

IUCN Eastern Africa Programme

Socio-economics of the Lake Victoria Fisheries

**CONSTRAINTS AND OPPORTUNITIES FOR 'COMMUNITY
PARTICIPATION' IN THE MANAGEMENT
OF THE LAKE VICTORIA FISHERIES**

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During the last 20 years the Lake Victoria fisheries have been completely transformed. From being a locally based fishery with little intervention and capital investment from outside, the present fishery is dominated by national and international capital penetrating the industry. There are many institutions and organisations involved in the management and development of the Lake Victoria fisheries. These institutions include Government departments and agencies of the three states sharing Lake Victoria (Kenya, Uganda and Tanzania), international development banks, donor organisations, local, national and international NGOs. Despite their differences in size and approach to development issues, they share at least one common feature: They all emphasise the importance of promoting "community participation" in the management of the Lake Victoria fisheries.

"Community participation" is a vague and an elusive concept and the different institutions involved in the Lake Victoria fisheries do not have a common conception about what "community participation" would involve when implemented in the context of the Lake Victoria fisheries. The main objective of this paper is to discuss some aspects of this concept and relate it to changes which have occurred in the Lake Victoria fisheries. We discuss what we think are some of the relevant **areas for community participation** in the Lake Victoria fisheries. We adopt a "holistic" approach to community participation and we suggest that participation should not only seek to involve people in the management of the production sector of the fisheries, but also should include the processing and distribution sectors and consumption of fish.

We discuss how **the broader context of the Lake Victoria fisheries**

1. INTRODUCTION

"Community participation" has during the last decade been regarded as an essential component in the management of natural resources. This is also the case for the management of the fisheries resources of Lake Victoria. In reports and papers issued by the governments of the three countries sharing Lake Victoria (Kenya, Uganda and Tanzania) and the recently established Lake Victoria Fisheries Organisation, it is emphasised that the people living along the shores of the lake should be engaged in the management of the fisheries resources (CIFA, 1994).

That "community participation" is regarded as an important element in the Lake Victoria fisheries, is also evident from the plans of two large development programs concerning the Lake Victoria fisheries. These two programmes which will play a dominant role in the development of the Lake Victoria fisheries, are the Lake Victoria Fisheries Research Project supported by the European Development Fund of the EU and the Lake Victoria Environmental Management Programme (LVEMP) supported by GEF and the World Bank. Both of the programmes will work through and support relevant Government institutions in the three countries. The two programs that have been in the planning process for many years, are expected to last for at least five years each. The two programmes are comprehensive in terms of the issues they will address. Both programmes will employ a staff of socio-economists who will focus on how the local communities can be involved in the management of their fisheries resources. The two programmes will to a large extent influence how the three governments will plan and implement the management of the fisheries resources for Lake Victoria. The recommendations of the two programmes will therefore have a significant impact on how "community participation" is both perceived and supported in the Lake Victoria fisheries.

The main objective of this paper is to present and discuss some selected issues which we believe are important to address when the concept of "community participation" is discussed in the Lake Victoria

Who is the community that is to participate in the management of the Lake Victoria fisheries? In a recent article Harris (1998), states:

"In contrast to the traditional view of fishery management, the community is no longer just local actors". This expanded view of the community has led analysts to talk of stakeholders (Decker *et al.* 1996). In case of Lake Victoria, stakeholders are found at ten levels or realms:

1. global level: bio-diversity, common heritage of humanity;
2. transnational levels: traders;
3. society level: national resource;
4. citizen level: food security, nutritional needs for protein;
5. national government level: foreign exchange;
6. recreational realm: tour operators;
7. industrial realm: processors and marketers;
8. fishers; boat owners, operators, crew;
9. family and neighbours: employment;
10. lakeside people: subsistence consumption." (Harris, 1998).

We agree with Harris that today there are many different stakeholders in the Lake Victoria fisheries. Many of the stakeholders have, as we will show in this paper, different and contradictory interests in the resources of the lake. For the purpose of this paper, however, we have elected to use a more confined definition of community. Here we will use the International Institute for Environment and Development's (IIED) approach to the concept of **community**. IIED points out that communities can be understood in **spatial, socio-cultural** and **economic** terms (IIED, 1994). Discussing IIED's approach to the concept of "community", Barrow and Murphree (1998) note: "combining these constructs one can derive a model of community as an entity socially bound by a common cultural identity, living within defined spatial boundaries and having a common economic interest in the resources of this area".

