CO-MANAGEMENT IN MALAWI: COMPARISON OF LAKE MALOMBE AND LAKE CHIUTA

CARLA DAVIS

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Co-management in Malawi:

Comparison of Lake Malombe and Lake Chiuta

by

Carla Davis

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ABSTRACT

Malawi is a small developing country that is dependent on fisheries as a source of employment and protein. The country supports an artisanal fishery for both commercial and subsistence use. Centralised management has failed to reduce effort and protect juvenile fish, resulting in declining fish stocks. In an effort to correct problems with these fisheries, co-management has been suggested starting with the test sites, Lake Malombe and Lake Chiuta. This study will look at improvements needed to increase the potential for sustainability by allowing co-management to be integrated into the societal context, focusing on the position of the village headmen and Beach Village Committees.

Co-management is the evolving institutional process of sharing the management of the fishery among various stakeholders. The capacity and interests of local fishers are complemented by the state's ability to legislate regulations. Co-management can lead to better more informed decision-making and improved resource outcome as measured by efficiency, equity and sustainability.

Co-management so far in Malawi involves the creation of Beach Village Committees in communities to aid the Department of Fisheries in managing fisheries at the test sites - Lake Malombe and Lake Chiuta. Beach Village Committees in Lake Malombe include the village headmen, and has resulted in fishers being underrepresented in management. After the implementation of co-management there has been an increase in compliance and increased catches. The main benefit is improved communication between the Department of Fisheries and communities.

In Lake Chiuta, co-management was implemented through a community led initiative in response to the harmful effects of nkacha fishers. Village headmen have not served a major role in the process of co-management. As a result the Beach Village Committees are more often viewed as being representative of the fishers and they are able to present views of those fishers. The main advantage of co-management has been to legitimise *de facto* regulations.

To become a part of the society in which these fishers live, co-management needs to have certain qualities. Village headmen need to be removed from Beach Village Committees, although they need to be given other positions of authority within the fishery that their position dictates. As members of lake wide committees they can still gain benefits from the fishery and be involved in dispute resolution. Beach Village Committees need to build on pre-existing social structures. This may mean the inclusion of sadakas and chairmen in Beach Village Committees.

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ABBREVIATIONS

DoF	Department of Fisheries, Government of Malawi
FCMA	Fisheries Conservation and Management Act
BVC	Beach Village Committee
CIHI	Centre for International Health Information
CLU	Community Liaison Unit
FAO	Food and Agriculture Organisation of the United Nations
FRU	Fisheries Research Unit, Department of Fisheries, Government of Malawi
GOM	Government of Malawi
GTZ	Duetsche Gesellschaft fur Technische Zusammenarbeit
ICLARM	International Centre for Living Aquatic Resource Management
IRIN-SA	Integrated Regional Information Network - Southern Africa
LMFA	Lake Malawi Fishermen's Association
LCFA	Lake Chiuta Fishermen's Association
NEP	National Environmental Policy
NEAP	National Environmental Action Plan
NGO	Non-governmental Organisation
SAP	Structural Adjustment Program
UNDP	United Nations Development Program
VHM	Village Headmen

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1 INTRODUCTION

Within developing countries a large number of people rely on fish resources as a source of protein and as employment of last resort. Management regimes instituted must succeed in further creating employment without depleting stocks. Currently 51 million people living in coastal communities are directly involved in the fisheries, and about 1 billion people rely on fisheries products for their main source of protein, income and/or livelihood. With the high rates of population growth in many developing countries, the number of people relying on these resources will increase drastically (Berkes et al., 2001). The dependence on fishing coupled with a growing population has resulted in a reduction in the amount of fish available for each person as has already been noted in Malawi.

In Malawi, centralised fisheries management was introduced in the early 1900's and has led to a decline in total catch and compositional change in all major fisheries (Fig 1-1) (Fisheries Resource Unit [FRU], 1999). This system was unable to limit fishing effort and protect juvenile fish. The result has been too many fishers chasing too few fish. The once abundant and economically important chambo has been replaced by less valuable cichlids. This shift in catches has reduced the income and nutritional welfare of many within fishing communities (Donda, 2000b).

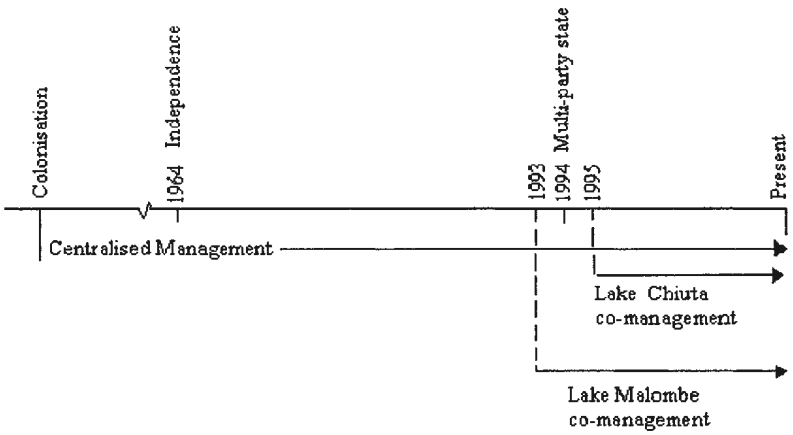

Figure 1-1 The introduction of co-management in Malawi.

To prevent further decline, the government intends to bring management back to the lakeshore communities through the introduction of co-management. Co-management is the sharing of power and responsibility of the fishery between the government and other stakeholders. Committees composed of representatives of various stakeholder groups are involved in negotiations with government to regulate and to enforce regulations (Berkes et al., 2001).

Before co-management in Malawi, fishers had very little involvement in the management of the fisheries. Management was centralised with decisions made away from the eyes of those affected. These decisions focused on the biology and economics of the fishery with little consideration of other social variables (Donda, 2000b).

So far, co-management has only been implemented in test sites, but will soon be implemented throughout the country. The first site where co-management was initiated was in the communities surrounding Lake Malombe followed by those near Lake Chiuta. Within these communities, Beach Village Committees (BVCs) were created to carry out the role of negotiator with government officials. BVCs were to consist of elected members plus traditional leaders. Traditional leaders (village headmen) were included as *ex officio* members. Village headmen (VHM) traditionally controlled access to the resource. They consider co-management to be a threat to their power and have managed to take control of Lake Malombe's BVCs, making most decisions for the committee (Donda, 2000b).

A lot of literature has stated the importance of the sociology of fishing communities, but very little seems to have been incorporated into management structures (Townsley, 1998). Traditional centralised management has put people at the periphery of fisheries management. Co-management attempts to bring people into a more interdisciplinary approach. Not only are the biological and economic areas considered, but also sociological aspects of the fishery (Berkes et al., 2000). To be successful, more research has to be initiated into the social environment in which co-management will be implemented (Townsley, 1998). A co-management framework has greater potential for flexibility in allowing community representative groups to be adapted to their social structure, as well as allowing adaptation to social changes that occurs in response to fishers' need.

1.1 PURPOSE AND NATURE OF THE PROBLEM

The purpose of this report is to look at the introduction of co-management into Malawi (Lake Malombe and Lake Chiuta), and to examine how improvements could be made to integrate it into the traditional societal context. Co-management was implemented in 1993 in an attempt to bring catch levels to those experienced in the early to mid 1980's (Donda, 2000b). Improvements in the arrangement need to be made to increase the potential for sustainability. Most of these improvements need to focus on the position of the VHM in BVCs set up to act as intermediaries between government and the community.

The importance of the social environment of the fishery in Lake Malombe and Lake Chiuta has been ignored for the most part since the creation of the co-management arrangement. Organisational structures are based on a blueprint design modelled after agriculture clubs in the area. This model is inadequate for a social resource such as fisheries that can be exploited by all the community. Fishers do not own fish until they are caught (Donda, 2000b).

The Malawian Department of Fisheries has failed to sufficiently consider the importance of the VHM within the fishery. Further research is needed to determine the true role of the VHM in fisheries management before co-management can be fully integrated into the community. Most literature suggests that the only role the VHM played was to limit fishing effort, and for this role they were paid a fee by fishers to fish in their area (Donda,

2000b). The relationship is likely to be more complicated and has greater impact on the lives of fishers than this.

1.2 APPROACH

Background information on Malawi and the government centred fisheries management arrangement will be presented first. This centralised arrangement is believed to have led to a decline in the fishery, especially the most economically important chambo (*Oreochromis spp.*) fishery. With a decline in the fishery, co-management has been suggested as a remedy. This report examines the basic theory of co-management relevant to the present study. It goes on to describe the co-management arrangements instituted in Malawi and to compare the approaches in two areas – Lake Malombe and Lake Chiuta.

Of the two cases, Lake Malombe was the original pilot site chosen by the Government of Malawi. It was likely chosen due to the importance of fishing in the area, and because the most serious decline in fish stocks was noted at this site. In Lake Chiuta co-management was implemented through a community-based initiative to rid the lake of damaging fishing activity associated with fishers from other lakes (Donda, 2000b). Each site will be examined to look at the role and influence of the village headmen, and then differences in the sites will be compared to determine their possible effects on the sustainability of co-management. Recommendations for improvements in the co-management arrangements will be looked at in the final section.

The information for this study was obtained from various literature sources. Many of the general co-management reports were products of various overseas agencies working within the field. For articles specific to Malawi, the report concentrates on those generated by Malawian nationals. Many of the overseas aid agencies painted the Malawi co-management situation in an overly positive way that was not seen in locally generated reports. Much of the information in the locally generated reports was the product of surveys performed by S. J. Donda as part of a PhD thesis. These surveys were directed towards community members directly involved in the co-management arrangement as well as those outside the BVCs, to get a full understanding of how the arrangements were affecting communities. Foreign agency reports focused on those directly involved in the BVCs whose views were not considered to be representative of the fishing community due to issues associated with the village headmen.

The main obstacle to writing this thesis was the lack of information on the traditional fishing community structures. Most information obtained was through the Donda (2000) thesis, but since it did not focus on the relationship of the fishers with the VHM before and after co-management, the information is somewhat limited.

2 MALAWI

2.1 Profile of Malawi

Malawi is a small, landlocked country in the eastern portion of southern Africa. It has a total area of 118 500 km^2, of which 24 208 km^2 is covered by freshwater. Three countries surround Malawi: Tanzania to the north, Zambia to the west and, Mozambique in the south and east. Malawi is classified as a developing country that is predominantly dependent on agriculture (Fig 2.1) (International Centre for Living Aquatic Resource Management and Duetsche Gesellschaft fur Technische Zusammenarbeit [ICLARM and GTZ], 1991).

Figure 2-1 Location of Malawi within southern Africa (www.malawi.net).

The largest body of water is Lake Malawi (also known as Lake Nyasa fig.2-1) located along the eastern border with Mozambique. Directly to the south of the lake is a smaller body of water, Lake Malombe. Lake Malombe is attached to Lake Malawi by way of the Upper Shire River. To the east of Lake Malombe along the Mozambican border is Lake Chiuta (Fig 2.2) (ICLARM and GTZ, 1991).

