

# Journey to sustainable fisheries management: Organisational and Institutional limitations in fisheries co-management, the case of lakes Malombe and Chiuta in Malawi

Steve Donda

Affiliation: Reflections on Co-management, Consensus, and Conditions for Labor

**Abstract:** Fisheries resource management in Malawi, has so far gone through three types of management systems which can effectively be defined, if not more. In the pre-colonial era, fisheries resource management was under the control of traditional leaders, which fall under the Community Based Natural Resource Management System. Thereafter, up to this day, most fishery resources in Malawi are entirely controlled by the government, under the Centralised Fishery Management System. Of late a number of Fisheries in Malawi, like those of lakes Malombe, Chiuta and Chilwa have adopted the Fisheries Co-management approach. Fisheries co-management in Malawi was introduced in 1993. Experiences so far gained indicate that sustainable fisheries resource co-management necessitates the acceptance and embeddedness of the user group representative bodies within the fishing communities. Resource user representation and transparency in decision making process are important in institutional development as these in turn impact on the legitimacy and compliancy of the developed institutions. An understanding of the local organisational set-up and its dynamics is vital for proper planning and implementation of the co-management approach. This paper gives experiences and lessons learnt from co-management arrangements in lakes Malombe and Chiuta.

**Key words:** Traditional, Management, Co-management, User group, Institution, Organisation.

## 1. Introduction

Fisheries, whether at sea or inland waters have a number of characteristics that suggest that management will be necessary in order to avoid over-exploitation of fish stocks. Fishery Resource Management has been a theme of debate among resource managers for a very long time, trying to focus on how appropriate fishery management policies and strategies that can protect the fish stocks from being overexploited without adversely affecting the welfare of the resource users can be developed and implemented. Fisheries management policies in Malawi have been guided by the conservation paradigm, that is a biologically based philosophy, focusing on the protection of fish stocks. The approach to fisheries management has been government centred, with the Department of Fisheries (DoF) as the only management authority. Unfortunately, this approach has proved to be disastrous in Lake Malombe, where fish catches have continued to show a declining trend, implying that fish stocks are getting depleted.

In response to this, the DoF changed its management approach from the centralised government system to resource user participatory approach, also referred to as co-management. This new approach has only been applied to

pilot sites, and was introduced in Malawi in 1993. The shift from centralised government management system to co-management has an impact on the organisational structure of DoF as well as the fishing communities and the institutions that shape the organisational behaviour.

This paper looks at constraints brought about by organisational and institutional changes within communities following the introduction of co-management in lake Malombe and Chiuta in Malawi.

### 1.1 Working definitions of Organisations and Institutions

The working definitions of organisations and institutions in this document are adopted and adapted from North (1990). Organizations are groups of individuals bound by some common purpose to achieve objectives (North, 1990). The institutional framework fundamentally influences the creation or the evolvement of organizations, and in turn the organizations influence how the institutional framework evolves. Organizations are created for specific objectives, and in the course of attempting to accomplish their objectives they initiate the process of institutional changes (*ibid.*, p5)

Institutions are the rules of the game in a society, or in other words, are the humanly devised constraints that shape human interactions (North, 1990), and are affected by social,

cultural, economic and political factors. Institutions can either be formal or informal and may be created or evolve over time (*ibid.*, p3). Depending on the situation, the formal rules may be in written form and the informal ones may not.

## 1.2 Development of co-management in Lake Malombe

Lake Malombe, just like Lake Malawi is situated in a south-eastly section of the East African Rift Valley system, about 10 km from the exit of Upper Shire from Lake Malawi. It is a natural impoundment of the Shire River, the outflow of Lake Malawi. The lake covers a surface area of 390 km<sup>2</sup> with a maximum length of 29 km, a width of 17 km and a mean depth of 4 m. The lake is highly productive and achieved a maximum yield of 15,500 t in 1988. Fishing supports a small-scale fishing industry of approximately 420 gear owners, 3,766 crew and approximately 1,220 traders (1997 DoF Frame survey figures), having a high significance on the livelihood in the area which is entirely focused on fishing.

