

Artisanal fisheries

A skewed kind of development

The results of top-down development policies for fisheries are not always satisfactory, as the case of Tanzania exemplifies

Along the Tanzanian coast fishing is primarily carried out by village based artisanal fisherfolk who use traditional technology and small-sized boats. Their knowledge of marine ecology and fishing techniques is based on generations of experience. Their methods are essentially sustainable and non-destructive, and their management practices are sophisticated enough to maintain a sound resource base.

However, during the past century, colonialism and the subsequent post-independence interventions have introduced new factors into Tanzanian fisheries. These have affected not only traditional fisherfolk but also the ecology of coastal waters.

While some technologies have increased effectiveness in certain cases, others have non-sustainable and destructive properties. They threaten the livelihood of traditional fisherfolk, the ecological balance and judicious resource utilisation.

Tanzania's coastal fish populations and catches display great diversity. However, there are no reliable statistics of the country's marine fish catches.

Based on acoustic and trawling surveys by large sophisticated research vessels, foreign 'experts' have estimated the biomass and potential yield of Tanzania's marine fisheries resources.

But their estimates, which are based on very selective and scanty data, vary widely. They are not good enough for estimating the populations of inshore tropical multi-species fish. A more useful and realistic result can be achieved in collaboration with local fisherfolk themselves.

These fisherfolk have been exchanging ideas and designs with their counterparts from Arabia, Persia, South Asia and Polynesia. These can be seen in the similarities in boats and gear across the Indian and western Pacific oceans.

In Tanzania, intertidal resources can be reached by walking and wading at low tide. A great variety of fish, crabs, bivalves, gastropods and various bait organisms are collected by hand, with sharp sticks or *nyavu* (hand nets). This calls for a thorough knowledge of tidal cycles as well as the distribution and habits of the organisms.

Uzio (long rows of stakes) stretch across the sandy or muddy tidal flats and fish are collected in an enclosure during low tide. *Wando* rows of stakes function similarly in a zigzag pattern off mangrove estuaries to capture fish and prawns.

In shallow waters, *kaniki* (cloth) is used to catch *uduvi* (small shrimps) which can be dried, while *kimia* (cast net) is used to ensnare small fish.

To capture fish and lobsters, fishermen swim and dive over the coral reefs. *Madema* and *towe* (hexagonal basket fish traps) use a variety of bait for different purposes and conditions. Fish (and, rarely, lobsters) swim into the traps and cannot escape.

Local techniques

Juya (seine nets) are hauled in by teams of fisherfolk into shallow water over seagrass beds, while swimmers splash and imitate seagull calls to try to prevent the fish from escaping.

In another technique, *jarife* (drag nets) are similarly used along the beach as well as in tidal channels.

Fishing offshore from boats, *mishipi* (hand lines) with baited hooks are dangled at suitable locations or trolled behind a moving boat.

Wavu (gill nets) are set near the bottom of the surface to ensnare fish swimming into them. Large nets are used further offshore on moonless nights.

Many different traditional boat designs are used in Tanzania. The most common is *ngalawa*, a slim dug-out boat with two outriggers and a mast and sail, 3-9m long. *Mtumbwi* is a simpler dug-out canoe used mainly in more sheltered waters.

Hori is a larger dug-out, with a more flattened cross-section, and able to venture further offshore.

Dau is a planked boat with a pointed shape at both ends, usually 5-7 m long. *Mashua* is a large planked boat with a flat transom, 6-12 m long.

The traditional coastal fishing village communities of Tanzania are similar in many ways to peasant farming communities. They share economic, social, political and cultural patterns.

Communalistic modes of production persist, and extended-family relations are strong. Hospitality and friendliness to strangers are customary.

The influence of contact with Indian Ocean travellers and traders is generally stronger in fishing communities than in farming communities. The Islamic religion is relatively widespread.

Social relations are often quite hierarchical, with differences existing between *tajiri* (a rich owner) and *mvuvi* (a fisherman), between *nahodha* (captain) and *baharia* (sailor) and between men and women.

