Caprivi Livestock Systems Study

A Sociological Account of Small-holder Agro-pastoral Production and Marketing in Two NOLIDEP Pilot Communities.

By

Patrick Sikana *with* **Otto Kamwi**

A consultancy Report for Northern Regions Livestock Development Project.
Ministry of Agriculture, Water and Rural Development. August 1997.

Acknowledgements:

We dedicate this report to our informants in Chinchimani and Kabbe, who patiently provided answers to our numerous questions even though it was apparent that we had nothing to offer in return. In particular we would like to thank Induna Simasiku of Chinchimani village, who did not only provide a wealth of information but also personally ensured that we got every kind of assistance we required during our stay at Chinchimani. Brian Lubeile and Francis Malumo took us on day-long guided tours of their area without complaint and also provided companionship.

In Kabbe, we would like to thank Induna Mwala and his assistant for welcoming us. Our camping at Kabbe village was made comfortable by Rosemary Situnda of Kabbe Primary School who provided regular hot baths to the research team.

We would also like to record our appreciation for the services rendered by our research assistants; Rosemary Liywali, Maureen Sitwala, Susan Ndana, Cynthia Kabende, Thelma, Noricah Likando and Elllen Konga.

One person who deserves the most credit in Caprivi is Mr Negussie, the NOLIDEP Regional Coordinator, who did not only attend to our numerous logistical requirements but also provided valuable professional advise and support.

Lastly but not least, we would like to thank Dr Roy Behnke Jr for setting the ball rolling and for having been there for us throughout the course of this assignment.

Patrick Sikana
Cambridge University
UK.

Otto Kamwi
Institute for Social
and Economic Research
University of Namibia.

Table of Contents

1. Preface: Who is irrational then?

At the beginning of our field work, village headman Mwakamui (not his real name) had this to say when we visited his homestead;

> " I have already heard that you are going around asking questions about cattle. We like people who ask questions about cattle because that is our livelihood. But I personally do not like some of your so called solutions. Recently, I attended a meeting in Katima-Mulilo to discuss the problems facing our livestock, and what did we get? we were constantly harangued that the best solution is for us to sell our animals. Now, is there any sanity in such a suggestion?"

Headman Mwakamui's sentiment is a response to a commonly-held official view that traditional cattle keepers are reluctant to sell their animals, and that this attitude is responsible for the problems of over-stocking and range degradation. In our view, this is a major dilemma for livestock development in the context of small-holder production systems; how to balance the goal of increasing the productivity of the traditional herds with that of protecting the natural resource base from degradation as stock numbers rise.

The need to seek a balance between the volume of consumable resources and the population of consumers has been a timeless concern to policy-makers since the beginning of modern nation states. In the context of the human population, relatively simple solutions such as family planning have become generally acceptable and have been implemented with some measure of success. However, in the context of small holder-livestock production, the corollary of the 'family planning model'(i.e. controlled herd growth) has proved difficult to achieve because livestock units are both 'consumable resources' as well as 'consumers'. Thus, restricting the number of livestock units to protect the range, a primary goal for environmentalists, also diminishes the volume of consumable resources available for humans, which is the primary goal for people like headman Mwakamui. Looking at our terms of reference, we find that this is the central question we have been asked to address. For example, on page 4 of the TORs (see appendix 1) it is stated that...

'The study...will ascertain whether local herd-owners think controls on herd growth and/or movement are necessary or likely to be beneficial, and examine the institutions at the community or regional level that might have the legitimacy and power to regulate resource use.'

Several development strategies have been proposed to increase herd productivity without compromising the natural resource base. Some of the most commonly suggested options include the following;

i. Increasing off-take rates from the traditional herd: This is a subject of recurrent debate in

livestock development fora (as evidenced by headman Mwakamui's Katima-mulilo experience), and is also a major theme in our terms of reference. In this report we pay particular attention to the possible reasons why headman Mwakamui does not see any 'sanity' in this proposition.

ii.Improving the quality of the range: NOLIDEP has particular interest in this area as evidenced by their work on range improvement trials. We comment on this option and offer a few suggestions.

iii.Investing in supplementary feeding regimes: Scientific production of supplementary livestock feed has more or less eliminated the problem of range degradation in the commercial sector. In this report we examine the extent to which the traditional livestock sector can benefit from this technology.

iv. Community-based range management: This is central to NOLIDEP's livestock development manifesto as reflect in the quotation above. The main premise is that since the natural resource base is important for the survival of livestock and for sustaining livelihoods of the local people, then the goal of safe-guarding the natural resource base is as much a local agenda as it is a concern of environmentalists, rural development planners and those who fund the development process. As is reflected in the TORs, our brief in this regard is to identify local mechanisms which regulate access to range resources, and by so doing, help to establish a harmony between local models of resource controls and external intervention.

v. Enclosure: This is often suggested as the ultimate solution to the problem of range degradation because it gives individuals direct stakes in safe-guarding the formally commonly-owned range resources. The movement towards enclosure is already taking place in other parts of Namibia's communal areas (see for example, Kerven 1997). As is indicated in the last section of this report, this option is increasingly being demanded by an emerging but powerful lobby within Caprivi.

2. Introduction

2.1. Purpose of the study.

The primary aim of the Caprivi Livestock Systems Study is to describe the livestock production and marketing systems and the use of grazing and stock water resources in two NOLIDEP pilot communities; one with direct access to flood plain grazing (Kabbe) and the other without such access (Chinchimani).

To accomplish the above, the study examines how communities utilise and manage their grazing and water resources, and seek to ascertain whether local herd owners see the need to institute measures which will protect their communal resource base (eg control of stocking rates and/or stock movements). By extension, the study aims to identify community-based or regional institutions which might have the authority and legitimacy to regulate resource use.

The study also provides a general overview of the agricultural production systems in the two study communities and explores any possible linkages and resource flows between agricultural production and livestock husbandry. This should yield in-depth and site-specific information

which will shed light on important variables influencing production decisions in both crop farming and livestock husbandry. Hitherto, all the on-going and previous data collection programmes (such as the Caprivi Farm Management Study [FMS] and the Socio-veterinary Study for Caprivi) do not adequately provide such in-depth and site-specific information to guide intervention and policy development.

The other major focus of the study is the livestock marketing system in Caprivi. In this regard, the objective is to identify marketing strategies and rationales, as well as the major bottlenecks and opportunities which influence marketing decisions.

2.2. Methodology.

Although the two pilot areas of Chinchimani and Kabbe were designated as the main focal points of this study, it became apparent (both from our interpretation of the TORs and from our subsequent investigations) that there is a dense network of relationships between the pilot communities and neighbouring communities with whom grazing and water resources must be shared. This being the case, the sphere of observation was extended, where possible, to include such neighbouring communities. Similarly, our investigations at the local community level also provided leads which needed to be followed up in the administrative and commercial centre of Katima-Mulilo.

Initially, the present study was meant to provide qualitative information on the issues outlined in the TORs to complement on-going or completed formal surveys (eg the Farm Management Study and the Socio-veterinary study). This being the case, the initial intention was to conduct an in-depth community study using open-ended and qualitative approaches such as informal interviews, group discussions and Participatory Rural Appraisal techniques. However, due to expressed local need for site-specific quantitative information on livestock and crop production in the two pilot communities, the range of methodologies was broadened to include a more formal quantitative survey, which ran concurrently with the in-depth qualitative studies in the two pilot communities. The formal survey results were expected to provide additional breadth to the overall understanding of locally relevant issues, as well as providing useful bench-mark information for programme appraisal and evaluation in the future. Unfortunately, due to logistical problems experienced at the stage of data analysis, it was not possible to include the quantitative data analysis into this report. This is regrettable because all the themes which were included in the quantitative survey were subsequently omitted from the qualitative data collection schedule. However, whereas some information gaps do inevitably exist, it is hoped that our last-minute patch-work has sufficiently restored the coherence of the report.

In sum, the methodological approach used in this study was multi-pronged, and included the following quantitative and qualitative tools;

a. Formal survey: a questionnaire covering different aspects of livestock production and marketing and crop/livestock interaction was designed and administered to all households in the two pilot areas of Chinchimani and Kabbe. The questionnaire was also meant to provide basic census information on human population and current livestock numbers in the two communities. Since the quantitative data could not be analysed and included in this report, it is going to be treated separately and attached as annex to this report at a later stage.

b. In-depth and open-ended interviews: A number of key informants and groups of individuals were interviewed in the two pilot communities of Chinchimani and Kabbe, in the neighbouring communities of Muketela, Kanano, Lusu and Bukalo, and in the administrative and commercial centre of Katima-Mulilo. A list of some of the key informants interviewed is given in the appendix 2.

e. Participatory Rural Appraisal: A range of PRA tools were used to access additional information in the two pilot communities of Chinchimani and Kabbe.

d. Case studies: In-depth case studies of specific households were undertaken to provide concrete information on how production decisions and strategies are actually enacted on the ground. The household-specific data is used to triangulate the more aggregated community-focused information derived from both the formal survey and the PRAs.

3. Findings.

Many of the findings relating to livestock management and crop production are site-specific, and are therefore presented separately under the respective sub-sections for Chinchimani and Kabbe. However, many of the issues pertaining to livestock marketing are common for both pilot areas and will therefore be dealt with under a common sub-heading on livestock marketing.

3.1. Chinchimani Area.

3.1.1. The community and its neighbourhoods.

Chinchimani village is a constellation of about 12 widely dispersed hamlets or sub-villages, with each hamlet constituting a number of households which are related by blood or marriage. Some of the sub-villages are relatively big and have consequently assumed names which distinguish them as
separate entities. These hamlets include;

i. Mazwangendaba,
ii. Silapelo and
iii. Kariba.

The other remaining sub- villages are relatively small and often revolve around a prominent founder household which had first settled on a given piece of land. Such sub-villages do not have names per se, and are only distinguished by making reference to the senior founder household (eg '*Ku bo* Jeckson' meaning 'Jeckson's place'). These sub-villages include the following;

i. Ku bo Jeckson
ii. Ku bo Lubeile
iii. Ku bo Goerge
iv. Ku bo Ma-Monde
v. Ku bo Francis
vi. Ku bo Bornard

vii. Ku bo Daniel Sukuta
viii.Ku bo Malumo
ix. Ku bo Ma-Masiye

Each sub-village has a leader (*mun'ga muzi* or 'owner of the village') who presides over local affairs at the level of the sub-village and also represents the sub-village at the village court or *kuta ya munzi.*

Out of the nine hamlets listed above, two are named after women (*Ku bo* Ma-Monde and *Ku bo* Mamasiye, translated as 'Monde's mother's place' and 'Masiye's mother's place' respectively) indicating that women too can assume prominent positions within the village set-up. However, such prominent women do not play a direct public role at the level of the village court and can only be represented by a closely related male proxy who is de-facto leader of the sub-village. Thus, it can be said that participation in the political affairs of the village is still exclusively a male prerogative, although prominent women are routinely consulted on all important matters.
Although the different sub-villages occupy distinct physical spaces and have a social identity of their own, there are no internal boundaries between them. The only recognised boundary is that between the greater Chinchimani village and neighbouring villages. According to the village leadership, there are no internal boundaries because the different village sections or sub-villages are all part of Chinchimani territory. The sub-sections were established as a result of a fission process, as people decided to break away from the main village nucleus to avoid over-crowding and also to consolidate their claim over hereditary land holdings within the bounds of the greater Chinchimani village. It is not clear whether this desire to consolidate claims over hereditary land is a pointer to existing or anticipated land pressure. However, the important point to note is that this process can form a basis for the transformation of tenure rules from free-hold to titled land, should such a transformation be deemed necessary in the future.

Chinchimani shares boundaries with Shaile village to the north and Muketela village to the south. In the west, it is bounded by a wooded *Mupani* upland area (locally known as *sipani*) which serves as a wet-season grazing area and as a site for satellite forest cultivation. A major gravel road from Katima-Mulilo to Linyanti (and then to the tarmac road at Kongola) seperates the village settlements from the upland grazing area (see appendix 4b). In the east, the village is bounded by a gentle sloping terrain of bushed-valley which quickly transforms into an expanse of open grassland or flood plain. The valley area is transected by the Mukuni stream, and is the site for maize-dominated agriculture in lowland gardens called *mapumba.* The flood plain is used as the dry season grazing enclave and is also the site for winter cultivation in seepage gardens locally known as *litapa* (sing. *sitapa*).

When we inquired about Chinchimani's neighbouring communities, the old village headman (*induna*) mentioned a number of villages to the north and to the south of Chinchimani, many of which do not share any physical boundaries with Chinchimani. The villages mentioned include Shaile, Kanono, Malundu and Lusu in the north, and Muketela and Linyanti in the south. After further probing, we established that the old headman's definition of 'neighbourhoods' did not coincide with our formal definition which is based on the sharing of actual physical boundaries. Instead, the old headman was looking at 'neighbourhoods' in

a much broader context, to include all those communities with whom grazing and water resources must be shared. However, it must be pointed out that this inclusive definition of 'neighbourhoods' does not necessarily imply open and unfettered access to grazing and water resources for all and sundry. Instead, as it will be demonstrated under sub-heading 3.1.4, access to grazing and water must be negotiated on the basis of cross-cutting and multifarious linkages such as kinship, marriage, political rank and the degree of cordiality between different herd-owners.

3.1.2. Traditional leadership.

A number of studies make reference to traditional authority in Caprivi (see for example, Naeraa et al 1992, MAWRD 1994, NOLIDEP 1996). However, most of these studies focus on the higher levels of traditional authority; namely, the tribal council and the *Silalo* (a constellation of villages which make up a tribal 'district' or ward). In this report, we primarily focus on traditional authority at the village level for two reasons; firstly, village level authority is more directly responsible for decisions which influence every-day life in the local community. Secondly, and on account of the above, village level authority represent the most accessible structure through which external development agents can directly reach and mobilise the local people.

As it is indicated in section 3.1.1., the most basic grassroots leadership authority is located at the level of the sub-village and is vested in the person of the sub-village leader (*mun'ga muzi*). The different sub-villages are brought together under the auspices of the village court (or Kuta), which is led by the village-headman, locally known as the *induna wa munzi*. The *induna wa munzi* is assisted by his deputy, the *ngambela*, and the assistant *ngambela*, called the *natamoyo*. Nowadays, most village traditional authorities also include a fourth ranked official called *mun'goli wa munzi* or village secretary, whose responsibility is to keep written record of all court proceedings and other important village matters. Apart from the above four ranked officials in the village *Kuta*, other members include representatives from all the different sub-villages. The *ngambela* and *natamoyo* are often close relatives of the village induna, while the *mun'goli* is elected from among the different sub-village representatives. Because of the nature of his job, basic literacy and numeracy skills are important considerations in the choice of the *mun'goli wa munzi.*

The basic village-level authority structure described above is a replication of traditional authority at the highest level of chiefdom and at the intermediary level of the district or *silalo*. There are two chiefdoms in Caprivi, the Mafwe chiefdom, with headquarters at linyanti (also pronounced as 'Linyandi') and the Masubiya chiefdom, with headquarters at Bukalo. The two paramount chiefs (Mamili for the Mafwe and Mulaliswani for Masubiya) are assisted by the *ngambela*, the *natamoyo* and the *mung'oli wa kuta ye tuna* (secretary of the supreme tribal court). The tribal council is constituted by *silalo indunas* or district headmen, who oversee traditional matters in a constellation of villages which make up a *silalo* or district. In turn, the *silalo induna* also has his own *ngambela* and *natamoyo,* and presides over a group of village headmen drawn from the different villages which make up the *silalo*.

Although a legal sounding word, *Kuta* (court), is used to describe the seat of traditional authority, the functions it performs are not only restricted to judicial matters but also include

all other aspects of local administration. For example, as it will be shown in due course, village level traditional authority play a significant role in mediating access to, and use of all forms of common property in the local community. NOLIDEP Caprivi has established a very sound working relationship with the traditional authority in both Chinchimani and Kabbe and it is recommended that this should continue.

3.1.3. Grazing and water resources.

Under this sub-heading, we consider the two most critical resources which determine herding decisions and the well-being of stock; namely, the availability of suitable grazing and the availability of water for livestock. Unlike commercial ranchers who have access to resources and technology to artificially develop and/or purchase their own livestock feed and water facilitates, traditional cattle-keepers must rely on natural grazing and water resources. This being the case, the production imperative is that these two production inputs must be available within the same vicinity, or at least within reasonable distance from one another.

In the study area, two distinct agro-ecological enclaves are utilised by livestock; the wooded forest area locally known as *sipani*, and the riverine pastures in the flood-plain. In ideal circumstances, specifically during the wet years before the drought of 1993, the forest area was utilised from around November, with the on-set of the rains when water starts collecting in the numerous pans and depressions, locally known as *bihubi*. The animals would remain in the *sipani* up to the end of August the following year, when these pans and depressions are dry. In September, the animals are moved to the flood plain, where they will be kept for the remaining two months of the dry season (ie September and October). Thus, it can be seen that in ideal situations, the *sipani* was by far the most important, as it provided nourishment to livestock for most part of the annual grazing cycle.

