

CHAPTER 13

FISH IN KENYA

The Nile-perch chain

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Abstract. With the introduction of large-scale fish-processing plants in Lake Victoria, Kenya, the structure of the actor network changed considerably. The domestic chain characterized by small-scale fishermen has become increasingly marginalized. Competition for fish between the domestic and export market is rather unequal and the drive to sell fish overseas has resulted in reduced local availability. The absence of banks and credit institutions increased the dependencies of fishermen on other parties in the supply chain. Improved financial systems to enlarge the ability of fishermen to acquire loans, government involvement in catch standards, and joint action for supply-chain governance system is needed to create a more competitive market and to provide the desired sustainability.

Keywords: small-scale fisheries; quality management; sustainability

INTRODUCTION

This case study describes the economic, social and environmental effects of the formation of a Nile-perch chain from the Lake Victoria region in Kenya to international markets after the 1970s. Initially, new technological developments in quality control, transport and large-scale processing boosted supply of fish through the catches and landings of Nile perch by local fishermen.

Foreign investments entered the Lake Victoria region and created a large processing capacity, but the benefits for the region appeared to be limited because of a loss of traditional jobs and limited added value for the local population. Small-scale enterprises dominated the upper part of the value chain from fishermen to the processing industry. This part of the chain was characterized by a lack of sufficient quality measures and control, oligopolistic or monopolistic power in markets and incompleteness of market information. The traditional domestic fish markets at the

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beaches and in the interior of the country have been marginalized due to the creation of a buying-agent system by the processing industry. The fishermen became dependent on loans from these buying agents to obtain access to boats and fishing gear, which in turn reduced their power in price negotiations.

The growth in the number of small-scale fishermen resulted in over-fishing – sometimes with illegal means – thereby making a sustainable future fish stock in Lake Victoria insecure. The international fish chain, as created by the processing industry, changed the fish-processing and marketing system considerably.

The case study discusses the impact of the international fish chain on the sustainability¹ of livelihoods of the local households of fishermen.

INSTITUTIONAL SETTING AND SOCIO-ECONOMIC IMPORTANCE OF THE NILE-PERCH CHAIN

The basic structure of the international supply chain and network of fish is presented in Figure 1. It affects the livelihoods of the local people because fishing was, and still is, a main source of income for households in the Lake Victoria area. About 80% of the fishermen in the Lake Victoria area in the mid-1970s depended on fishery as their primary source of income (Abila and Jansen 1997; Jansen 1997; Mitullah 2000).

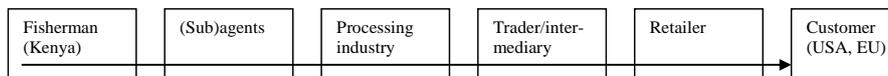


Figure 1. The Nile-perch chain from Lake Victoria, Kenya, to the customers in the EU and USA

The Nile perch was introduced as a foreign hunter species into Lake Victoria in the early twentieth century. It proved to adapt very well to the lake's conditions. Access to the lake by fishermen was regulated and enforced by local authorities (Abila and Jansen 1997), as is often the case in communities with local commons or natural resources (Dasgupta 2002). This period was characterized by low investments in 'modern' equipment such as outboard engines. Before the institution of the international supply chain, the local fishermen traded the fish they caught mostly to women (the fishmongers) on the communal beach or in the village or town market.

This changed after 1979 (Figure 2) when new technological developments like refrigerated containers made it possible to transport fish over large distances. Rising international fish prices were very attractive² for fish originating from Lake Victoria (Gibbon 1997). The opportunity to earn foreign exchange by selling fish in the European Union or the United States led to an explosion of activities on the almost 300 landing beaches of the Kenyan part of the lake.

