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Challenges of co-management on shared
fishery ecosystems: The case of Lake Chiuta

by Friday Njaya



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**Challenges of co-management on shared fishery
ecosystems: The case of Lake Chiuta**

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**Centre for Applied Social Sciences
and
Programme for Land and Agrarian Studies**

Challenges of co-management on shared fishery ecosystems: Case of Lake Chiuta
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Abbreviations and acronyms

CBNRM	community-based natural resource management
DoF	Department of Fisheries
MAP	Ministry of Agriculture and Fisheries
TBNRM	Transboundary natural resource management
ZIMOZA	Zimbabwe-Mozambique-Zambia TBNRM project

Executive summary

As part of the Centre for Applied Social Sciences (CASS)-Programme for Land and Agrarian Studies (PLAAS) 'Breaking New Ground' project, a study was commissioned on Lake Chiuta between August 2004 and March 2005 to identify the major challenges of implementing co-management in shared ecosystems. There are frequent conflicts among fishing communities on Lake Chiuta mainly due to definitions of resource boundaries and membership, the limited empowerment of the user communities because of weak decentralised structures, and the application of different policy frameworks and rules on the two sides of the lake. However, opportunities exist for co-operation as the fishing communities share the same culture, traditional values and language. They recognise the roles of their traditional leaders and both governments – of Malawi and Mozambique – have adopted community participation approach in their development projects. Both countries have also signed various international conventions, agreements, and protocols that deal with conservation and management of natural resources.

The process of establishing Lake Chiuta transboundary fisheries co-management started in 2002, and still falls largely in Phase I. Both Malawian and Mozambican fishing communities need to continue to share information and ideas on how to develop a common management strategy to reduce conflicts. Further steps in Phase II include a formal agreement to be signed between the two parties and harmonisation of policy and legislative frameworks. The final stage, Phase III, will involve consolidation of the whole process.

1 Introduction

Fisheries co-management initiatives have been implemented in various water bodies of southern Africa since the 1990s (Geheb & Sarch 2002). A Participatory Fisheries Management Programme (PFMP) was introduced on Lakes Malombe, Chilwa and Chiuta in Malawi between 1993 and 1995 (Bell & Donda 1993; Hara & Banda 1997). In Zambia and Zimbabwe, the co-management arrangement has been implemented on Lake Kariba since mid-1990s (Hachongela et al. 1998; Malasha 2003), while Mozambique and South Africa are implementing the initiative in selected areas along the coast (Lopes et al. 1998; Sowman et al. 1998). Community participation in decision-making processes regarding resource monitoring and control through formulation and enforcement of fisheries regulations is a key element in these initiatives. On the other hand, the state is involved in promulgation of a legislative framework and, in some cases, assists the user community to enforce the regulations.

The initiation process of these co-management arrangements varies from place to place. In some areas, the state initiated the co-management regimes, while in others user communities started the process. Consequently, outcomes – like equitable access to resources and cost-effectiveness – also vary.

Evaluation studies conducted on some small water bodies such as Lake Chiuta and Lake Kariba show that the user community has potential to contribute to sustainable resource management if enabling conditions are created. While most of the previous studies have centred on resource attributes, behavioural patterns and decision-making processes, very little work has focused on the implementation of co-management arrangements in shared water bodies, which is one of the complex factors (Knox & Meinzen-Dick 2001). There has been an emerging interest in transboundary natural resource management (TBNRM) initiatives since 1990, with some countries like South Africa, Malawi, Mozambique, and Botswana already advanced in creating enabling conditions (Griffin et al. 1999). However, the approach has mainly been applied to wildlife and forestry sectors.

It is against this background that this study was designed to identify some of the major challenges of implementing co-management in shared fishery ecosystems. Lessons will be drawn from Lake Chiuta, which is shared between Malawi and Mozambique.

Objectives of the study

The overall objective of this study is to identify challenges in implementing fisheries co-management regime in the shared ecosystem of Lake Chiuta. Specifically the study aims to:

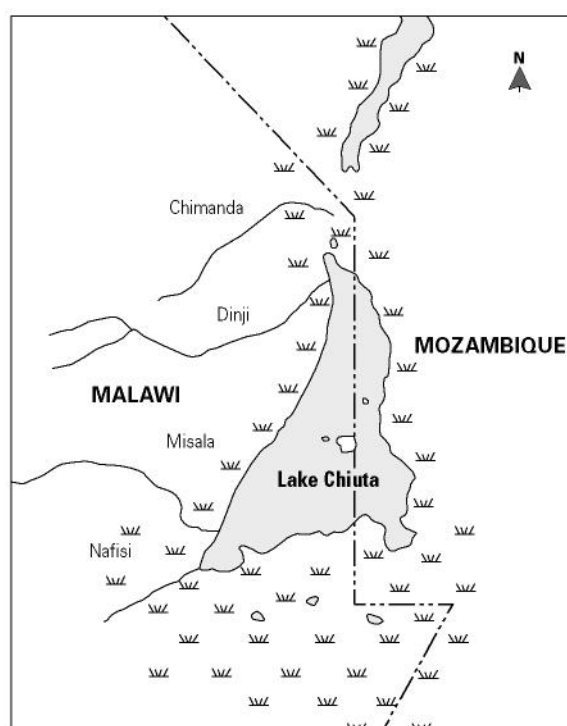
- examine challenges of implementing a fisheries co-management regime on Lake Chiuta with specific reference to resource boundary and scale
- identify constraints and opportunities of developing a transboundary co-management arrangement on Lake Chiuta at community level as a way of addressing conflicts.