According to the local people, the *sipani*, during wet years, is endowed with sufficient grazing and water resources to sustain livestock for most part of the annual cycle because of the following;

a. The *sipani* zone is very extensive in terms of total land area, and also carries numerous and highly nutritious grass and plant species (including shrubs, trees and fruits) which can be utilised by livestock. Some of these grass and plant species are given in appendix 3.

b. Surface water catchments (*bihubi*) were widely and evenly distributed throughout the *sipani,* such that all the neighbouring communities from Lusu to Muketela had access to their own *bihubi* for the most part of the year. This being the case, localised overgrazing could only occur towards the end of the dry season (around August and September), when most of the smaller pans and depressions would have dried up. This is the time when most people would then decide to move their herds to the flood plain.

Table 1: Major forest pans and depressions for Chinchimani, Kanono and Lusu villages.

Chinchimani	Kanono	Lusu
Lusinina	Sifuwe	Mbumwae
Lupondo 1	Makumbe	Kalili
Lupondo 2	Piza	Sibuyu
Nzoka Ileya	Mangomba	Lisa la Mboma
Tozo	Mutata	Kaswabenga
	Chobwe	
	Nali	
	Tou	
	Kapanda	
	Nasansa	
	Silazo	
	Pizi	
	Maziba	
	Nganda	
	Mafulu	
	Nkumba	

To understand flood-plain grazing and how this has changed since 1993, a simple description of the local drainage system is necessary. The flood-plain we are dealing with here is part of the Linyanti wetland system. As can be seen from the map in appendix 4A, the Linyanti river branches off from the Kwandu-Mashi and then flows northwards towards a big lake called Lyambezi, which is now dry. The linyanti wetland system therefore begins at the confluence of the linyanti and kwando-mashi river, and extends northwards up to lake Lyambezi. As recent as 1992, the flood plain had a network of perennial channels and depressions which ran along the length of the flood plain. One of these is the Mukuni channel, which borders Chinchimani village in the east and extends northwards along the flood plain. All the village settlements in the neighbourhood of Chinchimani are dotted along this drainage line, and therefore have direct access to the Mukuni channel and/or other wetland streams and depressions.

Before the events of 1993, which will be described in detail below, flood plain grazing was adequate to sustain livestock from September to November because of the following;

a. The period for dry season grazing was very short (ie September to November) because rainfall was more reliable and started early in the season, which allowed the *sipani* pans and depressions to re-charge as early as November, and hence allowing livestock to return early to the forest zone.

b. The Mukuni stream used to hold water all the year round. Since all the village communities from Lusu to Muketela had direct access to mukuni stream, livestock could be evenly dispersed along the stream, and hence avoiding localised overgrazing.

Thus, it can be seen that before 1993, livestock grazing was based on a relatively simple transhumance which involved the movement of livestock between the two grazing enclaves of the flood plain and the forest area. It should be noted that since grazing and water were both available within reasonable walking distance from the village settlements, the movement of stock did not necessarily involve the movement of people as well.

Since 1993, the study area has been affected by a drought which has drastically transformed livestock grazing patterns and access to water and range resources for different villages. According to the local people, rainfall has become more erratic, and tends to start much later in the season, such that by November, most of the pans and depressions in the *sipani* will not have collected sufficient water to enable stock to move back to the forest area. Furthermore, due to insufficient rainfall, most of the pans and depressions do not collect enough water to last up to September as was the case in the past. For example, out of the 16 forest pans and depressions belonging to Kanono territory (see table 1 above) only three (Chobwe, Nansansa and Makumbe) manage to retain water up to July. A majority of them dry up by May. The story at Lusu Village is even worse; of the five forest depressions mentioned, three (Mbumwae, Sibuyu and Lisa la Mboma) were already dry at the time of this field study (April), one (Kalili) was expected to dry up by May, and only one (Kaswebenga) was expected to hold water up to June. At chinchimani village, only one forest pan called Lupondo 1, which was excavated by NOLIDEP in 1996, had sufficient water to support livestock at the time of our field work (April). The other four had either completely dried up or were reduced to small and murky poodles of water.

The first consequence of the above scenario is that by June, huge numbers of cattle would be moved to a few relatively big forest pans which would still holds some water, resulting in localised overgrazing and silting of the water catchments. This means that by July, all the forest pans will have dried up, and stock must be moved to the plains. In sum, since the drought of 1993, flood plain grazing has been elongated from a mere two months as was the case in the past, to about five months. Detailed household level case-studies of grazing patterns indicate that some herd-owners start moving their animals to riverine pastures as early as May (see appendix 5).

From the above description, it can be seen that the duration and strategic importance of flood-plain grazing has significantly increased in the last five years. However, the same climatic and hydrological changes described above also have had a telling impact on flood-plain grazing and water resources. Most dramatic of all, the Mukuni channel has now been reduced to a mere seasonal stream, such that at the time of our field work in April, the section of the stream northwards of Chinchimani village had completely dried up.

According to recent hydrological studies (eg Van Langenhove and Rukira 1995, MAWRD Hydrological Division 1994, both cited in NOLIDEP 1996) the changes outlined above are reflective of broader regional hydrological trends. The surface water resources of the region are undergoing sharp fluctuations at present, with flows in major rivers dropping and channels drying up. For example, according to the NOLIDEP report, no significant floods have occurred on the Kwando-Mashi river, and the wetlands of the upper Linyanti are dry (NOLIDEP 1996, Section 6.8.4).

There is only one significant section of the wetland system which still holds sufficient water

throughout the year. This is called Mararo, a relatively deep depression to the south of Chinchimani village and towards the confluence of the Linyanti and the Kwando Mashi river. According to local people, Mararo is one of several deep depressions called *mikon'ga ya likubu* within the linyanti wetland system. In the past, when the Linyanti wetland system still had plenty of water, these depressions were used by hippos as nesting places during their northward trek towards lake lyambezi. Mararo and its surrounding range-land is controlled by the village of Muketela, which border Chinchimani village in the south.

The point to be emphasised here is that whereas access to grazing and water resources was relatively unproblematic in the past, the drought of 1993 has significantly reduced water availability in the study area, and this has resulted in drastic changes in herding strategies. As it has already been pointed out, there is now need to keep livestock in the plain for a much longer period of time, while the supply of water within the plain itself has also drastically reduced. In addition, a clear pattern which emerged is that livestock water shortage becomes more critical as one moves northwards from Linyanti village. This is because the wetland channel described above becomes drier as one moves towards lake Lyambezi, which is now completely dry.

Given the above scenario, one of the major hypothesis developed during the course of this study was that if water has become such a critical resource for the survival of livestock, and by extension, for sustaining livelihoods of the local people, then there must be well-defined local mechanisms which regulate access to this critical resource. We also surmised that since villages which control watered range resources are more likely to experience greater pressure from neighbouring communities, then these must be the people we should look to, in order to identify traditional models of resource control. At present, there are two villages which control significant water resources for dry season grazing; these are Muketela village, which controls Mararo, and Chinchimani village, which controls the wetter portion of the Mukuni channel and which has also recently benefited from NOLIDEP's water development programme. In the sub-section which follows, we elaborate the different herding strategies devised by different categories of herd-owners in different villages, as well as the local mechanisms which regulate access to the limited water resources available in the community.

3.1.4. Access to water resources.

A number of strategies are devised by different categories of people in different villages to deal with the problem of livestock water shortage during the dry season. Some of the most important strategies include the following;

i. Using domestic water supply for livestock.
ii. Construction of individual wells.
iii. Trekking animals to Mararo on a daily basis.
iv. Establishing temporary herding posts at mararo.

As it will be shown in due course, an individual herd-owner may not always have to make a clear-cut choice between the above strategies, but may use different options at different times or use two or more options in combination. We now present a more detailed description of each of the above strategies.

i. Use of domestic water.

There are two types of domestic water supply currently available in the study area. Some villages such as Chinchimani, Muketela and Kanono, have piped water supply while other villages such as Lusu, have hand-pumps locally known as *bikelenge* (sing. *sikelenge*). For a number of reasons which will become clear at a later stage, some herd owners are forced to depend on domestic water supply to water their animals during the dry season.

At Chinchimani village, detailed case studies of seasonal grazing patterns involving nine households established that seven of these households depended on domestic water supply to water their cattle during certain months of the dry season. Follow-up interviews revealed that in fact, many households in the village depend on this water supply and only resort to other strategies when the domestic bore-hole is not working. However, a rather surprising pattern which emerged from the case studies indicate that many people opt to use riverine grazing even when they are watering from the village tap, instead of using the ostensibly superior forest grazing. For example, of the seven households who used the village tap last season, five trekked their animals to riverine pastures on a daily basis, while only two opted to use the forest area. There are two possible explanation for the preference given to riverine pasture during this time of the year; firstly, most people are cultivating their *litapa* and *mapumba* gardens in the vicinity of the riverine pasture, and hence this strategy allows people to combine herding with cultivation. Secondly, the village tap gives herd-owners the flexibility to utilise any part of the riverine pasture where grazing is relatively better, instead of having to rely on the watered section of Mararo, which gets to be extremely overcrowded and overgrazed during this time of the year (more about which later).

The most preferred portion of riverine grazing for Chinchimani cattle is the area around the Mukuni stream. However, during the latter part of the dry season, Chinchimani cattle may also be moved south-wards towards Mararo. During this time of the year, most of the riverine pasture is destroyed by fire, and cattle have to depend on fresh ratooning reeds which tend to be more plentiful in the wetter southern portion of the plain.

In Chinchimani village, the existence of a power-driven water pump has greatly simplified the chore of having to water livestock at a domestic water source. In addition, towards the end of 1992, most villages were supplied with huge plastic water tanks which were periodically filled by road tankers as part of the government's effort to cushion the effect of the drought. In Chinchimani village, these water tanks are no longer required for domestic use and have therefore become very handy for watering livestock. A plastic tank is filled at night using a horse-pipe and the water is then siphoned into canoes for the animals to use the following day. Access to tap water is restricted to Chinchimani cattle only. This is because Chinchimani residents are required to make regular cash contributions to run the water pump.

The above local initiative could be supported by supplying water tanks and drinking troughs to other villages with standing water pipes such as Muketela and Kanono. Furthermore, the possibility of extending pipes to various points within the forest zone, where grazing is better, could also be evaluated. This might prove to be a cheaper alternative than the construction earth dams.

At Lusu village, a number of herd-owners who fail to gain access to the watered riverine

enclave of Mararo are forced to rely on the hand-pump (*sikelenge*) to water their animals. For example, last season, only 12 herds managed to gain access to Mararo, while nine herds remained at the village and relied on the *sikelenge*. There is only one *sikelenge* at Lusu village, which is situated some 5 to 6 kilometres from the main village, and this is used for both livestock and domestic purposes. Thus, one of the major problems is that of competition for water between livestock and humans. The second problem is that of drudgery; filling canoes with pails from a hand-pump is a tedious and time consuming undertaking. Those with big herds do not manage to water their animals all at once (a rota system has been established by the village court whereby each household has been allocated a day and time slot for watering their livestock). Because of the above, some people have to fill up their canoes in the middle of the night, so that they will have finished by dawn, when women start coming to fetch their domestic water. The problem of water shortage has also led to women playing a more active role in livestock husbandry.

The above factors are reflected in the case of the assistant headman of Lusu village who has 34 head of cattle and has been given the morning slot to water his animals. His strategy is to start filling up his 7 canoes at 8 o'clock at night when most women have already fetched their domestic water. It is important that he must fill his canoes by 1 o'clock and then rest (by the *sikelenge*) because women start coming for their domestic water supply at the crack of dawn. In the morning his wife helps drive the cattle to the *sikelenge*, as she comes to fetch her domestic water. She hands over the cattle to her husband who waters them and then take them to the bush to graze.

The above description indicate that the option of using domestic water for livestock is much more problematic at Lusu village than is the case at Chinchimani. This can be partly alleviated by attaching to the *sikelenge* extension pipes which will enable water to be directly pumped into the canoes, and thereby precluding the tedious use of hand pails.

ii. Construction of Individual wells.

A number of people in the study area have established individual wells on the river-bed of the Mukuni channel. However, as we have already noted, the northern portion of the channel is much drier than the southern portion. As a consequence, people from the drier northern villages aspire to develop wells around the Chinchimani side of the channel, where it is much easier to hit water. Currently, there are six individual wells at Mukuni and most of these are owned by people from the drier northern villages. This is reflected in the following table.

Table 2: Type of well and village of origin of well-owner.

	Well-owner's village of origin	Water traction system	Type of trough
1.	Shaile	generator	fibre glass
2.	Kanono	generator	fibre glass
3.	Mazwangendaba	manual	wooden
4.	Malundu	manual	wooden
5.	Kanono	manual	wooden
6.	Kanono	manual	wooden

From the above table, it can be seen that although the area which is being utilised for developing water-wells belong to Chinchimani village, only one well-owner comes from a sub-section of Chinchimani village (ie Mazwangendaba). As we have seen above, most people at Chinchimani have the option of either using the domestic water-tap or trekking their animals to Mararo on a daily basis. For the drier northern villages, the distance to Mararo is too long to be covered by livestock on a daily basis.

Well-owners from the drier northern villages establish temporary cattle posts within the vicinity of the well, which means that their cattle have to compete for grazing with Chinchimani cattle which are watered from the village tap. Because of this, permission to develop a well and establish a cattle post must be obtained from the village *induna* and his advisors. Because Chinchimani village has a lot of cattle which depend on the riverine pasture around the Mukuni channel, not everyone who wishes to develop a well is granted permission. According to the village *induna*, not more than five cattle posts can be allowed in any one season. The village *induna* put it as follows;

"if it is full, we close and advise them to go where the water is"

As is reflected in the statement above, people who are refused permission to develop wells and establish cattle posts at Chinchimani are left with the option of taking their cattle further south to the main dry-season grazing enclave of Mararo. Thus, for the drier northern villages, two major variables seem to be important in influencing dry-season herding strategies; firstly, the differential ability of individual herd owners to invest resources in a water-well, and secondly, the degree of influence and ability of individual herd-owners to command support from the traditional authority. In this regard, it is interesting to note that three of the six well-owners reflected in the table above(ie well 1, 2 and 3) are all influential individuals who hold important positions in society. The owner of the first well is a senior manager at Namibia Broadcasting Corporation in Katima-Mulilo, the second well is owned by a deputy director in the ministry of education, while the third well is owned by a school teacher.

Although individual wells are located on communal land, they are regarded as private property, and access to them is restricted. Sometimes, a number of herd-owners who routinely

herd their cattle together may also pool their labour and other necessary resources to develop a well. Thus, there are two possibilities for facilitating the development of private wells in communal areas; by targeting relatively well-off individual herd-owners who have the capacity and resources to contribute towards the development of private wells, or by focusing on relatively poor clusters of linked households who normally cooperate and pool resources together.

iii. Trekking animals to Mararo on a daily basis.

The third strategy employed by herd-owners during the dry season is to trek their livestock to Mararo on a daily basis. However, this option can only be utilised by people in the villages of Muketela and Chinchimani, which are relatively close to mararo. In fact, it should be mentioned that even people in Chinchimani village, which is more than 10 kilometres from Mararo, reported that this option is a last resort, because the journey to and from Mararo leaves little time for animals to graze. The daily trek also drains cattle which are already weak as a result of the general poor condition of dry season pasture. As is already pointed out above, Chinchimani herd-owners use this strategy only when their domestic borehole is not working, or later in the season when the pasture around the mukuni channel is depleted or destroyed by fire.

iv.Establishing cattle posts at Mararo.

This strategy is by far the most important in the study area. During the dry season, many people from the villages of Muketela in the south up to Lusu in the north depend on this strategic dry-season grazing enclave. This strategy is particularly important for people who are not in a position to either establish their own private water wells at Chinchimani or to trek their animals to Mararo on a daily basis. This means that people in the villages to the north of Chinchimani, such as Shaile, Kanono, Malundu and Lusu, must all seek permission to establish dry-season cattle posts at mararo, as they can not cover the distance on a daily basis from their respective villages.

Permission to establish a cattle post at Mararo must be obtained from the headman of Muketela village, who also happens to be the *silalo induna*. As should be expected, the task of regulating access to the only reliable dry-season watering point in the community is not an easy one. According to the *silalo induna* and his advisors, it is difficult to deny access to anybody in the community because everyone is a *muzwale* ('acquaintance'); in other words, most people in the community share a number of cross-cutting linkages based on kinship, marriage and friendship. This is the way the silalo induna himself put it.

"We can not refuse anyone permission because no one is a stranger. They are all our *mizwale*. Besides, this river was made by God. If it means that our stock will perish, then it is better that we should all lose"

On the face of it, the statement above seem to suggest a strong sense of an all inclusive 'community' where access to critical resources is mediated by a non-discriminatory and altruistic ideology of sharing (ie in the mould of the 'moral economy' suggested by Scott 1976). However, further investigation revealed that in reality, access to Mararo is not open to all. For example, during a group interview at Lusu village, it emerged that a number of

people in this village are in fact refused permission to establish cattle posts at Mararo. An interesting remark by one of the participants was as follows;

"Sometimes they refuse us to set up cattle posts. We just go there by force. We are prepared to be killed if it comes to that. We have no other choice"

On the basis of the above, it is clear that access to Mararo involve a certain degree of social contest. According to Lusu people, only the village headman of Lusu village and a few other well-connected individuals are given permission to set up cattle posts at Mararo. However, those who are refused permission will then secretly amalgamate their stock with those of their colleagues who are given permission. Even when the Muketela people discover this afterwards, it would not be easy to force them out. In other words, the above strategy is now an 'open secret' which is well-known by the Muketela village authority. Thus, Lusu village managed to send up to twelve herds to Mararo last season, despite the fact that only the headman and a few other individuals were actually given permission by the Muketela village authority.

