GETTING TO KNOW RURAL LIVELIHOODS IN KAVANGO THROUGH CASE STUDY MONITORING.

by
Harriet Matsaert, Elizabeth Mutwamwezi and Elizabeth Kakukuru. Kavango Farming Systems Research and Extension Team.

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SUMMARY
This report outlines the findings of case study monitoring carried out with seven Kavango households over the 1995/96 and 1996/97 agricultural seasons. The households selected for monitoring represented a number of different farming systems, interests and needs, as outlined in the table below.

<table>
<thead>
<tr>
<th>RIVERSIDE VILLAGE</th>
<th>Cattle owning household</th>
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<tr>
<td></td>
<td>Non cattle owning household</td>
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<tr>
<td></td>
<td>Non cultivating household</td>
</tr>
<tr>
<td>INLAND VILLAGE</td>
<td>Cattle owning household</td>
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<tr>
<td></td>
<td>Cattle owning 'pioneer' household</td>
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<tr>
<td></td>
<td>Non cattle owning household</td>
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<tr>
<td></td>
<td>San bushman household</td>
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The aim of the study was to complement the findings of past 'one off' surveys by allowing us to examine the dynamics of livelihood systems over time. Monitoring allowed us to look more closely at the key enterprises in household livelihood systems and at the interactions between them. We were able to observe how family members and households cooperated together for natural resource management and to monitor the way that rural households reacted to opportunities and problems which arose over the year.

The report contains descriptions of each household's livelihood system as well as flow charts showing details of income, expenditure and food sources over the monitoring period. The study's findings have some important implications for the way the MAWRD extension and research staff carry out their work.

Some key findings of the study were:-

1. Successful livelihood systems in Kavango were based on a wide diversity of enterprises.

2. Off farm income was critical to household livelihoods. Those who did not have access to formal employment (often women headed or San bushman households) were particularly vulnerable to food insecurity.

3. Forest resources played a key role in many aspects of farming systems and were particularly critical to the survival of the poorest households. Yet these households tend to be those who have least say in planning the future management of forest resources.

4. Inland and river villages in Kavango had very different needs and interests with respect to natural resource development.

5. Household differentiation was greatest in the river villages. Here the interests of the poorest households, the 'non cultivators' often conflicted with those of the more vocal and influential large farmers.
6. In the inland villages, the San bushmen were a group with quite distinct needs and interests to the majority of Bantu farmers.

7. Within households, roles were changing with women taking on increasing responsibilities and work loads. However, these changing responsibilities (for example for draft animal power) were often not acknowledged by outside agencies with relevant training and information targeted at (or more accessible to) men.

8. The study observed that households were often made up of a number of hearth holds (women and their dependants) which have different needs and interests with regard to natural resource development.

9. The case study monitoring found that farming systems in Kavango were dynamic. All households monitored were actively experimenting and had a potentially valuable contribution to make to agricultural research and development.
ACKNOWLEDGEMENTS

We would like to thank the seven case study households who, month after month, have patiently answered our questions and have enabled this report to be produced. Thanks also to the other KFSRE team members who have often assisted in carrying out interviews and providing transport to the villages.

GLOSSARY
Agribank - Agricultural Bank of Namibia
FED groups - Farmer Extension and Development groups
hearth-hold - unit consisting of a woman and her dependents (may form a self contained household or be found within a larger household).
kasipembe - liquor made from forest fruit
KFSRE - Kavango Farming Systems Research and Extension
kafula - cattle loan arrangement
MAWRD - Ministry of Agriculture, Water and Rural Development
mutete - local vegetable (hibiscus family)
nzambi - communal work party
rudi - clan
sipata - small garden around a homestead

1. INTRODUCTION AND METHODS

Why case study monitoring?
Case study monitoring has been an important part of KFSRE's farming systems analysis. By collecting detailed information about a small number of households, the case study monitoring complements the one off surveys which cover a wider range of the population.
In his discussion of research methodologies, Peter de Vries (Battlefields of Knowledge 1992) suggested that "whereas statistical analysis is dependent upon formal theory, case study analysis is dependent upon establishing logical connections between a number of variables in a case study....Case studies, therefore, serve to establish the validity of a particular theoretical principal, not by achieving statistical significance but through their ability to elaborate a theoretical principle by confronting it with the complexity of empirical reality." (p68 1992). Case studies have certainly been found to give a richness and depth of description of farming systems which is not found in 'one off' surveys.

KFSRE used case study monitoring to build on the information collected in previous community surveys. This detailed monitoring of a number of households complemented the findings of the surveys in two ways. Firstly it allowed us to observe household activities and livelihood strategies over time. This gave us an idea of the dynamic process households were involved in as they developed livelihood systems, which contrasted with

1 A recent example of rich farming systems analysis through case study monitoring is Ian Scoones et al, Hazards and Opportunities (1996)
2 See reports on community surveys (KFSR/E working documents 7,8 and 14)
the rather static view of farming systems which is captured by one off surveys. Secondly by focusing in detail on different household situations and on intra-household relations, case study monitoring helped us to develop our understanding of the specific opportunities and constraints faced by different members of the farming community.

Methods
Our case study monitoring has followed the activities of seven households in two villages (riverside and inland) over a poor and a good rainfall year (1995 - 1997). Each case was selected for its representation of a different kind of household situation (from villagers' own categorisation of households). The distinctions between households were based mainly on cattle ownership and/or size of area under cultivation. Households were visited on a monthly basis by members of the KPSRE team. We used a checklist to guide discussion on activities carried out over the last month (see appendix 1). Households kept records of income, expenditure and main food sources over the year. These were compiled into systems diagrams at the end of each cropping season.

Table 1 - Summary of Households Monitored.

<table>
<thead>
<tr>
<th>Household</th>
<th>Dates Monitored</th>
<th>Income Sources</th>
<th>Area of cultivated</th>
<th>Land monitored</th>
<th>Total monitored</th>
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<tr>
<td><strong>RIVERSIDE</strong></td>
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<tr>
<td>R1 Cattle owning household</td>
<td>November 1995 -</td>
<td>Formal employment (husband), sale of crops, milk and beer</td>
<td>13.2 hectares</td>
<td></td>
<td>95/96 N$7500</td>
</tr>
<tr>
<td></td>
<td>November 1997</td>
<td></td>
<td></td>
<td></td>
<td>96/97 N$11000</td>
</tr>
<tr>
<td>R2 Non cattle owning household</td>
<td>November 1995 -</td>
<td>95/96 Casual employment, common resources (fish, grass, wood etc.), formal employment (husband), sales of beer</td>
<td>0.5 hectares</td>
<td></td>
<td>95/96 N$3800700</td>
</tr>
<tr>
<td></td>
<td>November 1997</td>
<td></td>
<td></td>
<td></td>
<td>96/97 N$5</td>
</tr>
<tr>
<td>R3 'Non cultivating' household</td>
<td>November 1996/97</td>
<td>Casual employment</td>
<td>0.1 hectares</td>
<td></td>
<td>&lt;700</td>
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<tr>
<td><strong>INLAND VILLAGE</strong></td>
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<tr>
<td>L1 Cattle owning household</td>
<td>November 1995 -</td>
<td>95/96 Formal employment, sale of forest products, remittances</td>
<td>95/96 10 hectares</td>
<td></td>
<td>96/97 N$7500</td>
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<tr>
<td></td>
<td>November 1997</td>
<td></td>
<td>96/97 2.7 hectares</td>
<td></td>
<td></td>
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<tr>
<td>L2 Cattle owning pioneer household</td>
<td>November 1996 -</td>
<td>Sale of milk, meat and forest products</td>
<td>4.5 hectares</td>
<td></td>
<td>96/97 N$2000</td>
</tr>
<tr>
<td></td>
<td>November 1997</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L3 Non cattle owning household</td>
<td>November 1995 -</td>
<td>95 Formal employment (husband), casual employment (wife), formal employment (husband and wife)</td>
<td>1.3 hectares</td>
<td></td>
<td>95/96 N$1000</td>
</tr>
<tr>
<td></td>
<td>November 1997</td>
<td></td>
<td>96/97 N$10000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L4 San bushman household</td>
<td>November 1996 -</td>
<td>Casual employment</td>
<td>0.3 ha</td>
<td></td>
<td>&lt;700</td>
</tr>
<tr>
<td></td>
<td>November 1997</td>
<td></td>
<td></td>
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Report Structure & Key Issues
In this report, we will let the case studies speak for themselves by giving descriptions of each of the seven households and their activities over the 1995/96 and 1996/97 cropping

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1In 1995/96 we monitored the extended household consisting of a couple with young children and their parents. In 1996/97, the couple moved residence. We continued to monitor the parents.
seasons. Flow diagrams are also used to summarise household income and expenditure and to pinpoint the most important enterprises for cash and food security.

The case study material is followed by a discussion of some key issues for our understanding of Kavango farming systems. We ask the questions:

1. What are the most important enterprises in Kavango farming systems?

2. How do households differ? What are their particular needs? Which households are most vulnerable or food insecure?

3. What does the case study monitoring tell us about relations between households (inter household) and their cooperation for natural resource management?

4. What does the case study monitoring tell us about relations within the household (intra-household)?

5. How do farmers experiment and adapt their farming systems?

Finally we draw out some important themes which have relevance to future research, extension and development work with Kavango farmers.