The fish exploitation technology in Lake Malombe is at the artisanal level, although it is for both subsistence and commercial purposes. The nature of the fishery largely necessitates the use of planked boats without engines and a few dugout canoes. The main fishing gears that are used with this type of craft are gillnets, *nkacha* seine nets, *kambuzi* beach seine nets and long lines. The nets are normally named after the fish they target.

Over the last two decades, the Malombe fishery has experienced changes both in the vertical and horizontal effort development. The balance of effort has shifted from a majority of effort by large mesh seines, *chambo* seines, to complete dominance by small mesh seines, *kambuzi* and *nkacha* seines respectively. Since the mid-1980s, the mesh size of the latter net types has been progressively reduced. Currently most *kambuzi* seines and *nkacha* seines have bunts with meshes of 19 mm or less. This has resulted in the decline of sizes of fish caught, with the majority of the caught fish being immature, and the disappearance of some large and high valued fish species. It has also been argued that the bottom dragged seines (e.g. *chambo* seines and *kambuzi* seines ) damage fish habitats by clearing the weeds and damaging nesting sites (Tweddle *et. at.*, 1994).

With the knowledge that the decline in catches and reduction in fish stocks took place while the biologically oriented management strategies were in use, a search for other management strategies for the lake appeared to be eminent. In 1993, the DoF had three scenarios to choose from (Bell and Donda, 1993). The first scenario was for the DoF to

continue managing the fishery alone, but with an intensified enforcement approach to the law breakers; The second scenario was to adopt a Community Based Resource Management strategy, where the communities could take full control of the management responsibilities, with none or very little assistance from the DoF; and the third scenario was for the DoF to share *equally* the management responsibilities with the fishing communities.

After a thorough analysis of the three options, the DoF decided to adopt the third scenario. As in the first case, it required the DoF to strengthen its enforcement section by providing the necessary resources in terms of materials, finances and personnel, which it could not fulfil. Whereas, in the second scenario, the problem was that the communities did not have the capacity to carry out the management tasks.

The co-management arrangement in Lake Malombe was therefore, introduced by the government. The driving force behind DoF's going for co-management was its discovery that there was over-fishing going on in Lake Malombe. The problem was aggravated by the human population growth that resulted in increased fish demand, and therefore increased fishing pressure. This was coupled with environmental degradation that ended in siltation which covered the favourable breeding grounds for the fish stocks. However, the problem was exacerbated by the incapacities of DoF to enforce fishing regulations among the fishers.

The initial objectives for the introduction of co-management<sup>1</sup> as developed by the DoF were<sup>2</sup>:

- a) To promote recovery of the fisheries of Lake Malombe and Upper Shire to a level that could sustain an annual catch of 10,000 tonnes;
- b) To achieve this objective through co-operation, dialogue and negotiation between Department of Fisheries (DoF) and fishing communities. Initially, decision-making powers were to be retained in the hands of DoF, but would progressively be transferred to community-level organisations.
- c) To promote the formation of community-level organisations, i.e. beach village groups and committees (BVCs) and a lake-wide body: the Lake Malombe Fisherman's Association (LMFA). Their objective was, to assume communal management of the resource, to articulate the views of the fishing

<sup>1</sup> The co-management arrangement, which was often referred to as Participatory Fisheries Management (PFM) in Malawi, in the planning phase was called Community Fisheries Management Programme (CFMP)

<sup>2</sup> See Bell and Donda, 1993

community and to act as a channel for dialogue and extension between DoF and fishing communities.

The fishing communities were not involved in the development of the above objectives due to the fact that co-management was initiated by DoF. However, the fishing communities by then did not have any objectives for going into co-management. Therefore, they accepted the propositions made by DoF, since at that time, the attitude was that whatever the government introduces to the village communities was something good and worth following or accepting.