We must hasten to add that the social contest described above involving the people of Lusu does not completely invalidate the sentiments expressed by the Muketela village authority. It is indeed true that during times of scarcity such as drought and famine, the mobilisation of kinship and other social support networks is an important coping mechanism which ensures the survival, recovery and continuity of small-holder production systems (for Caprivi, see Naerra et al 1992). It is also true that these social support networks are often very extensive, because a person's relationships with fellow kinsmen in a village does not constitute the total field of a person's social networks, nor even a large part of that field. On the other hand, a person's relatives, affines and friends are scattered very widely over a big geographical area, such that it is possible for an individual to claim linkages to a number of villages. However, as will be demonstrated below, these relationships are often deeply embedded in history, which means that social contests such as the one described above can best be understood by unravelling the historical interconnectedness (or lack of it) between different segments of the 'community'.

Our investigations revealed that amongst all the six villages we are dealing with here (i.e. Muketela, Chinchimani, Shaile, Malundu, Kanono and Lusu), some villages share stronger common historical roots than others. The villages of Muketela, Chinchimani, Malundu and Kanono are all offshoots of the royal capital of Linyanti. Of these four, Muketela and Chinchimani are royal villages which were founded by two princes (Muketela and Simasiku) who first settled at Lisikili before they were given the present village sites by the paramount chief in the 1920's. Kanono was established later in 1940, and the founder, Mulele, was a *ngambela* (ie 'prime minister' to the paramount chief) at Linyanti until he retired to set up his own village. The people of Malundu are related to Kanono people, and came from Linyanti in 1946 to the present site through the name of Mulele, the founder of Kanono village.

The above four villages share a dense network of kinship and affinal linkages. For example, Simasiku, the founder of Chinchimani village, married the daughter of Mutumuswana, the younger brother to Mulele, who founded Kanono village. Similarly, the present headman of Kanono village is married to Simasiku's sister's daughter. This being the case, we should

expect a greater degree of cooperation and cordiality amongst people in the four related villages.

The story of Shaile village is quite different and somewhat more complicated. The founders of Shaile village came from across the border in Botswana and temporarily settled at Muketela village in 1940. They were then given the present site a few years later. While they were at this site, one of them married Simasiku's daughter and then Mulele's daughter. This man split from Shaile village in 1950 and was given land within Chinchimani territory by his father-in-law, Simasiku. This place is now called Mazwangendaba, and is still a sub-section of Chinchimani, as we have seen in section 1. This means that people of Shaile village have historical connections with Muketela, Chinchimani and Kanono villages, and are therefore more strongly incorporated into the local networks of reciprocity and cooperation.

Lusu village, which moved to the wooded plateau in the late 1940's can be regarded as the dark horse. The founders of Lusu village are the true natives of the study area; they are the original inhabitants who lived in the interior of the Linyanti wetlands, and eked their living as hunter-gatherers and fishermen, before conquest by the dominant Mafwe group. Because of their much simpler mode of subsistence, these original inhabitants, called the Yeyi or *Ba makuta* in derogatory terms, were looked down upon and denigrated by the new agro-pastoral settlers. They were stereo-typed as lazy people who only depended on fish and water lilies. Although the Yeyi people have since taken up agriculture and livestock husbandry, their historical label still seem to remains even today.

On the basis of the above, we are compelled to conclude that although many individuals in Lusu village may have established many personal linkages with other people in the community, their historical isolation has placed them at a disadvantage. Consequently, their bargaining power to contest for communal resources such as the Mararo dry season pasture is much more limited. For this reason, we recommend that Lusu village should be given preference in the next phase of NOLIDEP's water development initiative.

3.1.5. Dry-season cattle posts

People who obtain permission to establish cattle posts at Mararo also set up temporary settlements to accommodate selected members of the household for the whole duration of the dry season. Settlements at these cattle posts are often constituted of 'herd-boys' who reside at the cattle posts for long stretches of time on a rota basis. Most of the 'herd-boys' are hired hands from Zambia and to a lesser extend, from Angola. These are remunerated in cash. Non-school-going adult males from client households may also be enlisted to take up herding duties on a full-time basis. Because of the reliance on hired male labour (instead of kinsmen) at these cattle posts, the possibility of dishonesty always exists and it is therefore desirable that the male household head and other grown-up male members of a cattle-owning household, should closely supervise the herd-boys and spend some time at the cattle post from time to time. In the case of cooperating households who amalgamate stock and pool their labour together, adult males from the respective households take turns to supervise the herd-boys by spending some time at the cattle posts.

The institution of dry season cattle posts could be used as an entry point for development intervention. For example, cattle clubs could be formed on the basis of groups of linked

households who amalgamate their stock and establish a joint cattle post during the summer.

As is apparent from the discussion in section 3.1.4, the desire by the Muketela village authority to limit access to Mararo is hindered firstly by the sheer density of social networks between different cattle-owning households in different closely related villages, and secondly, by strategies of resistance employed by people in peripheral villages such as Lusu, who secretly amalgamate their stock with their relatives and friend who are given permission. Consequently, according to the village induna at Muketela Village, "throngs and throngs of cattle" are brought to Mararo during the dry season, resulting in excessive use of the water channel and surrounding range land.

To get an idea of the extent of the above problem, we identified all household units from different villages which either established permanent cattle posts at Mararo or trekked their cattle on a daily basis for the whole duration or part of the dry season last year. On the basis of this information, we attempted to obtain estimates of the actual number of cattle involved by using records kept by field staff in the department of veterinary. Unfortunately, we were not able to get a full record of the number of animals in some herds, especially for Lusu and Malundu villages. However, the figures we managed to obtain are nevertheless still indicative of the scale of the problem, and these are summarised below.

Table 3: Number of cattle which utilised Mararo dry season pasture last year.

Village	Number of herding Units	Total Number of cattle	Management strategy
Lusu	9	175	cattle posts
Malundu	5	120	Cattle posts
Kanono	18	518	Cattle posts
Shaile	14	747	Cattle posts
Chinchimani	21	1186	Daily Trek/cattle posts
Muketela	28	1057	Daily Trek/cattle posts
Total	95	3803	**

From the above table, it can be concluded that the village induna's statement, about the throngs of cattle which congregate at Mararo during the dry season, is not an exaggeration. As a result of this overcrowding, the following problems are experienced at Mararo;

i. Extensive overgrazing of the surrounding range land.

This problem leads to starvation, susceptibility to disease and consequently, high stock mortality rate. During a PRA exercise held at Chinchimani village, 'hunger and thirst' was

recorded as the major cause of stock mortality during the 1994 season. The problem is compounded by that of uncontrolled burning, which destroys large tracts of range land. During this time of the year, ratooning reeds constitute the main staple for livestock. Being deep-rooted, reeds can not be completely destroyed by fire and livestock, and will therefore quickly come up even after a big fire. However, only young palatable shoots can be utilised by livestock. The strategic importance of reeds as the main lifeline for livestock in the dry season was conveyed by the village *induna* at Chinchimani who remarked that "if it was not for the reeds, this place would now be a desert".

According to key informants at Muketela village, the evidence of starvation can easily be obtained by opening a carcass of any animal which dies during the height of the dry season;

"all you will find in the gut is mud. You will not find any grass"

ii. Excessive use of the water channel.

Due to overcrowding, the Mararo water channel is over-used and there is a real danger that it may eventually become a seasonal stream like the Mukuni channel at Chinchimani. According to the Muketela village *induna* and his deputy, the channel almost dried up last season, as only a narrow muddy strip was left in the middle. Because of this, cattle have to scramble and climb on top of each other to reach the muddy poodle of water in the middle of the channel, resulting in many of them being stuck in the mud and dying. In this regard, it was claimed that one herding unit lost up to 12 head of cattle in this manner last year.

iii. Competition with wetland cropping.

The Mararo enclave is also an important site for flood plain agriculture. A number of people from Muketela and Chinchimani villages establish *litapa* gardens (sing. *sitapa*) along the Mararo channel. *Litapa* gardens utilise residual moisture in low-lying depressions within the flood plain, and are therefore cultivated and planted during the dry season (ie around August and September, just before the on-set of the rains). Thus the use of Mararo for wetland cropping coincides with the use of the same area for dry-season grazing, resulting in many litapa gardens being destroyed by cattle.

iv. Wild animal predators.

Because of the general scarcity of water within the immediate vicinity, Mararo is also a dry season sanctuary for wild animals, mainly from across the border in Botswana (ie part of the linyanti wetland is on the other side of the frontier). Stock deaths at the hands of wild animals such as hyenas were reported at Lusu, Kanono and Chinchimani villages.

v. Underground fire:

This phenomenon, locally known as *mulilo wa bumbe*, is regarded to be mysterious by the local people. It is claimed that some animals get killed as a result of being stuck into underground furnaces of fire. The real cause of this fire is not known, although some people

believe that it may be caused when veld fires penetrate open crevices of the dry scorched earth and ignite the dense root systems of deep-rooted plants such as reeds. Although the severity of this problem could not be objectively determined during the course of this study, it is suggested that this phenomenon should be further examined, in consultation with the fire protection unit of the department of forestry.

3.1.6. Implications for NOLIDEP's water development programme.

From the above discussion, it is clear that the problem of livestock water shortage is paramount for Chinchimani and other neighbouring villages. For this reason, NOLIDEP's water development programme is highly appreciated by the local people, because it addresses what is considered to be the most important community priority. The degree of local appreciation was evidenced by the warm reception accorded to us during the course of this study, once we were introduced as working on behalf of NOLIDEP. Given this positive community response, the suggestions given below are intended to consolidate NOLIDEP's initial achievements, rather than to chart a new direction of intervention.

The observation we want to emphasise here relates to the all important issue of community-based systems of resource control. Currently, there are three livestock water facilities developed by NOLIDEP in the community; and these are the Lupondo dam in the forest area, the Wasimona dam on the fringe of the flood plain, and the solar and engine driven bore-hole near the Mukuni stream. At the time of this study, we found that access to Lupondo dam in the forest zone was open to people from neighbouring villages, as long as they lived near enough to drive their cattle there on a daily basis. When asked whether access to Wasimona dam and the bore-hole would also be open to people from neighbouring villages when they become operational this summer, the village *induna* of Chinchimani village had this to say;

" it will be difficult for us to refuse them access to the dam. But we will definitely not allow them to use the bore-hole. They too should seek assistance (i.e from government or from NOLIDEP)"

The above statement is very informative. Access to the two NOLIDEP dams is relatively open to people from neighbouring villages, as is the case for Mararo, while access to the bore-hole is restricted to Chinchimani residents only, as is the case for the Chinchimani village tap. The following may explain why this is so;

i. Chinchimani residents are required to make regular monetary contributions to run the engine for both the village tap and the bore-hole. This being the case, 'community boundaries' are redefined to include only those who actually make the contributions, notwithstanding the diverse kinship and affinal linkages with people in neighbouring villages.

ii. The two dams were constructed by an external contractor using heavy equipment and then bequethed to the community, with minimal contribution from the local people. For this reason, the dams are seen as a gift from government, in the same manner that Mararo is seen as a gift from God. In such circumstances, it is very difficult for the traditional village authority to prevent their kin and friends in neighbouring villages from using these water facilities.

Against the above background, it is concluded that village level monetary contributions can

strengthen the legitimacy of traditional authority to control the use of communally-owned water resources. This point should therefore be taken into account in future interventions.

3.1.7.livestock diseases

Although the recent drought and its attendant problems of water scarcity and poor livestock nutrition had tended to over-shadow the problem of animal health in the past few years, the latter emerged as a major concern for the local people in this study.

During a PRA session held at Chinchimani village, a number of animal health problems affecting cattle were mentioned by the local people. It will be noted that some of these problems are in fact 'symptoms' rather than diseases per se, which means that consultation must be made with competent authorities to identify the underlying causes of some of these animal health problems. In the table given below, vernacular names as stated by the local people are given, accompanied by a rough translation as provided by the department of veterinary. Scientific names are only given in instances where our informants at the department of veterinary were absolutely certain about the underlying causes of some of problems obtained from the PRA. The complete list of animal health problems mentioned is as follows (not in order of importance)

Health Problem (vernacular)	Translation (English or scientific)
i. Sibumba	Omasum
ii. Kukokomana	Arched back
iii. Sitolopo	Pasteurellosis
iv. Kusulula	Diarrhea
v. Likufa	Ticks
vi. Mafwafu	Lungs
vii. Kutoza	Limping
viii.Meto	Eyes
ix. Litalo	Skin
x. Mufolozo	Abortion
xi. Nyoko	Gall sickness or anaplasmosis
Xiii Lubete	Spleen or anthrax
xiii.Gazi	Blood
xiv. Taku ni Mulomo	Foot and mouth disease
xv. Sikweke	Lumpy skin disease

The above is a mere shopping-list of the major animal-health problems being experience in the community. More technical information about the actual prevalence rates of these animal health problems may be obtained from the department of veterinary. However, during PRA, we were also able to get an impression of the relative significance of the above problems during different time periods. Two time periods were initially suggested for analysis, the 1980s and the 1990s. However, during the ensuring discussion, the need to split the 1990s was identified because of the changes in animal health problems imposed by the drought. In the end, four time periods were used in the analysis; 1980 to get an idea of the most important diseases some 17 years ago, 1990 to reflect the animal health situation just before

the drought, 1994 to ascertain changes in animal health patterns imposed by the drought, and 1997 to obtain the current animal health situation. The following table reflect local opinion about the relative significance of animal health problems experienced during the above referent time periods (note: although many other problems may have occurred during the different referent years, informants were advised to mentioned only those problems which they think were the most important during a specific time period).

Table 4: Relative significance of animal health problems during different years.

1980	1990	1994	1997
1.Sitolopo 2.Gazi 3 Sikwekwe 4.Meto 5.Taku ni mulomo	1.Likufa 2.Taku ni mulomo 3.Sitolopo 4.Nyoko 5.Gazi 6.Meto	1.Linyolwa ni tala 2.Mufolozo 3.Litalo	1.Kutoza 2.Meto 3.Kukokomana

The above table suggests a considerable degree of variation in the relative significance of different animal health problems in different years. This calls for a decentralised and community-based animal health strategy which can keep pace with the continually unfolding local level realities.

Although the time available for this study did not allow us to delve into the complex and often closely guarded topic of ethno-veterinary knowledge and practices, we managed to confirm that at least five out of the fifteen animal health problems listed above can be treated by local ethno-veterinary practitioners. The five problems are; *nyoko* (gall sickness or anaplasmosis), *lubete* (spleen or anthrax), *sibumba* (omasum), *kukokomana* or arched back disease, and *sitolopo* (Pasteurellosis). It is suggested that an elaborate study of ethno-veterinary skills and practices should be considered in future, to be undertaken in collaboration with the department of veterinary. This, in turn will pave way for a community-based animal health strategy which will incorporates elements of proven ethno-veterinary skills and practices.

The other livestock health problem which was mentioned during the PRA session is a disease called *kakotwe* which decimates chicken almost every year. There is no local cure for this disease, and therefore a strong appeal was made for more concerted efforts to control or eliminate the disease. Chicken play an important role in the local economy not only as a source of protein but also as a source of cash to meet recurrent household expenses.

3.1.8.Crop production

a. Land systems and Field types

As it has already been indicated somewhere above, agricultural production in the study area takes place in three distinct field types; these are the *sipani* forest gardens, the *mapumba*

lowland fields and the *litapa* wetland fields.

The *sipani* fields are located in the wooded forest area which is also used as the site for wet season grazing. The soil in the *sipani* area is described as black sandy-loam (*o munsu o kopani ni lishabati*) which is very well-drained. It responds very well to the first rains but has relatively poor water holding capacity. Because of the later, the erratic rainfall experienced in recent years has heralded a decline in the economic significance of *sipani* fields, such that only the more drought tolerant crops such as sorghum and millet are now the main crops grown in these fields.

The *mapumba* fields are located on the intermediary gentle sloping belt between the forest and the flood plain and also include gardens in the vicinity of the village settlements. The soils are varied but are generally described as very friable light loams with no sandy particles. In the past, a big portion of the *mapumba* belt used to be prone to flooding, and consequently, these fields were not as important as the sipani gardens. However, since the early 1980s the economic significance of these gardens has steadily increased, and are now the most important today.

There are several factors which have contributed to the increased significance of *mapumba* gardens. Firstly, as we have seen, rainfall has become more erratic in recent years, which means that there is now a limited risk of flooding. Secondly, these gardens are the main site for maize production, which has greatly increased in importance since the 1980s. Thirdly, unlike in the past when these fields were cultivated by hand on a very small scale, there has been a dramatic shift to the use of ox-drawn ploughs since the 1980s. Apart from maize, *mapumba* gardens are also suitable for pumpkins, gourds, sweet potatoes and a local type of sugar-cane known as *nswe*.