These traditional fishing communities manage resources carefully. Fishing village are generally located around particular coral reefs, mangrove creeks, river estuaries, and so on.

The village community exercises customary jurisdiction over the resources. It uses its knowledge of the ecology and sustainability of resources to manage fishing access, practices and intensity.

Code of conduct

Strict codes of conduct apply, and infringements are punished. Outsiders and migrant fishermen must seek permission to fish in zones controlled by particular communities.

For example, fishermen from Zanzibar are granted permission to fish offshore from Kunduchi and Msasani during the *nguru* peak season each year so that they may

have access to the larger markets of Dares Salaam, and they may also fish reefs round adjacent islands such as Mbudya. Some Junduchi and Msasani fishermen also fish off the island of Pungume, south of Zanzibar.

Conflicts arise of customary laws are not respected. In 1993 fisherfolk of Pongwe village, on the east coast of Zanzibar, had overexploited the pweza (octopus) on the stretch of reef which they customarily use. They had to request for premission from the neighbouring village of Uroa to share octopus resources. The Pongwe fishermen then had to bear the brunt of great teasing by the Uroa fisherfolk because they had not managed their own resources wisely.

Life in the fishing communities along the coast of Tanzania was drastically disrupted when the German imperialists imposed their rule by force from 1885. Resistance to colonisation was considerable and fierce battles were fought along the coast. These were finally brutally suppressed by 1905.

British colonialism took control of Tanganyika in 1919. The general domination and subjugation of the people affected fishing communities, but the British were not especially interested in the exploitation of fisherfolk or fishery resources because they did not have the technology to export such products to Europe. A small fisheries department and a research facility was established in Zanzibar, but the British were primarily concerned with sport fishing.

The struggle for Tanzania's independence was supported by the most of the fisherfolk. Only a small number of mwiny and sheikh felt insecure about

their privileged status in the face of the nationalist struggle as a broad democratic movement.

The attainment of independence for Tanganyika in 1961, and the revolution in Zanzibar in 1964, was followed by the formation of the United Republic of Tanzania.

Important progressive changes were made, but the structure of the civil service imitated the colonial government. The Fisheries Division reflected this trend. The ranks were rapidly expanded and

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attempts made to improve extension services and statistical records.

Few of the officials themselves came from coastal fishing communities or had any experience with such fisheries. This is the case even today. Fisheries officials received training primarily in modern industrial-type fishing technology in Europe, North America and Japan.

International thinking amongst fisheries authorities and multilateral agencies tended to equate 'modernisation' with 'development'. This influenced Tanzanian fisheries officials too.

Post-independence development plans emphasised a modern industrial-scale fishery export sector. A joint venture for prawn fishing with modern trawlers was entered into with the Taiyo company of Japan in 1969. But the terms were unfair to Tanzania and the licence was revoked in 1971.

Public corporation

In 1974, the Tanzanian Fisheries Corporation (TAFICO) was formed as a public company. It has engaged in trawling for prawns for export. In terms of catches of fish and prawns, the enormous

investments in TAFICO have not been justified for Tanzania.

Most of the boats and equipment have been donated as 'aid' and the present Japanese-controlled operations export prawns to Japan. Plans are presently under way to 'privatise' TAFICO by selling it to foreign capital, in accordance with World Bank structural adjustment directives.

The Fisheries Division has also attempted to promote development at the village level through extension services and supply of equipment and infrastructure, particularly after the ujamaa-village policies since 1967. These have been met with mixed success.

A 'top-down' approach was often adopted. The officials are usually sceptical of the coastal fishing communities who, in turn, are sceptical of official impositions and interventions. Though taxation and registration of ownership of boats began in 1975, the relationship between officialdom and fisherfolk did not improve.

Fisheries training centres were established at Kunduchi and Mbegani. But the trainers were European 'experts' and Tanzanians trained in Europe. The curricula emphasised theoretical training and 'advanced' foreign technology. The ample facilities were under utilised and largely inappropriate.

