FISHERY COUNTRY PROFILE	**Food and Agriculture Organization of the United Nations**	**FID/CP/MLW**
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THE REPUBLIC OF MALAWI

GENERAL ECONOMIC DATA - April 2005

Area:	118 484 km^2
Water area:	24 405 km^2
Population (2003):	11 000 000
GDP current (2003):	US$ 1.7 billion
GDP per capita (2003):	US$ 170
Agricultural GDP (2003):	37.6% of GDP
Fishery GDP (2003):	4% of GDP

FISHERIES DATA

Year	Production	Imports	Exports	Total supply	Per capita supply
2001	**tons liveweight**				**kg/year**
Fish for direct human consumption	41,187	582	123	41,646	3.6
Fish for animal feed and other purposes	-	-	-	-	-

Estimated employment (2003):	
(i) Primary sector (including aquaculture):	62 000
(ii) Secondary sector:	350 000

Trade (2002):	
Value of fisheries imports:	US$ 277 000
Value of fisheries exports:	US$ 280 000

FISHERY SECTOR STRUCTURE

Overall fishery sector

Malawi is a landlocked country with a total area of 118 484 km^2, of which about 20 percent (24 405 km^2) is covered by water, supporting over 800 species of fish and nearly 15 percent of the global freshwater fish biodiversity. The fisheries sector in Malawi is divided into two groups: capture fisheries and aquaculture. The capture fisheries sector is the major sector.

Malawi has five major water bodies important for fish production. The annual catch from Malawi's major fisheries is in the region of 40 to 60 thousand tonnes. In 2003, Malawi produced an estimated catch of 53 540 tonnes. Lake Malawi is the largest and most significant water body. The fish catch from Lake Malawi contributed over 75 percent of the total annual catch from Malawi waters in 2003. The other water bodies are: Lake Chilwa (about 750 km^2), Lake Malombe (about 390 km^2), Lake Chiuta (about 200 km^2), and two sections of the Shire River (upper and lower). In terms of fish production in 2003, Lake Chilwa contributed about 14 percent of the total catch, Lake Malombe about 1.2 percent, Lake Chiuta about 2.4 percent, Upper Shire River less than one percent, and the Lower Shire River about 4.2 percent. All these water bodies are of high local importance.

The fisheries are multi-species and multi-gear, involving a number of exploitation techniques to harvest numerous species. They are categorically divided into two, the artisanal or traditional fisheries and commercial fisheries.

Capture fisheries is further sub-divided into artisanal fisheries and small-scale commercial fisheries. On the average, the artisanal fisheries contribute about 85 – 90 percent of the total fish landings in Malawi and the small-scale commercial fisheries contribute about 10 – 15 percent of the total fish landings.

The artisanal fisheries

Artisanal fisheries are open access, highly complex, scattered in all water bodies and mainly operate between 0-20 m in Lake Malawi while in other water bodies all depth ranges are covered. The artisanal fisheries comprises of a wide range of fishing units, ranging from traditional fishing gears and crafts, such as fish traps and handlines operated from dugout canoes to

relatively modern gears and craft, like the seine nets operated from planked boats powered by outboard motors, and employ a lot of people.

The main target fish species for the artisanal fisheries, depending on the fishing gear, are chambo (*Oreochromis* species), Kambuzi (*Haplochromis* species), Usipa (*Engraulicypris sardella*), Utaka (*Copadichromis* species), *Kampango* (*Bargrusmeridionalis*) and *Mlamba* (*Clariid gariepinus*). The main fishing gears are gillnets, *chambo* seine nets, *kambuzi* seine nets, *nkacha* seine nets, *chilimira* seine nets, longlines, handlines and fish traps.

The 2003 frame survey results indicated that there were 15 542 gear owners and 42312 crew members that fished with 15 316 fishing craft. Of the fishing craft, 493 were planked boats operated with engines, 2 999 were planked boats operated without engines, and 11 824 were canoes. A summary of the survey results are given in the table below.