The case study monitoring also collected a considerable amount of information on management practices for the most important farm enterprises (crop and livestock production, fishing, forestry and wild vegetable harvesting). This information is documented in separate reports.

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4See KFSR/E Working Documents on Livestock, Forestry, Crops and Wild Vegetables.
2. THE CASE STUDIES. (see map 1 for map of location of case study villages)

2.1 RIVER VILLAGE (see map 2 - map of river village).

The river village was situated between the tar road and the Kavango river. The houses overlooked a wide river plateau where livestock grazed. Across the river was Angola. Though the river now formed an international boundary, in the past it had not been a border but rather a focal point for settlement, because of its importance for food and as a transport route. Many Kavango households had family members on the other other side of the river. There were homesteads (made up of small houses built from wood, mud, millet stalks and reeds surrounded by tall fences) on either side of the road. Around the homesteads were the small gardens 'zipatas', while the main crop fields were set back from the houses, mainly between the village and the tar road. There were many bars and a shop along the one gravel road which passed through the village. One bar was particularly large with smart thatched shelters and loud dance music playing all day long. The bars were always full: morning, noon and night. It was also common to see people sitting under trees with baskets of bread rolls, wild vegetables, fish or piles of clothes to sell. The village was close to the district centre and to a large middle and secondary school. A hospital and clinic were 2km away on the gravel road.

Case Study R1 - Rachel and Ben, Cattle Owning Household (see figures 1 - 4 for details on income/expenditure and food sources)

If you have worked in Kavango then you will know households like this one. These tend to be the families who you easily meet when you come to work in a village. They are confident, interested in farming with lots of demands and questions to ask. In village discussions these families were classed as 'real farmers' or 'cattle owners' as they had draft animals and cultivated large fields. One or more members of the family was usually in formal employment.

Rachel's homestead was by the main road in the village (see map 2). Behind it cropped fields stretched back to the tarmac road and the Kavango forest beyond. Ahead was a floodplain and the Kavango river. Next door was the largest bar in the village. The homestead was a large one made up of many huts surrounded by a millet straw fence. Outside the fence were a number of thatched shelters where at almost any time you could find a member of the family pounding millet, dehulling maize or entertaining visitors. Rachel lived in the homestead with her husband, Ben and her two step daughters. All three women had young children. There was usually a young man staying in the compound, either Rachel's younger brother or one of Ben's nephews.

Main enterprises in the livelihood system

Off farm employment

Ben was employed as headman of the village. This was his main occupation, which often took him away from the village for meetings or to attend the traditional court. This employment was a critical income source for the household.
Figure 1 - Cattle Owning Household, River Village (R1)
Income and Expenditure 1995/96
This diagram is based on monthly monitoring of main sources of income and expenditure over the year. The thickness of arrows denotes the relative importance of each component.

Estimated total income for the year: N$7500
Figure 2 - Cattle Owning Household, River Village (R1)
Income and Expenditure 1996/97
This diagram is based on monthly monitoring of main sources of income and expenditure over the year. The thickness of arrows denotes the relative importance of each component.

Estimated total income for the year: N$11,000
Figure 3 - Cattle Owning Household, River Village (R1)
Main Food Sources 1995/96
This diagram is based on monthly monitoring of main sources of food over the year. The thickness of arrows denotes the relative importance of each component.
Figure 4 - Cattle Owning Household, River Village (R1)
Main Food Sources 1996/97
This diagram is based on monthly monitoring of main sources of food over the year. The thickness of arrows denotes the relative importance of each component.
Rachel, assisted by her daughters and the young man, raised income through brewing beer and making cakes which they sold to other villagers. She also marketed mutete (an indigenous vegetable) and sweet sorghum stems.

**Crop production**

Rachel's main occupation was crop production. The family owned a plough and canoe for ploughing and transport. Of all the households monitored, she cultivated the largest area of land (13.5 hectares). Because of Ben's influential position as headman she had access to a piece of prime land (fenced government land) close to the village and was able to borrow or rent farm machinery from the local agricultural extension agent. Ben's two daughters also cultivated fields using Rachel's plough. In two years of case study monitoring Rachel was very successful in her crop production. She produced enough for family consumption with excess used for brewing and sold as grain\(^5\). In the second year, her income from crop sales when combined with beer sales exceeded her husband's income and food purchases from the shop decreased.

In the dry year of 1995/96 when many farmers harvested nothing, Rachel managed to get a good harvest. Her planting strategy was to begin early and to continue planting over a long period (November to February). She also planted a wide variety of crops and experimented with short duration varieties of millet. Another drought management strategy was to plant crops at very wide spacing. Rachel continuously experimented and adapted her farming methods. During the two years of case study monitoring she experimented with a number of new crops (sweet potato, Okashana millet) and with planting fruit trees. Other experimentation was problem oriented, directed at soil fertility management (fertiliser, manure and ploughing in crop residue) and new cures for livestock disease (Newcastle disease and sickness in cattle). Labour was the main expense for Rachel's crop production and she was interested in adopting new labour saving devices. In 1995 she hired a tractor to plough her land. In 1997, she hired a millet thresher. She was also interested in the use of animal drawn cultivators to cut down labour needed for weeding. With profits from her crop production in 1995/96 Rachel purchased a barrel which could be used to collect water. The barrel could be filled with water and rolled up the hill preventing the need for several trips with buckets or Jerry cans.

Rachel did lose some of her many seed varieties as a result of the drought. She was able to restock by swapping seed with her sister and mother who farmed inland.

In 1997, Rachel applied for and was successful in obtaining an Agribank loan to purchase her own oxen. With this draft animal power she hoped to further extend her farm. Her plan was to clear a new field in the forest beyond the tar road (aprox 2km from her homestead). She would hire someone to stay out there during the cropping season.

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\(^5\) Grain was sold on credit to elderly people who would pay once their pensions came through.
Forest and river products

The family's livelihood system was dependent on common resources for grazing, firewood and sources of new land to expand crop production. However they did not use forest products directly for income generation. Though the family purchased fish and fruits they did not harvest these themselves. Rachel told us that last time she had gone in search of wild fruit (deep in the forest, as there are no longer trees near the village) she had got lost. Since then she had decided she would not go back to the forest. Though Ben enjoyed eating forest fruit and nuts, Rachel told us that the younger generation are less interested. Her children preferred to eat bread and coffee and things which could be bought from the shop.

Livestock

Rachel and Ben owned separate flocks of chickens. Ben's daughters owned no animals. With the exception of four animals (three of which were sold in 1996), the cattle which the family managed mainly belong to other households and had been loaned to the family. Known as *kufisa*, this is a common practice in Kavango. Livestock are mainly loaned to relatives who care for them in exchange for use of their products (milk and draft power). The owners may also reward the relatives later by giving them an animal. Though paying a herd boy presented a considerable cost to the family (estimated at 9% of expenditure in 1995/96 and 13% in 1996/97), the cattle made a significant contribution to food and income. The oxen's draft power was essential to crop production\(^6\). This is why Rachel's plans to expand her farm involved purchasing her own oxen.

The cattle were managed by the young man who took them out to graze and harnessed them for use with sledges and ploughs. The animals were herded throughout the year. When he was away, Rachel, Ben and the daughters looked after the cattle. In 1996/97 season ploughing was delayed because the young man had disappeared in search of better paid work. The women in the family were keen to get their fields ploughed but said they were 'too scared' of handling the animals. A training course in use of draft animals had been held in the village earlier that year, but no women had attended.

*Inter household relations*

Household members cooperated and shared labour with each other and with relatives in other parts of the region. However, they did not cooperate with their neighbours in the village. Rachel told us that she had never been involved in communal *nzambi* work parties. She valued her independence and preferred to pay her neighbours in cash (or occasionally in millet) for work done, than to feel under obligation to them. Because this household was comparatively better off than many other households in the village their success was the cause of jealousy. In 1996, Rachel's was one of very few households to get a good harvest, due to the poor rainfall and the fact that most other households had not been able to plant as early as her. At the time of harvest Rachel, Ben and their child became ill. They believed they had been bewitched because of jealousy. A considerable portion of their income that year (including three of the household's four cattle) was used to pay a

\(^{6}\) In 1995/96 Rachel decided to hire a tractor to plough one of her fields. The tractor came so late, that she vowed not to depend on it again, and to use her own oxen in future.
local healer. Rachel was suspicious and fearful of her neighbours. She planted all legumes and cucurbits around her house only because she was afraid that they would be stolen if planted in fields further away from the house.

Intra-household relations

In our initial discussions with the household it was Ben who took the lead, however we soon found that it was Rachel who was the de facto farm manager. For example Ben talked enthusiastically about the new MAWRD millet variety and about vegetable production while Rachel later told us that she had experimented with and rejected both.

Husband and wife each had their own sources of income and responsibilities to the household. For example, it was Ben who kept the income from sale of dairy products but in turn he was responsible for paying herding fees. As the main wage earner, Ben was also responsible for buying necessities from the local shop. He would also assist in paying for labour for crop production when Rachel was not able to do so. Rachel’s beer brewing was her own enterprise. In 1996 she initiated the beer brewing by selling some sweet sorghum stems. With the money raised from this sale she was able to buy sugar and brew beer. Profits from beer sales were invested into crop production. They were also use to purchase extra things which Rachel needed such as clothes or items from the shop.

