TOWARDS DEVELOPMENT OF A TRANSBOUNDARY FISHERIES CO-MANAGEMENT: LESSONS FROM LAKE CHIUTA

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Abstract
This paper presents key lessons from development of a transboundary fisheries co-management (TBFC) on Lake Chiuta, shared between Malawi and Mozambique. Since the mid-1990s when fisheries co-management was introduced on the Malawian side of the lake, there had been conflicts between fishing communities from both countries. The conflicts mainly centered on management system and fishing rules. Fishing co-management was introduced on the Malawian side in 1995 which led to formation of Beach Village Committees (BVCs) to represent interests of the fishing community while traditional leaders advanced fishing rules on the Mozambican side. The Malawian BVCs banned use of seines to sustain the fishery while the Mozambican traditional leaders allowed seine fishers. To address the conflicts a TBFC arrangement was proposed by fisheries authorities from both sides in 2003. This study shows that the TBFC has gone through three phases including field-based coordination and collaboration (Phase I); study of collaborative management systems and policies (Phase II) and the just started Phase III after the signing of the Memorandum Understanding (MoU) on Fisheries Management and Aquaculture Development in October 2014. Apparently, by going through both phases, conflicts have now been addressed since 2014 when. Key lessons can be drawn from the process of establishing the TBFC including use of traditional knowledge; sharing of common culture, values and traditions; policy on community participation; and willingness of parties to negotiate at community level. Effective and sustainable TFC models for small-scale fisheries should always be community-driven.

Key words: Lake Chiuta, fishing-related conflicts, transboundary fisheries co-management, fishery sustainability, collaboration

INTRODUCTION
A discourse on Transboundary natural resource management (TBNRM) has become popular among scholars and practitioners especially since the early 2000s. TBNRM has always been associated with protected areas (Katerere et al., 2001; Sandwith et al., 2001; Lanjouw et al., 2001). Over the past few years, various actors including non-governmental organizations (NGOs), development partners and the private sector have been advancing TBNRM mainly due to issues like globalization and promotion of regional economic integration (Katerere et al. 2001).

A TBNRM initiative is necessary in several ways including its contribution towards sustainable natural resource management and biodiversity conservation; promotion of regional economic development, addressing conflicts among resource users and as a way to make use of other opportunities (van der Linde et al., 2001). In many areas, natural resources including fisheries transcend across national boundaries, which demand appropriate cooperation between or among the riparian countries to address the fishing-related conflicts among the resource users that mainly arise due to differences in policies and legislation, resource management regimes and dependency on fishing as a source of livelihood (van der
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Linde et al., 2001; Njaya 2006; Whande et al. 2006). This is the case with Lake Chiuta that is remotely located and shared between Malawi and Mozambique (Njaya, 2006).

By definition, “transboundary” implies the context of international co-operation. However, it may also cover co-operation between neighboring sub-national jurisdictions, including autonomous regions or provinces (Sandwith et al., 2001:3). Transboundary natural resource management can be defined as a process of collaboration across boundaries to increase the effectiveness of attaining goals of natural resource management or biodiversity conservation (van der Linde et al., 2001). Griffin et al. (1999) came up with a similar definition but added that the transboundary natural resource management is for the benefit of the parties concerned in the initiative.

There are some challenges in implementing TBNRM which also apply to TBFC initiatives. Katerere et al. (2001) in their critique asserted that there could be some concerns arising from the initiatives ranging from marginalization of the surrounding community to inequity in the distribution of benefits within a given country. The authors observe that there could be fears that the border communities that are dependent on particular natural resources and are already at the margins of social, political and economic opportunities would become further isolated through transboundary natural resource management initiatives introduced in their areas.

Based on the above understanding, transboundary fisheries co-management (TBFC) can refer to a joint fisheries co-management arrangement across boundaries that concerned parties mainly countries pursue to achieve goals of equitable and sustainable fish resource utilisation. The approach encompasses a wide continuum of TBNRM initiatives and activities ranging from transboundary community-based natural resource management and transboundary protected areas management to large-scale fisheries resource management integrated in a regional economic development context. In this approach some ecological, social, political and economic considerations are made (van der Linde et al., 2001).

Jones et al. (2001) identifies four types of TBNRM initiatives. These include transfrontier conservation areas; transboundary natural resource management areas and informal transboundary use types; spatial development initiatives: and development corridors. In the context of this paper, Lake Chiuta fisheries transboundary co-management initiative fits into the transboundary natural resource management area and informal transboundary use types.

