

## **Political Ecologies of Scale and the Okavango Delta: Hydro-politics, Property Rights and Community Based Wildlife Management.**

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### **Abstract:**

**In this paper political ecology refers to the historical process whereby different hierarchical levels of interest at global, national, provincial and local level determine the management of ecological resources. The political ecology of the Okavango delta analyses these critical political and economic interests as they directly affect the use and management of wetland and wildlife resources. The term “political ecologies of scale “ refers to the attempt to establish mutually beneficial arrangements between internally differentiated organizational levels. In simple language, it is hoped to establish win/win situations involving governments, local communities, private sector and NGO’s that nurture the wise use of local resources. This paper attempts to illustrate how social differentiation (vertical and horizontal dimensions of social scale), historically competing land use strategies (the time scale and property rights) and geographical scales may collide with or reinforce each other.**

**In more ways than one the Okavango Delta is like the canary in the environmental mineshaft for Southern and Central Africa. The ecological health of the Delta is an indicator of global climate change and global environmental stress because of its regional significance as a sensitive drainage area. 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 viewed as International, National; District and local assertions of access, ownership, proprietorship and use rights over both land and water. These claims pose a common property resource management dilemma because the competing claims have to be negotiated socio-politically. Understanding the competing claims and property rights, the levels of management and decision making involved as well as the institutions responsible for decision making and enforcement of claims is a critical but often neglected step in management planning. Because of the complexity of the claims the 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. Recent development of community based natural resource management (wildlife) forums at district and national level are analysed.**

**Some of the key risks involved in this type of wildlife management institution building include the danger that one or more stakeholders may manipulate the process to achieve their own special interests. Another risk is that stakeholders without legislative authority may become sleeping partners, and that stakeholders may increasingly distrust each other rather than cooperate together. Numerous stakeholders with divergent interests may create a political impasse of scale. There is therefore no blue print on how to create the desired outcome of joint**

**management for wise use, but the paper argues that the costs of not attempting joint management are greater than the costs of trying.**

### **The Concept of Political Ecologies of Scale**

Political ecology here refers to the historical process whereby different hierarchical levels of vested interest at global, national, provincial and local levels determine the management of ecological resources. The heuristic term “political ecologies of scale” (Hasler 1995,2000) refers to the establishment of mutually beneficial arrangements between administrative, economic and political levels of society with the aim of establishing win/win situations that nurture the wise use of local resources for the future. The key assumption behind the term is that if local resources are well managed the entire society benefits, if they are poorly managed or destroyed by a special interest group, everyone loses in the long run. On this reasoning it is hoped that all political levels can be mobilized. As used in the articles cited above the term includes the principle that local participation in the management of local resources is a key mechanism in promoting the desirable management of resources and that local management of resources can enhance the efforts of the state, the private sector and other interests. The concept also emphasizes that if proprietorship of local resources is encouraged at local level, other levels need to be involved because local resources may be controlled, owned or used by national, global, district or other interests. Thus the encouragement of locally based management regimes and projects is not realistic unless key interests at other levels are supportive of this arrangement. Because of this issue of scale, local social organizations are more likely to effectively participate in the direct management, benefits, and proprietorship of resources if selected institutions at higher levels of social organization, such as global lobby groups and national politicians, themselves have a political and economic interest in sustainable locally based resource management. The concept of political ecologies of scale describes efforts towards creating such co-operation.

Political ecologies of scale therefore involve the forging of alliances between and within the various levels of the political hierarchy in order to influence outcomes locally. They also involve conflict resolution and co-operation between and within the various decision-making levels. Both alliance building and conflict resolution require the building of new institutions that link international, national, district and local interests in local resources. The aim is to facilitate wise management of resources by the people who live with or manage these resources on the ground. An assumption is that the establishment of alliances within and between levels thereby can allow effective ecological management through the political and economic structure.

### **The History of Political and Economic Interest in Local Resources**

A checkered history of differentiated global, national, district and local interests in resources exists throughout Africa. Competing interests often arise from historical causes, particularly the tendency for one group of interests to dominate others. Dynamic political processes in which groups compete for control over resources are the real agenda or real politics driving the broader process. These local

political dynamics can become an end in themselves and the domination of one interest group may cause the entire process to be co-opted by a single paramount special interest group. This may be a faction within the local community, a government department, a political party, the private sector or a global lobby group.

### **Risk and Cost: Avoiding a Political Impasse of Scale**

The concept of political ecologies of scale therefore bears considerable risk to all levels and to all participants. The costs of entering the experiment for decentralization is potentially high, as its breakdown may leave all participants in a worse situation suffering from unrealized expectations and wasted effort and resources. The danger of one of the stakeholders dominating the process, or of sleeping partnerships between government and communities is very real. The historical structure of competing land use strategies and the property rights regimes associated with particular land uses are critical for understanding how the decentralization experiment meshes with the reality on the ground. The case of the Okavango Delta illustrates this well as outlined below.

