

CHAPTER 7

The Okavango Delta Management Plan project: The need for environmental partnerships

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Abstract

The government of Botswana plans to undertake an integrated management planning exercise for the Okavango Delta in order to pursue, in accordance with national policy, the wise use of natural resources for the benefit of all stakeholders in the delta, to fulfil its obligations under the Ramsar convention, and to contribute to regional integrated water resource management in the Okavango River basin. This chapter seeks to highlight the principles underlying the planning process, their operational exponents, and the need to place the Okavango Delta within the wider river basin ecosystem. It is argued that the latter is of particular relevance to the perspective of national and regional decision makers who will need to work in partnership to sustain the goods and services of this unique Ramsar site, which is the world's largest.

Introduction

“The Okavango Delta is more than beautiful; it provides a major source of income for the country, the delta communities and indeed the individual residents. It is hard to imagine Botswana without the Okavango Delta; indeed for many people Botswana *is* the Okavango Delta. We have the responsibility as the government and the people of Botswana, together with our development partners, to make sure that this amazing resource is utilised in a sustainable and responsible manner” (Botswana minister Jacob Nkate, WSSD, September 2002).

Policy framework: Botswana's National Wetlands Policy

The Botswana National Wetlands Policy and Strategy provide the policy framework for wetland management planning in the country (NCSA 2000). The policy is people-oriented and stresses that the public have a role as major players, and should be involved in the management and monitoring of wetlands through the use of local knowledge and institutions. Participation by the public will improve conflict resolution and encourage active support. The emphasis placed on public support for the policy derives partially from the national principle of democracy and good

governance, as well as from the reality that the responsible institutions in government will be more effective in implementing the policy when receiving full public support.

The development of a national policy on wetlands started in 1994 with a conference on wetlands management. Key recommendations included the need to form a wetlands coordinating committee and for the government to formulate a national policy on wetlands. An initial list of wetlands policy issues was generated at a wetlands conference in Maun in 1997 and, soon thereafter, the National Conservation Strategy Agency (NCSA) proceeded with detailed identification of issues. These issues were reviewed at the National Consultative Workshop in 1998. A year of consultations followed with publications being widely distributed and community-level consultations undertaken throughout the country. The results of these consultations contributed directly to the preparation of the National Wetlands Policy and Strategy, which was published in draft form in 1999.

The policy describes wetlands as areas where water sits on the surface of the soil for periods of time, affecting the area's ecological characteristics. The definition of wetlands used throughout the policy is "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt." The policy argues that the major factors leading to the degradation and loss of habitat and biodiversity in Botswana's wetlands are:

- changes in land use due to urbanisation, canalisation of rivers and channels, settlement within wetlands, extensive *molapo* farming, clearing of the riparian vegetation for arable lands, establishment of veterinary cordon fences and uncontrolled fire;
- changes in water quality and availability through diversion of water for other activities (such as dams, irrigable agriculture) and unsustainable groundwater abstraction;
- pollution originating from fuels and lubricants, mismanagement of chemicals, particularly pesticides, dumping in river courses and sewage disposal;
- invasive species as manifested by the spread of, for example, *Salvinia molesta*, which threatens the wetlands of northern Botswana;
- sedimentation of wetlands due to upstream habitat loss and destruction, siltation, overgrazing within river catchments and erosion of arable land;
- uncontrolled exploitation of wetland resources through commercial exploitation of communal resources (such as sand extraction), overgrazing and commercialisation of livestock production, lack of regulations particularly for fisheries and the limited enforcement of existing natural resource-related legislation;
- alienation of communities living in or near wetlands due to reduced (rights of) access and resource use and lack of empowerment of communities;
- regional threats such as upstream water abstraction, pollution and conflicting land uses; and
- global threats such as global warming and its potential impact on climatic processes, with subsequent local effects on wetlands.

There is therefore clearly a pressing need to conserve wetlands by reducing the present rates of degradation, promoting rehabilitation and protecting these resources from future challenges.

The implementation of the wetlands policy is guided by the following principles:

- Decisions are to be based on a comprehensive understanding and appreciation of the functions and values of wetlands (including indigenous knowledge).
- The concepts of wise use, sustainable development and equity are fundamental to the policy and strategy.
- Wetland conservation and management are to be multisectoral and integrated.
- All appropriate spheres of government and the general public are to participate actively in an ongoing, transparent and gender sensitive decision-making process.
- Communities living in or having traditional links to wetlands shall be directly involved in wetland management.
- Public awareness and support are crucial to effective wetland management.
- Research into wetland processes, dynamics and management is to be maintained and findings are to be widely disseminated.
- Botswana's regional and international environmental obligations are to be observed.
- Human health and safety concerns shall not be compromised.

The strategy on wetlands management, an integral part of the policy, reads as follows: "Adopt an ecosystem approach to utilisation, conservation and management of wetlands. Plan and implement ecologically sustainable wetland conservation including the development and implementation of management plans for wetlands of national and international importance."

Concerning wetlands of national and international priority, the wetlands policy is very clear: "management plans will be drafted for all designated Ramsar sites and wetlands identified as nationally important." This, therefore, puts the Okavango Delta Management Plan project at the centre of the country's policy on wetlands.

The Okavango Delta

The government of Botswana ratified the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar 1971), popularly known as the Ramsar convention, and became a contracting party on 4 April 1997. The Okavango Delta system was listed as a wetland of international importance according to article 2 of the convention and, as stated in article 3, its conservation and wise use should be promoted.

