



OKACOM

The Permanent Okavango River Basin Water Commission

Land Use in Kavango: Past, Present and Future

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RAISON (Research and Information Services of Namibia)

February 2009

*Environmental protection and sustainable management
of the Okavango River Basin*

EPSMO

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Summary

The report provides an overview of the major uses of land in Kavango, while paying attention to processes that have driven the use of land and its resources in the past and those that are now most significant. The majority of people, the most intense use and greatest pressures on resources are along the Okavango River. Populations have grown rapidly over the past several decades as a result of immigration from Angola. The approximately 28,200 rural households largely use their land for low input-low output farming, but most of their income and food security comes from sources unrelated to agriculture. The government sees the River water as an important source of irrigation water to be harvested before it leaves Namibia, in so doing contributing to the assumption that Kavango can be the breadbasket for Namibia. Urban growth is substantial because increasing numbers of people seek cash wealth which rural livelihoods can not provide, and because a variety of economic activities related to sub-regional trade are based in Rundu and other towns.

Communal tenure limits long-term economic development while also encouraging the exploitation of commonage resources. However, over one-third of open communal land is being privatized into about 540 farms allocated to several hundred individuals.

Although agriculture – in the form of large-scale irrigation projects for cereals and traditional farming methods – is unlikely to offer useful prospects for future development, more intense cultivation of high-value products has potential. There is also scope to boost the wealth of rural farmers through the production of jatropha, as long as this is managed appropriately. Kavango can derive considerable benefits from tourism and wildlife, mainly by further development and the strengthening of conservancies and community forests. The region also has much to gain if the Okavango River Basin is developed and promoted for its considerable tourism value.

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Environmental, historical and contexts to land use in Kavango¹

There are no existing land use plans for Kavango although a number of regional development plans have been compiled over the past 40 years.² However, elements of these plans have seldom been implemented because land uses in Kavango are much more a product of local environmental and economic conditions. Some of these have had significant effects over many years, and they are likely to continue to do so in the future. Of course, most uses of land are driven by the availability of resources, and those provided by the *Okavango River* have had the most marked effect on the use of land. It is along the River that pastoral and agricultural communities first settled perhaps 1,500 to 2,000 years ago. The River provided fresh water for people and their livestock, food in the form of fish, wildlife and wild fruits, relatively fertile soils for crops, and reeds and thatching grass to construct homes. Populations were small and life was comparatively easy along the River, thus shaping the way in which people use time, land and other resources. Almost everyone lived close to its banks as recently as 65 years ago when much of the rest of the region was thinly populated and little used. It is only in the past few decades that permanent settlements have expanded to any extent south of the river. Much of that expansion has been along roads, and in places where water is available and soils allow for dry-land crop production.

The use of land along the River is also affected by the *perspective of Kavango being a 'breadbasket'* for Namibia if the River water is used to turn open, dry land in this country into productive fields. There have also been plans to use the River to supply water to the central regions of the country and for hydropower, but these plans have not been implemented. In contrast to Botswana's use of the Okavango for its lucrative tourism economy, Namibia has viewed the river water more as a passing resource to be harvested before it is lost at Moembo.

¹ Much of the material presented here has been updated from information compiled and published in *Sand and Water: a profile of the Kavango region of Namibia*, published in 2001; and *Okavango River: the flow of a lifeline*, published in 2004. A list of key references that predate these books is given on page 12.

² For example: AOC. 1967. *A preliminary survey of the natural environment and the agricultural resources of Okavangoland*. Report for the Department of Bantu Administration and Development, Pretoria.; Loxton, Venn & Associates; PLAN Associates. 1984. *'n Ontwikkelingstrategie vir Kavango*. Windhoek.; Page, D. 1978. *Nasionale plan Kavango ('n voorlopige benadering)*. Universiteit van Stellenbosch. Instituutsverslag No. 22. Stellenbosch, South Africa.; Page, D. 1979. *'n Raamwerk vir ontwikkeling van Kavango: Atlas*. Inst. vir Beplanningsnavorsing, Univ. van Stellenbosch, Goodwood, 40 pp. ; Yaron, G., Janssen, G & Maamberua, U. 1992. *Rural Development in the Okavango Region of Namibia: An Assessment of Needs, Opportunities and Constraints*. Windhoek, Gamsberg Macmillan. ; Namibia Development Consultants. 2001. *Regional development plan for Kavango*. Report for National Planning Commission, Windhoek.

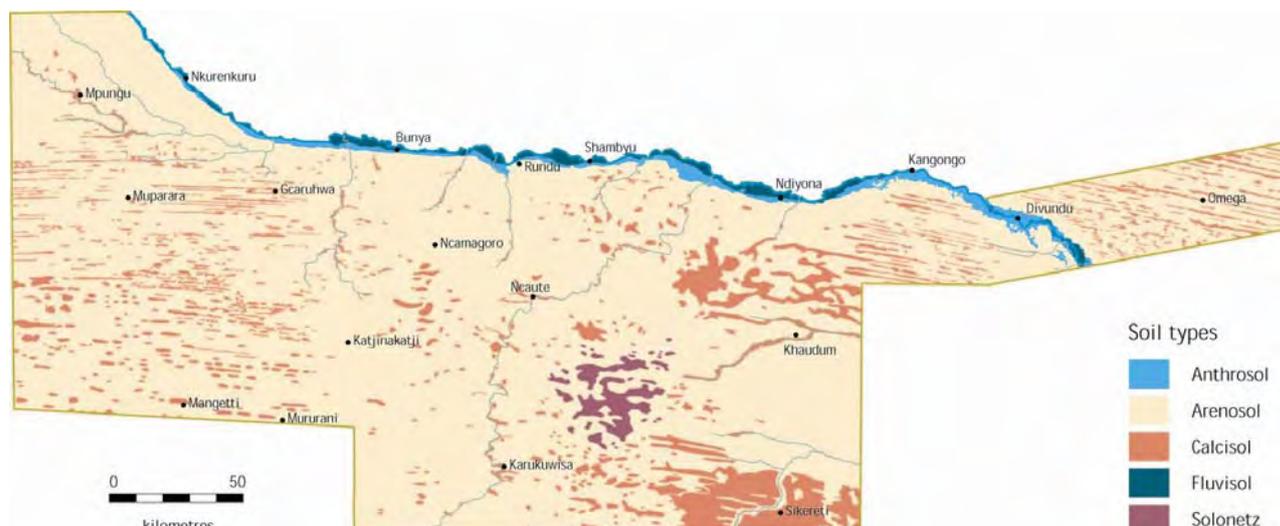


Figure 1: MAJOR SOIL TYPES IN KAVANGO

Villages south of the River depend entirely on ground water because little surface water is available for any length of time anywhere in that area. This is largely because rainwater rapidly drains through the *Kalahari sands* (arenosols) that dominate much of the Region (FIGURE 1). These porous soils are very poor for crop production because of their inherent low fertility and water retention in the uppermost soil horizons. As a result, most small-scale farmers plant their crops elsewhere: in small patches of somewhat better soils along the River and along fossil drainage lines (*omurambas*) and inter-dune valleys (fluvisols and calcisols).

Immigration from Angola during its civil wars from 1961 to 2002 has had a major influence on land uses in Kavango. Most immigrants settled in rural areas, and their escalating numbers led to high rates of land being cleared for crops. For example, areas of woodland cleared expanded by 3.9% per year between 1943 and 1996. More than half of all people in Kavango are immigrants or children of recent immigrants. The population of Kavango amounted to 201,093 in 2001 and, at an annual growth rate of 3%, probably totals about 254,000 people in 2009 (FIGURE 2).