2 The area under study

Lake Chiuta (Figure 1) is located at an altitude of 620m. It is shared between Malawi and Mozambique. The Malawi-Mozambique boundary is approximately 1 569km long (US Department of State 1971). The lake is shallow with a mean depth of 5m and has a total surface area of about 200km² of which 49km² lie in Mozambique (FAO 1994).

The lake has a number of inflowing rivers such as the Lifune, Chitundu and Mpili rivers. Depending on seasons, it is sometimes connected by a swampy channel to Lake Amaramba, from which flows the Lujenda River.

Figure 1: Map of Lake Chiuta



The fishery is predominantly artisanal with fishers operating either dugout or planked canoes for both subsistence and cash. The Department of Fisheries indicated in 1971 that it was not possible to carry out any fisheries work in this area due to its remote location (DoF 1971). Before 1970, annual fish production in Lake Chiuta was estimated at 200 tonnes. However, from 1976 to 2003, the annual fish landings (Malawian side only) has been around 1 500 metric tons (DoF 2003). The catches are dominated by *Oreochromis shiranus* (*makumba*), *Tilapia rendalli* (*chilunguni*), *Clarias gariepinus* (*mlamba*) and *Barbus paludinosus* (*matemba*). The main fishing gear include gillnets, fish traps and long lines. Seines are used only in the Mozambican waters.

Background to fisheries management on Lake Chiuta

Before the mid-1970s, the lake was under a similar management regime in both Malawian and Mozambican territories. Traditional authorities had powers to allow and allocate fishers on beaches. The fishing community recommended use of fish traps gillnets, long lines and gill nets (Dissi & Njaya 1995). However, due to abundance of the resource at that time, control of access was not necessary; rather, it was a way of demonstrating the powers of the local authorities:

According to Chief Chimwala [on western Lake Malombe], the power of the chief was over his people. He was their guardian, and they gave him/her gifts of food and other items in return for his guardianship. A portion¹ of fish was always given to him as a token of appreciation

(Chirwa 1997:65)

The traditional authorities are based on a lineage system of indirect rule that was introduced in the 1940s by the colonialists (Lopes et al. 1998; Nhantumbo et al. 2003). One of the main responsibilities allocated to the chiefs by the colonialists was the collection of taxes, fees and dues.

By the 1970s, there was a shift towards a more centralised regime in Malawi when a catch data recording system was introduced on Lake Chiuta. By this time, there were less than five seines operating on the lake. By the mid-1990s, a co-management arrangement was introduced after the user community approached the Malawi Department of Fisheries (DoF) for support to evict over 300 seine fishers who were operating on the lake. They also formed beach village committees (BVCs), which demanded a formal recognition of their fishing rules in 1997 (Njaya 2002).

The chiefs in Mozambique have more powers to control access to fisheries on Lake Chiuta although there is one agricultural extension worker who is involved in fisheries work. Given these varied management regimes on the lake, there have been conflicts mainly due to the prohibition of seines on the Malawian side.

3 Co-management and TBNRM: A review of concepts

The emerging interest in community-based natural resource management (CBNRM) initiatives lends weight to the argument for involving communities in TBNRM, not only to maintain ecological conditions, but also to facilitate dialogue between respective communities. In some areas, the TBNRM initiatives serve to reduce conflicts between the communities (SLSA Team 2003).

TBNRM is defined as ‘any process of collaboration across boundaries that increases the effectiveness of attaining natural resource management or biodiversity conservation goal(s)’ (van der Linde et al. 2001:10). The approach covers a wide continuum of activities ranging from transboundary co-management or CBNRM and transboundary community protected areas to large-scale natural resource management integrated into regional economic development. It is now becoming a focus of new donor-funded projects in natural resource management (Katerere et al. 2001; Wolmer 2003). The formal TBNRM initiatives are grouped into four categories. These include: transfrontier conservation areas like Maloti/ Drakensberg, which straddles the 300km-long border between Lesotho and South Africa; TRNRM areas like the ZIMOZA initiative, which involves Zimbabwe, Mozambique and Zambia; regional authorities like the Zambezi River Authority and protocols and international conventions such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (MBERU 2002).

