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Contested fishing grounds: Examining the possibility of a transboundary management regime in the Lake Kariba fishery

by Isaac Malasha

Commons southern Africa occasional paper series

No. 13

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management regime in the Lake Kariba fishery**

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April 2005

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Downloadable from www.cassplaas.org

An output of the joint Centre for Applied Social Sciences/ Programme for Land and Agrarian Studies project 'Breaking new ground: Approaches to people-centred natural resource management for development in southern Africa' (www.cassplass.org)

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Acronyms and abbreviations

Admade	Administrative Management Design for Game Management Areas
Campfire	Communal Areas Management Programme for Indigenous Resources
CBNRM	community-based natural resources management
CBO	community-based organisation
DoF	Department of Fisheries
EFZ	exclusive fishing zone
EMA	Environmental Management Act
GDP	gross domestic product
GMA	game management area
GTNA	Gwembe Tonga Native Authority
IMF	International Monetary Fund
IUCN	The World Conservation Union (formerly the International Union for the Conservation of Nature and Natural Resources)
IUCN ROSA	IUCN Regional Office for Southern Africa
JFTC	Joint Fisheries Technical Committee
NEAP	National Environmental Action Plan
NEP	National Environmental Policy
NPWA	National Parks and Wildlife Authority
RDC	rural district council
SADC	Southern African Development Community
SAFA	sub-area fishers' association
SAP	structural adjustment programme
TBNRM	transboundary natural resources management
WASHE	Water Sanitation and Health Education
WMU	wildlife management unit
ZIMOZA	Zimbabwe, Mozambique and Zambia Transboundary Natural Resources Management Project
ZINWA	Zimbabwe National Water Authority
ZMC	zonal management committees
ZWC	Zambezi Watercourse Commission
ZZJPC	Zambia/Zimbabwe Joint Permanent Commission
ZZSFP	Zambia/Zimbabwe SADC Fisheries Project

1 Introduction

Community-based natural resources management (CBNRM) programmes in the southern African region emerged as a reaction to colonial ‘fortress’ conservation policies that criminalised and marginalised local people, preventing their use of natural resources. These colonial approaches did not lead to the sustainable use of the resources. They merely contributed to continued conflicts between government agents and local users. In the immediate post-colonial period very little was done to rectify these policies. It was only in the mid-1980s that a paradigm shift towards CBNRM began to occur. The political integration brought by the formation of the Southern African Development Community (SADC) presented favourable conditions for the scaling-up of these CBNRM initiatives. Transboundary natural resources management (TBNRM) projects began to be implemented in the joint-management of resources that straddle international boundaries.

Objectives of the study

The general objective of this study is to propose a TBNRM arrangement for the Mlibizi Basin of Lake Kariba. The justification is borne out by the fact that both Zambia and Zimbabwe have embraced policies that promote CBNRM and TBNRM. These ‘people-centred’ conservation policies have not led to the resolution of conflict in the Mlibizi Basin of Lake Kariba where fishers from the two countries utilise the same ecosystem under different management regimes. It will be the purpose of this paper to explain basis of the conflict and use examples from the existing TBNRMs in other natural resources such as wildlife to suggest how a similar arrangement in the basin can lead to an equitable and sustainable use of this contested artisanal fishery.

Lake Kariba

Lake Kariba, which is 277km long and covers a surface area of 5 364km², straddles the Zambia/Zimbabwe border. About 45% of the water surface lies on the Zambian side and the rest is on the Zimbabwean side of the lake. Today it is the second largest water body, by volume, in Africa. The lake has five hydrological basins running from east to west. The focus of this study will be on the narrowest part of the lake known as the Mlibizi Basin. While artisanal fishing in the rest of the lake has no effect on fishers from either country, due to the deep channel between the shores, this is not the case in this particular basin. Not only does the Mlibizi basin exhibit riverine characteristics due to the influence of the Zambezi River, but it is also so narrow that artisanal fishers from both countries utilise the same ecosystem, albeit under different regulatory mechanisms. The artisanal fishing patterns for fishermen from Zambia and Zimbabwe are very simple because only one type of gear (the gill-net) is used. These gill-nets are set from fibre boats and dugout canoes, most of which are not equipped with mechanised propulsion systems.