Although it is difficult to apply this ideal-type model to the fishing communities around Lake Victoria, there is no doubt that many of these communities can be considered "**communities of place**", even if they have changing membership due to the frequent migration of fishermen. Many of the members of the fishing communities share a **common cultural identity**, but many of the fishing communities are diverse, encompassing members of various tribes with different identity and traditions. Although all members of the fishing communities should, at least in theory, have **common economic interests** in managing the fish resources in a sustainable manner, the members of the fishing communities belong to different groups, often with contradictory economic interests.

Despite the varied socio-cultural and economic background people may have, we will for our purposes, nevertheless, consider that it is the people who live close to the lake and depend on the fisheries resources who are the members of the fishing communities. It is these people that all institutions involved with the development of the Lake Victoria fisheries would like to see, at least on paper, **participate** more in the management of the fisheries resources. In relation to the ten levels of stakeholders Harris identified above, the IIED definition covers level 8, 9 and 10. It is, no doubt, important that the concerns and participation of the actors of all the levels are included in the management of the Lake Victoria fisheries. In practice, however, the local communities, level 8,9 and 10, are often left out. Harris (1998), comments on the role of various actors in the development of the plan for the important LVEMP:

"On the one hand, most of the international meetings leading to the formation of the LVEMP Plan were held outside Africa, and most of the influential actors in the planning process were international agencies and transnational associations. On the other hand, the final document resulted from a consultative process which engaged over 100 scientists, officials and business leaders in each country, and the formal proposals were assembled by task forces of officials from the three countries. Although this process included the industrial processors and marketers, *it excluded any participation by the boat owners and operators and crew, or the leaders of fishing communities*" (italics by authors).

"Participation"

When development thinking during the last two decades shifted from a "top-down" approach towards "bottom-up" and "people-centred" development, "**participation**" has become an important part of the language of development thinking (Chambers, 1983). IUCN notes "properly mandated, empowered and informed communities can contribute to decisions that affect them and play an indispensable part in creating a securely-based sustainable society" (IUCN 1991). Participation for members of communities can take many forms and, it varies from being passive at one extreme (only be informed by outsiders about what will happen) to self-mobilisation at the other (see Table 1).

Although Table 1 summarises to what extent people can participate in development programmes, it can also be used to show the varying degrees people participate in managing their own natural resources. It is obvious that the participation level among the members of the local communities varies a great deal. The

		of Nile perch fillets. Local trade in whole Nile perch has greatly decreased. Local traders now mainly involved in selling Nile perch skeletons.	women. However, the involvement of women is threatened by increased industrialisation of <i>dagaa</i> processing for fishmeal..
Consumers	4	Very little Nile perch of good quality available for local consumption. Local people mainly consume skeletons and rejected Nile perch.	Still consumed by a large majority of local people. This is set to decline as more of <i>dagaa</i> goes for fishmeal.
Government	5	Has put great effort to improve hygienic conditions to meet fish export standards.	No major interventions by government
Donors and Development Banks	6	Given financial support to factories and government to improve quality of fish exports	No major interventions by government

3. WHAT ARE THE AREAS FOR "COMMUNITY PARTICIPATION" IN THE LAKE VICTORIA FISHERIES?

For some institutions concerned with the Lake Victoria fisheries, community participation is linked to the management of the fish resources only. For these institutions management methods of the fisheries is concentrated around the harvesting sector of the fisheries and the sole aim is management of the fish stocks. The fish stocks can be severely depleted by over-fishing and important management measures are related to controlling access to the fishery. Methods for managing a fishery include: Limiting the number of people who may fish; controlling the fishing techniques; controlling the mesh size of nets to prevent the harvest of immature fish; maintaining the quality of the fish habitat - primarily the quality of the water, spawning and feeding areas; controlling the timing of open season and imposing size limits of fish that may be kept. We believe it is very important for the people in the local communities to "participate" and play a prominent role in these tasks of management. However, in our view, community participation in the fisheries should not only be considered in relation to management of the harvesting sector of the fisheries.

We would therefore like to look at fisheries management in a more holistic perspective, paying attention to the entire production chain from the harvesting of fish to the processor, distributor and the consumer (cf.