Several regional and global agreements and conventions contain articles that support transboundary collaboration. For example, in terms of fisheries, Food and Agriculture Organisation Code of Conduct of 1995; Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication of 2015; and the recently approved 12 steps on Ten Steps to Responsible Inland Fisheries, specifically Step 6 which highlights the need to “improve governance, especially for shared water bodies” (Taylor et al. 2016). Other cooperation agreements and treaties that are primarily set up to facilitate transboundary collaboration between two or more nations exist like the Joint Permanent Commission of Cooperation between Malawi and Mozambique and the Malawi-Mozambique Memorandum of Understanding on Fisheries Management and Aquaculture Development that was signed on 23 October 2014. Additionally, Whande et al. (2006) note that the Southern Africa Development Community (SADC) treaty for regional integration and co-operation in the management of shared natural resources provides a basis for the conflict management around transboundary inshore fisheries. The Southern Africa
Development Community has also put in place the SADC Protocol on Fisheries of 2001 which is aimed at increasing co-operation in conservation and natural resources management efforts.

Co-management is a participatory form of fisheries management. It is an arrangement where user groups and government share the power and authority to manage a fisheries resource (Sen and Nielsen, 1996). Co-management is about the inclusive right to participate in making key decisions about how, when, where, how much, and by whom fishing will occur. In this case, co-management focuses on the recognition that user groups have to be more actively involved in fisheries management if the regime is to be both effective and legitimate. Pomeroy (2003) incorporates other stakeholders beside users and government, for example non-governmental organizations or civil society groups.

This paper reviews the process of developing a transboundary fisheries co-management as means of addressing fishing-related conflicts on Lake Chiuta that is shared between Malawi and Mozambique. I apply three transboundary natural resource management phases (Box 1) as outlined by Lanjouw et al. (2001:32) which were applied in the International Gorilla Conservation Programme are applied.

**Box: Phases of establishing a transboundary fisheries management arrangement**

**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 cooperation. 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 transboundary natural resource management 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.

*Adapted from Lanjouw et al. (2001:32)*

Furthermore, secondary sources are used. In particular, published reports, articles on Lake Chiuta transboundary fisheries management initiative, for example, Donda (1997); Njaya et al. (1999), and Njaya (2002 and 2006), as well as monthly and annual field reports prepared
for the Department of Fisheries are referred to for description of the fishery, earlier reviews of the transboundary initiatives and status of the fishery mainly in terms of threats.

THE FISHERY

Lake Chiuta fishery is dominantly artisanal or small-scale in nature but some sort of “subsistence” fishery is also available. In the Fisheries Conservation and management Act of 1997 “subsistence fishing” means fishing for the primary purpose of providing food for household consumption while a “small scale commercial fisherman” means: (a) in the case of an individual, a person who is engaged or intends to engage in fishing for sale throughout the year or a specified season or part of a season each year and who relies on his fishing activities for part of his income; or (b) in the case of a corporate body or association of persons, one that has an appreciable investment in the fishing industry or intends to make one.

Figure 1: Map of Lake Chiuta showing Malawian and Mozambican sides of the lake
Source: FISH project (2014)
Lake Chiuta is a shallow lake with a mean depth of 5 m and is shared between Malawi and Mozambique. It is located at an altitude of 620 m in the southern part of Malawi. It has a total surface area of about 200 km\(^2\), of which 49 km\(^2\) lie in Mozambique (FAO, 1994) as shown in Figure 1. The southern part is more or less permanently covered with emergent vegetation penetrable by canoes but not larger craft. The waters are clearer and less saline than those of Lake Chilwa.

Lake Chiuta is a multi-species fishery (Donda, 1997; Njaya et al., 1999 and Njaya 2013) with annual harvests estimated at an average of 1,200 tonnes for the Malawian side (GoM 2015; Njaya 2013). The fishery is predominantly small-scale with fishers using traditional craft (dug-out canoes) and gears like fish traps and gillnets. In 2015, Lake Chiuta registered 822 fishers using 298 dug-out canoes, and 1,869 gillnet units were counted on the Malawian side of the lake (GoM 2015).

The lake habitat is less degraded than most, with muddy bottom and submerged vegetation. The commonly exploited fish species include Oreochromis shiranus (local name: Makumba), Tilapia rendalli (local name: Chambo), Clarias gariepinus (local name: Mlamba), Barbus paludinosus (local name: Matemba), and Nkhalala (Alestes imberi). The fishers use gill nets, fish traps and long lines and individually placed hooks locally termed as njomanga while dug-out canoes and few planked boats are commonly used on the lake for fishing activities (Njaya et al., 1999; Njaya 2013).