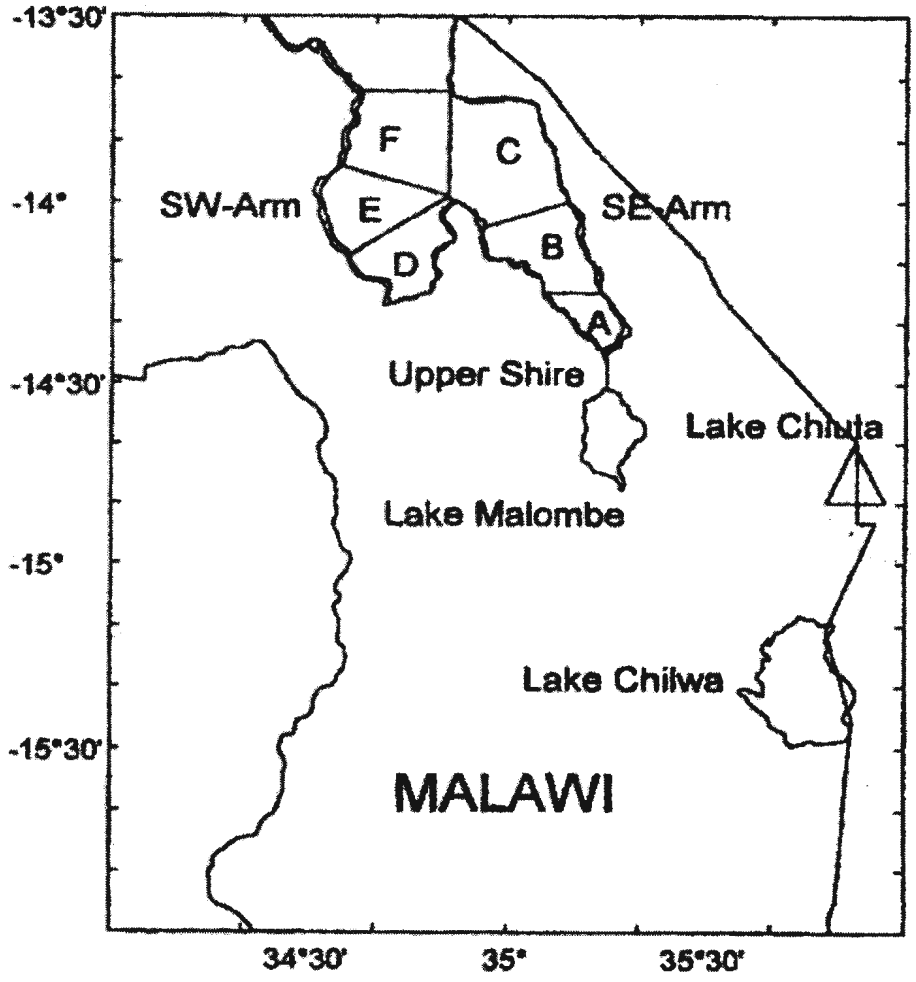

Figure 2-2 Location of Lake Malombe and Lake Chiuta within southern Malawi. (FRU, 1999.)

As the third poorest country in the world, Malawi shows many of the characteristics of a developing country including a high population growth rate, high population density, high dependence on agriculture and low health indices. The population of Malawi as of 1998 was 9.9 million with a growth rate of 2.4% (National Statistics Office in Malawi, no date). The population density is 105 people per square kilometre, making it one of the most densely populated countries in the world. The majority of the population live in rural areas (~90%) and are mainly dependent on agriculture (ICLARM and GTZ, 1991). The country has one of the lowest life expectancies in the world at 36 years (Centre for International Health Information [CIHI], 1999) as a result of poor nutrition and AIDS, as well as inadequate sources of safe drinking water (ICLARM and GTZ, 1991). Approximately 55% of the families are unable to produce enough to feed their families (Brummett and Noble, 1995).

Many of the poor communities rely on fish as their primary source of animal protein (Kaunda, 1994). Red meat and poultry are too expensive for the majority of the population, so many have become dependent on fish (Hara, 1993). It is estimated that 70% of the animal protein consumed comes from fish. Fish is readily available for most of the population since lakes and rivers cover 20% of the country and very little is exported (Kaunda, 1994). With the growing population there has been a decline in the amount of fish consumed from 12-18 kg/year per person in the 1970's (Scholz et al., 1998) to 5.6 kg/year per person (FAO, 1999).

Malawi has been an independent state since 1964 when it became a one party state under Life President Dr. Hastings Kamuzu Banda. In 1994 the first election in Malawi's history was held. This heralded a change to a multi-party democratic state (Donda, 2000b). Bakili Maluzi was first elected president for a five-year term and was re-elected again in 1999 (IRIN-SA, 1999).

With the change to democratic government, there has been a push to decentralise many government functions. The National Decentralisation Policy and the Local Government Act were passed in parliament in 1998. These policies were devised to allow for grassroots decision making and to mobilise communities for local economic development through the formation of District Assemblies (Donda, 2000b).

Village headmen (VHM) are being brought into the local political arena in the drive to decentralise government functions. Traditionally they were predominant in many aspects of community life. They had the final say on any decision that concerned the entire community, including those involved in resource use. Even though the VHM have the power to make all decisions, they often left decisions to community elders. These groups of elders made their decisions by consensus. In a centralised government system the power of the VHM was somewhat diminished (Donda, 2000b).

2.1.1 MALAWI FISHERIES

Artisanal fisheries occur in most bodies of water in Malawi. The most important occur on Lake Malawi, Lake Malombe, Lake Chiuta, and Lake Chilwa as well as on the Upper and Lower Shire River. A decline in catches has been noted in all these water bodies over the last ten years (FRU, 1999).

The fishery sector is predominantly artisanal for both subsistence and commercial purposes. There are 10,600 gear owners and 32,600 assistants (Scholz et al., 1998). The fishery is executed from both dugout canoes and plank boats, although, a growing number of motorised boats are entering the fishery in Lake Malawi (FRU, 1999). In total there are 13,000 small craft operating gillnets, scoop nets, traps and hook and line. The use of seine nets is also on the increase (Scholz et al., 1998).

There has been a decline in all major fisheries within Malawi preceding the implementation of co-management. The fishery peaked in 1990 at 70 thousand metric tons and the catch has declined since that point (Fig 2.1) [1] (FRU, 1999). This decline was most likely the result of excessive effort and destructive fishing methods such as small meshed nets that target juvenile fish. These practices are often seen as a by-product of the centralised management. Centralised management does address these issues in its regulations, but the lack of legitimacy combined with the lack of enforcement resulted in rampant violations (Donda, 2000b). With the change to centralised management in the

[1] Fishery statistics vary from source to source. For most of this report the Fisheries Research Unit findings have been used since these values seemed to be an average.

early 1900's responsibility for the fishery no longer rested in the hands of community (Njaya, 2000). They therefore did not feel a sense of ownership and would not act in a manner that would preserve the stocks.

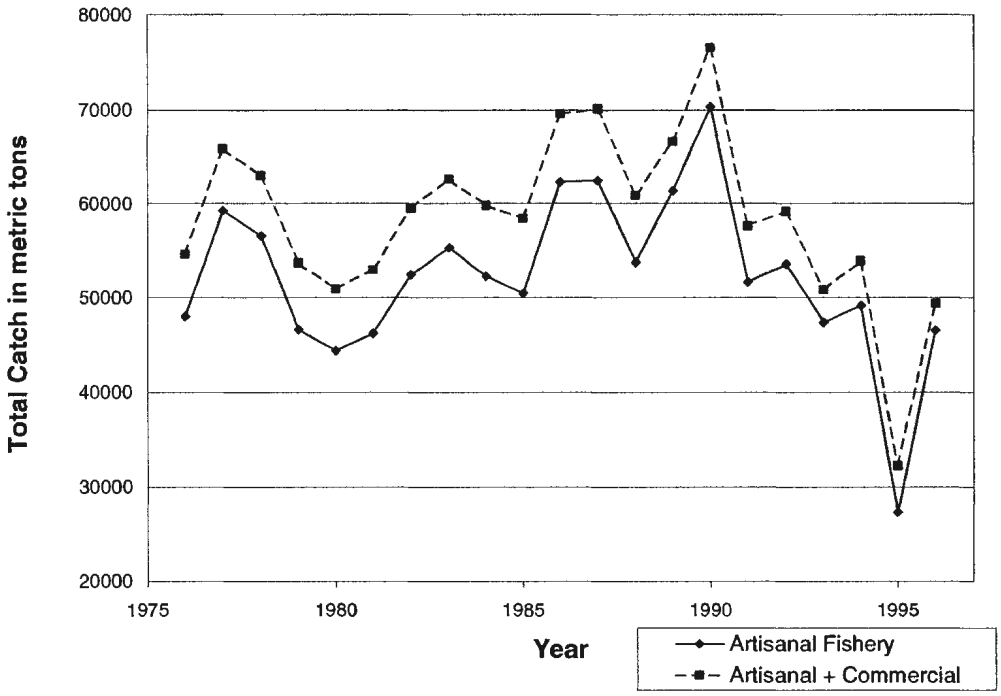

Figure 2-3 The total catch of all fisheries in Malawi from 1976-1996 (FRU, 1999).

Most fisheries within Malawi are multi-species with eight species comprising the largest percentage of the catch (Donda, 2000b). Economically the most valuable group is chambo (*Oreochromis spp*)[2], which is comprised of three closely related tilapia species. This stock

[2] Includes *Oreochromis lidole, O. squamipinnis* and *O. karongae.* These species are almost indistinguishable from each other and are usually grouped together.

has shown the most serious decline, and its fishery is all but non-existent in all bodies of water except the south-east arm of Lake Malawi (GOM/FAO/UNDP, 1993).

2.2 AREA OF INTEREST

The report will focus on Lake Malombe and Lake Chiuta. In reaction to declining catches, combined with high transaction costs, Lake Malombe was chosen as a test site for co-management. Co-management was later implemented in Lake Chiuta in response to community pressure (Donda, 2000b).

2.2.1 LAKE MALOMBE

Lake Malombe is the third largest lake in Malawi. It is a natural 390-km^2 impoundment of the Shire River that flows out of Lake Malawi. Although Lake Malombe does not have the high species diversity associated with Lake Malawi, it does have a higher level of fish biomass and greater productivity that at one time supported a thriving fishery. The lake is shallow, turbid and nutrient rich, with emergent vegetation along much of its shoreline (Bell, 1998; Tweddle et al., 1995).

Lake Malombe has a multispecies fishery with forty species commonly appearing within the catch (Donda, 2000b). Fishers target medium and small sized cichlids, chambo and kambuzi (*Haplochromine spp.*), from planked boats or dugout canoes. Gear types used include large beach-seine nets or boat-operated, open-water, purse seines. Mlamba

(*Clarias gariepinus*), usipa (*Engraulicypris sardella*), nchila (*Labeo mesops*) and kampango (*Bagrus meridonalis*) also form a large portion of the catch (Tweddle et al., 1995).

In the 1970's chambo, the most economically important species, was the most predominant species in the catch. Throughout the 1980's and 1990's the percentage of chambo in the catch declined from a maximum of 66% (8 484 metric tons of 12 936 metric tons) in 1982 to 2% (96 metric tons of 4 792 metric tons) in 1998 (Fig 2-4). At this point chambo stocks have not shown signs of improvement (FRU, 1999).

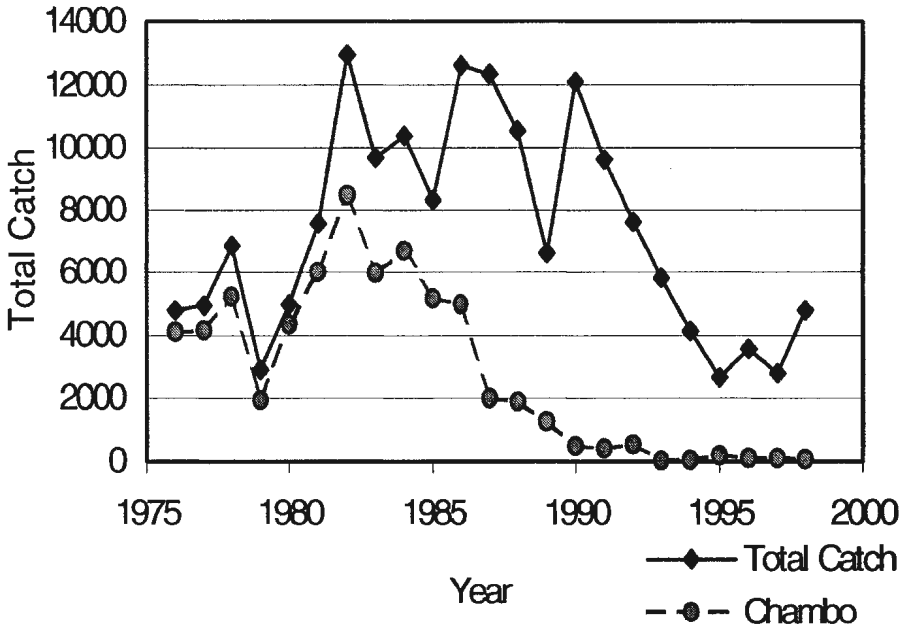

Figure 2-4 The total catch and chambo catch in Lake Malombe from 1976 to 1998 (FRU, 1999).