There has always been traditional management of natural resource involving TBNRM – people have survived on farming, harvesting forestry products and aquatic resources (MBERU 2002). Previously, communities living near borders used the resources without any reference to the borders. In addition, communities could utilise resources that are now part of protected areas such as forestry, national parks and sanctuary areas.

Community participation refers to an active involvement of individuals or groups in an activity (Campbell & Townsley 1996). If management is to succeed, fishers must support management efforts through formulation and enforcement of rules (Wilson et al. 1994). However, the degree of user group involvement may differ from one country to another (Jentoft & McCay 1995).

The idea of active participation of local resource users and communities in development and management has been part of the development process in certain parts of the world since the 1960s (Pomeroy & Viswanathan 2003). Traditional and informal governance systems for fisheries have been practised historically in many African countries (WHAT 2000). The traditional leaders had authority to control access and fishing operations. However, these locally-based governance systems, which were important in developing countries, lost their effectiveness for various reasons. These include: lack of legal recognition; failure to cope with the introduction of modern fishing technologies; inability to exercise governance over the full range of fishery resources or gear types; lack of legitimacy or cohesion of community; and the inability to exclude or control new migrants (WHAT 2000). Despite these problems, arrangements at the community level are important building blocks for the effective management of fisheries.

Co-management refers to an arrangement between a central authority and resource user groups (Sen & Nielsen 1996). The user groups have to be more actively involved in fisheries management if the regime is to be both effective and legitimate. Co-management requires a clear commitment on the part of government to the sharing of power and authority with local government and community organisations. A key function of co-management is for the state to use its authority and power to contain and channel fisheries conflicts (Wilson et al. 2003).

A concern has been raised regarding the lack of democracy in co-management programmes that involve chiefs – consultations between fishers and chiefs may be very limited (Lowore & Lowore 1999). Another criticism of co-management is that it is like a ‘fox guarding the hen house’ and that it allows for ‘free-riding’ by some do not contribute to co-management but reap the benefits realised

from investment by others (Jentoft et al. 1997). A further criticism is that the local community may abuse their rights as custodians of the fisheries.

One of the most fundamental aspects of the implementation of common property regimes is definition of a boundary (Ostrom 1990; Knox & Meinzen-Dick 2001; Pinkerton 2003). Effective common property regimes are able to exclude outsiders. In situations where an elite group or politically powerful fishers attempt to access the resources, the local community should seek support from the government for protection of their rights or to institute sanctions to illegal fishers (Knox & Meinzen-Dick 2001). This occurred in the case of Lake Chiuta, where the local fishers sought support from the DoF to have their rules formally recognised.

Decentralisation refers to any act in which a central government systematically and rationally transfers its powers, authority, and responsibility to local government structures or lower level institutions such as provinces or districts and community associations or user groups (Ribot 2002; Pomeroy & Viswanathan 2003). Democratic decentralisation reforms give an opportunity for a shift from project-based to legally-supported popular participation. As Ribot (2002) observes, such reforms demand necessary resources for scaling up these popular participation initiatives across national boundaries. Pomeroy and Viswanathan (2003) observe that, in many countries, government programmes and projects stress the formation of local organisations and their autonomy to handle some aspects of fisheries management. However, adequate attention is seldom given to the establishment of administrative and policy structures that define the legal status, rights, and authority essential for local organisations to perform effectively.

4 Lake Chiuta fisheries co-management: Implementation challenges

Boundary and membership

In terms of scale, this study refers to a community that includes fishers and traditional leaders. It also recognises that resource boundary and membership are key issues that are necessary for an effective co-management regime. Definition of a resource boundary is one of the keys to reducing conflicts and facilitating membership that may result in exclusion of some appropriators (Ostrom 1990; Knox & Menzie-Dick 2001; Pinkerton 2003). In the case of Lake Chiuta, the physical features of the lake form the geographical boundary of the ecosystem and the political boundary is marked by beacons. Changes have been made over time to the Malawi-Mozambique border on Lake Chiuta (Box 1).

Box 1: Boundary changes on Lake Chiuta between 1899 and 1954

The 1 569km boundary sector between Beacon 1 (15° 5' 606.77", 35°49'36.74"E) on the left bank of the Malosa river and Beacon 17 on the shore of Lake Nyasa was initially demarcated [in] 1899 in accordance with the Anglo-Portuguese treaty of June 11, 1891. From Beacon 7F the boundary extends in a straight line to Beacon 8 forming a prolongation of the line previously delimited from Beacon 8 to Beacon 10. Thus, the boundary between Beacon 7F and 10, located at the south-east corner of Lake Chiuta, consists of a single straight line. In accordance with the 1911 rectification, the boundary from Beacon 10 followed the eastern shore of Lake Chiuta until it reached Beacon 11 at the eastern edge of the marsh between Lake Chiuta and Lake Amaramba. Article 4 of the Anglo-Portuguese Agreement of November 18, 1954, re-delimited the boundaries in Lake Chiuta between Beacons 10 and 11. [Therefore] the frontier on Lake Chiuta [is]... a straight line drawn from Beacon 11 running due south to its intersection with the prolongation westwards of a line drawn along the geographical parallel of Beacon 10, as described in Exchange of Notes of May 6, 1920.