The third garden type is the *litapa* (sing. *sitapa*). These are low-lying gardens within the flood plain, which are situated on the margins of seasonal streams (*milapo*) and flush dambos. These gardens get completely covered with water during the flood season, leaving rich deposits of peat and alluvial soils in the subsequent dry season. Because of their location, *Litapa* gardens retain residual moisture during a greater part of the dry season, which makes it possible for cultivation to take place before the on-set of the rains. Like *mapumba* fields, *Litapa* gardens are also mainly used for maize cultivation, while other crops such as gourds, vegetables and *nswe* may also be grown on a relatively small-scale. Although the flood plain is extensive in size, only specific suitable portions can be used as sites for *sitapa* cultivation. This being the case, these fields are not as significant as the *mapumba* gardens in terms of relative size. However, the *litapa* gardens have great strategic importance in terms of food security, because the maize from *litapa* gardens, which is harvested around January, provides nourishment early in the agricultural season, before harvest of the main *mapumba* maize crop and of most other cereal crops.

b. Division of labour

Because of the need to exploit the dual enterprises of agriculture and livestock husbandry, there is a very well defined division of labour based on gender and age. Most of the agricultural tasks such as planting, weeding, harvesting threshing and processing are

undertaken by women. Men, who play a greater role in livestock husbandry, only carry out those agricultural tasks which are considered to be either heavy or masculine, such as bush clearing (for sipani fields), ox-ploughing, transporting produce from the fields to the homestead (with oxen) and building storage bins and granaries. As part of their domestic and child care training, young girls help out with domestic chores and tending to small children, and may also accompany their parents to the fields, depending on how big they are. Young boys help to control the oxen whilst ploughing, and also herd the oxen after ploughing. As part of their training in masculine skills, young boys are also routinely involved in many of the tasks undertaken by adult males, such as yorking oxen, holding the plough, transporting produce to homesteads, building granaries etc.

The division of tasks and responsibilities is by no means rigid, as some men may in fact undertake some of the tasks routinely performed by women, such as weeding and harvesting, while women also claim that they actual perform masculine tasks such as ox-ploughing when the situation dictates. Thus, the outline given above is only a normative description of how tasks and responsibilities ought to be shared on the basis of gender and age, rather than an unequivocal statement of how these roles and responsibilities are actually enacted on the ground. It is suggested that if more detailed information about actual activities and labour inputs for men and women is required, NOLIDEP should consider undertaking a more elaborate and multiple-visit gender study, which will reflect daily work routines for men and women during different seasons in a year.

c. Cropping patterns

As is indicated earlier, maize (*mbonyi*) is currently the most important cereal staple grown in the area. The other cereals grown are bulrush-millet (*mauza*) and sorghum (*makonga*). Cowpeas (*manawa*) are the major pulse crop, followed by bambara nuts (*lituu*). Groundnuts (*ndongo*) were grown to a very limited extent in the past, but are no longer important today. Other ancillary crops being grown in the area include pumpkins (*mundalangwe*), gourds (*malaka*) and *nswe*, which are usually intercropped with cereals such as maize. Vegetables are also grown on a very small scale in litapa gardens and near streams, or around homesteads under irrigation with water from standing pipes. A type of wild-mellow, locally known as *namuchoko*, is consumed during the hunger period just before harvest. *Namuchoko* is also liked by livestock, and is therefore propagated extensively through cattle droppings.

The PRA exercise undertaken at Chinchimani village indicate that cropping patterns in the study area has undergone some dramatic changes in the past three decades. In the 1960s, sipani-based bulrush millet and sorghum were the main staples, in that order of importance. Maize was only grown on a very small scale to supplement the two main staple cereals mentioned above. However, between the 1970s and the 1980s, the production of bulrush millet and sorghum started to decline. In the 1990s sorghum production continued to decline, and is now considered to be a very minor cereal crop mainly used for occasional beer brewing or for nshima during the hunger period. In contrast, there has been a resurgence in bulrush millet production in recent years, and it is widely believed that this crop will become even more important in the future. The most dramatic change is witnessed for maize, which has risen from being a minor crop some thirty years ago to a position where it is now regarded to be the mainstay of the agricultural economy. This upsurge in maize production started in the 1980s, as more and more people shifted their priority from forest-based bulrush

millet and sorghum cultivation. For pulse crops, cowpeas has steadily increased in significance since the 1960s, while bambara nuts have declined in importance. At present, no one in Chinchimani village is reported to be producing any significant amounts of bambara nuts any more. Sweet potatoes, which were grown in abundance in the past, have also declined in importance. These cropping dynamics are summarised in the following table.

Table 5. Long term cropping trends for Chinchimani area.

crop	Relative significance in			
	1960's	1970s	1980s	1990s
sorghum	* * * *	* * *	* *	* *
millet	* * * * *	* * *	* *	* * *
maize	*	* *	* * *	* * * * *
cowpeas	* *	* *	* * *	* * *
bambara nut	* *	*	*	
groundnut	*			
sweet pot	* * *	* *	*	*
w. mellow	* *	* *	* *	* *

Key:

***** = most important crop
**** = very important crop
*** = important crop
** = small scale production
* = very small scale
blank = negligible or not grown at all.

A number of reasons were advanced for the changes in cropping patterns observed above. The decline in sorghum production was attributed to its decreased subsistence and exchange value. In the past, sorghum, together with bulrush millet, were the main cereal staples as they were easier to grow and to process into *buhobe* or thick porridge (the main staple dish) than other possible alternatives such as maize. Surplus sorghum could also be exchanged for cattle or brewed into beer for sale or for important festivities such as weddings and initiation ceremonies. Since the 1980s, several factors such as the ready availability of an official market and the introduction of hammer-mills have favoured maize as both the main cash crop and the main staple. Furthermore, many rural households can now afford to purchase *mukaiwa*, the industrially processed and packaged maize-meal, which is readily available in many rural shops and in Katima-mulilo. The increased purchasing power of rural households can be attributed to increased incomes from cattle sales and increased transfer of incomes

from the urban sector to the rural sector[1]. The other reason which has contributed to declined sorghum production is the decreased importance of the local sorghum beer, which has now been replaced by a lighter yeast-based brew called *tombo*, and by commercial bottled lager beer.

The short-lived decline in bulrush millet production in the 1980s can be attributed to the same reasons advanced for sorghum. However, as we have already noted, bulrush millet production is again on the up-swing, and the following reasons can account for this resurgence; Firstly, there is now an official market for bulrush millet through the regional farmer cooperative called Likwama. Official interest in bulrush millet has been spurred by increased demand for bulrush millet in Ovamboland, where it is used as a staple. Related to the above, bulrush millet is now hammer-mill processed, packaged and sold in the major supermarkets as flour, and this has helped to stimulate wider appeal and increased demand. Lastly, new higher yielding, shorter maturing and drought resistant varieties of bulrush millet have now been introduced by the department of agriculture. One such variety which is becoming popular in the study area is *okashana*.

The dramatic switch to maize production can be chiefly attributed to the availability of a ready formal market provided by milling companies in Katima-Mulilo, such as Eagle Mill, and later FNDC mill. Since the 1980s, demand for maize flour has increased due to the expansion of the non-agricultural urban population, occasioned by increased employment opportunities in the civil service and in the armed forces (see also Naerra et al 1992). In addition, during times of drought such as the early 1990s, the grain market becomes very lucrative. This is often accompanied by a net flow of livestock from poorer, and often grain-deficit households (who are forced to liquidate their livestock assets to acquire grains), to richer households with a grain surplus (see for example Sikana, 1997, for Western Zambia).

The second reason accounting for the spectacular expansion of maize production is the increased use of ox-drawn ploughs. In the past, the main cereal staples of millet and sorghum were mainly cultivated by hand-hoe. Today, many people use ox-drawn ploughs, while some use the government-run tractor hire scheme. However, there is some indication that not everyone has ready access to draft power, because some people can not always manage to raise sufficient cash to hire oxen or the government tractor. This being the case, there is need to explore whether outside intervention is required to extend the availability of draft power to even more people. Before any specific interventions can be identified, the main bottlenecks limiting draft power availability must first be identified. The justification is that increased availability to draft power will push maize production to even greater heights.

The third reason given for increased maize production is the introduction of new higher yielding varieties of maize from within Namibia and from neighbouring countries such as Zimbabwe and Zambia. One such variety, which is being grown in the study area is Pioneer.

---

[1]These transfers may be in the form of direct remmitances to rural-based relatives or investiments into the agro-pastoral sector. Many urban-based Caprivians also maintain a second home in their village of origin, which they visit during weekends or during leave from their formal jobs.

3.1.9. Summary of major conclusions and recommendations; Chinchimani.

1. The local definition of 'neighbouring communities' does not coincide with the formal definition based on the sharing of actual physical boundaries. Instead, the local definition includes all those communities with whom grazing and water resources must be shared.

2. The above inclusive definition does not imply open and unfettered access to grazing and water resources for everyone. Instead, access to these resources must be negotiated on the basis of cross-cutting and multifarious linkages such as kinship, marriage, political rank and the degree of cordiality between different herd-owners.

3. Village level traditional authority play the biggest role in mediating access and use of all forms of common property in the community, including range and stock water resources. It is noted that NOLIDEP Caprivi has already established a very sound working relationship with village level traditional authority in both Chinchimani and Kabbe, and its suggested that this should continue.

4. Village-level monetary contribution can strengthen the legitimacy of traditional authority to control the use of communally-owned stock water resources. It is recommended that this should be taken into account in future intervention.

5. The duration and strategic importance of flood-plain grazing has significantly increased in the last five years due to recurrent drought. However, the supply of water within the plain itself has also drastically reduced. A clear pattern which emerged is that the problem of livestock water shortage becomes more critical as one moves northwards from Linyanti royal capital.

7. Within the study community, only the two villages of Muketela and Chinchimani control significant flood-plain grazing and stock water resources. The villages of Malundu, Kanono, and Shaile, have relatively easier access to these grazing and water resources because they share common historical roots with Muketela and Chinchimani village.

8. The people of Lusu village are not strongly incorporated into the local networks of reciprocity and cooperation because of their weaker historical connection with the other villages in the community. Consequently, their bargaining power to contest for communal flood-plain grazing and water resources is much more limited.

9. On the basis of the above, it is recommended that Lusu village should be given preference in the next phase of NOLIDEP's water development programme[2]. There are other reasons to justify this. In the first place, this is the most northerly village in the community, and is therefore furthest from the dry-season grazing enclave in the wetter southern villages. Secondly, this village depends on a hand-pump while three of the wetter southern villages (

---

[2]Although Lusu Village is one of the target villages for the German-sponsored Rural Water Development Programme, officials of this programme stated that they do not have sufficient resources to provide livestock water facilities to all the target villages.

Kanono, Muketela, Chinchimani) have piped water. Thirdly, there is a local sentiment within Lusu village that development intervention in the past has tended to favour the southern villages which are politically closer to the centre of traditional authority at Linyanti.

10. The people at Chinchimani village are currently making use of their domestic water tap to water their livestock. This initiative could be supported by supplying water tanks and drinking troughs to other villages with standing water pipes such as Kanono and Muketela. The possibility of extending water pipes to the forest zone where grazing is better, could also be evaluated.

11. In villages such as Lusu, where manual hand-pumps are used to water livestock, the chore of having to fill drinking troughs using hand-pails can be simplified by attaching extension pipes which will enable people to directly pump water into the drinking troughs.

12. The institution of dry-season cattle posts can be used as a convinient entry-point for development intervention. For example, cattle clubs can be formed on the basis of groups of linked households who routinely amalgamate their livestock to establish a joint cattle post during the dry season.

3.2. Kabbe Area

3.2.1. The community and its neighbourhoods

Like Chinchimani, Kabbe village is also made up of a cluster of dispersed hamlets or sub-villages each with a distinct identity and a recognised *mun'ga muzi* (owner of the village). However, compared to chinchimani village, Kabbe territory is quite extensive, and therefore hamlets tend to be more widely dispersed. Consequently, territorial boundaries between the different sub-villages are a bit more pronounced, although people still share close kinship and affinal relationships.

According to our informants, Kabbe village is constituted of 17 sub-villages which are given below;

i.	Demani	ii.	Mboma
iii.	Ku ba Sililo	iv.	Ku ba lubanda
v.	Ku bo Mazambani	vi.	Mudaniko
vii	Sumpauko	viii.	Mapenzi
ix	Kahunikwa	x.	Kasheshe
xi.	Ku ba Lutaka	xii.	Ku bo Chandimwa
xiii.	Limbeza	xiv.	Ku ba Matali
XV.	Makaipa	xvi.	John Mapulanga
xvii.	Old Kabbe		

The above listing is different from that given by a study undertaken on behalf of NOLIDEP in 1996, which identified 18 sub-villages in Kabbe community, and which mentions a number of names which do not appear in the list given above. This is due to the fact that depending on the informant, some villages may be grouped together or segregated, and a single hamlet may have more than one name; for example, Demani village is also referred to as Ku bo Sinvula (ie Sinvula's place). Hence, different researchers may record different names for the same hamlet and even arrive at a different number of hamlets.

In the past, the above sub-villages were part of the Masubiya royal village which was by then located at old Kabbe. When the palace shifted to Bukalo during the reign of Chief Mulaliswani the 2nd, most people also moved from Old Kabbe, often as clusters of closely related relatives. Two reasons were advanced for shifting; firstly, people wanted access to more agricultural land because at old kabbe, the area was prone to constant flooding , and the few raised mound gardens (*mazulu*) were not enough to go round. Partly due to the above, agriculture was primarily based on small-scale bulrush millet production, using the limited *mazulu* gardens. The second reason for shifting is that other social services such as school and rural health centre were also moved to the plateau.

Because people shifted and settled as clusters of close relatives, most sub-villages in Kabbe village trace their origin through two main ancestry lines, *ba Silimwe* (i.e.Silimwe's descendants) and *ba Lubanje* (ie Lubanje's descendants). Hence, some villages are predominantly constituted by one or the other ancestry line while some villages are mixed. The following is how the different sub-villages can be classified on the basis of ancestry lines.

Table 6: Ancestry categories for Kabbe hamlets

Ba silimwe	Ba Silimwe/Lubanje	Ba Lubanje
Demani Mapenzi Kahunikwa Chandimwa	Mboma Limbeza Ku ba Matali Makaipa John Mapulanga	Ku ba Sililo Ku ba Lubanda Mazambani Mudaniko Sumpauko Kasheshe Ku ba Lutaka

The above classification, based on natural affiliation of extended kinship clusters, can be used by development projects as a basis of group formation and community mobilisation.

Unlike Chinchimani village where human settlements are permanent, and where a simple and short range transhumance of livestock is practised, Kabbe village practices a more extensive transhumance system which involves the shifting of both people and livestock over relatively more spatially separated ecological niches (this will be elaborated later). Many people have two homes; a dry season home in the flood plain and a wet season home in the plateau. People from one plateau sub-village would typically move to one plain village. However, two or more closely related plateau sub-villages may move to one plain village; for example, Sililo, Sumpauko and Kasheshe sub-villages on the plateau, which are all classified as *ba Lubanje* in the table above, all move to one plain village called Kachelwa. The following summarises the plain village destinations of people from different plateau sub-villages.

Plateau sub-village	Plain village destination
Mboma	Mabungo
Damani	Mabungo
Limbeza	Mabungo
Makaipa	Mabungo
Ba Sililo	Kachelwa
Sumpauko	Kachelwa
Kasheshe	Kachelwa
Kahunikwa	Kachelwa
Mazambani	Kuliza
Mudaniko	Nabula Nkoli
Mapenzi	Shuckmansberg
Chandimwa	Schuckmansberg
Ku ba Lutaka	Ku ba Lutaka
Mapulanga	Old Kabbe
Matali	Nazonde

The pattern of movement of the different plateau-based villages can also be taken into account in group formation and community mobilisation. For example, cattle clubs may be formed in such a way that they are constituted by people who typically move together to and from the plain settlements.

Unlike chinchimani, which shares its grazing and water resources with a good number of other neighbouring communities, Kabbe village shares borders with communities which do not directly compete with each other for the same grazing and water resources. For example, Bukalo, north-west of Kabbe, has its own forest pans and wet-season pastures as well as direct access to the lower Zambezi flood plain. Similarly, Lusese area in the south has its own grazing and water resources both in the plateau and in the plains. It is only the third neighbouring community of Ikumwe in the west, which appears to be a bit more dependent on grazing and water resources being controlled by Kabbe village. For example, last season, six herds from Ikumwe area were grazed and watered in forest pastures belonging to Kabbe village.

Although there is no direct competition for water and grazing resources between Kabbe and its neighbouring communities, there is nevertheless a great deal of stock movements between these communities. This is because some individual herd-owners in any one community may often share close kinship or marriage ties with other individuals in neighbouring communities. It is through such ties that many forms of stock transfer are accomplished. As it will be demonstrated below for example, during the summer, when most people move to the plain villages, some individuals who can not access agricultural land within Kabbe territory may temporarily shift with their stock to other neighbouring communities in which they can lay claim to land on the basis of their kinship or marriage ties.

3.2.2. Traditional Leadership.

The traditional leadership structure in Kabbe is very much the same as that described for Chinchimani. At the level of the sub-village, the mung'a muzi (owner of the village) presides

over all local matters and is answerable to the nduna wa muzi (village induna), who is the head of the village court or *kuta ya muzi*. The internal structure of the village court, and how it relates to the higher authority of the county (*silalo*) and the chiefdom, is basically the same as that described for Chinchimani, and therefore there is no need to repeat that here.

