Kwando Wildlife Management Areas.		SOC
Ngamiland District Development Committee	1989	Ngamiland District Development Plan 1989 - 1995 - DDP 4	North West District Council, Maun	177	Provides background description of the physical, human and economic resources of the district. Summarises development progress and implementation of government programmes during previous plan period. Describes development goals and objectives, and details sectoral development plans.		PLAN
Ngamiland District Development Committee	1977	Ngamiland District Development Plan 1977 - 1982	North West District Council, Maun	142	Provides a background assessment of Ngamiland District. Details district goals with reference to social services, physical infrastructure, production and employment, and through integrated development.		PLAN
NORFICO	1986	Fishing Gear Technology.	MoA, Gaborone	21	Proposals for adoption of appropriate technology from Kenya and Malawi to enhance development and off-takes from the local fishing industry in the Okavango and Kwando/Linyanti/Liambezi/Chobe systems (discounting known factors already limiting harvests in these areas).		SOC

Author	Date	Title	Publisher/Location	No Pages	Annotation	Ranking	Discipline
NORFICO	1987b	Fish Processing and Marketing.	MoA, Gaborone	29	Historic review of fish processing and marketing with recommendations for improvements (pending the recovery of some fish populations), including trial regional frozen fish marketing, improved marketing of dried fish and continued use of dried fish as drought relief rations.		PLAN
NORPLAN	1985	Botswana Fisheries, Status and Strategies.	MoA, Gaborone		Not Seen		PLAN
Okavango Community Consultants	1995	Management Plans for Controlled Hunting Areas Allocated to Communities in Ngamiland WMAs	DWNP/NRMP, Gaborone	240	The study aimed at preparing plans for the use of the areas based on the needs and wishes of the communities who would ultimately be given control over the resources in each area.		SOC
Otsyina, R.M. & K.P. Walker	1990	Agroforestry Development in Botswana, Final Reports	FAB?, Gaborone	187	The report presents the results of a survey of present land use systems in Botswana, to determine the agroforestry potential in solving production and conservation problems.		PLAN
Parry, D.C.	1989	The Wildlife Management Areas of Botswana. MSc Thesis	c/o Ecosurv, Gaborone / Univ. of Natal, South Africa	129	The study (an MSc Thesis) examines attitudes towards wildlife and Wildlife Management Areas (WMAs) in Botswana in 1988-89. Findings showed that administrators and biologists were well-informed regarding WMAs, related policy and land use issues, and considered the economic viability of WMAs more important than social or conservation-related issues. Rural communities had negative attitudes towards wildlife generally, and particularly towards the administrators (DWNP), were distrustful of government motives and had a poor understanding of the WMA concept. Results indicated however that attitudes and understanding could be improved, and a framework for this process was provided.		SOC
Parry, D.C. & B. Campbell	1992	Attitudes of rural communities to animal wildlife and its utilisation in the Chobe Enclave and the Mababe depression, Botswana	Environmental Conservation Vol. 19 p3	1	This article summarises the findings of an in-depth study (presented as an MSc thesis - see Parry, D.C. 1989) It focused in detail on the attitudes of rural communities to wildlife and to authorities administrating the resource.		SOC

Author	Date	Title	Publisher/Location	No Pages	Annotation	Ranking	Discipline
Ramberg, L. & B. van der Waal	1997	Fisheries Management in the Okavango Delta	Fisheries Section, MoA.	48	Proceedings of a workshop. The main objective was to propose to the Fisheries Section of MoA how the fishery in the Okavango should be managed in the future with particular reference to NDP8. Findings were that there was no scientific evidence of over-fishing, and research was needed to confirm that offtakes could be higher. Serious conflicts exist between different user groups. A management plan is needed. with registration and licensing phased in over next 3 years.		SOC
Schapera. I.	1938	A Handbook of Tswana Law and Custom	International African Institute / The Botswana Society, Gaborone	326	The main objective of the book was to place on record the laws and customs of the Tswana tribes to assist colonial officials in their administration. Topics covered include: social structure of the tribes; the nature and sources of Tswana law; the tribal constitution; family law; law of property; legal wrongs; and procedure.	2	SOC
Sefe, F.T., Perkins, J.S. & E.N. Toteng	1997	Boteti River Resource Assessment	University of Environmental Sciences, UB, Gaborone	146			ECOL
Sekhwela M.B.M. & P.O. Dube	1991	Desertification in the Ngamiland Communal First Development Area (CFDA)	University of Botswana, Gaborone	49			SOC
Shamukuni, D.M.	1972	The BaSubiya	Botswana Notes & Records, Vol. 4, pp 161-183. The Botswana Society, Gaborone	22	This paper covers the origins of BaSubiya, the establishment of their kingdom at Itenge (along the Chobe river), the BaSubiya chieftainship, political structure, and social structure. It notes the first contact with the BaTawana and colonialists. It also documents the successive changes in land tenure.		SOC
Skjonsberg, E. & Y. Merafe.	1987	The Okavango Fisheries Socio-Economic Study.	MoA, Gaborone		Not Seen		SOC
Sutherland, A.	1981	Report on Land Tenure in Western Ngamiland's First Communal First Development Area	MLGL&H, Gaborone	31	Describes changes since 1976 and local strategies for productive security. Describes conditions both on the molapo areas traditionally farmed by BaYei and the dryland farms of the Hambukushu.	2	SOC