### **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 up stream users,
- ❖ Proposed damming of the river upstream and  
by other potentially competing and conflicting activities within Botswana (eg. past schemes for utilizing the water for the diamond mines or for irrigation), as well as
- ❖ competing activities within the Delta itself particularly the potential conflicts between utilizing the water dependent resources for agriculture, cattle production, wildlife utilization and tourism.

Note that these four issues above refer to one global problem, two international issues and one national/district/local issue. This paper argues that competing wetland use strategies in the Delta system are a product of competing property rights claims across these levels. Understanding and

addressing these claims can identify common solutions.

## **Key Conceptual Issues for the Okavango Delta:**

### 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 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. Some resources, in certain circumstances may fall into two or more of the above categories. Let us take, for example the rights of concession area leaseholders 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 eg. 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 resource are determined by political and economic factors at the various levels. For example, historically, national decision making processes or policy has determined that the water of the Okavango may be used for 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 Table 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). A discussion of key competing claims follows.

#### **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 utilization of water dependent resources is a part of hydro-politics because frequently this utilization determines the quality and amount of water available. For example, utilization of the Okavango Delta for primarily agricultural purposes would have an enormous impact on the water resource available.

In the case of the Okavango Delta some examples of 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: 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 that 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 utilization by particular nations, it is conceivable that these institutions and organizations 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 *real politic* of international hydro politics.

### **National Hydro-Politics**

National hydro-politics refers to the decision-making processes, which determine interventions in water and wetland utilization. The decision-making processes reflect the agenda's 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) emphasized food self-sufficiency while NDP7 (1991-1997) emphasized 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 NDP 8 the generation of revenue through Tourism was emphasized 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 outcome of National hydro-politics is the utilization of the Okavango Delta for various developmental purposes. Such interventions have included channel clearing and straightening to expedite recruitment of labour for South African Mines instigated by WENELA (a regional labour recruitment organization), 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 Department of Water Affairs (1966- present). In 1971-73 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. Mining is obviously high on the national agenda, as it is Botswana's single most important contributor to gross domestic product. Lastly the Southern Okavango Integrated Water Development Project which was an attempt to utilize further water from the Delta for downstream purposes including mining, agriculture and cattle production. The latter project was only rejected after the IUCN wetlands program 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". This later example is an illustration of how national development objectives involving the utilization of water could be quashed by dissenting local voices. The project was terminated.

### **District Planning Issues**

It is important to note that without the Delta water, tourism, wildlife utilization, 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 utilization, 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 an availability.

### **Local Hydro-Politics:**

Basarwa or Khoisan speakers were the first inhabitants of the Delta who utilized 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 utilizing 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 reinfested many areas there were

cattle posts on both the Kwhai and the Boro River, Tawana also had cattle posts on chief's Island during the first quarter of this century (Smith 1990:1-2). Malapo or flood regression agriculture reached a peak in the 1970s when an estimated 30,000 hectares utilized 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).**

<b>COMPETING CLAIM</b>	<b>INSTITUTIONS INVOLVED</b>	<b>LEVELS OF MANAGEMENT</b>
<b>Proposed Namibian Pipeline</b> (upstream)	Namibian Government, Botswana Government OKAKOM, Donor Agencies	National, International
<b>Proposed Dams in Angola</b> (upstream)	Angola Government, Donor Agencies, OKAKOM	National, International
<b>Anglo-American Corporation</b> off -take for Orapa mine (down stream)	Anglo American Corporation, Government of Botswana	National, International
<b>Implementation of Thoage Scheme</b> (to redirect channel flow)	Department of Water Affairs	District, National,
<b>Southern Okavango Integrated Water Development Project</b> (terminated)	Department of Water Affairs, Snowy Mountains Engineering Corporation	District, National, International
<b>Local Production Processes</b> (see diagram below) including tourism, wildlife utilization,	Local Communities, Private Sector and a range of Government Ministries	Local, District, National, International (see diagram below)



fisheries, agriculture, mining prospecting and water utilization		

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

**Contextual factors: From Substance 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, utilization 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 mobilizing 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."

**Contextual factors: 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 West 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 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 withdrawn or move on to higher ground if a flood reached this area. Fishing activities in the dried out flood plains start when the annual flood arrives which introduce commercial and subsistence

fishermen from other parts of the Delta and from the towns near by. Fishers use both Makoros and motorboats provided through the Government sponsored fisheries programme. The motor boats 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 motorized 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 Malapo (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, Malopo 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, Privatized Property, Open Access and State Property). These tenure regimes are in turn directly linked to particular administrative processes.

