

# Land-use and resource conflicts in the Okavango Delta, Botswana

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## Abstract

This study assesses land-use conflicts in the Okavango wetland ecosystem. A survey of the livelihood activities of a sample of four villages has been carried out and a stakeholder approach used to identify and analyse the key actors involved in resource competition and conflicts in the area. Traditional and emerging stakeholders were identified and found to be in conflict not only with each other but within themselves. Institutional policies on land use in the area are not properly harmonized, and there has been a top-down approach to development planning and implementation of development programmes. As a result, land-use conflicts have escalated in the area. The Okavango Delta Management Plan adopted in 2007 should integrate and harmonize all the land-use policies, and land management in the area.

## Introduction

Wetland ecosystems are among the most threatened of all environmental resources. General analysis and reviews over the past two decades have identified a suite of pressures faced especially by tropical wetlands (Finlayson & Rea, 1999). Finlayson (2003) has contended that to prevent further loss of degradation of wetlands it is necessary to address the underlying and less visible causes that result in pressure being exerted on wetlands in addition to addressing the apparent and highly visible causes of wetland decline. The Okavango delta, located in north-western Botswana, is a relatively pristine natural environment (see Fig. 1). The inner parts of the Okavango delta are generally kept for natural resource conservation and tourism development. Other land-use activities such as agricultural development are carried out in the outer parts of the Okavango delta where human settlements are allowed. The outer parts of the Okavango are home to a variety of wildlife and plant species. The Okavango delta is also home to 124,712 people who live within and around it (Central Statistics Office, 2002). As a result of its rich wildlife diversity, permanent water resources, rich grasslands and forests, the Okavango has in the last decade attracted many land users and other stakeholders whose divergent land-use interests and practices lead to conflict. This paper therefore aims at assessing the land-use practices and conflicts in the Okavango wetland ecosystem.

## Methodology and results

Field research through observation, documentary search and interviews was the principal instrument used to

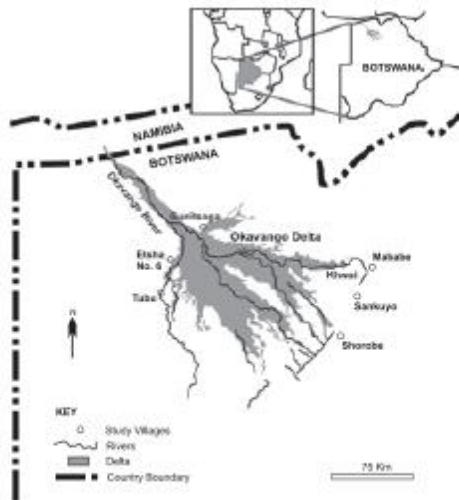


Fig 1 Map of the Okavango delta showing study sites

determine and provide information on land-use and resource utilization in this study. The stakeholder approach (Grimble & Wellard, 1997; Grimble, 1998) was used in identifying the key actors or stakeholders and their activities as well as areas of actual and potential conflicts among them. To adequately identify the various stakeholders and land-use activities, a survey was carried out, in which a sample of 120 stakeholder respondents were selected from the four villages of Shorobe, Etsha 6, Tubu and Gunitsoga and interviewed. These four villages were reflective of different human–environment relationships. Questionnaires with both closed- and opened-ended questions were administered to the actors and stakeholders. Special questionnaires were posited to key informants. Augmenting this information base was data extracted from Mbaiwa’s (1999) study of the three villages of Khwai, Mababe and Sankuyo. Secondary data sources were collected from both published and unpublished work.