3.2.3. Grazing and water resources.

Kabbe village is located on the edge of the wooded plateau which borders the extensive lower Zambezi flood plain. Because of its location, Kabbe territory spans across three distinct ecological niches, namely; the *lupani* or forest zone (also called *mushitu*), the intermediary belt of bushed grass-land called libala (also called *saana*), and the plain itself.

a. *Upland (mushitu)grazing.*

The *lupani* or forest zone is used as wet season pasture and is also the site for satellite forest agriculture. Within the *Lupani*, four main forest pans (*bihubi*) are used to water livestock; and these are Kapani 1, Kapani 2, kataka and windmill. All these forest pans dry up by April, including Kapani 1 which was recently excavated by NOLIDEP as part of its dam construction programme. Generally, Kapani 1 dam is regarded as a failure, and the local people attribute this to the fact that they were not adequately involved in the planning, design and implementation of the dam construction project. In other words, community involvement was confined at the consultative level, rather than at the level of substantive-decision making and collective action. In particular, the local people seem to heap the blame on the company which was contracted to excavate the dam. They claim that this was done in a big hurry and that the use of heavy machinery should have been weighed against the use of more labour intensive options which could have led to greater community participation. Whereas it would be unwise to entirely dismiss the above claim, it should be pointed out that the physical and hydrological characteristics of the forest zone may have more to do with the relative failure of forest dams in both Kabbe and Chinchimani. Thus, our observation is that these claims must be taken with a pinch of salt, because the second dam, which was constructed in the intermediary bushed valley zone, using similar capital intensive methods, seems to be flourishing.

b. *Intermediary bushed-valley (saana) grazing.*

When forest pans are dry by April, the intermediary bushed-valley pastures are used until August, when animals and people shift to the riverine pasture in the plains. Kabbe has four main grazing enclaves in the bushed-valley zone, and each of these grazing enclaves is serviced by seasonal valley pans. In fact, a single name is used to refer to both the pan and the grazing environs around it. We now briefly describe each one of these four grazing areas, mainly in terms of the number of villages which use each grazing site and how long it takes to dry up. By listing the number of villages which use each site, a rough estimation of the total number of animals using each site can be obtained by making reference to the quantitative data set.

i. Lukobakoba:- This grazing site has a pond which holds water up to July. The main villages which use this site include; Sumpauko, Kaunikwa, Demani, Mudaniko, Mazambani, Sililo,

Lubanda, and Lutaka.

ii. Nandabu:- This site is situated some three kilometres from Lukobakoba. The pond is slightly larger than Lukobakoba and therefore holds water up to August. According to the local people, one important factor which leads to the drying-up of larger pans such as Nandabu is the competition between elephants and livestock. During the dry season, elephants are forced to migrate from the Chobe National Park in Botswana to Northern Caprivi, which happens to be wetter on account of its close proximity to the lower Zambezi drainage system. Not only do elephants drink more water but also their stampede leads to rapid siltation of the pans. The main villages saved by this site include; Limbeza, Lutaka, Kaunikwa, Kasheshe, Chunga, Lubanda, and Sumpauko.

ii. Namaulu:- This is situated about four Kilometres from Nandabu. The pond holds water up to August and would hold it much longer if it was not for the elephants. The main villages serviced by this pond include; Mudaniko, Demani, Lubanda, Mapenzi, Mazambani, and Sililo.

iii.Mboma:- This is the most important pan for Kabbe. It is the site of one of the two dams which were recently constructed by NOLIDEP on behalf of the community, the other one being Kapani 1 in the forest zone. However, in contrast to Kapani 1, this dam was full of water at the time of this survey. Before it was transformed into a dam, this pan used to service the villages of Mapenzi, Demani, Mboma, Mazambani, Mudaniko, and Lubanda. However, because of its newly found strategic importance, this dam will service all the Kabbe sub-villages. Local herdsmen interviewed on site felt that the dam has enough water to last through the summer if a workable strategy is devised to control the elephants (more about which later). This dam looks deep, and is partly covered by a prolific water weed called *mutindi*, which has spread on the shallow fringes of the dam. According to the local people, it would be advantageous if this weed could spread to the deeper end of the dam because the weed "holds water together" and would therefore elongate the productive life of the dam. In fact, even in Chinchimani, some key informants also expressed the view that the water retention capacity of the dam can be enhanced by colonising the dam with known aquatic plant species such as the said *mutindi, kuma, Musuhela, mashela, Njefu*, and water reeds. The existence of such clearly articulated indigenous technical knowledge justifies the local demand that community members should be actively involved in the planning, design and implementation of the NOLIDEP dam construction programme.

The relative success of bushed-valley dams over forest dams in both Chinchimani and Kabbe has important implications for the design of other parallel NOLIDEP programmes such as range improvement. According to the local people, forest pastures are preferred over both bushed valley and plain pastures because the former has more nutritious grass and plant species. However, as we have seen, valley dams have better water retention capacity than forest dams, which means that cattle will necessarily depend on poorer valley pastures for a much longer period. This being the case, a compromise can be made by focusing range improvement work on valley pastures rather than on the upland pastures.

c. *Flood-Plain grazing.*

In August and September, cattle are moved from the intermediary bushed-valley zone to the flood plain along the zambezi river and its tributaries. Most of Kabbe animals are taken to

Kasaya, a tributary of the Zambezi river. There are several villages scattered along the Kasaya river and the main Zambezi river. As indicated in section 3.2.1., people from different plateau villages take their animals to different villages, depending on kinship, marriage and even friendship ties. During this time of the year, people also temporarily shift to plain villages to cultivate their riverine gardens. Because of the strategic importance of riverine agriculture (as it will be shown later), individual herd-owners take their animals only to those plain villages in which their access to riverine gardens is assured. Thus, although the plain is extensive in terms of size, the distribution of animals within the plain is not random and haphazard, but is intricately linked to availability of agricultural land in different plain villages, and to the number of herd-owners who can lay claim over that land.

Because of the above, people in different plain villages are likely to experience different levels of grazing pressure. For example, if we refer back to the list of plain village destinations for different kabbe sub-villages given in section 3.2.1., we find that plain villages such as Mabungo and Kachelwa accommodate up to eight plateau sub-villages between them, while other sub-villages such as Kuliza and Nabula Nkoli only accommodate one plateau sub-village each.

Apart from intra-village competition for plain village farm-land and pastures, grazing pressure in the plain is also a result of competition with cattle from Kabbe's neighbouring communities such as Bukalo, Miyako, Ikumwe, Ibu, and Sibulwe. As is indicated in section 3.2.1., various forms of temporary stock transfers routinely occur between individuals in different communities, and these are also based on kinship, marriage and friendship ties. Thus, many individuals from different plateau communities may take their animals to relatives and friends in similar plain villages.

Although the grazing pressure experienced in Kabbe's plain pastures is nowhere near that experienced in Chinchimani's Mararo grazing enclave, Kabbe cattle also lose condition during dry-season plain grazing. Apart from the issue of localised grazing pressure in different plain villages, the other two factors contributing to loss of condition are the poor quality of grass and veld fires. According to local people, at the time when cattle move to the plain, most of the grass species found there, such as *mutaka*, *musuhela*, and *mutindi* are overgrown, coarse and not very palatable for cattle. Like for Chinchimani, uncontrolled veld fire is also a major menace because it restricts possible dispersion of animals from areas experiencing localised grazing pressure.

3.2.4. Agricultural Production

A. *Land systems and field types.*

Like livestock husbandry, agricultural production in Kabbe also takes place in the three agro-ecological niches described above; namely the *mushitu* or forest zone, the *saana* or bushed-valley zone and the flood plain itself, commonly referred to by the local people as *kwa nuka* ('at the river-side').

In the forest zone, local people distinguish two main soil types. The main type is *Lukundu* (also called *lisheke*) which occurs extensively throughout the forest zone and is described as sandy and well-drained. The second type is *sikela*, a sandy-loam soil which occurs in small

Kasaya, a tributary of the Zambezi river. There are several villages scattered along the Kasaya river and the main Zambezi river. As indicated in section 3.2.1., people from different plateau villages take their animals to different villages, depending on kinship, marriage and even friendship ties. During this time of the year, people also temporarily shift to plain villages to cultivate their riverine gardens. Because of the strategic importance of riverine agriculture (as it will be shown later), individual herd-owners take their animals only to those plain villages in which their access to riverine gardens is assured. Thus, although the plain is extensive in terms of size, the distribution of animals within the plain is not random and haphazard, but is intricately linked to availability of agricultural land in different plain villages, and to the number of herd-owners who can lay claim over that land.

Because of the above, people in different plain villages are likely to experience different levels of grazing pressure. For example, if we refer back to the list of plain village destinations for different kabbe sub-villages given in section 3.2.1., we find that plain villages such as Mabungo and Kachelwa accommodate up to eight plateau sub-villages between them, while other sub-villages such as Kuliza and Nabula Nkoli only accommodate one plateau sub-village each.

Apart from intra-village competition for plain village farm-land and pastures, grazing pressure in the plain is also a result of competition with cattle from Kabbe's neighbouring communities such as Bukalo, Miyako, Ikumwe, Ibu, and Sibulwe. As is indicated in section 3.2.1., various forms of temporary stock transfers routinely occur between individuals in different communities, and these are also based on kinship, marriage and friendship ties. Thus, many individuals from different plateau communities may take their animals to relatives and friends in similar plain villages.

Although the grazing pressure experienced in Kabbe's plain pastures is nowhere near that experienced in Chinchimani's Mararo grazing enclave, Kabbe cattle also lose condition during dry-season plain grazing. Apart from the issue of localised grazing pressure in different plain villages, the other two factors contributing to loss of condition are the poor quality of grass and veld fires. According to local people, at the time when cattle move to the plain, most of the grass species found there, such as *mutaka*, *musuhela*, and *mutindi* are overgrown, coarse and not very palatable for cattle. Like for Chinchimani, uncontrolled veld fire is also a major menace because it restricts possible dispersion of animals from areas experiencing localised grazing pressure.

3.2.4. Agricultural Production

A. *Land systems and field types.*

Like livestock husbandry, agricultural production in Kabbe also takes place in the three agro-ecological niches described above; namely the *mushitu* or forest zone, the *saana* or bushed-valley zone and the flood plain itself, commonly referred to by the local people as *kwa nuka* ('at the river-side').

In the forest zone, local people distinguish two main soil types. The main type is *Lukundu* (also called *lisheke*) which occurs extensively throughout the forest zone and is described as sandy and well-drained. The second type is *sikela*, a sandy-loam soil which occurs in small

patches within the forest zone and which is described as being more fertile and retains water better than *lukundu*. The main crops grown in the forest zone are bulrush millet and sorghum, and to a lesser extend, maize and water melons.

The bushed-valley zone is also used for cultivation, and like the forest zone, the major crops being grown here are bulrush millet, sorghum, maize and water-melons, in that order of importance. The main soil type found in the valley is *lukate*, and this is described as a black clayey soil which is hard and tends to crack when dry. *Lukate* soil is not very fertile and is poorly drained.

The flood plain is regarded as the most important zone for agricultural production. Cultivation occurs on three main field types, *mazulu* (raised mound gardens), *mandamino*(village fringe gardens) and *litapa* (seepage gardens). Soils in the plain gardens are varied, but people tend to single out a soil type called *manenu*, which is mainly found in *litapa* gardens. This soil is described as fine, dark, rich, very friable and well drained. The main crop is maize, supported by minor crops such as wild mellow, pumpkins and *nswe* (a kind of local sugar-cane).
Of the three garden types mentioned above, *litapa* gardens are the most important, as evidenced by the tendency by the local people to make reference to what goes on in *litapa* gardens when they are asked to describe flood-plain agriculture. In other words, flood plain cultivation is seen to be synonymous to *litapa* cultivation. The other obvious sign of the central role of the litapa gardens is the fact that the rhythm of activities in these gardens have evolved in a manner which closely conforms to the rhythm of seasonal livestock migration. In other words, litapa gardening seems to go hand in glove with livestock husbandry, and together, the two constitute the hub around which the economic and social life of the community revolve.

As pointed out in the section on flood plain grazing, the strategic importance of flood plain gardening is manifested by the influence it imposes on choice of flood plain village made by herd-owners when they have to move their livestock to riverine pastures. As we have seen, people move their animals to only those villages in which their access to flood plain gardens is assured. According to estimates by the local people, flood plain agriculture accounts for up to 80% of staple cereal (i.e. maize) production in the community. Because of this, plain fields are given priority in the allocation of household labour. For example, the need to weed twice in the plain fields often delay, and sometimes even precludes weeding of the forest gardens. In other words, forest cultivation is seen as a subsidiary enterprise, mainly devoted to millet and sorghum production. These two 'insurance crops' are not preferred staples, and are mainly grown to cushion the impact of possible crop failure during drought. Both crops are only consumed in December and January, when maize stocks are low or have completely run out. For this reason, millet and sorghum are regarded as 'hunger crops'.

Against the above background, it is recommended that the significance of flood plain agriculture should be taken into account by outside development institutions such as NOLIDEP. In collaboration with the farming systems research division, an initial exploration of constraints and opportunities in flood-plain agriculture could be undertaken. This exploration could then point to potential areas of intervention to increase production. For example, new shorter-maturing varieties of maize could be tried in the litapa gardens to compare their performance with the varieties currently being used. Since litapa gardens are

planted well before the onset of the rains in October using residual moisture, the introduction of a shorter maturing maize variety could shorten or even eliminate the hunger spell around December and January.

B. *Access to flood-plain gardens.*

Given the strategic importance of flood-plain agriculture as stated above, access to plain gardens is constantly contested. The premium put on flood plain gardens is even likely to increase, given the existing opportunities to market maize surpluses on a readily available formal market.

In Kabbe area, and in Caprivi in general, a person can inherit land in both his parents villages. However, there seems to be a general consensus that a person should make a primary claim in father's village, because rights in mother's village are subject to the benevolence of mother's paternal relatives such as mother's brother, mother's father, or mother's father's brothers. In fact, it is generally believed that a person's best chance to get an estate in his mother's village is when mother's father is still alive.

Although there are clear rules which determine land inheritance, there are numerous cases in which individuals or groups of individuals lay claim on the same piece of land, or contest boundaries between estates. At the time of this study, there were three recent cases of land disputes in Kabbe. In one case, two families attending a land dispute case engaged in physical scuffle at Bukalo court. The two families were disputing the boundary between their family estates. This case is still on-going.

The second case demonstrates a slight overlap and confusion between rights of inheritance and usufruct rights. In this case, one man, whom we shall call Mubiana, temporarily vacated his land in his father's riverine village in Lusese and settled in his mother's village in Kabbe. Last season, Mubiana decided to return to his father's village, after a few years absence. He cultivated his former field and planted his maize. When the maize was ready to be weeded, another man, whom we shall call Nyambe, accused Mubiana of having cultivated on his land, which according to him, he has been using for the past few years. Nyambe is now laying claim on not only the field, but also on Mubiana's maize crop itself, and to keep Mubiana away, Nyambe carries a gun when working in this field.

The third case is somewhat similar to the second. In this case, an elderly woman harvested someone else's maize field because the later had encroached on her piece of land. This was done as a preemptive measure; for once an encroacher is allowed to establish usufruct rights over a piece of land, it is very difficult to subsequently remove him, as is evidenced by Nyambe's actions in the second case example.

C. *Crop production trends.*

Like in Chinchimani, the most dramatic change in crop production in Kabbe is the ascendancy of maize as the main cereal staple, replacing millet and sorghum. In the 1960s and 1970s, millet and sorghum were the main staples, while maize was grown on a very small scale, and was mainly consumed as green maize. In the 1980s, the production of maize increased, while that of millet and sorghum started to decline. The early to mid 1990s were generally poor

years for crop production because of the recurrent drought which ravaged most parts of southern Africa. The good rains which were experienced in the last two years have again led to a recovery in crop production, with maize yields reaching record levels. Like is the case for Chinchimani, the upsurge in maize production can be attributed to the ready availability of a market, to the switch to ox-cultivation instead of hoe cultivation and to the introduction of new varieties of maize. In addition, the introduction of a government-run tractor hire service has also led to expansion of the total maize hactarage.

3.2.5. Agro-pastoral labour.

Like in Chinchimani, there is a well defined division of responsibilities and tasks on the basis of gender and age. In general terms, men and boys perform most of the tasks in livestock husbandry, such as herding, building kraals, milking, making ropes, etc. Women and girls on the other hand, play a bigger part in crop production and domestic work. Apart from land preparation which is done by oxen and involve men, subsequent manual operations such as weeding and harvesting are mainly done by women. After harvesting, men again play a role in transporting crops from the field site to the village, using ox-drawn carts or sleighs, and in making storage bins.

Perhaps even more so than is the case for Chinchimani, there is a big dependence on hired labour for both livestock husbandry and crop production duties. Most of these hired hands come from across the river in neighbouring Zambia to look for jobs as herders (*balisana*), being attracted by the relatively higher wages offered in Caprivi. For example, the lowest paid herder in Namibia gets N$50 per month (roughly equivalent to US$12 at prevailing exchange rate) while many herders in Zambia get as little as ZMK7,000 per month (equivalent to only US$5).

Although these hired hands are primarily recruited to herd cattle, they also perform many other domestic and agricultural tasks such as fetching firewood, cultivating, weeding, and harvesting. Because they have to take many other responsibilities apart from cattle herding, the hired hands are also provided with food. In other words, these herders become incorporated into the labour pool of their employers' households, and in many cases, become part of their employers' consumption unit. After serving for several years and getting married, some hired herders may be given a separate field of their own to cultivate, and this enables them to set up a satellite and semi- autonomous consumption unit.