Ben’s two daughters were both married but had moved to live in the compound while their husbands were working elsewhere. This enabled them to share labour for childcare and other household tasks, freeing up time to carry out crop production as well. Without combining labour across ‘hearth-holds’ in this way it would be impossible for these women to cultivate, unless their husbands were sending back sufficient cash for them to hire labour. Through their relationship to Ben, the daughters were able to get access to land close to the village and cultivated their own fields. They took second place to Rachel in gaining access to the plough.

Discussion

This household had a broad range of enterprises which all made an important contribution to their livelihood system. Off farm enterprises (formal employment and beer production) and crop production were the most important enterprises for this household, with livestock playing a key role in providing draft power for crop production. Because of their access to off farm employment, their political connections, their wide range of enterprises and success in crop production this family could be said to be very food secure.
Case Study R2 - Rebecca and Hamutenya, Non Cattle Owning Household (see figures 5 - 8 for details on income/expenditure and food sources)

When we began visiting this household in 1995, Hamutenya, his wife Rebecca, their five school aged children (occasionally joined by Rebecca's young brother and sister) lived in a number of small, rather old huts on a plot set back from the main road. The household was stuck in a poverty rut from which it seemed there was no way of escaping. Hamutenya and Rebecca had no formal employment and were dependent on low paid casual employment on other people's farms. They also farmed their own land and hoped to be able to generate food and cash from this enterprise. However the family had lost their draft animals through lung disease and could not afford to purchase more animals. Without oxen, or cash to hire animals, they could only cultivate a small area of land around their house (0.5 hectares). They fell into the village category of 'people with gardens (sipata) only' not 'real' farmers.

We monitored this household for two cropping seasons (1995 - 1997) over which time we witnessed a dramatic change in their fortunes.

During the 1995/96 season the household planned to plant a wide variety of crops. They were enthusiastic and keen to experiment with some of the new varieties being promoted by the MAWRD. Hamutenya had plans to lay a pipe from the river (approximately one kilometre away) and to irrigate his field. As they did not have their own plough, the family had to work for several days for other households in exchange for loan of a plough. As a result they could not cultivate all of their land (they cultivated only 0.5 hectares) and they planted late7. During the cropping season, the couple were forced to work for neighbours in order to meet their daily food needs. The wages paid were very low (N$4/day) and were insufficient to make any savings for the future. Because much time was spent working on other farms, Hamutenya and Rebecca were unable to devote as much time to weeding their own field as they would have liked. The harvest obtained at the end of the 1995/96 season was very poor.

Several times, during the season, Hamutenya left the village in search of formal employment. To do this he had to spend large amounts of money on transport. However, he was unsuccessful and each time returned to the village. As Rebecca was not literate and did not speak English there was no point for her even to look for formal employment. Most of the 'formal' employment available to Kavango people are jobs such as security guards or road workers which are normally given to men only, and nursing and teaching jobs which require school and college training.

Forest and river products
Forest products and fish were a small but important source of income for the family during the 1995/96 season. Hamutenya and Rebecca raised some cash through collecting grasses and poles from the forest, reeds from the riverside and through selling mangetti fruit and fish. Because the household had no draft power they were unable to collect large amounts

7Those who hire ploughs must wait until the owner has finished ploughing.
Figure 5 - Non Cattle Owning Household, River Village (R2)
Income and Expenditure 1995/96
This diagram is based on monthly monitoring of main sources of income and expenditure over the year. The thickness of arrows denotes the relative importance of each component.

Estimated total income for the year: N$700
Figure 6 - Non Cattle Owning Household, River Village (R2)
Income and Expenditure 1996/97
This diagram is based on monthly monitoring of main sources of income and expenditure over the year. The thickness of arrows denotes the relative importance of each component.

Estimated total income for the year: $5800
Figure 7 - Non Cattle Owning Household, River Village (R2)
Main Food Sources 1995/96

This diagram is based on monthly monitoring of main sources of food over the year. The thickness of arrows denotes the relative importance of each component.
Figure 8 - Non Cattle Owning Household, River Village (R2)
Main Food Sources 1996/97
This diagram is based on monthly monitoring of main sources of food over the year. The thickness of arrows denotes the relative importance of each component.
of produce from the forest compared to some cattle owning households. They complained that due to large scale clearance of the forest around the village and back to the tar road by the cattle owning households, they now had to walk further and further from their home to collect forest produce. Hamutenya also expressed concern that the number of fish in the river had become less due to low water levels.

When he attended the village farmer group meetings, Hamutenya often pleaded the case of farmers like himself. How could they possibly develop their farms without access to draft animals? And how could they get access to draft animals when they had no savings? Even Agribank which set up a loan system in 1996 was not prepared to lend to such a risky case as Hamutenya. Rebecca herself voiced a concern that even if they were able to obtain a loan they might not be able to pay it back if there was a poor season.

Hamutenya had one plan which might help him out of his difficulties. This was to pool labour together with other farmers in his position, recreating something similar to the nzambi communal labour system practised in inland villages.

**Off farm employment**

As things turned out, Hamutenya did not need to resort to this plan. In 1996 he was successful in getting employment on a road building scheme. During the 1996/1997 season, we observed how the household's livelihood system was dramatically transformed through this new source of income.

During the 1996/97 season, Rebecca took charge of the farm management. Hamutenya visited on a monthly basis and provided cash to purchase food and other necessities. He also provided cash for Rebecca to hire labour for agricultural production. Now the family were freed from the necessity of taking on low paid casual employment and were able to become employers themselves. Rebecca hired labour to clear a larger area of her field and, during the season, for planting, weeding and harvesting. The resulting harvest was so good that, in addition to providing for the household's consumption needs, Rebecca was able to process some of her millet into beer and generate some income through beer sales.

During the year, the family gradually built up their livestock herd. They first bought chickens, then a cow and finally oxen (together with plough and sledge). The chickens were particularly important to Rebecca who was able to sell them to meet any pressing cash needs that might arise during Hamutenya's absence. The restocking of animals suffered a serious setback in October 1997 when all the family's cattle were lost. Rebecca believed they had been stolen. This is a common problem in Kavango, estimated by Bovell and Hengua (1997) to be responsible for 30% of all herd exits. The family had no choice but to slowly begin saving again. Rebecca told us that next time she would hire a full time herder to ensure the cattle were well protected.

Access to off farm employment also transformed the household itself. Over the year the family constructed new buildings and bought a set of smart white plastic chairs and a radio.
As the household's prosperity increased more children came to live in the compound. By November 1997, the household was supporting nine children (the other children were from Hamutenya's first marriage). Rebecca told us that a major difference between 1997 and the year before was that she was now able to help relatives.

At the beginning of the 1997/98 season, Rebecca told us that she planned to expand her agricultural production by clearing a second field. She planned to purchase a wheelbarrow to help her with transport. She would also like to increase her beer brewing business and to start selling chickens as a business.

*Interhousehold cooperation*

The family had settled on this particular piece of land because it had originally been cleared by Hamutenya's grandmother. Though they did not cooperate with other households in the village itself, the family had close links with Rebecca's grandfather's compound across the river in Angola. Rebecca's grandfather provided occasional loans of ploughs and labour. After the 1996/97 harvest Rebecca sent millet across to Angola to be used for beer brewing.

*Intra-household cooperation*

While the couple were farming jointly, it was Hamutenya who appeared to make most of the decisions on agricultural production. Even after he left the household to work on the roads, Rebecca told us that she would make decisions jointly together with him when he returned home at the end of the month.

During the 1996/97 season the household was very heavily reliant on Hamutenya's salary. There were a couple of months during the season (May/June) when Hamutenya did not return home and they received no money. During this time Rebecca was forced to sell chickens or to take up casual employment on other farms. Later, when she had harvested her millet, she was able to raise some income of her own through brewing and selling beer.

*Discussion*

This case study monitoring highlighted the critical importance of formal employment to the development of livelihood systems. The impact of access to formal employment (seen clearly in figs 5 - 8) was a diversification in both income generating enterprises and food sources. This was possible because the household was freed from the hand to mouth dependence on casual employment and had the cash and resources to invest in other enterprises.

As far as developing their farming systems, we saw that the family were keen to try new ideas and to actively experiment. However, before Hamutenya managed to get a job, the family were prevented by lack of cash and labour from making any major changes. Some interventions, which required no cash input and were low risk, such as new crop varieties could be tested by the household. In the 1995/96 season the family tested new cowpea varieties. They were extremely pleased with these as they had lost their own varieties some years before. The cowpeas provided cash (through sales) and food which helped them through a difficult time before the millet matured. In 1996, with more time and resources
available to her, Rebecca also did some experimentation with soil fertility management (application of manure and ploughing in crop stover).

