

The hydro-politics of the Okavango Delta: property rights and the management implications of competing land and water use strategies.

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Abstract

The management of unique wetlands such as the Okavango Delta is determined by the competing de facto and de jure claims on water and on water dependent natural resources. The claims can be categorised as International, National, District and Local assertions of access rights. These claims pose a common property resource management dilemma, because exclusion of access to water and wetland resources is problematic. Wherever exclusion is problematic a de facto common property resource management dilemma exists, because the various competing claims have to be negotiated socio-politically. Understanding the competing claims and property rights, the levels of management involved and the institutions which are responsible for decision making and enforcement of claims is a critical but often neglected step in management planning. This paper argues that the Okavango Delta is best managed by a joint jurisdiction regime involving multiple stakeholders at local, district, national and international levels. Key institutions dealing with the co-management of resources in the Delta are identified as possible models for future institution building,

Key conceptual issues

Hydro-politics in this paper refers to the socio-political dimensions determining: access, control, use and ownership of water and water dependent resources. The hydro-politics of the Okavango Delta is primarily determined by competing de facto and de jure claims on water and water dependent natural resources. The unfolding social and political processes that determine property rights associated with water and wetland resource utilisation are therefore critical for understanding management options (see Hitchcock R K 1999) for valuable in-depth critical analysis on these questions). Property rights (in this case rights over water and water dependent resources) are rights in the sense of an enforceable claim; while its enforceability is what makes it a legal right. The enforceability itself depends on a society's belief that it is a moral right. Property is not thought to be a right because it is an enforceable claim: it is an enforceable claim because it is thought to be a human right (Macpherson quoted in Hasler 1996, p13). Whether these claims involve international sharing of river basin water resources, national water priorities, district planning issues or local historical rights to land and water utilisation, they are usually couched as property rights. This paper attempts to illustrate the complexity of competing claims on the water of the Okavango Delta system as a case study for water management in Southern Africa.

Property rights regimes

Advances in the analysis of common pool resources in the last thirty years help us to understand and conceive the problems of hydro-politics in the Okavango Delta. Garrit Hardin's *Tragedy of the Commons* model has been systematically challenged as simplistic by a body of literature dealing with the relationship between land use strategies and different types of tenure regime. In this regard, Berkes and Farvar (1989) identified a typology of property rights regimes which

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illustrated the diversity of tenure relationships which influence land and water use. These are

Open Access:

Free for all: resource use rights are neither exclusive nor transferable, these rights are owned in common, but are open to everyone (and therefore property to no-one) (Berkes 1989).

State Property:

Ownership and management control held by the nation state or crown: public resources to which use rights and access rights have not been specified.

Communal Property:

Use rights for the resource are controllable by an identifiable group and are not privately owned or managed by governments: there exist rules concerning who may use the resource, who is excluded from the resource and how the resource should be used: community based resource management systems.

Private Property:

Where the claim rests with the individual or the corporation.

(Source: Berkes quoted in Hasler 1996)

Since all these categories exist in the Okavango River basin, the important issue for purposes of this paper is the existence of overlapping property rights regimes. In certain circumstances some resources may fall into two or more of the above categories. For example, let us take the rights of concession area lease-holders of wildlife management areas in communal areas of the Okavango Delta. Clearly these are privatised rights over designated resources within the wildlife management area for a specified length of time, e.g. the right to hunt or photograph lion, elephant etc within the area. These rights are obviously subject to other sets of rights, particularly since the area is held under a communal property rights regime. Despite being a communal property regime, some people may be treating certain resources (such as fish or veldt products) as an open access resource if proper exclusion rights appropriate to communal property have not been established. The point here is that property rights are often ambiguous, and this may have a negative impact on management. This is especially true when considering contested water resources where there are multiple contenders.

The political ecology of land and water use

An additional conceptual tool for understanding the Okavango Delta case study is provided by what can loosely be called the political ecology of land and water use. This perspective analyses the competing water and land use claims at local, district, national and international levels. This is important in augmenting the property rights perspective, because it illustrates how claims on local resources are determined by political and economic factors at the various levels. For example, historically, national decision-making processes or policy may have determined that the water of the Okavango might be used for a certain purpose such as assisting with mining or agriculture. The fact that some of the schemes for irrigation (see table 1) agreed upon at national level have been successfully thwarted at local levels is highly significant, as it illustrates that real management control involves co-management. This paper, therefore overlays the complex property rights regimes existent in the Okavango Delta with the existent political and economic determinants of land and water use (see Tables 1 and 2). These two perspectives are critical for understanding decision-making and appropriate institutional options for the future management of the Okavango Delta.