The Lake Chiuta fishery is dominated by two ethnic groups, namely Lomwe and Yao. In terms of religious groupings, Muslims and Christians are commonly found in the area. The community shares socio-economic and cultural background together with their counterparts on the Mozambican side. Reports from the fishing communities show that in times of hunger or food shortage, people from cross over the border to either side in search of food. The same happens for businesses (Njaya et al., 1999; Njaya 2013).

**MAIN SOURCE OF CONFLICTS**

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 fishing rules for Lake Chiuta.

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.
Table 1: Fishing regulations for Lake Chiuta

<table>
<thead>
<tr>
<th>Rule/regulation</th>
<th>Malawi</th>
<th>Mozambique</th>
</tr>
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<tbody>
<tr>
<td>1. Fishing gear types:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Gill nets</td>
<td>allowed</td>
<td>allowed</td>
</tr>
<tr>
<td>(b) Fish traps</td>
<td>allowed</td>
<td>allowed</td>
</tr>
<tr>
<td>(c) Long lines</td>
<td>allowed</td>
<td>allowed</td>
</tr>
<tr>
<td>(d) Beach seine</td>
<td>prohibited</td>
<td>allowed</td>
</tr>
<tr>
<td>(e) Open water seine (<em>nkacha</em>)</td>
<td>prohibited</td>
<td>allowed</td>
</tr>
<tr>
<td>2. Minimum mesh size for gill nets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>was set at 69mm</td>
<td>not yet</td>
<td></td>
</tr>
<tr>
<td>3. Closed season for seines – 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>November to 30 April</td>
<td>not applicable as the seines are prohibited</td>
<td>applied</td>
</tr>
</tbody>
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KEY LESSONS FROM THE ESTABLISHMENT OF LAKE CHIUTA TBFC

TBNRM initiatives including TBFM are developed and implemented in a broad framework including ecological, social, economic, political and institutional aspects (van der Linde, 2001). The author recommends a need to be aware of the opportunities, enabling conditions and constraints to assess the likelihood of achieving transboundary natural resource management objectives. In terms of Lake Chiuta the opportunities included socio-cultural issues; policy and political context; dependence on the resource for economic gains; willingness to engage in dialogue; and international obligations and commitments by both Malawi and Mozambique.

4.1 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 transboundary natural resource management 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. van der Linde et al. (2001) also outlined opportunities like social and cultural dimensions for development transboundary natural resource management. In their analysis they looked at trust among key stakeholders for commitment to the process; participation by all key stakeholders; addressing potential conflicts among stakeholders; empowerment of the actors for benefits; common history, ethnic grouping; language and traditional resource management systems across a border to enhance the likelihood of success at local level.

Recognition of traditional powers by both Malawi and Mozambique offers an opportunity for a sustainable TBFC 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).

4.2 Policy and institutional context

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.


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 Maritima was formulated in 1997, which facilitated the establishment of the Comissão de Administração Pesquerra.

In 1984, Malawi and Mozambique signed a Joint Permanent Commission on Cooperation (JPCC), 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, as van der Linde et al. (2001) state, since establishing a TBNRM may be a lengthy and difficult process, it may be necessary to start implementation before all the enabling conditions are put in place. In support of this point, Lanjouw et al. state that ‘it is unrealistic to consider that a transboundary natural resource management 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.

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

A decentralisation process in Malawi started in the mid-1990s. In terms of fisheries the
devolved functions include extension services, inspectorate, and licensing of vessels and gear.
Despite progress having being made towards the devolution of tasks to local district councils
and user groups such as beach village committees that constitute fishing-related actors, 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) argues that its implementation has not
been as expected. In both countries conflicts arise because parallel structures for development
projects are often formed alongside the traditional ones. For example, where the beach village
committees were formed, the process did not take into account the existing institutional
arrangements and conflict resolution mechanisms.

4.3 Legislation on fisheries co-management

On the Malawian side a review of the Fisheries Policy of 1973 was done in 2001 to
incorporate issues about community participation within the context of either community-
based management or co-management. A follow-on review of the National Fisheries and
Aquaculture policy of 2001 has however just been done in 2016. The current National
Fisheries and Aquaculture Policy of 2016 strengthens fisheries governance issues.

Nhantumbo et al. (2003:7) observe that community-based natural resource management is
still ‘evolving in Mozambique, in terms of approach and depth; therefore, a model best suited
for conditions in the country have 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.
Community-based natural resource management 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.