Management

Lake Kariba came into being in the late 1950s following the impoundment of the Zambezi River for the primary purpose of generating hydro-electricity. Since this period the Zambian side of Lake Kariba has been under the central management of the Department of Fisheries (DoF). In 1993 the DoF, operating under the auspices of a donor-funded programme known as the Zambia/ Zimbabwe SADC Fisheries Project (ZZSFP), instituted a fisheries co-management arrangement which led to the decentralisation of management and the inclusion of fishers and local traditional leaders in structures known as zonal management committees (ZMCs) (Malasha 2002). The Zimbabwean side of Lake Kariba is designated as a recreation park. From a legal point of view it is controlled by the state through the National Parks and Wildlife Authority (NPWA). The NPWA limits access, closes areas to fishing and restricts fishing gear methods. A permit system is in place in terms of which the NPWA informs the local authorities which border the fishery of the limits placed on the number of fishing permits that may be issued for the particular year. In 1993 the NPWA decentralised some of

its management roles through the designation of exclusive fishing zones (EFZs) for artisanal fishers. In these zones the fishers were to determine who was to use the resource, who was to be excluded from the resource and how the resource was to be used (ZZSFP 1998a).

Artisanal fishing

On both the Zambian and Zimbabwean shores of Lake Kariba, artisanal fishing competes with other economic activities such as the generation of hydroelectricity, tourism and a thriving semi-industrial fishing industry targeting a sardine known as Kapenta (*Limnothrissa miodon*). From a macro-economic perspective, artisanal fishing does not contribute as much as the other economic activities to the gross domestic product (GDP) of the two countries. However, artisanal fishing does affect the operation of these other economic activities and vice versa. On the Zimbabwean shoreline where there is a vibrant tourist industry, artisanal fishing is considered to have reached its limit and that expansion might lead to the collapse of the sector that attracts much-needed foreign currency (ZZSFP 1996). Both DoF and the NPWA view artisanal fishing as being 'labour intensive, subsistence oriented', and that it 'consists of a poorly organised marketing system...having little management of any kind' (ZZSFP 1998b).

Despite these views, artisanal fishing plays an important role in the livelihoods of many households on both shorelines. On the Zambian shoreline artisanal fishing commenced in the late 1950s as soon as the water levels began to rise. In line with the existing *laissez-faire* policy towards the industry, artisanal fishers were allowed to fish anywhere along the lakeshore and own as many fishing gill-nets as they could afford (Malasha 2003; Kolding et al. 2003). During these early years about 2 500 fishermen were recorded as being active in the fishery, but by 1967 the number had declined to about 500 (Kolding et al. 2003). It was only during the 1980s that the number of fishers increased to the pre-1967 levels. The post-1980 increase is attributed to the contraction of the formal sector and a decline in industries that provided employment when the country began to implement structural adjustment programmes (SAPs). This prompted most of the people who had lost their employment in the formal sector to enter (or re-enter) the fishery (Jul-Larsen 2003:233–52). Similar 'boom and bust' dynamics in the artisanal sector have also been observed on the Zimbabwean shoreline. On this shoreline the movements in and out of the fishery have not been as dramatic as on the Zambian shoreline. Kolding et al. (2003) attribute this to a good macro-economic situation which could afford to employ people in other non-fishing sectors. This was, however, to change in the late 1990s when there was a sharp increase in the number of fishermen on the Zimbabwean shoreline as a result of the declining macro-economic situation in the country (Songore 2000).

The movements of fishers in and out of the fishery as a result of the changing macro-economic factors give an indication of the importance of the artisanal sector in the Lake Kariba fishery. Despite its minimal contribution to the two countries' GDP artisanal fishing provides a safety-net function to thousands of households. As shown above, the contraction of the formal economy pushes people into the fishery thereby providing an alternative or additional source of income, employment and food. Largely, this is because of the low capital required for one to become an artisanal fisher. Secondly, the easy entry-requirements, especially on the Zambian shoreline, makes the fishery a perfect safety net for those who have lost their employment in other sectors of the economy. According to Béné (2004) artisanal fishing such as that found in Lake Kariba does not generate high economic returns but instead helps vulnerable households to sustain their livelihoods and prevent them from falling deeper into deprivation.

Definitions and concepts

The problem of managing natural resources has always been to harvest from a resource today in such a manner that it is still available to the other appropriator tomorrow. It is difficult to physically bar potential beneficiaries from accessing the resource. In addition, the units harvested by one individual will not be available to others. The best known attempt to explain this was that of the