Table 1 above shows the wide variety of ways in which people can participate in development programs and in the management of their natural resources. Within all the sectors we find varying types of participation. In the harvesting sector we noted participation in management issues related to when and where fishing should be permitted, who should be allowed to fish and with what type of equipment. Within the processing and distribution (trade) sector, members of the local communities participate in decision-making about a number of issues which have bearing on the management of the natural resources; i.e. how the fish is being processed and how it is being transported, who has access to the processing and distribution sectors, etc. As we have shown elsewhere, locally based regulations and "enforcement institutions" have developed in the fishing communities to manage the various sectors. (Owino, 1999; Mbuga *et al.* 1998; Abila and Jansen, 1997)

In our view, participation is closely related to the opportunity to take part in decision-making about management of the resources concerning the sector one is engaged in. This is decision-making about issues which influence directly one's own involvement and interests in the sector and the fisheries as a whole.

In this paper, however, we will be less concerned about the detailed aspects of participation in decision-making in these sectors. Our focus will be more to discuss to what extent local members of the communities can obtain or keep their employment in these sectors. **Unless members of the fishing communities can obtain or keep their employment or an income from these sectors, there is very little to "participate" about.**

In other words, the possibility for having employment or an income from one or several of these sectors is an important **entry point to participation** for the members of the local communities. When people lose their jobs and income from the sectors they are also excluded from participation. We believe that one of the most important development processes now going on in the Lake Victoria fisheries is the destruction of tens of thousands of jobs for the members of local communities in the various sectors we have identified above.

fisheries and totally transformed it (see the list of stakeholders at various levels, identified by Harris above).

We will in particular discuss how the fish export and fishmeal industries, which have been established during the last 15 years around Lake Victoria, have affected the opportunities for employment, income and participation in the areas we have identified above. We will also focus on how the three Governments' policies and practice in the management of the fisheries have changed as a result of the outside investors and the new industries which have emerged.

6. DEVELOPMENT OF THE LAKE VICTORIA FISHERIES

Since about 1980 the fishery of Lake Victoria has been completely transformed. From being a locally based fishery with little intervention and capital investment from outside, the present fishery is dominated by national and international capital penetrating the industry. This change is very much the result of the rapid proliferation of Nile perch and the strong demand which has developed in the global markets for this fish. In order to understand the recent developments of the Lake Victoria fisheries, it is therefore useful to distinguish between the "old" pre-Nile perch fisheries regime which lasted up to about 1979 and the "new" fisheries regime which developed during the 1980s (Greboval, 1989).

The pre-Nile perch regime

Until the mid 1970s the fisheries of Lake Victoria was exploited solely by small scale fishermen. It was estimated that some 50,000 fishermen operated from about 12,000 canoes (Butcher and Colaris, 1975). The total catch of fish from the three countries was about 100,000 tons per year. In the pre-Nile perch regime there were clear barriers to investment in equipment in the production sector. Very few owners of canoes possessed more than one canoe or owned more gill-nets than they were able to control themselves. The typical boat would be operated by its owner who had all or some of the gear in the boat. The ownership pattern was thus very decentralised and the income from the lake was fairly evenly distributed (Jansen 1973 and 1977). There was limited investment in fishing technological improvement. Although outboard engines were introduced in the early 1950's almost all canoes continued to be manually operated. The engines were used for transport purposes only.

In the pre-Nile perch regime, the processing and trading sectors of the fisheries were almost totally dominated by small scale operators, most of them women, who were based in the local communities around the lake. The part of the fish which was not sold fresh, was processed by being smoked or sun-dried on the beach and carried to local inland markets. There were few wholesalers in the fish trade, and the traders never acquired control over the fishermen as they have managed to do in so many other traditional fisheries through the establishment of credit relationships. Most of the fishermen sold their fish to a limited number of women fishmongers with whom they had developed long standing relationships. Most of the animal protein which the local population ate came from the lake.

There was limited interference in the Lake Victoria fisheries by the Government. The Governments of the riparian states, however, collected statistics on the fishery and formulated different regulations. These regulations were rarely enforced. Although in principle there has been an open access to fish in the lake, the local communities around the lake have all through this century developed rules which regulate the fisheries. These rules stipulate who may fish, during which season, in what area, what type of fishing gear is acceptable and what type or size of fish can be caught. Local rules had also developed concerning the role of the fishmongers and their relationship to the fishermen. Institutions have been developed in the local communities to enforce these regulations. The rules and nature of enforcement institutions vary from one area to another and they have also changed over time. In some places these rules are detailed, clearly defined and well-known in the community. In other areas the rules may be non-existent or be more vague, cover less issues related to the fishing effort and may not be generally recognised in the community.