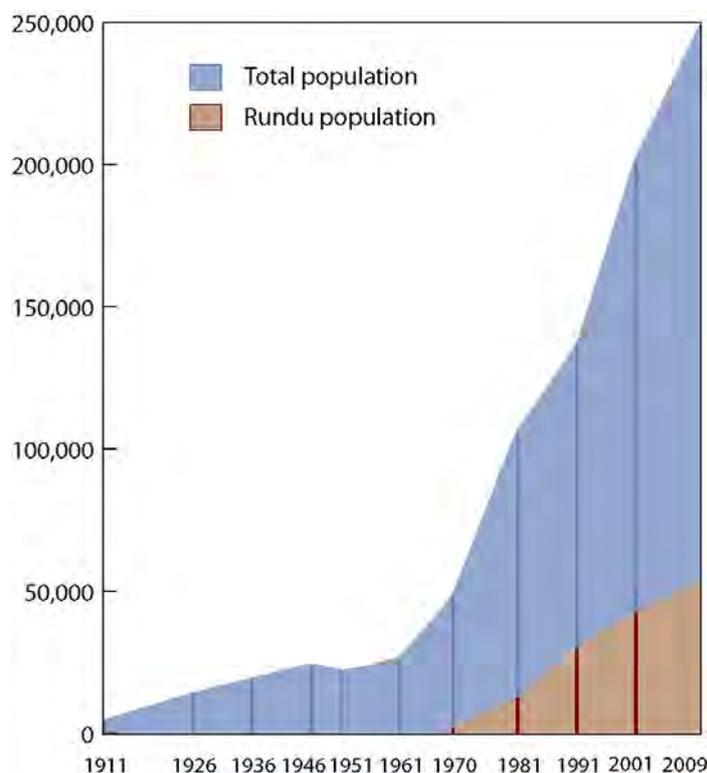


Figure 2: POPULATION GROWTH IN KAVANGO OVER THE PAST 100 YEARS

While social and economic development in Kavango was largely neglected by the *South African administration* because it was a black homeland, some of the transport infrastructure was developed for strategic reasons by the South Africans during the Namibian liberation war. That administration also started several agricultural development projects along the river, and allocated about 60 large farms to foster commercial farming by Kavango residents. Those first farms probably provided the foundation for the current massive effort to privatize large farms (see page 10).

As a homeland during the South African administration, jurisdiction over allocation and land tenure was largely the responsibility of traditional authorities. The tribal, traditional or customary system of land tenure was renamed *communal* after independence. Despite the recent programme to privatize land, most land in Kavango is still officially regarded as communal, a tenure system that leads to a variety of uses and abuses of land.

The sub-continental position of Kavango provides it with two assets. The first is the Okavango River, the local effects of which were noted above. But in a broader context, it is significant that Kavango shares the middle section of the whole river system with Angola, and also occupies a central place between the catchment in Angola and the famous Okavango Delta, downstream in Botswana. As public, political and economic interests in the whole *Okavango River Basin* grow, Kavango is likely to assume an increasingly important and strategic role in the management of the River's health and wealth.

A second asset is the location of Kavango – and Rundu in particular – along *major trade routes* between Namibia and Angola, Botswana, Zambia and Botswana. The Region already enjoys a variety of benefits from trade along these routes, especially along the Trans-Caprivi Highway. Indeed, Rundu is the only major economic centre within a huge expanse that stretches 900 km west to east from Ondangwa to Katima

Mulilo, and about 1,000 km north to south from Menongue to Grootfontein and Maun. Rundu is thus a major supplier of goods and services to people spread across a very large area.

Finally, the Region and its people are increasingly moving from a traditional, rural economy (based on farming and harvesting natural resources for domestic use) to a *cash- and urban-based economy*. Rundu is reputedly the fastest growing town in Namibia, and a rapidly escalating proportion of the Kavango's residents now live in Rundu and other emerging towns.

Present land uses

THE DISTRIBUTION OF PEOPLE

The total number of rural households amounts to about 28,200 in 2009, an estimate based on an annual increase of 2.3% from 23,520 rural households counted in the 2001 census. The early and continued settlement of people along the Okavango River resulted in an extremely uneven distribution of people (FIGURE 3). The densest rural populations are concentrated in a swathe about 10 kilometres wide along the Okavango River. About 68% of all rural residents live here.

Settlements away from and to the south of the river developed for several reasons:

- A lack of open, arable land and grazing along the river led people to seek areas in which they could farm
- The provision of water from new boreholes
- The opening of roads allowed people easier access to unsettled areas
- Wealthier farmers with large cattle herds established cattle posts which later expanded into small villages.

Living conditions in small, remote villages away from the river and main roads are difficult, however. The people are far from services and have little chance of participating in Kavango's retail and cash economy. Land available for crop cultivation is often limited. As a result, many of the villages have shrunk, often causing local public services such as schools to become redundant or uneconomical.

In addition, peace in Angola has opened up new opportunities for people resident along the River to clear new fields on the Angolan north bank. Some people have built new homes on the Angolan side, while others commute daily to tend their fields. Much of the Angolan side was virgin woodland, but this is now steadily being decimated

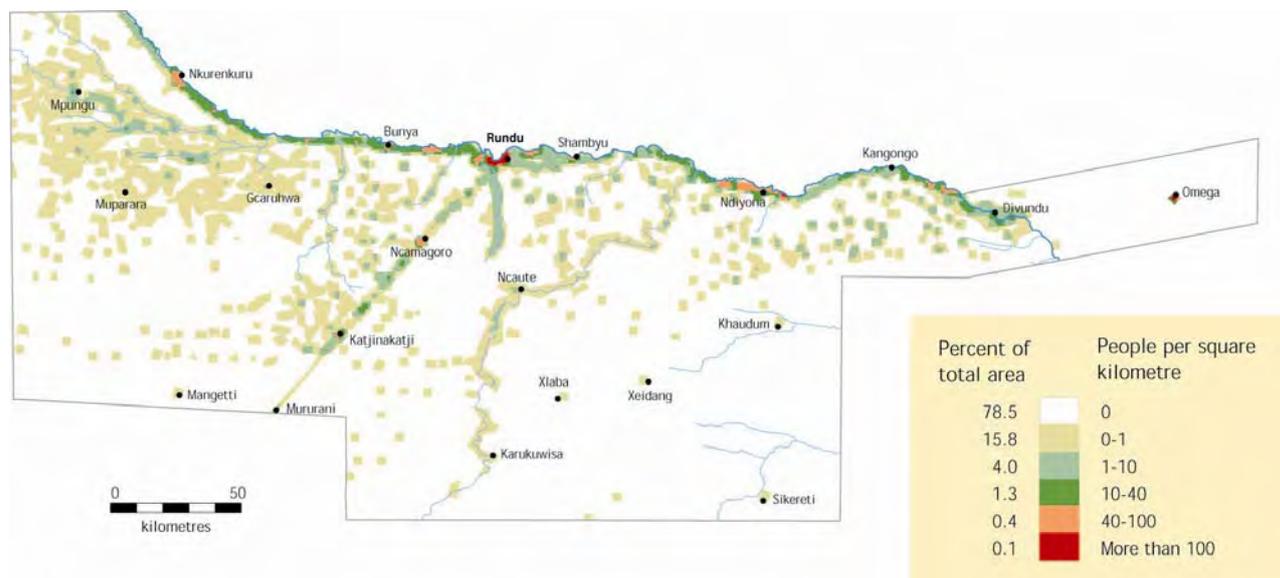


Figure 3: THE DISTRIBUTION OF PEOPLE IN KAVANGO

Urbanization has led to the rapid growth and development of Rundu. In 1971, the whole of Rundu consisted of fewer than 2,000 people, whereas its population in 2009 probably numbers about 60,000. Close to 30% of all people in Kavango live in Rundu and other emerging urban areas, such as Divundu, Nkurenkuru, Ncamagoro, Omega, Kahenge, Mpungu Vlei, Katjinikatji and Ndiyona. The population is thus rapidly changing from a completely rural character to one in which with significant urban populations. Moreover, almost all rural households have close links to urban socio-economic livelihoods as a result of family members who have moved to town.

