

**PRODUCTION RELATIONS AND DYNAMICS AMONG USER-GROUPS IN THE ARTISANAL FISHERIES OF MALAWI :  
Implications for Representation in Co-management Arrangements**

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*Abstract* The composition of organisations representing users in co-management arrangements is an important determinant of both their legitimacy and efficiency. In Malawi's artisanal fisheries, there is a need for careful analysis of the contextual variables that shape decision-making and the identification of key stakeholders who make decisions impinging on management regulations. The influence of crewmembers on production decisions within fishing units, the benefit sharing systems based on amount or value of the catch, and the fact that crewmembers' security of tenure depends on their performance makes this group of actors vital for effective management. Therefore, unless co-management arrangements consider the underlying relations of production within fishing units and place vested interests such as crewmembers at their core, user-based management initiatives are bound to be ineffectual. This article uses cases from Lake Malombe and the southeast arm of Lake Malawi to analyse the importance of the composition of management bodies for their legitimacy and effectiveness.

## **Introduction**

Despite its low contribution<sup>1</sup> to the Gross Domestic Product (GDP), the fishing industry is important in the economic and nutritional profile of Malawi. With population growth and largely stagnant national fish production, the contribution of fish to animal protein consumption declined from sixty percent in the 1970s to between forty-five and fifty percent in 1999 (Hara 2001; FAO 2002). Fishing is one of the main occupations for people along the shore areas of the major fish producing water bodies such as Lake Malawi, Lake Chilwa, Lake Chiuta and the Lower Shire River. According to Malawi's Department of Fisheries (1994), the industry provided income related employment to an estimated 43,227 fishers (10,602 gear owners and 32,625 assistants/crewmembers) in 1993. A further thousand people were estimated to be working in the semi-commercial and commercial sectors. Another 20,000 were estimated to have been working in the post-harvest sector as processors, traders, and retailers and also in the ancillary industries of boat building and net-making (Hara 1993). According to the 1993 Government of Malawi/United Nations Development Programme Situation Analysis of Poverty in Malawi, the national average number of people per household was five. Thus an estimated 250,000 to 300,000 people (approximately three percent of the total national population) depended on the fishing industry for their livelihoods in 1993.

Following the dramatic decline in the fisheries of the Lake Malombe and the Upper Shire River in the early 1990s (see figure 1), the Government of Malawi launched a co-management programme in 1993 for the two areas in order to address these negative trends (Fisheries Department 1993; Donda 2001; Hara 2001; Hara *et al.* 2002). Despite six years of implementation, the new regime did not seem to have a positive effect on the catch trends (figure 1). All the same, the regime was extended to Lake Malawi in 1998 under German Technical Foundation (GTZ) funding, even though the experience in Lake Malombe pointed to the probability that it might be more difficult to introduce the new regime in Lake Malawi.<sup>2</sup> The decision to launch the regime in Lake Malawi appears to have been largely influenced by the interface between donor requirements and lack of government financial resources. The Government of Malawi was desperate for continued donor assistance at a time when most other donors were pulling out. The GTZ could not continue with the Malombe project in accordance with their policy.<sup>3</sup> The compromise was to move to a new area (Lake Malawi) even though it would have been more prudent to continue in Malombe, which was a pilot project for drawing lessons about the implementation of co-management in Malawi.

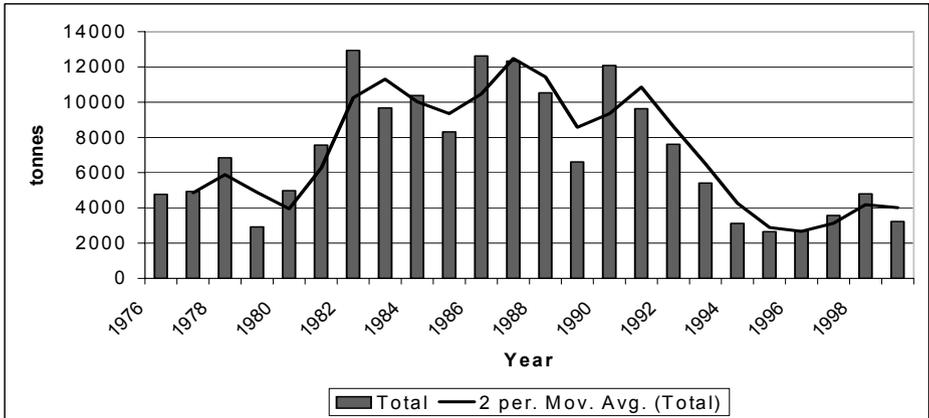


Figure 1. *Estimated Total Catch from Lake Malombe*  
 Data source: Department of Fisheries, Lilongwe. Note: Estimated catch figures are not available after 1999. Due to financial problems the Department of Fisheries had suspended catch assessment surveys.