The virtual disappearance of chambo has led to the increased importance of kambuzi (Tweddle et al., 1995). Smaller mesh sizes are needed to catch kambuzi and remain competitive. Net sizes have decreased to the point where most are smaller than 19 mm with many fishers using illegal mosquito netting (Bell, 1998; Hara et al., 1999). Since the beach price for kambuzi is 30% of chambo, this has resulted in a decline in income for fishers. The cheaper price does make kambuzi more accessible to a poorer portion of the public (Tweddle et al., 1995).

The total catch has also declined throughout the same period. In 1982 the total catch was 12 936 metric tons. By 1995 the catch was 2 653 metric tons. There has been a slight increase from this point. The catch in 1998 reached 4 789 metric tons again (Fig 2-4) (FRU, 1999). The decline in catch was the result of overfishing resulting from the lack of legitimacy of regulations under a centralised management system, combined with weak enforcement (Donda, 2000b).

Fishers' cultural beliefs can have major impacts on the way fishers use the resource as well as other aspects of fishers' lives. Ancestral and spirit beliefs traditionally played a major role in the management of the fishery. The decline in fisheries on the lake has often been characterised by fishers as being the result of Gods or ancestral spirits. Some say that the Gods/ancestral spirits give fish at times and take them away at others. In this belief system fishers need to just wait for the Gods to give again. Others believe that the Gods and/or ancestral spirits are not happy with the way in which man has conducted the

fishery and has decided to keep the fish away from them (Donda, 2000b). The latter scenario can be used to the advantage of the fisheries manager by incorporating management measures as a way to appease the spirits.

Before centralised management, in some fisheries a traditional sadaka was performed to pacify the spirits and to improve their chances of having a good fishing year. A sadaka is an offering to make the spirits happy. Ancestral shrines, that are used during sadakas, are still present in many communities (Donda, 2000b). The traditional sadaka is still used in Mbenji Island fishery on Lake Malawi (Njaya, 2000; Scholz et al., 1998).

In addition to sadakas, closed areas and seasons were also used. Closing fishing areas near houses owned by the Mkulukutwa clans controlled fishing effort. Fishers believed they would lose their nets or lives by fishing close to their villages. Also closed seasons were implemented based on when the ancestors were travelling or when the Mkulukutwa clan daughters were marrying (Donda, 2000b). These taboos inadvertently reduced the effort, gave the fishery time to recover and created sanctuaries for breeding fish.

Beliefs and cultural knowledge are beginning to die out as modernisation occurs within the communities. They are still believed by older fisher, but many of the younger fishers are losing interest in the old ways (Donda, 2000b).

No formal traditional system was formed due to large abundance of fish and few fishers. Anyone could fish anywhere on the lake if they had the required gear. Tenurial rights to

fishing areas were never used. Each village was responsible for maintaining their own beaches. If fishers from other areas wanted to use the landing on another beach, they had to get permission and pay a fee of fish to the VHM. This practice has persisted even with the centralised management and may act to limit some of the fishing effort even if the practice does not have a legal basis (GOM/FAO/ UNDP, 1993).

As part of the traditional management, each beach has a chairman. Fellow fishers informally appointed these chairmen. They were also informally appointed by VHM to handle many fishery-related problems. Their duties included the acceptance and expulsion of fishers from the beach, and the resolution of small conflicts. VHM were informed of the decision, but for larger disputes the beach chairmen would refer those involved to the VHM (Donda, 2000b).

The Lake Malombe area is predominantly classified as Muslim Yao (87%) with the next largest group comprising the Christian Chewa. The area around the lake falls under the authority of three Yao chiefs. The population around the lake is mainly farmers with a large minority involved in the fishing industry (primary and secondary)[3] (Donda, 2000b).

[3] Primary resource users derive benefits directly from the resource (i.e. fishers, boat owners), while secondary users are those that derive benefit from the resource indirectly (i.e. consumers, government).

2.2.2 LAKE CHIUTA

Lake Chiuta is a shallow lake shared with Mozambique. The mean depth is 5 m and a total surface area of 200 km^2; 49 km^2 of the lake lies within Mozambique (Fig 2-2). Most of the lake bottom is muddy with submerged vegetation, although, in the southern part of the lake there is emergent vegetation that is penetrable only by dugout canoe. The lake is fed by a number of streams. These varying physical features serve as diverse habitat for a variety of fish species that support the fishery on Lake Chiuta (Njaya et al., 1997).

Although the catch averaged 2000 metric tons between 1976 and 1996 on Lake Chiuta there was very little involvement by the Department of Fisheries (DoF) (Fig 2-5). The lake is relatively remote and not easily accessed. Low priority was given to the fishery since the DoF considered the fishery to be unimportant in comparison to fisheries on other water bodies (Njaya et al., 1997).

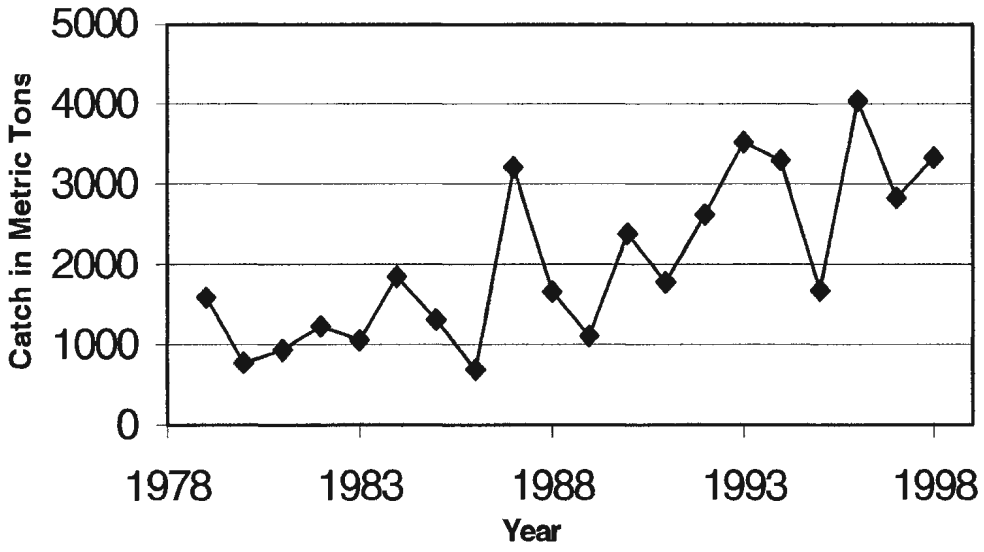

Figure 2-5 Total catch of the Lake Chiuta fishery from 1970-1998 (FRU, 1999).

All fishers in a community were members of a committee until the mid 1990s. A chairman headed each committee. Fishermen approached the chairman if there was a problem, including gear theft or disrespect of traditional authority figures. The chairman still exists in spite of co-management, but their usefulness has become somewhat limited (Njaya et al., 1997).

Other inadvertent management tactics are used including taboos that have persisted even after the implementation of co-management. Within the lake, there are four islands. Around the smallest island *Phiri la Mtsatsi* fishing is forbidden. Fishers believe that if one catches fish near the island or lands fish on the island they will never return to their home villages. The spirit of the island will take them away (Donda, 2000b). This has

allowed the area around the island to become a sanctuary since fish habitat and the fish are not disturbed.

The fishery is artisanal for both subsistence and commercial use, and fishers use dugout canoes and a few planked boats. There are a total of 913 fishers, a decline from 1990 numbers at 1443, using gill nets, fish traps and longlines with individually placed hooks. The most important fishing methods are fish traps followed by gillnets and longlines which require minimal assistance. As a result, 831 of the 918 fishers are gear owners. The shift to fish traps from gill nets has occurred over the last ten years (Donda, 2000b; Njaya et al., 1997). Approximately 90% of the catch is sold through local markets (Njaya et al., 1997).

The multi-species fishery catches predominantly those that are considered sedentary. Some evidence suggests that a migration from open water to the marshy areas does occur (Njaya et al., 1997). The catch in Lake Chiuta consists mainly of matemba (*Barbus paludinosus*), followed by chitungi (*Tilapia rendalli*), makumba (*Oreochromis shiranus*) and mlamba (*Clarias gariepinnus*) (FRU, 1999).

The dominant ethnic groups around Lake Chiuta are the Lomwe and Yao of Islamic faith. Both groups have a high dependence on the fishery. The fishers tend to have good attitudes toward risk, innovation and collective action (Njaya et al., 1997), although they have low literacy levels. These groups tend not to be just dependent on fishing but also on agriculture as a source of income and food (Donda, 2000b).

The shift away from community based management began in the late 1980's and early 1990's. Fishers from Lake Malombe and Chilwa, using nkacha nets to catch matemba, invaded the Chiuta fishery. These nets are non-selective and caught all species. Invading fishers had no respect for the traditional fishers on the lake creating constant conflicts between the two groups. The gear of local fishers was repeatedly damaged. The use of nkacha nets also resulted in a decline in water quality as the nets stirred up mud from the bottom of the lake making the water unfit for human consumption (Donda, 2000a; Njaya et al., 1997). Fishers realised the rights to fish were *de facto* and not protected by legislation. *De jure* rights were needed to prevent the invasion of outsiders. At this point the communities approached the Department of Fisheries and initiated the process that led to co-management (Donda, 2000b).

2.3 Centralised Fisheries Management in Malawi

Since colonial times fisheries management has been centralised. This system was implemented to control the level of exploitation, modernise fishing methods and ensure exports back to the colonising government. The only thing it has truly accomplished is to take the control of fishing resources from the community and put it in the hands of the government. Centralised management is believed to be the main cause of the decline in Malawi's fisheries. To prevent a complete loss of the fishery there was a need to put a new management strategy in place (Environmental Affairs Department, 1998).

In areas that are centrally managed, decisions are made at the national level without participation of fishing communities. Governments have underestimated the capacity of communities to manage resources using traditional knowledge. As local populations lost access to resources that were essential to their survival, they also lost the knowledge generated over centuries. The imposition of centralised management showed a lack of understanding and incompatibility with cultures and traditions (Berkes et al., 2001).

With the loss of control over the resource, users began to resent government authorities, creating an atmosphere that prevented communication. The lack of communication between fishers and the government created antagonism that has erupted into violence between the two groups (Donda, 2000b). In areas where co-management has been implemented the relationship between the fisheries department and fishers has improved, but, in other areas, problems still persist (Hara et al., 1999; Njaya et al., 1997).

Central management decisions are made based on the collection of biological data from fishers and through research to protect fish stocks for economic reasons. This conservation approach is based on highly centralised decision making with a strong emphasis on the biology of the targeted fish species. Policies based on this method attempt to maximise the sustainable yield of fish that can be harvested economically. Government biologists have insufficient funds for proper collection of enough information on the status of fish stocks to make accurate estimates. Therefore, to gain the required information a dependency on foreign funded projects has developed (Donda, 2000a; Njaya, 2000).

Although the biology of fish plays a predominate role in management, the goal is to promote sustainable economic use through increased efficiency of exploitation, processing and marketing. The conservation paradigm is seen as a method to maintain stock size to ensure economic viability of the resource (Scholz et al., 1998).

The first Fisheries Act in Malawi was passed in 1973. Fishers were not informed about the underlying principles behind the regulations and were told to follow them or face repercussions (Donda, 2000b). Regulations imposed, therefore, lacked the legitimacy needed for effectiveness and consequently many regulations were ignored. Due to the diffuse nature of the fishery, it was impossible for fisheries departments to catch most violators. More money and time were needed to locate and prosecute violators for enforcement to be effective. The support of fishers would increase compliance and reduce the need for enforcement. This support is necessary for fisheries management to succeed (Berkes et al., 2001; Donda, 2000b).

Most fishers are aware of the decline in fish stocks and how to solve the problems, but due to their current positions they cannot afford to decrease catch to allow numbers to increase (GOM/FAO/UNDP, 1993). With centralised management, fishers have very little control of many of the management decisions. New management strategies need to be developed that empower the local communities and allow these groups to become involved in resource use. Management should focus on rural development from a wider view that encompasses the social, cultural, economic and political aspects of fishing

communities. Through training, communities learn to recognise and deal with problems that arise in each of these areas. Skills learnt through training allow communities to become empowered to actively make and become involved in decisions that affect their wellbeing (Berkes et al., 2001; Madeley, 1991).