LAND USES AND CONTROL

Most land in Kavango is broadly and officially viewed as communal land. This means that land is formally owned by the state, but many organisations exercise some control over land. The most significant organisations or groups are:

- Tribal authorities
- Regional Councillors
- The Ministry of Lands & Resettlement
- other ministries that control certain areas (for example, the national parks that are managed by the Ministry of Environment & Tourism)
- Individual farmers: both small-scale and those on large leasehold farms
- Conservancies and community forests
- The Kavango Regional Land Board

Land is also used for many different purposes, the most important of which are:

Land use/ownership	Square kilometres	Percentage of Kavango
Communal grazing	22,477	46.4%
Private, commercial farms	14,529	30.0%
Conservation areas	7,534	15.5%
NDC farm	1,689	3.5%
Small-scale crops	750	1.5%
Namibia Defence Force	537	1.1%
Quarantine farms	280	0.6%
Resettlement farms	200	0.4%
Urban areas	162	0.3%
Government farms	112	0.2%
Forestry area	101	0.2%
Rehabilitation farms	62	0.1%
“Green scheme” farms	23	0.0%
Total area of Kavango	48,456	100%

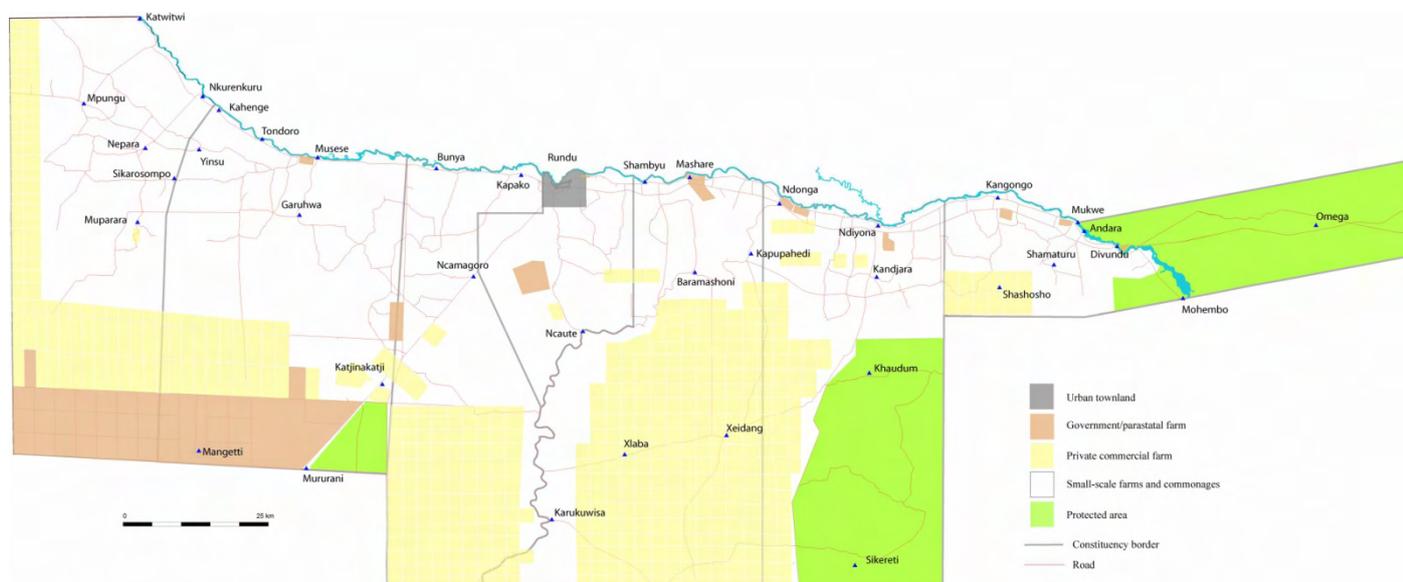


Figure 4: JUST LESS THAN HALF OF KAVANGO CONSISTS OF COMMUNAL LAND. THE REMAINING AREAS ARE USED FOR A VARIETY OF PURPOSES, IN PARTICULAR FOR COMMERCIAL FARMING AND CONSERVATION

TRADITIONAL AUTHORITIES AND COMMUNAL LAND

While communal land is formally owned by the state, traditional authorities are expected to provide considerable control over land. Provisions for this control are stipulated in the Traditional Authorities Act of 2000 and the Communal Land Reform Act of 2002. However, traditional authorities are primarily gate-keepers, controlling who may settle, build a home and farm (see Appendix 1). Once a newcomer is given permission, little or no control is exercised by the authorities over how land is used. A major consequence of this is that no one has any effective control over commonage pastures and other resources. It is therefore in everyone’s interests to exploit commonage resources to the maximum. Wealthy residents who have lucrative off-farm incomes graze as many animals as they like, which is often at the expense of

poorer residents who subsist entirely on farming. A lack of control over commonages also leads to excessive clearing of new land (some of which is then never used for cropping), run-away bush fires, and perhaps logging.

Communal tenure means that residents have customary rights to use land allocated to them for life. The Ministry of Lands & Resettlement, through the regional Land Board, has implemented a programme to map and certify the residential and cropland rights of residents on rural land, but no further rights or security of tenure are presently envisaged for local residents. They may therefore not own their land in a legal sense, and neither do they have any legal long-term leasehold on their land. As a result, residents may not use and invest in their land as a capital asset for purposes of saving, long-term security or collateral.



Figure 5: KAVANGO IS DIVIDED INTO SIX TRIBAL AUTHORITY AREAS: KWANGALI, SHAMBYU, MBUNZA, GCIRIKU, MBUKUSHU AND KXOE; ONLY THE FIRST FIVE AUTHORITIES ARE OFFICIALLY RECOGNIZED BY THE GOVERNMENT.

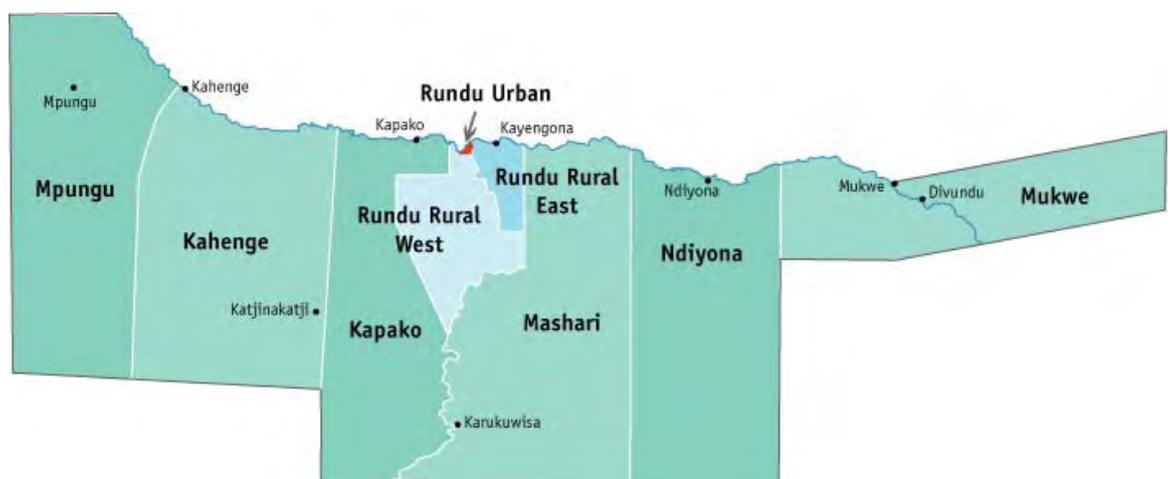


Figure 6: THE REGION IS DIVIDED INTO NINE CONSTITUENCIES, EACH REPRESENTED BY A REGIONAL COUNCILLOR. THE BOUNDARIES OF THE CONSTITUENCIES AND TRIBAL REPRESENTATIVES DIFFER IN MANY AREAS.

