

The Fisheries of Zanzibar: Potential for New Investments

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Abstract

Zanzibar, one of the poorest areas of sub-Saharan Africa, has a good potential for foreign investment in offshore (EEZ) marine capture fisheries, in aquaculture and in fisheries infrastructure. Zanzibar's fisheries resources could be better managed in an effort to alleviate the poverty of its rural population and to provide food security. At present, Zanzibar's fisheries are artisanal and its total annual production of fish of just over 20 000 t, caught in inshore waters, is consumed locally. The government of Zanzibar has liberalized its policies to make Zanzibar a good environment for foreign investment.

Introduction

Zanzibar, part of the United Republic of Tanzania, consists of two sister islands called Unguja and Pemba, with about 50 other small islets forming the Zanzibar Archipelago. Zanzibar lies 40–60 km off the eastern coast of mainland Tanzania in the western part of the Indian Ocean, between latitudes 5° and 6° south of the equator and between 39° and 45° east of the Greenwich Meridian.

Zanzibar covers a total area of approximately 26 243 km². Unguja covers 1 658 km² and Pemba 985 km². Unguja is about 100 km long and 40 km wide at its widest point, whereas Pemba is about 80 km long and 23 km wide. The territorial waters are estimated to be 4 450 km² and form a major fishing area.

There are many reefs around the islands, which drop off sharply into vertiginous crevasses up to 40 meters deep. The steep walls are covered with colorful sponges and gorgonians, and teem with sea stars, lobsters and eels. Some reefs, like undersea mountains wreathed with seaweeds and corals, abound with ornamental fish.

There are more than 20 000 ha of mangrove forests along Zanzibar's coastline, scattered in sheltered areas along estuaries and



Figure 1. The location of Zanzibar

coastal lagoons. The mangroves play a very important part in the ecology and conservation of the environment. Apart from preventing beach and mud flat erosion, their incredible root system provides a breeding ground for many finfish and crustaceans (including shrimp) and marine life that forms part of the inter-tidal food chain. Because of its adaptability to saline water, the wood is resistant to insect and wood-boring parasites.

Under the current Union constitution, Zanzibar retains control of its own legislative, executive, economic and social functions. Zanzibar has its own administrative structure for the development, promotion and management of its inshore fisheries. However, there are fishing areas that are shared with mainland Tanzania, such as the Zanzibar and Pemba channels. The Exclusive Economic Zone (EEZ) is a Union matter. A temporary arrangement allows both mainland Tanzania and Zanzibar to issue fishing licenses to foreign fleets to fish in their EEZ waters. This is a temporary arrangement; a more permanent system for fishing in the EEZ is under consideration.

The fishery

The fishery is largely a marine capture fishery carried out by artisanal fishers within the 12-mile territorial waters around the Zanzibar islands. However, most of the fishing takes place within 5 miles of the shore, as the fishing craft used are small. There are some 24 000 artisanal fishers using 5 200 fishing craft from 254 fish landing sites. The fish is auctioned right at the landing sites. About 3 000 fish traders transport the fish, without ice, to nearby markets or to the main towns and villages using bicycles or motorbikes. The total catch is consumed in Zanzibar. For a population of nearly one million people, the annual per capita consumption of fish is about 21 kg/per year (per capita red meat consumption is only 3-4 kg/year).

Many of the inhabitants of Zanzibar have been engaged in fishing activities for

generations. They use traditional fishing boats and gear such as canoes, canoes with outriggers, sailing boats, with few planked outboard-engine boats. The gear used includes purse seines, gill nets, drift nets, scoop nets, hand lines, traps, and weirs. Fisheries play an important role in the economy as they provide a source of income to about 20% of the population. In addition, fish is the major source of dietary animal protein. Government policy calls for ensuring the supply of fish at affordable prices for local consumers.

The fish stocks around Zanzibar include small pelagics (sardines and anchovies), coral reef fish (grouper, snapper, parrotfish, emperors), lobsters, octopus, squid, and large pelagics (tuna, billfish, sharks, marlins). Seaweed, sea cucumber and seashells are also found. There are differences in the relative abundance of the various species between the two main islands. Reef fish are more abundant at Pemba, while small pelagics are more abundant around Unguja. Large pelagics, lobsters and shrimps appear to be more abundant in Pemba.

In the absence of a recent biological stock assessment survey of the resources, available information indicates that a significant tuna stock (yellow fin, bigeye, and skipjack) exists within the 200-mile EEZ of Tanzania. So far, the area is not fully exploited, with a minimal level of fishing by foreign fleets. Foreign fishing fleets obtain licenses to fish in the EEZ waters against royalties that are based on the gross tonnage of the fishing vessels. There is also some unlicensed fishing by foreign vessels.