As far as food security was concerned, the family circumstances changed from being extremely vulnerable before they got access to formal employment, to quite secure at the end of the monitoring period. In 1995/96 their agricultural production was insufficient to provide food for more than a month after the harvest. The daily wage obtained through casual labour on other farms was barely enough to help them to survive. They were forced to purchase maize meal on a daily basis in small quantities, paying a much higher price than if they were able to buy by the sack full. Once Hamutenya received an income food security improved in a number of ways: crop production increased, the family purchased livestock (for consumption and capital reserves) and maize meal could be purchased more cheaply in bulk. Fish and wild vegetables formed an important part of the family's diet both before and after Hamutenya found employment.
Case Study R3 - Robert, 'Non Cultivating Household'

If Robert had not taken us to his house, we might not have realised that it was a house at all: a small pile of tin cans, cloth and some straw strewn under a tree. He had been born in this village and had come back to settle here after many years working and living elsewhere. The land had belonged to his grandmother and the households around belonged to relatives. Robert had planned to build a house, but four years after his return he had not yet done so. He lived with his young son. He had been married twice but both his wives had left him and lived in other villages. We visited Robert regularly over the 1996/97 season.

Robert's lifestyle was one of day to day survival. His main source of food and income came from casual employment on other people's farms. Occasionally he would also raise money from fishing or collecting produce from the forest. He complained that the mangetti trees he used to collect from had been burned down. He cultivated a very small area of land around his home by hand (0.3 hectares).

Robert owned no livestock. When he had migrated to work in the South of the country he told us that he had saved money and bought cattle. These animals had been kept with his father, and when his father died, had been stolen by his clan relatives (under the matrilineal system, Robert was in a different clan to his father).

Though he lived extremely poorly and dressed in rags, Robert did receive support from his clan relatives in the village. When he was unable to work or had no food he would often go to a relative and eat with them in the evening. He was ashamed to have to do this and told us the "in our tradition, older people should not depend on their younger relatives". In 1997 when tragedy struck and his young son was killed, his granddaughter provided him with two cows to pay for funeral expenses.

Discussion

This case study showed us how the Kavango kinship systems provides a safety net for the poorest and least able of its clan members. Even in the depths of his poverty, Robert was able to obtain, through kinship links, access to land and to daily food. However, unless he was able to gain access to formal employment again, it was difficult to imagine how Robert would be able to build up a lifestyle which could provide him with some self reliance and sense of dignity.

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8 No systems diagrams were made for this case because Robert wasn't able to keep notes over the season. At the end of season summing up, we were not able to locate him as he had moved on to another village.
2.2 INLAND VILLAGE (See Map 3).
This inland village was located at the end of a deep sandy track several kilometres into the forest after leaving the main river road. The village was very dispersed and from one homestead it was difficult to see any others. However, this was a close knit community and despite the apparent isolation of each house, information spread rapidly from one to the other. The village centre was the borehole where people came to drink, water their livestock, wash and chat. Close by was the headman's house and a large tree under which the villagers gathered for meetings.

Most houses in the village were within a kilometre of the borehole. However, a small group of villagers (including the headman) had begun to venture further inland into the forest. The main reason for this was to get access to new fertile land along the dry river beds. Only those households with oxen were able to venture inland as they would need to return regularly to collect water from the borehole. The headman told us he hoped that once the authorities saw a new settlement they would authorise a borehole to be sunk there. Some villagers migrated to these new houses during the cropping season only. Others (particularly older couples) remained in their remote hamlets throughout the year.

The village had a small primary school and received regular visits from a local hospital outreach team. However a major concern of the villagers was the difficulty in reaching facilities such as clinics and shops. In 1997 a small shop (and bar) was set up by the village school teacher. This solved some of the problems of access to resources, but in its turn created new problems associated in the past only with river villages. More and more often we arrived in the village to find people drunk outside the bar.

Case Study L1 - Arthur and Anastasia, Ian and Nancy, Cattle Owning Household (see figures 9 - 12 for details on income/expenditure and food sources)

This extended family appeared to be related to almost every household in the village. We followed the progress of two households: Arthur and Anastasia, a young couple and Arthur's parents, Ian and Nancy, who lived in the adjoining compound over two agricultural seasons (1995 - 1997). The two households shared labour for many activities, though they cultivated separate fields. Arthur's parents, Ian and Nancy looked after a number of grandchildren whose parents had migrated to the city for work. Together the two households supported a total of eleven school age children. The households also had strong links to Arthur's younger brother and wife who lived in a compound about half a kilometre away. During the time of the study, Ian's brother also moved to the village.

The two households were involved in a wide range of enterprises for food production and income: crop production mainly for subsistence, livestock production with sale of dairy products and occasional off take of old and sick animals, forest fruit and kasisipembe (liquor made from forest fruit) production, as well as occasional formal employment (on the part of Arthur). Ian and Nancy also received pensions and remittances from Arthur's

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9 Arthur and Anastasia had been our key informants, however when they left the village in 1996, Ian and Nancy agreed to continue with the monitoring.
Figure 9 - Cattle Owning Household, Inland Village (L1)
Income and Expenditure 1995/96
This diagram is based on a summary of main sources of income and expenditure over the year. The thickness of arrows denotes the relative importance of each component.
Figure 10 - Cattle Owning Household, Inland Village (L1)
Income and Expenditure 1996/97
This diagram is based on monthly monitoring of main sources of income and expenditure over the year. The thickness of arrows denotes the relative importance of each component.

Estimated total income for the year: $7500
Figure 11 - Cattle Owning Household, Inland Village (L1)
Main Food Sources 1995/96
This diagram is based on monthly monitoring of main sources of food over the year. The thickness of arrows denotes the relative importance of each component.
Figure 12 - Cattle Owning Household, Inland Village (L1)
Main Food Sources 1996/97
This diagram is based on monthly monitoring of main sources of food over the year. The thickness of arrows denotes the relative importance of each component.
brothers and sisters, who were employed outside the village. Between the households there were adequate oxen and ploughs to cultivate large areas. A San bushman household was attached to the family and provided cheap labour for both agricultural and household tasks.

At the beginning of the 1995/96 season, Arthur, who was a member of a Farmer Extension and Development (FED) group, was keen to extend his area of crop production. He selected a new field to be cleared inland from the village and planned to cultivate and area of approximately ten hectares. He was keen to try new crop varieties and took part in MAWRD experiments with new groundnut, sorghum and millet varieties. He also requested maize seed which he had seen in another area and was keen to obtain. As well as getting new seed from the Ministry, Arthur would also go down to the local hospital where people often came with seed to sell to pay for their hospital fees. He had collected a number of new varieties in this way.

Arthur had also experimented with livestock production. He had tested animal licks and had purchased a cross bred Brahman cow for his herd. He kept detailed records of his farming activities in a large notebook.

The 1995/96 season was extremely poor. As it became clear that rains would not be sufficient to obtain a good harvest, Arthur abandoned the idea of planting the second new field. By February, realising that the harvest would be very poor, he went to Rundu in search of work. He succeeded in finding work as a security guard. Anastasia, Nancy and Ian managed the crop fields in Arthur's absence. The harvest was poor but provided something for the family to eat.

At the end of the season, Arthur and Anastasia moved their residence further West to Anastasia's parent's village. The reasons were unclear but it may have been that Anastasia preferred to live with her own parents while Arthur was working in Rundu. Mobility of households or hearth holds (made up of a woman and children) is common in Kavango. The movement of hearthhold units to settle with kin was also seen in the case of Rebecca's household (R1). We continued to visit the older couple over the 1996/97 season.

While Arthur had hoped to make an income from crop production, for Ian and Nancy crop production was strictly for home consumption. They cultivated two fields with an area of almost 3 hectares. Remittances and pension payments were the main source of income for this household. The large livestock herd (59 cattle, 13 goats and 25 chickens in November 1996) provided milk (for consumption and sales) and occasional meat. Ian told us that the livestock all belonged to his children and had been purchased through their earnings.

Forest Products
In the 1995/96 season, the two households produced large amounts of kaspembe liquor which was an important source of income (shown under home based industry in figure 9). In 1996/97 less forest products were collected and processed because there was less labour available, and as Ian told us "I am getting too old". Ian was very concerned about the lack of control over the common resources: forest and river. He told us that in the past burning
was carried out only at the riverside and not in the inland areas. When he was young he said, there were many wild animals in the forest as well as hippopotami in the river. Now, most young people have never seen these animals. Anastasia, his daughter in law was less interested in the protection of forest resources. "We young people don't know how to eat those forest things" she told us.

Interhousehold Cooperation
Labour did not present a major problem to this household for two main reason. Firstly the household was able to make use of nzambi communal work parties to assist them to carry out timely land preparation, weeding and harvesting. The nzambi system was strong in this village, and households were committed to helping each other until every field was ploughed. Secondly the household was involved in a patron/client relationship with a San family. Through this relationship (which is discussed in more detail in the KFSRE San Study) the household gained access to almost free labour for livestock herding, agricultural production and household tasks.

Food Security
With their wide range of enterprises and access to remittances from formal employment, this household was extremely food secure.

Discussion
This case study highlighted a number of important features of Kavango livelihood systems. The case of an older couple supporting young children (whose parents have migrated to the urban areas for work) is a common one in the region. This has important implications for the development of farming systems. As figure 10 shows, the main source of income for an older couple may well be from savings, pensions and remittences with agriculture seen as a subsistence activity only.