### **Tenure 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 (eg. 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 privatized through leasehold agreements (eg. 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 (Eg. its formal status), a privatized resource (accessing water under a lease hold agreement over a community wildlife area) a communal property resource (utilization in cattle posts) and an open access regime (where no controls are implemented on utilization 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". 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 program. 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 summarizing 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 and wildlife 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 & LEVELS OF MANAGEMENT**

<b>ACTIVITY</b>	<b>TENURE REGIME(S)</b>	<b>LEVELS OF MANAGEMENT</b>
<b>Veld Product Collection</b>	Communal, Open Access	Local,
<b>Cattle Posts</b>	Communal	Local, District,
<b>Wildlife Utilization (CBNRM)</b>	Communal	Local, District, National, International
<b>Wildlife Utilization (Commercial)</b>	Private	Local, District, National, International
<b>Fisheries (subsistence)</b>	Communal, Open Access	Local,
<b>Fisheries (commercial)</b>	Communal, Private, Open Access	Local, District,
<b>Tourism</b>	Private, Communal	Local, District, National, International
<b>Mining Prospecting</b>	Private, State	National, International
<b>Agriculture</b>	Communal, Private, State	Local, District, National
<b>Water utilization</b>	Communal, Private,	Local, District, National,

	State	International
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### **Social Fluidity in the Delta and its impact on Water and Wildlife Management.**

At local level, 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 (i.e. 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. Therefore, resource use patterns (malapo 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 future 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 natural resource use 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 and wildlife 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 centralization 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 natural resource management strategy.

### **Cross Scale issues**

The Okavango Delta therefore 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 of 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 fledgling 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 organizations, government departments at District and National level and 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.

The fledgling CBNRM forums in Botswana arose out of the need for institutional development in the USAID funded Community Based Natural Resource Management Projects. This project had strengthened government capacity for helping communities to set up economic projects that utilized natural resources (particularly wildlife) as a source of revenue for local communities (groups of villages and households identified by planners) but had not facilitated the development of institutions that brought together all stakeholders to the process. An initial forum of NGO's Government, Private sector and Communities was formed with a secretariat at the North West District Council in 1999 (Okavango Area). Subsequently a national CBNRM forum was formed, which was constituted by national level institutions representing Government, Private Sector, Ngo's and Communities. The process of action planning for CBNRM was going well for almost two years until Government decreed that all funds that had hitherto gone directly to communities would have to be administered through District Councils.

This caused an impasse for the forums as they felt that the Government was dictating without appropriate consultation. The reasons given for this were complex and varied and included: bureaucratic error, government reluctance to decentralize, lack of support for the CBNRM project in general and in particular from the livestock lobby, conflicts and mismanagement between and within communities arising from revenue management. A key problem was the equity and distribution of benefit issue. Stakeholders at national level, including cattle lobbyists and parliamentarians argued that wildlife was a national resource. Communities at district level who were not directly benefiting from revenue from lucrative elephant and big five hunting teamed up against their neighbours who were benefiting. Within areas where households were benefiting allegations of mismanagement and corruption were rife. The root cause of all this confusion was the ambiguity about property rights caused by the joint management regime.

The effect of the Government decree to control wildlife revenue was to create a political impasse of scale. This stalled the process because community based wildlife policy was not yet firmly enshrined in law as the policy was still in draft form. Analysts concluded that this was stumbling block but not the end of the process and that a gradual evolution towards community based wildlife management was still possible. In summary, some of the key risks involved in this type of wildlife management institution building include the danger that one or more stakeholders may manipulate the process to achieve their own special interests. Another risk is that stakeholders without legislative authority may become sleeping partners, and that stakeholders may increasingly distrust each other rather than co-operate together. Numerous stakeholders with divergent interests may create a political impasse of scale.

The competing interests, competing land use strategies, competing levels of management, competing property rights regimes, local factions and other local dynamics (as summarized in Tables 1 and 2 and the accompanying text) illustrate the complexity of working towards joint management where an internationally shared river basin is involved. There is therefore no blue print on how to create the desired outcome of joint management for wise use, but the costs of not attempting joint management in circumstances where divergent interests exist, is likely to be higher than the cost of trying to do this. In the extreme case scenario of the Okavango Delta, if upstream users turn off the tap, the Delta will not survive.

## **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 within and outside the Delta in terms of different tenure regimes and levels of management. It has shown that these competing activities and interests impact on the decision-making about resources and that this process largely determines the future of the Okavango Delta. The danger of a special interest group dominating decisions about local resources has been underlined as the key stumbling block for co-management initiatives and the establishment of what has been called “Political Ecologies of Scale”. Lastly this paper would like to stress that our time frame for evaluating results from co-management initiatives may be too short and that we should be thinking in terms of time scales that allow the evolution of institutions for appropriate joint management.

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