Co-managing the future of the Okavango Delta

A key concept which helps in the analysis of these competing claims is the concept of co-management. This is defined as a joint jurisdiction regime which can take into account the competing property rights regimes as well as the political, economic and ecological factors which determine land and water use. Another way of thinking about co-management is through vertical and horizontal integration. Vertical integration refers to the links necessary for effective land use between local, national, district and international claims on local resources. Horizontal integration refers to the differentiation between stakeholders within each of these levels. (See more on cross scale issues at the end of the paper).

The Okavango Delta

The Okavango Delta is a unique inland wetland system in Northern Botswana. The Okavango river rises in Angola (Kubango river) where it is joined by the Kuito to form the Okavango (see map). It briefly passes through Namibian territory before fanning out into the Delta (20,000 square kilometres) in Northern Botswana. The catchment area for the Okavango Delta is estimated at 150,000 square kilometres (Scudder, T *et al* 1993 p284). The inflow into the Okavango Delta is determined by a number of factors which are beyond the national boundary of Botswana, not least of these are the potential future development in the Okavango river basin such as the proposed building of dams and the potential for water off-take by Namibia and Angola. Unlike most rivers the Okavango does not reach the sea, instead it fans out into the dry Kalahari sands to form the Okavango Delta. The inflow from the Okavango River largely determines the extent and ecological health of the Okavango Delta.

The biodiversity of the Okavango Delta is considered a valuable world heritage, as is evident from Botswana's signing of the RAMSAR convention. The annual flood of water from the Okavango River reaches the extremities of the Delta as much as six months after the rainy season has ended. This water nurtures a wide variety of riverine fauna and flora in what would otherwise be considered desert. The Delta is aptly called the jewel of the Kalahari but its economic and environmental value is threatened by a number of factors including:

- Global climate change
- Proposed off-take of water by upstream users,
- Proposed damming of the river upstream and by other potentially competing and conflicting activities within Botswana (e.g. past schemes for utilising the water for the diamond mines or for irrigation), as well as
- competing activities within the Delta itself particularly the potential conflicts between utilising the water dependent resources for agriculture, cattle production, wildlife utilisation and tourism.

This paper argues that competing wetland use strategies in the Delta system are a product of competing property rights claims. Understanding and addressing these claims can identify common solutions.

International water claims

In this paper hydro-politics refers to the socio-political dimensions determining control use and ownership of water and water dependent resources. The utilisation of water dependent resources is a part of hydro-politics because frequently this utilisation determines the quality and amount of water available. For example, utilisation of the Okavango Delta for primarily agricultural pur-

poses would have an enormous impact on the water resource available.

In the case of the Okavango Delta, international institutions dealing with competing claims on the water of the Okavango include international agreements concerning the Delta, such as RAMSAR and the World Heritage Convention and Regional River Basin Planning institutions such as OKAKOM, which has a membership from Namibia, Botswana and Angola. Competing claims on the Okavango River include Namibia's proposed off-take of water to feed a pipeline to Grootfontein and ultimately to Windhoek. If the war in Angola is resolved, the populations who have been relocated from the catchment area will return, causing increased clearing of fields, deforestation and also an opportunity for the Angolan Government to build dams. All such activities will have a direct influence on the volume and sustainability of the inflow to the Delta. International hydro-politics affecting the Delta also includes the political and economic considerations concerning alleged global climate change. In the last twenty years inflow to the Delta has been far less than in previous periods of drought. Large economies growing at the expense of the environment are usually blamed for such alleged changes in climate. International hydro-politics is therefore more than the sum of institutions which take part in decision making concerning shared river basins on a regional level. Global concerns such as climate change may ultimately prove to be the most important in determining the fate of the Okavango Delta.