Arthur and Anastasia's move at the end of the first season was also characteristic of the high mobility of Kavango household and household units. Through kinship links, individuals can claim rights to residence and to clear land in many different locations. The fact that new land is still available to those who have the ability to move must have implications for attitudes towards sustainable land management.
Case Study L2 - Immanuel and Kasiku, Cattle Owning 'Inland Pioneers' (see figures 13 - 14 for details on income/expenditure and food sources)

Immanuel, Kasiku and their extended family were 'inland pioneers' who had built homesteads and cleared new land in the forest inland from the village. Immanuel and Kasiku had a homestead in the village where they lived through the dry season and a second house, five kilometres inland, (next to Kasiku's parents and brother's house), where they lived during the cropping season. They were able to spend part of the year in this very isolated location because their children were now at secondary school (which is residential). In contrast, Ian and Nancy (Case study L1), who had many primary school age children, needed to stay close to the village centre where the school was situated. We monitored this household over the 1996/97 season.

Immanuel moved to the village from the riverside in 1968. He told us he had left the river because of the lack of grazing there. He had relatives who had already settled inland so it was easy for him to clear land there. Later he was elected headman of the inland hamlet. This is a post which he will keep for life. As it was a minor headman post (the main headman being at the river) it was unpaid.

The family had a mixed livelihood system. Crop production was important, particularly for food and in the season in which we monitored the household they cultivated an area of 4.5 hectares. The family also had a large herd of livestock: chickens (9), goats (15) and cattle (34) (figures from November 1996). Chicken were for consumption only, goats for consumption and sale while cattle were sold or consumed only if sick, or if the family had a pressing need for cash. However cattle products: milk and butter, were sold in the village over the rainy season. Dairy sales were ranked as the most important source of income in the 1996/97 season. The family also made use of forest products (particularly mangetti nuts and wild vegetables) for consumption and for sale (grasses and mangetti). Immanuel occasionally migrated to find work in the South of the country. He had worked in Walvis bay in 1994/95 but in 1995/96 had travelled South and been unable to find work. Immanuel also did blacksmithing, for his own household and for sale. During the dry season, Kasiku would travel to the riverside with other women to fish.

Sickness in the family was a major problem and cause of tragedy over the 1996/97 season. Just at ploughing time, the couple's son became ill. Immanuel travelled with him to hospital, while Kasiku and the rest of the family stopped clearing land and began cutting grasses from the forest to be sold to pay the hospital bill. Kasiku told us that it was because of this illness that the family were not able to plough all their land and the harvest was disappointing.

In October 1997, Immanuel's daughter died. The family slaughtered three goats and sold a cow to pay for a coffin and food (maize meal) for the funeral. In the same month a number of the family's oxen disappeared, presumed stolen.
Figure 13 - Cattle Owning 'Inland Pioneers', Inland Village (L2)
Income and Expenditure 1996/97
This diagram is based on monthly monitoring of main sources of income and expenditure over the year. The thickness of arrows denotes the relative importance of each component.

Estimated total income for the year: N$2000
Figure 14 - Cattle Owning 'Inland Pioneers', Inland Village (L2)
Main Food Sources 1996/97
This diagram is based on monthly monitoring of main sources of food over the year. The thickness of arrows denotes the relative importance of each component.
Interhousehold cooperation

This household cooperated very closely with their extended family. In the new pioneer hamlet, the houses of Immanuel and Kasiku's parents and brother were situated close together. Members of all three households could be found pounding millet, shelling mangetti nuts or chatting under a large tree close to the compounds. The three households combined labour for herding cattle.

The household was also involved in the nzambi communal labour exchange system whereby households in the village helped each other with land preparation and weeding.

Intrahousehold cooperation

Immanuel and Kasiku each had their own fields. However they worked together for most agricultural activities. Kasiku told us that the produce would however be stored separately and could be sold by its owner.

Food Security

With a very diverse livelihood system, the food security of this household was very good, despite the fact that no family member was currently in formal employment. Milk, fish, wild vegetables and crops from the field made up the most important part of the family diet. Purchases from the shop were less common than for the other households monitored while forest products were more important (both for food and income).

With regard to experimenting and adapting farming systems, Kasiku and Immanuel were more traditional than most of the other households monitored. At the end of the season Immanuel told us that he did not intend to make any changes in his farming system over the next year. Because the household were in a position to clear new areas inland, there was no need for them to experiment with soil fertility management, as the other households monitored were doing. In recent years, Immanuel had carried out some experimentation with fallowing and grazing to control weeds on his field.

Discussion

The experiences of this inland pioneer household is similar to that of many Kavango households who continue to move progressively deeper into the Kavango forest. Resources in the forest are plentiful; soils are still fertile and there are many forest products freely available. The major constraint is lack of water and isolation of the new settlements. This prevents households with no cattle (to transport water), or with young children (who must walk to school every day) from moving inland.
Case Study L3 - Haingura and Ingrid, Non Cattle Owning Household, Inland Village
(see figures 15 - 18 for details on income/expenditure and food sources)

Haingura and Ingrid lived in the centre of the inland village in a small compound situated close to several other compounds. We monitored this household over two cropping seasons (November 1995 to November 1997).

Ingrid and Haingura were a young couple with two young daughters (pre-school age). Both husband and wife were related to other village households. The neighbouring compounds belonged to Ingrid’s mother and two brothers. Haingura’s maternal uncle also lived in the village. Though each household cultivated its own land there was a high level of cooperation between the different compounds. Ingrid produced kaspembe liquor from mangetti nuts together with her mother and brother. Ingrid’s other brother, a school teacher, lent the household his plough in the 1996/97 season.

The family’s primary source of income was off farm employment. In 1994, Haingura was appointed as the village literacy teacher which gave him a small but secure income. Ingrid carried out casual labour for other households. In 1998 she managed to get short term ‘formal employment’ building the new village school.

The couple were enthusiastic farmers and keen to develop their farming in the future. They had a two small fields (an area of 1.5 hectares) under cultivation. The fields were ‘old fields’ (previously cultivated) close to the village and were of low fertility. Both Haingura and Ingrid were actively experimenting with soil fertility management. During 1995/96 they tested the value of manure by planting maize on an area where cattle had previously been penned. In 1996/97 they carried out soil fertility experiments with the KFSRE team comparing the value of manure, phosphate and lime.

Though the couple had access to some labour through the nzambi system, and loans of cattle from relatives they were able to cultivate a small area only (compared to Arthur or Immanuel). Harvests were poor and insufficient to feed the family over the year. The family also made use of wild fruit, nuts and vegetables and trapped small animals and birds in the forest. Ingrid frequently travelled to the riverside to catch fish. Kaspembe production from forest fruit was an important additional source of income. In the 1995/96 season, Haingura also raised some cash through making and selling furniture. In the 1996/97 season, he raised money by buying fish in Rundu and reselling these.

The family had a few chickens but no other livestock. Though the couple had a regular income, Haingura told us he had many family commitments and could not save enough to purchase livestock. His plan was to gradually purchase a number of goats and to sell these to purchase cattle. In 1996 he purchased a single goat. However, this had to be sold later in the year when his mother in law died. In 1997 Haingura applied for a loan with Agribank to purchase oxen and a plough. At the end of the monitoring period this had not been accepted. His plan for 1997/98 was to buy goats again. In the meantime, he had a kufisa loan arrangement with his brother who lived at the riverside. Each year, when the brother finished ploughing, his cattle would be sent inland to stay with Haingura and Ingrid. The couple and their relatives would herd the cattle during the cropping season in
Figure 15 - Non Cattle Owning Household, Inland Village (L3)
Income and Expenditure 1995/96
This diagram is based on monthly monitoring of main sources of income and expenditure over the year. The thickness of arrows denotes the relative importance of each component.

Estimated total income for the year: NS3000
Figure 16 - Non Cattle Owning Household, Inland Village (L3)
Income and Expenditure 1996/97
This diagram is based on monthly monitoring of main sources of income and expenditure over the year. The thickness of arrows denotes the relative importance of each component.

Estimated total income for the year: N$10,000
Figure 17 - Non Cattle Owning Household, Inland Village (L3)
Main Food Sources 1995/96
This diagram is based on a summary of the main sources of food over the year. The
thickness of arrows denotes the relative importance of each component\textsuperscript{11}.

\textsuperscript{11}No estimate of percentages was obtained in this case
Figure 18 - Non Cattle Owning Household, Inland Village (L3)
Main Food Sources 1996/97
This diagram is based on monthly monitoring of main sources of food over the year. The thickness of arrows denotes the relative importance of each component.
exchange for using their draft power and milk. The cattle arrived in the village rather too late to allow Haingura and Ingrid to cultivate a larger area, however, they could be used to collect mangetti fruit for kaspembe production.

In 1995/96 food was a major expense for the household. Because there was no shop in the village, Haingura was forced to travel into Rundu to buy sacks of maize meal, adding transport costs to the food bill. The opening of a village shop in 1997 meant Haingura no longer had to travel to Rundu to buy maize meal. However the shop created new expenses for the family as they found they were running up large monthly bills (on credit). Their resolution for the next year was to buy less on credit.