SMALL-SCALE FARMING AND HOUSEHOLD ECONOMIES

Farming on a few hectares of mahangu (pearl millet) with small numbers of goats and cattle is the dominant land use, particularly along the Okavango River. Almost all rural households practice this kind of agriculture, mainly to produce food for domestic consumption. About two-thirds (63%) of all rural households report farming as the main source of income, while cash incomes from wages, businesses, pensions and remittances are the main source of income for other households. The figure of 63% for farming is, however, likely to be an over-estimate (see page 9).

Mahangu is much the dominant crop, being planted on about 95% of all cultivated land. The remaining 5% is cultivated with maize, sorghum and vegetables such as melon, groundnuts, beans, spinach and pumpkins. Mahangu predominates because it is the only cereal that grows relatively well on sandy, nutrient-poor soils where the climate is characterised by low, erratic rainfall and long spells of dry weather.

Crop cultivation usually starts in November when fields are ploughed and prepared for crop planting, and ends in July when the mahangu is harvested and threshed. The main input to farming is labour because most farming activities are done manually. The majority of farmers plough their fields manually or use ox-drawn ploughs, while few farmers plough with tractors. Weeding and harvesting are the most labour-consuming tasks, and are done manually. Due to the long dry season and slow growth only one harvest of staple cereals can be obtained per year.

The amount, timing and effectiveness of rainfall varies greatly from year to year and also within any one rainfall season. Harvests are therefore variable. Similarly, livestock suffer substantial mortality when conditions are very dry, as happened in 1994 and 1995.

Yields and the areas cultivated vary greatly from one household to another, and so there is substantial variation between households in the amount of mahangu produced each year. Crop failures occur commonly because:

- Crops are reliant on rainfall which is often low or interspersed with hot, dry spells.
- Crops are grown on nutrient-poor sandy soils which retain little water.
- Farmers make very little use of compost or fertilizers to boost soil fertility.
- Weeding is not regular or thorough.
- Pests and diseases may damage crops.

Livestock is an important asset for many rural households, as well as for urban dwellers who keep their stock with relatives living in rural areas. There are at least 150,000 cattle and 65,000 goats in the region. However, relatively few animals are slaughtered or sold, with annual off-take amounting to about 7%. Most slaughters are for domestic consumption or to obtain cash for household use.

There are several misconceptions about farming and rural households in Kavango, which often influence thinking about land use planning, development prospects, options for agriculture and the livelihoods of rural people:

- **All rural Kavango households are similar.** As in any society, Kavango households vary greatly. For example, livestock ownership is extremely skewed; thus, 49% of all households own no cattle, and 59% own no goats.

Just over half of all cattle in the region are owned by 10% of the farmers,³ and field sizes vary greatly between households. Much of this variation is due to disparities in wealth and access to cash incomes. Those relatively wealthy households with the largest herds or flocks make the greatest use of commonage, cultivate the largest fields, and are most likely to have the biggest and most diverse sources of off-farm incomes. They also have more access to labour because their families are larger or because they can afford to hire casual labourers.

- **Crops provide rural households with most of their food requirements and food security.** Many development projects are founded upon this very pervasive idea. However, production on most farms and in most years is far too low to provide for household needs. Average yields usually amount to between 100 and 300 kg/hectare, and most fields cover less than two hectares. Results from the 1994 Income & Expenditure survey showed that only 17% of all Kavango farmers rely entirely on food that they produced themselves, and the only proper study of income found that 82% of rural household income was not related to farming. This was in 1992.⁴ A high degree of reliance on off-farm cash incomes is evident from the following table:

Main source of income	Percentage of households
Farming	63%
Business	11%
Wages and salaries	13%
Pension	5%
Remittances	4%
Other	3%
Total	100%

Source: 2001 Population & Housing census data

These figures usually reflect the main source of income of the head of the household, rather than the major source of *all income* for a home. Indeed, the figures over-emphasize farming because most household heads are elderly, less educated and unemployed people, with the result that the more lucrative incomes of younger and more economically active family members are not reported. This bias is evident from the following table, which shows the proportions of people over 14 years employed in different sectors in rural areas of Kavango:

Employment sector	Percentage of people
Public and private services	48%
Agriculture and other natural resources	44%
Manufacture, mining, building	6%
Trade	1%
Not stated	1%
Total	100%

³ Based on analysis of four years of annual agricultural surveys conducted by the Central Bureau of Statistics. Additional information on farming in the region is summarized in Mendelsohn, J.M. 2006. *Farming systems in Namibia*. RAISON, Windhoek. 80 pp.

⁴ Keyler, S. 1995. Economics of the pearl millet subsector in northern Namibia: a summary of baseline data. *International Crops Research Institute for the Semi-Arid Tropics*. Working Paper 95/03.

Source: 2001 Population & Housing census

Several other aspects to household incomes are to be seen in these and other data:

- Most households have at least two or more sources of income,
- Households with the largest family sizes have the greatest and most diverse incomes
- Households with the largest incomes also have the biggest fields and livestock holdings
- The largest total household incomes are in families which have one or more people formally employed, for example as teachers or nurses.⁵
- Few households have no source of cash income.

These kinds of results show that much of Kavango's economy is already based on cash, that considerable amounts of money are in circulation, and that subsistence agriculture is not the mainstay of Kavango's economy. A further, obvious point is that cash incomes are vital to the livelihoods of rural people in Kavango, indeed to all Namibians. Without cash it is simply impossible for people to function in a society where most commodities and transactions are based on cash. For this reason, farmers are eager to exploit any new opportunity to earn cash, especially so given the limited job and business opportunities that now exist in Kavango.

- **The potential for food production is high.** Kavango is often held to be the breadbasket of Namibia. Huge efforts by the government, donors and NGOs have been put into improving mahangu production, for example by providing improved seed, fertilizers, ploughing services and marketing of products. As a broad and general conclusion, all these efforts have had little or no impact. Indeed, many people conclude that mahangu yields are now lower than say 20 or 30 years ago.

In summary, traditional farming is a low input–low output activity that generates little income because: fields are small, soils have limited fertility, yields are low, labour is often limited, surplus harvests are rare, and markets are small. Because production is too low to provide for all household food requirements people depend largely on cash incomes to feed themselves. Efforts to improve traditional farm production have had little success. Any opportunities of significantly improving household wealth will have to rely on new or greater cash incomes.

COMMERCIAL FARMS

Several large farms were allocated to individuals in each tribal area during the 1980s as part of an effort to develop and encourage commercial farming activities. The same effort led to the bigger development of 44 farms in the Mangetti Block in 1989. The Mangetti farms are just north of the quarantine fence, and it was then intended to move the fence to a line along the northern border of these farms. Over the past few years, however, there has been a great increase in the allocation of large-scale farm (euphemistically and officially called 'small-scale farms').

⁵ For example, the starting salary of a qualified teacher is N\$58,461, while unqualified teachers with some experience generally earn between N\$35,000 and N\$45,000 per year.

The Mangetti farms are in the Uukwangali tribal area and this precedent led other traditional authorities to plan farms for themselves. In the late 1980s and early 1990s, Land & Farming Committees were formed by each traditional authority with the purpose of demarcating areas that could be fenced into large farms. There are now over 534 of these private farms which range in size from 1,000 to over 6,000 hectares. Adjoining farms are often allocated to the same person, giving him an even bigger farming unit. Cumulatively, the farms now cover over 30% of the region, and close to 40% of all communal land. An account of large-scale farms in each tribal area is given in Appendix 2.

Most of the farms have been surveyed by the Ministry of Lands & Resettlement, and 25-year or 99-year leasehold certificates have been issued to the owners of about half the farms. This means that about 30% of the region is effectively owned by a few hundred individuals.

DEVELOPMENT PROJECTS

Dozens of agricultural development projects have been attempted along the banks of the Okavango River over the past 40 years. Most aimed to produce cereals (mainly maize, sorghum and pearl millet), oil seeds (mainly peanuts and sunflowers), cotton, vegetables and fish. The majority of the projects were abandoned, or only continued to work because of subsidies provided by public funds. Failure has usually been due to the fact that incentives for communities to operate the projects were absent or weak, the marketing of products was difficult, or farmers found it hard to manage soil fertility, pests and harvesting.