Although the site lies between coordinates 18°15'S, 021°45'E and 20°45'S, 023°53'E, and is the largest declared Ramsar site (see map 1), the delta is part of a river system, which originates in Angola and passes through Namibia. Article 5 of the

convention specifies that contracting parties shall consult one another about implementing obligations arising from the convention, especially in the case of transboundary wetlands where a wetland extends over the territories of more than one contracting party and/or where the system is shared by contracting parties (Ramsar Bureau 1997).

Environmental status

The Okavango Delta – an inland delta – forms the core of the largest wetland of international importance protected as a Ramsar site. The site, which also includes the Cuando/Linyanti river system, is located entirely within Ngamiland district in a semi-arid region and experiences large variations in flooding of permanent, seasonal and intermittently flooded areas. Annual inflow ranges from 7,000 to 15,000 million m³ and variations in flow have a profound effect on ecological processes such as sedimentation and water distribution. Approximately 3% of the flow reaches downstream towards the Makgadikgadi Pans.

The system is important for terrestrial and water bird species with 650 bird species identified. Two resident species, the Wattled Crane (*Burgeranus carunculatus*) and the Slaty Egret (*Egretta vinaceiqula*), are globally threatened. The delta contains high densities of large mammal species particularly elephant. It is also the habitat of one of the largest remaining populations of the African wild dog (*Lycaon pictus*) and is a stronghold for the Sitatunga antelope (*Tragelaphus spekii*) and the Nile crocodile (*Crocodilus niloticus*). There is a high floral diversity with 208 aquatic and semi-aquatic species, 675 herbs and grasses and 195 woody species. One endemic has been identified, the ground orchid (*Habenaria pasmithii*). A number of other plant species has been identified as rare or endangered in the ecological zoning study carried out in 1990.

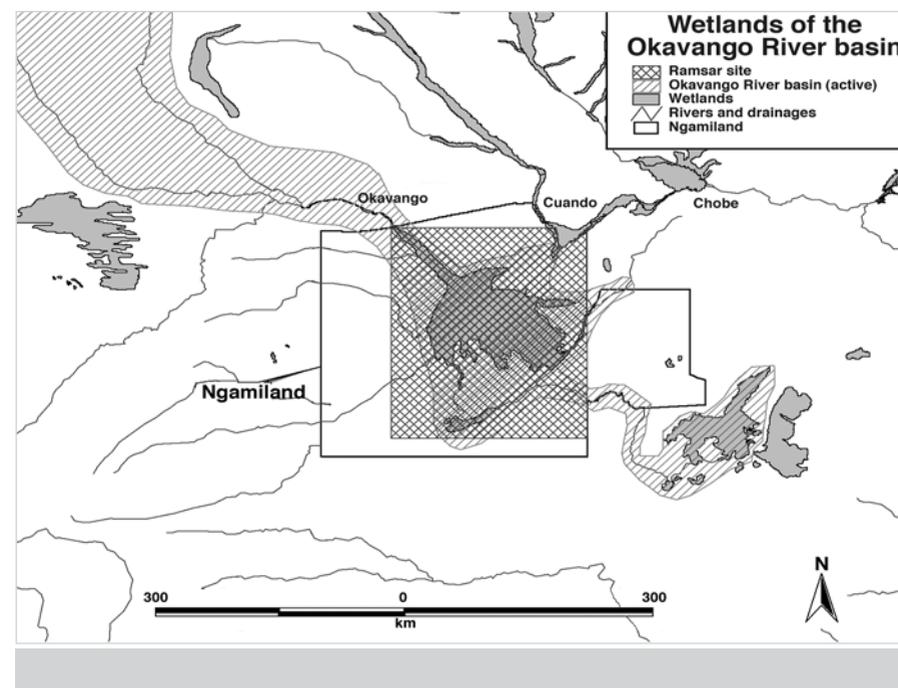
Approximately 7% of the area falls within the Moremi Game Reserve and is protected under the 1992 National Parks Act. A further 65% is protected under the same Act as a wildlife management area and activities are controlled through regulations (WMA 2000), which allow for both consumptive and non-consumptive use of wildlife. The rest of the area (28%) is zoned for agricultural and residential development.

Land and natural resource use

In an arid country like Botswana water is very precious and thus the delta and its abundant water, vegetation and wildlife resources have always attracted people. Signs of human habitation in the delta and its periphery have been found dating back to about 100,000 years. However, natural factors like the changes in the flow pattern, outbreaks of epidemic diseases and the spread of tsetse fly have affected the settlement and land-use pattern of the Okavango swamps. Many ethnic groups, like the BaYei, the BaTawana, the HaMbukushu, the OvaHerero and the River San, with

Map 1

Location of the Okavango Delta system Ramsar site



different perceptions of land and natural resource utilisation, are presently living mainly along the fringes of the Okavango Delta.

Large numbers of Ngamiland's population still depend directly on the utilisation of natural resources in the delta for subsistence. Fishing, hunting, livestock grazing, floodplain cultivation, the collection of raw materials for building and fuel, and the production of handicrafts are important factors in the local economy. Arable agriculture is practised in Ngamiland mainly at a subsistence level, as soils and climate are generally not well suited for crop production. On the fringes of the Okavango Delta, small-scale flood recession farming is found locally. Grazing resources are generally good in the dry land areas. However, the availability of water and the occurrence of tsetse fly close to the delta restrict the development of the livestock sector. The Okavango Delta itself is a livestock-free zone. Due to the outbreak of a cattle lung disease, 320,000 cattle had to be culled in Ngamiland in 1996. Currently, livestock numbers in the planning area have increased again to well

over 100,000. The outstanding natural beauty and abundant wildlife resources form the basis of a fast-growing tourism industry, which is offering alternative employment opportunities to people in the rural communities of Ngamiland district.