‘tragedy of the commons’ (Hardin 1968). The assumptions behind Hardin’s view have been disputed. Scholars and researchers have observed that, firstly, users of a resource are not all selfish individuals whose primary motive is to overexploit a resource upon which their livelihoods depend, and secondly, there are effective institutions at the local level capable of protecting the resource from unsustainable exploitation (Acheson 1989:351–475). Research to identify the characteristics of long-lasting resource systems have been carried out by various researchers within the New Institutionalist School. Scholars such as Robert Netting (1976), Daniel Bromley (1992), Elinor Ostrom (1990), David Feeny (1994) and Fikret Berkes (1995) have sought rules governing the management of resources that are robust and continue to be used over a considerable period of time. Research revealed that these systems were not only resilient, but appropriation rules were devised and kept being modified over time according to a set of ‘collective choice’ and ‘constitutional choice’ rules (Shepsle 1989). This led to the identification of seven design principles that appeared to characterise such resource institutions. Ostrom (1990) defines the design principle as ‘an element or condition that helps account for the success of these institutions in sustaining the common-pool resource and gaining the compliance of generation after generation of appropriators to rules in use’. These design principles have been influential in the formulation of CBNRM programmes in the southern African region. CBNRM is generally taken to refer to the devolution of control and management authority over communally-held resources (Murombedzi 1996). The concept itself is generic and refers to different government or user arrangements. CBNRM programmes are based on the premise that clearly-identified communities have a much greater interest in the sustainable use of resources than does the state or its agents or even private interests.

The enabling political environment created by the formation of SADC provided an opportunity to use the experience gained from CBNRM programmes to expand these initiatives across borders. There was a realisation that further political and economic integration could be achieved by creating systems for the joint management of resources that straddled international boundaries. It was at this juncture that TBNRM programmes began to emerge from the success of CBNRM. TBNRM is used to refer to any process of co-operation across international boundaries that facilitates or improves the management of various natural resources to the benefit of all parties in the area concerned (Griffin et al. 1999). The concept is similar to the ‘ecosystem approach’ used by the World Conservation Union (IUCN). The ecosystem approach is a mechanism designed to balance conservation, sustainable use and equitable sharing of genetic resources (Bennett 2004).

Principally, TBNRM promotes the management of shared ecological systems such as watersheds, river systems or migratory species. Through TBNRM initiatives, issues such as compliance can be addressed, thereby providing regulatory measures that meet the concerns of all countries concerned. Another strand of thought views TBNRM programmes as promoters of long-term peace and stability, especially in post-conflict areas. According to Roberts (www.interdisciplinary.net) the majority of funding in post-conflict zones is focused on human life and welfare at the expense of the environment. He argues that a focus on cross-border environmental concerns might even be more helpful. A principal feature of the TBNRMs that has been borrowed from CBNRM programmes is that, apart from the need to conserve the jointly-owned resources, there is also emphasis on the role of the market in providing revenue to an array of actors involved. Consequently, the formation of TBNRMs has attracted various relationship partners among governments, donor agencies, multilateral lending organisations and private business interests, especially in the tourism sector.

2 A critique of CBNRM and TBNRM

CBNRM and TBNRM initiatives have been criticised at two levels. First, there is a criticism based on the theoretical foundation upon which they are premised. The second criticism is empirical. The assumption that communities that manage natural resources are homogenous and located in a well-defined geographical space and have identical interests has received extensive disapproval. Berry (1993), Brosius et al. (1997) and Peters (2000) have observed that within any specific groups of resource-users there are other identities based on type of household, gender, village and kinship networks that determine access to resources. Terms such as ‘community’, ‘rights’ and ‘traditional’ are used generically within the CBNRM and TBNRM discourse without regard to local contests for power. At a more empirical level, it is increasingly being shown that CBNRMs and TBNRMs have not managed to eradicate poverty – one of their key goals. The continued prevalence of high poverty levels where most of these initiatives have been implemented have been seized upon by conservation lobbies, who argue that conservation and the sustainable use of a resource is a contradiction and cannot contribute to the eradication of poverty (Turner 2004). They propose that the solution is not to create community-based programmes, but to establish protected areas with the primary objective of conserving the biodiversity at the expense of local livelihoods. Peters (2000) further argues that CBNRM has not led to real decentralisation of administrative and financial authority and resources. Instead, local people have been further burdened by demands for labour and cash from their government or its agents. The role of international organisations, multilateral lending agencies and Western conservation organisations in the promotion of CBNRM and TBNRM initiatives has also come under increasing scrutiny. It is argued that more than promoting the use of resources for the benefit of local communities, these external forces merely shift resources away from local strategies for livelihoods and empowerment towards the interests of the foreigners which they represent (Brosius et al. 1997).

3 Decentralisation and community participation in Zambia and Zimbabwe

The need to decentralise the management of natural resources in Zambia and Zimbabwe has been informed by three factors. First, both countries have attempted to implement policies that seek to reduce the poverty that is prevalent in the communal areas. The new policies seek to give priority to previously marginalised communities as a means of improving the conservation of resources and improving livelihoods. Related to this is the fact that both countries have attempted to reverse the discriminatory and racial manner in the way resources were accessed and used in the colonial and immediate post-colonial period. The third determinant has been the effects of structural adjustment programmes advocated by lending institutions such as the International Monetary Fund and the World Bank. Both countries have implemented SAPs at different times in an effort to revive their declining economies. This has meant reducing government expenditure and making users meet the full cost of accessing services and resources.