At the time of this survey, we counted a total of 103 Zambian herders in Kabbe. These were distributed as follows in the different sub-villages;

Village	No of Zambian herders	Village	No of Zambian Herders
Mapenzi	8	Mudaniko	9
Kahunikwa	9	Sumpauko	8
Lutaka	5	Mazambani	8
Kasheshe	7	Sililo	3
Chandimo	3	Matali	6
Limbeza	25	Makaipa	1
Demani	10	Mapulanga	1

Apart from the male immigrants who settle for relatively long spells of time in Caprivi, Zambian women also cross into Caprivi on seasonal basis, to take up short term piece-work such as weeding and harvesting. The traffic of people between Zambia and Caprivi has led to the emergence of a lucrative river-boat bussiness, whereby boat and canoe-owners transport prospective and returning job seekers to and from Zambia for a fee, usually under the cover of darkness.

The existence of a large Zambian workforce implies that there is sufficient capital in the community to attract job-seekers. Our investigations revealed that most of this capital originates from the formal employment sector, because many Caprivians routinely invest savings from wage employment into the traditional agro-pastoral sector. For example, most of the local school teachers at Kabbe, including female teachers, reported that they maintain a herd of cattle in their villages of origin, and that they routinely send money home to pay for hired herders. To further illustrate this phenomenon, a case example of headman Mapenga (not his real name) is given below.

Headman Mapenga is reputed to be one of the wealthiest men in Kabbe. He controls one of the biggest herds of cattle in the area. Although he is assisted by 10 hired herdsmen, he still does not have sufficient labour to adequately look after all his stock. So, he has dispersed some of his animals to several relatives and friends under the traditional *mafisa* arrangement. When asked whether he is the sole owner of all the livestock holding under his control, Mapenga revealed that his herd is in fact an amalgamation of cattle belonging to himself, his three grown-up sons and one grown-up daughter, who are all currently in formal employment within Caprivi and in other parts of the country. " Although we had 74 calves last rainy season, my children do not seem to want to stop buying more cattle" he lamented. As a general rule, all the four absentee cattle-owners have to send regular cash remittances to the village in order to pay wages for the hired herders. If one of the four does not send money, the old man has the freedom to sell one beast belonging to that particular defaulter, in order to cover wages for hired herders.

The above scenario is considered important because it sheds light on the intricate link between urban employment and the traditional agro-pastoral sector. This link has the following development implications;

i. Although it is often suggested that the creation of alternative employment opportunities can help reduce stocking levels in the traditional sector (i.e. by reducing dependence of the local people on livestock as the main source of income), the evidence presented above points to the contrary. For many Caprivians, formal employment is viewed as an ephemeral episode in a person's life, and that one day everyone has to retire and settle back in their village of origin[3]. For this reason, investing wages into the agro-pastoral sector is seen by many as part of their preparations for their eventual retirement and possible settlement in the country-side. Thus, our contention is that increased access to urban incomes will increase, rather than reduce stocking levels in the country-side.

---

[3]This is unlike in other African countries such as Zambia, where many salaried employees aspire to settle in urban areas upon retirement.

ii. Since many salaried employees are already involved in the traditional cattle sector, cattle development intervention should not be targeted only at those people who actually tend the animals in the villages, but should also involve salaried employees. One possible way to involve urban-based salaried employees is to support the formation of urban-based 'village associations' which bring together people who originate from the same village. In most African towns, people who originate from the same village always form a close network of cooperation and exchange, and regularly interact with one another on many informal fora (e.g. funerals, weddings, exchange visits, etc.). These already existing urban networks can be mobilized, formalized and deployed to address development priorities of the home village. If this is successfully achieved, all development programmes such as the construction of dams or sinking of bore-holes can be jointly planned with these urban-based committees and the local people themselves.

iii. Related to the above, innovations such as cross-breeding programmes, veterinary care, supplementary feeding regimes, bore-holes etc., should be marketed not only to people in the villages but also to salaried employees. Not only do salaried employees have greater access to disposable incomes and credit networks, but they are also often more inclined to try new ideas and more well-connected to take advantage of such innovations.

3.2.6. Summary of major conclusions and recommendations; Kabbe.

1. All the sub-villages of Kabbe village were in the past part of the Masubiya royal capital, which was then located at old Kabbe. People shifted to their present site as clusters of closely related relatives. For this reason, all the sub-villages in Kabbe trace their origin through two main ancestry lines; *Ba Lubanje* and *Ba Silimwe*.

2. The above classification, based on natural affiliation of extended kinship clusters, can be used by development projects as a basis for group formation and community mobilisation.

3. People in Kabbe village practice a more extensive transhumance system whereby closely related plateau sub-villages routinely move to one plain village. This transhumance pattern can also be taken into account in group formation and community mobilisation.

4. Individual herd-owners take their animals only to those flood-plain villages where their access to riverine gardens is assured. Thus the strategic importance of flood plain agriculture has a direct influence on stock movement.

5. Against the above background, it is recommended that the significance of flood plain agriculture should be taken into account by development institutions such as NOLIDEP. In this regard, it is suggested that an initial exploration of constraints and opportunities in flood-plain agriculture should be undertaken in collaboration with the Farming Systems Research Unit. The possibility of introducing new shorter maturing maize varieties should be explored.

6. The relative success of bushed-valley dams over forest dams in both Kabbe and Chinchimani has direct implications for other parallel NOLIDEP programmes such as range improvement. It is suggested that range improvement work should focus more on the valley pastures where water is more abundant but grazing is poor.

7. The productive lives of valley dams can be elongated by colonising the dams with aquatic plant species which are known by the local people to 'hold water.' Ways to prevent siltation by elephants should also be explored in conjunction with the department of wild-life.

8. Local people should be more actively involved in the planning, design and implementation of the dam construction programme. They have valuable indigenous knowledge which can be incorporated into the dam construction plan, such as the suggestion made above to colonise the dam with known water-holding aquatic plant species.

9. The problem of uncontrolled veld fires is serious in both Kabbe and Chinchimani. It is suggested that contact should be made with the department of Forestry, which is currently running a highly successful pilot community-based fire protection programme (see appendix 7).

10. This study established that many salaried employees are involved in the traditional cattle sector. Cattle development intervention should therefore not be targeted only at those people who actually tend the animals in the villages, but should also involve salaried employees. One possible way to involve urban-based salaried employees is to support the formation of urban-based 'village associations' which bring together people who originate from the same village.

3.3. Cattle Marketing.

One issue which features prominently in community-level development discourse in both Chinchimani and Kabbe areas is that of cattle marketing. Many of the issues pertaining to cattle marketing are common for both Chinchimani and Kabbe, and for this reason, the discussion presented below is an overview of the cattle marketing situation for both communities, rather than a description of the specific circumstances which obtains in each community.

Two distinct cattle marketing systems are described; the formal or official market and the informal market. Opportunities and constraints associated with the two marketing systems are identified, and development opportunities are suggested.

3.3.1. The formal cattle marketing system.

Before independence, cattle keepers in Namibia's communal areas did not have access to an outside beef market. This was because most cattle in communal areas could not meet the strict quarantine requirements of the formal beef market, which was by then dominated by commercial farmers.

At present, the formal cattle market in Caprivi and other communal areas is dominated by MEATCO, the only parastataal organization which directly buys cattle from small-holder producers. To meet the strict quarantine requirements of the formal market, MEATCO established a quarantine facility and an abattoir within Caprivi. These two investments required a substantial capital outlay to the extent that MEATCO is now required to slaughter at least 5,000 animals per annum in order to break even. For reasons which will become clear in due course, it is not always easy for MEATCO to meet this target because off-take rates among traditional cattle keepers are low. The official view within LIKWAMA, and indeed

within MEATCO, is that traditional cattle keepers are reluctant to sell their animals because of the socio-cultural and symbolic value they attach to cattle. Thus, to stimulate sales, MEATCO works through a local farmers' union called LIKWAMA, which has a network of 25 community-based local associations. A stock agent is appointed by LIKWAMA for each one of these local associations. According to one top official within LIKWAMA, the role of the stock agent is to 'try and break traditional barriers' by encouraging cattle keepers to market their animals. As part of this campaign, LIKWAMA, through their stock agents, informs cattle keepers about MEATCO cattle auctions; about the proposed buying point, number of animals required, proposed sales date and prevailing prices. For playing this role, LIKWAMA is paid 1.5% of the total value of cattle purchased by MEATCO.

Despite the above efforts, many local cattle keepers are not happy with the price being offered by MEATCO. The problem of low prices was ranked as the most important development priority in both Chinchimani and Kabbe. As a consequence of this, some cattle owners may attend MEATCO cattle auctions but still return home with their cattle after failing to obtain a reasonable price from MEATCO. According to local people, only the biggest ox can fetch over one thousand Namibian Dollars, while the majority of animals are pegged at less than a thousand.

Although MEATCO does not have the mandate to fix beef prices (this lies with the Meat Board in Windhoek), local MEATCO officials in Katima believe that MEATCO can not afford to pay higher prices to traditional cattle keepers because of several mitigating factors. Firstly, MEATCO incurs very high overhead costs as a result of the strict quarantine laws which have been put in place to control the spread of Foot and Mouth Disease (FMD). For example, all animals purchased from the traditional sector must be confined in quarantine camps for up to 21 days before they can be slaughtered and marketed. This does not only increase costs but it also delays profits. Furthermore, even after the 21 days, not all the animals purchased by MEATCO will be accepted for slaughter. Many of them are condemned and discarded. In addition, stock thefts are quite common during this quarantine period. For example, during the month of March, 53 animals were reported stolen from the MEATCO quarantine camp. The above factors impose considerable risks on the part of MEATCO.

Related to the above, carcasses from the traditional sector must be de-boned before they can be exported to other parts of Namibia or outside the country. This imposes additional costs on an industry which is heavily dependent on the export market. Presently, most of the animals purchased in Caprivi are exported either to Southern Namibia, where the concentration of salaried urban population is higher, or to the Republic of South Africa. The Republic of South Africa account for 60 % of the export market for Caprivi beef while the remaining 40 % is exported to the south of Namibia and to a MEATCO processing factory in Otavi. The high costs of transportation makes Caprivi beef to be more expensive in Windhoek than it is in South Africa.

As can be deduced from the above, low local demand for beef can also account for the low prices being offered to traditional cattle keepers. According to estimates obtained from MEATCO, 200 animals are slaughtered at the local abattoir every week, of which 160 are exported only 40 are consumed locally within Caprivi. Presently, the main demand centre is Katima-Mulilo, the only town with a sizeable population concentration in Caprivi. In fact, according to officials at the MEATCO retail butchery in Katima-Mulilo, most of the beef is

sold to government institutions such as schools, colleges, and the local hospital, while only a small proportion is sold directly to the general public.

Whereas the above factors do contribute to low prices of beef from the traditional sector, the most fundamental reason, in our opinion, is the generally poor condition of traditionally managed stock. The formal beef market uses an elaborate grading system which puts traditional small-scale producers at a great disadvantage. This grading system is based on age of animal and body condition. Young animals of less than 18 months are categorised in the premium 'A' grade, and these fetch the highest price, followed by grade 'B' animals, aged between 18 and 36 months. Grade 'C' animals are above 36 months old, and these fetch the lowest prices. Within each grade, sub-categories are again made on a three-tier scale (e.g. A1, A2, and A3) basing on body characteristics such as fatness and skin condition. The numerical value '2' is more superior and therefore more expensive, followed by '3' and finally '1'. Thus for example, 'A2' animals fetches more money than 'A3' and 'A1' animals, while the same grading system also applies for grade B and grade C animals.

There are several reasons why traditional cattle keepers are at a disadvantage in the context of the above pricing system. Firstly, as we have seen above, cattle under traditional management mainly depend on communally-owned pasture and water resources, where nutritional intake is not always sufficient and is highly dependent on the vagaries of nature. Secondly, indigenous cattle breeds are generally smaller in stature but more hardy and well-suited to the unfavourable conditions obtaining under traditional cattle management. Thirdly, unlike commercial cattle keepers who raise animals mainly for the market, the production goal of most traditional cattle keepers is to extract a wide range of use values such as milk, manure, draft power and the reproductive capacity of their individual stock units.

Because of the above factors, most traditional cattle keepers are not able to sell their animals at a time when they can fetch the highest price on the formal market. Most animals in the traditional sector are still be very small at the age of 18 month, which is considered by the formal sector to be the premium age for selling. Thus many traditional cattle keepers delay sales until their animals are over three years. For example, according to estimates obtained from MEATCO in Katima, 65% of the animals bought from traditional cattle keepers in Caprivi are grade 'C', with 25% being grade 'B' and only 10% being grade 'A'. Meanwhile, the price differential between a prime grade 'A2' animal and a grade 'C1' animal of the same weight can be as large as 70 %. For example, According to April 1996 prices, a 400 kg (live weight) 'A2' animal fetched R1,055 while a 'C1'animal of the same weight fetched only R591 (see appendix 6).

Against the above background, the position taken in this paper is that the observed reluctance to market animals on the part of traditional cattle keepers can not solely be attributed to the socio-cultural and symbolic value attached to cattle. On the other hand, because of the disadvantages inherent in the formal market pricing system, the reproductive and use value of stock may be perceived to be higher than their sale value, and this may account for low off-take rates. In our opinion, this could be part of the reason why people like headman Mwakamui do not see any sanity in the suggestion that traditional cattle keepers should sell more of their animals.

3.3.2. The informal marketing system:

The informal cattle market in Caprivi is still very small. There are two main informal market outlets; local slaughter at village and township 'bush markets' and local level sale of live animals for breeding purposes. Local sale of animals for breeding purposes is less visible and difficult to document as it involves private transactions between two parties. This being the case, this paper will focus only on local slaughter on the informal 'bush-markets'.

In both Chinchimani and Kabbe area, there are well established bush-markets where animals are slaughtered and sold directly to the public. Bush-markets are particularly important for cull animals which can not fetch a good price on the formal MEATCO market. They are also important for emergence slaughter to raise cash for contingencies such as illness, fines, and school fees, in situations where it would be too late to wait for the official MEATCO cattle auction. However, in areas such as Ngwezi township, Bukalo and Ikumwe, where demand for meat is high, bush-markets are well-established commercial outlets which cater for the need of entrepreneuring cattle keepers and cattle traders who slaughter on a regular basis. For reasons which are not clear, price per kilo at all these bush markets is the same (N$4 at the time of this study), irrespective of distance from the main consumption centre in Katima-Mulilo. Ngwezi township in Katima has the biggest network of 'bush-markets', and these are located at Itusengi, Choto, Mafuta, Cowboy, and Mahohoma mission.

To slaughter at these markets, one has to register with the traditional authority and pay a fee of about N$60, which covers local tax (N$40) and service charge for the scale provided (N$20). According to some key informants who regularly sell on these bush-markets, the price obtained per unit animal is generally better than what one would expect from the official MEATCO market. For example, an animal which fetches between N$800 to N$900 on the official MEATCO market can fetch as much as N$1,400 on the bush market. The main reason why it is more profitable to sell on the informal bush market is because animals are not graded. All animals fetch the same premium price of N$4 per kilo, irrespective of age, fatness, and skin condition. In other words, what matters here is the size of animal and quantity of meat, rather than the quality of meat.

Although the informal market is relatively attractive in terms of price per unit animal, and is also congruent with the production goals and circumstances of traditional small-scale producers, it is not big enough to absorb all the marketable animals from the traditional sector. Potential traders have to queue before it is their turn to slaughter. According to key informants who regularly use these markets, it is not possible for an individual to slaughter more than one animal per month. Furthermore, sales are low during mid-month when most salaried employees have run out of cash. This makes the informal market to be quite risky and unsuitable for those who may wish to engage in large scale cattle marketing. We contend that this situation is likely to continue for a long time to come, because Caprivi does not only have a low concentration of salaried urban population but it is also quite isolated from other potential consumption centres in other regions.

3.3.3. Conclusions and recommendations:

From the above discussion, it can be seen that the formal or official market offer the greatest opportunity for increased off-take rates from the traditional sector, provided conditions are created which will enable traditional cattle keepers to compete favourably on this market. As we have seen, the main disadvantage staked against traditional cattle keepers is that their production circumstances do not allow them the opportunity to sell their animals when they are still young, to meet the requirements of the formal pricing regime. In our opinion, this is where the development opportunity lies, and we suggest the following;

A. Development efforts should be focused on improving animal nutrition to promote rapid calf growth and weight gain. Whereas NOLIDEP's work on range improvement should be hailed as a step in the right direction, the extend to which this can be effective in the context of communally-owned range resources should be assessed. Our contention is that range improvement can work better in the context where individuals, or corporate groups of individuals such as extended family clusters or stock associates, are given the opportunity to tend and manage their own improved range. Where tenure rules precludes the possibility of quasi-private ranges, it is suggested that the strategy could be modified by growing improved fodder on private farm-land as a fallow crop. This fodder could then be fed to selected animals using the cut-and-carry method.

B. Related to the above, it is strongly suggested that other animal nutrition strategies such as feeding lots should be considered. Currently, one private trader based in Katima-Mulilo is using this strategy, and MEATCO has also started a similar programme on a pilot basis. The private trader in question is the only other cattle buyer who purchases animals from traditional cattle keepers in Caprivi. The animals purchased are fattened in the feeding lot using supplementary feed such as leak blocks and then sold to MEATCO at a higher price. It is suggested that this strategy is also best directed at individuals or at corporate groups of individuals such as extended family clusters.

c. The above measures can be more effective if they are accompanied by improved management practices such as de-worming and dehorning. Above all, these improved regimes should be targeted at specific animals earmarked for sale, while the rest of the herd can be managed under the traditional system and used to extract other use-values considered important by traditional cattle keepers, such as milk, manure and draft power.

d. Cross-breeding programmes to improve size and weight of traditional herds could also be considered in the long-term. This should be balanced with the need to preserve the traditional genetic stock which is more hardy and well-suited to the rugged conditions obtaining under traditional cattle management regimes.