One of the main reasons for the lack of the co-management regime’s positive effect is that fishers had continued to ignore regulations formulated to reverse the negative trends (Hara *et al.* 2002; Hara 2005). One reason for the continued low adherence to regulations was linked to the poor representation of fishers in the organisations meant to represent user groups, the Beach Village Committees (BVCs). When the BVCs were first elected in 1993, only thirty percent of the BVC members were fishers (gear owners and crewmembers), the other seventy percent being other community members not actively involved in day-to-day fishing. Even then, nearly all of the fishers elected to the BVCs were gear owners (Donda 2001; Hara *et al.* 2002; Hara 2004). There were very few, if any, crewmembers on the committees. It is important to note that the definition of a ‘fisher’ appears to

have been one of the main reasons why crewmembers were left out of BVCS: Malawi's Department of Fisheries defines a 'fisherman' as the 'gear owner'. During elections for members of BVCS therefore, few if any, crewmembers were elected to BVCS since they were not defined and recognised as fishermen. This disregarded the role that crewmembers play in decision-making within fishing units and therefore the importance of involving them in user organisations formed for co-management. The economic relations of production within fishing units and the role that crewmembers occupy in fishing operations makes them crucial for the functioning and success of fisheries management in Malawi (Hara and Jul Larsen 2003). Their involvement is even more important in regimes based on user-involvement such as co-management where the issue of legitimacy based on representation is critical for the efficiency of such regimes.

This article argues for the importance of recognising the unique operations, organisational forms, benefit sharing systems, and decision-making processes associated with the main gears used on the southeast arm of Lake Malawi and Lake Malombe when organising user groups for co-management arrangements. It is argued that in Malawi, unless crewmembers are at the core of involvement in co-management arrangements such regimes will not improve the efficiency of fisheries management in terms of sustainable patterns of exploitation and reduced 'transaction costs'. The article is intended to contribute to the debate about the importance of including vested interests or specific interest groups in the composition of organisations meant to represent users in co-management regimes if such regimes are to succeed in their intended objectives.

This article is based on interviews conducted and synthesised between 1997 and 2001 as part of the author's fieldwork for his doctoral thesis (Hara 2001) and also as part of the *Management, Co-management or No management* project (Jul Larsen *et al.* 2003). For both the Ph.D. and the latter project, structured and unstructured interviews were used to collect the information. Particularly useful was the approach of building life histories of forty-two gear owners and crewmembers in order to develop a historical overview of investment patterns, effort development, and organisational structures in the fisheries of the two areas. In total, over eighty fishers (gear owners and crewmembers) were interviewed in the four-year period. In addition, the author used his extensive knowledge of the fisheries of the area gathered between 1990 and 1996 when he worked as Fisheries Officer for the Mangochi District, the administrative area where the two water bodies occur. Besides these two specific research projects and his tenure as Fisheries Officer, the author continues to follow and retain interest in developments concerning fisheries management and development in Malawi in general and the two water bodies in particular.

### **User-group Representation in Fisheries Management**

Perennial problems of compliance that are resulting in depletion of fisheries around the world (FAO 1995, 1998, 2000) have resulted in the concentration of the minds of those concerned and the public at large on the underlying problems with fisheries management (Mikalsen and Jentoft 2001). Among government agencies and non-governmental organisations (NGOs) responsible for fisheries management, there has been a growing realisation that no management scheme will work unless it enjoys the support of those whose behaviour it is intended to

affect. As a result, legitimacy and compliance have become key concepts in fisheries management (Feldt 1990; Jentoft 1993). It is now widely assumed that legitimacy is conducive to compliance; that fishers will adhere to rules and regulations if they consider the management scheme as legitimate (Jentoft 1989; Raakjaer Nielsen *et al.* 1997; Hatcher *et al.* 2000; Raakjaer Nielsen 2003). 'In this sense, legitimacy has to do with compliance with decisions and policies that conform to, or approximate to the values, standards and expectations of those affected' (Beetham 1991:11). Assuming that efficiency of management measures hinges on compliance, and compliance on legitimacy, there is a strong case for user-group participation in management decision-making (McCay and Wilson 1998; Jentoft 2000). Thus one of the most pressing problems in fisheries has become how to ensure 'grassroots' approval of management decisions. The standard solution for ensuring 'grassroots' approval of decisions is seen as representation (Mikalsen 1996). It is assumed that apart from providing user-groups with opportunities to shape policy and regulations, representation would also make users responsible for policy and regulations they have contributed to formulating, thereby increasing the likelihood of co-operation and support in implementation. In the last fifteen years, therefore, there have been increasing references to, and adoption of user-based management regimes such as co-management, especially in artisanal fisheries in Africa and around the world in general (Baland and Platteau 1996; Sverdrup-Jensen and R. Nielsen 1998; Agrawal 2001; Geheb and Sarch 2002; Hauck and Sowman 2003; Jul Larsen *et al.* 2003; Wilson *et al.* 2003). It must be realised though that government fisheries management agencies may be motivated to introduce co-management by issues that have less to do with the desire to introduce user participation and self-control among users. For example, in most developing countries the accommodation of users in management schemes has been partly forced upon governments as one of the conditionalities for aid for natural resource management/development projects following the end of the cold war (Hara 2001).