The large, irrigated farms – such as those at Vungu Vungu, Shitemo, Musese and Shadikongoro which mainly produce maize and wheat – have been heavily subsidised by public funds. In addition, the running costs of irrigation are high, especially for electricity to operate pumps, transport to markets and for fertilizers. Cereals produced on the irrigation schemes therefore usually cost more than imports from elsewhere. The poorest members of society who depend heavily on cereals for their nutritional needs are thus forced to pay inflated prices.

NATURAL RESOURCES

Kavango's great variety of wildlife and natural vegetation resources are most simply divided between those along the Okavango River and those inland and to the south in the woodlands that grow on sandy soils. These woodlands are dominated by a variety of tree species, but the best-known tree is kiasat from which large quantities of timber were harvested over the past 50 years. However, few kiasat trees large enough to be harvested now remain, and the timber industry has been stopped as a result. Much of the profitable craft industry in Kavango depends on the use of kiasat. There are many other valuable plants, such as false mopane or ushsivi (also used for timber), mangetti (for *kashipembe* liquor), and thatching grass. Many of Kavango's plant species have potential commercial values which could be substantial once developed. Examples are oils for the international cosmetics market from blue sourplum, mangetti, bird plum and baobabs, and liquors from mangetti, jackal berry, and monkey oranges.

Much of the wildlife that used to occur along the Okavango River has now disappeared because so much natural vegetation has been cleared by the many people that live along its banks. Regrettably, the same is now happening on the

northern, Angolan bank. As a result, most remaining wildlife is now concentrated in the Bwabwata and Khaudum National Parks. The Mahango area of Bwabwata has the highest concentration of large mammals in Namibia, and also boasts the greatest diversity of birds in the country. These animals are important attractions for tourists to that area of the Region and who bring income by staying in nearby lodges and campsites. Many jobs are also created by the tourism industry.

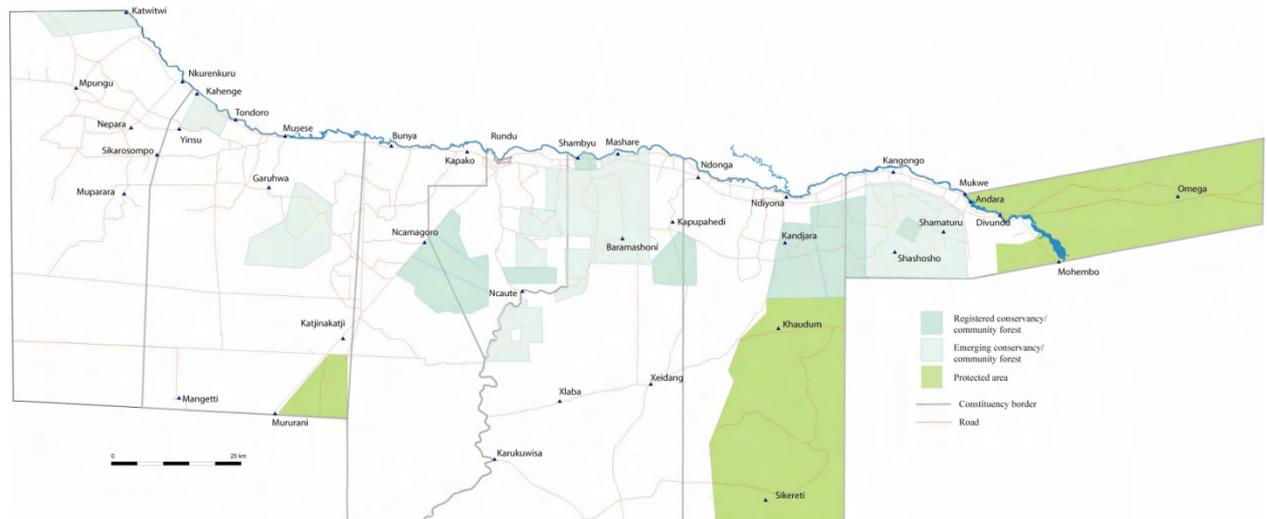


Figure 7: FIVE COMMUNITY FORESTS AND FOUR CONSERVANCIES HAVE BEEN GAZETTED IN KAVANGO, WHILE OTHERS ARE IN THE PROCESS OF DEVELOPMENT.

In recent years Namibia has been developing new ways of using natural resources commercially in communal areas. Communities in these areas gain rights over tourism and to manage and benefit from wildlife and plant products by registering conservancies and community forests. These rights enable communities to establish their own tourism enterprises, to sell trophy animals, game meat, live game, timber products and other woodland resources, and to establish joint ventures with tourism companies. Trophy hunting and tourism joint ventures have earned substantial revenues in some areas. Several additional benefits stem from community forests and conservancies. For example, residents gain greater security over communal land and its resources, the value of their land increases, and incentives are created for natural resources to be managed effectively and sustainably. In the case of Kavango, the greatest values to be obtained from natural resources are likely to be through tourism along the Okavango River.

Land uses in the future

The main drivers of resource use are likely to continue to mould land uses in Kavango. For example, Namibia's *preoccupation with food self-sufficiency*, which is reinforced by many development agencies, will continue to foster agricultural development, even though food security can be achieved in easier and more effective ways. Thus, the Namibian government intends to expand areas under irrigation from the present 2,200 to 15,700 hectares.⁶ The *harvesting of Okavango River water* will therefore rise from 33 million to 235 million cubic metres per year. Despite the environmental degradation caused by slash-and-burn clearing and the extremely low returns from mahangu production, it is unlikely that the wisdom and value of these *traditional farming methods* will be questioned seriously by any decision-makers. The remaining natural woodlands on the northern bank of the Okavango River will therefore continue to be cleared and lost.

Urban growth is certain to continue, and increasing numbers of people will seek cash incomes rather than depending solely on the harvest of home-grown produce. Population growth in rural areas will continue to slow as more people migrate to towns and birth rates decline. Pressures on services in urban areas will escalate.

Although about one-third of the region is being privatized and allocated to a few hundred individuals, the Namibian government is likely to retain *communal land tenure* in Kavango for the foreseeable future. *Pressures on commonage resources* will increase as cash earnings are used to expand traditional farm holdings, especially in the form of livestock. One reason that wealthy people will continue investing in livestock is that communal tenure limits their options for investing in capital assets.

The economic *benefits of trade* are likely to grow as long as economic integration in SADC increases, peace prevails in the sub-continent, and road networks are developed. The Namibian government plans to construct a road linking Katwitwi and Tsumeb, which would shorten the trade route between southern and south-eastern Angola and the major economic centres in Namibia. The road from Rundu westwards to the hub of economic activity at Oshikango and Ondangwa is gradually being improved.

These are the likely consequences of 'business as usual', as determined by present government policies on food, the pursuit of cash wealth, and lack of management of communal land incomes. However, other, economically beneficial and less environmentally destructive options are available if greater efforts were made to exploit several comparative advantages present in Kavango.

Tourism and natural resources.

It is increasingly evident that substantial economic benefits can be obtained from tourism (as exemplified by the significant industry in the Okavango Delta) and trophy hunting, fishing, game sales etc (as demonstrated by conservancies elsewhere in Namibia). Three mechanisms to develop these resources should be pursued. The first is the continued development and strengthening of conservancies and community forests. More areas and more communities can be developed in this way, new enterprises can be established and greater rights over control and ownership of land and resources could be given to these community-based management

⁶ Based on data provided by the Ministry of Agriculture, Water & Forestry, Windhoek.

institutions. Ways can be found to transfer ownership of conservancies and community forests as capital assets to residents. In addition to the formation of capital, incentives would emerge to develop the areas and reduce the abuse of commonage resources.