The decreasing number of landings in the 1990s (Figure 2) was caused by the raise of quality standards by the EU. The increase in landings in 1994 was based on a fundamental change of market conditions due to the opening of several big

processing plants (Gibbon 1997). The activities of these plants involved unloading,

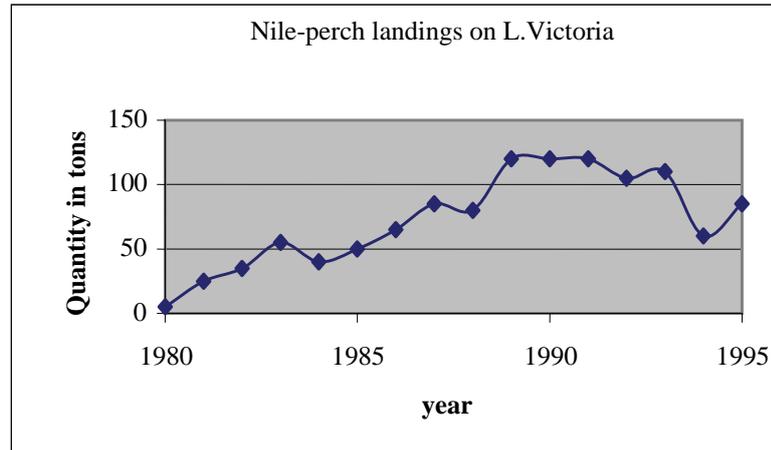


Figure 2: Nile-perch landings in tons during 1980-1995, Lake Victoria, Kenya (Abila and Jansen 1997)

washing with chemicals, skinning, filleting, cleaning, packing and freezing to make the fish ready for the European market. A change in the number of landings could be caused by too many fishing boats or the fact that official regulations were disobeyed (LVFO 2004)³.

The introduction of large-scale processing plants in the area changed the structure of the actor network considerably (Figure 3). This supply network connects the small-scale upper part of the chain with the large-scale processing industry and the international actors. The domestic chain is still characterized by small-scale fishermen and it has been marginalized by the export supply chain. Until recently, the development of the international supply chain for Nile perch was perceived to be a success story, providing foreign exchange to the area (ANF 2004). But some sustainability problems have arisen.

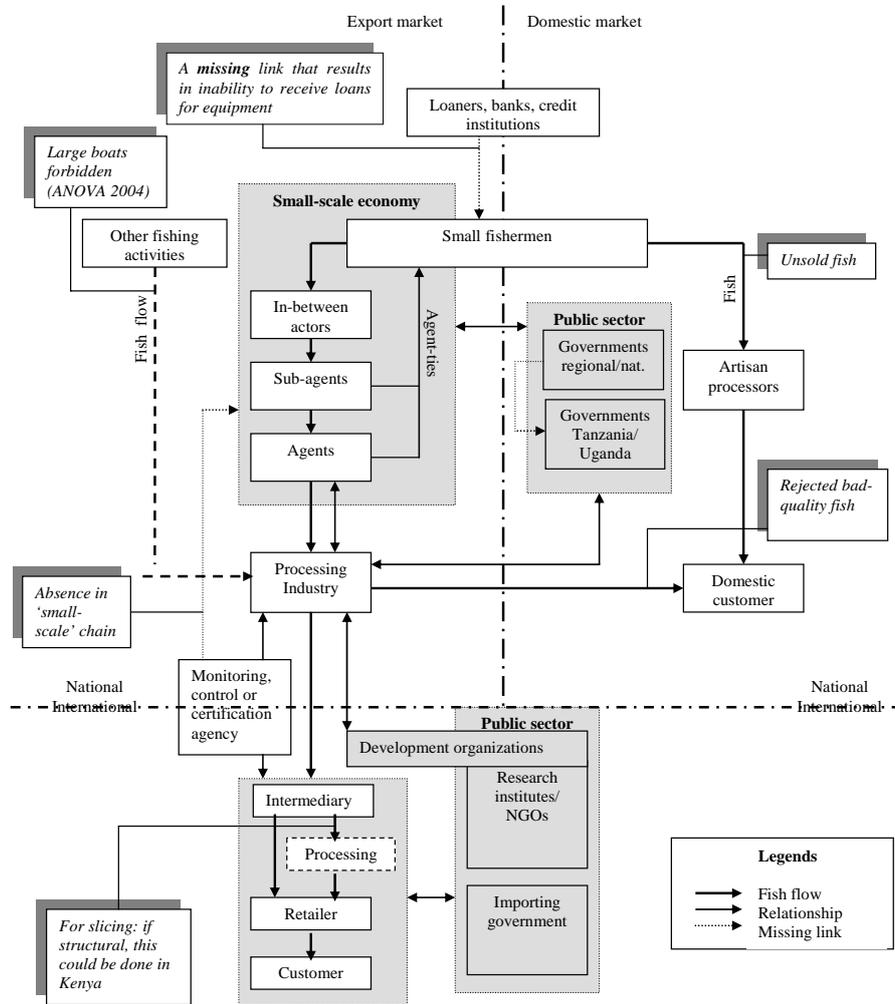


Figure 3: The actor network of the international Nile-perch chain originating at Lake Victoria, Kenya