Co-management is supposed to give user-groups, through their representatives, a seat at the management decision-making table. Even then, a co-management regime might not enjoy the support of key sections of user-groups. Managers may think they have adequately taken care of such issues through collaboration while the organisations they consult might not be representative of some specific sections of user-groups or special interest groups within the user community. According to Mikalsen (1996), three problems and dilemmas exist for user representation: the relationship between *interests and influence*, the issue of *representation*, and *balancing special interests against public concerns*. Regarding 'interests and influence', it is argued that giving power to fishers is tantamount to letting the 'fox into the hen house' or 'letting the goat guard the oatmeal bag' (Jentoft 1993; Hoel *et al.* 1996; Mikalsen 1996). That is, fishers have a tendency to capture the immediate benefits while disregarding the long-term impact of their activities on the stocks. The issue of 'representation' pertains to the question of whether it is possible to satisfy the interests and concerns of all stakeholders. If this is not possible, whose interests are being served or accommodated? The final issue concerns the need to balance special interests against public concerns. In this context, a balance needs to be struck between the legitimate and vested interests of user-groups whose livelihoods depend on management decisions and the concerns of the state in its custodial role for natural resources on behalf of the public in the quest for ensuring conservation and sus-

tainable utilisation. Dealing with issues of composition, organisations representing user-groups in fisheries management therefore have to consider these factors, complex as this might be.

We must be aware that legitimacy and compliance may not necessarily hinge on direct representation alone. In coastal communities where fisheries form an important part of people's livelihoods, non-compliance might be the result of issues entirely unrelated to issues of representation. For example, in times of disaster (such as famine), peoples' *vulnerability* in other economic sectors might drive them into the sectors that are still providing possibilities of a livelihood. Fisheries might be such a sector. In Malawi where the majority of the population depends on rain-fed agriculture for food production, problems of drought as experienced in recent years make such considerations important.



Figure 2. Map of Malawi Showing the Major Lakes and Rivers Including Lake Malombe and the Southeast Arm at the Southern End of Lake Malawi.

Thus increased fisheries exploitation might result from limited economic and livelihood opportunities in other sectors rather than the 'classic' profit motives only. This means that regulations, especially those that limit access (even under co-management arrangements), could face added challenges due to the need for fisheries to act as a buffer in times of stress or due to historical and cultural requirements for livelihood diversification (Brox 1990; Allison and Ellis 2001; Jul Larsen *et al.* 2003).

### Southeast Arm of Lake Malawi and Lake Malombe

The southeast arm of Lake Malawi denotes the right arm (facing north) of the southern end of Lake Malawi (figure 2). It lies between 13° 44' to 14° 25' south and 34° 50' to 35° 10' east. Its total surface area is approximately 2000 km<sup>2</sup>, which is 8.4% of Lake Malawi's total surface area. Lake Malombe (figure 2) lies between 14° 21' to 14° 45' south and 35° 10' to 35° 20' east and has a total surface area of about 360 km<sup>2</sup>. Despite their sizes, the southeast arm of Lake Malawi and Lake Malombe have been the most important fishing areas in terms of contribution towards national fish production in Malawi. In 1999, an estimated 10,351 tonnes were landed from the former. This represented twenty-four percent of total national fish production. At its peak of production in 1990, Lake Malombe contributed nineteen percent to national production. In case of the latter, there had been a dramatic decline in catches after 1990 (figure 1 and table 1).

Year	Estimated Production				
	National (tonnes)	Southeast Arm of Lake Malawi		Lake Malombe	
		in tonnes	as percentage of national total	in tonnes	as percentage of national total
1976	56495	4033	7	4776	8
1980	51976	4395	8	4969	10
1985	59078	7084	12	8314	14
1990	65132	12872	20	12084	19
1995	53956	8927	16	2652	5
1999	43021	10351	24	3231	8

Table 1. *Estimated Total Catch for the Southeast Arm of Lake Malawi, Lake Malombe and National Production for Selected Years.*

*Data source: Department of Fisheries, Lilongwe. Note: estimated catch figures are not available after 1999 due to financial problems the Department of Fisheries had suspended catch assessment surveys.*

### The Important Fishing Gears

In the fishing areas, the main target commercial species had changed from *chambo* (*Oreochromis spp.*) to *kambuzi* (*Lethrinops spp.*) in Lake Malombe and to *utaka* (*copadichromis spp.*) and *usipa* (*Sardinella spp.*) in the southeast arm of Lake Malawi. The *kambuzi* is caught using the *nkacha*<sup>4</sup> net and *kambuzi seine net*<sup>5</sup> while the *utaka* and *usipa* are caught using the *chilimira*.<sup>6</sup> In the southeast arm, the *chambo* is also increasingly being caught using the *chilimira* using a method called *kauni*.<sup>7</sup> In the past, *gillnets*<sup>8</sup> and *chambo seine nets*<sup>9</sup> had been the main gears for catching *chambo*. Thus in the 1990s, the *chilimira*, *kambuzi seine net* and *nkacha* have increased in importance in terms of landed catch from the southeast arm as shown in figure 3.