### 1.3 Development of co-management in Lake Chiuta

Lake Chiuta is a shallow lake shared between Malawi and Mozambique. It is located at an altitude of 620 m in the southern part of Malawi. The mean depth of the lake is 5 m and has a total surface area of about 200 km<sup>2</sup>, of which 40 km<sup>2</sup> lie in Mozambique (FAO, 1994). The southern part is more or less permanently covered with emergent vegetation penetrable by canoes but not larger craft. The lake is fed by a number of affluent streams and the main influent rivers include Lifune, Chitundu and Mpiri rivers. The Lake Chiuta fishery is characterised by artisanal fishermen who operate using either dug out or planked canoes and fish both for subsistence and commercial purposes. The 1996 frame survey results revealed that the total number of fishers was 1088 (Fisheries Department, 1996).

The co-management approach in Lake Chiuta was initiated by the fisher communities. In the mid 1990s, Lake Chiuta was invaded by seine netters who came to fish for *Matemba* (*Burbus paludinosus*). These seine nets were open water seines which are locally called *nkacha*, if they are coming in from Lake Malombe, and *Matemba* seine nets, if they are coming in from Lake Chilwa. These nets have bunt meshes of about ¼ inch (about 19 mm) and less. These fishing gears are non selective and are known to catch all sizes of different fish species. Initially, these fishers came in from Lake Malombe, but due to the good catches realised from the seines, more and more fishers joined the fishery from the neighbouring Lake Chilwa. The situation got out of control as the seine netters had no respect for the other lake users. There were constant conflicts between these fishers and other fishers on the lake in that the seine nets constantly damaged other gears, and the water was repeatedly being disturbed. The other villagers who had nothing to do with fishing also got affected because the quality of water for domestic use was greatly affected. There were problems of drinking water as during the operations of the seine nets, the bottom soil was mixed with the water, making it turbid,

and hence making the water dirty and not fit for domestic use, as a result most people did not like the seine netters.

The absence of formal fisheries regulations in Lake Chiuta between DoF and the fishing communities made it impossible for the local fishers to chase away the seine net fishers. The local fishers then invited DoF to assist them in chasing the new fishers and to manage the fishery jointly. This marked the birth of co-management in the lake.

## 2. Representative organisations

However, for effective and co-ordinated implementation of co-management, it was necessary to have representative organisational structures on both the government side (Community Liaison Unit - CLU) and the user community side (Beach Village Committee - BVC). These structures were more developed in Lake Malombe than in Chiuta due to the high levels of planning that was done prior to implementation of co-management in Lake Malombe. North (1990) indicated that organisations are designed to further the objectives of their creators. The objectives of DoF for creating the CLU in Malombe was to have a specialised unit within DoF that would devote all its efforts in implementing co-management, and primarily, to facilitate the formation of the BVCs and establish dialogue between DoF and the fishing communities. In Lake Chiuta, however, this was never the case, DoF simply made use of the extension workers based within the fishing communities instead of establishing a special organisation for this purpose.

The organisational structure and the management institutions within DoF have basically remained unchanged despite the introduction of co-management in Malawi. Inversely, DoF insisted in both lakes, to change the community organisations, but failed to adapt its own organisation to fulfil the requirements that follows implementation of co-management.

The structure and composition of all BVCs in lakes Malombe and Chiuta was designed to be the same. In Lake Chiuta, this design was copied from Lake Malombe. In the design phase, membership was targeted at fishers. However, the end composition of the BVCs was mainly dominated by non-fishers in Malombe (about 70%) and fishers in Chiuta (about 80%). In practice, membership to BVCs in the fishing communities needed to have the blessings of both the village headman and the fisheries extension worker in addition to having been elected by the village community. Only people that could be approved by these parties were accepted as BVC members. This clearly demonstrated that the process of BVC formation was not democratic.