Climate plays an important role in Zanzibar's fisheries. The coastal areas are subjected to monsoon (Trade) winds, or southwest winds, that blow from southwest to northeast from April to June. They bring heavy rain, causing cold water to sink down and warm water to come up, creating a mixing phenomenon. This mixing and the nutrients brought by the incoming rainwater run-off could be one of the causes of the observed abundance of fish during this season.

From September to November, coastal areas experience northeasterly winds with short spells of rain and have more pelagic migratory fish species.

In contrast, mainland Tanzania is extremely well endowed with freshwater fishery resources, which Zanzibar lacks. Inland waters, mainly Lake Victoria, Lake Tanganyika and Lake Malawi/Naya, and a number of rivers cover about 6.5% of the total area and their combined production in recent years has accounted for 80-90% of the national production from capture fisheries. FAO reported that in 2001 the total production was 310 170 t. Marine catches are estimated between 40 000 to 50 000 t per year, of which Zanzibar contributes almost half.

Potential for investment in capture fisheries

Zanzibar's coastal fishing is currently a local artisanal undertaking, specially reserved for citizens only. Foreign investors are invited to invest in establishing large-scale and deep-sea fishing businesses. The government encourages investment by foreigners in order to promote the economy of the islands. In addition to increasing foreign exchange earnings and employment opportunities, foreign investment is expected to transfer know-how to Zanzibar.

Deep-sea and offshore fishing could provide annual earnings that are well above the annual earnings from the agricultural sector. It could provide employment in many rural areas where there are insufficient opportunities for gainful employment.

Planning and development initiatives for the future must build and maintain appropriate systems for the management and protection of the aquatic environment, and provide the infrastructure for a more efficient post-harvest sector.

The fishing areas of Zanzibar offer a high potential for the diversification of the economy, as the varied ecological systems

include coral reefs, mangrove forests, sandy beaches, swamps and tidal flats. Fishing communities can use these for mariculture activities to supplement their incomes.

Potential for investment in aquaculture

The long coastline of the Zanzibar islands offers a good potential for the development of brackish-water fish farming. The large number of bays, lagoons, mangrove forests, freshwater reservoirs formed by dams (especially on Pemba Island), and other small water bodies are good farming environments. Most of these are under-utilized due to the lack of proper management, use of inappropriate technologies and inadequate extension efforts. A number of freshwater, brackish water and marine species of fauna and flora are suitable for aquaculture. However, the development of aquaculture needs to be guided by promoting and incorporating the management principles that ensure its sustainability; potential exists for seaweed, fish, mollusks, cockles, mussels, oyster, crabs and sea cucumber farming.

Experience in many maritime countries has shown that mariculture can play a significant role in contributing animal protein to the diet and provide direct employment to the fishing industry. Aquaculture (mariculture) has not developed in Zanzibar because of the lack of technical and financial inputs. Some local people have attempted farming activities (in the areas of Fundo in Pemba and Nungwi in Unguja), but they did not develop due to lack of financial resources, access to appropriate culture technologies, and limited marketing experience.

Data show that catches from inshore fisheries are declining. This may be due to limited stocks in Zanzibar's coastal waters due to increased fishing pressure (over fishing of near shore waters and/or use of destructive fishing methods); increasing cost of fishing in terms of the high price of fishing gear and other imports; and changes in maritime laws and regulations

for management purposes. Aquaculture could help restore the previous level of fish production from Zanzibar and possibly increase it. Aquaculture can provide alternative or additional employment for a large number of surplus fishers, under-employed farmers and unemployed youth. By providing rural employment, it can help prevent the unemployed from migrating to urban areas to seek jobs. It will improve the nutrition and income of rural areas.

Zanzibar has very limited inland waters, so freshwater fish farming can be developed as a small-scale activity practiced by individuals, families or groups in sites such as Muungoni, Chukwani, Bubwini, Makoba, Kama and parts of Pemba. The potential for this aquaculture has not been exploited because of lack of capital to conduct research, and identify suitable sites and species. Fish farming also requires new skills.

Potential for investment in fisheries infrastructure

Investments in capture fisheries and in aquaculture have to be supported by investments in infrastructure. Some of these include:

- **Ice-making plants.** At present there are no such plants in Zanzibar.
- **Cold-storage services.** These are required to store excess catch for better marketing opportunities. There are presently no such services.
- **Boat-building yards.** All fishing boats are built from local wood by artisanal boat builders using very simple tools. Better designed and larger boats will be required in the future to fish in deeper waters and to take trips of more than one day.
- **Plants to make fishing nets.** One of the major constraints to increasing catch is the acute shortage of fishing gear. A local plant is highly desirable. Its production could be marketed on the mainland and in other neighboring countries.
- **Engine repair and maintenance workshops.** With the increase of

fishing activities and bigger motorized boats, such workshops would become a vital necessity.