It was not only the Government which had a limited role in the management of the fisheries, outside financial investment also played a minor role. The members of the local communities were thus the most important "participants" in the management of the fisheries. Almost all the equipment was owned and operated by members of the local communities and the fish was being processed, traded with and consumed by people living in the region. It was also the same people who were active in decision-making about management issues in the various sectors of the fisheries.

There were, no doubt, many factors which gave opportunities or constrained the way in which the Lake Victoria fishery was organised. Ecological, technological, political, economic, social and cultural factors all contributed to shape the fishery. What we want to emphasise is that actors outside the local communities around the lake played a much less prominent role in the fishery than in the Nile perch regime.

Characteristics of the Nile Perch Regime (1980 - 1999)

In order to understand the transformation which took place in the Lake Victoria fisheries and why outside actors entered the fisheries, it is necessary to present information about the “explosion” in the catch of fish and the way in which the fish was used.

The rapid proliferation of Nile perch started in the Kenyan part of the lake about 15-20 years after the fish was introduced in the lake. In 1978 about 1,000 tons of Nile perch were caught, in 1981 nearly 23,000 tons and in 1991 the production had increased to a peak of 123,000, and has since been on a generally declining trend.

An even faster increase took place in Uganda and Tanzania. In each of these countries less than 1,000 tons of Nile perch were landed in 1981. In 1986 approximately 41,000 tons of Nile perch was caught in Uganda and about twice that amount in Tanzania. The total production of this fish in the three countries in 1993 was close to 363,000 tons, with 29% landed in Kenya, 27% in Uganda and the rest in Tanzania (Greboval and Mannini 1992; Goulding, 1997).

The total catch of all fish species of Lake Victoria increased from about 100,000 tons in 1979 to about 500,000 tons in 1989. Since 1989 the annual production has remained at a level four to five times higher than what was achieved during the late 1960s and 1970s. In the last 6-7 years, the production of fish from Lake Victoria has represented about 25% of the annual total catch from Africa's inland fisheries (FAO, 1995).

Along with the rapid increase in the stock of Nile perch, the composition of the fish biomass in the lake

was able to absorb a supply of almost three times higher than any time previously, without much effect on prices. This shows the popularity of the Nile perch and the existence of a huge demand for a medium priced table fish in the three countries. There is no doubt that many new fish consumers gained tremendously from the changes which affected the rich Lake Victoria fisheries during the 1980s, with huge amounts of fish having been made available at more affordable prices in many parts of the three countries (Greboval and Mannini, 1992).

People in the harvesting, processing and distribution sub-sectors of the fisheries also benefited greatly from the new fisheries regime. It has been estimated that during the 1980s an additional 180,000 jobs were created in the primary and secondary fields of the fisheries. Many people who had been unemployed or under-employed were able to obtain incomes at levels they had never experienced before. No wonder that many fisher-folk nick-named the Nile perch "the savior" (Reynolds and Greboval, 1988).

In the early and mid 1980s the fisheries continued to be almost exclusively operated by small scale rural fisher-folk with little fundamental changes in technologies, techniques and practices compared to the former fisheries regime. The period saw more women engaged in the processing and marketing of fish both on the Lake Victoria beaches and in markets in several towns in Kenya, as in the other countries (Yongo, 1994; Abila, 1994).

Linked to the rapid growth of the Nile perch, another "revolutionary" change took place in the Lake Victoria fisheries. This change is related to the huge demand for Nile perch which soon expanded beyond

are non-citizens. These national and transnational companies are "heavy players", and they have completely transformed the Lake Victoria fisheries. In a separate paper we have described and

While many of the fishermen gaining from the Nile perch boom in the 1980s reinvested their increased incomes in the fisheries, other fishermen diversified their increased earnings and invested in cattle, larger families (more wives), shops, transport vehicles, etc.

However, with the good return on investment in the harvesting of the fisheries, many well-to-do people, with no or little background in fishing started to invest in boats and gear. Many of these people were government officials, teachers or businessmen who would hire people to fish for them. **Absentee ownership** opened up for a development in which new categories of employment developed (see Harris *et al.*, 1995). Some absentee owners would "manage" their canoes from the beach, collecting fish and selling it. Some owners were, however, real absentee owners, living in the larger towns and cities. They would hire resident managers, often relatives, who would wait for the canoe at the beach, take care of the catch, pay salaries and give shares to the various crew members.