Discussion
Compared to the ‘non cattle owning’ households in the riverside village, the food security status of this family was good. They had wide range of income and food generating enterprises as well as strong systems of interhousehold cooperation and support with their neighbours. Because of this interhousehold cooperation, the differences between the areas of land cultivated by cattle and non cattle owners are not so high in the inland as in the riverside. Despite not owning draft animals this household was able to cultivate 1.5 hectares compared to the 2.7 and 4.5 hectares cultivated by the plough owners in the village. In comparison, non cattle owning households in the river village cultivated only 0.5 and 0.3 hectares, compared to the 13.5 hectares cultivated by the cattle owning household.
Case Study L4 - Ivan and Namvhura

Ivan and his wife, Namvhura lived alone in a small hut in the centre of the village. We visited the couple over the 1996/97 season. This household was one of only two San families permanently settled in the village. They moved here from the riverside after a disagreement with the Bantu family they were working for there. They now had a client relationship to a number of patron households in the village for whom they worked in exchange for food and alcohol. When we asked Ivan why there were few other San people in the village he told us "San people don't own anything, so they just move around and live where they want". Many of the San people in his group, the Nlumo had died or had left the area\(^1\). However, the household did receive frequent visits from their children.

**Income and Food generating enterprises**

The most important household enterprise was healing. Ivan was a well known healer, preparing remedies from a range of forest products. However his income from this was irregular and Ivan often complained that people had refused to pay him in cash but would only give him alcohol. Ivan also herded for households in the village and carried out casual labour during the cropping season. He collected wild fruit, mangetti nuts and wood from the forest. For all these activities he was paid a low wage (equivalent to half the wage paid to Bantu workers at the riverside) or more often was given food. He also brewed kastipembe, using the brewing equipment of his patrons. Unusually for San families, this household had been granted a small piece of land and some seed by a Bantu household and were attempting to cultivate a range of crops (millet, sorghum, squashes, maize etc.). In 1996/97 the family ploughed a small area (0.3 ha) using their patron's plough. Unfortunately later in the season, a neighbour's animals broke into the field and destroyed most of the crops. The neighbour refused to pay them compensation. Despite the setbacks, Ivan told us that he planned to plant again in the next year.

The couple were not entitled to pension payments or other government services because they had no ID cards. This was a common situation for San people.

Namvhura was seriously disabled with TB and was unable to work\(^2\). In addition to working for others Ivan assisted his wife by carrying out heavy household tasks such as pounding mullet.

**Food Security**

Because they cultivated a small area only, and had little access to cash, the family were dependent for food security on food provided to them by neighbours and on the fruit, nuts and vegetables collected from the forest. Ivan expressed concern that forest fires were destroying valuable sources of forest fruit as well as killing off the wild bees.

\(^1\)No systems diagrams were prepared for this household as they were unable to keep records over the year.

\(^2\)Many San families left the area during the liberation struggle when they were recruited to the South African army as trackers. After independence most decided not to return to Kavango, and have remained in settlement areas in Caprivi, Bushmanland and South Africa.

\(^3\)The KFSR E San study has found that TB is particularly prevalent in the San community.
Interhousehold cooperation

This household was isolated from the strong social network of mutual obligations and support which existed in this village. Though they had close relations with a number of households, the couple were often exploited and treated without respect by their neighbours. The other villagers tolerated the San family's attempts to cultivate a small area of land, but did not provide compensation (as would normally be the case) when the crops were destroyed by their cattle. One villager told us that San people are in danger of being bewitched if they try to become farmers. The San households were not represented on any village committee, nor did they speak at village meetings.

Discussion

This case study illustrates some of the key issues facing San people in the 1990s. This group tend to be marginalised, not only at the village level, but by their lack of access to ID documents and to the government services, such as pensions which they could obtain with these.

As far as natural resource management is concerned, San people are facing a crisis as their livelihood base, the forest, is encroached by agriculturalists. Some San people have shown an interest it taking up crop production themselves, but are prevented through lack of start up capital and the reluctance of their Bantu neighbours to allow them to clear land.
3. DISCUSSION

3.1 WHAT ARE THE MOST IMPORTANT ENTERPRISES IN KAVANGO LIVELIHOOD SYSTEMS?

One of the most significant findings of the case study monitoring is that successful livelihood systems were based not on a single enterprise but on a diversity of enterprises. The richer and most food secure households monitored (Rachel, Immanuel, Ian) were characterised by a wide range of income and food generating enterprises\(^1\).

The case studies highlighted the central role of formal off-farm employment (not casual employment on others' farms) as a necessary precursor to the development of successful livelihood systems. Those households with recent access to formal employment (Rachel, Ian, Haingura, Immanuel and Hamutenya) presented a complete contrast to those of Ivan and Robert, who had no capital to build up their farms and were dependent on poorly paid casual employment or on common resources. In Hamutenya’s case, access to employment in the second year of monitoring resulted in dramatic changes in the household’s livelihood system. During the 1995/96 season the household had been dependent on casual employment, had purchased food on a day to day basis from the local shop and had little time to develop their own farm. Their food security status had been extremely weak. As they depended on daily casual employment and had no food stores, sickness and inability to work for a few days could have been disastrous. Once the household gained access to formal employment they were quick to build up stores of food and capital in the form of livestock.

During the 1996/97 season, Immanuel’s household, the ‘inland pioneers’ were the only household to manage to cultivate a large area, without access to formal employment. The resources which the household had managed to build up from past formal incomes (cattle, ploughs, tools) allowed them to survive the season with no access to formal employment. The case of Rachel, who in 1996/97 managed to earn more than her husband’s formal salary, through her crop production and beer sales, suggests that households may be able to develop viable farming systems (in terms of being able to meet both food and cash needs) if they have sufficient capital saved up. The question is could a farming system, such as Immanuel’s survive a number of bad rainfall years or a livestock epidemic? Rachel’s case showed that with careful management practices risk could certainly be reduced. Through early planting (and spreading planting across a couple of months) she managed to get a harvest in 1995/96 when most other villagers did not.

Several of those monitored, particularly younger people such as Rachel, Arthur and Hamutenya saw developing their crop production as a potential alternative income generation source to formal employment. Does the fact that there are few successful full time farmers suggest that they were wrong?

\(^1\) It was also interesting to note that Hamutenya’s household, on gaining access to off-farm employment, responded by investing cash into the development of a range of other enterprises (crop production, livestock and beer brewing).
The case study monitoring clearly showed the key role of livestock in the farming system. In the absence of tractors, those without access to oxen simply could not cultivate enough land to feed their families, let alone raise any income. Livestock products (mainly chicken, goat meat and milk) were important food sources, particularly during the 'hungry period' (December to April) when family grain supplies were running short. Chickens were mainly managed by women and, as we saw in Rebecca's case, were an important source of income generation for them. Unfortunately the high incidence of Newcastle disease was preventing women from building up their flocks.

All the households monitored made use of common resources (forest and river) for food, fuel, grazing, fencing, as a source of materials for other income generating activities (mat making, liquor production etc.) and for many other purposes. The cases showed that it was the poorer households (without access to formal employment) who were most dependent on common resources, but that ironically it was the richer households, who reaped the most profit from them. In the inland village, for example, poorer households such as Ivan's would collect mangetti nuts, or brew kazipembe liquor and would exchange these for food or minimal payment from richer households. The richer households would then transport these items by the sledge load to the riverside where they would be sold at a profit.

3.2 HOW DO HOUSEHOLDS DIFFER?
The case study monitoring helped develop our understanding of how Kavango households differ. Knowing more about the different livelihood systems, opportunities and problems faced by farmers in the villages in which we work can help us to design a research and extension programme which addresses a range of needs and not just the interests of the most vocal, visible (usually richest) farmers.

Differences between river and inland villages
The case studies showed that households in the inland villages had different interests and needs to those in the river villages. Households in inland villages tended to have plentiful access to forest resources and grazing. On the negative side they experienced problems in getting access to external resources and services because of the distance from shops, clinics and other services.

Due to the high population along the riverside, households in the river villages were experiencing more directly the impact of the degradation of common resources. As in the case of Robert and Rebecca, people were having to travel further inland every year to find fruit trees. Grazing was becoming a problem as more land was cleared around the village, and livestock had to be steered carefully through cropped fields to the grazing land.

Labour was a more critical issue for river villagers than for the inland households. In the inland, households (with the exception of San) pooled labour through the nzambi system. Households also had access to San labour at minimal cost. In the river villages, labour had become a marketable commodity. Non cattle owning households could generally not
afford to hire labour. Without assistance they could only cultivate small areas and were unable to produce enough to feed the household.

*Household differences within river villages*

In the river villages, there appeared to be more differentiation between households. The reasons for this are discussed in the next section on inter household relations (and in more detail in the KFSRE Social Network Study, WD 27). As we mentioned earlier, villagers told us that there were two types of household in the village, those who "really farmed" and those who cultivated small gardens or 'sipata' only. The 'farmers' tended to be people like Rachel who had cleared large areas of land, hiring casual labour to carry out farm operations. The 'sipata farmers', due to a number of causes, (primarily lack of capital and draft animals) were only able to cultivate small 'sipata' gardens around their homesteads. For food and survival they depended on working for the richer farmers. The payment for this casual employment was so low that saving money was impossible. The only way out of their situation appeared to be through an injection of capital, obtained through formal employment.

Large farmers, like Rachel, tended to be interested in increasing the areas of land cleared and in tools and equipment which could cut down labour costs. In our monitoring we saw Rachel experimenting with the use of a tractor and a threshing machine. She was also interested in using an oxen drawn cultivator to reduce labour costs in weeding.