MAIN BOTTLENECKS IN THE FISH CHAIN

This chapter discusses effects of the formation of the international fish chain on the sustainability of the livelihoods of the small-scale fishermen. Sustainability is assumed to have both an economic, social and environmental dimension.

Table 1: Main economic, social and environmental dimensions of sustainability in the Nile-perch chain

	Economic	Social	Environmental
Sustainability issues	New market opportunities	Livelihood issues	The stock
	-Limited regional benefits	-Competition with domestic market; changing livelihood	-Tragedy of the commons
	-Loss of traditional jobs	-Health and safety issues	-Long-term income effects
	-Limited added value for the poor	Dependency and power distribution	Loss of biodiversity
	Upper part of the chain	-Ownership	-Lack of enforcement
	-Insufficient quality measures	-Fisherman-agent structure	-Damaging activities
	-Product diversification at risk	Trust and tradition	Increased pollution
	-Lack of monitoring, control and crediting	-Private optimization	-Water quality
	Market failures	-Use of power	-Fossil transport fuels
	-Overcapacity	-Specific circumstances	
-No market transparency (info flow, monopsony)			

Economic critical issues and sustainability

The formation of the international fish chain created new market opportunities that stimulated the local economy. More than 180,000 jobs in relation to fishery were created. As an example, the number of fishermen increased from 11,000 to 30,000 within two decades (Abila and Jansen 1997). However, consequences related to these new market opportunities were:

- 1) Regional benefits – investments in the local infrastructure or human-resource development – were low despite the growth in trade (O’Riordan 1996).
- 2) Traditional jobs like the – often female – fishmongers were lost (Abila and Jansen 1997). The working conditions for the factory workers tended to be insecure since they can be laid off within a few days.
- 3) The added value for the local population has been low. A large part of the value-added is taken by the buying agents, buying subagents and others occupying the chain between the fishermen and the processing industry. Also, the many people present in the chain for weighing, counting and carrying fish earn a part of the added value. The price paid for fish to the fishermen is sometimes about half of the price received by the buying agent that is delivering fish to the processing industry.

Secondly, there is not sufficient attention for several aspects of the small-scale fishermen’s economy, although large fishing vessels are forbidden (ANOVA 2004).

Threats for the fishing community are:

- 1) Fish quality, as expected internationally, is guaranteed by the processing industry through adopting new quality guidance techniques. It is based on a strong selection of the quality of the fish that is purchased at the factory gate. There is insufficient quality control in this upstream part of the fish chain. Examples of the absence of quality monitoring in the upstream part of the channel are throwing of fish on the landing beaches; the insufficient use of ice on both the boats and the landing beaches, and long waiting times of the trucks at the beach competing for fish. This results in early deterioration of the fish.
- 2) The focus on only one species, the Nile perch, for export implies a considerable risk. About 50% of all the fish production at Lake Victoria is related to the Nile perch. Therefore, optimizing the level of risk in the chain through product diversification is required (ANF 2004).
- 3) There are almost no incentives for fishermen to change the current status quo.

Several market failures can be observed in the fish chain. The early subsidies for processing factories by development banks and aid agencies led to underutilization of processing capacity in the area. In the downstream part of the fish channel, from the processing industry to the export markets, information on prices, quality, quantity and standards is quite clear. In the upstream part of the channel, between fishermen and processing industry, the fishermen do not have insight in the price that the processing industry is willing to pay for their fish, and this price can differ among beaches and buying agents. This is the result of an incomplete information flow (see Figure 4). The fishermen are dependent on the price that the buying agents are willing to pay. This is also due to interlocked markets, the obligation to sell fish to the buying agent who provides the loan for the boat or the fishing gear. Cooperation among buying agents – agreeing on which price to buy – is common, and leads to a kind of monopolistic buying behaviour on the beaches.