Author	Date	Title	Publisher/Location	No Pages	Annotation	Ranking	Discipline
Swedeplan	1989	Programme for the Planning of Resource Utilisation in the Okavango Delta Region	DTRP / Swedeplan, Gaborone	500+	Provides an inventory of natural resources and their utilisation, and a programme for undertaking the planning of future resource utilisation. Main findings of the Inventory were: There are considerable untapped resources in the region especially in fisheries, forestry and other veld products. More research is required into all resource and utilisation sectors, and in the socio-economic sectors.	3	SOC
Taylor F.W. & H. Moss	1983	Final Report on the Potential for Commercial Utilisation of Veld Products: the Resource and its Commercial Utilisation. (3 vols.)	MCI, Gaborone	683*	The report presents the results of a multi-disciplinary investigation of known veld products (including insects) and provides details of harvesting techniques, marketing potential and the infrastructure necessary for utilisation in Botswana. An in-depth country-wide study.		BOT
Terry, M.E.	1984	A Survey of Basketmakers, Etsha, Ngamiland, Botswana (Handicraft Survey, Ngamiland CFDA)	Botswanacraft, Gaborone	69	Assesses the extent of handicraft production, its marketing system, transmission of skills, problems and current availability of raw materials.		SOC
Terry, M.E.	1984	Botswanacraft & Humbukushu Basketry - The Effects of a Major Marketing Operation on a Group of African People, their Traditional Craft and the Natural Resources.	Botswanacraft, Gaborone	?	Only Chapter 4 seen, but title self-explanatory.		SOC
Tlou, T.	1985	A History of Ngamiland - 1750 to 1906 - The Formation of an African State	Macmillan Botswana, Gaborone	174	The study tries to reconstruct the pre-colonial history of north-western Botswana. The period before c. 1750 is not included because of lack of data. The main focus is on the BaTswana, BaYei, and HaMbukushu peoples.		SOC
Tyler, G.J.	1996	The Contribution of Community-based Wildlife Tourism to Botswana	IFAD, Rome / DWNP, Gaborone	81	Largely based on existing documentation, the report summarises and estimates the present and recent past contribution of wildlife utilisation to the Botswana economy, and to income and employment. It presents a framework and model for estimating the contribution of the tourism sector, and assesses the contribution of subsistence products to lower income households. Several simulations are presented.		SOC

Author	Date	Title	Publisher/Location	No Pages	Annotation	Ranking	Discipline
University of Utrecht	1993	Ngamilands District CSDA - Eastern Part: Socio-economic Baseline survey and Land Suitability Analysis	University of Utrecht, Holland	150			SOC
van der Heiden, L.J.	1991	Land Use and Development Plan - Kwando and Okavango Wildlife Management Areas (First Draft)	NDLUPU / Tawana Land Board, Maun	108	A plan for the improved management and increased commercial use of the Wildlife Management Areas of Ngamiland. The plan defined new CHA boundaries and zoning by use type: multiple use, photographic, and community. It has been largely superseded by recent events in which the plan has been implemented and areas now fall under individual management by private companies, although still administered by the Tawana Land Board.		SOC
van Hoof, P.J.M. & H. Th Riezebos (eds.)	1991	Ngamilands District CSDA - Western Part: Socio-economic Baseline survey and Land Suitability Analysis	University of Utrecht, Holland	150			SOC
Wilson, S.G., Morris, K.R.S., Lewis, I.J. & E. Krog	1963	The effects of trypanosomiasis on rural economy.	World Health Organisation Bulletin, No. 28, pp 595-613	18	Not seen		SOC

10 **APPENDIX 2 : SOCIO-ECONOMIC MODEL OF A REPRESENTATIVE HOUSEHOLD IN A SETTLEMENT IN THE OKAVANGO DELTA**

Introduction

This appendix provides a model of a typical household representative of those in villages in and along the Okavango Delta. Information on demographic and economic characteristics is given to describe conditions and modes of living. This description is taken from a short report which compared data for 5 rural villages across Botswana. The report was done for the project formulation mission of the International Fund for Agricultural Development (IFAD) in 1997. The study was based entirely on existing documentation. The example is drawn up for the village of Seronga, which at the 1991 census had a total population of 681.