To truly allow for empowerment, national governments need to decentralise control to regional and local levels. Pressures to decentralise decision-making are now coming through structural adjustment programs and aid agencies, as well as new thinking in fisheries management. Aid agencies have shifted funds from building technical capacity to community based and sustainable approaches to fisheries management that focus on the poorest (Sarch and Allison, 2000).

Many of the traditional aspects of the fishery still remain despite centralised management. VHM still retain the authority to regulate who has access to the resource. Before fishing from a beach, permission must be granted by the local VHM. It is well within the authority of the VHM to refuse to allow any fisher to land on the beach. VHM also collect a fee of fish from fishers as a sign of respect for use of the beach area and are involved in conflict resolution (Donda, 2000b).

Given the importance Malawi puts on the fishery, there is a need to create effective management strategies that are not economically taxing to the Department of Fisheries. The top-down management approach can be considered a failure, for it has led to the decline in all fisheries. Regulations are largely ignored, and the government does not have

the capacity to apprehend violators. So far, regulations implemented by centralised management have failed to reduce effort in the fishery and protect juvenile fish (Donda, 2000b). A new management strategy is needed that increases compliance and reduces the cost of enforcement.

To meet these goals Malawi, with the assistance of foreign agencies, is bringing communities into the management of the fishery. Co-management is the evolving partnership between government and stakeholders to share responsibility of the fishery (Nielsen et al., 1996). This endeavour places substantial demands on both government and fishing communities, including the need for proper representative associations, the need for them to be able to present their positions and the need for these associations to be fully integrated into the community (Nielsen, 1996).

3 CO-MANAGEMENT: AS AN ALTERNATIVE

Co-management is defined as the partnership between government and those with interests within the fishery. For this relationship to be successful, it must be dynamic and use the capacity and knowledge of resource users complemented by the capacity of government to provide the required legislation. The rationale behind co-management is that involvement and participation in management creates incentives for co-operation in order to formulate and implement more efficient, equal and sustainable management schemes that benefit all parties (Pomeroy and Williams, 1994). Characteristics needed for a successful partnership has been summarized in Appendix 1.

Partnerships between users and government can fall along a continuum based on the authority and responsibility each group possesses. At one end of the continuum is community-based management where fishing communities have full control over management of the fishery without input from the government. At the opposite end of the spectrum is full government control. Between these two points are many variations that are based on the degree of participation of the community (fig 3-1) (Berkes et al., 2001; Brown, 1998; Nielsen, 1996). The degree of decision-making responsibility delegated to the community will depend on its knowledge, strength in negotiating and ability to organise. Each arrangement should be site and country specific (Rihoy, 1995).

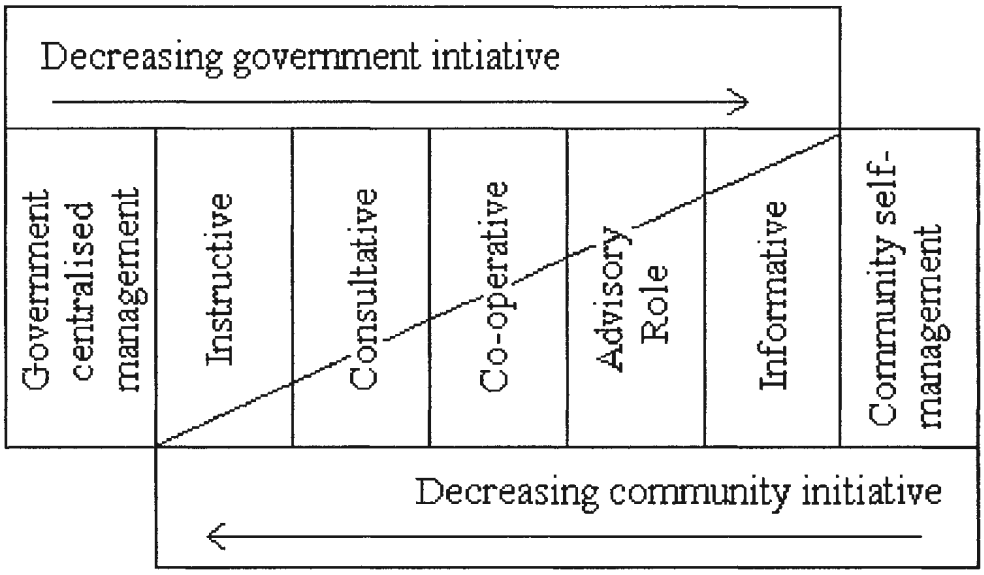

Figure 3-1 A hierarchy of co-management arrangements (Donda, 2000b; Nielsen, 1996).

The dynamic institutional process of organising co-management must be flexible enough to respond to changing demands in the fishery. Institutions are considered to be the rules of the game in a society that are created or evolve in response to economic, cultural, social and political pressures. They develop to allow for participation, rule making, conflict management, power sharing, leadership, dialogue, decision making, negotiation and knowledge generation. These institutions influence how organisations are formed, and subsequently, organisations will influence the evolution of institutions. The ultimate goal of co-management is the creation of an institution designed to manage fisheries co-operatively with two or more organisations who will alter the institution to meet changing demands and needs of the fishery (Nielsen et al., 1996).

Through the institutional process of reallocating management structures, co-management allows the sharing of costs and benefits between the government and users. The costs associated with each process are no longer incurred by the government alone but are shared by both parties, and more importantly, the benefits will also become more equally shared among all shareholders (Nielsen, 1996). In situations where co-management results in a reorganisation of the fishery so that the benefits outweigh the costs for all participants, it will become sustainable.

In the process of allowing the fishery to become more equitable, co-management also increases the legitimacy and effectiveness of management by involving user groups. Bringing user groups into the management allows them to share in the responsibility for the fish resource in partnership with government agencies through assisting in the development of regulations and enforcement (Pomeroy and Berkes, 1997). Since resource users are involved in formulating regulations, there is greater incentive to implement efficient, fair and sustainable management schemes, and subsequently, comply with the resultant regulations making the fishery more profitable and sustainable over the long run (Nielsen, 1996; Rihoy, 1995). Throughout the process, the capacity and interests of local fishers are complemented by the state's ability to legislate regulations (Berkes et al., 2001).

3.1 Process of Co-management Implementation

Co-management is usually introduced in response to overexploitation of the resource, growing antagonism between fishery departments and fishers, ineffective centralised management regimes and conflicts between different fishery users. Although co-management may help in the previously mentioned incidences, it will not work in all fisheries (Nielsen, 1996). Some communities are unwilling to take on the responsibility of managing the fishery. In Malhaio, a small community in the Phillipines, community residents were more interested in farming and had to be prodded into participation. The fishery is secondary income. After the first few years the committee members stopped meeting and have not maintained most of the initiatives implemented with the program (Pomeroy et al., 1996).

In many tropical fisheries, co-management may be brought in not due to stock depletion but due to an alteration in species composition. Over-exploitation often causes a decline in number of valuable species and an increase in less valuable species and thus reduces the overall value of the fishery (Tweddle et al., 1995).

The implementation of co-management can be seen as a series of steps. The first step is pre-implementation. This step begins with the recognition of the problem by the resource users and stakeholders, followed by open discussion and development of a plan of action. Information at this stage must reach all possible stakeholders, so they can become actively involved in planning. Government and resource users should use this planning

process to develop bonds that will allow them to develop common goals and come to agreement on the way in which these goals will be achieved (Pomeroy, 1998). Research into sociological aspects of local villages should begin at this time and continue throughout the course of the program.

The next step is the implementation of co-management. This step has four components: resource management; community and economic development; capacity building; and institutional support. Resource building includes activities that manage, protect and rehabilitate stocks. Economic and community development create other economic activities that direct effort away from the fishery. This area also deals with improving the living standards of communities. As other economic activities are created, effort may be diverted away from the fishery. Building the capacity of communities and individuals involves training, organisation development and empowerment. Institutional support comes in the form of policies. Policies should be written up and enacted to protect the organisations, and the methods in which they hope to manage the resource (Pomeroy, 1998).

The final step involves the withdrawal of outside support and evaluation of the project. Co-management arrangements should be self-sustaining and should not need external financial support. Constant monitoring is needed to determine if goals of co-management are being met. If these goals are not being met adjustments to plans can be made with consensus of stakeholders (Pomeroy, 1998).

3.2 COMMUNITY ORGANISATION

Communities need to develop the capacity to form proper organisations to be truly effective. Organisations are groups of individuals bound by common interests and goals, assembled to meet specific objectives. Objectives need to be explicitly stated and shared by those within the organisation. Members also need to define and have a common understanding of;

1) who is and is not a member,
2) the rights inferred by membership,
3) how decisions will be made in the management process,
4) the role of leaders,
5) membership responsibilities to sustain the organisation, and
6) how conflicts will be resolved (Nielsen et al., 1996).

Many fishing communities do not have the required experience or skill set needed for creating organisations to manage a resource. Several skills are imperative for the success of an organisation. They must be able to reach consensus on their position, then communicate this position to other groups and to deal with changes in the fishery as well as to transmit information on stocks to other stakeholders. These skills must be taught through community training. Training should include business management, communication, group dynamics, basics in theory behind co-management, problem solving and biology of the stocks in question. The process of forming effective organisations can take from 3-10 years depending on previous organisational capacity (Pomeroy and Berkes, 1997).

Until the community can effectively communicate its position and is able to form the required organisation, the co-management arrangement is likely to be consultative or instructive (see fig. 3.1). Low levels of education and lack of empowerment all hinder an equal involvement of fishing communities in the decision making process (Nielsen, 1996). As the proper skills are developed more responsibility can be delegated to the community organisations.

The traditional community structure will be another factor affecting the communities' ability to organise. Autocratic traditional leaders may consider a community-based organisation as a threat to their power, and over years autocratic leaders may also reduce the community's ability to make collective decisions (Donda, 2000b). Co-management may appear as a threat to power and may result in more conflict in the community.

Organisational leaders should be chosen from the community. Leaders already present in the community may not always be appropriate for resource management. People involved in the use of the resource are more likely to be respected and to represent the fishing community better in negotiations with the government. The leader's term in office should be limited to give many individuals in the community the opportunity to develop leadership skills and to reduce the possibility of corruption (Pomeroy et al., 2001).

When setting up organisational structures, it may be advisable to bring in non-governmental organisations (NGOs) to assist in the process. NGOs are more willing to live within the community and are able to focus on community objectives without

pressing their own agenda, acting as an impartial partner and change agent. They employ more people who live within the community and have direct access to target populations. Assisting communities organise, increasing fishing community's power and helping communities participate in resource management are all tasks that may be better performed by NGOs (Berkes et al., 2001; Madeley, 1991). These capacities are developed by providing information and independent advice, ideas and expertise, education and training to those directly involved in the community (Berkes et al., 2001). Communities should not become dependent on the NGO, and after an appropriate period of time NGOs need to be slowly phased out.

The ability to organise may increase a community's ability to raise social standards. Community organisations can be used for both fisheries management and community and economic development by promoting the participation of fishers and communities to actively solve problems and address their own economic and social needs (Abdullah et al., 1998; Berkes et al., 2001). Organisations also have the potential to improve communication. They serve as a forum to discuss community related issues and through training members are able to adequately state and identify problems within the community.

Management functions relevant to small-scale fisheries that can be shared with both community organisations and government include;

1) data gathering and analysis,
2) harvesting decisions, such as licensing, timing, location and vessel or gear restrictions,

3) protection of water quality and habitat damage,
4) enforcement of regulations or practices for harvesting, allocation and resource protection,
5) enhancement and long-term planning; and
6) policy decision making (Pinkerton, 1989).

3.3 GOVERNMENT INVOLVEMENT

Not only must changes occur in the community, but also in organisations and institutions used by the government. Appropriate government administrative structures are essential to promote and sustain local level management through open dialogue and legislation (Pomeroy and Berkes, 1997).

New organisations and skills are needed to deal with the increased number of stakeholders involved in management. Government personnel need to be trained to deal with special issues that may occur as a result of the co-management. Special units should be developed with the specific task of communicating with other stakeholders. Little research has been completed on the actions that need to be taken within the government to initiate and ensure sustainability of co-management.