Transboundary issues in land and natural resource use, such as planned water management interventions in the river basin, the movement of wildlife populations between Botswana and its neighbours, and shared problems like the distribution of tsetse fly necessitate the inclusion of surrounding countries in the planning process (Ashton & Neal 2002).

Challenges facing the Okavango Delta

The Okavango Delta forms the tail end of the river basin and, as such, most upstream developments in Botswana, as well as those in the upstream catchment area and basin in Namibia and Angola have a potential effect on the character and functioning of the delta downstream.

Plans for large-scale water off-take and watershed development

In the past, many plans have been made to extract water from the Okavango in order to support development projects in Botswana and neighbouring countries. Even though most of these projects did not materialise, plans for water management interventions form a constant threat, as there is not enough climatic and hydrological information to predict the impact of hydrological changes on the delta's ecology and socioeconomic functioning. Furthermore, the overall economic value of an intact delta ecosystem has never been considered in the planning and decision-making processes.

Land and resource use conflicts

The increasing demands of the fast-growing Ngamiland district population (3.9% per annum), the changes in economic structure and the tremendous expansion of the tourism sector have augmented the pressure on the natural resources of the Okavango Delta and the sustainable level of water off-take is often disputed. As an example, the increased water demand of the district capital, Maun, cannot be met during years of low floods, leading to a serious water crisis. The consequences of human-induced environmental changes like pollution, alteration in the flow regime and destruction of habitat for rare and endangered species are not monitored and not fully understood. Data on the magnitude of the actual resource off-take, and the sustainability and reproduction level of the natural resources is not available. For planning of the sustainable use of the natural resources of the Okavango Delta, the establishment of carrying capacity guidelines, the setting up of user restrictions and the establishment of zoning recommendations are crucial. Through the improvement of the rural roads

network, even the remote areas of Ngamiland have become more easily accessible and more vulnerable to exploitation. Traditional land rights are often not defined and documented and consequently are not protected. Land-use conflicts among different user groups are prevalent and need to be addressed.

In the last decade, community-based natural resource management has been adopted in Botswana as a new conservation and development strategy. Several community-based organisations (CBOs) around the Okavango Delta have been given the responsibility to utilise and manage the wildlife and other natural resources in their respective areas. Various constraints have been identified by the different stakeholder groups, which are hampering the effective implementation of the community-based strategy. The lack of capacity to implement the new strategy, the lack of mutual understanding between stakeholders and the unclear definition of the roles and functions of newly established institutions are but some of the examples (see also Rozemeijer 2002). As not all of the communities in Ngamiland have been empowered and are benefiting from the community-based strategy, unequal opportunities have been created resulting in political friction and a lack of commitment to the approach by non-beneficiaries.

To control the spread of tsetse fly and an outbreak of *nagana* (*Trypanosomiasis*) in the district, an integrated tsetse eradication programme is being implemented. This includes aerial spraying of almost the entire delta and the introduction of sterile male flies. The possible negative side-effects of this control measure have led to some controversy between environmentalists, tourism operators, the local population and government institutions. The Harry Oppenheimer Okavango Research Centre (HOORC) is implementing a biodiversity monitoring programme to study the impact of the eradication campaign. Disease control programmes with broad ecological, social and political implications need to be considered in long-term planning.

The Okavango Delta Management Plan project

The overall goal of the Okavango Delta Management Plan is “to integrate resource management for the Okavango Delta that will ensure its long-term conservation and that will provide benefits for the present and future well being of people, through sustainable use of its natural resources” (NCSA 2002). The objective of the exercise is hence to develop a comprehensive, integrated management plan for conservation and sustainable use of the Okavango Delta and surrounding areas (see map 1 for the management plan area as defined by the Ramsar site coordinates).

The various components of the management plan will seek to:

- provide a long-term vision of the development options and management scenarios for the Okavango Delta;
- serve as an integrated, dynamic management plan, which provides the overarching framework and contextual guidelines for individual area and sector plans;
- determine levels of use in order to ensure sustainability and protection of the natural resources of the Ramsar site;

- set up the institutional framework required for the management of the Ramsar site;
- determine research and monitoring requirements and standards;
- provide data and information requirements and feed development options into the basin management planning exercise of the Permanent Okavango River Basin Water Commission (OKACOM); and
- build capacity among implementing institutions and in communities.

From a basin-wide perspective, the environmental aspects of this management planning exercise are based on the Ramsar guidelines, as well as the use of the ecosystem approach in the development of the project and through the planning process.

The development of the Okavango Delta Management Plan is expected to provide input into the overall management of the Okavango River basin through OKACOM. The link between the management planning exercise and activities undertaken under the auspices of OKACOM is of great significance to the government of Botswana as it shows its regional commitment to transboundary cooperation, as well as integrated river basin and natural resource management (see box 1).

The two most crucial environmental issues, which will be addressed by the management planning exercise, are discussed below.

Water resources management

The annual rhythm of water flows is the key factor determining the quality of life in the delta in terms of biodiversity, as well as of human livelihood. In an area like the north-west of Botswana, situated at the edge of the Kalahari Desert where water is scarce, demands on water resources from the different stakeholders are potentially high and often of a conflicting nature. Water may be used only once, or be fed back into the system in a polluted state.