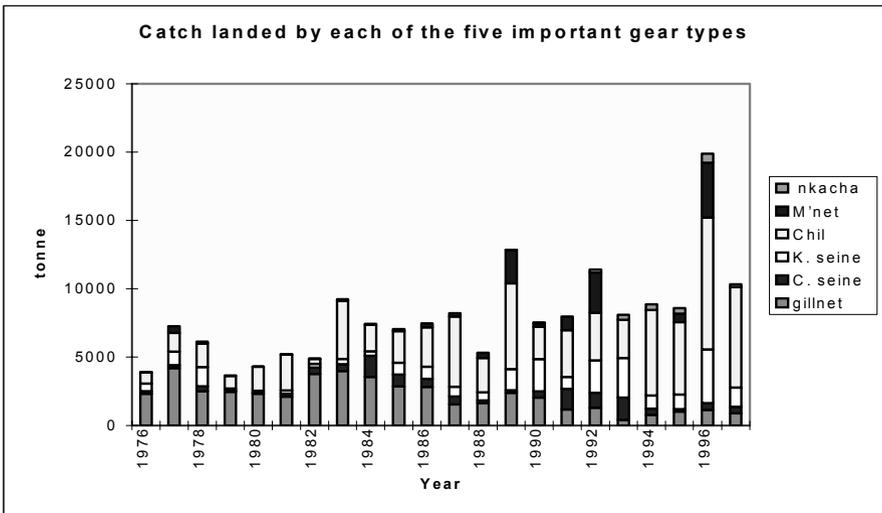


Figure 3. Contribution of the Five Most Important Fishing Gears on the Southeast Arm of Lake Malawi to Total Catch from the Area

Data source: Department of Fisheries, Lilongwe. (M'net = Mosquito net, Chil = Chilimira, K. seine = Kambuzi seine, C. seine = Chambo seine). Note: Estimated catch figures are not available after 1999. Due to financial problems the department of fisheries had suspended catch assessment surveys)

### Labour and Organisational Forms

Because of the problems of raising capital, a very small percentage of people own fishing units (fishing gears and boats) within the fishing communities (Hara and Jul Larsen 2003). Here the term *gear owners* will be used to refer to the individuals who own fishing units. In most instances, gear owners do not participate in the actual daily fishing activities. Instead, they employ crews. The number of crewmembers varies depending on the type and size of the gear. Reviewed here are the organisational structures and the operations of the most important fishing gears in the two water bodies. These are *chilimira seine nets*, *nkacha seine nets*, *gillnets*, *chambo seine nets* and *kambuzi seine nets*. While the first three are offshore gears, the last two are operated from the beaches.

### *Chilimira Net*

The *aTonga*<sup>10</sup> from Nkhata Bay in northern Malawi are credited with the invention of the *chilimira* net and its introduction to the central and southern parts of Lake Malawi through migration. According to McCracken (1987), the introduction of the *chilimira* brought about organisational innovations, creating fishing companies made up of an owner of fishing implements and his *alovi* (crewmembers) not all of whom were members of the owners' lineage.<sup>11</sup> Under this system, group ownership of equipment was abandoned and instead, nets and boats became the private property of owners, most of whom left the day-to-day control of the fishing to a son while they supervised the drying and selling of fish on shore (McCracken 1987).

A *chilimira* net employs nine crewmembers in the following roles: one person who is skilled at searching for fish shoals and leading the fishing operations (locally called *sigina* (signal) or *sentinela*), who is also normally the leader of the crew, and eight net operators (*wokoka*<sup>12</sup>). Once the catch is sold, the gear owner subtracts the day's operational costs. The *net balance* is then divided into two halves, one for the gear owner and the other for the crewmembers. The sharing of the proceeds from the catch is thus based on the net sales rather than the gross sales. Suppose the catch was sold for K10,000<sup>13</sup> and operational costs amounted to K1000, the money would then be shared as follows.

Role in the unit	Share proportions of the net sales (Malawi Kwacha)	Share as a percentage of net sales (Malawi Kwacha)
<i>Gear owner</i>	K4,500	50%
<i>Sigina</i>	K 900	10%
<i>8 wokoka</i>	K3,600 (K450 each)	40% (5% each)

Table 2. *Standard Sharing Proportions of the Net Sales Proceeds in Chilimira Fishing Units. Source: Fieldwork*

The gear owner gets fifty percent of the net catch sales after operational costs have been subtracted. Among the crewmembers, their share is split into ten equal units. The *sigina* gets two units while the rest of the crewmembers get one unit each so that among the crewmembers, the *sigina* gets twice as much as the other crewmembers. The sharing is done as soon as the sale of the catch has been completed.

### *Nkacha Seine Net*

In nkacha net fishing, the eight crewmembers are usually employed in the following roles; there are two divers (*atiwi* singular *Mtiwi*<sup>14</sup>), four net operators (*wokoka*) and two young boys (*aNangula*<sup>15</sup>), one in each boat whose duties are to throw the anchor and bale out water.