Governments must be willing to devolve power to local management structures. Usually this is not the case. Fisheries managers are sceptical about communities' ability to manage the resource. Communities need to prove they have the knowledge needed for

management. Although fishers normally have a lower level of education than the rest of the population, they usually have the appropriate knowledge to participate in fishery management. This knowledge has been transferred through generations by cultural transmission. Using scientific findings complemented by traditional knowledge may make co-management stronger then either community-based or top-down management (Berkes et al., 2001).

Specific legislation needs to be developed to allow participation of fishing communities in the co-management process. Legalisation of fisher's organisations and rights to assist in the management and enforcement of the fishery are essential to community involvement. Policies must define the legal status, rights and authorities essential to the performance of management. Power needs to be shifted through laws to communities (Pomeroy and Berkes, 1997).

Fisher's organisations need to be institutionalised through legislation enacted by government. Resource users need to have the right to hold meetings, to discuss problems and to develop organisations and institutional arrangements (rights and rules) for management. Fishers should be given the right to develop their own organisations and to form networks and coalitions for co-operation and co-ordination. These organisations need to be given access to government officials to express concerns and ideas. Quite often fisher's organisations are government formed (Pomeroy and Berkes, 1997). They tend not to be representative of the community and are viewed as an extension of government within the community (Donda, 2000a).

3.4 Cost Benefits of Co-management

The implementation of co-management results in a change in the transaction cost structure associated with managing the fishery. Transaction costs arise from gaining information about the resource and what users are doing with it, reaching agreements with others in the group with respect to its use and enforcing agreements that have been reached (Abdullah et al., 1998).

Centralised management has a significantly different cost structure then co-management. Costs associated with set-up in centralised regimes tend to be lower since less time is spent on establishing management and consulting those involved. This approach relies on a limited number of experts who gather information and design regulations with very little participation by resource users. In the long run the costs will be higher, and the management will be less sustainable. The costs of monitoring and enforcement are higher since there is an incentive to break rules (Abdullah et al., 1998; Donda, 2000b).

With co-management the costs of implementing the program will increase, but the costs associated with monitoring and enforcement will be decreased. Costs of reaching consensus among the stakeholders will increase since the number of individuals associated with the agreement will also increase. Each user group will bring different information and viewpoints to negotiations resulting in lengthier negotiations when coming to an acceptable agreement. Co-ordinating the activities of several different

groups takes time and other resources in the process of coming to an agreement, monitoring activity and evaluating performance. There will also be costs associated with restructuring or creation of local and government organisations (Abdullah et al., 1996).

Costs of coming to an agreement are often incurred by one group with others free-riding. This may be detrimental to the sustainability of the new institution (Abdullah et al., 1996). Free riders will have less incentive to maintain the institution since each participant did not make a sacrifice, and they may hamper the sustainability of the co-management agreements.

The costs of monitoring and enforcement are reduced in co-management due to the increased legitimacy of regulations. This has become one of the main arguments for co-management. Fishers are more likely to comply with regulations and allocation principals if they are involved in their creation. They can actively monitor the fishery as they are out on the water fishing. The community can also be involved in information gathering as part of licensing agreements (Abdullah et al., 1996).

3.5 OUTCOMES OF CO-MANAGEMENT

Not only does co-management decrease some of the costs associated with managing resources, co-management can lead to better, more informed decision making, may reduce conflict and uncertainty over resource use, and can contribute toward building a sense of community. Conflict is reduced by clearly defining rights and responsibilities by providing an institutional forum for discussion with decision-makers (Rihoy, 1995). The benefits derived from co-management have been summarized in Appendix 2.

It can also address issues of marginalisation of fishing communities. To address marginalisation requires the empowerment of communities through the transfer of economic and political power from a few to the impoverished majority. Empowerment gives communities greater social awareness, self-reliance and establishes a balance in community power relations (Pomeroy et al., 2001).

Not only will benefits be noted in community structures and decision-making processes but also in the economic and biological aspects of the resource. Co-management can lead to improved resource outcome as measured by economic efficiency, equity and sustainability (Nielsen et al., 1996).

Efficiency deals with the change in net benefits from the fishery. Cost effectiveness can be measured through reduction in transaction costs or improved net returns from the

fishery. Co-management should lead to better monetary returns from the fishery over the long run (Nielsen et al., 1996).

Equity is divided into representation, process clarity, homogenous expectations and distributive effects. Representation is the extent to which users and stakeholders are represented. The entire range of interests should be represented within the process, including fishers, gear owners, conservationists, middlemen and others involved in the fishery. Although many interests should be represented, there should also be a limit on those that can be involved (Berkes et al., 2001; Nielsen et al., 1996). With too many interests, the negotiation process can become lengthy, and many of the interests of the fishers will be lost. All processes should be transparent to all and have a clear purpose. This is referred to as process clarity. Homogenous expectations are the extent to which participants have similar expectations concerning the process and its objectives. Distributive effects are the extent to which the management process has led to a more or less equitable distribution of benefits (Nielsen et al., 1996).

The sustainability component is broken into resilience and stewardship. Resilience is the ability of the system to absorb and deal with shock. Organisations need to change with conditions in the fishery. There must be a continual process of professionalising by learning and adapting in response to changes and shocks. The second aspect of sustainability is stewardship. Stewardship is the tendency of resource users to feel a sense of ownership toward the resource, leading to the maintenance of resource productivity and ecological characteristics of the resource (Nielsen, 1996).

Co-management can also be adapted to the social environment the fishery occurs within. Government needs to design co-management, so that it is flexible enough to allow each community to adapt their committees to their social environment. These committees may be able to re-establish old traditions. The individual nature of co-management arrangement allows communities to introduce traditional culture into a modern system (Brown, 1998; Hauck and Sowman, 2001).

The centralised management regime implemented during the colonial age has taken the management of resources away from traditional communities (Berkes et al., 2001). Co-management attempts to bring some of the responsibility back to these communities through sharing of responsibility between the government and communities. For successful co-management organisations need to be set up in both the government and fishing communities (Pomeroy and Berkes, 1997). Co-management has the advantage over central management in that it allows the reduction of transaction costs, more informed decision making, and reduced conflict and uncertainty over the resource (Nielsen et al., 1996).

4 CO-MANAGEMENT IN MALAWI

In the late 1980's and early 1990's the fisheries in Malawi were in serious decline. This decline has been attributed to excess effort and lack of enforcement capabilities caused by shortfalls in management. Population levels of chambo, the most valuable species, had reached the point where it could no longer sustain a fishery. Less valuable fish replaced chambo making the fishery a less economically viable proposition (Sarch and Allison, 2000).

With the recommendation of the Chambo Fisheries Research Project (GOM/FAO/UNDP, 1993), the government considered implementing more stringent regulations in an attempt to reduce overfishing. If these regulations were implemented, more money would be needed to strengthen enforcement capabilities. However, increased funding was not possible due to streamlining of government budgets in response to structural adjustment programmes (SAP). Within the SAP there was an emphasis on shifting toward decentralisation of government decision making. A new management plan was needed that reduced the costs of enforcement but increased compliance to prevent biological overfishing while bringing decision making closer to the community. There was also a need for improvement in the relationship between the government and fishers (Hara et al., 1999).

Co-management seemed to be the best alternative since it would address many of the problems associated with centralised management. It would encourage dialogue between

fishers and government and result in increased trust. Fishers would become involved in the formulation of regulations thereby increasing legitimacy of regulations and subsequently increasing compliance. Higher compliance would mean a decrease in the need and costs associated with enforcement (Nielsen, 1996). It also fitted within the SAP's goal of decentralising government's function to lower levels.

The government hoped that user participation would allow for biologically sustained exploitation and continued economic viability. Self-regulation would reduce costs and increase acceptance of the regulations by users and would result in much less need for outside enforcement of regulations (Hara et al., 1999).

4.1 IMPLEMENTATION

The initial plan for co-management in Malawi included seven components. These components were community participation, change of the current fisheries regulations and policy, research and monitoring, public relations and extensions, licensing, gear compensation and income generating activities and law enforcement. Throughout the length of the implementation process these components were changed or discarded and new components included (Scholz et al., 1998).

The main feature of the co-management scheme involved the formation of Beach Village Committees (BVCs) through training of fisheries assistants and fishers by the Department of Community Development. One of the long-term goals was the formation of lake wide

fishers' associations to provide co-ordination between BVCs. As part of the implementation process, the policy and legislation for fisheries management was modified to transfer some control over the resource to BVCs and the fishermen's association (Bell, 1998).

The main government department involved is the Department of Fisheries (DoF), but the Ministry of Agriculture and Livestock Development, the Department of Wildlife and the Forestry Department are also assisting. The other departments have been included to create other income generating activities in order to divert effort away from the fishery. Malawi Broadcasting Corporation also has become involved. It produces a radio show that discusses issues related to the fishery (Njaya, 2000). The Malawi Rural Financing is providing loans as start-up capital for small and medium-scale enterprises (Donda, 2000b).

The government hopes to increase stock levels, so that the fishery can be exploited to levels experienced in the 1980's (Hara et al., 1999). This is unlikely to improve the situation since these were the levels that caused the decline in the fishery. In an attempt to increase fish population levels, government hopes to enforce a closed season, ban the use of beach seines and increase the minimum mesh size to 25 mm with the assistance of local communities (Bell, 1998).

4.2 ORGANISATIONS INVOLVED

Co-management needs proper organisations both within the community and government. These organisations serve as a forum to express ideas and suggest changes. They also serve as an interface for communication with other organisations (Scholz et al., 1998). In Malawi BVCs within fishing areas and the Community Liaison Unit on the government side have been set up for these purposes (Donda, 2000b).

4.2.1 COMMUNITY STRUCTURES

Within the community a democratically elected committee, the BVC, was proposed by government to take on the challenges of co-management. In negotiations with the government, BVCs would act as intermediaries between the DoF and fishing communities. They would provide a two-way channel of communication, in particular concerning the discussion and adoption of fisheries regulations and extension work (Scholz et al., 1998).

To become a representative in the BVC, one has to be elected and meet the approval of the village headmen (VHM) and fisheries extension workers. A group of 10–14 members are selected by the community (Scholz et al., 1998). Anyone within the community could be voted onto the committee whether they are involved in the fishery or not. Candidates need the blessing of the VHM and fisheries extension worker in addition to having been elected by the community (Donda, 2000a). Since the VHM and extension workers can overrule election results the process is not truly democratic.

Traditional authority figures, such as the VHM, were to be included as *ex officio* members (Scholz et al., 1998), but many have taken over the control of BVCs. In many instances within Lake Malombe's BVCs, the VHM felt that the committees were largely ineffective and replaced elected fishers with other community members. VHM choose replacements not based on their knowledge of the fishery but on their relationship with the VHM (Hara et al., 1999).

In the original proposal BVCs were to be funded through the payment of sitting allowances. Fisheries license fees were to be diverted to cover costs associated with the running of the BVCs. So far this has not occurred. BVCs have become reliant on foreign and government funding (Scholz et al., 1998).

Groups were to be involved in management components such as discussion of fisheries regulations, licensing and record keeping of fishing gear and boats, control of their beach and fishing area, gear and license inspection, organisation of extension sessions and participation in fisheries enforcement. In order to perform these functions properly, training of committee members was needed. BVCs were trained in group dynamics, leadership, business, accounting and the adoption of a constitution (Scholz et al., 1998).

4.2.2 GOVERNMENT ORGANISATIONS

Within the government the Community Liaison Unit (CLU) was set up to deal with government's co-management functions. It was designed as a specialised unit in DoF that devotes all its time to implementing co-management, facilitating the formation of BVCs and establishing a dialogue between the government and fishing communities. In Lake Chiuta a CLU has not been set up, so these functions are carried out by extension workers (Donda, 2000a). The organisational structure and the management of government institutions remained basically unchanged, with most decisions being made in central offices away from the fishing areas. The government failed to fully adapt its own organisational structures even if the communities were forced to change (Donda, 2000b).

One of the most important functions of government is to create the proper legal framework for co-management that legitimises communities' participation by defining their legal status, rights and authorities in co-management. Several policies have been enacted. The Fisheries Act and the Fisheries Conservation and Management Act (FCMA) give the main legal support. Further support is given through the National Environmental Policy (NEP) and the National Decentralisation Policy (Donda, 2000b).

