Kenya

Lake Victoria fisheries

Throwing the dice

The development of fisheries in Lake Victoria seems set to follow global trends of overcapitalization

Fishermen all over the world will agree that fishing is a game of chance played with three dice: good weather, good catch and good markets. If all three are tossed in your favour, then your earnings will be good. Inmost cases, however, at least one of the dice will be loaded against you: despite good weather and a good catch, unfavourable market prices can reduce your earnings. Likewise, despite good weather and a favourable market place, your earnings may be reduced if you fail to make a good catch.

The judicious use of technology can load this game of chance in your favour, granted, of course, that you have the necessary resource rights, technical skills, knowledge of weather, fish stocks and available market outlets.

For example, a more seaworthy boat and motorized propulsion can reduce the risk of bad weather curtailing fishing. A more powerful fishing unit with more equipment like nets and fish finding devices can reduce the risk of a poor market by improving the quality of the catch and making it possible to stock it for longer periods. Improvements in technology can also make fishing safer and less arduous for fishworkers.

Some of these issues are evident in Lake Victoria, which has, for instance, witnessed significant loss of life due to boats capsizing. More seaworthy boats would prevent this. Likewise, motorized propulsion would take the backbreaking toil out of rowing and help the fishermen get home sooner.

In most cases, it is the technology innovators (those fishers who first take the risk of using a new technique or fishing method) who gain the greatest advantage in the game of chance. However, as more people invest in the new technology, the competitive edge is lost, and soon everyone is using the new technology. The initial increased earnings of the Innovators may have enabled them to pay off their capital costs and accumulate wealth. The imitators, who follow, however, are always likely to be at a disadvantage. As catches diminish (or incomes reduce as markets get saturated), earnings may not be enough to pay for increased running and maintenance costs, let alone make up the greater capital required for the initial investment.

This can be illustrated with the case of Lake Victoria's fisheries. The introduction of flax and, subsequently, nylon gm-nets had a major impact on fish catches in Lake Victoria. Initially, significant surplus catches were made, but soon, as more people invested in the nets, catch rates dropped.

It has been estimated that between the early 1900s and 1953, the total length of gill-nets rose from zero to 2,000 kin, putting huge pressure on stocks and dramatically reducing catch rates. Thanks to their lightness and strength which made them easier to handle and use over rocky bottoms, the nylon nets enabled fishers to reach previously inaccessible fishing grounds.

However, it also pushed the fishing pressure beyond the level where stocks could replenish themselves. Catch rates soon became unviable. Thus, tilapia catches declined from rates of 25 fish per net when gill-nets were first introduced, to less than one fish per net in the 1960s.

Signs of overfishing

Similarly, over the last 10 years, there have been increasing signs of overfishing and a

reduced catch per unit effort in the two main fisheries. Although statistical data is quite limited, in the case of the Nile perch fishery, both average catches and average size of fish have reduced considerably. Both the *omena* and tilapia fisheries also show evidence of reduced catch rates. These are the classic symptoms of overfishing.

Technology choice and technical change can also be exclusive. Increasing requirements for capital or new technical skills may favour outside investors over local fishing communities. In most instances, technology change in modem fisheries (or the 'modernization' of fisheries) has led to substantial additional investments in capital, leading to greater industrialization, vertical integration and, in many cases, overcapitalization in fisheries. Modern technology has dismantled traditional barriers to entry in most fisheries.

Generally, the modernization process in fisheries has not recognized traditional, community-based regulatory and management systems. Modernization has transformed many fishery resources from community-managed to open-access ones. These throw up several implications for sustainability. Open and unregulated access to resources has resulted in unhealthy competition, and has encouraged the use of non-selective and environmentally destructive fishing gear.

With the boom in the Nile perch and *omena* fisheries over the last 10 to 15 years, such a trend is discernible in Lake Victoria.

The additional capital and running costs needed in modern fisheries tend to encourage an industrialization process which invariably leads to fewer work places (technology becomes capital-rather than labour-intensive), centralization of ownership of fishing assets, and the vertical integration of the fish catching, marketing and processing sectors.

Fishing communities become displaced and disadvantaged. Decentralized communities of owner-operators, fish processors and vendors become replaced by distant, company-owned vessels and factories. With increasing fishing pressure and more competitive markets, the economic returns to fishing reduce. The emphasis then shifts to high-value and value-added fish products for distant markets or bulk catches of species of relatively low economic value to be used as animal feed.

Market-driven

In the end, it becomes the market which drives the fishery and local control is lost. With efforts concentrating on the export of the Nile perch and on *omena* for animal feed, export processing plants and animal feed factories are dominating fishing communities. Less fish is now available for local consumption. This indicates that

Lake Victoria's fishery is well on its way to being a market-driven, rather than community-controlled, fishery.

At this stage in its development, technology change in Lake Victoria's fishery has serious implications for the survival of its fishing communities, for the number of people it can employ, and for the supplies of valuable protein-rich food for local consumption. Fisheries management can not, be left to the mechanisms of the market, neither can regulation of technology be left to ineffectual state laws.

How can fishing communities make appropriate technology choices to become more productive, without undermining traditional management systems and depleting the resource base? The use of capital-intensive, technically efficient hardware for short-term economic gain tends to increase competitiveness, and works against sustainability.

'Intermediate technology' options (between artisanal and capital-intensive fisheries) may offer a 'middle road' and provide for a more equitable development of fisheries. Technology hardware, on its own, can not solve the problem. Appropriate delivery and support systems are also needed, as are institutions to regulate the use of technology, and social organizations to distribute the benefits.

This is why it is important to support initiatives like those of the Kenya-based NGO, OSIENALA, aimed at community participation in management, organization and empowerment, and why they need to be linked to any future technology developments in the Lake Victoria fisheries of Kenya, Uganda and Tanzania.

Global trends

Without such initiatives, Lake Victoria's fisheries are likely to follow the trend set by fisheries in other parts of the world: increasing centralization and concentration of ownership and management, concentration on high-value fish for export and bulk catches for fishmeal, fewer workplaces, reduced food security, and increased pauperization in fishing communities.

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