Thus, from being owner-operated fishery in the 1970s, the late 1980s and 1990s developed to be a fishery in which absentee ownership became much more prominent. Asowa-Okwe reports that in the late 1980s, 83% of the men who participated in the fishing operations from the boats in the Ugandan part of Lake Victoria, neither owned any gear in the canoe they fished nor the canoe itself (Asowa-Okwe, 1996). We do not have comparable figures from Kenya or Tanzania, but there is no doubt that absentee ownership increased in the late 1980s and the 1990s. On many of the beaches we visited in the mid and late 1990s, we were informed that rich men, could own as many as 5-20 canoes including the gear used in the vessels.

Although there was a shift from owner-operated canoes to absentee ownership from the late 1980s to the late 1990s, some essential aspects of the fisheries technology in the harvesting remained the same. The fishing operations were still quite labour intensive. The boats used sails and oars as a means of propulsion as they had done for many decades. Each boat, depending on the type and amount of gear, continued to require from 2-6 men for its operation. From the point of view of the people in the local communities, the Nile perch fishery had many positive features: Some fishermen increased their earnings many fold, while others who had been unemployed or under-employed obtained jobs as crew. **Thus, with the rich Nile perch fishery, opportunities were created for employment and thereby increased participation in the harvesting sector.**

Recent changes in the harvesting technology of the Nile perch fishery

With more fish export factories being set up, the competition for raw material (fish) increased. Most factories only operated at 50% capacity (Abila and Jansen, 1997). A major concern for the fish export factories has been to obtain more fish, and a number of strategies were made for this purpose. One of the strategies was to encourage a more efficient technology in the harvesting sector. During the 1980s many factories acquired **trawlers**. The trawlers had the advantage that they each could deliver large quantities (500-1,500kg) of fresh and undamaged fish per day at major landing points served by the insulated trucks of the factories. During the last few years all the three governments of East Africa, have, however, banned trawling due to the adverse effects trawling has on the ecological habitat of the lake and the destruction of gear of the local fishermen.

However, trawling still continues, particularly in Kenya where some 10-15 trawlers are in operation and providing the fish export factories with top quality fish. Mbuga *et. al.* (1998) estimates that for each work place created in a trawler, 7-8 work places in the traditional harvesting sector of the fishery is being destroyed. In addition, trawlers regularly destroy the expensively purchased gill nets of the local fishermen and in this way force them out of business. Violent confrontations between the trawlers and local fishermen have occurred often during the last decades. **Thus, the operation of trawlers in a very real way undermines the opportunities for employment and participation in the harvesting sector of the fishery.**

According to information we received in Tanzania, many trawl boats based there are not being used at all, or only being used for transport purposes because of the ban on trawling. One fish export factory manager in Tanzania informed us that he plans to use some of his company's trawlers for fishing with double gill nets in a drift-net technique. He would also introduce modern equipment to locate the fish stocks.

However, trawlers have never caught more than 5-10% of the fish landed along the shores of Lake Victoria. A much larger threat, with regard to loss of employment possibilities for people in the local communities, is coming from a very recent change of technology in the harvesting sector - the *tembea* boats.

Tembea boats

The first outboard engines were introduced into the Lake Victoria fisheries in the 1950s. Although some well-to-do fishermen fitted the engines to their *Sese* canoes, motorised fishing never really took off in Lake Victoria. A main reason for this was the additional expenses needed for fuel. It never made any economic sense to put on an outboard engine for fishing with gill nets only 5-10 km from land. Sail and oars have continued to be the means of propulsion for the small scale fishermen until today. Since the 1950s the outboard engines have, however, been used extensively for transport purposes. Larger 'Sese' canoes, fitted with 10-40hp outboard engines, were, and are, extensively used to ply the routes between the islands and the mainland with fresh and processed fish. Outboard engines were also used to transport passengers between the various fishing communities.

Thus, until very recently the harvesting sector has retained many of its characteristics - it is non-motorised and continues to remain labour intensive. When the number of fish caught has increased this has meant that more boats and more people have been needed.