As a final word, a number of influential people within Caprivi are of the opinion that improved cattle management regimes such as the ones mentioned above can not be successfully implemented in the context of communal ownership of range and water resources. The clarion call is therefore that the commons must be dismantled, and that development efforts should now be directed at a few 'pioneer farmers' who can best take advantage of modern innovations. Whereas we generally agree that many of the innovations listed above are untenable in the context of existing tenure rules, we are of the opinion that,

for equity considerations, a compromise can be made by targeting groups of individuals rather than a few individual 'pioneer farmers'. A number of naturally occurring corporate groups which could be targeted have been identified in this report, and these include, extended family clusters, dry-season cattle posts and urban-based 'village associations'. It is recommended that a more elaborate study should be considered, to identify the dynamics of such naturally occurring corporate groups.

References:

Kerven, C., 1997: The Knife cuts on Both Blades: Redefining Property Rights in Eastern Oshikoto Region, Namibia. Draft Report for Overseas Development Institute, London.

Naeraa, T., S. Devereux, B.Frayne and P. Harnett., 1992: Coping with Drought in Namibia. Informal Social Security Systems in Caprivi and Erongo, 1992. Namibian Institute for Social and Economic Research.

NOLIDEP, 1996: Preliminary Site Surveys: Working Paper. Prepared by Oxfarm Canada for the Ministry of Agriculture, Water and Rural Development.

MAWRD, 1994: Feasibility Study for the Development of Water Supply for the Area Between Katima-Mulilo and Kongola in the Eastern Caprivi. Socio-economic Study. CES/LCE Joint Venture Consultancy for the Ministry of Agriculture, Water and Rural Development.

Scott,J.C., 1976: The Moral Economy of the Peasants; Rebbellion and Subsistemce in South-East Asia. Yale University Press, New Haven.

Sikana, P.M., 1996: Agro-pastoralism and Trade Liberalisation: Tramsformation of Production Goals and Rationales Among Traditional Cattle Keepers of the Bulozi Flood-Plain, Western Zambia. World Bank Social Recovery Programme, Office of the President, Lusaka, Zambia.

Appendix I

Terms of Reference and Rationale for a Livestock Systems Study Funded by NOLIDEP in Caprivi Region

An overview of NOLIDEP

The Northern Regions Livestock Development Project (NOLIDEP) operates in Kunene, North Central Division (consisting of Omusati, Oshana, Oshikoto and Ohangwena Regions), Okavango and Caprivi Regions - a total of about 169,000 km2. The project area covers the whole of the northern communal areas of Namibia, which are clearly demarcated from the commercial farms to the south by livestock health restrictions and a veterinary cordon fence.

The objective of the project of to improve the economic and social welfare of the rural population of the project area through increased livestock production and improved marketing. Developments sponsored by the project also promote the sustainable management and fair distribution of natural and physical resources. The project consists of four components which support:

- Sustainable community-based rangeland management
- Applied agricultural research, extension and training services for the livestock sub-sector
- Improved animal health through the provision of veterinary services
- The operations of the Ministry of Agriculture, Water and Rural Development (MAWRD).

Female-headed households are common in the project area, and the economic and social well-being of women beneficiaries of the project is of particular concern.

Total project funding is USD 15 million for a seven year period. The project is co-financed by the Government of Namibia, the International Fund for Agricultural Development (IFAD), and the governments of Belgium, Luxembourg, France and Finland.

NOLIDEP in Caprivi Region

Caprivi contains two distinct agro-ecological systems - the uplands and the floodplains. The great majority of the Region's population live in the uplands where they practice small-scale dry-land farming. This area is also heavily wooded and provides wet-season grazing for livestock. The flood plains adjoining the region's major rivers support few people year-round, but serve as a dry-season grazing reserve, and the site for flood-recession agriculture and fishing. During the dry months of May to November cattle are forced out of the highlands due to lack of water and concentrate along the rivers.

NOLIDEP is currently active in three pilot areas in Caprivi Region. Two of these pilot communities - Kabbe and Lisikili - have ready access to floodplain grazing. The third, the upland community Cincimani, controls no significant floodplain grazing and in the dry season herds from this community use riverine pastures that are controlled by other

communities. Each of these three pilot communities consists of between 150-200 households settled in dispersed hamlets composed of from 3-20 households, often related to one another.

In the pilot communities, NOLIDEP has constructed a total of six mechanically excavated earth dams, supported the construction of veterinary crush facilities, identified (but not yet funded) a number of small-scale income generating projects for women, and established project-community links through traditional authorities or newly-created committees. In 1997-8 NOLIDEP will expand its activities to two new sites, Bukalo (adjacent to Kabbe) and Kanono (adjacent to Cincimani). These new pilot communities share grazing and stock water resources with the neighbouring communities in which NOLIDEP has already constructed earth dams. By creating additional water points in adjoining communities, the project hopes to relieve grazing pressure at the stock water facilities already constructed by the project.

For further information on the components and objectives of NOLIDEP's programme in Caprivi Region, reference should be made to the NOLIDEP draft Annual Work Programme for 1997-98.

Objectives of the study

The study described here will examine livestock production and marketing systems and the use of grazing and stock water resources in two NOLIDEP communities - one with direct access to floodplain grazing (Kabbe) and the other without such access (Cincimani).

With respect to natural resource management, the study will describe the use of livestock feed and water resources in the study communities. It will ascertain whether local herd owners think controls on herd growth and/or movement are necessary or likely to be beneficial, and examine the institutions at the community or regional level that might have the legitimacy and power to regulate resource use. The advisability of the project working with these institutions will also be assessed.

Given the dearth of information known to the project on Caprivi farming systems, the study will also provide a general overview of the agricultural production systems in the study communities. The study will particularly emphasise the livestock component of these mixed farming systems and examine the importance of crop-livestock linkages such as:

- the use (if any) of manure to improve soil fertility,
- the feeding of crop residues to livestock,
- the importance of animal draught power for crop production, transport or haulage,
- the extent to which farmers hand cut or collect and preserve natural forage for their animals.

Results of this work will contribute to the improved design of NOLIDEP's adaptive research on livestock fodder.

During 1997-8 the Directorate of Planning is carrying out a multi-visit Farm Management Survey in Caprivi Region. Based on the results of a similar survey conducted in 1995-6 in Okavango, the Caprivi FMS will provide valuable quantitative

information on the farming system, including information on areas cultivated per household, principal crops, herd and flock sizes, sources and amounts of household income and expenditure, etc. The Directorate of Veterinary Services also conducted in 1995 a socio-veterinary study focusing on livestock health statistics for East Caprivi. These surveys do not, however, provide direct information on the reasons given by farmers for taking critical farming decisions. Intra-regional variations and wealth related differences in production systems within communities are also difficult to ascertain, given small sample sizes (FMS) or aggregated results (the DVS survey).

With respect to livestock marketing, for example, the DVS estimated a mean offtake rate for Caprivi in 1995 and the FMS will provide information on livestock sales rates, the kinds of animals sold, and the prices received, etc., for this year. But such surveys provide little information on why owners of herds of different sizes sell particular kinds of animals at different times, through formal or informal channels, or under what conditions herd owners would likely sell more or fewer animals. Answers to these questions are important to NOLIDEP in assessing the feasibility of using improved marketing systems or higher livestock prices as in inducement for increasing offtake rates and reducing grazing pressure. The NOLIDEP study described here will provide qualitative information from farmers on these issues.

Consultancy terms of reference
The consultancy team will:

1. Describe the principal kinds of natural pastures and water resources available to livestock at the two study sites, the relative importance of these sources in different seasons, and the impediments (land tenure restrictions, crowding, distance from home village, labour availability, etc.) to their use.
2. Based on data in 1 (above), at each study site describe seasonal patterns of herd and flock movement for large and small herd owners, and for owners with adequate or inadequate household labour (such as female-headed households).
3. Describe the likely impact of NOLIDEP water development on stock movements, numbers and concentrations, and comment upon the capacity and willingness of local communities to maintain livestock watering facilities provided by the project. It is not clear whether improved water supplies provided by the project will lead to the dispersal of present livestock populations or simply to increases in their numbers. Much will probably depend on local customary usages with regard to land and resource ownership and sharing within and between communities. These usages should be described and some assessment made of the ability of local institutions to regulate stock movement and numbers. Do local herd owners feel that additional community regulation of individual herd management is useful, potentially beneficial, or feasible?
4. Assess the practical steps that NOLIDEP might take to support local institutions and strengthen community-based resource management, if this is necessary.
5. Describe the rationale behind farmers' livestock sales/slaughter strategies, their preferences for formal or informal marketing outlets, the timing of their disposals, and their choice of animal (large/small stock, age and sex).
6. Assess how NOLIDEP and/or other GRN projects or directorates might improve the livestock marketing system for Caprivi herd owners.

7. Provide a descriptive overview of the farming systems in the two study communities, with emphasis on livestock and livestock-crop linkages. This account will include an assessment of the importance of animal draught power for cultivation, the use of manure for fertiliser, and the significance of crop residues or harvested natural forage as animal feed.
8. Describe the mafisa system of livestock gifting and loaning as it operates in the study area, estimate the importance of these practices for redistributing livestock to poorer households and the likely number of animals involved in these exchanges.
9. Liase closely with agricultural extension staff in the study villages, whenever possible include them in the study, and provide practical on-the-job training in appropriate PRA methods. These extension officers will later be responsible for carrying out parallel studies in the new pilot villages of Bukalo and Kanono, which are adjacent to the present study communities.
10. Using field assistants hired by NOLIDEP, collect rudimentary household census data and data on livestock ownership for a sample of households in the study villages.

Appendix 2

List of key informats

1. Induna Simasiku - Chinchimani village.
2. Brian Lubeile - Assitant headman chinchimani village.
3. Francis malumo - Senior aide (natumoyo) to induna simasiku.
4. Induna Muketela - Muketela village.
5. Mr. Mulele -Kanono Village.
6. Induna Mwala - Kabbe village.
7. Bernard Namayonge -Grandson to Induna Mwala -Kabbe.
8. Febian Lufelile - A migrant zambian herdsman - kabbe.
9. Mr mate - Musangwe village, kasaya.
10. Mr Samson Mapenzi - Sub -village headman.
11. Ma sambe - wife to Samsons Mapenzi.
12. Bernard Mapenzi - son to Samson mapenzi - a prominent butcher.
13. Rosemary Situnda - Teacher , Kabbe primary school.
14. Mr Marais malaa - manager, MEATCO retail butchery, Katima - mulilo.
15. M. Albert sehubedu - regional manager MEATCO Abbaitoir,Katima - mulilo.
16. Mr Tommy Rocher - Private cattle trader, Katima - mulilo.
17. Pastor Mathias semi - Managing director Likwama farmers union.
18. Mr Micheal Kawana - Forest fire - chief, Katima - mulilo.
19. Henry Bwendo - Senior extention technician Chinchimani ADC.
20. Martin sisheho - S E T Kabbe.
21. Samora mutelamo - Caprivi rural water supply project.
22. Leornard Croetd - Caprivi rural water supply project.

APPENDIX 3

Common grass and trees species known to be liked by cattle

1. Forest (Sipani) area:

(a) Siwimume: a highly nutritrious grass species which retains dew up to mid-day. Has a slightly salty taste. Grows in patches in the forest zone.

(b) Businde: Very succulent grass species that is highly liked by animals. This is a perennial grass.

© Liyati: grows rather tall but still very good for the animals. It grows during the rain season only.

(d) Musangu: Short and dense grass with tiny millet-like seeds.

(e) Silutombolo: A creeping plant with very succulent leaves. Palatable even when dry.

(f) Muhoto: Muhoto trees bears clustered pods that are highly liked by cattle.

(g) Isunde: A perennial bush that prefers sandy patches within the forest zone.

2. Flood plain:

Although flood plain grass species are generally said to be less nutritious, there are certain species which are liked for specific characteristics. The following are some of the common ones:

(a) Mumbwa: Very hardy plant that does well even during poor rains. Also regenerates before the rains
(b) Mataka: Young regenerated reeds are acknowledged to be the life-line of livestock even during severe drought. They are even more hardy than mumbwa.

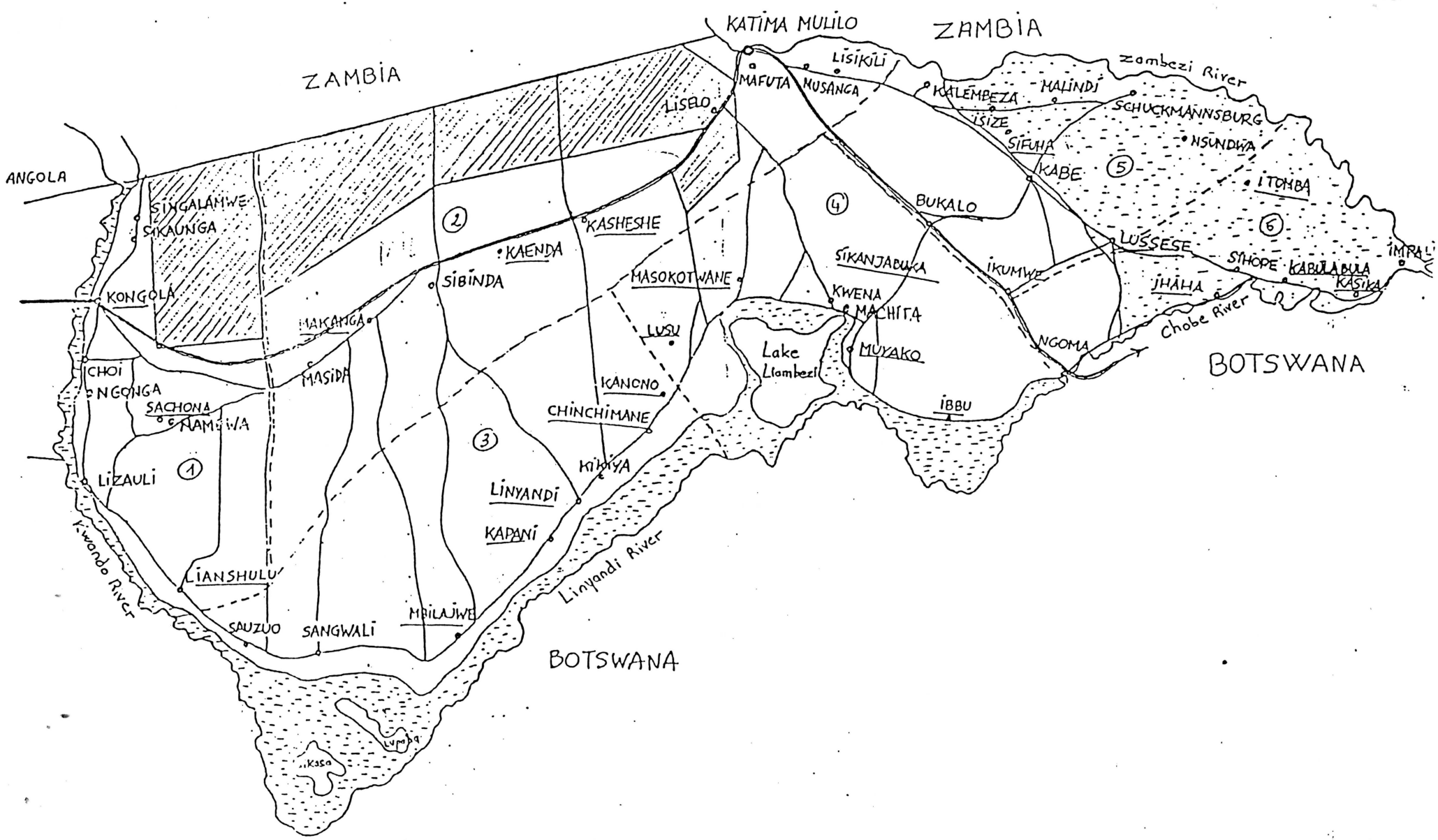
(c) Litindi: A grass species found in flash-dambos. Also regenerate before the rains.

(d) Lusiya: A succulent broad leafed plant with a milky sap. Also used by humans as a vegetable.