The sharing system in the nkacha works as follows: from the gross sales, ten percent is subtracted and paid to the divers who share this equally. The remainder is split in half. One half goes to the gear owner and the other half is shared among the crewmembers. Among the crewmembers, the sharing of the money varies according to one's role within the crew. Suppose that the catch is sold for K10,000 after it is landed. K1000 will be paid to the divers leaving a bal-

ance of K9000. K4500 will go to the gear owner while the rest will be shared among the crewmembers. In the end, the money will be shared as follows.

Role in the unit	Share proportions of <i>gross sales</i> (Malawi Kwacha)	Share as a percentage of <i>gross sales</i> (Malawi Kwacha)
<i>Gear owner</i>	K4,500	45%
<i>2 divers</i>	K2,300 (K1150 each)	23% (11.50% of total to each)
<i>4 wokoka</i>	K1,700 (K 425 each)	17% ( 4.25% of total to each)
<i>2 aNangula</i>	K 500 (K 250 each)	5% ( 2.50% of total to each)

Table 3. *Standard Sharing Proportions of the Gross Sales Proceeds in Nkacha Fishing Units. Source: Fieldwork*

Thus the gear owner gets forty-five percent of the gross sales amount, while the crewmembers get fifty-five percent. Each of the divers gets 11.5 percent of the gross sales, net operators (*wokoka*) get 4.25 percent of the gross sales amount each and *aNangula* get 2.5 percent of gross sales amount each. Unlike in the *chilimira* nets, the gear owner in *nkacha* units is responsible for operational costs. Like in *chilimira*, sharing is done as soon as the catch has been sold.

In the 1990s, most *nkacha* units had two crews each. Thus in a given six-day<sup>16</sup> working week (one day is put aside for net repairs), each crew will fish for three days, translating into a twelve-day working month. In some cases units had three crews, meaning that each crew worked two days per week and therefore a maximum of eight days a month. During their free days, the crewmembers act as replacements in other crews although such chances were said to be becoming more and more rare (Hara 2001).

In general, the *nkacha* crewmembers tend to be very mobile. In a given year, the crewmembers can change crews or units up to four times. The reasons for this high mobility included disagreements within the crew and poor performance of the gear; crewmembers also moved when the gear owner sold the unit and the new owner recruited other crewmembers or when the gear owner migrated to another water body. In such instances, gear owners either went with one set of crew or chose to find crewmembers within the new area. Due to these unstable working relations and conditions, crewmembers working in *nkacha* units pointed out that their employment is based on the principle of *ganyu* (piece work).<sup>17</sup>

### *Gillnets*

Gillnet fishing, the number of crewmembers varies between one and four depending on the size of the nets. Usually, the target species for gillnets is *chambo* although other species are also caught as by-catch. In this fishery, sharing is based on the number of pieces of fish rather than total sales. The usual system is that five pieces of fish (or the equivalent proportion in gross sales value) in every dozen go to the crewmembers. Presumably, the gear owner gets seven pieces of fish out of every dozen in order to cover operational costs. The crewmembers can choose to get the actual share of the fish and do as they wish with it (sell or take

home), rather than taking the money proportion. There are also cases whereby traders and gear owners negotiate pre-payment for the fish. In this case, the two parties negotiate the price of the fish before it is caught. Such an agreement has to be communicated to the crewmembers so that they also agree and are aware that for the duration of the agreement, they are going to get the money proportion as their share of benefits. The agreed price cannot be changed after the agreement. The trader then gives the agreed lump-sum amount of money to the gear owner and he or she gets all the fish from such a unit until the amount deposited is exhausted. The crewmembers get their proportion of the money daily depending on the value of the day's catch. Normally, gear owners enter into such contracts when they need capital for repair or replacement of equipment.

#### *Chambo and Kambuzi Seine Nets*

The operation of the *chambo seine nets* and *kambuzi seine nets* requires people to haul the net onto the beach. In the former, the number of gang members<sup>18</sup> ranges between ten and thirty, while in the latter this ranges between six and twenty. Half of these are usually employed on semi-permanent basis while the other half are employed as need be on a daily *ganyu* basis. Like in the *chilimira*, the sharing is half each between the gear owner and the semi-permanent operators after operational costs have been subtracted. Those employed on *ganyu* for the day are paid by the gear owner from his share (in 1999, the rate for those employed on *ganyu* for the day was K2 per dozen fish sold). At some beaches such as Chipereka on the east banks of the southeast arm of Lake Malawi, a system of pre-payment of benefits had been increasingly used since the mid-1990s. Due to declining catches, the gang members had started demanding that they be paid before operating the net. It was becoming common to set the net and get very poor catches, so that gang members were finding themselves in a situation whereby they could go home with negligible benefits at the end of the day. The amount to be paid for the day to the gang is negotiated between the gang members and the gear owner. This is paid to the gang members for sharing among themselves before they can start operating the net. Under such an agreement, the gear owner then gets all the day's catch for himself. This is a gamble on both sides. If fifty percent of the net sale of the catch amounts to more than the gear owner had pre-paid the gang members, then he wins. If the catch is so poor that the fifty percent amounts to less than what the gang members had been pre-paid, then the gang members have won the gamble. The principle in this practice is that once it has been agreed to use this system, both sides have to stick to the agreement. Neither can change their mind and renege on the agreement after seeing what the actual amount or value of the catch is. Both gear owners and gang members believed that this system was fair in times of resource uncertainty. In addition, both parties said that on average benefits between the two sides even out in the end under this system. It was confirmed that although such agreements were informal, they were very much binding under local custom and practice (Hara 2001).