Crucial in this will be the understanding of the area's hydrology, both for surface and groundwater. This understanding is of vital importance in order to be able to predict any changes in the delta and its impact on interests represented in the delta that might be caused by developments in the river basin. Without the understanding of the hydrology and of its importance for the different interests at stake, the formulation of a management plan becomes an academic exercise of very limited use.

Land and resource use planning

Extensive land-use planning exists for the Okavango Delta. Ngamiland is divided into planning zones and controlled hunting areas for which principal land uses have

been identified. In protected and wildlife management areas detailed physical planning exists. Furthermore, there are various sectoral development plans. However, the land-use plan produced in 1991, covering the Okavango and Cuando wildlife management areas (Van der Heiden 1991), was drawn up without sufficient stakeholder participation and consequently seems to lack adequate implementation support and commitment from local institutions. The individual area and sector plans need to be examined, analysed and, if necessary, harmonised. All existing plans are static and do not follow an integrated ecosystem management approach. As they do not include a constant monitoring component, they cannot be regularly adjusted to the dynamics of the delta ecosystem.

The ecosystem approach

The ecosystem approach seeks to organise human use of ecosystems in order to strike a balance between benefiting from the natural resources available from an ecosystem's components and processes, while maintaining an ecosystem's ability to provide these at a sustainable level.

Hence, the ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way (see box 2 for the ecosystem principles adopted by the Convention on Biological Diversity in Nairobi, 2000). It requires adaptive management to deal with the complex and dynamic nature of ecosystems, as well as with the absence of complete knowledge or understanding of their functioning. This adaptive approach should be able to respond to uncertainties, and contains elements of 'learning-by-doing', and/or research feedback. The approach does not preclude other management and conservation approaches, but carries the potential to integrate all these approaches and other methodologies to deal with complex situations (CBD 2000; Maltby et al 1999).

Ecosystem management seeks to meet human requirements for the use of natural resources, while maintaining the biological richness and ecological processes necessary to sustain the composition, structure and function of the habitats or ecosystems concerned (Pirot & Meynell 1998). Pirot and others (2000) further placed ecosystem management within the context of the sustainable use of natural resources to balanced human needs, and summarised the principles of the ecosystem approach as follows:

- maintaining ecosystem function and integrity;
- recognising ecosystem boundaries and transboundary issues;
- maintaining biodiversity;
- recognising that people are part of the ecosystem;
- recognising the need for knowledge-based adaptive management;
- recognising the need for multisector collaboration; and
- making ecosystem-based management a mainstream development approach.

The ecosystem approach and its application form a crucial aspect of the Okavango Delta management planning exercise, more so because the approach is multidisciplinary, recognises transboundary natural resource management and looks at interlinking ecosystems. This forms an important backdrop to the implementation of the Ramsar convention, the SADC Revised Protocol on Shared Watercourses (SADC 2001), and the increased SADC regionalism and international cooperation on integrated water resource management.

Planning approach and principles of the Okavango Delta Management Plan project

The National Conservation Strategy Agency (NCSA), as the Botswana government coordinating agency for the National Wetlands Policy and Strategy and the focal point for the Ramsar convention, is responsible for the development of the management plan. The overall planning approach is guided by Botswana's National Wetlands Policy and Strategy, the ecosystem approach, and the Ramsar convention guidelines on wetland and river basin management.

The main guiding principle of the management plan is the creation and strengthening of ownership. Institutions and actors mandated to implement the Okavango Delta Management Plan should be associated with the planning process, so that the final product will be 'their' plan. In order to operationalise the approach and this guiding principle, a number of key elements are of importance.

Creating and strengthening responsibility and accountability in existing institutions involved in managing the delta and its resources

The project will assist institutions to participate in the planning process, consolidate existing responsibilities, and implement the plan by making provisions for capacity-building. Components will be identified in such a way that they ensure appropriate integrated planning at national and district levels, while ensuring vertical cohesion through the different line departments where components may be housed.

Active stakeholder participation in the main stages of the planning process

Participation includes, among others:

- the use of traditional knowledge;
- association with the decision-making process;
- transparency in the planning process and stakeholder access to information;
- recognition of and respect for traditional resource user rights; and
- benefits to stakeholders responsible for managing the resources.

Association of international stakeholders with the planning process

Regional and international environmental obligations will be integrated. The Okavango Delta Management Plan will also be integrated into the existing OKACOM process.

Integrated planning process

A dynamic and phased approach (living plan) will be used. A first version of the management plan (framework management plan) will be produced after one year, and will be based on existing knowledge, taking cognisance of existing land-use and sector management plans. The framework management plan will be subjected to an evaluation and review with the participation of stakeholders, assisted by national and international expertise. Identified shortcomings in the framework management plan will be addressed during the second year, so that a draft management plan can go through a similar review process at the end of the second year. The final management plan will be available after three to four years. This plan would then require periodic updating.

Prioritising the issues to be dealt with in the planning process will enhance ownership and acceptance of the plan. In each key area of management, one or two 'burning' issues (a so-called 'hotspot' approach) will be selected at a very early stage in consultation with stakeholders (see box 2), for immediate attention and solution during the planning process itself. Integration and cooperation will be pursued among stakeholders and the solutions will form an integral part of the Okavango Delta Management Plan.

Capacity-building and learning will be enhanced in the participating institutions through hands-on training during the planning process and specialised technical training as identified during the inception phase.

Planning based on the ecosystem approach

This aims to adapt to the constant changes in the ecosystem and to maintain the integrity of the Okavango Delta within the Okavango basin. The approach, as explained above, brings together social, economic and environmental aspects. The project will take valuable guidance from the Ramsar convention's implementation and planning manuals.