Despite the existence of institutions like OKACOM (a committee dealing with Okavango Basin issues, with representatives from Namibia, Angola and Botswana) and international agreements such as RAMSAR, which one hopes will prevent unilateral interventions in water utilisation by particular nations, it is conceivable that these institutions and organisations will be ignored if strong political will exists to extract water, no matter what the political risks or social and environmental cost. This is the *realpolitik* of international hydro-politics.

National hydro-politics

National hydro-politics refers to the decision-making processes which determine interventions in water and wetland utilisation. The decision-making processes reflect the agendas which different Botswana governments have had through the years, as outlined in National Development Plans, or in earlier times through administrative priorities. For example, National Development Plan 6 (1985-1991) emphasised food self-sufficiency, while NDP7 (1991-1997) emphasised food security. Under NDP6 The Okavango Delta was therefore seen as an important source for irrigation and flood plain (*molapo*) agriculture. Subsequently it became policy that food security could be best achieved through increased productivity and employment generation. In NDP8 the generation of revenue through tourism was emphasised, and the Delta was seen as a primary resource for this. Broad policy decisions therefore directly affected the ways in which water was to be used.

The purpose of national hydro-politics is the utilisation of the Okavango Delta for various developmental purposes. Such interventions have included

- channel clearing and straightening to expedite the recruitment of labour for South African mines instigated by WENELA (a regional labour recruitment organisation)
- channel clearing to improve navigation in the Delta for better colonial administrative purposes (1932-42)
- channel clearing for purposes of tourism undertaken by tourism operators and the Department of Water Affairs (1966-present)
- the dredging and bunding of the Boro river, as well as reservoir building and diversionary works on the Boteti for purposes of assisting the diamond mining project at ORAPA mine undertaken by Anglo American Corporation (1971-73). Mining is obviously high on the national agenda, as it is Botswana's single most important contributor to gross domestic product
- the Southern Okavango Integrated Water Development Project, which was an attempt to utilise further water from the Delta for downstream purposes including mining, agriculture and

cattle production. The project was only rejected after the IUCN wetlands programme undertook an independent review, and it was established that considerable local dissent existed against the project as it was seen as an attempt to 'kill the river'. The project was terminated. This is an illustration of how national development objectives involving the utilisation of water can be quashed by dissenting local voices.

District planning issues

It is important to note that without the Delta water tourism, wildlife utilisation, livestock management, fishing and agriculture would not exist in their current forms. District hydro-politics is concerned with decisions about a range of land uses which impact on the management of the Delta waters. For example, physical planning exercises, through the District Land Use Planning Unit, have divided large areas of the Delta into Wildlife Management Areas within which further subdivisions exist into Controlled Hunting Areas, Photographic Safari Areas and Multiple Use Areas. Without the Delta water many of these activities would be compromised. The existence of the buffalo fence, which separates cattle from wildlife, has a critical impact on land and water uses, as it provides for the existence of separated wildlife/tourism activities by preventing cattle from entering the core biodiversity areas of the southern parts of the Delta. In the last 100 years tsetse control has opened up opportunities for livestock management and tourism, but other diseases pose an on-going threat to cattle production. In 1996-7 the Botswana state had to eliminate 250,000 head of cattle for fear of the spread of cattle lung disease, which would have decimated the national herd and destroyed the European market for Botswana beef. Some opposition party members interpreted this as a plot by the government to secure the Delta and the rest of Ngamiland as a wildlife and tourism destination. The extent of wildlife and tourism activities versus livestock and agriculture are therefore largely controlled through district level planning exercises involving negotiation between the District Planning Unit, the Tawana Land Board (the authority for all land in the area) other government ministries and the district council. Leases in concession area within WMAs and CHA's have to be negotiated with a District Technical Committee made up from representatives of the institutions mentioned. This indicates that land use and the associated impact on water and wetland are highly influenced by district level planning and decision-making. Some of these decisions directly impact on water utilisation, for example, decisions concerning whether an area should be a multiple use area in which cattle can exist, a controlled hunting area or a photographic safari concession area, all have different impacts on water quality and availability.