## 2.1 Organisational constraints

A number of constraints for the proper functioning of the BVCs and sustained DoF - BVC relationship were identified. In Lake Malombe, the constraints were summarised in two categories. The first group of constraints resulted from the weak relationship between DoF and the BVCs due to the lack of understanding of each other's expectations. BVC members saw DoF as being unhelpful based on their perceived expectations. The BVC members indicated that there was a weak DoF-BVC relationship, as a result of this, DoF delayed in responding to BVCs' requests and did not give timely support and guidance to their activities. According to Habermas (1984; 1989), the theory of communicative action asserts that the development of a common language is the basic requirement for effective communication between two parties. It is evident in this case that DoF and the BVCs did not fulfil this requirement in order to understand each others stand point on their relationship as well as what each one of them could expect from each other. This lack of understanding also led to the second group of constraints that affected the development of the relationship between the two sides.

The second group of constraints included issues that affected the organisational capacity of BVCs to function as designed. This capacity problem was exacerbated by the lack of understanding both by the BVC members and the fishing communities on the whole purpose of introducing co-management in Lake Malombe. BVC members indicated that this lack of understanding among the BVCs members created disincentives, as such people wanted tangible benefits in return for their services in order to participate in the BVC activities. Among the village communities, the lack of understanding resulted in giving no support to the BVCs, as they saw the BVCs as government representatives. In this case, in addition to the theory of communicative action, the principles of the network theory (Sørensen, 1996) help explain the way the relationship between DoF and the BVCs developed. The gradual understanding of each other as the two parties interact determines the type of relationship that will result. Since the two sides (DoF and the BVCs), did not have a common language and basis to communicate with each other and interpret their life worlds in common terms, the expectations that DoF had over the BVCs and those that the BVCs had over DoF were different. As a result the relationship failed to institutionalise, and this formed the basis of the above constraints.

Similar constraints, with a few exceptions were given by the BVCs and communities of Lake Chiuta, whose basis

could be explained as those of Malombe, that there was no proper communication between the DoF and the BVCs. The following three constraints were specific for Chiuta: a) Lack of legal empowerment; b) Lack of co-operation from the people of Mozambique who share the lake; and c) Perpetual conflicts between the village heads and the BVC members. In Lake Malombe, although the BVCs were also not legally empowered, the BVC members did not reflect that as a constraint. This could be explained in term of how the BVC members viewed the relationship between themselves and DoF. The fact that DoF introduced the whole co-management programme in Malombe, then it was assumed by the BVCs that DoF would also take care of the legal implications. While those in Chiuta felt insecure that they could still be challenged by the *nkacha* fishers, as having no powers to enforce the government fishing regulations. It was noted that the similarity in some of the constraints between the BVCs of the two lakes was due to the influence of DoF on the committees.

From the DoF's side, a number of constraints were given by all those consulted at the different levels of participation. These constraints were considered from two different views, those which directly affected DoF and those which affected the fisher communities, and thereby indirectly affected DoF. Among the ones that directly affected the performance of DoF were: a) the lack of financial resources to run the co-management programme effectively; b) the lack of appropriate knowledge, in terms of not understanding the concepts of co-management; and c) lack of proper monitoring mechanisms within the set-up, here reference was made to the biological monitoring of stocks as well as the functioning of the BVCs from the community's point of view. Specific to CLU were: a) lack of decision making powers by the junior members of CLU; and b) delays in responding to requests submitted from the lower levels.

Considering those that affected the fisher communities and indirectly affected DoF, the major ones were the lack of proper collaborative arrangements between DoF and the BVCs and the lack of legal empowerment of BVCs such that they could be able to carry out some of their BVC functions. A typical example of this was reported by the district office that BVCs were refusing to do enforcement due to the absence of legal backing on their participation. Subsequent to this constraint was the issue of lack of incentives for the BVCs to participate in enforcement. The district fisheries officer reported that some of the BVC members were reluctant to take part in enforcement because they knew that they were not going to be compensated if they got injured while carrying out enforcement activities

An analysis of the functions and constraints of these organisations (BVCs and DoF) indicated that the two hardly work together as a team towards the attainment of the co-management goals. The lead organisation, DoF, has not been effective enough to build capacity among the BVC members for their effective performance. This is simply because the principles of communicative action, development of a common communicative media, common understanding of the life world from which references can be drawn, have not been developed. DoF, did not take the initiative to establish a common language for effective dialoguing, as a result each organisation has viewed the situation differently from the other.