The FCMA allows the DoF to effectively implement its policy and management tactics. Within the FCMA the DoF is permitted to enter into a contractual relationship with user groups to aid in management. As of 1999 no contractual arrangements have been made (Donda, 2000b). It could be a powerful tool to define DoF's relationship with the

community and to define the obligations of both sides in the management of the fishery. Combined with the soon to be completed Fisheries Policy, the government hopes to have a full range of policies to legitimise community organisations and allow for their participation in management (Donda, 2000a).

One problem associated with the proposed and finalised policies is the issue of property rights (Donda, 2000b). Since property rights are not mentioned it can be assumed that the resource will remain under common property rights regime. The resource will remain open access making it hard for communities to exclude effort from the fishery. This allows outside fishers to benefit from co-management.

As further support to co-management, the government has included communities in resource management in other sectors. The agriculture and forestry sector has also implemented similar endeavours. Each of these areas was identified as areas of environmental concern in the National Environmental Action Plan. The NEP was prepared in response to the action plan to address these needs. It emphasises the preservation of environmental processes, management of the resources, increasing public awareness of resource degradation and involving user groups in the management of the resources. The NEP serves to support fishery regulations, since all new policies relating to environmental use must emphasise the participation of resource users (Department of Research and Environmental Affairs, 1994).

The National Decentralisation Policy is designed to allow for community involvement in not only resource management but also in other economic areas. It is designed to empower local communities to take control of socio-economic development in their area. Combined with the NEP and the FCMA the legal basis was set up to enable co-management in the lakes and rivers of Malawi (Donda, 2001).

4.3 Co-management in Lake Malombe

A co-management plan was initiated in Lake Malombe in response to stock depletion. It was implemented in 1993, after five years of declining catch, when new policies in the country were emphasising the importance of community involvement in resource management (NEP, National Decentralisation Policy, FCMA). The centralised management not only resulted in declining catches but also in an increasing sense of animosity between fishers and government. It was an expensive way to gain information and also expensive to enforce. All these issues needed to be addressed in new management system (Donda, 2000a).

The Lake Malombe area is ideal for co-management since it is a well defined area, the fishing levels had decreased to the point that both government and fishers were concerned, an ineffective centralised management regime was in place and there was a large economic loss due to reduction in the number of chambo and decreased catches. Over exploitation that results in a change in species composition and ineffective management are two common reasons for implementing co-management. These factors

produced incentives for both government and fishers to participate in the process (Scholz et al., 1998).

The community organisations were set up in 1993 as BVCs around Lake Malombe and the Upper Shire River based on landing sites and through combining of communities. BVCs became representatives for the fishing community in negotiations with the government (Njaya, 2000).

With the development of BVCs, many responsibilities have been delegated and shared with the government and the community. BVCs have become responsible for issuing of transfer letters, which allow fishers from other lakes to fish in Lake Malombe. Co-operatively with the government, they are involved in enforcement, collection of licensing fee, monitoring of stocks and message delivery. BVCs are also consulted on formulation of regulations, review of Fisheries Act and the Fisheries Policy (Donda, 2000b). Most activities still are the responsibility of DoF or shared with DoF. Due to organisational constraints co-management at Lake Malombe can be classified as consultative, as in fig 3-1.

Goals specific to Lake Malombe included the recovery of the fishery, increased co-operation, increased dialogue and negotiation between the DoF and fishing communities and the formation of community level organisations (Donda, 2000b). Communities were not involved in the formation of these objectives. When community members were asked

what they felt the goals of management in the fishery should be the response was the economic advancement of fishers and increased social wellbeing (Hara et al., 1999).

To ensure the recovery of fish stocks, there needs to be an increase in the level of compliance with regulations. Since the implementation of co-management increased compliance has been noted. Regulations are considered to be more legitimate since fishers were involved in the formulation. More fishers have obtained their license (Hara et al., 1999). The adoption rate for the new net regulation of a minimum of ¾ inch mesh was 85% in 1996 (Scholz et al., 1998), although, it is believed that some fishers are now lining their nets with mosquito netting to prevent the economic loss associated with increasing the net mesh size (Hara et al., 1999).

This compliance is likely to decrease. The courts within the country no longer allow the community organisations to apply monetary sanctions. Sanctions must be in the form of either chickens or cows, or through the confiscation of gear, until the courts can hear the case. Confiscated gear has been stolen from the BVC on several occasions causing conflict between fishers and BVC members. Most BVCs refuse to become involved in enforcement and have allowed the Department of Fisheries to resume these duties (Donda, 2000b).

Many have refused to take on enforcement activities not only because of legal issues but also due to social norms within the community. Fishers are not always willing to impose sanctions on others in their social group. They don't want to be seen as the person who

gets their colleagues in trouble, since these actions may result in repercussions. Cultural and social norms may be considered the backbone of the society and failure to comply with these norms has consequences (Donda, 2000b). The fishery may need external monitoring by DoF until new regulations become the norm, followed by a gradual handing over of enforcement to communities.

Many have come to view co-management as the shifting of power to the community after the government failed in its duty to manage the fishery, especially in regard to enforcement activities. Since most members of BVCs are not fishers there is little incentive for them to take over the government's work without pay (Donda, 2000b).

One of the main problems with co-management in Lake Malombe is expecting more from the group than they are able to do. A more gradual introduction into co-management may have been better. More training for both communities and government officials would have been beneficial, leading to a better understanding of each participant's role in management.

Before co-management, beach chairmen were responsible for many aspects of the fishery now delegated to BVCs. Chairmen were informally appointed by fishers and empowered by the VHM. They served as representatives of the VHM handling issues affecting fisheries including the acceptance and expulsion of fishers from the beach and the resolution of minor conflicts among fishers and between fishers and non-fishers. VHM were consulted only for serious disputes (Donda, 2000b). These problems are now

handled by BVCs, threatening the representation of the VHM in many decisions and eliminating the need for traditional beach chairmen.

The VHM were to be involved as *ex officio* members. This right has been legislated within the Fishery Act in recognition of their traditional role in resource management. VHM were traditionally the major decision-maker in all aspects of community life. Most decisions were made in an autocratic manner with little consultation with fishers, although, fishers were normally present during fishery disputes. In addition to dispute resolution, the VHM determined who could fish from their beach and was paid a fee of fish for fishing access from their beach (Donda, 2000b).

Since decisions the VHM made are not questioned, VHM have became dominant in many BVCs. Members feel they cannot speak up and take part in discussion or contradict decisions the VHM has made. Therefore, the views often put forth by BVCs are those of the VHM and not the fishers. BVCs are often viewed as not being representative of the fishers (Hara et al., 1999).

VHM have often taken over to the extent that they now control who is on the BVC. Relatives and close associates of the headmen often replace elected members. Many of the replacements are non-fishers and have very little knowledge of the fishery (Hara et al., 1999). They serve only to back decisions made by the VHM.

The lack of representation of fishers has become a serious problem. Approximately 70% of those on the BVC are not fishers (Donda, 2000a). Lack of representation in BVCs make it unlikely that the views are to be those of the fishers, and accordingly fishers may not continue to feel that they were involved in decisions and compliance may be reduced. BVCs are considered to be a branch of government supported by local leaders in the community. This is the result not only of lack of representation but also the dominance of the VHM and lack of communication with fishers outside the BVCs (Donda, 2000b).

After the implementation of co-management the catches continued to decline for three years with a low of 2 652 metric tons in 1995. The catch increased to 4 789 metric tons in 1998. At this point officials are not sure whether the increased catch is the result of co-management or environmental considerations (FRU, 1999).

One of the most quoted benefits of co-management was improved communication between the fishers and government. A link between these two groups did not exist before co-management and may be the greatest incentive for local villages to remain within the arrangement. The improved communication has resulted in a decrease in hostility towards fisheries inspectors. Inspectors also feel that violations of regulations have decreased (Hara et al., 1997). It may be a sign of increased understanding behind the regulations.

Even with co-management many of the inequities in the fishers' situations still persist. The gear owners were the primary beneficiaries of the fishery, and this phenomenon still

persists. Fishers' assistants, who are hired on a daily basis, do not make as great as living from being involved in the fishery (Donda, 2000b).

The Lake Malombe Fishermen's Association (LMFA) was formed in 1997 to serve as an inter-BVC organisation. Currently the exact role of this organisation seems unclear and needs to be further clarified through legislation (Hara et al., 1999).

4.4 Co-management in Lake Chiuta

The co-management arrangement in Lake Chiuta was applied in 1995 at the initiative of the fishery public interest groups formed locally. Regulations that gave the BVCs legal standing and legislated fishery regulations were implemented a year later. Since the fishers came from a community management situation they have been given more responsibility than in Malombe (Donda, 2000b).

Before co-management, the management system was community based. The DoF had very little involvement in their fishery since the catch level was low and the lake was relatively remote. A public interest group was organised to rid Lake Chiuta of the damaging nkacha nets, and this group approached the department to find solutions to remedy the problems. At this point the DoF suggested the implementation of co-management (Donda, 2000b).

Nine BVCs were created based on the 6 communities involved as public interest groups and three other communities representing 9 active beaches. The original members of the public interest groups immediately became BVC members. No formal training sessions for members were originally performed. This left the internal workings of the committee up to the founding members. During 1997, BVCs were trained through study tours to Lake Malombe as well as in group leadership and dynamics. Through the formation of BVCs in the community NGOs were not involved in the co-management process (Njaya et al., 1997).

Tasks completed by the BVC include protecting and controlling exploitation of fish stocks, making sure only regulation gear types operate on the lake, enforcement and collection of license fees. They also are involved in conflict resolution. BVCs co-operate with government to review Fisheries Act, to formulate regulations and loan distribution. BVCs are consulted in loan recovery issues, catch data collection and frame surveys. Many within the co-management arrangement feel that the BVCs in the area are doing more work than the DoF (Njaya et al., 1997).

BVCs hold meetings with fishers and other members of the community on a regular basis. Meetings are held with the BVC and fishers once or twice a month. Another meeting is held by BVCs with not only fishers but also other community members (Njaya et al., 1997). This gives community members a say in fishery matters. Due to BVCs involvement in the expulsion of nkacha fishers many community members feel that BVCs

are their representatives in fisheries related matters and are more willing to participate and comply with regulations (Donda, 2000b).

Currently the members of the BVCs are not replaced. The original members of the public interest groups were made members of the committee. Over the last few years a loss of trust of these representatives has occurred as a result of loan recovery issues (Njaya et al., 1997). Replacement of these members will be beneficial for sustainability of co-management.

Traditionally the village head held a similar position to that in Lake Malombe. They played a major part of decision making in the fishery. With the invasion of fishers from other lakes, the respect for the VHM has decreased. The VHM went against the wishes of the community and endangered the area's water supply when they allowed nkacha fishers on the lake. Nkacha fishers caused a decline in the catch, the reduction in size of chambo caught and a decline in the water quality since the nets used stirred up the bottom, creating problems for all communities around the lake. To have these fishers removed local fishers had to go outside the traditional authority structure to the DoF (Donda 2000b; Njaya et al., 1997).

This conflict has resulted in decreased respect for, and authority of, local VHM. Fishers are unwilling to listen to the wishes of the headmen and believe that they are corrupt. They still have some influence due to their position, but this influence is greatly reduced. Many BVCs members do not wish to have VHM as members or even advisors to the

committee, but due to their traditional position DoF have mandated their participation through the Fisheries Act (Donda, 2000b). The VHM will only be consulted if the BVC is unable to come up with a decision, or if sanctions have to be imposed on someone outside of their beach area (Njaya et al., 1997).

The lack of respect and reduced authority experienced may cause problems in the future. Conflict may stem from the VHM exerting traditional rights in resource management, including the collection of fees for access. These conflicts may harm the sustainability of co-management.

The decision making process is more likely to be democratic, since the VHM are not involved with BVCs. Issues are presented at meetings, and then are discussed with all members. Usually decisions are made by consensus, although, if the issue is urgent decisions are made through a majority vote. Fishers are consulted before any decisions are made making the process more transparent to them (Donda, 2000b).

Since the expulsion of nkacha fishers the distribution of benefits has improved. Prior to this nkacha fishers received more benefits since their nets caught a wider range of fish sizes and more fish with each net haul, due to smaller mesh sizes. Once these fishers were removed the general benefits from the fishery were divided more evenly among those in the fishery. Most people in the fishery own their gear and do not hire assistants. Assistants receive a smaller portion of the total revenue from the fishery. This reduced

portion attributes to the main cause of inequities in the third world fisheries (Njaya et al., 1997).