## Historical Context of the Organisational and Sharing Systems

The organisational structures and benefit sharing systems reviewed for the four fishing gears have evolved over a long time. Major changes occurred, however, in the 1980s and 1990s. In the early years of commercialisation of the fishery, the gear owner employed the crewmembers and paid them monthly wages (Hara and Jul Larsen 2003). This continued until the late 1970s. In Lake Malombe, change apparently came about due to two gillnet (gear) owners, Messrs Nkongwa and Wadi Ali. Unlike other gear owners, these two did not have outboard engine motors for their units. This placed them at a great disadvantage when it came to attracting good crewmembers. Thus in order to attract good crewmembers, they offered their crewmembers half of the net catch sales proceeds (Hara and Jul Larsen 2003). When other crewmembers who were paid on a monthly basis heard about this innovation, they demanded of their employers that they also change to the same system of remuneration. The system of dividing the net value in half, with fifty percent for the gear owner and fifty percent for the crewmembers, spread to groups using all the other main fishing gears in both water bodies namely, *chambo* and *kambuzi* seine nets, *nkacha* nets, and *chilimira* nets in the 1980s.

Although the pay system was based on half of the *net value* of the landed wet fish to each party, payment of the crewmembers' share by the gear owner was only made at the end of a working week. Until the late 1980s, gear owners processed their catch before selling it to fish traders. Thus the value of the catch would be agreed upon between the two parties and recorded every day. At times, crewmembers had to wait until the gear owner had sold the dried or smoked fish before they could get their share of the pay for the period in question. This could be as long as two weeks or even longer depending on the season and availability of traders. Under this system, the gear owners increased their profits, as the value of the catch usually doubled after processing. By the early 1990s though, gear owners had started to sell the wet fish direct to the traders for the latter to do the processing on their own. Since the gear owners got the money for the catch immediately, most crewmembers demanded that they get their share immediately also. Gear owners complain that nowadays, it is the crewmembers who negotiate the price of the fish with the traders rather than the gear owner, as was the case in the 1980s. Whereas in the 1980s and early 1990s the *nkacha* gear owners subtracted the operational costs (cost of fuel for units still using outboard motors, net repairs, and breakfast for the crewmembers), the mid-1990s saw crewmembers demand that the sharing should be based on *gross sales* rather than *net sales*.

## Decision-making and Unit Management

Two main types of decisions can be identified within the fishing units. These are strategic business decisions and operational decisions. The gear owner makes the strategic decisions, with the help of the leader of the crewmembers. These decisions include the type of fishing to engage in and where to fish. It is usual for gear owners to have more than one type of fishing gear. This enables them to switch from one gear to another according to the season or to the availability of fish or profitability of a particular type of fishing. Crewmembers have a lot of influence in these decisions, which affect the potential level of their benefits.

They exert such influence through their leader who is consulted by the gear owner about the strategic decisions. Out on the fishing grounds, the leader of the crew takes operational decisions in close consultation with the rest of the crewmembers. The gear owner has very little control over what happens out on the lake. In this context, decisions to engage in illegal activities can be taken among crewmembers without the knowledge of the gear owner (Hara 2001). Even if the gear owner knew about such activities, gear owners interviewed said that they avoid interfering with operational decisions that will determine the size of the catch and therefore the benefits that he and the crewmembers get. In any case, the security of tenure for the crewmembers depends on their performance (Hara *et al.* 2002).

Staying in the fishing business once one had acquired the gear became increasingly difficult after the mid-1990s as unit management had become a critical issue (Hara and Jul Larsen 2003). Gear owners said that the problem was the growing power and influence of crewmembers over both management and operational decisions within fishing units. Most gear owners complained that crewmembers had taken over decisions in areas such as: changes to the specifications of fishing nets; the number of hours they would stay out fishing; and negotiating with fish traders over the price of the fish once it was landed. For some gears such as the *nkacha*, crewmembers had stopped contributing towards operational costs for the unit. Even when it came to disciplining crewmembers, the gear owner had limited powers. Some gear owners pointed out that even in terms of the composition of the crew, the crewmembers increasingly recruited and sacked each other among themselves. The gear owner could withdraw his net to force changes in the composition of the crew, or as a disciplinary measure. But, if the crewmembers within the area felt that the gear owner's action was unfair, they could apparently mobilise all crewmembers within that area, like a labour union, to force the ostracism of the fishing unit in question. It was said that in such circumstances, the gear owner would find it difficult to employ crewmembers from outside the area, since the local pool of crewmembers possessed informal powers to stop crewmembers from other areas working from their beaches (Hara and Jul Larsen 2003). For example, in 1999 a gear owner from Chapola beach on Lake Malombe caught his crewmembers selling the catch without his permission at Chizumbi beach, away from the normal landing home beach (Chapola). While he had every justification to seek redress, the crewmembers abandoned the unit on the spot without giving back the money saying that he was being too strict. Most gear owners confirmed that theft of fish and fishing nets by crewmembers had become increasingly common. Finally, gear owners explained that the high mobility of crewmembers and their lack of long-term tenure within fishing units or crews meant that crewmembers did not usually feel much sense of responsibility for proper use of the fishing equipment.