Source: US Department of State (1971:5)

The local Malawian fishers have their own version of the story as to how the boundary changed:

In the past, a Portuguese named Katsabola arrived on the Mozambican side of Lake Chiuta. At that time the whole lake was within Malawi (then Nyasaland). He built a school and clinic, which could serve both Mozambicans and Malawians. Having procured a powered boat, he asked our Government if he could use it on the lake. He was positively granted that permission which necessitated re-alignment of the boundary into the lake (Mainala pers. comm.).

The Mozambican fishers agree with this story:

The position of the boundary was not where it is now. The boundary was within Mozambique, where chipilara (beacon) is, but after arrival of Katsabola the boundary was re-aligned into Lake Chiuta (Kalawire pers. comm.).

This common understanding about the boundary re-alignment could be an issue on the shared lake although it was not highlighted during a meeting of both parties in 2002 (Annexes 1–3).² The main issue is the lack of knowledge among the local community about the basis of such re-alignment of the boundary.

In addition to boundary, membership is a recommended factor in implementation of common property regimes that govern management of smaller or medium water bodies (Pinkerton 2003; GTZ 2001). Lake Chiuta falls within the smaller-sized category although no specific size is given. On the Malawian side of Lake Chiuta, seine fishers are excluded. However, if a fisher operates gear like gillnets, long lines and fish traps then access is guaranteed (DoF 2002). On the other side, the

Mozambican fishers allow seining operations although there is a closed season from November to April.

Membership may be understood differently informally – it may be based on where one comes from, for example which beach, village, traditional authority or district. Sometimes membership takes the form of gear ownership – gillnet, seine or fish trap. In some areas, a fisher is identified based on whether he or she is a resident or migrant. An additional category is membership of a beach village committee, as is the case on the Malawian side. Another form of defining membership is through licensing, although its implementation is mainly focused on revenue. In small-scale fisheries in Malawi, registration and licensing are essentially formalities. They are both required by law, but applicants who meet statutory requirements are not normally denied access to the fishery even if the water body is over-fished (Lowore & Lowore 1999). Rights of exclusion for Malawi's fisheries are not well defined in this respect. Townsend and Wilson (1996:312) contend that 'the problems of management of an open-access resource are caused by the absence of the right to control the resource'. However, as Lowore and Lowore (1999) note, the fishers on Lake Chiuta appear to display the strongest sense of resource ownership among the other smaller lakes.

The decentralisation process in Malawi and Mozambique

A decentralisation process in Malawi started in the mid-1990s. The devolved functions which affect fisheries include extension services, enforcement, and licensing of vessels and gear. Despite progress having been made towards the devolution of tasks to local district assemblies and user groups such as BVCs, there is still a long way to go. There is need for the formulation of by-laws for empowerment of the beach village committees. There is also need to fit these committees into decentralised structures such as village development committees, area development committees and district assemblies.

In Mozambique, amendments to the Mozambican Constitution that promoted a regime based on democratic principles and multi-party politics were introduced in 1990. With regard to the decentralisation process, Nhantumbo et al. (2003:6) argue that this has not been implemented as expected:

The granting of more autonomy to lower levels of government came to be seen as one of the avenues to improving the state's capacity to deliver basic services and re-establish the legitimacy of government institutions at the local levels. The approach therefore follows the orthodox 'bureaucratic decentralisation' discourse.

In both countries conflicts arise because parallel structures for development projects are often formed alongside the traditional ones. For example, where BVCs were formed, the process did not take into account the existing institutional arrangements and conflict resolution mechanisms.

Policies on fisheries co-management

Reviews of the fisheries policy and legislation were carried out between the 1990s to 2001. Malawi then put in place enabling conditions for the implementation of CBNRM (Box 2). However, implementation of the legal instruments has been slow mainly due to the lack of community empowerment, among other things.

Nhantumbo et al. (2003:7) observe that CBNRM is still 'evolving in Mozambique, in terms of approach and depth; therefore, a model best suited for conditions in the country has yet to be completed'. However, the Forestry and Wildlife Policy has the social objective of ensuring greater involvement of local communities in the management of natural resources and ensuring that they derive benefits from such resources. CBNRM is the strategy for realising this objective. A fundamental implementation framework for this strategy is outlined in the Land Law, which establishes that communities can have access to land delimitation process and acquisition of land use certificates.