In Zambia the National Environmental Action Plan (NEAP) of 1994 is founded on the principle that local communities and the private sector should participate in natural resource management (Government of the Republic of Zambia 1994). This action plan was meant to consolidate the gains made in the management of resources such as wildlife, in a context of declining government expenditure on rural development. In terms of actual implementation, the best-known CBNRM programme in Zambia is Administrative Management Design for Game Management Areas (Admade). This was initiated in the wildlife sector in 1988 following an increase in the decimation of wildlife through poaching. Like most CBNRM programmes, Admade is premised on transferring the responsibilities and benefits of managing wildlife to the rural communities living in game management areas (GMAs) through the creation of wildlife management units (WMUs). This approach is aimed at reducing the cost of conserving wildlife by ensuring that benefits from trophy hunting are distributed fairly among members of the communities in GMAs. In 1999 the Wildlife Act was amended, giving communities legal rights to manage and protect their wildlife resources (Mwenya et al. 1990). The accomplishments of Admade led to the implementation of similar arrangements in the fisheries sector. It was reasoned that the decentralisation of authority to fishermen was the most efficient and cost-effective system of fisheries' regulation as it promoted collective self-interest in sustainability (Chipungu & Moinuddin 1994). This authority was to be transferred to committees of users known as zonal management committees.

Within the water sector emphasis has been on ensuring adequate delivery of the resource and recovery of costs rather than decentralisation. The lack of a clear policy and the multiplicity of institutions in water affairs led to the design of a National Water Policy in 1994. The policy sought to ensure the equitable provision of water for all competing users at an acceptable cost (www.rion.org/wwf/WDM-initiative-Zambia). It was designed at a time when the country was undergoing the privatisation of its public sector in conformity with the dictates of structural adjustment programmes. In urban areas, local authorities created commercial enterprises to supply water to residents at cost. This reduced the role of local authorities in directly providing water to residents. In peri-urban areas community-based organisations (CBOs) were formed to improve co-ordination in the delivery of water. In rural areas water sanitation and health education (WASHE) programmes were implemented under the National Water Policy. The purpose of WASHE was not so much the management of water resources, but the enhancement of public awareness of water conservation.

At a rhetorical level, efforts have also been made to decentralise the management of forests to users. The principle of the NEAP within the forestry sector is to encourage local community and private sector participation in the use of forest products. This follows numerous problems experienced in terms of lack of clear policy for user-participation. The 1998 Forest Policy recognised this problem and proponents implored the Forest Department to encourage the active involvement of local

communities in the protection and utilisation of forest resources, through the promotion of local development committees similar to those in wildlife (Government of the Republic of Zambia 1999). This was achieved through the Forest Act of 1999 that led to the establishment of the Zambia Forestry Commission. The Act further led to the establishment of joint forest management areas for the participation of local communities, traditional institutions and other actors in the sustainable management of forests. The forest management areas were to be under the control of forest management committees which would ensure that forests were used in a sustainable manner.

Until recently when the Environmental Management Act (EMA) was enacted, the principal legislation governing the use of resources in Zimbabwe was the Natural Resources Act. The Natural Resources Act had a shortcoming in that it was not applicable in communal areas where tenure of resource is determined by traditional rights. It was through the National Environmental Policy (NEP) that such anomalies were corrected by consolidating the gains made in the conservation of resources while improving peoples' access to them. The policy objective is to avoid a 'tragedy of the commons' by maintaining biodiversity 'so as to sustain the long-term ability of natural resources to meet basic needs and to promote the participation of the public through the creation of effective institutional framework' (Government of the Republic of Zimbabwe 2004). A well-documented CBNRM programme which provided the inspiration contained in the NEP is the Communal Areas Management Programme for Indigenous Resources (Campfire) programme. Campfire seeks to encourage commercial farmers and those residing on communal lands to view wildlife as an economic asset that can promote both rural development and conservation (Hasler 1996:30).