A second avenue or mechanism is to develop the international reputation of the whole Okavango River Basin as a destination for tourism, a transboundary resource worthy of protection in an environment that is largely pristine. The Okavango River basin could achieve a unique reputation. Efforts must be made to open up tourism opportunities in the Angolan catchment, tourists and tourism operators in Botswana should be drawn upstream, and a marketing programme to promote the whole Basin should be pursued. The participation of the Botswana government and tourism industry is of particular importance, since both have strong incentives to contribute to the protection of water flows into the Delta. Both also have much to lose if Angola and Namibia damage flows to the Delta.

Thirdly, there is scope for additional development and promotion of tourism routes that include Kavango. These can attract visitors from nearby destinations, such as Etosha, Caprivi, Victoria Falls, Chobe, and the Okavango Delta. If the whole Basin can be developed as a destination the logical opportunity arises to develop routes within the Basin, visitors moving up or downstream from one attraction to another between the catchment and Delta.

Agriculture.

Despite earlier criticism of existing perspectives and approaches to farming in Kavango, there is scope for agriculture that makes efficient use of the River water, is economically lucrative to the country and that contributes significantly to improving the wealth of residents (as opposed to the mere poverty reduction). Irrigation schemes can be used for high-value crops, and the schemes can be economically viable (rather than being dependant on public subsidies). Products such as fresh fish, beef (from cattle in feedlots) avocados, mangos and paprika should be investigated and developed where possible.

Considerable public discussion and speculation surrounds biofuel production in Kavango, in particular from jatropha. Many commentators are critical of such crops, but the opportunities offered by jatropha (if properly managed) for economic development and boosting cash incomes (and thus food security) are very significant. Moreover, jatropha cultivation by small-scale farmers on land now used for mahangu would give farmers much greater returns than are presently obtained. The key to realizing these lies in careful, strict management of where jatropha is grown. There is also the risk that more virgin woodland will be cleared if jatropha is really lucrative. Interestingly, many people are worried by additional clearing for jatropha, but offer no alarm over clearing for low-value mahangu.

Finally, the hundreds of new, private farms could be productive assets to the region. Most of their owners have no experience or knowledge of farming. The only kind of production that now seems possible on the farms is beef, but managing the farms as individual units will be extremely hard, given the lack of infrastructure, remoteness of most farms, their relatively small size as beef ranches. Alternative approaches to farm management need to be considered, perhaps by amalgamating several adjacent farms into larger, cost-effective management units of which the owners are shareholders. Other sources of income may be obtained from bigger management units, especially from tourism and wildlife if the units are registered as conservancies and/or community forests.

Conclusion

Most land in Kavango is clearly bespoken: by small-scale farmers, commercial farms, government and parastatal farms, and as protected parks, for example. There is thus little scope for changing allocations of land in any major way. But there is considerable scope for changing the ways in which existing land-holders use their land. Doing so will require investigation and debate over current uses, and the posing of important questions, such as:

- Is mahangu production on small-scale fields worthwhile?
- Will the few hundred people allocated commercial farms use their farms productively, and in what way?
- Will Kavango continue to see Okavango River water as a passing resource to be harvested, or can Namibia contribute to a broader vision of developing the economic potential of the whole River Basin?
- How can the exploitation of commonages be controlled, and should residents of communal land gain ownership and capital assets from land?
- Are government and parastatal farms productive and used to maximum effect?
- Et cetera?

The Namibia Nature Foundation and Ministry of Lands & Resettlement has embarked on a land use planning programme for the Region. It is to be hoped that these and other questions can be asked during this planning process, and that useful answers to the questions can be formulated into a plan for the Region. The people and leaders of the Kavango will then have the important challenge of implementing the plan to achieve a better future.

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Appendix 1: Land management by traditional authorities⁷

Features of traditional administration

From bottom to top, tribal leadership consists of community leaders, headmen, senior headmen and chiefs. Community leaders (sometimes called junior headmen) are often the patriarchal leaders of extended locally-resident families. They are also the people who first established homesteads around which villages developed in the inland area to the south of the Okavango River. Headmen have responsibility for several communities or villages, and they are elected by community members before the chief ratifies their appointment.

Tribal areas are divided into wards, each of which is headed by a senior headman who is appointed by the chief. In addition, there is a council consisting of 12 or more traditional councillors, some of whom are senior headmen while others are appointed in their individual capacities. One councillor is appointed as the chief traditional councillor, with a position akin to that of a prime minister. His role is to advise the chief and also deputise when needed.

Tribal chiefs (called *hompas* in Uukwangali, Mbunza, Shambyu and Gciriku, but the *fumu* in Mbukushu) are normally members of the 'royal family', having been appointed as leaders by their deceased predecessors. Nowadays, however, headmen may elect a chief from among several candidates within the royal family.

Prior to independence the chiefs of the five traditional authorities (Tas) would regularly confer at meetings called by the Commissioner for Kavango. Since then nothing was done to encourage the continuation of the meetings, but the dispute over Owambo cattle in Uukwangali (see below) apparently led the chiefs to meet again for the first time about one year ago.

Land management and allocation by traditional authorities

Residential and crop land

Parcels of land are administered in very similar ways by the five traditional authorities. Allocations are for life, and nothing is paid when land is allocated. Land is normally allocated to men, since men usually live close to their parental homes when they marry. Properties in any local area therefore tend to be owned by closely related men. Land is also seen as traditionally being a 'male preserve'. Properties may not be sold and land that is permanently abandoned reverts to the traditional authority.

The level and kind of permission required for any change to land ownership is governed by two principles. The first is the degree to which an applicant is known by, or related to the local community. The more familiar a person is, the lower the level of authorization needed for any change in ownership or allocation. A father can subdivide his land to provide a parcel to his son without telling anyone, but will have to inform his neighbours and the local community leader if he is to allocate an adjoining piece of virgin land to his son. Likewise, an existing resident can enlarge his property or clear a new piece of land nearby as long as the neighbouring community knows that this is happening. Land may be transferred from one resident to another local resident by informing the local headman.

⁷ Adapted from Mendelsohn, J.M. *Customary and legislative aspects of land registration and management on communal land in Namibia*. Report for Ministry of Lands & Resettlement. 98 pp.

By contrast, an immigrant from elsewhere who wishes to occupy a piece of land would require the agreement of members of the community, the community leader and headman. The applicant would also need a letter of introduction from the headman of the area of his origin. If the immigrant was from a distant area or another tribe, he would also require agreement from the senior headman and chief, and his letter of introduction would need to come from his tribal chief.⁸

The second principle is that the more unusual the land allocation or change, the more permission is needed. For example, someone wishing to use a piece of land for business purposes requires authorization from all levels of the traditional authority. He would also be called to discuss the intended business with the chief so that the need for tax payments to the TA is unambiguous. Similarly, the creation of large farms (see below) has been planned at the highest TA levels.

The intended value of the two principles in governing land lies in avoiding disputes or misunderstandings in the future. Thus, the more familiar a person is, and the more his credentials, character and origins have been assessed by both community members and various levels of leadership, the lower the chance of disputes occurring.

While no payments are made for land, tribal authorities collect taxes from each person aged over 18 years and over. These amount to N\$24 per year for everyone (Uukwangali, Mbukushu, Gciriku), or to N\$15 for people who do not work and N\$30 for people who are employed (Shambyu and Mbunza). No other payments or tributes are paid to chiefs. Up until the 1970s, each household was expected to provide a portion of their harvest to the chief with the intention that the food be kept as a reserve for the community in the event of a famine. Prior to that, community members were required to first cultivate the fields of the chief and local headmen before tending to their own fields.

A great number, perhaps the majority, of residents have more than one parcel of land, and given the relative abundance of open land, farmers often clear new fields when the soil fertility of current fields is exhausted (very few farmers take measures to add nutrients to soils). Cleared fields that are not planted have either been abandoned or left to lie fallow. Residents would presumably attempt to register all cultivated, fallow and abandoned fields when offered the chance to demarcate their properties for CLR.