Box 2: CBNRM policies in Malawi

National Environment Policy of 1996: Following the National Environmental Action Plan that was launched in 1994, the National Environment Policy was developed to provide an overall framework against which relevant sectoral policies such as fisheries, forestry, wildlife, water and land can be reviewed to ensure they are consistent with sustainable development principles. Among others, the policy seeks to promote co-operation between government, local communities, women's groups, non-governmental organisations and the private sector in the management and utilisation of the natural resources and the environment.

National Fisheries and Aquaculture Policy of 2001: The policy represents an integrated policy framework for both fisheries and aquaculture in Malawi. The general policy goal is to maximise the sustainable yield from the national waters of Malawi and human-made water bodies through a participatory fisheries management approach.

Fisheries Conservation and Management Act 25 of 1997: The Act came into force in 1997 after the proposed Fisheries Conservation and Management Bill was enacted in Parliament. Part III of the Act deals with local community participation. It also highlights the importance of signing a fisheries management agreement between the DoF and the Fisheries Management Authority.

Fisheries Conservation and Management Rules of 2000: This document spells out fisheries rules and penalties. It also elaborates on duties of BVCs and outlines conditions of fisheries management, including the need for a management plan.

Local Government Act 42 of 1998: The Act makes provision for district assemblies to take responsibility for management of forests, fisheries and wetland within a district, including the formulation and enforcement of by-laws relating to natural resource management. The traditional authorities are ex-officio members of the district assemblies.

Mozambique's Fisheries Law 3 of 1990 regulates the exploitation of fisheries resources (Box 3). Lopes et al. (1998) refer to the way that socio-political change since 1975 and the devastating civil war has affected the livelihoods of the fishers. After independence in 1975, management of fisheries resources was in the hands of the *Administração Marítima* (Lopes et al. 1998). This organisation was responsible for resource monitoring and control of the artisanal fisheries sector. Then the management regime shifted from a community-based approach to a centralised approach in which the Fisheries Administration (*Administração Pequira*) controlled and managed the fisheries resource. However, the structural adjustment programme that Mozambique pursued since the 1980s led to restructuring of the institutional arrangement and the establishment of the *Instituto de Investigação Pesca de Pequena Escala*, which aims at promoting small-scale fisheries development. Since 1993, there has been an interest in community participation. The main concern is that the government does not grant any official rights to fisher representatives; instead they are considered as the most efficient way to collect taxes.

Box 3: Approved policies affecting the use of natural resources

Land: Land Policy of 1995, Land Law 19 of 1997, Land regulations 66 of 1998 and Technical Appendix to the Land Law of 1999.

Environment: Environmental Law 20 of 1997, Regulation for Environmental Impact Assessment 76 of 1998.

Forestry and Wildlife: Policy and Strategy for Development of Forestry and Wildlife 8 of 1997, Forestry and Wildlife Law 10 of 1999 and Forestry and Wildlife Regulations of 2002.

Agriculture: Agrarian Policy of 1995, Agricultural Sector Investment Programme, with a Forest and Wildlife National Programme adopted in 1998 (including a component in support of government initiatives towards the implementation of CBNRM).

Water: Water Policy 7 of 1995.

Fisheries: Fisheries Law 3 of 1990.

Source: Ntantumbo et al. 2000:2

In response to global changes, in 1994 a further institutional change occurred when the mandate of managing fisheries resources was given to the Ministry of Agriculture and Fisheries (MAP). This sectoral difference could also contribute to how policies are formulated as it can be shown that Mozambique places much emphasis on the coastal resource management, as *Serviços Provinciais de Administração* is the only branch that has field staff in all coastal districts and none in inland fisheries. It appears that Lake Chiuta is not a high priority in terms of relevant fisheries technical expertise since agricultural staff like those based at Mecanhelas are assigned this responsibility.

Rules and regulations

Two types of fisheries management systems exist in many fishing communities. The first is an informal management system, which is developed and implemented by a community of resource users and often coexists with a centralised fisheries management system. Outsiders to the community are often not aware of informal systems as these are not easily observed or understood. An informal management system refers to a 'rights-and-rules system collectively sanctioned by fishers' (Pido et al. 1996). Table 1 outlines the regulations for Lake Chiuta.

Table 1: Fishing regulations for Lake Chiuta

Rule/regulation	Malawi	Mozambique
1. Permissible gear types:		
(a) Gill nets	Allowed	Allowed
(b) Fish traps	Allowed	Allowed
(c) Long lines	Allowed	Allowed
(d) Beach seine	Prohibited	Allowed
(e) Open water seine (<i>nkacha</i>)	Prohibited	Allowed
2. Minimum mesh size for gill nets was set at 69mm	Allowed	Not yet set
3. Closed season for seines – 1 November to 30 April	Not applicable as seines are prohibited	Yes

Based on the regulations, it is evident that the main source of conflict is with regard to seining operations. Seines are allowed on the Mozambican side, but they are prohibited on the Malawian side. There is need for continued dialogue between the two fishing communities to address this problem.