### Stakeholders and land-use conflicts

The major land-use stakeholders and actors in the Okavango delta can conveniently be categorized into two groups, namely: traditional and emerging stakeholders (Mbaiwa, 1999). These groups were found to be in conflict with each other and within themselves. Traditional stakeholders included groups such as subsistence livestock and crop farmers. Emerging stakeholders were found to include government agencies such as the Department of Wildlife and National Parks (DWNP), Department of Tourism, North West District Council, the Tawana Land Board and the private sector such as the tourism industry. Livestock farmers were identified as one of the key stakeholders in the use of land and its resources in the Okavango delta. Results of the survey show that livestock farming was the major livelihood activity in the villages of Tubu, Gunitsoga, Shorobe and Etsha 6. About 65.8% of the households in these villages owned livestock and acknowledged that it was the main economic activity that provided for their subsistence. In all these study villages, livestock farming was found to be conflicting with other land-use activities. For example, the erection of veterinary fences (Fig. 2) by the Department of Animal Health and Production (DAHP), particularly fences associated with the control of the Contagious bovine pleuro-pneumonia (CBPP) pandemic, resulted in the reduction of particular areas for livestock grazing. This led to land-use conflicts between residents in the study villages and the DAHP. Results of the survey indicated that the erection of veterinary fences has created boundaries beyond which subsistence livestock farmers could not use certain areas for livestock grazing to sustain their livelihoods. Veterinary fences were meant to protect the production of beef and its export (especially to European markets) from livestock diseases.

Developing countries such as Botswana, aspiring to export beef to international markets such as the European Union were required to meet high standards of veterinary hygiene and disease management. In the Okavango delta, this had been partly achieved through the construction of a network of veterinary cordon fences and quarantine camps, which divided the Okavango region and Botswana as a whole into disease control areas between which livestock movements had been restricted. This strategy had resulted in the Okavango delta and the rest of Botswana being crisscrossed by a network of veterinary cordon fences. Veterinary cordon fences made it easy to isolate livestock in case of a disease outbreak in any of the areas in Botswana. Results in the survey showed that at Shorobe, 95% of the respondents were affected by the fence and at Tubu 68%, while at Gunitsoga the figure stood

at 54%. At Etsha 6, however, most respondents (82%) indicated that the fences did not affect them. It should be noted that the population in the Okavango delta is multi-ethnic, hence village livelihood and land-use activities differ. This explains why Etsha 6 which was largely dominated by the Bambukushu who practiced crop farming, was not much affected by veterinary fences. In most of these villages, households noted a higher rate of fences affecting livestock farming particularly with

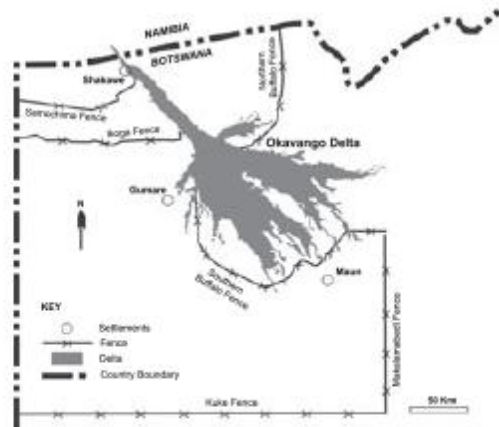


Fig 2 CBPP fences in the Okavango delta. Botswana. Source: modified from Bensen & Meyer (2002)

regard to access to grazing land and watering points. At Shorobe, great concern was expressed that the Southern Buffalo Fence reduced grazing areas and caused livestock congestion which further caused destruction of crops by livestock, mainly cattle. In Tubu and Gunitsoga, the fences were viewed as obstructing the use of nearby water sources for livestock, especially during periods of drought. Results further indicate that the erection of veterinary fences had led to the reduction of grazing areas that mostly had permanent livestock watering points falling within the Okavango delta area. These grazing lands were no longer accessible to livestock farmers as they had been officially declared a livestock free zone. For example, the completion of the Northern Buffalo Fence (NBF) in 1995 affected the people of Gunitsoga, as they could no longer take their livestock to the inner parts of the Okavango where there was water and good pastures. In addition, village leaders at Gunitsoga noted that the NBF acted as a conduit that congregated wildlife during the dry season, especially buffaloes (*Syncerus caffer*) and elephants (*Loxodonta africana*) at the western end of the fence where permanent water was available, and therefore increased predation of wildlife on livestock. They noted that elephants could and did frequently break through the fence, allowing cattle to cross over into the cattle free zone. Whenever, this happened, the veterinary department killed all cattle which crossed over the Buffalo fence and burned the meat in order to control cattle diseases. Ironically, however, buffaloes, which crossed over the Buffalo fence, were merely driven back by the wildlife officers of the DWNP and were never killed. For farmers struggling to build their breeding stock after the 1995 CBPP outbreak which led to the culling of all cattle in the delta, such killings of cattle were intolerably traumatic.