Though the graduate diploma holders became fisheries officials, they soon found that the theories and technologies they had learned had little in common with daily fishing in the coastal villages.

In response to criticisms about the lack of relevance, fisherfolk were identified as a 'target group' and training programmes instituted to teach selected fishermen how to mend nets and maintain outboard engines. Few recognized the traditional fisherfolk as being the real 'experts' nor were they made to participate in planning and decision-making. Research in fisheries and marine ecology has been carried out at the University of Dar es Salaam, which includes a research station at Kunduchi (now inactive), and the Institute of Marine Sciences at Zanzibar,

and also at the Tanzania Fisheries Research Institute at Kunduchi.

Some of the basic and applied research can be considered relevant but much is of no interest to the majority of fisherfolk in Tanzania. The most inappropriate purchase was that of a large and useless research vessel 'Kaskazi' which is still anchored and rusting off Zanzibar.

In contrast, the Botany Department co-ordinated important research on the mapping of mangroves along the entire Tanzanian coast and investigated socioeconomics issues from the point of view of the fisherfolk.

The Institute of Marine Sciences has been particularly active recently in addressing problems relevant to the traditional fisherfolk, organizing workshops with them, and influencing government policy on coastal zone management.

One interesting example of the introduction of new technology is the case of the Greek fisherman who came to Tanzania in 1961. He used lamps on moonless nights to attract zooplankton and subsequently fish (primarily dagaa) and then scooped them up.

Local fisherfolk were impressed with the results and soon imitated the techniques, including some of their own adaptations using senga (scoop nets). The fishing of dagaa in this way does not negatively influence other habitats or resources. This example confirms that local fisherfolk are not opposed to new ideas and technology per se, even if they are reluctant to accept certain imposed changes about which they are not convinced.

Some types of new technology are very destructive. Dynamite explosives are used mainly by urban-based fishing units to blast the coral reefs. This kills and stuns fish in the vicinity. They are scooped up easily with hand nets. A dynamite - fisher—man 'gets rich quick' but the explosions smash the corals and destroy the habitat of fish and other reef-dwelling organisms.

Extensive destruction

After repeated dynamite blasting, increasingly extensive areas of reefs are

destroyed and the productivity declines drastically. As the productivity of reefs near to towns declines, the dynamite fishermen venture further and further from the urban centres to blast productive reefs up and down the coast.

Trawlers disrupt the conditions of the ocean bottom, especially seagrass. Large quantities of fish are dumped as 'by-catch' or 'trash fish' to make space in the freezers for export bound prawns. Trawlers may also destroy nets and traps, with little thought about compensation.

Very serious conflicts have broken out between fishermen perpetrating the use of dynamite and local traditional fisherfolk. Those of the coastal villages have organized themselves to protect their coral reefs from the dynamite users.

This has been quite effective in many areas, but in several serious cases, people have been killed in fierce clashes during the past two decades.

In some cases, granting of land for the building of luxury tourist hotels has infringed upon the fisherfolk's rights of passage and customary access to resources.

Foreign tourist interests have taken over coral islands and fishworkers are even forbidden to take refuge there from storms.

Proposals for setting aside areas of coral reefs as marine parks mean well for conservation. Some conservationists even wish to prevent non-destructive traditional fishing practices in these parks.

In planning and implementing measures for the conservations of the reefs, it would seem much more sensible to co-operate with the local fisherfolk.

Such steps are being discussed on Mafia island between the fisherfolk, Fisheries Division officials and researchers from the Institute of Marine Sciences.

The experience of Tanzanian fisherfolk has shown that some forms of 'development' are genuinely positive.

However, many interventions actually engender neo-colonial relations of inequality. This ultimately acts to the detriment of the interests of the traditional fisherfolk.

This article is written and illustrated by Ian Bryceson, a Tanzanian marine biologist now living in Norway