Commonages and grazing areas

While headmen have theoretical authority over open pastures and woodlands, levels of control are lax since these resources are perceived to be abundant. Livestock owners require no special permission to graze their cattle and goats in local commonages as long as the animals cover areas within daily walking distance from the homes of their owners. Livestock resident along the Okavango River are expected to move within a zone that is perpendicular to the river, thus going down to the river to drink and then grazing in directions directly away from the river.

Livestock owners from other villages or communities need authority from a headman if they require temporary access to local grazing or water.

Inheritance

⁸ This system also held for properties allocated to immigrant Angolans, although it must have been applied somewhat loosely when large waves of people arrived during particularly turbulent times of warfare in Angola.

A woman typically moves to live in her husband's village or community when she marries. Upon his death, her adopted community evaluates her position and social acceptability. In most cases she is allowed to continue using her husband's property because her character is agreeable and this would be in the interests of her children. The community will also offer her the option of marrying again, often presenting her with several potential partners from whom she can select a new husband. The new husband assumes the role of custodian or manager of the property and its assets, which would belong to the children of the late husband in terms of traditional law.

However, if the bereaved woman is judged to be unacceptable, she would return to her parental community and her husband's property would be inherited by her children. In the event of a mother dying, the father and her children will continue living on their property.

Appendix 2: Comments on large farms in Kavango

Uukwangali farms

There are now 110 farms in Uukwangali, of which 50 comprise the Mangetti⁹ and other farms established in the 1980s. The remaining new farms are along the northern border of the Mangetti Block and along the regional border between Kavango and Oshikoto/Ohangwena.

Mbunza farms

Three farms were allocated in the 1980s in the Mbunza tribal area, and all remain occupied. The Land & Farming Committee first allocated 62 new farms to the south-east of the Mangetti Game Reserve. Twenty of these had boreholes, pumps and storage tanks installed in 1992 to provide water for livestock in event of a drought and need for emergency grazing. Each of the 20 farms was about 8,100 hectares in size. The remaining new farms are to the east and south of this 'drought-relief' zone. Since then, 119 farms have been demarcated in the same general area between Mangetti Game Reserve and the Omatako omuramba. Most of the 119 farms are about 2,300 hectares in size.

It remains to be seen what explanation is offered when Kavango next experiences a severe drought. Cattle owners are certain to remember the planning and provision of drought-relief grazing, boreholes and water tanks in this area, which have now been given to private farmers.

Shambyu/Gciriku farms

Four large farms were established during the 1980s in the Shambyu area, and another eight farms in Gciriku area. The Land & Farming Committees of the two tribal authorities have since demarcated 271 farms, 41 of which lie in an area claimed by both authorities.¹⁰ All the new farms were originally planned to cover 5,000 hectares each. In planning the farms, both Land & Farming committees took the southern, east-west border between Kavango and Otjozondjupa as a baseline, and then simply measured off 5 x 10 kilometre blocks of land progressively north from the baseline border.

It is clear that many poor, subsistence farmers already live on many of the newly-established farms in Kavango. What is not clear is how the new farm owners will treat them, although there are reports of some long-established residents being evicted. Government policy on the matter is also not clear: will previous residents be compensated for eviction, be evicted or accommodated in some other way.

Mbukushu farms

Although these were not planned by the South African administration in the 1980s, three large farms were occupied and operational near Shashasho. Another 18 newer farms, each of 2,500 hectares, have been planned but not implemented because they overlap some of the existing farms, and the traditional leadership has acknowledged that this would cause the displacement of some local villagers.

⁹ Owners of Kavango Mangetti farms do not pay grazing fees, unlike their counterparts on the "Owambo Mangetti farms".

¹⁰ The 41 farms are considered to be in dispute. However, the farms and leaseholds are allocated to individuals who may be of any tribal origin. The fact the farms lie in an area claimed by both tribal leaderships is thus irrelevant.

Perhaps because of the difficulty in establishing the 18 new farms, and perhaps because of the limited area available for new farms in the Mbukushu area, the tribal leadership has advocated the demarcation of commercial farms in Bwabwata National Park.

Other farms

A number of farms that were part of the Kavango Cattle Ranch run by the Namibia Development Corporation (NDC) have been allocated to war veterans and/or the Namibia Defence Force. The nature of occupation on these farms is not known.

The Okavango River Basin Transboundary Diagnostic Analysis Technical Reports

In 1994, the three riparian countries of the Okavango River Basin – Angola, Botswana and Namibia – agreed to plan for collaborative management of the natural resources of the Okavango, forming the Permanent Okavango River Basin Water Commission (OKACOM). In 2003, with funding from the Global Environment Facility, OKACOM launched the Environmental Protection and Sustainable Management of the Okavango River Basin (EPSMO) Project to coordinate development and to anticipate and address threats to the river and the associated communities and environment. Implemented by the United Nations Development Program and executed by the United Nations Food and Agriculture Organization, the project produced the Transboundary.

Diagnostic Analysis to establish a base of available scientific evidence to guide future decision making. The study, created from inputs from multi-disciplinary teams in each country, with specialists in hydrology, hydraulics, channel form, water quality, vegetation, aquatic invertebrates, fish, birds, river-dependent terrestrial wildlife, resource economics and socio-cultural issues, was coordinated and managed by a group of specialists from the southern African region in 2008 and 2009.

The following specialist technical reports were produced as part of this process and form substantive background content for the Okavango River Basin Trans-boundary Diagnostic Analysis

Final Study Reports	Reports integrating findings from all country and background reports, and covering the entire basin.		
	Aylward, B.		<i>Economic Valuation of Basin Resources: Final Report to EPSMO Project of the UN Food & Agriculture Organization as an Input to the Okavango River Basin Transboundary Diagnostic Analysis</i>
	Barnes, J. et al.		<i>Okavango River Basin Transboundary Diagnostic Analysis: Socio-Economic Assessment Final Report</i>
	King, J.M. and Brown, C.A.		<i>Okavango River Basin Environmental Flow Assessment Project Initiation Report (Report No: 01/2009)</i>
	King, J.M. and Brown, C.A.		<i>Okavango River Basin Environmental Flow Assessment EFA Process Report (Report No: 02/2009)</i>
	King, J.M. and Brown, C.A.		<i>Okavango River Basin Environmental Flow Assessment Guidelines for Data Collection, Analysis and Scenario Creation (Report No: 03/2009)</i>
	Bethune, S. Mazvimavi, D. and Quintino, M.		<i>Okavango River Basin Environmental Flow Assessment Delineation Report (Report No: 04/2009)</i>
	Beuster, H.		<i>Okavango River Basin Environmental Flow Assessment Hydrology Report: Data And Models (Report No: 05/2009)</i>
	Beuster, H.		<i>Okavango River Basin Environmental Flow Assessment Scenario Report : Hydrology (Report No: 06/2009)</i>
	Jones, M.J.		<i>The Groundwater Hydrology of The Okavango Basin (FAO Internal Report, April 2010)</i>
	King, J.M. and Brown, C.A.		<i>Okavango River Basin Environmental Flow Assessment Scenario Report: Ecological and Social Predictions (Volume 1 of 4) (Report No. 07/2009)</i>
	King, J.M. and Brown, C.A.		<i>Okavango River Basin Environmental Flow Assessment Scenario Report: Ecological and Social Predictions (Volume 2 of 4: Indicator results) (Report No. 07/2009)</i>
	King, J.M. and Brown, C.A.		<i>Okavango River Basin Environmental Flow Assessment Scenario Report: Ecological and Social Predictions: Climate Change Scenarios (Volume 3 of 4) (Report No. 07/2009)</i>
	King, J., Brown, C.A., Joubert, A.R. and Barnes, J.		<i>Okavango River Basin Environmental Flow Assessment Scenario Report: Biophysical Predictions (Volume 4 of 4: Climate Change Indicator Results) (Report No: 07/2009)</i>
	King, J., Brown, C.A. and Barnes, J.		<i>Okavango River Basin Environmental Flow Assessment Project Final Report (Report No: 08/2009)</i>
	Malzbender, D.		<i>Environmental Protection And Sustainable Management Of The Okavango River Basin (EPSMO): Governance Review</i>
	Vanderpost, C. and Dhliwayo, M.		<i>Database and GIS design for an expanded Okavango Basin Information System (OBIS)</i>
	Veríssimo, Luis		<i>GIS Database for the Environment Protection and Sustainable Management of the Okavango River Basin Project</i>
	Wolski, P.		<i>Assessment of hydrological effects of climate change in the Okavango Basin</i>