The interests of the 'sipata farmers' were rather different. Many were very interested in developing their farms and making profits from agriculture. However, as they had no draft animals and cultivated small areas, developments in draft animal power technology were useless to them. Being given loans to buy draft animals was not really an option for them. As Rebecca (case study R2) pointed out, the risks (of crop failure and cattle theft) were too high. What was of interest to these households were low risk, low input technologies which had potential to produce food and income within their existing farming systems. A member of a farmer's group in the river village expressed his needs in this way: "we need intensive technologies. We need ideas which we can use on our small areas of land". For Hamutenya and Rebecca in 1995/96, new cowpea varieties were an example of a technology which could fit their 'sipata' based farming system. Cowpeas could be intercropped with grain crops, they produced early and provided food and a source of income at a difficult time for the household.

The 'sipata farmer' group also had a keen interest in the sustainable management of common resource areas. While the larger farmers did make use of common resources they were not dependent on them in the same way as the 'sipata farmers'. Larger farmers were in fact involved in the process of destroying village common resources as they cleared land.

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15 One possible alternative proposed a FED group was for 'non farmers' to group together and cultivate land communally, pooling labour and other inputs.

16 This was clearly demonstrated when a Farmers Extension and Development (FED) group was set up in the river village monitored. All the group members, except one, fell in the 'non-farming' category.
further and further inland from the village. Ironically, as was the situation in our case study (Rachel's husband was headman) it was normally the larger farmers who had a say in decision making bodies.

Household Difference in Inland villages.
The differences we found between Bantu households in the inland village were less extreme than those found at the riverside. The major differences in farming systems were observed to be mainly due to age and stage in the family cycle. Hningsura and Ingrid, the youngest couple monitored, were involved in raising the capital to purchase draft animals. Their future plan was to have livestock and to develop a farm. Arthur, a young man with primary school aged children, had purchased livestock through working outside the village. He was now interested in raising income from crops. He farmed close to the village where his children attended school. Immanuel, whose children were now at boarding school was able to move inland in the cropping season to clear new land. In 1996/97 he was virtually self sufficient. Ian and Nancy, an elderly couple, farmed for food rather than to raise cash. Their cash needs were provided for by their children's remittances and through their own pensions.

In terms of farming opportunities and constraints, we found that the inland pioneer household (Immanuel) was the most conservative in its farming methods (no innovations recorded over the monitoring period) perhaps because resources were plentiful and there were no major constraints to crop production. In contrast those households which were forced to cultivate old land close to the village were experiencing problems with soil fertility and were actively experimenting with ways of improving this.

While the case study monitoring found no extreme differences between Bantu households in the inland village, there were extreme differences between the Bantu households and the San household monitored. The case study, together with other research into San livelihood systems (see KFSRE San Study), showed that the San families have a much more sophisticated knowledge of the forest resources than the Bantu people. Ivan, for example, was renowned for his ability to produce medicines from forest herbs and barks. He expressed concern, however, that precious resources were being lost through poor forest management. As was the case for the main forest users in the river villages, San households have no input into the decision making structures which have potential to guide forest management.

Generally it was our experience that San people were excluded from village networks and decision making bodies. They were given little respect by others as was demonstrated by the fact that Ivan was often unpaid for his skilled healing work, and was forced to take on unskilled casual employment in order to survive.

San households, such as Ivan's, showed an interest in cultivating their own fields. Like the poorest households in the river village, they lack the capital to develop their own farms. However, they faced an additional problem. Unlike the Bantu families they did not have rights to clear land. In our case study, Ivan, had exceptionally been granted a small area of
land to cultivate. However, when his crop was destroyed by animals he did not receive the normal compensation granted to a Bantu villager.

3.3 WHAT HAS CASE STUDY MONITORING TOLD US ABOUT INTER HOUSEHOLD RELATIONS?

Inter household relations are the subject of a companion report to this (Managing Land Together, Working Document 27) so they will be dealt with only briefly here.

There were many examples in our case study monitoring of strong cooperation between households. We saw, for example, how Robert was given food by relatives, how Rachel was able to get new stocks of seed from her sister, how Haingura borrowed cattle from his brother, and how Ian and Nancy provided child care for eleven grandchildren. Nearly all the interhousehold cooperation observed was based on kinship relations, though at the riverside we observed some new forms of cooperation, for example between church members.

In the small inland villages most households were related to each other and overall cooperation for farming, natural resource management and information exchange was high. In contrast, the river villages (where most services were located) attracted more households, many of whom were not related. Interhousehold cooperation was poor. One visual illustration of differences in household cooperation was the fact that most fields in the riverside were fenced. Households did not trust each other to keep cattle away from the cropped fields.

In the inland village, the strong bonds between Bantu households meant there was a common interest in helping everyone to farm successfully. Through the nzambi system all farmers were able to cultivate reasonably sized areas of land. As one old lady told us "we cannot stop ploughing until everyone's fields have been finished".

In contrast, the situation in the river village was characterised by individualism. In the absence of obligatory inter household cooperation, some households were successfully expanding their farms, while a larger sub class of sipata farming households was emerging.

Ian and Nancy were an example of a common trend in Kavango whereby older people are left in the rural areas, looking after their grandchildren, while their parents are away working in the cities. As this generation of children receive more education and have more job opportunities, it is possible that this trend may continue and that Kavango farms will increasingly be managed by older people.

As far as the San are concerned, it was our experience that they were excluded from village networks and decision making bodies. Ivan's case showed us how normal standards of interhousehold behaviour were not maintained by Bantu people in their interactions with San households.
3.4 WHAT HAS CASE STUDY MONITORING TOLD US ABOUT INTRAHOUSEHOLD RELATIONS?

In our work we often have to remind ourselves that households are not a single mind with single purpose. Different household members have unique skills, responsibilities, problems and interests. Their distinct knowledge and responsibilities will lead them to have quite different interests with regard to natural resource development.

Just as some households are more vocal and visible than others, so too some household members are able to articulate their views and interests more clearly than others (or have more time to attend the relevant meetings). Through case study monitoring, we have tried to look more closely at the interests of all the household members.

Unless village based enterprises can generate enough cash, as well as food, to meet family needs, we should not be surprised to find farms managed by de facto single parent households (usually women headed), where the partner (normally husband) is involved in paid employment. This was the situation for several of our case studies (Rachel, Anastasia, Rebecca, Kasiku) at one time or other. As discussed in the last section, another common household form was of an elderly couple looking after grandchildren (as was the case for Ian and Nancy).

For the generation of farmers that we were monitoring, men had received more formal education than women and consequently had more opportunities to find skilled work (the main jobs being school teaching, nursing etc.). The nature of employment available for unskilled workers (mining, road building, security guards, construction) was mainly available to men only. Local government posts (such as village headman) were also mainly taken by men.

Paid employment was often away from the village (for Arthur, Hamutenya and Immanuel though Haingura and Ben was fortunate to find work in the village), and those left in the village were highly dependent on the flow of cash returning from the absentee family member. In case study R2, we saw how Rebecca was forced to return to poorly paid casual employment for a couple of months when she received no income from her husband. Ian and Nancy named remittances as their most important source of income. Some of the poorest households we came across were single headed households who had no access to on farm earnings17.

In the case studies we saw how women were attempting to build some self reliance by developing their own forms of income generation. Both Rachel and Rebecca developed beer brewing businesses using produce from their crop production. Rachel also sold cakes and did some trading of millet. Rebecca hoped to make a business from chicken farming. Other village based income generating activities taken on by women included basket

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17In 1995/96 we began monitoring a de jure single woman headed household. This woman was unable to continue working with us because her work load was so heavy, and she never had time to sit down and talk. During the time we did monitor her household, she was forced to abandon farming and take on a low paid job working in the bar.
making (Ingrid), grass collection and sale of wild vegetables. Of these, beer brewing was the only enterprise able to generate significant levels of cash\textsuperscript{18}. The case study monitoring showed us just how critical these village based income earning opportunities are for women, and particularly for de jure female headed households.

The response of some younger women to being left while their husbands are away was to move in with their parents or parents in law. This was the case for Anastasia who worked together with her parents in law when Arthur went to town to work as a security guard (and later moved to her own parent's village). Ben's daughters had also come to live in his compound. By combining a number of 'hearth-holds' in one household, many tasks, such as cooking, washing and child care could be combined, allowing all the women to cultivate fields as well. A lesson for us here is that a household may contain a number of single women headed hearth-holds within it. These women are probably cultivating their own fields, and have interests and needs which can be quite different from those of the 'household head'\textsuperscript{19}.

As far as crop production was concerned, we found that different family members often cultivated their own fields (with control over the use of its produce). However, labour was commonly pooled by household members. Women household members were the ones who carried out seed selection and made the major planting decisions. Ploughing was traditionally the man's role. However in an increasing number of cases (Rachel's and potentially Rebecca's in the future), the husband is away during ploughing time and the woman must manage the ploughing.

While women managed chickens and pigs, the main responsibility for cattle and goats lay with male household members. In the past children and young men played an important role in herding, and at the time of the study it was still common to see young children herding livestock. However, as children spend increasing amounts of time at school and young men find jobs in the city, labour looked like becoming an growing problem for livestock management. In 1996/97 we saw how Rachel and her daughter in laws were forced to take on livestock herding on top of their other substantial workload. Herding is compulsory during the cropping season and so corresponds with peak labour demands for crop production.