The Lake Chiuta Fishermen's Association (LCFA) was recently formed. This organisation co-ordinates the activities of BVCs. One member from each BVC is elected to become a member of the association, and two VHM are also appointed. The LCFA conducts meetings with BVCs, resolves conflicts, checks and co-ordinates the activities of BVCs in the area, and applies sanctions to offenders. It also formulates and implements rules and regulations that guide its functions and the behaviour of its own members and members of the BVC's (Donda, 2000b). It was only recently formed, so its effectiveness remains to be seen.

4.5 Comparison of the Two Lakes

Due to the circumstances that led to its implementation, and the consequent representation of fishers and functioning of BVCs, co-management in Lake Chiuta is often considered to be the more successful program (Scholz et al., 1998). One of the determinants of success of a co-management program may be the position of the VHM and the relationship between the BVC and the VHM. Others factors in co-management's success include effective two-way communication and the original state of the fishery.

The co-management program in Lake Malombe was initiated in a fishery that had already crashed. Beginning with a low population level meant that there was a need to work

harder to improve the situation in the fishery, and thus a greater requirement for implementing stricter regulations. Enforcement needs to be at forefront of discussions to prevent further over fishing and reverse the decline of the fishery. BVCs are not willing to take on many of the enforcement tasks in Lake Malombe due to danger of patrolling and the lack of legal empowerment to sanction violators of regulations. Legislation needs to be enacted that allows full involvement of communities in the enforcement and sanctioning of violators.

In contrast to the situation in Lake Malombe, co-management in Lake Chiuta was initiated when the catch was still relatively healthy (FRU, 1999). Fishers initiated the process to remove nkacha fishers at the first sign of decline and to improve water quality for the area. Launching co-management had the immediate result of removing nkacha fishers, and the impact of such a decision would be apparent to the entire community. This made BVC members more willing to maintain enforcement than their counterparts in Lake Malombe and made the community feel that BVCs were their representatives on fishery matters. Although, BVCs are not legally authorised in either area, the isolation of Lake Chiuta makes it more likely that BVCs there will be able to impose sanctions without being reprimanded by legal authorities.

In Lake Malombe the process of co-management is not emerging as an evolving institutional arrangement. There seems to be a lack of common communication structures. Even from the beginning agreement was not reached on the goals of management. The government continues to focus on the fish stocks while the community considers social

and economic goals to be more important (lack of homogenous expectations). In most aspects of co-management the government has led while the committees followed without having a significant impact on the evolving institutions. This is the result of a lack of equal two-way communication between fishers and government. The two sides have not developed a shared language. Even though there has not been an emergence of a common language the increased communication between the two sides has improved the situation in the fishery by reducing hostility, making enforcement by government officials easier. Fishers feel that this communication is one of the main benefits derived from co-management (Hara et al., 1999).

In Lake Chiuta the institutional process of co-management was initiated by the community, allowing them to create the basis of communication needed to develop co-management. BVCs originally set the agenda for communication by focusing on the removal of the nkacha fishermen from Lake Chiuta. From that point the government enacted formal legislation, many based on existing *de facto* regulations, as well as helping the community to develop their own informal legislation, thus creating a more open and equal dialogue. The common communication that has evolved in Lake Chiuta will help them in negotiation of regulations, while in Lake Malombe the lack of common communication will hamper their ability to negotiate effectively.

The difference in communication that has evolved has resulted in co-management arrangements that fall on different spots in the continuum for both lakes (fig 3.1). The lack of common language has meant that the arrangement in Lake Malombe falls to the

left and is largely consultative. The more open communication has resulted in the BVCs of Lake Chiuta sharing an arrangement that tends to be more co-operative.

Since the government in Lake Malombe initiated co-management, the process will start at the left (with more government control) (Fig 3.1). As the organisations and institutions evolve they have shifted toward more community control. The problems associated with communication may hinder this process since there is not a common understanding between government and BVCs about the goals and each person's responsibility in co-management.

Co-management in Lake Chiuta is a more evolving process. It started off as advisory with the community coming to the government to legitimise informal regulations. As the involvement of the government has increased there has been a leftward shift to a co-operative system of management (Fig 3.1).

Not only will the initiation of co-management by the community result in the better communication with the government, but will also lead to a program that is more equitable and more sustainable (Townsley, 1998). Since the community implemented co-management in response to the communities needs, there is greater incentive for Lake Chiuta fishers to act in a manner that will allow the project to be sustainable.

The communities involved, at both Lake Chiuta and Lake Malombe, have weak organisations hampering their full participation in all aspects of fisheries co-management.

Co-management imposes complex government and management challenges on the community. Further support from external agencies, whether government or foreign is needed for both Lake Malombe and Lake Chiuta. To develop the required institutions can take from three to ten years depending on their previous organisational capacities (Pomeroy et al., 2001). Assistance is needed during this period to maintain and adequately train members.

The formation of public interest groups in Lake Chiuta allowed the community to develop some of their own internal structures within their organisations. The original group had held many discussions within and outside the fishing community. Natural leaders would already have shown themselves before co-management was implemented. Since co-management the BVCs continue to show more initiative by institutionalising the interactions between BVCs and within BVCs (Hara et al., 1999). BVCs in Lake Malombe were designed and implemented by DoF. The resultant organisations were seen as an extension of government within the community. A sense of ownership would not be experienced.

Of the two lakes Lake Chiuta seems to have a greater capacity to organise. Before the formation of public interest groups each fisher belonged to an organisation headed by a chairman. They were able to organise public interest groups that were able to meet the demands needed to remove nkacha fishers. This shows initiative on the part of the fishers and ability to respond to changing demands of the fishery. In Lake Malombe the process

and formation of BVCs was instigated solely at the insistence of DoF. The fishers seem to be passive in their involvement in co-management.

The efficiency of the arrangements still remains to be seen. Each program is still relatively young. Even at this stage, differences in costs between both areas have become apparent. The cost of implementation at Lake Malombe is significantly greater than at Lake Chiuta. At Lake Chiuta the community brought on the process themselves with very little planning or involvement of outside organisations, and thus both the community and the government incurred very little costs. In Lake Malombe, the process began with significant planning and study by the government and aid agencies involved. This resulted in a significant input of time and money. Most costs in Lake Malombe were born by external agents with little direct costs to the DoF and fishing communities.

Co-management has had some impacts on other transaction costs. In Lake Malombe there has been a reduction in enforcement costs due to increased compliance. Fishers have also noted an increase in net returns and there are signs that the catch is increasing. Improved net returns should arise from increased or maintained catch for Lake Chiuta, which is likely to occur with the assurance that nkacha nets will not return. The communities also have the assurance that the department is behind them in their efforts and approves of their informal regulations (Donda, 2000b).

One factor in the measurement of improved resource outcome is that of improved equity. Equal representation in fisheries decisions is an integral part of this factor. In Lake

Malombe, the representation in BVCs is predominantly by those external to the fishery. People that represent the VHM have replaced elected members, and most of these have very little interest in the fishery. As a result fishers have little say in the fishery. In Lake Chiuta most members of the BVCs are fishers but the communities they are representing did not vote them in. Members of the public interest groups immediately became members of the BVC and currently serve as member for life (Njaya et al., 1997). There is a need to have the community's input into the committee for proper representation. These factors at both lakes prevent the equal representation of stakeholders in the process. Equity in representation is important for sustainable co-management.

The involvement of VHM has a significant impact on the equity in representation and is considered to be the greatest threat to co-management. To continue to exert their traditional position the VHM have responded by taking control over the BVCs in Lake Malombe. BVCs took away many of the privileges and power the VHM once held in the fishery and now VHM view BVCs as a threat to their authority. To counteract this threat the DoF instituted VHM as *ex officio* members. VHM have used this position as a way to exert their traditional power by replacing elected members with relatives and friends, and thus blocking the participation of fishers in discussion and decision making. The committee has become an extension of the VHM, making decisions in an autocratic manner. Since the VHM is directly involved in BVC decisions they can not be argued with.

The main result is that many of the ideas put forth by the BVC are not that of the fishing community. Scholz et al. (1998) reported that the BVCs wanted to change the closed season and also close the fishery for a period of two years. Most fishers obviously do not want the fishery in the area to be closed for any period of time since this would mean a loss of income for an extended period of time. Many also did not support the change in closed season (Hara et al., 1999). The lack of support for proposals emanating from BVCs could have devastating results for co-management. The process would lose backing from fishers, which is needed for any management regime.

The VHM within the BVCs of Lake Malombe have come to hold a significantly different position than the VHM of Lake Chiuta. The lack of involvement of VHM in Lake Chiuta combined with the regular meetings held with other members within the fishery and the community allows the BVCs to represent the fishers better. Decisions are made by consensus or democratic vote. Fishers are more likely to comply with the regulations that come about by such a decision making process, and therefore compliance should be higher than in Lake Malombe (no data available).

The lack of representation of the VHM in the fishery in Lake Chiuta may serve as a source of conflict in the future. The only way that conflict is not likely to occur is if the VHM loses power in other areas as well. This means an overall change in the social structure. The conflict with the nkacha fishers may be such a catalyst for social change. The change to a democratic government, combined with the implementation of co-management, may lend itself to fewer autocratic leaders within the community.

4.6 COMPARISON OF MANAGEMENT BEFORE AND AFTER CO-MANAGEMENT

Although many short falls in the co-management arrangement have been observed there still seems to be a positive effect on the fishery. In Lake Malombe co-management has led to improved communication, increased compliance, improved relationships between extension workers and fishers, and improved catches. In Lake Chiuta the fishers now have the added advantage of legitimising *de facto* regulations. The changes that resulted from the implementation of co-management are summarised in Table 4.1.

Table 4.1 Changes as a result of the introduction in co-management (Based on Donda, 2000b; Hara et al., 1999; and Njaya et al., 1997).

	Lake Malombe	**Lake Chiuta**
Efficiency		
Improved net returns from the fishery	• increase in catches from 1996	•less competition with outside fishers for resource access
Reduction in transaction costs	•higher compliance therefore lower costs associated with enforcement	•previous no regulations for the lake, so therefore no enforcement costs
	•implementation costs come from outside sources	•co-management initiated by the community, so very little spent by government in formation
		•costs less than benefits

	Lake Malombe	Lake Chiuta
Equity		
Change in representation	•fishers feel they are not represented by BVC, feel BVCs are extension of government and do not represent the views of fishers	•BVCs believed to represent the views of fishing community in fisheries' matters
	•low fisher representation ≈30%	•higher representation of fishers ≈80%
	•Community Liaison Unit	•no government organisation
Transparency	•little communication between fishers and BVCs	•good communication between fishers and community as well as among fishers
	•good communication between DoF and BVCs	•good communication between DoF and BVCs
	•decision making processes become less transparent as the decision making moves higher in DoF	•decision making processes become less transparent as the decision making moves higher in DoF
Homogeneous expectations	•DoF expectations –to increase catch to mid 1980's levels	•DoF expectations –ensure sustainable exploitation fish resources improving the livelihood of fishers
	•fishers expectations–concerns are with economic aspects of the fishery	•fishers expectations–get government support for and recognition of their management system
Distributive effects	•still the main beneficiaries of fishery are the gear owners	•access by outside groups limited
		•little inequality between the remaining fishers

	Lake Malombe	Lake Chiuta
Sustainability		
Resilience	•not strong –dependence on external support •have not had to respond to major changes yet	•more resilience –less dependent on outside support •effective conflict resolution mechanism in place •have not had to respond to major environmental changes
Stewardship	•history –government driven •weak due to property rights regime	•history –community driven •stronger stewardship regardless of property regimes

5 RECOMMENDATIONS AND CONCLUSION

In Malawi the economy is predominantly dependent on agriculture, although fisheries still play a major role (ICLARM and GTZ, 1991). Fisheries act as a source of income for many people usually as employment of last resort when all other economic opportunities have been exhausted. It also serves as a major protein source for a large portion of the population (Berkes et al., 2001). Current population growth and decline in catches has decreased the amount of fish available per person, resulting in the deterioration in nutritional wellbeing (FAO, 1999).