The institutional framework of Campfire is located within local government structures. A 1982 amendment to the Parks and Wildlife Act of 1975 allowed the minister responsible to confer 'appropriate authority' to rural district councils (RDCs), permitting them ownership rights over natural resources. Benefits from Campfire projects are used to meet the infrastructural needs of rural communities such as schools, health centres and grinding mills. In some instances communities are given direct monetary incomes. The Campfire principle was soon recognised as a way of effectively managing aquatic resources. In 1993 the NPWA instituted a fisheries co-management of the inshore fishery of Lake Kariba. Like other CBNRM programmes, this arrangement sought to confer management rights to an identified group of fishers over specific fishing grounds. This was borne out of the realisation that the land tenure system on the shoreline did not permit fishermen to have permanent homes. Consequently, fishermen resorted to all sorts of illegal fishing activities in order to catch the most fish within the shortest period of time (Machena 1993). This compelled fishermen to encroach on closed fishing grounds, thereby bringing them into conflict with other actors, especially those within the tourist industry. To resolve these conflicts, the fishermen were to be given the responsibility of determining who gained access to designated fishing grounds or exclusive fishing zones (EFZs). Like in the wildlife sector 'appropriate authority' was to be given to fishermen operating in particular EFZs through their RDCs. This was to be a form of communal property regime in which user rights for the resource were to be controlled by an identifiable group and are not privately owned or managed by the government (ZZSFP 1998a).

Like in the wildlife sector, changes that occurred in the water sector were informed by the need to alter the discriminatory colonial policies. Between 1920 and 1998 access rights to water were closely linked to land rights (Mtisi & Nicol 2003). Subsistence and communal farmers did not have rights to land, so they could not legally access water. The water sector reforms of 1998 sought to change this status quo by addressing the colonial injustices in water and land and the need to broaden the funding base in the face of dwindling government resources (Mtisi & Nicol 2003). This was achieved by abolishing the racial connotations associated with access to water. The 1998 changes to the Water Act led to the creation of a parastatal known as the Zimbabwe National Water Authority (ZINWA) whose responsibilities was to co-ordinate the development, management and

conservation of water resources. The Act further democratised and decentralised the water management role to the lowest levels of catchment and sub-catchment councils.

Management problems within the forest sector have revolved around the need to maintain a vibrant plantation-based industry that employed about 14 000 people in 2002 and meet the needs of local people, the majority of whom reside in communal areas. As a result emphasis has tended to fall on the need to avoid deforestation and degradation of the forest resources as this would have a negative impact on the industry. In communal areas, where about 43% of the country's forests are located, the use of forests is controlled by the Communal Lands Forestry Act of 1975. This Act allows people in communal areas to make use of their forests for everyday needs such as grazing and forest-products. The act does not however allow for commercialisation of forest products in the communal areas. The Forest Department is in charge of all gazetted forest areas and the emphasis is on reducing deforestation and degradation of forests. With the land reforms the Forest Department has not adequately supervised most these areas as they have fallen victim to clearance for agricultural land and fuel-wood.

4 Towards TBNRM in the inshore fishery of Lake Kariba

Different management systems have operated on both shorelines since artisanal fishing commenced. The Zambian fishing policy is to maximise fish production for the purposes of meeting the food requirement of urban workers and to ensure employment in the rural areas. Consequently, fishermen are allowed to own as many nets as they can afford and entry is almost free. On the Zimbabwean shoreline, certain parts of the lake are closed to fishing to protect the interests of the tourist industry. Furthermore, the NPWA has an effective management unit organised along semi-military lines to make certain that fishing regulations are adhered to. While these different management systems are not necessarily a problem in the rest of the fishery, conflicts arise in the narrow parts of the fishery such as the Mlibizi Basin.

Fishing regulations

The different fishing regulations have been a major source of conflict in the basin. Fishing regulations on the Zambian shoreline do not place any limit to the number of nets a fishermen can own. Furthermore, the minimum mesh-size allowed is much smaller than that allowed on the Zimbabwean side of the lake. Survey figures indicate that in 1990 there were 140 Zambian artisanal fishermen operating in the basin while the Zimbabwean figure was 120 (ZZSFP 1998b). These Zambian fishermen owned 132 boats of various kinds and had a total of almost 2 000 gill-nets compared to 79 boats and 240 nets for the Zimbabweans (ZZSFP 1998b). Another survey revealed that the number of Zambian fishermen had increased to 613 while on the Zimbabwean side there had been a decline to only 63 (ZZSFP 1999). During the same period the number of gill-nets owned by the Zambians almost trebled to 3 069 compared to the 1990 figures. There was also an increase in the number of nets recorded on the Zimbabwean side despite a decrease in the number of fishermen. In 1995 the number of Zambian fishermen in the basin declined significantly to 225 (Chitembure 1996; Jul-Larsen 2003). This decline was attributed to new fishing and settlement regulations that were brought about through the introduction of the fisheries co-management project (Malasha 2003).