## 2.2 Institutional constraints

### 2.2.1 Organisational institutions

It was noted that most institutional constraints were a direct result of the absence of codes of conduct (constitutions) among the BVCs and a formal agreement between DoF and the BVCs. According to the theories of networks and interactions (Sørensen, 1996), and communicative action (Habermas, 1984), this should not have been a problem, because each meeting of the two co-managing partners has an impact on the next meeting. What happens is that each time DoF and the BVCs interact, expectations are raised on both sides, and these expectations keep on changing at each meeting. As a result of these interactions, two important changes take place within and among the organisations (DoF and BVCs). *Institutionalisation*, that is informal institutions develop between DoF and the BVCs, such as taking things for granted. Following this, is the process of *adaptation*, the two sides (DoF and the BVCs) learn each others' values, and adapt their attitude or behaviour in order to meet the requirements of the other partner. This process requires flexibility on both sides.

However, in Lake Malombe such informal institutions did not develop nor did DoF develop formal institutions to structure the co-management arrangement and how it was going to function. As a result, there was no institutional framework that defined the three "Rs"; rules, roles and resources, for the effective running of the co-management process. On one hand, some of the problems experienced in the implementation of the programme, could be attributed to the absence of these institutions. While on the other hand, although it was not a design intention, the absence of a guiding institutional framework could force a relationship to emerge between the two partners, as was the case in Lake Chiuta. In Chiuta, it was an advantage because the relationship institutionalised itself, thus the relationship developed as

predicted by the network approach. That is through continuous interactions and the interpretation of each other's actions, the two sides developed informal institutions. They both developed the feeling of 'belonging' to each other and thereby, make the relationship last longer (Sørensen, 1996).

There was one thing in common, in both Malombe and Chiuta cases, the active participation of village heads in BVCs was seen as a stumbling block to the effective performance of the BVCs. In Lake Malombe, the situation in some BVCs was aggravated by the presence of dominant village heads who were autocratic. In such cases active participation of BVC members depended on the understanding and attitude of the village heads. These dominant village headmen had powers to dismiss and appoint new BVC members. This action demoralised and made most BVCs members participate with fear. However, in Lake Chiuta, the village heads, who had earlier on during their struggle with the *nkacha* fishers had let the BVCs down, were seen as people that were not helpful at all, and the BVCs were not pleased to have the village heads participate in the activities of the BVCs. The BVCs felt they could function effectively without the interference of the village heads.

### 2.2.2 Regulative institutions

In Lake Malombe, the process of regulation formulation was initiated by DoF with the convening of inter-BVC meetings. At these meetings, two or more BVCs were brought together to discuss new proposals or review old regulations. At this level, decisions made concerning regulation formulation were basically under the control of the BVC members involved, and decisions are made by consensus.

The results of such meetings were brought to the annual general meeting of the BVCs where discussions were held between the DoF and the BVCs. Thereafter, agreements were made between the two sides. The resulting regulations were then taken by DoF for gazetting. Discussions at district level (annual general meeting for the BVCs), only allowed the participation of two to three participants from each BVC and the village headmen, who are ex-officio members of the BVCs.