### **Implications for Co-Management**

One of the main reasons for introducing co-management in Lake Malombe and the southeast arm of Lake Malawi was to improve the adherence of fishers to fishing regulations. This followed the decline of the fishery in Lake Malombe, which had been attributed to overcapacity and widespread illegal fishing activities (FAO 1993; Department of Fisheries 1993). Similar trends have been observed on

the southeast arm of Lake Malawi. Worse still, the *nkacha* nets, the fishing gear that has been blamed for the demise of the Lake Malombe fishery (FAO 1993; Hara and Banda 1997; Hara 2001), have been moving to the southeast arm of Lake Malawi. There is fear that a similar 'tragedy' might result on the latter.

As can be discerned from the foregoing analysis, the role of crewmembers in relation to compliance to regulations is without doubt very crucial. This is especially so for the offshore gears, including the *nkacha*. Out on the fishing grounds, crewmembers are on their own, out of reach of the gear owner, the community and also, the Fisheries Department inspectors who have been largely incapacitated in recent years because of a lack of resources for monitoring, control, and surveillance activities. One of the most common practices among crewmembers is to have a piece of netting with undersized mesh that can be lined in the bunt of the net once away from the beach. Thus while a net might look normal on the beach, the bunt will be changed once out on the fishing grounds in order to increase catches by making sure that no fish escapes once caught in the net. In any case, the risks of being caught are low as the Fisheries Department's capacity to carry out monitoring, control, and surveillance activities has greatly declined due to budgetary problems following the government's implementation of the Economic and Structural Adjustment Programme from the early 1990s (Bland and Donda 1994; Hara 2001). Thus what fishers support in principle when decisions are made, they might be against in practice when out on the fishing grounds.

Exploitation patterns are greatly influenced by profit and livelihood motives since maximisation of benefits for gear owners and crewmembers is the primary factor for fishing. As the benefit sharing systems between the two parties are based on the amount of catch or value, and also, the crewmembers' security of tenure within a fishing unit depends on their performance, there is great pressure on crewmembers to engage in activities that would act to increase catches in any possible way (Hara *et al.* 2002). For the gear owners, keeping a productive crew is a premium. In general, the sharing systems and the lack of long-term tenure within fishing units make crewmembers prone to operational decisions based on short-term socio-economic maximisation strategies, which encourage illegal activities. In addition, the lack of legal responsibility of crewmembers for their actions provides little deterrent to infringement of the regulations.<sup>19</sup>

This brings us to the issue of involvement of the fishers (gear owners and crewmembers) in user organisations meant for co-management. In Lake Malombe, as noted above, fishers comprised only thirty percent of the Beach Village Committee members up to 1999 and most of these were gear owners (Donda 2001; Hara *et al.* 2002). As a result, the fishers did not feel ownership of the BVCs when these were formed at the start of the programme in 1993 and, to a large extent, they ignored the resolutions that were being passed by BVCs. They complained that BVCs took decisions on fishing issues that they had little knowledge about. There was a strong feeling among crewmembers that decisions taken by BVCs were merely meant to punish them. Thus, one of the main reasons for the ineffectiveness of the new regime up to 1999 in Lake Malombe could be attributed to the marginalisation of crewmembers in the formation and functioning of the Beach Village Committees.

What we can deduce from the foregoing is that who participates and is represented on the management bodies and in the management processes in general is a critical factor for the effectiveness of user participation in fisheries

management. International experience indicates that the involvement of vested interests -- with a requisite critical mass -- in organisations meant to represent users is crucial for effective co-management arrangements. In the context of Malawi, the involvement of crewmembers, who are the ones that take the operational decisions out on the lake and also greatly influence production decisions within fishing units, is particularly important if Beach Village Committees are to function effectively as management institutions.

## **Conclusion**

The intention of this article was to provide a descriptive analysis of the prevailing social and economic relations of fishing in the artisanal fisheries sector, which is responsible for over eighty-five percent of the landed catch in Malawi. The aim was to demonstrate the complexities and challenges that exist in the quest for introducing effective user participation in the management of the fishery. The existing social, economic, and organisational dynamics in the Lake Malombe fishery raise several important questions that may be useful starting points for analysing co-management arrangements elsewhere. Who is a fisher? What are the implications of the highly transient, flexible and dynamic relationships, and organisational structures among the fishers? Who holds what kinds of power within fishing units? Who takes what type of decisions? What are the contexts within which production and operational decisions are taken in fishing units? Who should define the management issues? What knowledge could fishers bring to the management process? What implications do all of these have for building trust and lasting co-managerial relations and institutions? These questions have to be seriously considered when forming and building fisher organisations for co-management purposes.