In their assessment, van der Linde et al. (2001) also outlined opportunities like policy issues
for development transboundary natural resource management. The authors recommended
some enabling conditions like strong political will and commitment to transboundary
collaboration; developing policies and legislative frameworks to support sustainable natural
resource management; transparent and democratic policy and law-making process
representing the majority; political stability and security; support to local-level stakeholders;
strong regional integration; regional protocols and economic agreements; and integrated land-
use and fisheries management plans on both sides of the border.
4.4 Institutional issues

On institutional aspects, both Malawi and Mozambique has several key actors in the fisheries management. At community level, there are beach village committees (BVCs) and fisheries associations representing interests of the fishing community in Malawi. Equally in Mozambique, there are Community Fishing Councils (Conselho Comunidade das Pescas) and inter-district co-management committees - as is the case of Kwirikwidge - that have roles in the management of the fisheries resource together with the National Department of Fisheries in a co-management approach (Lopes and Gervásio 1999). van der Linde et al. (2001) highlighted some enabling conditions for institutional context including existence of well-established partners in each country; strong and balanced capacity among institutions; resources to invest in capacity building and the transboundary process; need for a long-term commitment of the organizations involved, and motivated staff; defined transboundary planning and coordination process; networks to be established for collecting and sharing information; existence of organizations to support natural resource management (NRM) and appropriate structures and systems as a basis for transboundary natural resource management. Study visits were organized and supported by IUCN-ROSA between 2002 and 2003 to Lake Kariba to enhance capacity of the Malawian and Mozambican fishing communities especially in conflict management (Hachileka 2003).

4.5 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.

van der Linde et al. (2001) also presented opportunities like economic aspects for development transboundary natural resource management. Some enabling conditions for consideration include the benefits of transboundary natural resource management to be greater than the costs; national financial policies to be supportive of transboundary natural resource management initiatives and approaches; status of the overall economy to be attractive to investors; benefits for on both sides of the border; resources to be mobilized to start up the initiative and long-term sustainability to be considered and built at the planning level especially if externally funded; and there should be a flexible and diverse funding sources.

4.6 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 transboundary natural resource management 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).
4.7 International obligation and commitments

Both Malawi and Mozambique are committed to various international conventions, agreements, and protocols like the FAO Code of Conduct of 1995; Southern African Development Protocol on Fisheries of 2001; and the AU/NEPAD Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa of 2014 in providing a framework of cooperation for shared ecosystems. This provides an opportunity for a common understanding and pursuance of a goal towards sustainable fish resource management.

STATUS OF LAKE CHIUTA FISHERIES TRANSBOUNDARY MANAGEMENT

The process of establishing the Lake Chiuta transboundary fisheries management initiative started in 2002 with support from the International Union for Conservation of Nature and Natural Resources (IUCN) that provided a negotiation platform for the Malawian and Mozambican fishing communities. It was also engaged in building capacity for both fishing communities in areas of conflict management, entrepreneurship, business management, fish resource management and environmental issues. Two major activities including a study tour to Zambia/Zimbabwe to learn about Lake Kariba transboundary initiative on fisheries management and organising a training session for riparian representatives of the fishing communities (fisheries, traditional leaders, fisheries technical assistants) were conducted in Malawi in 2003. The immediate result was reduced conflicts on the lake but after two years there was escalation of the conflicts as before with one side pointing fingers at the other.

As a way of seeking permanent solutions to the fishing-related conflicts on the lake, some cooperation initiatives at the local (district/provincial) level involving both countries started around 2012. There were exchange visits by traditional leaders and district/provincial authorities between the countries which gave rise to seeking support at a higher level. An idea to have a cooperation framework in form of a Memorandum of Understanding was reached after high level authorities from both countries visited some Njerwa beach on Malawian side and Muhara beach on the Mozambican side in October 2013. After that some paper work was exchanged between the relevant ministries until October 2014 when the Memorandum of Understanding was signed to mark a milestone in the transboundary fisheries management on Lake Chiuta.

Based on the framework by Lanjow et al. (2001) as shown in Box 1, Lake Chiuta transboundary fisheries management has gone through the following phases:

*Phase I* was between 2002 and 2010 during which the fishing communities from both countries engaged in sharing information and ideas through meetings on how to develop the common management strategy to reduce conflicts.

*Phase II* (2010 and 2014) included field level consultations involving riparian communities from both Malawian and Mozambican sides of Lake Chiuta. The consultations were facilitated by government authorities at both central and local levels. The major focus was on a review of fishing methods and an ecosystem-based and adaptive approach to management of the fisheries resources including fisheries co-management.