5 A framework for transboundary natural resource management

There are recommended steps to be considered when implementing a TBNRM arrangement (Knox & Meinzen-Dick 2001; van der Linde et al. 2001; Lanjouw et al. 2001). Lanjouw et al. outline three phases in adopting the International Gorilla Conservation Programme (Box 4) which are used in this study.

Box 4: Phases of developing a TBNRM

Phase I: Field-based co-ordination and collaboration: This phase focuses on harmonisation and co-ordination of management approaches, and development of field-based informal mechanisms for collaboration. These approaches and mechanisms respond to the objectives of transborder co-operation. This phase emphasises regular communication between field staff and management staff of the ecosystem, sharing information on resource monitoring and joint planning and implementation of activities.

Phase II: The existence and use of the harmonised approaches in the respective countries will facilitate the second phase of the strategy, which is formalisation of the transborder collaboration and harmonised policies. The second phase, however, is dependent on a minimal level of political support among the respective official governments. It is believed that improved management of the shared ecosystem is a function primarily of field-based collaboration, rather than official agreements.

Phase III: A final phase could involve the signing of a formal agreement between or among the respective governments to establish a TBNRM area. The agreement should outline in its preamble the legislative background of the TBNM, define its purpose, describe the parties and the endorsing partners, and define the ecosystem area and its structures (a joint commission or other mechanism) and modes of operation.

Source: Lanjouw et al. (2001:32)

According to these phases of developing TBNRM, we can conclude that Lake Chiuta falls mostly in Phase I since most of the ongoing activities include consultations between the two parties as a way of reducing conflicts.

Opportunities

Several opportunities exist that could facilitate the introduction of the TBNRM arrangement on Lake Chiuta at a community level. These include socio-cultural issues, policy and political aspects, decentralisation, dependence on the resource and dialogue.

Socio-cultural issues

In terms of ethnicity, the majority of the people around the lake are Nyanja, Yao and Lomwe. They share a common history, language, socio-cultural values and traditions. Many practices such as land tenure systems, marriage traditions and initiation ceremonies are also common among the villagers around Lake Chiuta. The fact that many Malawians came from Mozambique and some of them have intermarried during the past decades bodes well for a common level of understanding on resource management between the two fishing communities. Griffin et al. (1999) assert that TBNRM facilitates the movement of people across borders for trading of fish and other commodities, which can strengthen cultural ties and traditions that might have been affected by political boundaries.

Recognition of traditional powers by both Malawi and Mozambique offers an opportunity for a sustainable TBNRM framework that is built upon the ongoing CBNRM arrangements with incorporation of local knowledge. Hara and Nielsen (2003) contend that traditional structures in Africa play significant roles in terms of resource management as they serve as a link between the user community and the government. Traditional authority structures in southern Africa are considered a legacy of colonialism. In both countries, traditional authorities are based on a lineage

system of indirect rule that was introduced in the 1940s by the colonialists (Lopes et al. 1998; Nhantumbo et al. 2003). The main responsibilities of chiefs included collection of taxes, fees and dues as demanded by the Portuguese in Portuguese East Africa (now Mozambique) and the British in Nyasaland (now Malawi). After independence many African countries maintained traditional authority structures but reviewed their duties, including control over their villages, settling disputes and allocating customary land. In Mozambique, their customary powers were revoked in early 1990s, but recently the government has begun to recognise the role of traditional leaders.

When fisheries co-management started in Malawi in 1993 there was little recognition of the roles of the traditional authorities in the regime. This created power struggles between the traditional authorities and BVCs which necessitated the incorporation of the authorities into the committees. The new structures were developed to be in line with the devolution process that recognises a cluster of community-based organisations and then village development councils, area development committees and district assemblies.

While the historical boundary realignment may be a challenge, it could also present an opportunity in that both communities have the same understanding about resource boundary. Moreover, the boundary changes were made in a society that had the same traditional and customary values from time immemorial.

Policy and political aspects

Both Malawi and Mozambique are implementing co-management programmes in various water bodies. Natural resource policy reforms in Malawi began in the 1990s with emphasis on community participation mainly due to fiscal constraints and seeking ways of regulating access. In this context, recognition was given to environmental management as an essential element in sustainable economic development by establishing the Environmental Affairs Department in 1991. The National Environmental Action Plan was completed in 1994 following the United Nations Conference on Environment and Development (the Earth Summit) held in Rio de Janeiro in 1992. The Government of Malawi approved the National Environmental Policy and the Environment Management Act (EMA) in 1996. Malawi's National Fisheries and Aquaculture Policy of 2000 and Fisheries Conservation and Management Act 27 of 1997 provide for participatory fisheries management and international co-operation in fisheries. These legal instruments create an enabling condition for a TBNRM framework.