Table 1. 2003 Frame Survey counts of fishing craft, gear owners, crew members and fishing gears by District Fisheries Office

Fishers resident	**11769**
Fishers non-resident	**3773**
Crewmembers resident.	**31801**
Crew non-resident	**10511**
Plank boats with engine	**493**
Plank boats without engine	**2999**
Dug out canoe	**11824**
Gill nets	**77668**
Chilimira nets	**3079**
Chambo seines	**71**
Longlines	**2884**
Kambuzi seines	**385**
Mosquito nets	**362**
Fish traps	**27071**
Beach seine nets	**98**
Scoop nets	**83**
Nkacha nets	**309**
Cast nets	**766**
Handlines	**1383**
Kandwindwi	**42**
Matemba seines nets	**276**
Ndoloma	**1**
Chomanga	**24350**

The small-scale commercial fisheries

The small-scale commercial fisheries are mechanized, capital intensive and use mainly trawling and purse seining ('ring net') and are confined in the southern part of Lake Malawi. The fishery consists of pair trawlers units

(wooden boats about 8 m long with a 20-40 hp inboard engine), stern trawler (90-385 hp) units and ring nets (90 hp) which are confined to the southern part of the lake. Thirty-seven commercial fishing vessels have been recommended for this fishery, but the number of fishing vessels have fluctuated between 10 to 25 in the last decade. Thirteen trawlers, eight stern and five pair trawlers are currently operational. The pair trawlers fish in waters between 18 m and 50 m and the stern trawlers are restricted in deep waters greater than 50 m. All the stern trawlers except one are bottom trawlers. One stern trawler operate a midwater trawl.

Ornamental fishing operations are confined to two licensees that target Mbuna, the highly coloured territorial cichlids commonly found within 100 m. The aquarium trade is based on the exploitation and exportation of these coloured cichlids.

CATCH PROFILE

The annual catch varies widely between 30 000 and 80 000 mt, with landings in most years ranging between 50 000 and 60 000 mt. During the last four years, catches have fluctuated between 32 600 mt in 2002 and 63 500 mt in 2000. In 2003, the estimated total catches were 48 200 mt. The table below shows the total production during the past four years.

Year	Total catch (mt)
2000	43 000
2001	40 620
2002	41 330
2003	53 540

Catches by fish species in 2003, indicated that Utaka (*Haplochromis* spp.) contributed the highest (about 31.3 percent), Chambo (*Oriochromis* spp.) came second (about 12.7 percent), and Usipa (*Engraulicypris sardella*) came third (about 10.2 percent).

MAIN FISH RESOURCES

In Lake Malawi, the dominant fish species in the 2003 catches were Utaka (*Haplochromis* spp.) which made up 31 percent of the total catch, Chambo (which made 13 percent of the catch), Usipa (*Engraulicypris* sardella) (made ten percent of the catch), and Mlamba (*Clarias* spp.) (that made up six percent of the total catch). In lakes Chilwa and Chiuta, the dominant fish species in the catches were Makumba (*Oriochromis* spp.) (contributed 34

percent in Chilwa and 51 percent in Chiuta), Matemba (*Barbus* spp.) (made 52 percent of the catch in Chilwa and 11 percent in Chiuta) and Mlamba (*Clarias* spp) (contributed 13 percent of the catch in Chilwa and seven percent in Chiuta). While in the Lower Shire, the dominant fish species in the catches were Mphende (*Oriochromis* spp.) (which made 51 percent of the catch) and Mlamba (*Clarias* spp.) (which contributed 42 percent of the total catch).

MANAGEMENT APPLIED TO MAIN FISHERIES

Prior to 1993, the Fisheries Management approach in Malawi has mainly been influenced by the principles of the conservation paradigm, i.e. a biologically centralized led approach. As such one of its sectoral policy objectives is to aim at maximizing the sustainable yield from fish stocks that can economically be exploited from the natural waters. The conceptual background to this approach is based on the theories of Maximum Sustainable Yield (MSY).