Planning principles

The guiding planning principles underlying the Okavango Delta Management Plan are:

- creation and strengthening of responsibility and accountability in existing institutions with a mandate to manage the delta and its resources;
- active stakeholder participation in the main stages of planning and implementation utilising traditional knowledge;
- a dynamic, integrative action-oriented planning process based on the ecosystem approach and addressing pertinent issues as the plan is being prepared;
- cognisance of the existing relevant land-use and management plans;
- recognition of and respect for traditional resource user rights;
- acknowledgement of international interest in the delta; and
- accent on training and capacity-building.

The principle of responsibility and accountability takes shape through the devolution and decentralisation of mandates to institutions that are currently involved in managing aspects of the delta ecosystem and its functions. The main responsibility for the formulation and implementation of each project component within the framework of the management plan will lie with one of the existing agencies. The following ten components and lead agencies have been identified:

- *Policy, planning and strategy (including communication)* – National Conservation Strategy Agency (NCSA) on national level, District Development Committee and Okavango Wetland Management Committee on district level, and *communication* in collaboration with the Tribal Administration
- *Research, data management and training* – Harry Oppenheimer Okavango Research Centre (HOORC)
- *Hydrology and water resources* – Department of Water Affairs (DWA)
- *Wildlife management* – Department of Wildlife and National Parks (DWNP)
- *Sustainable tourism* – Department of Tourism (DoT)
- *Fisheries and animal health* – Department of Animal Health and Production (DAHP)
- *Vegetation resources* – Department of Crop Production and Forestry (DCPF), in association with the Agricultural Resources Board (ARB)
- *Physical planning* – Department of Town and Regional Planning (DTRP)
- *Land-use planning and land management* – Tawana Land Board (TLB) and District Land Use Planning Unit (DLUPU)
- *Local authority services' provision* – North West District Council (NWDC)

In order to achieve the immediate objectives of each component, these lead agencies will have to ensure that effective interaction takes place with other government agencies, as well as with civil society. Figure 1 gives an overview of the components, the implementing agencies, an identification of their main tasks within the planning process, and the coordination at their respective levels.

The principle of active stakeholder participation is reflected in the elaborate consultation process that preceded the finalisation of the project proposal. Also, a

project like the formulation of a plan for the integrated and sustainable management of the Okavango Delta demands the collaboration of a large number of stakeholders, from government and civil society, to local and international institutions. This can only be achieved successfully when communication is properly addressed. For this reason, communication is a subcomponent of the role played by the NCSA, but with its own objectives, outputs and activities (see figure 1).

According to the ecosystem approach, the role of people as an ecosystem component, and their interactions with other components of the system (Pirrot et al 2000) make human action the focus of ecosystem management, as people make the social and political choices about exploitation of the ecosystem. Other reasons for including people, particularly at local community level, are:

- They have a particular interest in the management process, being dependent upon the services the ecosystem provides.
- They often have considerable relevant knowledge of the ecosystem and of the ways in which it can be managed (indigenous knowledge systems).
- In some cases, the cultural, ethical and spiritual values of local communities have evolved on the basis of a long-standing interaction within an ecosystem, so their interest goes beyond simply deriving material benefits from the system.
- In many cases, they have developed traditional use or tenure systems that can be adapted to the aims and objectives of an ecosystem management programme.

Apart from positive reasons, people are often the greatest threat to ecosystem functions and integrity and without their cooperation ecosystem management efforts will run a high risk of failure. The people in the delta will have to view this planning exercise as beneficial for their livelihood strategies rather than a threat.

Participation must occur at an early stage in the planning exercise and not only at the stage when the plan is being finalised. The project includes a stakeholder forum, which will review progress and ensure participation (see figure 1).

The approach of addressing pertinent issues, as the project gets under way, is a principal matter, as the project should not be disconnected from implementation and become a desktop planning exercise. The rationale is hence for a close connection with the specific issues of the various stakeholders and the piloting of solution-seeking activities that will keep the planning momentum going, provide a technical input into the planning approach, and involve stakeholders actively in the design and implementation of actions that pursue conflict resolution (see earlier remarks on the planning and hotspot approach).

The Okavango Delta has not been managed in a complete vacuum. Various land-use plans exist dealing with different areas and prepared at different scales and levels of detail. However, gaps exist that have to be addressed, while at an overall delta-wide level, general land-use planning and utilisation principles need to be determined that will guide the overall development of the delta. For this to take place

without too much distress, existing plans need to form the basis of the overall planning exercise. This is also an exponent of the adaptive plan or ‘living plan’ strategy.

The premise of the principle of the acknowledgement of international interest in the delta is based on the fact that the Okavango Delta is listed as a Ramsar site and the management plan is developed according to the guidelines of the Ramsar convention. The government of Botswana is undertaking an integrated management planning exercise for the Okavango Delta to fulfil its obligations under the Ramsar convention (article 4), to pursue the wise use of natural resources for the benefit of all Okavango stakeholders, and to contribute to regional integrated water resource management in the Okavango River basin as mandated to OKACOM. This is in line with the Ramsar guidelines, which call for an integration of wetland site management within broad-scale environmental management planning, including river basin and coastal zone management.

Operations of the Okavango Delta Management Plan project

As mentioned above, the NCSA is the lead government agency. At the operational level, the project will be overseen by a project steering committee, which will hold biannual meetings while the Okavango Wetland Management Committee will function at field level (see figure 1). The latter committee will be established for the Okavango Delta according to the wetland organisational structure proposed in the National Wetland Policy and Strategy. It will coordinate planning at district level and report to the NCSA through the District Development Committee. All major stakeholders will be represented.