- **Fish-processing plants.** Increased landings of demersal fish species as well as other marine fish products would make such plants highly desirable, especially for the expanding tourist trade and for export.

Potential for investments in seaweed farming and processing

Over the last five years, seaweed farming based on exotic species introduced from the Philippines by a Danish company has become a widespread economic activity in Unguja and in parts of Pemba. In 1995, production reached 4 287 t and exports were 2 999 t (dry weight), rising to over 7 000 t in 2002. This important development was achieved purely through joint private foreign and domestic investment. Local companies are now buying seaweed from small-scale farmers and exporting it to Europe and the USA in raw form. Further investment opportunities lie in the processing of seaweed. A plant for processing to a semi-processed stage is a feasible investment.

There are two exotic species grown and harvested in Zanzibar. These are *Euचेuma cottonii* and *Euचेuma spinosum*. However, marine biologists have now reclassified both species and renamed them *Kappaphcus alvarezii* and *Eucheuma denticulatum*, respectively. These species are commercially known as 'cottonii' and 'spinosum'. The cottonii is commercially more important.

The uses for seaweed are varied. It is a versatile product widely used as food and also as an ingredient in the food and cosmetic industries. It is also used as a fertilizer and an animal feed additive. Today, approximately one million tonnes of wet seaweed are harvested and extracted to produce 55 000 t of hydrocolloids, valued at almost US\$ 600 million.

The culture of seaweed has an important economic role in Zanzibar in creating

employment and increased income for the farmers. About 80% of Zanzibar's coastal farmers who participate in seaweed farming and processing are women. Seaweed farms are owned individually, by groups or by families. There is no land ownership but farmers are free to establish a farm where there is space and the farm becomes their property. The companies involved with the industry provide farming materials to the farmers free of charge but in return the farmers have to sell their products to the respective company.

The commercial production of seaweed began in 1989 and currently there are four companies that purchase seaweed: C-Weed Company Ltd.; Agro Weed Company; Birr Seaweed Company; and Zanzibar East Africa Seaweed Company. Seaweed farming in Zanzibar expanded so fast that four years later its contribution to the economy was about 14.7% of Zanzibar's exports. The expansion was due to an increasing number of farmers, farmed areas and villages getting involved in the production.

Despite the contribution of women to fisheries in general, they have no access to productive resources, marketing services or credit. This means that women have not been able to use their potential effectively and, therefore, it is important for them to be involved with NGOs that can enable them to identify their needs and help them to plan, implement and monitor their development activities. The NGOs should also help in the facilitation and promotion of sharing and exchange of skills and knowledge through extension services. Training for quality control is important, as most farmers are only concerned about the weight of the products. They can also help the farmers look for international markets and obtain other information that would lead to the development of the seaweed industry in Zanzibar.

Currently international prices for seaweed are declining as there is a glut on the market. The reasons are that too

many countries are now farming the product and the quality of the product has deteriorated. The farmers in Zanzibar need to enhance their skills in farming seaweed to improve quality and compete in international markets. Zanzibar should endeavor to keep this industry from declining any further. Measures should be taken to produce a better quality product that would revive this lucrative activity that brings income to many farmers and earns hard currency for the country. The local companies would be wise to establish some social arrangement for the women as a means of motivating them and to give them a sense of belonging, protection and support. These companies should change their role from acting as intermediaries between the farmers and international companies, to investing in seaweed processing industries.

Studies conducted in Zanzibar show that there have been significant improvements made in seaweed farming. However, the success of seaweed farming on the Indian Ocean islands of Zanzibar and Pemba has been reported to have a negative impact on fish, shellfish, and crustacean aquaculture.

Government support for investment

Over the last few years, the government of Zanzibar has liberalized the economy and the new conducive business environment and lucrative opportunities that have ensued have necessitated the creation of specific state organs to promote, handle and oversee investments. In 1992, the Zanzibar Free Zone Economic Zones Authority (ZAFREZA) was established and made responsible for the promotion and administration of investments for industrialization through the Economic Processing Zone (EPZ). Any investment in fisheries would be serviced by this agency. The Zanzibar Investment Promotion Agency (ZIPA) was established under the Ministry of Finance and Economic Affairs. It operates under the 1986 Investment Act. Its main objective is to promote and facilitate investments

in Zanzibar and the improvement of Zanzibar's balance of payments. It is an agency of the government to encourage potential investors to establish projects in Zanzibar, including deep-sea fishing, aquaculture and seaweed farming. The Zanzibar National Chamber of Commerce, Industry and Agriculture provides information on the business environment in Zanzibar.

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