Local hydro-politics

Basarwa or Khoisan speakers were the first inhabitants of the Delta who utilised it for fishing, gathering and hunting for thousands of years. The Bayei are acclaimed for having introduced cattle to the original dwellers possibly 1,500 years ago (Smith 1990). Other Bantu speaking groups such as the BaHerero and the BaTawana later the Hambukushu have settled in the Delta area, exploiting and utilising the water dependent natural resources. Nearly all activities pursued by these groups have been directly dependent on the presence of water in the Okavango Delta.

The existence of tsetse fly restricted human settlement and livestock management in the area of the Delta for much of this century. However after the rinderpest epidemic in the late 19th century much of the Delta was tsetse free. During the twenties before the fly re-infested many areas there were cattle posts on both the Kwhai and the Boro River, Tawana also had cattle posts on Chiefs Island during the first quarter of this century (Smith 1990:1-2). *Molapo* or flood regression agriculture reached a peak in the 1970s when an estimated 30,000 hectares utilised flood waters for this purpose. Local claims on water and water dependent resources are therefore not

homogenous but are differentiated historically, geographically and ethnically as different groups pursue a range of different activities. A diagram illustrating competing claims on water and water resources from the different levels is found below:

TABLE 1: Diagram of key competing claims on Okavango water resources, institutions and levels of management involved (historical and current).

COMPETING CLAIM	INSTITUTIONS INVOLVED	LEVELS OF MANAGEMENT
Proposed Namibian Pipeline (upstream)	Namibia Government, Botswana Government OKAKOM, Donor Agencies	National, International
Proposed Dams in Angola (upstream)	Angola Government, Donor Agencies, OKAKOM	National, International
Anglo-American Corporation off-take for Orapa mine (downstream)	Anglo American Corporation, Government of Botswana	National, International
Implementation of Thaoge Scheme (to redirect channel flow)	Department of Water Affairs	District, National,
Southern Okavango Integrated Water Development Project (terminated)	Department of Water Affairs, Snowy Mountains Engineering Corporation	District, National, International
Local Production Processes (see diagram below) including tourism, wildlife utilisation, fisheries, agriculture, mining prospecting and water utilisation	Local Communities, Private Sector and a range of government ministries	Local, District, National, International (see diagram below)

(Adapted from Scudder et al 1993)

As will be noted by these few examples of serious competing claims on local Okavango water resources, a considerable share of the claims arise from the national and international arena. Local institutions are not represented in most of these debates. Likewise local production processes are not represented in these arenas and this is a great cause of concern as it indicates that international or national concerns may dictate the future of the Okavango Delta

From subsistence economy to national economy

The discovery of diamonds transformed Botswana from one of the poorest countries (per capita) in Africa to one of the richest. This increased affluence has impacted on the hydro-politics of the Okavango Delta. Recent (in the last thirty years) economic changes from village based subsistence economies to state supported drought and disaster relief has had an enormous impact on the

life and identity of Okavango Delta communities. Disaster relief for cattle lung disease and state economic support for local subsistence has made the state development process as important as any local community production processes. Many of these production processes in drought relief areas are or have been supported or subsidised by the state, for example: state supported fishing, state supported agriculture and more recently state and donor supported wildlife management. All these activities impact on water harvesting, utilisation and quality.

The final evaluation of the Natural Resource Management USAID project indicates that “dependency on the state is quite high and it has not encouraged communities to go through a process of setting priorities and mobilising local resources for resolving constraints. However the capacity for the state to provide essentials is reaching a limit and under NDP8, the Government of Botswana will be moving toward a partnership relationship which will favour communities which show initiative.”

Socio-ecological fluidity in the Delta

The Okavango Delta is fluid in both an environmental and a social sense. Each year the annual flood subtly changes its course. Even within a single year vast areas of land can be flooded and then dry out, leaving seasonal opportunities for different resource use activities (the most obvious being tourism, wildlife resource use, fishing and agriculture and reed collection). Over time new flood plains are flooded and old ones dry out. This is evident in the general movement of the flood from the western to the eastern side of the Delta in this century. Likewise human use of the Okavango Delta changes as the flood determines many of the activities that can or cannot take place. Thus cattle posts that are currently based in the dried out western portion of the Delta near Tsau will have to withdraw or move on to higher ground if a flood reaches this area. Fishing activities in the dried out flood plains start when the annual flood arrives which introduces commercial and subsistence fishermen from other parts of the Delta and from the towns near by. Fishers use both *makoro* and motorboats provided through the government sponsored fisheries programme. The motorboats cruise both the deep water channels as well as cutting passages through the dense papyrus of the upper Delta area, thereby opening up areas that have not had access to motorised water transport before. The fluidity and changeability of local production processes highlights the difficulties of proposing local involvement in water management activities.