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Country Reports Biophysical Series	Angola	Andrade e Sousa, Helder André de	Análise Diagnóstica Transfronteiriça da Bacia do Rio Okavango: Módulo do Caudal Ambiental: Relatório do Especialista: País: Angola: Disciplina: Sedimentologia & Geomorfologia
		Gomes, Amândio	Análise Diagnóstica Transfronteiriça da Bacia do Rio Okavango: Módulo do Caudal Ambiental: Relatório do Especialista: País: Angola: Disciplina: Vegetação
		Gomes, Amândio	Análise Técnica, Biofísica e Socio-Económica do Lado Angolano da Bacia Hidrográfica do Rio Cubango: Relatório Final: Vegetação da Parte Angolana da Bacia Hidrográfica Do Rio Cubango
		Livramento, Filomena	Análise Diagnóstica Transfronteiriça da Bacia do Rio Okavango: Módulo do Caudal Ambiental: Relatório do Especialista: País: Angola: Disciplina: Macroinvertebrados
		Miguel, Gabriel Luís	Análise Técnica, Biofísica E Sócio-Económica do Lado Angolano da Bacia Hidrográfica do Rio Cubango: Subsídio Para o Conhecimento Hidrogeológico Relatório de Hidrogeologia
		Morais, Miguel	Análise Diagnóstica Transfronteiriça da Bacia do Análise Rio Cubango (Okavango): Módulo da Avaliação do Caudal Ambiental: Relatório do Especialista País: Angola Disciplina: Ictiofauna
		Morais, Miguel	Análise Técnica, Biofísica e Sócio-Económica do Lado Angolano da Bacia Hidrográfica do Rio Cubango: Relatório Final: Peixes e Pesca Fluvial da Bacia do Okavango em Angola
		Pereira, Maria João	Qualidade da Água, no Lado Angolano da Bacia Hidrográfica do Rio Cubango
		Santos, Carmen Ivelize Van-Dúnem S. N.	Análise Diagnóstica Transfronteiriça da Bacia do Rio Okavango: Módulo do Caudal Ambiental: Relatório de Especialidade: Angola: Vida Selvagem
		Santos, Carmen Ivelize Van-Dúnem S.N.	Análise Diagnóstica Transfronteiriça da Bacia do Rio Okavango: Módulo Avaliação do Caudal Ambiental: Relatório de Especialidade: Angola: Aves
	Botswana	Bonyongo, M.C.	Okavango River Basin Technical Diagnostic Analysis: Environmental Flow Module: Specialist Report: Country: Botswana: Discipline: Wildlife
		Hancock, P.	Okavango River Basin Technical Diagnostic Analysis: Environmental Flow Module : Specialist Report: Country: Botswana: Discipline: Birds
		Mosepele, K.	Okavango River Basin Technical Diagnostic Analysis: Environmental Flow Module: Specialist Report: Country: Botswana: Discipline: Fish
		Mosepele, B. and Dallas, Helen	Okavango River Basin Technical Diagnostic Analysis: Environmental Flow Module: Specialist Report: Country: Botswana: Discipline: Aquatic Macro Invertebrates
	Namibia	Collin Christian & Associates CC	Okavango River Basin: Transboundary Diagnostic Analysis Project: Environmental Flow Assessment Module: Geomorphology
		Curtis, B.A.	Okavango River Basin Technical Diagnostic Analysis: Environmental Flow Module: Specialist Report Country: Namibia Discipline: Vegetation
		Bethune, S.	Environmental Protection and Sustainable Management of the Okavango River Basin (EPSMO): Transboundary Diagnostic Analysis: Basin Ecosystems Report
		Nakanwe, S.N.	Okavango River Basin Technical Diagnostic Analysis: Environmental Flow Module: Specialist Report: Country: Namibia: Discipline: Aquatic Macro Invertebrates
		Paxton, M.	Okavango River Basin Transboundary Diagnostic Analysis: Environmental Flow Module: Specialist Report: Country: Namibia: Discipline: Birds (Avifauna)
		Roberts, K.	Okavango River Basin Technical Diagnostic Analysis: Environmental Flow Module: Specialist Report: Country: Namibia: Discipline: Wildlife
		Waal, B.V.	Okavango River Basin Technical Diagnostic Analysis: Environmental Flow Module: Specialist Report: Country: Namibia: Discipline: Fish Life
Country Reports Socioeconomic Series	Angola	Gomes, Joaquim Duarte	Análise Técnica dos Aspectos Relacionados com o Potencial de Irrigação no Lado Angolano da Bacia Hidrográfica do Rio Cubango: Relatório Final
		Mendelsohn, .J.	Land use in Kavango: Past, Present and Future
		Pereira, Maria João	Análise Diagnóstica Transfronteiriça da Bacia do Rio Okavango: Módulo do Caudal Ambiental: Relatório do Especialista: País: Angola: Disciplina: Qualidade da Água

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		<i>Saraiva, Rute et al.</i>	<i>Diagnóstico Transfronteiriço Bacia do Okavango: Análise Socioeconómica Angola</i>
	Botswana	<i>Chimbari, M. and Magole, Lapologang</i>	<i>Okavango River Basin Trans-Boundary Diagnostic Assessment (TDA): Botswana Component: Partial Report: Key Public Health Issues in the Okavango Basin, Botswana</i>
		<i>Magole, Lapologang</i>	<i>Transboundary Diagnostic Analysis of the Botswana Portion of the Okavango River Basin: Land Use Planning</i>
		<i>Magole, Lapologang</i>	<i>Transboundary Diagnostic Analysis (TDA) of the Botswana p Portion of the Okavango River Basin: Stakeholder Involvement in the ODMP and its Relevance to the TDA Process</i>
		<i>Masamba, W.R.</i>	<i>Transboundary Diagnostic Analysis of the Botswana Portion of the Okavango River Basin: Output 4: Water Supply and Sanitation</i>
		<i>Masamba, W.R.</i>	<i>Transboundary Diagnostic Analysis of the Botswana Portion of the Okavango River Basin: Irrigation Development</i>
		<i>Mbaiwa.J.E.</i>	<i>Transboundary Diagnostic Analysis of the Okavango River Basin: the Status of Tourism Development in the Okavango Delta: Botswana</i>
		<i>Mbaiwa.J.E. & Mmopelwa, G.</i>	<i>Assessing the Impact of Climate Change on Tourism Activities and their Economic Benefits in the Okavango Delta</i>
		<i>Mmopelwa, G.</i>	<i>Okavango River Basin Trans-boundary Diagnostic Assessment: Botswana Component: Output 5: Socio-Economic Profile</i>
		<i>Ngwenya, B.N.</i>	<i>Final Report: A Socio-Economic Profile of River Resources and HIV and AIDS in the Okavango Basin: Botswana</i>
		<i>Vanderpost, C.</i>	<i>Assessment of Existing Social Services and Projected Growth in the Context of the Transboundary Diagnostic Analysis of the Botswana Portion of the Okavango River Basin</i>
	Namibia	<i>Barnes, J and Wamunyima, D</i>	<i>Okavango River Basin Technical Diagnostic Analysis: Environmental Flow Module: Specialist Report: Country: Namibia: Discipline: Socio-economics</i>
		<i>Collin Christian & Associates CC</i>	<i>Technical Report on Hydro-electric Power Development in the Namibian Section of the Okavango River Basin</i>
		<i>Liebenberg, J.P.</i>	<i>Technical Report on Irrigation Development in the Namibia Section of the Okavango River Basin</i>
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*Environmental protection and sustainable management
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