The enclosure of the Okavango delta by veterinary fences and its subsequent declaration as a cattle-free zone had also deprived subsistence livestock farmers of their traditional rights to utilize the area as a fall-back grazing area. Initially, communities who had remained with some cattle inside the fence (such as the Jao, Jedibe, Ditshipi, Daonara, Sankuyo, Khwai and Mababe) were urged to move their cattle out. If they failed to do so, they were not allowed to market their stock. After the 1995 CBPP problem, stock regulations had been strictly enforced and no cattle are presently found in the Okavango Wildlife Management Areas (Bensen & Meyer, 2002). The foregoing therefore shows the impact of fences on rural livelihoods and the extent to which they caused land-use conflicts in the Okavango delta.

The Okavango delta is one of the areas in Botswana which is rich in wildlife species. About 34.3% of the land in the Okavango delta is designated as Wildlife Management Areas (WMAs) and another 3.3% is national parks and game reserves. Both the WMAs and Botswana's national parks and game reserves are not fenced. This makes wildlife to move freely into areas kept for livestock grazing and in the process cause livestock predation. Livestock predation was found to be one of the major causes of landuse conflicts between the DWNP which is responsible for

wildlife protection and subsistence livestock farmers in the Okavango delta. Results showed that 73.3% of the subsistence farmers had some of their livestock killed by wildlife in the last 2 years. Several wild animals kill livestock in the Okavango delta, these include: cheetah (*Acinonyx jubatus*), hyena (*Crocuta crocuta*), lions (*Panthera leo*), leopards (*Panthera pardus*), jackals (*Canis adustus*), python (*Python sebae*) and wild dogs (*Lycaon pictus*). In this study, four key livestock predators were identified; these are lions, leopards, crocodile (*Crocodylus niloticus*) and hyenas. As shown in Table 1, lions by far exceeded all the predators in the killing of livestock. Between 2000 and 2004, lions killed 3704 livestock while hyenas killed the smallest number of 100 livestock (Table 1).

Livestock that got killed by wild animals include cattle, sheep, goats, donkeys, horses and mules. Results showed that lions generally kill cows than other livestock. For example, the total number of cows that were killed by lions between 2000 and 2004 in the Okavango delta was 1285 (Darkoh & Mbaiwa, 2005). This study could not identify reasons why cows appear to be the most preferred prey of lions. Results showed that there were problems experienced by subsistence livestock farmers in the process of obtaining their compensation from the DWNP. As a result, their satisfaction levels about compensation were found to be low. For example, of all the farmers who experienced

**Table 1** Total number of livestock killed by four key predators, 2000–2004

Species	2000	2001	2002	2003	2004	Totals
Lion	401	554	1161	688	900	3704
Leopard	151	334	271	223	172	1151
Crocodile	25	15	50	50	49	189
Hyena	31	3	26	11	29	100
Total	608	906	1508	972	1150	5144

livestock predation, 68% reported the predation by wildlife to DWNP, 71% of those who reported were paid compensation and an overwhelming 94% said they were not satisfied with the amount of compensation. Results further indicated that livestock farmers who managed to get some compensation were not satisfied with their compensation. They noted that it was small, did not match the value of their livestock and compensation monies from DWNP was slow in reaching these farmers. Some of the farmers who were not compensated said that this was because the remains of their killed animals that could have been produced as evidence to DWNP were never found. Because of this, DWNP could not provide them with any compensation. DWNP data also indicated that for the financial year 2004 / 05, the cases of livestock predation were 3150. Of this, only 1380 cases or people were paid. In addition to the land-use conflicts that crop farmers had with livestock farmers, arable farming was also plagued by land-use conflicts with DWNP over crop damage by wildlife. Results showed that of the 102 crop farmers in the survey 86% had ploughed their fields in the last 2 years and about 67% of them experienced destruction of crops by wildlife. Most of those who reported (91%) were paid compensation but they were not satisfied with the compensation. The main reason advanced was that the compensation paid was very low. Crop damage is largely caused by animals such as elephants (*Loxodonta africana*), kudu (*Tragelaphus strepsiceros*) and hippo (*Hippopotamus amphibious*). Elephants are generally the ones that cause most of the crop damage. A total of 1377 elephant crop damage cases were reported in the district between 2000 and 2004. Hippo cases were 75 while kudu were only nine (DWNP, 2004 & 2005). Botswana has one of the highest elephant populations in the world. In 2000, Botswana had an elephant population of 120,000 and this population was concentrated in the Okavango and Chobe regions (DWNP, 2000).