However, this is in the process of being changed now. A new technique of fishing is fast developing. The local fishermen have named it *tembea* (Swahili: moving, drifting). *Tembea* fishing is done with a large *Sese* canoe, having a flat rear end to which the outboard engine is fitted. The boats operate up to 100 double gill nets with a mesh size between 6 to 9 inches. The nets are joined together and have a length of 1-2 km. The nets attached to the boat, are set in the evenings and drift back and forward during the night. They are hauled in the morning hours. With the fish on board, the boats quickly return to the beaches where the trucks from the fish export factories wait for them. The first *tembea* boats were able to catch up to 1,200kg in a day. With increasing numbers of *tembea* boats, the catch has dropped significantly, but is still often 5-10 times higher than the catch obtained by the traditional boats. The various types of investment are, however, many times higher for the *tembea* fishing unit. It may go up to Kshs. 600,000 (=USD 10,000) in total for one boat with its equipment. In greater detail, the enlarged and stronger *Sese* canoe will cost Kshs. 60,000-90,000 while the engine costs Kshs. 100,000-150,000 depending on type and size. The mounted double gill nets attached to each other will cost KShs. 200,000-400,000, depending on size, type and how many nets are used.

The *tembea* fishing technique constitutes "a revolution" in the Lake Victoria fisheries and has already had important socio-economic impacts. According to our own investigations in 1998 and 1999, the *tembea* technique started in the Ugandan part of the Lake in the mid 1990s. In 1996 the first *tembea* boats entered the islands of Remba and Ringiti in Kenya. In 1997 and 1998 many of the *tembea* boats left the islands and started to fish from the mainland. What is amazing about the *tembea* fishing technique is how quickly it has caught on. In November 1997, there were no *tembea* boats in Sori-Karungu, which is one of the largest landing beaches in Kenya where up to 200 traditional fishing boats land their catch. In March 1998 we observed less than 10 *tembea* boats at Sori among the about 100 traditional boats fishing with gill nets for Nile perch. Four months later there were about 40 *tembea* boats and no traditional canoes catching Nile perch. A similar process took place in Mohuru,

boats. The owners of *tembea* boats are rich people, having invested up to Kshs 600,000 in each fishing unit. Most owners are also into other businesses: transport, hotels, etc.

Some of the owners of the *tembea* boats also work as agents for the fish export factories. They thus supply the factories both with their own fish and fish they may buy from other suppliers. In Tanzania many of the fish export factories themselves owned large fleets of *tembea* boats and transport boats. In our future research, we intend to establish to what extent the factories in Uganda and Kenya possess their own fleets of *tembea* boats. However, there is no doubt, that there is a close link between the *tembea* boats and the factories. Like the trawlers, *tembea* boats are, in contrast to the traditional boats, able to supply large amounts of fresh fish to the factories which often have a higher quality than the fish landed by the slow moving sailing boats.

A characteristic feature of the *tembea* boats are that they move around in a fleet, from one place to the other. When the catch of fish goes down in one area, the fleet move to another beach from where they fish for some time, completely undermining the operation of the locally based traditional boats, as we observed in Sori beach. From the point of view of **participation**, there is no doubt that the migratory *tembea* boats destroy work places in the traditional harvesting sector. Not only do they destroy work places, they also destroy the gear of the local fishermen. Many conflicts have occurred between the crew of *tembea* boats and the local fishermen having either lost their nets, or had their nets caught up with the drift nets of the *tembeas*.

With their negative impact on so many of the local fishermen, how have the owners and managers of the *tembea* boats been allowed by the local communities to continue? According to the information we received from Sori beach and also other major beaches, the owners of the *tembea* boats are careful to sell all their catch through the established local co-operatives at the landing beaches, paying 10% commission of the price they obtain for the fish. This makes the owners of *tembea* boats popular with the management of the local co-operatives. *Tembea* owners, we were informed, also carefully cultivated their relationships with the Government representatives of the Fisheries Department and the Co-operative Department, in addition to the local chiefs. For the Government Fish Scouts, the *tembea* boats use gill nets of large mesh sizes which are not illegal. This makes it easier for the Fish Scouts to defend the operation of the *tembea* boats. A few relatives of local influential people were employed on board the boats. Thus, the rich *tembea* owners or their representatives have effectively aligned themselves with the local elites and the Government representatives and in this way bought themselves some "protection". With all the conflicts on the fishing grounds this is important. Theft of gear, has been and is rampant in the lake, and after the *tembea* boats appeared, theft of outboard engines has started to occur. Heavily armed gangs moving around in canoes with strong outboard engines will attack the *tembea* boats in the lake and rob the others of their engine and nets. Killings have occurred and some crew in *tembea* boats now illegally carry with them guns when they go fishing.