*Phase III*: This has just started with an agreement between Malawi and Mozambique was reached in 2014. Furthermore, an action plan was formulated in 2016 to guide implementation of the agreement. This shows that the MoU implementation may be delayed, yet the local fishing communities have been anxious to see the process supported at the high level within an agreed timeframe.
Despite the delays, field reports and observation show that after the two countries signed the agreement on Fisheries Management and Aquaculture Development in 2014, conflicts have been greatly minimised. Various stakeholders including the fishing community, local and central government authorities and civil society groups attribute the reduced conflicts to political and policy support from the two countries. Sustainable utilisation of the fisheries resources for Lake Chiuta can be achieved where resources share a common vision, goal and objectives of the resource. In this context, the Memorandum of Understanding will provide a framework to guide to ensure sustainable manage the fisheries resources for sustainable fish resource management and development of aquaculture within the Lake Chiuta basin.

Of concern, however, there are some environmental or ecological threats to the Lake Chiuta aquatic ecosystem as documented by Njaya (2013). The major threats include variability and change of climate and emerging destructive fishing methods which are due to low water level changes. These may have adverse effects on the cash incomes of the riparian communities from fishing activities, food and nutritional insecurity, and limited employment opportunities. Eventually the fishing dependent communities will put pressure on other natural resources like forestry resources to earn incomes.

SYNTHESIS AND CONCLUSION

Fishing-related conflicts emerged on Lake Chiuta largely due to different fishing regulations and governance systems between Malawi and Mozambique. The differences were exacerbated by the fact that when the co-management arrangement was introduced on the lake, there was lack of recognition on cross-border collaboration among institutions at a local level. Thus, despite the articulation of ecosystem benefits such as sustained fish resources through transboundary natural resource management, conflicts may still emerge due to free-riding effect. There could also be an elite capture within the fisheries governance as some government official may take advantage of the initiative to advance their policy aspirations with minimal community consultations as negotiations could be done at higher levels. In addition, the local level co-management partners differ between Malawi and Mozambique. This results in varied power dynamics on both sides. The fishing community represented by BVCs and government are key partners on the Malawian side while traditional leaders and government are partners on the Mozambican side. Therefore establishment of the Lake Chiuta transboundary initiative with a common goal of pursuing fisheries co-management would address the issues about different fishing rules and regulations hence allow the fishers to operate in harmony.

This review has shown that transboundary fisheries management imitative can be implemented with minimal centralised authority if participation of user community is guaranteed. The Lake Chiuta fishing community demanded cooperation among themselves (Malawians and Mozambicans) in resource management but needed political support considering the international boundary that exists on the lake. Nevertheless, the support from the two governments appears not readily available as evidenced by the delay in putting in place necessary processes and systems for implementation of the Malawi-Mozambique Memorandum of Understanding on Fisheries Management and aquaculture Development. Being a five-year (2014-19) agreement, there is a fear that the agreement may expire with less to be achieved.

Three key lessons can be drawn from this paper for transboundary fisheries management initiatives. These include recognising active participation of the resource users in fish resource management; applying adaptive resource management approach; and providing
support to fishing communities in their quest for long-term and sustainable resource management by addressing conflicts. Finally, signing of agreements by countries at policy making levels should recognize needs of the user community and not only be ceremonial. Conflicts that were prevalent in Lake Chiuta for decades have, to a certain extent, been minimised. Communities from both sides of the lake are able to meet and engage in dialogue to resolve issues affecting the fishery and the fisheries governance system.

Another lesson is on time frames attached to agreements on transboundary natural resource management programmes as evidenced by delays that have already observed from this case study. There is a need to consider long term initiatives rather than shorter ones. Management of natural resources need to be looked into with a long vision. For example, we can argue that the first five years may be for putting in place systems and processes including approaches and legal issues for implementation of the agreement. The second ten years could be for working on agreed activities for sustainable utilisation of the resources while focusing on long-terms changes that might be brought about by climate change or variability. This means that some targeted programmes on adaptive capacity would need to be formulated to address such problems within a proposed long-term agreement.

Finally, management of shared fisheries resources should take into account varied interests of the respective countries especially at community level. Lessons from this study shows that socio-cultural, policy, management regimes and livelihood strategies influence sustainable harvest levels of fisheries resources. It is a common practice to deal with transboundary resource management for large scale ecosystems while neglecting smaller ones which in essence are important to riparian communities for their livelihoods. Regional projects are therefore recommended to take stock of these small and remotely located ecosystems for the benefit of the local communities for their cash incomes, employment as well as food and nutritional security.

There are, however, threats to their livelihoods key one being change or variability of climate that has resulted in receding of the lake. This is a critical issue that affect socio-economic status of the fishing communities considering that fishing is their dependent source of livelihood. Finally, there is a need to adopt an ecosystem approach, which is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way.

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