A number of resource management regulations that existed in Malombe before the introduction of co-management were reviewed by the BVCs with the participation of DoF – CLU. In addition to this through the same arrangement new regulations were developed in both lakes Malombe and Chiuta. Specific to the lake, in Malombe, the following regulations became formal working regulations which fishers were expected to

follow and were gazetted as subsidiary legislation of the Fisheries Act:

- a) *Closed Fishing Season*: This regulation was designed to protect fish species during their spawning period. All beach seines are prohibited to be used in Lake Malombe during the closed season that runs from October to December of each year. Prior to the introduction of co-management in Malombe, the closed season used to run from 1st January to 31st March of each year.
- b) *Mesh size restrictions*: This regulation was formulated to supplement the one on closed season, in order to protect young fish from being caught before they are mature to breed. Minimum mesh sizes for various types of fishing gears were set. Of major interest in this case was the change of the minimum mesh size for *nkacha* seines and *kambuzi* beach seines from  $\frac{1}{4}$  inch before the introduction of co-management to  $\frac{3}{4}$  inch after the introduction of co-management.
- c) *Minimum takable size of fish*: This regulation was designed to supplement the mesh size restriction regulation by protecting young fish. Different fish species have minimum allowed takable sizes in Malombe.
- d) *Maximum headline length of fishing net*: Each type of net has its own maximum permissible length depending on the water body to be used. The maximum headline length of *nkacha* was agreed to be 250 m and that for *kambuzi* seine to be 500 m.

In Lake Chiuta, for the first time in 1998, formal regulations were formulated that were gazetted and these were:

- a) *Nkacha* seine nets must be prohibited in Lake Chiuta
- b) The minimum mesh size for all gill nets in Lake Chiuta should be 38 mm
- c) Minimum size of tilapia caught (*Chambo* and *Makumba*) is 100 mm
- d) Beach seines are not allowed in Lake Chiuta.

In addition to these, informal regulations were formulated, and one of them was that social conflicts among fishers should be settled by the BVCs with support of the traditional leaders and DoF staff as observers.

At village community level, traditionally, decision making is dominated by the village headman. Depending

on the issue under discussion, sometimes decisions at this level are made by consensus, but experience from this study has shown that the village heads make the final decisions. Within the BVCs, decision making is by consensus.

### 3. Transparency and representation in decision making

Between the DoF and the BVCs, the decision making process is transparent in its initial stages when the BVCs discuss the issues with DoF, and less transparent when DoF makes the final decisions. This condition is common in both lakes Malombe and Chiuta.

Participatory decision making is another way of empowering the community by determining who can participate in decision making or not. Final decision making in both co-management arrangements (Malombe and Chiuta) has remained centralised at DoF headquarters. In both lakes, the fisher communities are consulted at district level, but cannot influence decisions made at national level. Considering the fact that the percentage of fishers in the BVCs is about 30% in Malombe, fisher representation at district level is even less than 10%. As a result fishers are under represented at the highest level of decision making.

However, decision making in both co-management arrangements (Malombe and Chiuta) has remained centralised at DoF headquarters and is done without any direct input from the fishing communities. In this way, fishers are not represented at the highest level of decision making. This poses an operational problem because all the issues have to be forwarded to DoF for final authorisation. If the final decision is made contrary to the expectations of the fishers, then the decision stands higher chances of being challenged by the fishers through non-compliance.

### 4. Legitimacy and compliancy

The low fisher representation in the BVCs has proved to have a negative impact on the performance of the BVCs, as the fishers' acceptance of the regulations formulated by the BVCs and DoF is low. Fishers have also questioned the legitimacy of the BVCs as fisher representative organisations.

With the active participation of the village heads in the BVCs and their influence in decision making at village level, a number of local informal institutions constrained the active participation of BVC members and inter-BVC

interactions. This was due to the fact that, what the village head said or suggested in the BVCs could hardly be challenged by any BVC member. According to the local traditions, what the village head says can hardly be challenged. While this was the situation in Lake Malombe, in Lake Chiuta, the local informal traditions had very little impact on the participation of the BVC members. In Chiuta, the BVCs developed a number of informal inter-BVC rules as well as rules within the BVCs that helped guide their code of conduct, and this increased the cohesion between the BVC members and the various BVCs.