Water attracts wildlife, which in turn attracts hunters and tourists who set up impermanent camps, and around whom service villages develop or existing villages expand. Thus new economic opportunities are determined by changes in the water resource base as it interacts with the changing production processes. Equally, older resource opportunities are forgone through the changes taking place. Agriculture and the system of *molapo* (flood plain) farming illustrate this well, as they directly respond to the changing flood. If the flood is too strong or too weak farmers have to abandon or create new fields. The changing resource use patterns (fishing, cattle, *molapo*, farming, tourism, hunting, collecting of veld products and wage labour) are reflected in the changing settlement patterns (cattle posts, fishing villages, agricultural villages, tourist villages), which are in turn associated with particular tenure regimes (communal property, privatised property, open access and state property). These tenure regimes are in turn directly linked to particular administrative processes.

Complex tenure regimes in the Okavango Delta.

Despite the existence of tribal land authorities, such as the Tawana Land Board, which controls and owns much of the land in the area, some resource use activities (e.g. wildlife management in protected areas) are controlled by the state (Department of National Parks and Wildlife Management) while others (grazing on flood plains outside of the buffalo fence) are communal property. Some resource activities have been privatised through leasehold agreements (e.g. community wildlife

concession areas) while others are subject to a virtual open access regime (access to fishing and veld products). In many cases the different resource use options such as fishing, wildlife, agriculture and tourism are subject to overlapping tenure regimes. Successful water management needs to be cognisant of the local production processes, the tenure regimes and the levels of management involved in decision-making concerning these activities. Access to water in the Okavango Delta can be simultaneously be a state resource (e.g. its formal status), a privatised resource (accessing water under a leasehold agreement over a community wildlife area) a communal property resource (utilisation in cattle posts) and an open access regime (where no controls are implemented on utilisation in communal lands). Frequently there are overlapping jurisdictions and competing rights concerning access. An example might be where a fishing tourism concession exists and where simultaneously commercial and subsistence fishermen exploit an area of the permanent swamp.

The type of access regime can influence the nature, spatial distribution and degree of autonomy of the resource use community. For example the (USAID) NRM communities have generally adopted the geographical and spatial definition of 'community'. Preliminary research findings indicate that this definition may not apply to Delta people because of the considerable 'social fluidity' which exists and this may be a major flaw in the design of the programme. Communities might more accurately be defined in terms of the levels of management involved rather than in terms of the spatial or geographical distribution of households in villages (which are loosely referred to as 'community'). This is because the identification of local communities within the Delta assumes autonomy of decision making at the local level, which frankly does not exist and will probably never exist, because communities are increasingly becoming extensions of the state apparatus to facilitate local production. Decisions concerning local production processes are also increasingly being determined at national and district levels.

A diagram summarising some of the local production processes, the tenure regimes and levels of management involved follows. Note that tenure regimes are usually complex and overlapping and that multiple levels of management are involved because of the complex legal and administrative jurisdictions involved. This is one of the biggest challenges for water management to negotiate. Ignoring the competing tenure regimes and levels of management is a recipe for failure.

Table 2: Diagram of local production processes, tenure regimes and levels of management

<i>ACTIVITY</i>	<i>TENURE REGIME(S)</i>	<i>LEVELS OF MANAGEMENT</i>
Veld Product Collection	Communal, Open Access	Local
Cattle Posts	Communal	Local, District
Wildlife Utilisation (<i>CBNRM</i>)	Communal	Local, District, National, International
Wildlife Utilisation (<i>commercial</i>)	Private	Local, District, National, International
Fisheries (<i>subsistence</i>)	Communal, Open Access	Local
Fisheries (<i>commercial</i>)	Communal, Private, Open Access	Local, District
Tourism	Private, Communal	Local, District, National, International