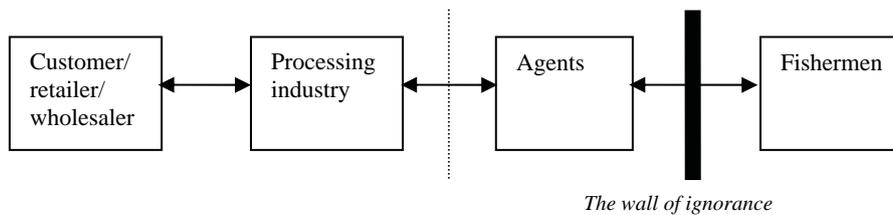


Figure 4. The information flow from and to the actors, and the barriers to these flows

Social critical issues and sustainability

Fish is still an important part of the livelihood in fishermen villages. Before the development of the international fish chain the fishermen were fishing for local consumption. Nowadays, processed fish is mainly exported. Competition for fish between the domestic and export market is rather unequal due to the relatively high

prices that are paid in the international markets and the related power of the fish-processing industry. The value of the export market in 2004 tended to be more than 90% of the total value of the landings although about 50% of the total fish landings have been used for the export market. Only the juveniles and low-quality fish, which are not accepted by the processing industries, are left for local consumption. To quote Abila and Jansen (1997): “the drive to sell fish overseas has resulted in very little of it being available locally”. The nutritional security of the fishing communities and their domestic markets is threatened due to scarcity of fish because of the exports (LVFO 2004). Abila and Jansen (1997) indicated that 50% of the population at the lake does not get the minimum intake of calories that is required.

The low quality of the fish for the local market can result in health problems, but alternative sources of protein are scarce. Connected with the health issues are safety issues for fishermen at work. The small boats and limited rescue equipment make the job hazardous for the fishermen.

Second, the small fishermen are usually dependent on the buying agents and become victim of unequal power distribution in the chain:

- 1) There is a clear separation between local processors and the large-scale companies from the EU and US (ANOVA 2004). The investments in processing factories originated from domestic or foreign sources⁴. The international trade in fish products is primarily and most importantly in the hands of intermediaries who are not concerned with the upper part of the chain between fishermen and processing industry (Visgilde 2004).
- 2) Arrangements to supply fish by the processing industry make the fishermen dependent. The most common way is that companies or independent buying agents are in charge of collecting the fish from the landing beaches and bringing it to the processing factories, often through contracted subagents (Abila and Jansen 1997). The fishermen are subject to exploitation by these buying agents because they can make the fishermen dependent through granting loans without formal contracts for undefined periods. These loans are used by the fishermen to buy fishing equipment such as fishing nets or boats with outboard engines.
- 3) The agents buying fish from fishermen or middlemen have to carry the costs of fish that is not accepted at the gate of the processing industries.

The following factors can be considered to be barriers for development of the supply chain of fish:

- 1) Every actor is active in the chain, but each with a private objective to optimize his or her goals. A private actor will not change his strategy as long as there are no incentives for chain integration and development even if it would benefit the total fish chain without costing him/her anything (ANF 2004).
- 2) Several of the institutions involved in Lake Victoria fisheries are a kind of quasi-governments due to their close connections with the government and the power they hold. Regulations are difficult to enforce because of this distribution of power.
- 3) The fishermen and buying agents live in a society where a certain way of handling of fish, adapted to the local conditions, was common. These traditional values may become in conflict with recently introduced (or enforced) new

technologies and ideas. For instance, ice for cooling fish, although available, is still not widely used on the fishing vessels.

Environmental critical issues and sustainability

The first set of critical issues is related to the stock of Nile perch in the Lake. The tragedy of the commons (Varian 1999) is that the fish stock is common property but that every individual fisherman is trying to maximize his output. The resulting output is not in line with the public optimal level, which is based on the regeneration capacity of the fish stock. That this is already occurring is shown by a comparison of the daily catches of around 400-500 kg in 1981 and of about 100-150 kg in 1996 (O'Riordan 1996).