Each responsible agency will establish task forces for major activities to be carried out within the framework of the project. The responsible agency will decide on the terms of reference and composition of each task force. However, the intention is that each task force will have representatives of major implementing partners, as well as community and private sector representatives where appropriate and feasible. The main aim of the task forces is to secure cross-sectoral coordination, project integration and stakeholder involvement. A task force will be abolished once the expected outputs have been achieved.

The implementing partners of the project should regularly discuss and be informed about ongoing project activities through a stakeholder forum. The forum would be composed of representatives of the existing institutions in the district involved in planning, decision-making, research and extension, as well as political leaders and representatives. The stakeholder groups could be strengthened by representatives of interest groups utilising the natural resources of the Ramsar site (local communities and the private sector), and by representatives of groups supporting the communities in reaching sustainable levels of resource utilisation

Figure 1
Project organisation including the responsibilities of and linkages between agencies

Implementing agency	Main outputs/responsibility	Coordination
National Conservation Strategy Agency (national level)	National coordination Project monitoring Linkages to steering committee Linkages to OKACOM Linkages to convention bureaux	OKACOM
National Conservation Strategy Agency (district level project secretariat) – with Tribal Administration (communication)	Project management Coordination between components Communication/information Training support Consulting support Monitoring, evaluations and reporting Physical and economic planning through district planning offices	Project Steering Committee
Department of Water Affairs (in association with DMS)	Hydrology and water resources Integrated hydrological model Climate changes scenarios	Okavango Wetland Management Committee
Department of Animal Health and Production	Disease control policies Data on fishery resources	Stakeholder forum
Department of Wildlife and National Parks	Biodiversity data and analysis Habitat and wildlife management CBNRM implementation	T A S K F O R C E S
Department of Tourism	Carrying capacity for tourism Community involvement in tourism	
Department of Town and Regional Planning	Settlement strategies Infrastructure development and environmental impact	
Department of Crop Production and Forestry (in association with ARB)	Access to agricultural land and forests Biodiversity data and analysis Carrying capacity for livestock	
Tawana Land Board (in association with DLUPU)	Land-use zoning, land management, monitoring and compliance CBNRM implementation	
North West District Council (in association with DSWM)	District tourism plan Waste management strategy	
Harry Oppenheimer Okavango Research Centre	Data management and library Ecosystem research Participatory land-use planning Training support	

(NGOs). The media should also be invited to attend. The main role of the stakeholder groups is to ensure active local participation, give advice and guidance to the planning team working on the Okavango Delta Management Plan and to feed back findings, suggestions and results into the existing institutions and local discussion forums.

Permanent project staff will include a project coordinator, a chief technical advisor and a project facilitator. The latter is a support function to the NCSA in Gaborone. Additional support staff will also be hired.

Conclusion

The Okavango Delta Management Plan project aims to plan comprehensively for the delta on the basis of a long-term vision, as well as the ecological and development needs and aspirations of the various stakeholders. However, as the delta is part of a much larger river basin and ecosystem, regional partnerships in planning and implementation will be crucial for the future status of the delta and the river basin in its entirety.

During its meeting in July 2002 in Windhoek, Namibia, OKACOM endorsed the Okavango Delta Management Plan project and was encouraged to conceive similar exercises in Namibia and Angola in preparation for robust regional cooperation on the basis of an integrated management plan for the entire river basin. Developing a management plan for the river basin is not a linear process, which starts at the regional level and trickles down to the national and subnational planning framework. Indeed, there is widespread acceptance of the notion that the various management and development planning initiatives in the riparian countries will contribute to the overall river basin planning exercise.

However, at a regional scale, issues such as national sovereignty, local needs, comparative advantages, securitisation, food security, rural development, industrial development, protected areas management and tourism, ecological reserves and trading water (whether real or 'virtual') all have to be taken into account and reconciled when developing a river basin management plan from an integrated water resource management perspective. A recent report argued that the trade-off and the uncertainties in the Okavango basin are acute (ODI/Arcadis/Euroconsult 2002). However, this situation will gradually change with the end of civil strife in Angola.

Linking this back to the Ramsar convention (and the expected joining of Angola, currently the only Okavango riparian state that is not yet a member), and to SADC and other international agreements, it is clear that regional and international cooperation is not only a necessity (Henwood & Funke 2002), but also provides ample opportunity (Affeltranger 2002) for development cooperation of mutual benefit among riparian states. In this regard, the peace dividend in Angola could indeed pay substantial interest.

Box 1

Issues identified during stakeholder consultations: Okavango Delta Management Plan design and appraisal phase

Environmental issues

- Lack of understanding of long-term climatic changes and their impact on the delta results in failure to consider these important aspects in management planning.
- Lack of inclusion of health data as an indicator into management planning prevents rapid management interventions.
- Concerns that high rates of human-induced fire have an impact on the ecology.
- Deteriorating environmental quality through increased sound pollution, visual pollution and access tracks undermine the base of the tourism industry.
- Absence of an efficient monitoring system leads to inability to assess impact of interventions.
- Absence of standardised survey techniques leads to incompatible information for management purposes.
- Uncoordinated research activities and limited use of indigenous data lead to research results that are unsystematic and less useful from an ecosystem perspective.
- Increase in elephant populations is changing woodland structure.
- Lack of documentation on endangered or rare plant and animal species and their locations makes it difficult to include this information in management planning.
- Limited information (and public awareness) on invasive plant and animal species increases the risk of their introduction and spread.
- Lack of recognition of the delta's function as a reservoir for globally endangered species such as wild dog and cheetah results in these aspects not being included in management planning.
- The border cordon fences, erected for national security, result in reduced wildlife movements and loss of crossborder community-based management opportunities.
- Groundwater pollution from cattle lung disease (CBPP) burial pits will result in high mitigation costs.
- Past flow manipulation of main river channels has had long-term impacts on the ecology.