By 1998, however, the number had again increased to 400 while on the Zimbabwean side it was 216. During the same period the Zimbabwean fishermen had about 687 nets (Songore 2000; ZZSFP 1999). The figures presented above clearly show that Zambian fishermen exert more effort and hence catch more fish in the basin than their Zimbabwean counterparts. Not only are Zambian entry rules easier than those of the Zimbabweans, the fishermen are also allowed to have more nets with smaller mesh-sizes. This means that their capacity to catch fish is far higher than that of Zimbabweans. These discrepancies have been a major cause of the current conflicts.

Fishing grounds

When Lake Kariba came into being, different land tenure systems applied to the shoreline. On the Zambian side of the lake, the land was classified as 'native reserve area'. This classification allowed the then Gwembe Tonga Native Authority (GTNA) to be consulted whenever changes to the land tenure system were to be made. As the water levels began to rise it was realised that there would not be sufficient agricultural land on which to resettle most of the displaced people. The GTNA decreed that due to these problems most of the local people would have to take up fishing. Consequently, the entire shoreline was open to allow the local population to take up artisanal fishing. This policy has remained intact since the 1950s. As the water levels began to rise on the Zimbabwean shoreline, the reservoir was designated as a recreational park. In addition, the authorities created safari areas and national parks, all of which had the lake as their frontage. Artisanal fishing in waters adjacent to the Chete Safari Area, most of the Matusadona National Park and parts of the Charara Safari Area is not allowed. Other restrictions are in place for river mouths, large population centres, harbours, and

river estuaries. At present about 470km² (63%) of the fishable water on the Zimbabwean side is available to the inshore fishery while the rest is closed (Marshall et al. 1982).

This situation has led to a number of conflicts in the Mlibizi Basin. Zimbabwean artisanal fishermen have been encroaching on the closed grounds in search of better catches. This leads them into direct confrontation with the NPWA and the safari operators. The artisanal fishermen are accused of targeting the tigerfish population, leading to a decline in the quality of sport-fishing which attracts a lot of tourists (ZZSFP 1996). The authorities have responded by taking a heavy-handed approach to control this illegal fishing. Zimbabwean artisanal fishermen caught fishing in closed areas have their fishing equipment seized and their boats sunk. Similarly, Zambian fishermen found fishing on the Zimbabwean side of the border receive the same treatment from security agents. The small-meshed gill-nets, in particular, used by Zambian fishers, are perceived to be very harmful to the sport-fishing species targeted by tourists.

Fish marketing

The Zambian part of the Mlibizi Basin is isolated from the major consumer areas. The nearest town Lusaka is more than 200km away from the fishery. The state of the road infrastructure is such that during the rainy season the roads become impassable. The nearest alternative market for Zambian fishermen is in Binga on the Zimbabwean shoreline. It is also in this town the Zambian fishermen obtain most of their essential commodities. The major constraint at the moment is that Zambian fishers land their fish on the Binga market informally. An informal network of Zimbabwean security officials buy the fish from Zambian fishermen at a lower price than is charged by Zimbabwean fishers. The justification is that Zambian fishers receive protection from penalties for entering the country illegally. The fact that Zambian fishers own more nets and nets with smaller mesh than their Zimbabwean counterparts and that they are not subject to standard controls on the price of fish has given rise to conflict. Catches go bad as Zimbabwean fishermen are not able to compete with their Zambian counterparts.

Table 1: Management of Lake Kariba

	Regulation enforcement	Fish prices	Fishing nets	Fishing grounds	Entry requirements
Zambia	Lack of capacity to enforce regulations. No specific unit within DoF dealing with enforcement. ZMCs assist in resource monitoring.	Determined by the market.	No limit on the number of nets. The legal minimum mesh size is 76mm of stretched mesh.	Allowed to fish anywhere. Can also engage in other agricultural activities on the lake shore.	Entry into fishery is in principle free, but fishers must operate from designated fishing camps.
Zimbabwe	A specific unit deals with enforcement of fisheries regulations. Sub-area fishers' associations assist with resource monitoring.	Controlled by local authorities.	Maximum number of nets allowed is five. Legal minimum mesh size is 100mm of stretched mesh.	Restricted to designated fishing grounds. Cannot engage in other economic activities on the inshore.	Entry controlled through permit system by NPWA and local authority.