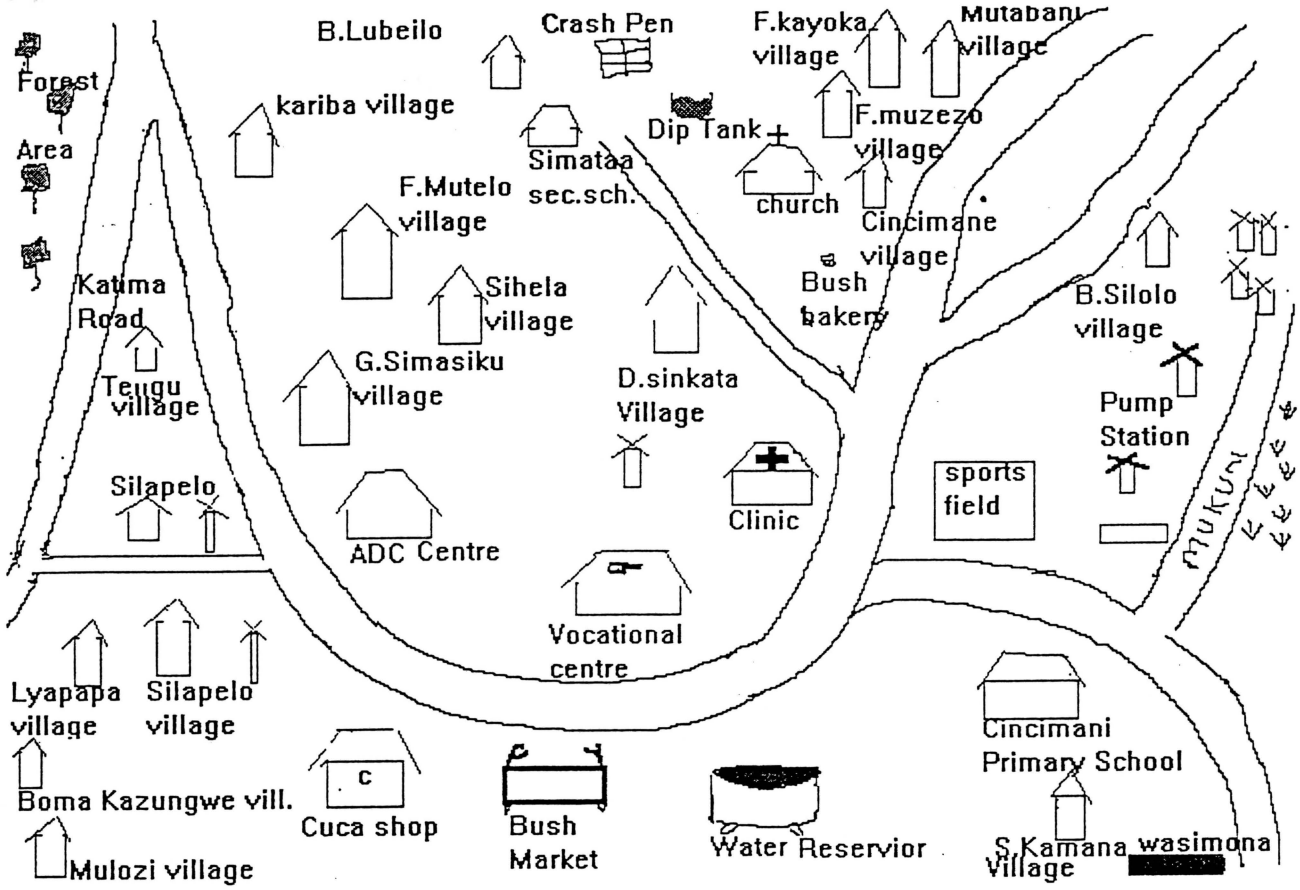
(e) Mutaka: Grow quiet tall and course especially in water channels. It is good when still young but very useful even when old because it is available when little else can be found.

(g) Lumbwatanga: Both leaves and fruit are liked by cattle. They can be quiet plentiful but finishes by april because it is highly liked by cattl

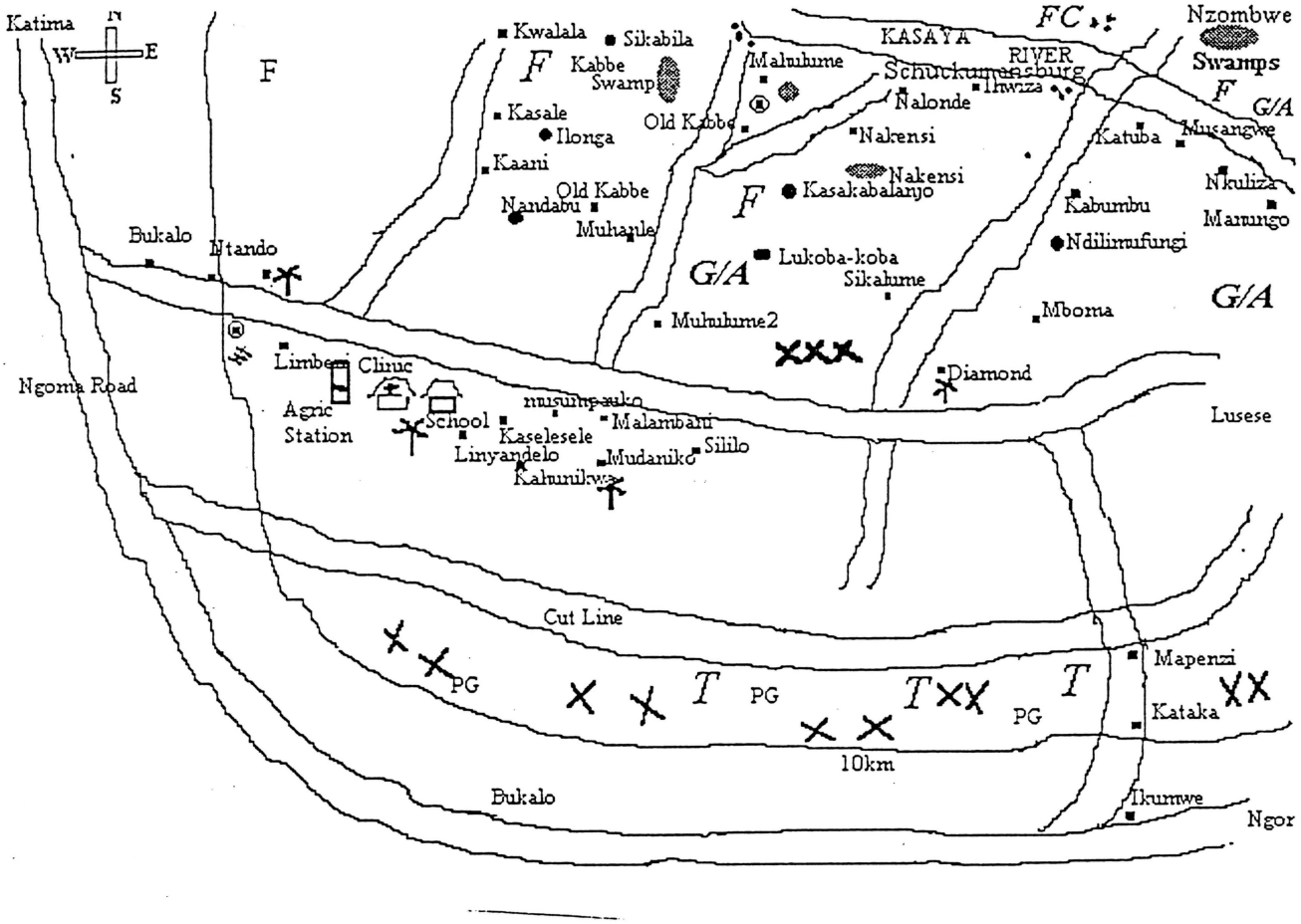
APPENDIX 4A :- LISTENING CHAV



APPENDIX 4B CINCINMANI COMMUNITY MAP



APPENDIX 4C KABBE COMMUNITY MAP



KEY

- Village
- Pass separating higher from the lower land
- Swamps
- Bore-Hole
- Crush-Pen
- Dipping-Tank
- G/A Grazing Area
- F Fruit trees
- Wet season grazing area
- T Timber
- P/G Potential Grazing
- F/C Flood plain cropping
- Dry season grazing land

APPENDIX 5

	Herd 1		
Months	Grazing	Watering	
January	Lusinina (forest)	Sinyepe (forest)	
Feburary	"	"	
March	"	"	
April	Sinyenda (plain)	Tap	
May	Kwichaba	"	
June	Kwichaba	"	
July	Mahiku	"	
August	Maralo	Maralo	
September	"	"	
October	"	"	
November	"	"	
December	"	"	
	Herd 2		
January	Lusinina (forest)	Lupondo (forest)	
Feburary	"	"	
March	"	"	
April	"	"	
May	Maralo (flood plair	Maralo (flood plain)	
June	"	"	
July	"	"	
August	"	"	
September	"	"	
October	"	"	
November	Lusinina	Tap	
December	"	"	

APPENDIX 5

	Herd 3	
Months	Grazing	Watering
January	Lupondo (forest)	Sinyepe (forest)
Feburary	"	"
March	"	"
April	"	"
May	"	Lupondo (forest)
June	Mukuni (flood plain)	Tap
July	"	"
August	Maralo	Maralo
September	"	Tap
October	"	"
November	"	"
December	"	"
	Herd 4	
Months	Grazing	Watering
January	Lumba Forest	Tap
Feburary	Forest	Forest
March	"	"
April	"	"
May	Maralo (plain)	Maralo and Tap
June	"	"
July	"	"
August	"	"
September	"	"
October	"	"
November	"	"
December	"	"

APPENDIX 5

	Herd 5	
Months	Grazing	Watering
January	Lusinina (forest)	Sinyepe (forest)
Feburary	"	"
March	"	Lusinina
April	Sinyenda (plain)	Tap
May	Kwichaba	"
June	Kwichaba	"
July	Mahuku	"
August	Maralo	Maralo
September	"	"
October	"	"
November	"	"
December	"	"

Appendix 6: Price list for beef: 22/04/1996.

PRICELIST FOR 22/04/96 TO 27/04/96 FOR PURCHASES ON THE HOOF IN THE NORTHERN AREAS AT ABATTOIR 13.

LIVE WEIGHT	GRADES								
	A-1	A-2	A-3	B-1	B-2	B-3	C-1	C-2	C-3
285	R 466.85	R 666.08	R 585.52	R 383.02	R 549.59	R 465.76	R 351.45	R 427.66	R 369.96
290	R 477.78	R 680.50	R 598.53	R 392.48	R 561.97	R 476.67	R 360.35	R 437.90	R 379.18
295	R 488.70	R 694.92	R 611.53	R 401.93	R 574.35	R 487.58	R 369.25	R 448.13	R 388.41
300	R 532.40	R 752.61	R 663.56	R 439.75	R 623.85	R 531.20	R 404.85	R 489.08	R 425.31
305	R 543.87	R 767.75	R 677.22	R 449.68	R 636.85	R 542.65	R 414.20	R 499.83	R 435.00
310	R 555.35	R 782.89	R 690.88	R 459.60	R 649.85	R 554.10	R 423.54	R 510.58	R 444.68
315	R 566.82	R 798.03	R 704.54	R 469.53	R 662.84	R 565.55	R 432.89	R 521.33	R 454.37
320	R 578.29	R 813.17	R 718.19	R 479.46	R 675.84	R 577.01	R 442.24	R 532.08	R 464.06
325	R 589.76	R 828.31	R 731.85	R 489.38	R 688.83	R 588.46	R 451.58	R 542.83	R 473.74
330	R 601.23	R 843.46	R 745.51	R 499.31	R 701.83	R 599.91	R 460.93	R 553.58	R 483.43
	A-1	A-2	A-3	B-1	B-2	B-3	C-1	C-2	C-3
335	R 612.70	R 858.60	R 759.16	R 509.24	R 714.82	R 611.36	R 470.27	R 564.33	R 493.12
340	R 624.17	R 873.74	R 772.82	R 519.17	R 727.82	R 622.81	R 479.62	R 575.08	R 502.80
345	R 635.65	R 888.88	R 786.48	R 529.09	R 740.81	R 634.26	R 488.96	R 585.83	R 512.49
350	R 685.36	R 954.49	R 845.66	R 572.11	R 797.13	R 683.89	R 529.46	R 632.41	R 554.46
355	R 697.37	R 970.36	R 859.97	R 582.51	R 810.74	R 695.88	R 539.25	R 643.67	R 564.61
360	R 709.39	R 986.22	R 874.28	R 592.91	R 824.36	R 707.88	R 549.04	R 654.93	R 574.76
365	R 721.41	R1002.08	R 888.59	R 603.31	R 837.97	R 719.88	R 558.83	R 666.19	R 584.91
370	R 733.43	R1017.94	R 902.89	R 613.71	R 851.59	R 731.87	R 568.62	R 677.46	R 595.05
375	R 745.44	R1033.81	R 917.20	R 624.11	R 865.20	R 743.87	R 578.41	R 688.72	R 605.20
380	R 757.46	R1049.67	R 931.51	R 634.51	R 878.82	R 755.87	R 588.21	R 699.98	R 615.35
	A-1	A-2	A-3	B-1	B-2	B-3	C-1	C-2	C-3
385	R 769.48	R1065.53	R 945.82	R 644.91	R 892.43	R 767.86	R 598.00	R 711.24	R 625.50
390	R 781.50	R1081.39	R 960.12	R 655.31	R 906.04	R 779.86	R 607.79	R 722.50	R 635.65
395	R 793.52	R1097.26	R 974.43	R 665.71	R 919.66	R 791.86	R 617.58	R 733.76	R 645.79
400	R 761.83	R1055.44	R 936.71	R 638.29	R 883.77	R 760.23	R 591.77	R 704.07	R 619.04
405	R 773.30	R1070.58	R 950.37	R 648.22	R 896.76	R 771.68	R 601.11	R 714.82	R 628.73
410	R 784.78	R1085.72	R 964.03	R 658.15	R 909.76	R 783.13	R 610.46	R 725.57	R 638.41
415	R 796.25	R1100.86	R 977.68	R 668.08	R 922.75	R 794.58	R 619.80	R 736.32	R 648.10
420	R 807.72	R1116.00	R 991.34	R 678.00	R 935.75	R 806.03	R 629.15	R 747.07	R 657.79
425	R 819.19	R1131.14	R1005.00	R 687.93	R 948.74	R 817.48	R 638.49	R 757.82	R 667.47
430	R 851.36	R1166.98	R1039.35	R 718.55	R 982.44	R 849.63	R 668.54	R 789.27	R 697.86
	A-1	A-2	A-3	B-1	B-2	B-3	C-1	C-2	C-3
435	R 863.07	R1182.37	R1053.25	R 728.72	R 995.67	R 861.33	R 678.12	R 800.26	R 707.78
440	R 874.78	R1197.75	R1067.15	R 738.89	R1008.91	R 873.02	R 687.71	R 811.25	R 717.71
445	R 886.49	R1213.13	R1081.05	R 749.06	R1022.15	R 884.71	R 697.30	R 822.24	R 727.64
450	R 898.21	R1228.51	R1094.95	R 759.23	R1035.38	R 896.40	R 706.88	R 833.23	R 737.57
455	R 909.92	R1243.89	R1108.84	R 769.39	R1048.62	R 908.09	R 716.47	R 844.22	R 747.49
460	R 921.63	R1259.28	R1122.74	R 779.56	R1061.85	R 919.79	R 726.05	R 855.21	R 757.42
465	R 933.34	R1274.66	R1136.64	R 789.73	R1075.09	R 931.48	R 735.64	R 866.20	R 767.35
470	R 945.05	R1290.04	R1150.54	R 799.90	R1088.33	R 943.17	R 745.23	R 877.19	R 777.27
475	R 956.77	R1305.42	R1164.44	R 810.06	R1101.56	R 954.86	R 754.81	R 888.18	R 787.20
480	R 968.48	R1320.81	R1178.33	R 820.23	R1114.80	R 966.55	R 764.40	R 899.17	R 797.13

Appendix 7: Story on Community-based Fire-Control Programme: Forest Fire Control Project, Katima-Mulilo.

Save Our Trees

NEWSLETTER for the Namibia/Finland - Forest Fire Control Project

Can we Caprivian's save the environment for our children?

The Directorate of Forestry has launched a massive fire campaign in East Caprivi. Seven (7) local communities have joined the forestry in its efforts to combat wild fires in the area.

Living healthy trees will invite the rains.

Without our trees, the whole area will loose its ability to attract rains. Without the rains neither animals nor people will survive.

With the present rate of burning, soon all our old trees will die.

How can we as Caprivian's protect our trees dying from fires? Or can we then protect the young seedlings from fire?

CONTENTS:

Participating communities in 1996.

The seven (7) participating communities have experienced a new sensation during the fire season 1996.
In **Mutwalwizi** community no fires (0%), have been experienced in 1996. In some other of the participating communities, forest and grazing areas have been burned to some extent as follows: **Malindi** 60%, **Simataa Project**, 30%, **Gunkwe** 30 %, **Sachinga** 20%, **Muketela** 50%, **Ibbu** 30% burned. In 1995, all these communities had their area totally burned. In areas outside these seven (7) communities, the fire damage has been almost total, or **90-100%.** An estimation is that the new fire program in communities, have saved 50.000 hectares from burning in 1996 in **East Caprivi.**

How do you know that your lands are damaged by fire?

Its easy, you say, just blackened dead trees. Ahaa, but what about the clouds of dust that fly everywhere? They consist of ashes from your fires.
What about the drying boreholes?

Where is your fertile topsoil, why is the wind taking it away?

Why is our rivers filling up with soil and silt. Why is the water level of the river sinking.
Why are our lakes drying up?

Human activities causing these problems!

All these activities which are disturbing our lives are caused by **human activities.** Yours as well as mine. Wild fires which run out of hand are then burning our future resources.

For further information on these community based fire programs please contact the *Forestry District Office* in Katima Mulilo:
Mr. Felix Bainga Kalonda (Forest Technician) Mr. Michael and John Kawana
Mr Jerome Mukutulo : Phone: 0677-3143