Many of these "pirates" are said to have been local fishermen themselves who have been robbed of their gear. In their frustration they attack other fishermen outside their own area (most of the robberies in Kenya are, according to the Kenyans, carried out by people crossing the border from Tanzania and *vice versa*). The threat of theft and piracy to some extent structure the movements of the boats. Thus the insecurity of the lake, partly caused by trawlers and *tembeas*, has resulted in **negative participation through stealing and piracy**.

For how long and how quickly will the *tembea* fleet continue to grow, and to which areas of the lake will it expand? According to the information we obtained, there were *tembea* boats operating within the Nyanza gulf in 1998. This area was still the domain of the traditional canoes and some trawlers. One year later, *tembeas* have been reported in Asat, Kaloka, Dunga and other beaches in the gulf. Some of these are the large traditional sail boats, with a bit of modification, which now operate as non-motorised '*tembeas*'. There is, however, no doubt that the many hundreds of *tembea* boats have already dramatically altered the structure of the harvesting sector in other parts of the Lake Victoria fishery as well.

Dagaa fishing

Probably the most comprehensive study about the organisation of the *dagaa* fishery was carried in the Tanzanian part of Lake Victoria (Gibbon, 1997). Gibbon gives a detailed description of the four different fishing techniques for *dagaa* which he observed in Tanzania. Our own observation from Kenya, showed that fishing for *dagaa* is carried out at night when the moon is down. The small *dagaa* sardines are attracted to the 3-5 lanterns set out by each *dagaa* boat. Fishermen leave the beach in the dark of the night and work all night long hauling up the *dagaa* which have been caught by the nets in the light of the lanterns. Fishing for *dagaa* is therefore considered hard work for one has to be physically fit. Very few middle aged or old men participate in the fishing operations from the boat. Although there are various methods for *dagaa* fishing, no technological revolution, like what we have seen in the Nile perch fishery, has taken place. The *dagaa* fisheries is therefore still not motorised and very labour intensive, requiring 4-7 people on each boat.

Some of the fishermen who lost their jobs when the *tembea* boats took over the Nile perch fishery, have obtained jobs as crew in the *dagaa* boats. Many, however, have for different reasons been unable or unwilling to go into *dagaa* fishing.

We still only have the rudimentary information about the ownership situation in the *dagaa* fishery. We have come across some owners who possess 10 to 15 *dagaa* boats each. We have been informed that some rich women engaged in trade of *dagaa* own small fleets of boats. Ownership and organisation of the *dagaa* fishery is much more locally based than the Nile perch fishery and not influenced by external actors. However, at this stage we do not have sufficient information about the impact the animal feed factories, using thousands of tons of *dagaa* for fish meal, have on ownership and organisation of the *dagaa* fishery. It is, however, clear that today the *dagaa* fishery is much more locally based, in terms of ownership and employment, than the current Nile perch fishery.

8. THE PROCESSING AND TRADING SECTORS

Although it could be useful to distinguish between these sectors since people in the processing and trading sectors perform different tasks and have different functions, we will nevertheless, lump them together here. This is because many people are engaged in both sectors, that is, many people both buy and trade in the fish as well as process the fish they have bought. However, there are also many examples of people who only process and people who only buy and trade in fish.

What have been the effects of the outside actors entering the Lake Victoria fisheries on the people engaged in the traditional processing and trading sector in terms of employment and participation? Also when discussing this issue it can be useful to distinguish between the Nile perch fishery and the *dagaa* fishery.

Nile perch fishery

We have noted above that the demand for Nile perch in the overseas markets are unlimited, and that almost all the fresh Nile perch above 1kg is being filleted and exported. How many work places, or potential work places in the traditional processing and trading sectors, have been destroyed as a result of the export of Nile perch?

In Kenya, on average 200 tons (= 200,000kg) of whole Nile perch is being loaded into the trucks and sent to factories each day (Abila and Jansen, 1997). If we assume that the average trader/processors would buy about 15kg of Nile perch per day, some 13,333 people could have been employed per day to process and trade on the fish which go to the factories each day. (This should not be an unreasonable assumption; small scale women traders usually purchase fish for KShs.200-1000 per day and 1kg of Nile perch for the local market would cost Kshs 20-35, depending on season). For each truck loaded with 7- 5 tons of Nile perch, an average of 500 women could have obtained employment in processing and sale of the fish.