Designing a framework for the basin

There is already a legal framework which could form the basis for the creation of a TBNRM to resolve the conflicts in the Mlibizi Basin. Zambia and Zimbabwe are signatories to the SADC treaty

which defines the basis for regional integration and co-operation in the management of shared resources. The two countries are already implementing a joint-management initiative known as Zimbabwe Mozambique and Zambia Transboundary Natural Resources Management Project (Zimoza). The two countries are also signatories to a number of protocols such as the SADC Wildlife Policy, the SADC Protocol on Wildlife Conservation and Law Enforcement and the revised SADC Protocol on Shared Watercourses. Furthermore, the two countries signed the Zambezi Watercourse Commission (ZWC) that came into force in 2003. Apart from being a mechanism through which conflicts can be settled, the ZWC also seeks to foster among the inhabitants of the Zambezi watercourse, of which Lake Kariba is a part, greater awareness of the equitable and reasonable utilisation and the efficient management and development of the resources of the Zambezi River (Munjoma 2004:1–8).

At national level, Zambia and Zimbabwe have policies that seek to devolve the management of natural resources to users. In the early 1990s this philosophy was transferred to Lake Kariba where both countries instituted fisheries co-management arrangements. During this process a protocol was signed on Economic and Technical Cooperation between the Government of the Republic of Zambia and the Government of the Republic of Zimbabwe concerning the management and development of fisheries on Lake Kariba and transboundary waters on the Zambezi River. It forms the legal basis for the joint Zambia/ Zimbabwe institution for the management of the lake. Within the protocol the Zambia/ Zimbabwe Joint Permanent Commission (ZZJPC) represents the highest level of political liaison. Issues related to fishing are conducted under the auspices of the Joint Fisheries Technical Committee (JFTC) composed of members from DoF in Zambia and the NPWA in Zimbabwe. Although the mandate of the JFTC is to be responsible for all fishery matters related to Lake Kariba, this has mainly been confined to the allocation of harvesting quotas for the Kapenta industry. Artisanal fishermen are currently not represented on the JFTC.

The most pertinent question at the moment is why these legal frameworks have not led to the creation of a TBNRM in the Mlibizi Basin, given the numerous conflicts which exist. Firstly, the manner in which the management of the fishery emerged and is being implemented gives the impression that fishers from either country are competing against each other. This view is engendered by the fact that the fishing regulations are seen as giving Zambian fishers an undue advantage. State security agents exacerbate this animosity by taking a heavy-handed approach in the name of controlling over-exploitation of the fishery when in essence they are actually protecting the interests of other economic actors such as the tourist sector.

Secondly, the fishermen from either shoreline do not realise that they utilise a common ecosystem and that it is only through co-operation that the conflicts can be resolved. The institutionalisation of co-management arrangements in the early 1990s on both shorelines presented an opportunity to address how the Mlibizi Basin is utilised. This opportunity was lost because the co-management arrangements on both sides of the border were not extended to include cross-border co-operation with similar institutions. Instead, the ZMCs on the Zambian side address issues related to the Zambian side of the fishery while the sub-area fishers' associations (SAFAs) concentrate only on matters related to the Zimbabwean side. Furthermore, issues related to artisanal fishing are not usually on the agenda of the JFTC. The various protocols have been used to create an enabling environment for fishers to begin to seek holistic solutions to the problems they face in this shared ecosystem.

Thirdly, there is lack of official recognition of the need for a TBNRM in the basin because of the perceived low economic value attributed to artisanal fishing. A review of the current TBNRM arrangements indicate that one of the major objectives for their formation is economic, especially as a result of increased tourist revenues (Katerere et al. 2003). As a result, the TBNRMs have attracted actors from business, international conservation NGOs and local governments. In contrast artisanal fishing is largely for subsistence with few benefits accruing to national and local governments and other influential actors. In the case of Lake Kariba, artisanal fishing is not even on the agenda of the

ZZJPC whose broad objective is for the ‘management and development of fisheries on Lake Kariba and transboundary waters on the Zambezi River’.

Finally, and related to the above, artisanal fishing in the Lake Kariba fishery is regarded as a low priority compared to other activities such as Kapenta fishing. It is estimated that in the 1980s the Kapenta industry employed more than 5 000 people in Zambia and Zimbabwe. On the Zimbabwean shoreline the Kapenta industry accounts for about 93% of wet fish landed and most of the infrastructure on that side of the shoreline has been built for this fishery (Bourdillon et al. 1985). Apart from employment opportunities, the industry is a major source of revenue for local and licensing authorities.

Given the above, the challenge for CBNRM and TBNRM practitioners is to find an agent that can stimulate co-operation between artisanal fishers in the basin. Examples from the wildlife sector, where TBNRM arrangements have been implemented over a number of years, show that the role of a ‘stimulant’ has been played by a number of local and foreign actors with diverse interests. Conservation groups from the north, donor agencies, local governments and even academic institutions have all been instrumental in the promotion of TBNRM within the wildlife sector (Katerere et al. 2001). In comparison, similar institutions and attention is missing when it comes to artisanal fishing. The primary reason is that from an economic point of view artisanal fishing does not attract the attention of the various actors such as conservation groups, donor agencies and even local governments. This is in spite of increasing evidence of the vital role that artisanal fishing plays in the livelihoods of the majority of vulnerable households, as has been shown in the southern African region (Jul-Larsen 2003; Béné 2004). In the absence of an agency that promotes the role of artisanal fishing and the need for TBNRM, the resolution of the conflicts in the basin will take much longer.