In addition to addressing these questions, co-management arrangements have to consider the position of the fishery within the livelihood options of the dependant community. In areas such as those around Lake Malombe and the southeast arm of Lake Malawi -- areas with very high population densities, small land holdings for farming, a small formal employment sector, high unemployment, and a general lack of economic opportunities outside the exploitation of natural resources -- fishing still provides the best potential for eking out a living for most people. Thus the questions of who benefits and where and how fishing fits within peoples' profile of livelihood options and strategies at specific times is very important when formulating co-management.

The Lake Malombe case demonstrates that instead of fitting fisher communities into co-management models, the models should be adapted to fit the reality of the social, economic, political, and power dynamics in specific situations. Without such due consideration and careful analysis, the danger exists that (crucially) important stakeholders such as crewmembers might be overlooked, resulting in organisations that are unrepresentative and therefore ineffective in their management roles.

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## Notes

<sup>1</sup> The figure that has been officially given and used by the Fisheries Department is that the fishing industry contributes four percent to Gross Domestic Product. This figure has not been re-evaluated for a long time though because no data on value of fish is provided by the Department of Fisheries to the National Statistical Office.

<sup>2</sup> One of the justifications for introducing co-management to Lake Malombe was the assumption that the community was small and relatively homogenous. Besides, there were only three main types of fishing gears in use. Compared to Lake Malombe, the southeast arm of Lake Malawi is about six times bigger, has several ethnic groups and has a greater number of gear types operating in the area.

<sup>3</sup> Apparently, GTZ policy is that the maximum number of years for a project is ten. The National Aquatic Resources Management Programme (NARMAP) project was a ten-year project. As GTZ had started funding the Malombe project in 1993, continuing with the project under NARMAP from 1999 would not have been justified.

<sup>4</sup> The *nkacha* is a rectangular open-water seine net with a gradation of mesh sizes from smaller at the bunt to larger towards the wing. It is operated using two planked boats by being cast in a circular manner. One crew member dives to tie the footrope together so as to form the net into a bag in which the fish are trapped.

<sup>5</sup> A *kambuzi* seine is a beach seine net common to both Lake Malombe and the southeast arm. It has mesh sizes ranging from a few millimetres to twenty-five millimetres at the bunt with headline length ranging from fifty to 700 meters and a depth of two to twelve meters. It is normally cast from the beach in a semi-circle using a single planked boat. Both ends of the net are pulled simultaneously by two sets of people (FAO 1993).

<sup>6</sup> The *chilimira* is a conical shaped open-water seine net originally designed for catching *utaka*. By lining the bunt with a piece of mosquito netting, it can be adapted to catch *usipa*. The net is operated using two dugout canoes and one plank boat.

<sup>7</sup> *Kauni* is a method of catching *chambo* with the *chilimira* using light.

<sup>8</sup> A gillnet is a rectangular gear usually made from four or six ply nylon twine. The mesh sizes can range from 64 to 102 millimetres. The headline length can vary from 100 to 3200 meters while the depth varies from 5 to 25 meters (FAO 1993).

<sup>9</sup> The *chambo* seine is a beach seine usually cast using a single plank boat. The mesh sizes at the bunt vary from 76 to 90 millimetres while the headline length can vary between 100 to 1800 meters. The depth ranges from five to twenty meters. It is operated in the same way as the *kambuzi* seine but requires ten to thirty people for its operation (FAO 1993).

<sup>10</sup> The aTonga are an ethnic group originally from Nkhata Bay District in the northern region of Malawi. Since the 1950s, some have settled in family groups on the southeast and southwest arms of Lake Malawi.

<sup>11</sup> Until then, mobilisation of fishing labour was done along kinship ties.

<sup>12</sup> *Wokoka* refers to the members of the crew who are responsible for casting and hauling in the net.

<sup>13</sup> K stands for Malawi currency called Kwacha. In 1999, \$1 was worth K45 while in 2005, \$1 was equivalent to K125.

<sup>14</sup> *Mtiwi* is the local name for the diver.

<sup>15</sup> *Nangula* is the local name for the anchor. *waNangula* is the name given to the member of the crew who is responsible for throwing the anchor and bring it in.

<sup>16</sup> In some instances, *nkacha* units go out fishing twice a day (during the day and at night).

<sup>17</sup> *Ganyu* is the local name for daily piece work.

<sup>18</sup> The net operators who haul the *chambo* or *kambuzi* beach seines are called a gang.

<sup>19</sup> In terms of the Fisheries Act (Government of Malawi 1997), it is the gear owner who is responsible for any infringement of the regulations.

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