The DWNP officials interviewed indicated that the elephant population in the Okavango was far beyond the carrying capacity of the area. As a result, elephants were highly destructive of the vegetation in the area (G.M.B. Otumile 2003, personal communication). However, the DWNP could not cull them because of the ban on ivory trade by the United Nations' Convention in Trade of Endangered Species to which Botswana is signatory. As was the case with livestock farming, crop farmers noted that they were generally not happy about the compensation that government provided as it was rather small. In some cases, the compensation was never given as the crop fields were smaller than the one hectare set by DWNP as the minimum size for compensation. Farmers also noted that DWNP officers never arrived on time after reporting to attend to the problem of crop damage, and in the process, all the evidence got destroyed, making it difficult for the affected individual to make a case for compensation. A total of 6673 crop damage cases were reported in the Okavango delta in the 5 years between 2000 and 2004 (DWNP, 2004 & 2005).

Land-use conflicts between wildlife managers of national parks and surrounding subsistence livelihood activities were found to be common in the Okavango. About 94% of the respondents in the three villages of Khwai, Mababe and Sankuyo located on the southeastern side of Moremi Game Reserve indicated that that government never involved them in making wildlife management policies and laws for the protected area. This was also the case with management of wildlife in the communal areas around these villages.

Respondents noted that they became informed of such policies and laws when they were either already implemented or just about to be implemented. Failure to involve local communities in wildlife management had led to lack of control over natural resources by the local communities. Interviews with community leaders in all the villages studied indicated that people in these villages wanted to have access, control and benefits from natural resources found in protected areas such as the Moremi Game Reserve. These benefits included hunting and gathering of veld products such as firewood, thatching grass, wild fruits, berries and roots (edible tubers). However, DWNP would not allow hunting or gathering of resources in the protected areas. Access to the protected areas was allowed to individuals when it was made for tourists purposes of which gate entry fees were required. These communities believed that the DWNP had usurped and deprived them of the resources which previously belonged to them. This conflict situation had resulted in lack of co-operation between the two groups in the management of natural resources such as wildlife in the Okavango delta.

## **Discussion and conclusion**

The persistence of land-use conflicts in the Okavango delta indicates that land-use policies and institutions in Botswana are failing to address the sustainable utilization of land and its resources. It has been observed that land-use policies in the Okavango delta are generally contradictory and reactive to conflict situations instead of being proactive. For example, government policy in agricultural development is such that all settlements in the Okavango delta can practice crop farming; however, some of the settlements are located in rich wildlife areas where cropping is highly unlikely to succeed because of damage by wildlife. In the light of all the land-use conflicts amongst the various land users and stakeholders in the Okavango delta, there is dire need for a proactive land-use conflict resolution mechanism to be put in place. This can be in the form of an effective institution or policy to specifically deal with land-use conflicts in the Okavango delta region. This initiative needs to be a collective responsibility of all the stakeholders and land users, including especially, the local communities in the area. Land-use competition and landuse conflicts can be minimized when restrictions agreed upon by all parties are enforced and observed.

The problem of competition over the land resources in the Okavango is an indication that its future development cannot continue to be decided by a laissez faire approach in which contemporary uncoordinated and often incompatible processes are permitted to find their own resolution. Hitherto, the lack of an integrated management plan has made it possible for specific ministries and departments to adopt and implement policies and strategies for development in the Okavango delta without consideration of programmes and policies of other ministries and departments in the area. Recently, a new integrated management plan called the Okavango Delta Management Plan (ODMP) has been adopted. Its aim is 'to integrate resource management for the Okavango delta that will ensure its long-term conservation that will provide benefits for the present and future well being of people through sustainable use of its natural resources' (ODMP Secretariat, 2005: 11). The expectations are that the plan, if implemented, would minimize some of the major land-use competition and conflicts taking place in the Okavango delta and provide a complementary management tool which will enhance coordinated and integrated planning between the various sectoral departments in the district. There is an urgent need for government to show a clear commitment to the implementation of the plan now that it has been adopted.

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## **Conflicts of interest**

The authors declare no conflicts of interest.

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