Available Infrastructure and Services

Services and infrastructure are less in smaller settlements. The Botswana Government has undertaken to provide certain levels of services to settlements of a certain size. This is important because in many instances settlements remain small precisely because they are in a place of limited viability (whether in terms of agriculture or other economic activity). Table 13 details the infrastructure and facilities in Seronga.

Table 13: Infrastructure and Facilities in Seronga

<i>Settlement</i>	Seronga
<i>Schooling</i>	Junior Secondary
<i>Health</i>	Clinic with maternity ward
<i>Road surface</i>	Sand
<i>Water</i>	River abstraction
<i>Electricity</i>	No - school & police have generators
<i>Communication</i>	Telephones, radios at police, school and clinic
<i>Shops</i>	Co-op, 2 shops, 2 bars, street vendors
<i>Government extension workers resident</i>	Nurses, Family Welfare Educator, Agricultural Demonstrator
<i>Other</i>	Airstrip, police station

Household Composition, Status and Activities

The typical household is large, incorporating more than two generations. Generally, levels of health and education are improving for each successive age group due to sustained Government efforts. Table 14 details the household structure and its economic activities.

Table 14: Demographic Description of the Typical Household

<i>Settlement</i>	Seronga
<i>Head of household</i>	Male, absent
<i>Ave. household size</i>	7
<i>Number of adults</i>	3.9
<i>Number of children</i>	3.1
<i>Most common illnesses</i>	Colds, diarrhoea, STDs, malaria
<i>Education</i>	At least 1 literate member, children at school
<i>Main source of food</i>	Crop production, livestock, fishing
<i>Livestock</i>	less than 10 cattle, some goats
<i>Arable land and primary crop</i>	3 hectares, 900 kg sorghum/millet
<i>Access to hunting</i>	Yes, Single Game Licenses
<i>Access to potable water</i>	standpipe
<i>Access to sanitary toilet facilities</i>	pit latrine

It must be noted that larger families do not simply mean more mouths to feed. This would be the case if there was no division of labour or sharing of assets. In fact, larger families can be seen as a survival mechanism: the household has a larger labour pool and is in a better position to diversify its economic activities. One reason that female-headed households tend to be worse off is simply that their households are much smaller. This is referred to as capability poverty - an inability to participate in income earning activities (BIDPA, 1996). Since households of approximately 7 members have been typical for rural Botswana for some time, it could be assumed that this size provides the best balance between income capability and expenditure costs.

The tendency for the head to be present in the majority of households can in part be explained by the continued existence of the extended family. Often the head is an older man, and it is usually younger males who have to find work away from their home village. While such absentee members may attempt to send cash home, these amounts are usually a small fraction of the household's cash needs (see Table 15).

While smaller, female-headed households may still be in the minority, the rapid social change taking place in rural Botswana means that their predominance is increasing.

Sources and Values of Household Incomes

The table below summarises financial values for different sources of income. The total income is compared to a Poverty Datum Line (PDL) calculated for district and size of household (BIDPA, 1996). All figures are from or extrapolated to 1994/95 values, as this is the time of calculation of the PDLs.

The official definition of a destitute was not originally based on a PDL figure. Instead it classified as destitute an individual who was without assets, who was incapable of working, or who was a minor child with no parents, or who was rendered helpless by hardship or natural disasters (after MLGL, 1980).

Table 15: Contribution of Different Sources to the Typical Household's Annual Income

<i>Settlement</i>	Seronga
<i>Informal activities/Sale of crafts, beer</i>	P 100.00
<i>Wage Labour (incl. govt. subsidised)</i>	P -
<i>Sale of livestock</i>	P -
<i>Sale of surplus crops</i>	P -
<i>Other cash income (Remittances, gifts, vending)</i>	P 50.00
<i>Total cash income</i>	P 150.00
<i>Estimated value of subsistence income*</i>	P 6 500.00
<i>Total income</i>	P 6 650.00
<i>Relevant PDL</i>	P 7 008.00
<i>Real shortfall</i>	P 358.00
<i>Destitute rations</i>	P -
<i>Apparent shortfall</i>	P 358.00

*Please refer to Table 16 for a breakdown of different food types and their relative contribution to subsistence income.

While the typical Seronga household does not fall that far short of the PDL, this is not the case in smaller or poorer settlements. Much of the income shortfall is made up by assistance and support from government through both the Remote Area Development Programme and through the services of the Department of Social and Community Development (DSCD). For example, for every four members of a household where the head is registered as destitute, a household is given a monthly food basket valued by DSCD at about P80.00. The market value of these items is probably slightly higher, at about P 90.00 per basket. Assuming 2 such baskets every month, such households would receive about P2160.00 worth of food annually.