Prior to and after the introduction of co-management in Lake Malombe, the fishers viewed the operational rules set out by DoF as illegitimate, and have continued to violate them. It was expected that after the introduction of co-management, management regulations were going to be adhered to by the fishers as some of the rules were made with BVC participation, but has not been the case. Most fishers have complained that the regulations formulated by DoF and the BVCs, are for the BVC members only. BVC members who participated in the formulation of the regulations find them relevant and feel fishers should accept them and follow them. Hence, they feel obliged to partake in their enforcement.

Based on this, it can be concluded that legitimacy and compliance of fishing regulations by fishers depends on high levels of participation by fishers in their formulation. This conclusion supports what other researchers have found that participation contributes to compliance through the process of involvement (Jentoft, *et. al.*, 1998, Hanna, 1995). The results also demonstrate that the process of decision making, depending on the level of representation, can either produce incentives or disincentives for the fishers to actively participate in fisheries co-management. In the Malombe case, this has produced disincentives while in the Chiuta case, it has resulted in incentives.

## 5. Conclusion

A number of lessons were drawn from this study with reference to constraints that result from the organisational and institutional frameworks that develop in fisheries co-management. These in turn impact on the sustainability of the co-management arrangements. The following are some of the lessons.

The need to have functional representative organisations on both co-managing sides. However, the introduction of new user representative organisations (such as the BVCs

among the fishing communities) should not bring in conflicts with the existing informal organisations.

The ability of the co-managing partners to change their attitudes and process of functioning towards the requirements of co-management.

The need to develop operational institutions that shape the behaviours of co-managing partners i.e. constitutions within the user representative organisations, as well as formal collaborative arrangements that spell who has what responsibilities to do what.

The need to devolve decision making powers to the grass root organisations.

The need to develop a two way communication system between the co-managing organisations.

The need for community participation in the development of management regulations.

The need for formalising informal institutions instead of developing new ones which may contradict or duplicate each other.

Finally, the need to have the community representative organisations accepted, supported and embedded within the communities will entail sustainable and functional user organisations which will in turn contribute towards sustainable fisheries co-management.

## References

- Bell, R.H.V. and Donda, S.J., Community Fisheries Management Programme: Lake Malombe and Upper Shire River Consultancy Report. Vol. 1 and 2. Mangochi: Government of Malawi, Department of Fisheries and the Malawi - Germany Fisheries and Aquaculture Development Project (MAGFAD). 1993
- FAO, Fisheries characteristics of the shared lakes of the East African rift. CIFA Technical Paper No. 24. Rome, p 28, 1994
- GOM, Government of Malawi, Fisheries Department, Annual Frame Survey report. 1996
- GOM, Government of Malawi, Fisheries Department, Annual Frame Survey report. 1997

Habermas, J., *The theory of communicative action. Vol. 1: Reason and the rationalisation of society*. Heinemann, London. 1984

Habermas, J., *The theory of communicative action. Vol. 2: Lifeworld and system: a critique of functionalist reason*. Polity Press. 1989

Hanna, S., Efficiencies of User Participation in Natural Resource Management. In *Property Rights and the Environment - Social and Ecological Issues*. Beijer International Institute of Ecological Economics and the World Bank. Washington DC. 1995

Jentoft, S. and McCay, B.J., and Wilson, D.C., Social Theory and Fisheries Co-management. *Marine Policy*, vol. 22, No. 4-5, pp. 423-436, 1998

North, D.C., *Institutions, Institutional changes and Economic Performance*. *Politica Economy of Institutions and Decisions*. Cambridge University Press, Cambridge. 1990

Sørensen, O.J., The Network Theory: An Introduction to its Conceptual World, *Compendium for International Industrial Marketing, Part II*, International Business Economics, Centre for International Studies, Aalborg University, Denmark. 1996

Tweddle, D., Alimoso, S., and Sodzapanja, G., Analysis of Catch and Effort Data for the Fisheries of Lake Malombe, 1976 - 1989. *Fisheries Bulletin No. 11*, 15pp. 1994