The involvement of central government in the fisheries in Malawi has led to increased emphasis on production oriented goals. The Department of Fisheries (DoF) has made regulations away from the eyes of those affected. Goals vary but usually have included goals such as increase in production for foreign revenue, employment, and fish to feed the growing population (Environmental Affairs Department, 1998). Over the last decade many researchers have realised that centralised, production-oriented management is ineffective in sustaining a fishery. So far, regulations have failed to reduce effort in the fishery and protect juvenile fish. Further pressures to decentralise are coming from structural adjustment programs and aid agencies. Within the fishery, this would mean bringing a higher level of decision making to the community.

With the input of money it may be possible to overcome some of the problems associated with centralised management, but Malawi does not have the funds to put into management. The input of financial resources would improve DoF's ability to collect data needed for proper formulation of regulations and subsequently enforcing regulations. The dependence on conservation based models to protect fish species and to increase production is based on scientific findings and on catch estimates. To obtain accurate values, time and money must be put into this aspect of management. Due to scattered beaches it is difficult and costly to get enough data. These scattered fishers have not been involved in the creation of regulations and have no incentive to follow them. Therefore costs associated with enforcement are also huge.

As part of giving communities more involvement in decision making and due to lack of government funds, aid agencies have shifted funds from building technical capacity to creating community-based and sustainable approaches to fisheries. These approaches focus on the needs and abilities of the poorest who are more likely to be involved in the fishery. Foreign agencies are bringing communities into the management of the fishery. Co-management is the evolving partnership between government and stakeholders designed to share responsibility of the fishery. This endeavour places substantial demands on both government and fishing communities, including need for proper representative organisations, the need to be able to present their position and for these associations to be fully integrated into the community (Nielsen, 1996).

Organisations created for co-management allow for empowerment of communities involved in resource use. Organisations allow communities to actively participate in decision making, creating a forum for discussion and training in economic and social issues. Empowerment is only possible if the newly created organisations are integrated into pre-existing social structures (Pomeroy et al., 2001).

In Malawi co-management was brought in to cut costs associated with management and enforcement and to improve the condition of fish stocks. The original site, Lake Malombe, was chosen due to the serious decline in catches (Donda, 2000b). Although it has many shortcomings it will hopefully change to a more equitable fishery. The lessons learned from this site are now beginning to be applied to other areas in Malawi.

Government initiated co-management in Lake Malombe. The government designed the organisations involved, and still maintains control over much of the fishery. After the initiation of co-management enforcement was originally with the community, but this created legal problems with collection of fines. Enforcement duties were returned to the DoF (Donda, 2000b). As co-management progresses, enforcement should be shifted back to communities. Before this can happen, new regulations need to be implemented that allow communities to impose sanctions on violators. The funds obtained from these fines, along with licensing fees, should remain within the BVC to fund its activities. Financial independence will increase the potential for sustainability.

The most noticeable advantage of co-management in Lake Malombe is the improvement of relations between the DoF and the fishers. Improved relations have led to decreased animosity between the two groups. This may be one of the reasons for increased compliance with regulations seen on this lake.

Lake Chiuta, the second lake to implement co-management, is considered the most successful example of co-management within the country. The program was implemented at the insistence of the community. This allowed the community to determine the path that co-management will take by creating the necessary dialogue for proper co-management. Together with government they were able to create both formal and informal regulations (Donda, 2000b).

One of the main problems associated with co-management revolves around the position of the Village Headmen (VHM). To be effective the VHM needs to be removed from the BVC. BVCs need to be a forum where fishers and others involved in the fishery can express their views and negotiate with the government. With the involvement of the VHM fishers are not able to express their views. A structure needs to be developed that allows the community to be involved with the management of the resource without compromising the authority or power of the chief.

A way to keep the VHM involved in the fishery without being directly involved in the BVC is to allow them to play a role in the cultural and spiritual aspects of fisheries management. Extensive research on the cultural beliefs and inter-household variations in

beliefs is essential to ensure project success. These cultural systems need to be included in the design of new organisations. Incorporating spiritual beliefs into the system is essential to the success of the program. In Lake Malombe it is believed that spirits give and take fish away fish. Opening ceremonies (sadaka) at the end of the closed season may be introduced as a way to appease the spirits allowing fish to remain plentiful. These should be resided over by traditional medicine men and other religious figures as well as VHM. During these ceremonies fishers can make payments to the VHM to allow them to take on some of the duties for the fishery and fish within the defined beaches in the VHM's area.

The problem with implementing spiritual related aspects into the management of the fishery is that it needs to be initiated by traditional religious leaders. The original focus at the pre-implementation stage of co-management should be on these religious leaders and on convincing them of the benefits of co-management in the context of the traditional religions. Their involvement from the beginning may make it easier to convince fishers of the benefits of co-management.

With the removal of the headmen, the communities will see BVCs as more legitimate, as seen in Lake Chiuta. Currently VHM are not actively involved in BVCs in Lake Chiuta, and the resultant committees are able to discuss issues without the threat of removal. The views they present are more likely to be the views of the fishers, and as a result they will be seen as more effective in the eyes of the community. With the increased role of the community, BVCs are more likely to be incorporated into the social structure of the

community, and the ensuing regulations will be more legitimate, resulting in fewer violations. Increased community involvement in creating regulations may also decrease the reluctance of Malombe's BVCs to enforce regulations, since other fishers will not be hostile toward BVC members enforcing regulations they assisted in creating.

New management structures are believed to be more successful if they build on pre-existing organisations (Berkes et al., 2001). In Lake Malombe the beach chairman was responsible for many of the functions now delegated to the BVCs. It would have been advisable to maintain these chairmen as leaders since they were empowered and therefore respected by both VHM and fishers. BVCs could have been established to assist the chairmen in carrying out newly delegated management functions. The remaining members would be voted in and should be chosen from only those involved in the fishery. After a certain period of time though the chairman should be replaced to prevent corruption and allow others to develop skills that are needed for leadership.

Due to the threat of not having the proper representation in the BVC, membership should be limited. The majority of the elected members should be gear owners, middlemen, processors and assistants from the community. Marketers often live outside the community (Donda, 2000b) and therefore will not represent the majority of the fishers in the area. The chairmen/VHM cannot be allowed to veto those voted in by the community.

The legislation regarding the roles of each stakeholder within the co-management arrangement needs to be strengthened further. To strengthen the role of communities in

resource management, legislation must be strengthened or implemented that deal with sanctions, property rights, community formation of their own organisations, roles of each party and transfer of more power to communities. Definition of property rights is needed to allow communities to legally limit the number of people entering the fishery. As it currently stands the resource is under a common property regime.

BVCs should be encouraged to use the Fisheries Conservation and Management Act and enter into contractual agreements that define the role of each stakeholder. The lake wide associations, as well as NGOs should oversee the entrance into these contracts. NGOs can serve as legal advisors to communities, explaining their legal responsibilities under the agreement and negotiating changes that suit the community's needs. To be truly effective each group must be fully aware of its responsibilities and duties in regards to management and enforcement function. This contract can also be used to mandate meetings between both parties giving communities guaranteed access to the DoF. It, also, must define how the sanctions will be applied, who will apply the sanctions and what the sanctions are.

In Lake Chiuta elections should be held. Elections on a regular basis will allow for replacement of members and allow others a chance to participate. They also reduce the potential for corruption by members. The resultant committee will also become more representative of the community.

BVCs should be involved in negotiating with government in issues such as changes to the Fisheries Act and other regulations. They should also be involved in the resolution of

smaller conflicts. Within BVCs decisions regarding such issues should be reached through consensus or through a majority vote after consultation with fishers. Decisions are currently made in this manner by BVC in Lake Chiuta.

Decisions that cannot be made by the BVC should be directed to the lake wide associations (LMFA and LCFA). These associations should serve as a mediating body for intra-BVC and inter-BVC conflicts. It should hold regular meetings with all BVCs in the area. At this level the VHM should be involved. VHM should be members along with representatives from BVCs, NGOs and government. NGOs can act as non-biased members in the discussion and decision making process. There should be equal representation between the VHM and other organisations, so they will not dominate decisions. Within the system the roles of each participant should be clearly defined (BVC, CLU and LMFA/LCFA).

The DoF should consider adding a committee such as the CLU in Lake Malombe in Lake Chiuta, located near the lake. This committee should be based on the relationship that has already developed between the extension workers and the BVCs involved. More power through legislation should be given to DoF extension workers working directly with the BVCs, so all decisions made by CLU members do not need to go to the DOF office in Zomba.

Involvement of NGO's to disseminate information about the program and to be involved in training of government and BVC members is necessary. They can work directly with

the fishers in training in leadership, institutional design, biology and basic principals behind co-management. The education programs should target al.l those interested in the villages. Their support should be maintained until the BVCs are able to function on their own. The training may extend beyond fisheries management into other economic areas. Training in other areas allow fishers to take employment outside of the fishery (including fish farming).

Government workers working directly with communities and those in more senior positions need to be included in the training sessions to maintain their knowledge and to make them known to the villagers. Further training for government workers should also be included in negotiating, more theoretical aspects of co-management and legislation.

When implementing co-management, the introduction should be more gradual and depend on the village's capacities and interest. The process should begin with the creation of discussion groups, which will identify problems in the area. Government extension workers can use this information to create incentives for introducing co-management. As these groups begin to develop their own inner workings they can become involved in discussions for regulations. Throughout this period involvement of NGOs should be a priority. The responsibility of enforcement should not be introduced until relatively late in the process.

For co-management to be truly effective and improve the conditions in which many fishers live, not only must issues relating to management of resources be addressed but

those relating to other aspects of fishers lives. Currently the rampant population growth and poverty keep fishing as the employment of last resort. Co-management should be implemented as part of a rural development plan where these issues can also be addressed. Rural development needs to encompass family planning programs and training in sustainable agriculture practices combined with improved access to health care and schooling. Increased schooling and improved health should result in a decrease in the population growth rate, which will decrease the pressure on the stocks. Also, other employment opportunities need to be opened up along the lakeshore that will divert people from the fishery (Nyambose, 1997).

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APPENDICES

APPENDIX 1: Characteristics for Successful Co-management

a) The communities involved are highly dependent on the resource and are vulnerable to non-sustainable use (Rihoy, 1995)

b) The resource users are relatively immobile: if the resource is overused orthe resource system is damaged, the users can not easily move to another location or another livelihood (Rihoy, 1995)

c) The community of eligible users is clearly defined (Pomeroy et al., 2001, Rihoy, 1995)

d) There are clear geographic or other boundaries to the resource system over which the users have control (Pomeroy et al., 2001, Brown, 1998)

e) Parties agree on the problem/situation/context that has to be addressed and these motives are compatible with public interest (Brown, 1998)

f) Participants in a fishery are organised, ready to participate and speak in a united voice (Brown, 1998)

g) Appropriate representative organisations and necessary infrastructures are in place (Brown, 1998)

h) Users are able to enforce management rules both against each other and outsiders (Scholz et al., 1998)

i) Users invest their own resources in activities such as enhancement and enforcement; - the costs of management and mismanagement are borne by those who benefit from the resource –benefits should exceed costs (Rihoy, 1995)

APPENDIX 2: Benefits from co-management

1) It creates co-operation among individual fishers and local fishing groups in planning the improvement of conservation of local fish stocks.
2) It creates the commitment among local fishers both the costs and benefits of their efforts toward enhancement and conservation.
3) For allocation decisions, creates an appropriate vehicle of conflict resolution among fishers; it increases motivation to negotiate sharing of access which is perceived as equitable.
4) It enhances the position of fishers so that a more equal negotiating relationship exists between local fishers and other water resource users.
5) Co-management creates a higher degree of organisation and mutual commitment among fishers so that they have a more equal bargaining relationship with fish buyers.
6) It creates a willingness among both fishers and government to share data about the resource, and therefore to reach collectively a more complete understanding of the resource.
7) It creates a willingness among both fishers and government to explore options for regulation that reduces inefficiencies for fisheries.
8) Regulations create greater trust between fishers and government and a greater sense of control on the part of fishers, so that motivation to invest in competitive gear for first capture is reduced.

9) It creates a higher degree of trust between fishers and government and improved ability to develop and successfully implement enforcement regimes that fishers perceive as appropriate and legitimate.

10) It creates a higher degree of trust between fishers and government and greater willingness on the part of the government to allow a range of self-management responsibilities to be assumed by fishers (Brown, 1998).