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- Increase in human population and wealth has resulted in increased sewerage and solid waste with a subsequent impact on the ecology and management practice.

Policy and overall issues

- Inability to influence changes in upstream land and water use activities threatens the integration of the Okavango Delta and has an overriding impact on delta land-use planning.
- Water off-take (irrigation and domestic use) influences downstream users and ecology (e.g. groundwater recharge, integrity of the Makgadikgadi National Park). It also weakens Botswana's position concerning OKACOM.
- Ramsar boundary lacks ecological and socioeconomic integrity.
- Problems in the implementation of the community-based management approach, relating to roles and responsibilities, lead to conflicts and confusion among stakeholders (roles and duties of Technical Committee undefined).
- Conflict arises between existing development policies (Agriculture and Disease Control Policy and Strategy) and the implementation of the proposed community-based management approach.
- Laws and contracts on natural resource management (lease agreements, fire control, veld product harvesting, regulation on livestock densities) are not monitored and enforced.
- Changes in tourism policy from low-volume/high-cost to high-density/mixed-cost tourism will put increased pressure on the delta ecosystem.

Management issues

- International environmental obligations have not been included in present management planning (failure in compliance).
- Regional agreements do not specify quantities of water abstraction, which drives international conflicts and impacts on delta ecology and economy.
- Non-holistic ecosystem planning approach results in numerous individual, unrelated management plans for particular areas.
- Land Board delays allocations due to increased demand, lack of clear management plans in place and lack of guidelines.
- Management conflicts occur due to some control hunting area boundaries not being demarcated.

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- Lack of updated demographic data for planning purposes hampers progress.
- Development and carrying capacity guidelines absent in areas other than wildlife management areas lead to unplanned developments.
- Natural resources (apart from wildlife) are not actively managed by communities unless allocated to them (lack of user rights).
- Static planning conflicts with dynamics of the delta ecosystem (no constant monitoring and adaptive management that would be required by the ecosystem approach).
- Lack of stakeholder participation in the existing 1991 Land Use and Development Plan leads to a lack of support and commitment to implementation.

Land use

General

- Planned blanket aerial spraying with endosulphane (deltamethrin) for tsetse control will cause loss of biodiversity and have an impact on the tourism industry.
- Unsustainable agricultural practices are resulting in the degradation of resources e.g. slash and burn and shifting agriculture, overstocking, erosion of *molapo* soils.
- Conflicts arise between increasing elephant, hippopotamus and crocodile populations, and people and related land use.
- Conflicts occur between different farming activities such as crop farming and livestock rearing.
- Disease control fences affect wildlife movements.
- Present disease control strategy does not optimise land-use potential.
- Poaching and predator control leads to loss of biodiversity.
- Increased use of fish resources results in conflicts between user groups.

Tourism

- Rapid expansion of tourism industry has resulted in increased pressure on natural resources.
- Increased motorboat traffic results in increased pollution and dangers of collision.

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- Increase in service settlements for the tourism industry has resulted in greater support service requirements (e.g. health facilities and schools).
- Absence of an efficient monitoring system to assess tourist satisfaction does not allow for feedback to planning.

Veld products

- Overexploitation of mokola palm and dye plants by basket makers results in their unsustainable use and commercialisation of these natural materials.
- Citizen hunting is restricted through community-based management and commercial tourism activities leading to a loss in income opportunities.
- Limited information on natural resource use, distribution of resources, sustainable use, user groups, rights and obligations (both quantitative and spatial) results in these issues not influencing planning decisions.
- Absence of a forestry resource inventory of commercially exploitable timber results in the resource not being used.

Hydrology

- Gaps in knowledge on water quality limit monitoring of impacts and implementation of mitigations.
- Lack of information on the impact of hydrological changes on biodiversity, community structure and ecosystem productivity results in a failure to predict impacts of management interventions.
- Hydrological modelling lacks spatially well-distributed data (e.g. evapotranspiration; ground and surface water flow; meteorological data) needed to predict ecological and social impacts of off-take.

Capacity-building

- Services required by communities involved in community-based management efforts are not well identified and the service support not coordinated.
- Insufficient government extension services for tourism and natural resource management (lack of transport and personnel) lead to a vacuum filled by uncoordinated activities of NGOs and private community support organisations leading to misunderstandings in the communities.

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Traditional rights

- Confusion exists about traditional rights (no comprehensive definition, no protection from abuse, little documentation and mapping).
- As traditional rights are not documented or protected, land grabbing occurs.
- Local commercial users enjoy traditional user rights to exploit resources leading to conflicts over user rights.