In Mozambique, the Fisheries Master Plan was approved by the Government in October 1994. The document outlines priorities and strategies for development to be pursued in subsequent years. In terms of small-scale fisheries, the plan emphasises the involvement of fishers in formulating and enforcing regulations (Lopes et al. 1998). The *Regulamento de Pesca Marítima* was formulated in 1997, which facilitated the establishment of the *Comissão de Administração Pesqueira*. This committee is charged with the responsibility of advising MAP on resource management.

In 1984, Malawi and Mozambique signed a Permanent Joint Commission on Cooperation, which can facilitate implementation of the proposed Lake Chiuta transboundary co-management. Both countries are also parties to various international conventions, agreements and protocols that deal with management of natural resources such as the 1992 Convention on Biological Diversity (CBD) and Food and Agriculture Organisation (FAO) Code of Conduct for Responsible Fisheries. Of particular importance is the Southern African Development Community 2001 Protocol on Fisheries, which can legally facilitate introduction of the transboundary fisheries co-management. However, van der Linde et al. (2001) say, since establishing a TBNRM initiative may be a lengthy and difficult process, it may be necessary to start implementation before all the enabling conditions are in place. In support of this point, Lanjouw et al. state that 'it is unrealistic to consider that a TBNRM area needs to be formally designated before regional collaboration can take place' (2001:37). They assert that collaboration can take place at a lower political level since there are more preconditions for obtaining higher-level political support.

Decentralisation and co-management

Like most African countries, Malawi and Mozambique are decentralising their authority in the management of natural resources. Since TBNRM requires democracy, Griffin et al. (1999) advocate that stakeholder involvement should occur at all stages of the process, particularly during decision-making stages. In this context, a centralised approach to the formulation of the TBNRM arrangement is not recommended in Lake Chiuta. Rather, local fishing communities should participate actively at local level since in most cases they share the same culture and traditions.

Dependence on the resource for economic gains

Fish provides a livelihood to many people on both sides of Lake Chiuta. The growth of the urban centres of Mecanhelas in Mozambique and Liwonde in Malawi mean that fishing and fish trading are important sources of income for the majority of the population around the lake. Regulation remains a critical issue and is being pursued by both fishing communities and fisheries management authorities. Lake Chiuta lies in a remote area where alternative fish supply from other sources such as Lake Chilwa may not be reliable. Its stable fish supply ensures provision of much-needed nutrients and income to the villagers.

Willingness to engage in dialogue

In 2002 a meeting was organised for the two fishing communities and exchange visits continue between the district officials from both countries. This demonstrates the willingness of local communities to address and solve their problems and determine their future. It is expected that a TBNRM framework based on mutual understanding of the communities would be efficient as it involves building upon existing resource management systems and institutions (Griffin et al. 1999).

6 Conclusion

This study has shown that there are several challenges and opportunities for CBNRM in shared ecosystems. In terms of scale, it is possible to develop a TBNRM with participation of the local community, although a minimum intervention of central governments may be required. This community-level process ensures active participation and understanding of necessary issues and policies affecting the resource users, thereby achieving a sustainable framework. What is even more interesting is the fact that the fishing community initiated the co-management regime on Lake Chiuta. As WHAT (2000) and Pomeroy and Viswanathan (2003) observe, the idea of active participation of local resource users and communities in development and management is not a new idea and has been part of the development process in many African countries.

This study has also shown that resource users on the Malawian side of Lake Chiuta have capacity to exclude outsiders – mainly migrant seine fishers. The local fishers sought support from DoF to legally prohibit seines. This example supports the view of Knox and Meinzen-Dick (2001), who note that in some situations the local community can seek support from the government for protection of their rights.

While it is important to define a resource (Ostrom 1990; Knox & Menzie-Dick 2001; Pinkerton 2003), there are some challenges in situations where the boundary has been re-aligned without informing the local communities about the justification for this change, as is the case with Lake Chiuta.

Finally, the process of establishing transboundary fisheries co-management that started in 2002 falls largely in Phase I according to the phases outlined by Lanjouw et al. (2001) (Box 4). Both fishing communities need to continue sharing information and ideas on how to co-operate and reduce conflict. It is also recommended that a management plan be drawn up to agree on specific measures governing exploitation of Lake Chiuta's fish resources. A formal agreement will follow in Phase II in which harmonisation of policies will take place. Phase III will consolidate the whole process.