In both Kenya and Uganda we have observed during the periods when a ban has been imposed on export of Nile perch to the European Union markets, that only a few days after the trucks from the factories disappear, hundreds of women are ready to buy, process and sell Nile perch in the local markets. A problem many of the women face when the local markets suddenly can be flooded with whole Nile perch, is that the processing places for Nile perch have been torn down. In Uhanya beach, in Kenya, where about

10-15% of the catch in the Kenyan part of the lake is landed, there is only one kiln - traditional processing place - for Nile perch which is left. This kiln today only smokes the Nile perch which is rejected from the agents of the factories. We were informed that some 5 years ago there were about one hundred kilns, a clear sign of the decreasing amount of Nile perch being left for the local market.

Uganda and Tanzania process even more Nile perch than Kenya. So, provided that the local market for Nile perch had been given a chance to develop, tens of thousands of work places could, theoretically, have been created.

With almost all Nile perch above 1kg going for export, what is left for the local traders and processors? It is mainly the following three types of Nile perch:

(i)

The *Dagaa* fishery

How have the outside investors in the *dagaa* fish meal industry influenced the opportunities for employment and participation for the traditional processors and traders in the sector?

Although an increasingly larger part of the *dagaa* is being sent to fish meal factories, this has not so far affected the processing technique of *dagaa*. *Dagaa* is sun-dried on the beach seine and mosquito nets in the morning and early afternoon hours after the fish has been brought to the beaches in the morning. It is a labour intensive work. Normally the women buying *dagaa* for Kshs 200-1000 each per day will sun-dry their fish before selling it. In the trading sector there are some clear tendencies to more large scale operations. We found some rich women who regularly supplied the animal feed factories in Nakuru in Kenya with several tons of dried *dagaa*

With the increased demand from overseas markets, less Nile perch were being left for the local and regional markets. Above, we have noted that what mainly was left of the Nile perch for the local market, was that which was rejected by the factories, the skeleton of the Nile perch after the fish had been filleted and the juvenile Nile perch. But during the last few years there F3Ö

10. NEW ROLE OF THE GOVERNMENTS IN THE FISHERIES

Above, we have discussed the effects that outside investors have had on the various sectors of the traditional fisheries. Here we will look at how the role of the Governments of Kenya, Uganda and Tanzania have changed in the Lake Victoria fisheries during the last decades. We will try to assess the impact that activities of the Governments have had on the possibilities for the local communities to participate through

factories. Many co-operatives obtain millions of Kenya shillings of revenue each year, much more than they did before the Nile perch boom. It has become very attractive to become a member of the co-operative committee, and many efforts are being made to get elected to the committee. From the point of view of the ordinary fishermen, however, the co-operatives are not rendering the services to the fishermen as they are

possibilities for the members of the local communities to "participate" in the management of the fisheries. Our purpose for focusing on the effects on **community participation**, was because of the important role this concept has obtained among the major institutions involved in the management of the Lake Victoria fisheries. All institutions involved in the Lake Victoria fisheries, international development banks, donors, NGOs and the governments, agree that participation by people living in the fishing communities is essential and should be promoted.

In this paper we have emphasised that the possibilities for obtaining and keeping employment opportunities in the various sectors of the fisheries is the entry point to community participation in the Lake Victoria fisheries. Without employment or an income from any of the sectors in the fisheries there is very little to participate about. Our approach in this paper has therefore been to discuss the effects the transformation in the fisheries have had on the possibilities for the creation and maintenance of work places and income in the various sectors. We have discussed this issue at length and paid less attention to the possibilities for people to participate in decision-making about management issues when they already are employed or obtain an income from one of the sectors of the fisheries.

Above we noted the initial positive opportunities created by the Nile perch boom for the increase of employment in all the sectors of the fisheries. As the Nile perch export industry expanded and new technology was adopted in the harvesting, processing and trading sectors, tens of thousand of work places were destroyed and the consumers also suffered. The *dagaa* fishery has not undergone the same technological transformation as the Nile perch fishery and is still labour intensive in its harvesting and processing sector. But for the consumers there has been a major change in that most of the *dagaa* now goes for fish meal production. We also indicated that technological changes may soon take place in the processing sector of the *dagaa* fishery which could undermine the jobs of many of the women involved in this sector.

We believe therefore that the manner in which the Nile perch export industry has expanded and the growth

If the governments, donors and NGOs are to let "community participation" be more than rhetoric in their fisheries policies, they need to consider the issues discussed above, and also make more efforts to implement many of the sound policies they already have adopted.

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