\textsuperscript{18}Rachel estimated that she made between $70 and $170 Namibian dollars profit from each brewing of 'mutoho' beer (approximately 300 litres). The main cash input was purchase of sugar ($65 per batch). Millet and labour (valued at $70) were provided by the family. In 1997, Rachel brewed millet throughout the year.

\textsuperscript{19}The value of using hearth-holds as a framework of analysis is discussed by Felicia I. Ekejuba in Women Wielding the Hoe (1995). She argues that household is an "ill fitting category" for in rural West Africa and that intra-household relationships may be, and often are, made invisible by a single focus on the household or on individual adult males and females in the household". The hearth-hold, as defined by Ekejuba is "made up of a woman and all her dependents whose food security she is either fully or partially responsible for - the male spouse can be either a full member of the hearthhold but in most cases he oscillates between several hearthholds, that of his wives, mother and mistresses" p51 As a unit the hearth-hold is "more socially, economically and emotionally stable over time. The incidence of divorce, separation etc. makes the household a more volatile unit"p55.
We found that though men were responsible for house building, most day to day household tasks fell to women. Labour demands were extremely high and the women monitored showed much interest in labour saving devices. Rachel exchanged some of her millet harvest for a large barrel which could reduce the time spent fetching water from the river. Rebecca told us that she planned to invest in a wheelbarrow to help her with household transport. When the family owned draft animals and these were managed by the men (as was the case for Immanuel, Ian and Rachel - sometimes) these could be used for collection of water, firewood and for transporting crop produce. This could substantially reduce women’s workload. With less men and children available to help female and elderly household heads, it will be important to people like Rebecca and Rachel that they receive training and support to be able to use their draft animals themselves.

3.5 HOW DO FARMERS EXPERIMENT AND ADAPT THEIR FARMING SYSTEMS?
Over the case study monitoring period we found that households were actively experimenting and developing their farming systems in many different ways. Some experimentation was ‘playful’, trying out new ideas just to see how they worked out. Experimentation with fruit trees, new crop varieties and salt licks for cattle fell into this category. Other experimentation was ‘problem related’, for example the use of manure, fertilisers and rotation for soil fertility management, fallowing for weed control and new treatments for livestock disease.

All households monitored were experimenting in some way. However, we found that the richer households were more likely to be involved in ‘playful’ experimentation. The poorer households were limited in their experimentation by their inability to invest in new technologies or to take risk. However, when, as members of FED groups, poorer households such as Hamutenya’ and Ingrid’s were provided with technologies such as new crop varieties, they were very keen to test them.
4. CONCLUSIONS - IMPLICATIONS FOR NATURAL RESOURCE RESEARCH, EXTENSION AND DEVELOPMENT IN KAVANGO.
From the discussion we draw out a number of themes which have important implications for MAWRD's work with Kavango farmers.

1. The study found that successful livelihood systems were based on a diversity of enterprises (both on and off farm). The MAWRD (and others working in rural Kavango) needs to appreciate this diversity and develop a more holistic approach to farming systems development which addresses not only crops and livestock but also common resources (wild vegetables, forest and river products), and which looks at the interactions between enterprises and the impact of changing one element of the system on others.

2. Off farm income played a key role in providing capital for natural resource based enterprises, and in helping households to cope with crop failure. Those who did not have access to formal employment were particularly vulnerable. The MAWRD should promote rural income generation opportunities, particularly those which are accessible to women, San bushman households and others who cannot gain access to formal employment.

3. Forest resources played a key role in many aspects of the farming system, and were an important source of food and income for the poorest households and for the San bushman who were particularly skilled and knowledgeable in forest management. However, it was just those households who were most concerned to maintain forest resources who had the least say in decisions which affect future forest management. The MAWRD (working together with Ministry of Lands and Resettlement and the Ministry of Environment and Tourism) should attempt to involve these households more fully in the planning of future common resource management systems for Kavango.

4. Inland and river villages had different needs and interests with respect to natural resource development. We found that for river villages lack of grazing, reduced access to common resources and labour were key issues to be addressed. In the inland village, people were more concerned about lack of access to agricultural services, inputs and information. Extension and research activities should be tailored to the particular needs and interests of these different village types.

5. In the river villages the interests of larger farmers and the resource poor 'sipata' farmers were very different. The larger farmers were interested in labour saving technologies (reducing labour costs), extensive production systems (involving clearing larger and larger areas of land) and in marketing their products. However, though larger farmers tended to be more visible and vocal, they were a minority group and it is important that the MAWRD pays attention to the majority of 'sipata farmers'. The concerns of the poorer 'sipata farmers' centred around the poverty rut they found themselves in. Many saw crop production as a way to improve their livelihoods, but without capital and draft animals were not sure how to proceed. Some 'sipata farmers were interested
in intensive technologies which could increase production or income generation from their existing small plots of land. In the long term this intensive path may prove more useful for developing sustainable livelihoods in Kavango than the extensive clearing being practised by the large scale farmers. The case of the FED group who decided to cultivate a piece of land jointly shows that the MAWRD extension staff and FED groups could play a key role in helping these households to find ways around their problems.

6. In the inland villages, we found less differentiation in household interests. However, one group, the San bushman, did stand out from other households. Though San people had immense knowledge and experience of forest management, they were not currently involved in any planning or management decisions with regard to the forest. While many San people were also interested in cultivating their own land, they appeared to be prevented from clearing land, and when they did cultivate (as in the case study monitored here) were not given due compensation when damage occurred. It is important that the San people are not forgotten in future natural resource development activities. They have a potentially important contribution to make to the development of sustainable forest management systems in the future. With regard to their ability to cultivate, it is important that their rights to land are acknowledged in forthcoming land legislation.

7. With regard to changing roles of household members, we saw that as young men and children were increasingly absent from the village during ploughing time, women were taking responsibility for use of draft animals for ploughing etc. It is important that the MAWRD bears this in mind when planning draft animal training courses. Labour for herding may also become a critical problem in the coming years.

8. The study noted that households often contained a number of hearth-holds (made up of a woman and her dependants) who cultivated land separately and had different needs and interests to the household head. It is important that the MAWRD is aware of the existence of these hearth-holds. It could be useful to use hearth-hold rather than household as the unit for future survey work, case study monitoring and needs analysis.

9. The case study monitoring found that all households were actively experimenting and have a potentially valuable contribution to make to on farm research. Poorer households, however, were less able to take on experimentation which involved additional labour input or had a high risk of failure. Inland pioneer households were the least likely to be involved in 'problem based' experimentation, because they experienced few of the constraints which occurred in the more highly populated areas.

The case studies are all unfinished stories. Hamutenya, Rachel, Immanuel, Ian, Robert, Ingrid and Ivan are all still farming, collecting from the forest, herding their livestock and coping with the difficulties and opportunities which come their way. We would urge policy makers and those whose work has an impact on rural communities in Kavango to keep these people in your minds and your hearts and let their experiences guide you in your work.
References
KFSR/E 1995 District Profiles, Kavango Region
KFSR/E 1995 Shikoro Baseline Household Survey (KFSR/E Working Document 8)
APPENDIX 1 - SAMPLE CHECKLIST (OCTOBER 1997)

This is a checklist from a monitoring visit which focused specifically on livestock.

OCTOBER 1997 CASE STUDY MONITORING CHECKLIST

Equipment Needed
Systems diagram, farmers folder.

Crop Production
Any activities in the last month?

Livestock
Any changes since last month?
- other issues to be discussed later.

Other Enterprises
Other enterprises carried out in the last month?

Income/Expenditure
check notebook
Summary of last month (include exchange of crop produce)

Food Security
Main food at the moment
Yesterday's meals
What is the total grain consumption of the household per month
What is the consumption per month of purchased maize meal

LIVESTOCK - general information for the report.
Some of this information has already been collected, please check the personal file before carrying out the interview - and fill gaps/summarise only.

Ownership/Access
Ownership of livestock within the household. Which household members own which animals? (chickens, cattle, goats)
How have household members acquired livestock (gifts, inheritance etc.)?
Women and livestock ownership?
How and when do young people acquire livestock?
Household stage and access to livestock - what is the normal pattern?
Kufisa/loan system. How does this work? Who can you lend to/borrow from? What is the payment?
Changes in livestock ownership, management, herd composition and use - what are the trends?

Types of livestock and role:
Of the livestock which the household owns, which animals are most important for food, cash and savings.
Are different animals more important to different family members?
Attitude towards other livestock: horses, pigs, donkeys, ducks - have the households ever kept these, would they in future?
Changing role of livestock.

Management of livestock
Chicken husbandry - Mbora where do chickens sleep?
Can women milk cows, herd, plough?
Changes in management practices?
Contribution of Livestock for Cash and Food
Summary of sales of meat (goat and cattle) this year, and live sales (goats, cattle, chickens). Sold for what reason?
Summary of cash income from milk/butter sales?
Renting of DAP for transport, ploughing?
Changing role of livestock for cash and food?

Social Networks
Role of chief - how is the chief important to the household today? Different to past?
Role of rudi - how is it important to you?
If you need help would you go to direct family, rudi, church, neighbours or to someone else?
Does your church do any development work?
Role of women in community management - can they be committee members, headwomen, chiefs??
Successful community organisations in the area - and reasons for success??

Changing situation??

Fish
Joint fishing parties: with family, rudi, neighbours??