Secondly, there are other environmental issues connected to a loss of biodiversity:

- 1) Although the Nile perch is not native to the lake and actually is a hunter that was threatening the stocks of other fish (LEI 2004; ANF 2004), nowadays the largest negative impact on these stocks is the regular use of illegal fishing practices. For instance, nets are in use with mesh sizes that are too narrow for juveniles and other fish species to escape, although it is forbidden to catch fish smaller than 45.7 cm since March 2002 (ANOVA 2004). However, these nets are cheaper on the black markets.
- 2) The fish-breeding habitats are severely damaged due to the local fishing activities. This is mainly the consequence of the distribution of fishing rights in certain areas⁵: the main rights assigned to fishing areas are also the location of important breeding habitats. Over-fishing and damaging of habitats occur mainly in these areas (ANF 2004).

The government of Kenya did not sufficiently enforce the rules for protecting the natural resource base, mainly due to the fact that the focus was more on creating foreign exchange earners than on sustainability.

Thirdly, there is an increasing pollution of water (LVFO 2004) and air because of the use of boats, trucks and airplanes.

IMPLICATIONS FOR STAKEHOLDERS

In this section, implications for the stakeholders in the supply chain are briefly discussed.

The national actors: small-scale fishermen, processing industry, credit institutions and the public sector

The chain provided new opportunities for the region and has grown at a fast rate. The government has seen many sustainability problems arise and has made regulations to fight these problems, but lacked in the end the ability or willingness to enforce them. Especially the absence of banks and credit institutions increased the dependencies of fishermen on other parties in the supply chain. Involvement of

banks and credit institutions, enlarging the ability of fishermen to acquire a loan, can lead to a more competitive market.

The international actors: trader, retailer and customer

An important motivation of the international traders not to be involved in the local fishery economy is because they feel that the local processing industries are more qualified to deal with this (ANOVA 2004). This results in a lack of knowledge of what happens at the domestic level characterized by lack of market transparency and traceability of each lot of fish (LEI 2004).

The international actors in Europe or the USA, although aware of problems within food chains, are not likely to be actively involved in changes in the supply chain. International traders are especially interested in the price, which needs to be competitive compared to other fish species (Visgilde 2004), the convenience aspect and the healthiness of the product (ANOVA 2004).

There seems to be a lack of cooperation between the national and international actors in the supply chain. Actors often look only after the part of the chain in which they operate to make a profit, which implies that new ideas or rules are difficult to implement. Change will not start from the local fishermen, neither from one single actor in the fish supply chain. A type of joint action or supply-chain governance system is needed to provide the desired outputs for both the channel participants and the consumers in Europe or the USA.

NOTES

¹ The term sustainability and the way this term can be viewed from an economic, social and environmental perspective is elaborated in this chapter.

² For the importers this was an opportunity to reduce the increase in fish prices (Gibbon 1997) given the relatively very low prices for Nile perch.

³ Ugandan fisherman stated that the decline in fish landings was due to too many boats, nets or fishermen (for 33% of them), whereas 43% of them thought that widespread disobedience of official regulations is to blame (LVFO 2004).

⁴ Of the twelve big processing factories, eight are in the hands of Asians, the others in the hands of westerners (Abila and Jansen 1997). These factories were in the past located in Nairobi, but all moved to the Lake Victoria region for faster processing and transport of the fish.

⁵ Due to country regulations, some areas of the Lake are forbidden for fishery, whereas others are assigned to be legal to fishing.

INTERVIEWS

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ANOVA, 2004. Notes of Dr. Ruud Verkerk, Wageningen University, about a visit at ANOVA Den Bosch, 3rd April 2004, and an interview with Mr. Willem Huisman, Commercial director Anova Food Europe.

LEI, 2004. Interview with Ir. Jos G.P. Smit, fishery economist at the LEI (Agricultural Economics Research Institute), Wageningen University and Research Centre, 4th of June, 2004.

Visgilde, 2004. Interview with Mr. H.B.B. Froot, representative of Visgilde, a Dutch franchise organisation of fish retailers, 23th of June, 2004.

RELEVANT WEBSITES

ANOVA: www.anovafood.net
ICLARM: www.worldfishcentre.com
LVFO Lake Victoria Fishery Organisation: www.inweh.unu.edu

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