Community-based natural resource management

- Creation of unequal opportunities through community-based natural resource management results in political friction and a lack of commitment to the policy by non-beneficiaries.
- Inappropriate mechanisms for implementation of joint venture agreements cause conflicts between the partners.
- Inherent instability of tourism industry in communally managed areas (short-term leases) leads to high turnover rates and a lack of commitment to sustainable management.
- Unrealistic expectations of CBOs towards private sector lead to conflicts between partners.
- Lack of coordination between stakeholders causes misunderstanding, conflicts, instability and distrust between NGOs and government, NGOs and the private sector, and between CBOs.
- Insufficient capacity-building available for communities to enable them to participate effectively in management planning (lack of community mobilisation).
- Community trusts not allowed to participate in setting wildlife quotas.
- Communities lack expertise and funds to enter tourism industry.
- Problems arise in joint management where communities with different ethnic identities are grouped together.
- Tender process for community managed areas is not transparent. Lack of legally binding rules leads to unfair competition practises between safari operators.
- Poor community trust board performance leads to dissatisfaction among community members.
- Problems with administration, reinvestment and redistribution of revenue by trust boards lead to distrust.
- Distrust between trust boards and communities results from a lack of information flow.

Box 2**Ecosystem principles as adopted by the 5th conference of parties to the Convention on Biological Diversity (CBD), Nairobi, Kenya, 15-16 May 2000****Principle 1: The objectives of management of land, water and living resources are a matter of societal choice.**

Different sectors of society view ecosystems in terms of their own economic, cultural and societal needs. Indigenous peoples and other local communities living on the land are important stakeholders and their rights and interests should be recognised. Both cultural and biological diversity are central components of the ecosystem approach, and management should take this into account. Societal choices should be expressed as clearly as possible. Ecosystems should be managed for their intrinsic values and for the tangible or intangible benefits for humans, in a fair and equitable way.

Principle 2: Management should be decentralised to the lowest appropriate level.

Decentralised systems may lead to greater efficiency, effectiveness and equity. Management should involve all stakeholders and balance local interests with the wider public interest. The closer management is to the ecosystem, the greater the responsibility, ownership, accountability, participation, and use of local knowledge.

Principle 3: Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.

Management interventions in ecosystems often have unknown or unpredictable effects on other ecosystems; therefore, possible impacts need careful consideration and analysis. This may require new arrangements or ways of organisation for institutions involved in decision-making to make, if necessary, appropriate compromises.

Principle 4: Recognising potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem-management programme should:

Reduce those market distortions that adversely affect biological diversity;
Align incentives to promote biodiversity conservation and sustainable use;
Internalise costs and benefits in the given ecosystem to the extent feasible.

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The greatest threat to biological diversity lies in its replacement by alternative systems of land use. This often arises through market distortions, which undervalue natural systems and populations and provide perverse incentives and subsidies to favour the conversion of land to less diverse systems.

Often those who benefit from conservation do not pay the costs associated with conservation and, similarly, those who generate environmental costs (e.g. pollution) escape responsibility. Alignment of incentives allows those who control the resource to benefit and ensures that those who generate environmental costs will pay.

Principle 5: Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.

Ecosystem functioning and resilience depend on a dynamic relationship within species, among species and between species and their abiotic environment, as well as the physical and chemical interactions within the environment. The conservation and, where appropriate, restoration of these interactions and processes are of greater significance for the long-term maintenance of biological diversity than simply protection of species.

Principle 6: Ecosystems must be managed within the limits of their functioning.

In considering the likelihood or ease of attaining the management objectives, attention should be given to the environmental conditions that limit natural productivity, ecosystem structure, functioning and diversity. The limits to ecosystem functioning may be affected to different degrees by temporary, unpredictable or artificially maintained conditions and, accordingly, management should be appropriately cautious.

Principle 7: The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.

The approach should be bounded by spatial and temporal scales that are appropriate to the objectives. Boundaries for management will be defined operationally by users, managers, scientists and indigenous and local peoples. Connectivity between areas should be promoted where necessary. The ecosystem approach is based upon the hierarchical nature of biological diversity characterised by the interaction and integration of genes, species and ecosystems.

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Principle 8: Recognising the varying temporal scales and lag-effects that characterise ecosystem processes, objectives for ecosystem management should be set for the long term.

Ecosystem processes are characterised by varying temporal scales and lag-effects. This inherently conflicts with the tendency of humans to favour short-term gains and immediate benefits over future ones.

Principle 9: Management must recognise that change is inevitable.

Ecosystems change, including species composition and population abundance. Hence, management should adapt to the changes. Apart from their inherent dynamics of change, ecosystems are beset by a complex of uncertainties and potential 'surprises' in the human, biological and environmental realms. Traditional disturbance regimes may be important for ecosystem structure and functioning, and may need to be maintained or restored. The ecosystem approach must utilise adaptive management in order to anticipate and cater for such changes and events and should be cautious in making any decision that may foreclose options, but, at the same time, consider mitigating actions to cope with long-term changes such as climate change

Principle 10: The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.

Biological diversity is critical both for its intrinsic value and because of the key role it plays in providing the ecosystem and other services upon which we all ultimately depend. There has been a tendency in the past to manage components of biological diversity either as protected or non-protected. There is a need for a shift to more flexible situations, where conservation and use are seen in context and the full range of measures is applied in a continuum from strictly protected to human-made ecosystems.

Principle 11: The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.

Information from all sources is critical to arriving at effective ecosystem management strategies. A much better knowledge of ecosystem functions and the impact of human use is desirable. All relevant information from any concerned area should be shared with all stakeholders and actors, taking into account, inter

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alia, any decision to be taken under article 8(j) of the Convention on Biological Diversity. Assumptions behind proposed management decisions should be made explicit and checked against available knowledge and views of stakeholders.

Principle 12: The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

Most problems of biological diversity management are complex, with many interactions, side-effects and implications, and therefore should involve the necessary expertise and stakeholders at the local, national, regional and international level, as appropriate.

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