The relative financial contribution of subsistence to the household’s total income is changing as the country moves into a cash economy. To many younger people, wage labour appears more attractive, providing a more secure income and more choices of lifestyle. Rural to urban migration is increasing, and this creates labour shortages for arable and pastoral agriculture and any hunting and gathering activities.

A breakdown of the percentage contribution of each income type is shown graphically in the pie chart below.

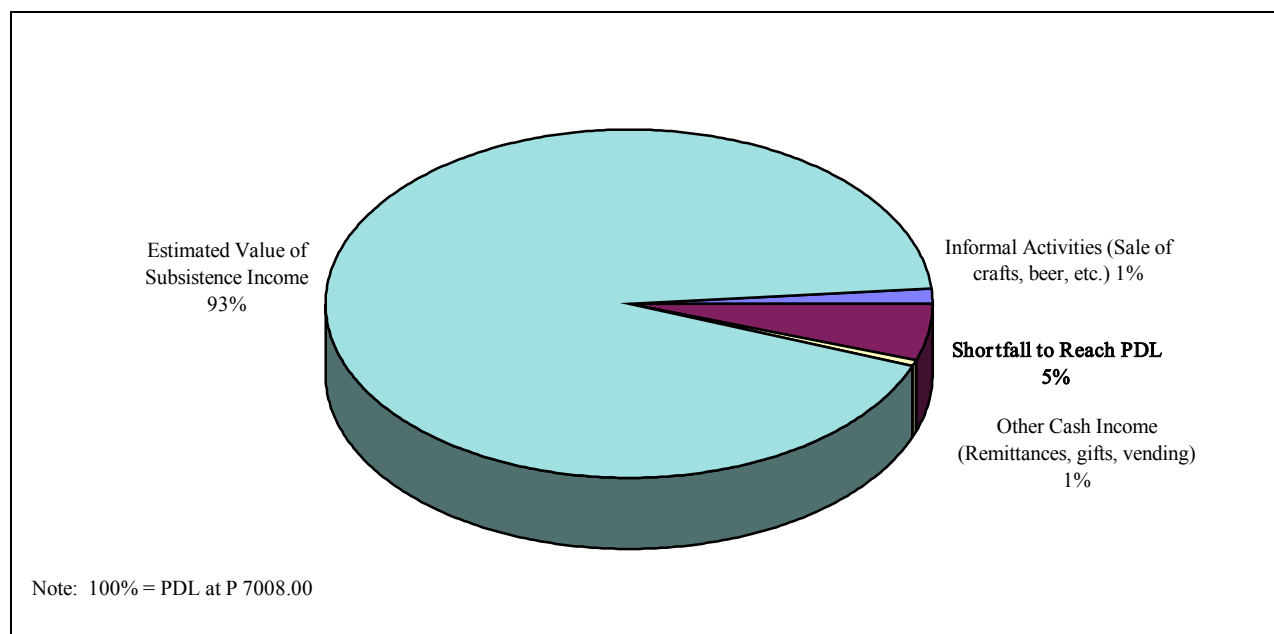


Figure 3: Contribution of Different Sectors to Annual Household Income

Due to its location, the inhabitants of Seronga are able to obtain a large proportion of their food requirements through subsistence means. At the same time, its location also means there are few cash income opportunities. Households in settlements in areas of lower viability are unable to sustain themselves even by subsistence means at a level considered to represent even a minimum standard of living. (These settlements also tend to have a high proportion of Basarwa who are disadvantaged due to loss of their traditional use of the resource base, and because they are a cultural minority.)

Food Sufficiency and Security

As shown above, food sufficiency is primarily determined by subsistence means. The table below shows quantities of the different subsistence foods used. The data were reached by establishing the weight of each item as the basic factor, and then calculating corresponding Pula values and calorie content.

Table 16: Quantities of Different "Subsistence" Foods Obtained by the Typical Household

<i>Settlement</i>	Seronga			
	<i>Source</i>	Kilograms	Pula	Kilo-Calories
<i>Grain crop</i>		900	900	2815
<i>Milk</i>		1500	3000	915
<i>Meat from livestock</i>		600	1200	1300
<i>Fish*</i>		1400	1400	1890
<i>Total Subsistence</i>		4400	6650	6920
<i>Annual Household Requirements @ 2.1 KCal/ person / day</i>				5365

* In villages further away from the main river channels, fish is not available, and people would have to try and get meat by hunting wild animals with licenses issued by the Department of Wildlife and National Parks.

Because such a large portion of the household income is subsistence-based, food security is hard to achieve. Hunting and gathering and crop production activities are all subject to erratic environmental conditions which are beyond the household's control.

Any changes to economic activities could also affect access to the resource base. This could have severe consequences for existing subsistence incomes. Any benefits realised from any new projects in the area may need to allow for changes in the household economy as well as filling in the gap to bring the household up to the PDL.

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