<i>ACTIVITY</i>	<i>TENURE REGIME(S)</i>	<i>LEVELS OF MANAGEMENT</i>
Mining Prospecting	Private, State	National, International
Agriculture	Communal, Private, State	Local, District, National
Water utilisation	Communal, Private, State	Local, District, National, International

Social fluidity in the Delta and its impact on water management

A critical issue in defining local de facto access rights to water and water dependent resources is the lack of long-term permanence in the composition and structure of settlements within the Delta. These settlements are often responsive to the broader political economy manifested in the nearby towns and tourist camps (ie people are economically and politically attached as much to the towns as to their villages or cattle posts). Equally importantly, the resource opportunities and the exploitation of natural resources in the Delta is dependent on the changing ecological resource base which is so dependent on the annual flood. Resource use patterns (*molapo* agriculture, collecting of veld products, fishing, cattle herding outside the fences, tourism, wildlife resource use) change in response to both ecological and political/economic changes. Associated ecological issues such as the presence of tsetse fly and the establishment of veterinary control fences for foot and mouth and other diseases have also determined settlement patterns leading to a history of "transient settler patterns" which make "uncertain the fixture of any given settlement in the Delta" (Taylor 1997). For example, an entire village (Marutsa) in the southern part of the Delta near Maun is based on exploitation and exportation of reeds mainly for the safari business in other parts of the Delta. It would be wrong to think of this village as a permanent settlement, as it is really a result or response to market forces concerning tourism and poling. This raises the question about what sorts of de facto and de jure water rights such impermanent villages have.

Likewise, because of the social fluidity and the strong links between the permanent towns and fluid villages in the Delta, it is inaccurate to make the assumption that communities within the Delta are spatially and geographically permanent units. The inhabitants of many villages in and around the Delta have homes in two or more places. This indicates that a spatial definition of community is not adequate in this context, and assumptions about neatly bounded discrete and homogeneous traditional communities could utterly mislead water management planners.

The fluidity of movement of people within and around the Delta as they opportunistically pursue the different activities within this mixed economy co-exists with the establishment of permanent villages and towns by the state with their own long-term rights to water. This has resulted in a centralisation and accumulation of population in the towns and villages surrounding the Delta. The link between the towns (on the outskirts of the Delta) and the villages (mainly closer to the Delta if not within it) is often critically important in the definition of local community. The fluidity of social movement has to be incorporated into the design of any water management strategy.

Cross scale issues

The Okavango Delta deals with a transboundary watercourse with multiple contenders for the waterways and the land that is periodically exposed by the seasonal shifts in the location and volume of the flow. Management of the Okavango Delta system is not possible at local level alone. Very simply this is because the system originates outside the national boundaries of Botswana. This factor needs to be incorporated into the management planning for the Delta.

This analysis leads us to the recognition that cross scale institutions defined as incorporating

multiple stakeholders from local to global will be the most effective institution for management decisions concerning the Okavango Delta (Berkes 2000).

CBNRM forum and OKAKOM

An example of an institution which has some of the aspects desirable for a cross scale institution is the newly established North West District Council CBNRM forum. Vertically this connects the national CBNRM forum to local stakeholders at local level and horizontally it connects diverse groups involved in community based natural resource management. These include local community trusts, non-governmental organisations, government departments at district and national level and the private sector. The only dimension missing is the transboundary international link, which is necessary for decision making on a river basin wide context. This aspect has been addressed by a standing committee on the Okavango River Basin called OKAKOM. Linking these and similar institutions would provide the kind of co-management model identified as suitable for the Okavango River Basin. The Okavango liaison group and the International rivers network are obviously key institutions for brokering the type of cross scale institution required for the Okavango.

Conclusion

This paper has presented the hydro-politics of the Okavango Delta as being constituted by property rights regimes reflecting international, national, district and local competing interests in water and water dependent resources. It has described and analysed a range of different activities taking place in the Delta in terms of different tenure regimes and levels of management. It has shown that these competing activities impact on the hydro-politics (the decision making about water resources) and that this process largely determines the future of the Okavango Delta. The intention is to contextualise emerging water management plans and activities (see for example trans-boundary diagnostic assessments submitted to OKACOM) in a broader analysis of the factors which determine water control and use. The paper seeks to augment the hydrological and natural science considerations, which are usually considered the primary determinants of the fate of the Okavango Delta.

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