Creation of a commons

Despite these challenges, from a practical point of view it is only through the designation of a part of the basin as a ‘commons’ that the conflicts can best be solved, while at the same time protecting the interests of other more economically influential fishery actors. This commons will have to take into consideration the organisational capacity of fishers. For it to operate effectively, the commons will have to be legally recognised within the context of the JFTC. This will enable fishers from both countries to begin to address the various issues which have been a source of conflict. These include the number of nets each fisher may possess and the minimum size of nets that can be employed. A quota system may also have to be introduced, given that there are more Zambian fishers.

In terms of institutional arrangements, a stakeholder forum comprising of the ZMCs and SAFAs, the local authorities, the Kapenta fishermen, the tourist sector and other representatives of the various economic interests in this part of the lake, should be part of the already existing Joint Fisheries Technical Committee of the ZZJPC. This forum will provide a platform from which issues related to the way the commons will be used, can be addressed. Other pertinent issues which have led to conflict and which require attention, include fish-marketing and pricing arrangements, security concerns, and cross-border movements.

Studies conducted in the freshwater fisheries of southern Africa suggest that the creation of such a commons would serve a number of purposes for thousands of households (Jul-Larsen 2003). Firstly, in the Mlibizi Basin itself this would reduce a conflict that has led to fatalities when artisanal fishers target the same species in a jointly-accessed ecosystem. Secondly, the commons would serve as a vital safety-valve for thousands of people who lose their livelihoods in other sectors. It would cushion households from falling further into poverty as a result of loss of employment in other sectors, or due to low agricultural productivity in a region that is prone to droughts. Thirdly, owing to the existing co-management institutions on either shoreline, the management of such a commons would not be prohibitive as is the case in other TBNRM arrangements that have spawned several

layers of bureaucratic instruments. The proposed stakeholder forum would be a sufficient vehicle through which to manage the commons.

Opposition to such a commons would inevitably come from other actors, especially the tourism sector. However, recent research has indicated that the type of technology used by artisanal fishermen in Lake Kariba does not have the potential to over-exploit the resource base and threaten the activities of other actors. Furthermore, the closing-off of certain parts of the fishery to protect the spawning ground of sport-fishing species such as the tigerfish, as is the current situation on the Zimbabwean shoreline, does not have much biological justification (Jul-Larsen 2003). Even within the NPWA there is debate on the relevance of closing-off certain areas to artisanal fishing (ZZFSP 1998a). Such factors would be sufficient grounds to obtain official support for the creation of a commons in the Mlibizi Basin.

5 Concluding remarks

This paper set out to propose a TBNRM framework for the Mlibizi Basin of the Lake Kariba fishery. It was observed that both Zambia and Zimbabwe have embraced the concept of CBNRM and TBNRM, which forms the basis for the joint management of this fishery. These factors set the stage upon which to develop a TBNRM framework for the basin. At the same time it was observed that a number of challenges related to artisanal fishing and other similar resources will have to be addressed if this arrangement is to succeed. It was noted that most of the CBNRM and TBNRM initiatives have tended to focus on those resources that attract national and global attention, such as wildlife. Low-economic value resources such as artisanal fishing have not been accorded the same priority. It is this point that forms another challenge to the theory and practice of CBNRM and TBNRM. They are premised on the understanding that the resources to be conserved will more than pay for themselves through extensive use of the market. In the case of TBNRM the market is the global tourist market. The discourse does not address how TBNRM can be achieved in resources that do not attract global or even national interest. It is postulated that the joint management of such resources will largely remain at a rhetorical level only. The second challenge is the biological dynamics and how they relate to the operation of the institutions that would have been created for TBNRM. In the case of Lake Kariba, the biological cycles influence the entry and departure of fishermen into the fishery.

The paper has suggested that a solution to the problem would be through the creation of a commons in the basin. This commons would have to take cognisance of the interests of other actors, and of the administrative abilities of the fishers themselves. Although there may be opposition to the formation of such a commons, such opposition would largely be based on data that does not justify the manner in which the fishery is currently managed. It is argued that the gear used by artisanal fishermen and the role that the fishery plays in poverty alleviation would more than justify the need for the creation of a common fishing ground for fishers from the two countries.

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