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Annexure 1: Resource management issues for Lake Chiuta

Issue	Malawi	Mozambique
Conservation	<ul style="list-style-type: none"> • Inadequate coverage of fisheries extension services • Use of illegal fishing gear • Weak enforcement 	<ul style="list-style-type: none"> • Closed season for seining from 1 November to 30 April • Aim to maintain biodiversity for future generations
Fishing practices (utilisation)	<ul style="list-style-type: none"> • Fish traps • Hooks • Gill nets • Spears 	<ul style="list-style-type: none"> • Beach seines • Fish traps • Hooks • Gill nets
Institutional framework	<ul style="list-style-type: none"> • Department of Fisheries • Lake Chiuta Fisheries Association • Beach village committees • Police 	<ul style="list-style-type: none"> • Department of Agriculture • Traditional leaders
Regulations	<ul style="list-style-type: none"> • Use of recommended fishing gear – gill nets, fish traps and hooks • Minimum mesh size for gill nets is 2½ inches • Beach seines are prohibited • Catching of immature <i>makumba</i> (less than 4 inches) is illegal • Use of poisonous substances to catch fish is not allowed • All gill nets have to be licensed 	<ul style="list-style-type: none"> • Use of beach seines is not allowed during closed seasons • Use of open water seines (<i>nkacha</i>) is prohibited • Offenders are apprehended • Observe international boundary on the lake
Problems encountered and the causes of the problems	<ul style="list-style-type: none"> • Use of illegal fishing gears (such as beach seines) • Illegal fishers carry firearms in order to threaten beach village committees • Lack of co-operation between BVCs and fishers • Threats from Mozambican counterparts 	<ul style="list-style-type: none"> • Cross-border fishing without proper permission • Use of illegal fishing gear (seines) • Limited closed season compliance • Lack of a common management strategy between Malawi and Mozambique • Confiscation of beach seines by Malawians in Mozambican waters • Lack of clear roles of the BVCs who appear to work for financial benefit rather than resource management • BVCs are cruel to offenders • Malawi's traditional leaders delay in giving feedback to Mozambicans on confiscated nets

Source: Njaya and Kazembe 2002

Annexure 2: Potential problems

Issue	Malawi	Mozambique
Conservation	<ul style="list-style-type: none"> • Seining ban is still being violated • Local leaders are corrupt 	<ul style="list-style-type: none"> • No co-ordination between Malawi and Mozambique • No agreement on the closed season regulation
Resource utilisation	<ul style="list-style-type: none"> • Fishers violate seining ban 	<ul style="list-style-type: none"> • No respect for borders between the two countries • Use of prohibited <i>nkacha</i> seines
Institutional set up	<ul style="list-style-type: none"> • Limited co-operation between the association and BVCs • Local leaders, beach village committees and fishers are corrupt • Conflicts between beach village committees and seine fishers 	<ul style="list-style-type: none"> • Lack of co-ordination between Malawi and Mozambique • Delays in getting feedback from the Malawian local leaders • The Mozambicans have not been sensitised beforehand about the formation of BVCs • BVCs are cruel to offenders • BVCs are corrupt
Regulations	<ul style="list-style-type: none"> • Seine fishers continue to violate regulations • Lack of co-operation • Different management measures between Malawians and Mozambicans 	<ul style="list-style-type: none"> • No enforcement of closed season • Lack of co-operation between Malawian and Mozambican communities • Some seine operators enter Mozambique without proper immigration documents • Some seine fishers operate during closed season • Lack of patrol boats • Co-management in Malawi started without first sensitising the Mozambican local leaders

Source: Njaya and Kazembe 2002

Annexure 3: Summary of problems and their causes

Problem	Cause
<ul style="list-style-type: none"> • Seining ban is still being violated, resulting in conflicts between beach village committees and seine fishers • Use of prohibited <i>nkacha</i> seines • Local leaders, BVCs and fishers are corrupt 	<ul style="list-style-type: none"> • Migrating fishers pose some problems in resource management • Because alternative income-generating income activities are limited, people resort to using illegal fishing gear to catch more fish
<ul style="list-style-type: none"> • No co-ordination of management measures between Malawi and Mozambique • BVCs confiscate Mozambican fishers' seine nets even when they are operating in Mozambican waters • Delays in getting feedback from the Malawian local leaders • Committees are cruel in their operations 	<ul style="list-style-type: none"> • Different regulations on both sides of the lake • Use of <i>nkacha</i> (open water seines) on the lake leads to the damage of other fishers gears (that is, set gill nets)

Source: Njaya and Kazembe 2002

Annexure 4: List of interviewees

Mozambique

- D Alik
- VH Kalawire
- Willie Minjolo
- R Nteuka

Malawi

- M Mainala
- VH Chikumba
- James Wisiki
- N Massi
- N Chikwembeya
- K Mpalume

Endnotes

¹ This portion of fish (*thini la mfumu*) is locally known as *mawe*, as described by Hara et al. (2002).

² The First Lake Chiuta Common Management Development Strategy workshop held in August 2002.