This approach is still being applied to the small-scale commercial fisheries sub-sector, where there is a strict control of the number of fishing units licensed, based on the status of the fish stocks in each fishing area. Lake Malawi is divided into a number of fishing zones, and a prescribed number of fishing units is allocated to each zone.

The management system in the artisanal fisheries sub-sector is slowly changing from the conventional "top-down" management approach to community participation fisheries management approach. This approach started on a pilot basis in Lake Malombe in 1993, and has since spread to lakes Chiuta and Chilwa.

Despite the introduction of participatory fisheries management, the management measures for the different fisheries are still based on biological information as guided by the fisheries policy. The policy states that the paramount responsibility of the Department of Fisheries remains the protection of the existing fish resources by means of appropriate research, the collection and analysis of the relevant data and the application of appropriate control mechanisms. However, in areas where participatory fisheries management is being practiced, prior consultations with the fishing communities is done before management measures are endorsed into fishing regulations as provided for by the Fisheries Act.

The following are some of the practical regulations that appear in the Fisheries Conservation and Management Regulations of 2000:

a) *Closed Fishing Season and Area*: This regulation was designed to protect certain species during their spawning period. Selected fishing gears (various beach seines) are prohibited to be used in the closed areas and during the closed season. The closed season runs from 1st November to 31st December

of each year in Lake Malawi for all beach seines, and from 1st January to 31st March of each year in Lake Malombe for all seine nets.

b) *Mesh size restrictions*: This regulation was formulated to supplement the one on closed season and areas, in order to protect young fish from being caught before they are mature to breed. Minimum mesh sizes for various types of fishing gears are set based on the size at maturity information for the target species.

c) *Minimum takeable size of fish*: Based on size at maturity information, this regulation was designed to supplement the mesh size restriction regulation by protecting young fish. Different fish species have minimum allowed takeable sizes.

d) *Maximum headline length of fishing net*: This regulation was designed to control fishing effort by limiting the size of the fishing net. Each type of net has its own maximum permissible length depending on the water body to be used. For example the same gear, like chambo seine net, would be longer in Lake Malawi than in Lake Malombe.

e) *Licensing of fishing gears*: This regulation, which is an exception of the other four above, is usually intended to control the amount of fishing effort by limiting the number of gears licensed to fish. In so doing it regulates access to the fishery. In the small-scale commercial fisheries, each fishing unit is licensed to fish in the zone it was allocated. These fishing licenses are not transferable.

AQUACULTURE SUB-SECTOR

Fish farming in Malawi is still at an early stage of development. Currently, potential exists both at small-scale and at commercial levels. It is estimated that more than 11650 km^2 of land in Malawi is under or has potential for aquaculture and this is about 15 percent of the land available. There are about 4 000 fish farmers owning about 7000 fish ponds that are scattered through out the country, producing about 650 mt of fish per year (2002). The pond sizes range from 50 to 500 m^2.

The species currently being farmed are *Tilapia rendalli* (chilunguni), *Oreochromis shiranus* (makumba), *Oreochromis karongae* (chambo) and *Clarias gariepinus* (mlamba). Research is underway at the National Aquaculture Centre (NAC) Domasi, to domesticate some of the Malawian cyprinids for use in the near future.

In addition, there are reservoirs that can be used by communities to produce fish. There are over 800 such small water bodies with a total surface area of over 1 000 ha, whose ownership ranges from public, private and communal.

Currently, the Department of Fisheries is promoting the growing of fish by integrating aquaculture with agriculture, i.e. Integrated Aquaculture-

Agriculture (IAA). Aquaculture extension services is being revamped in order to enable them achieve desired results. Farmer-to-farmer exchange of technology is being encouraged, by integrating Farmer Associations into the extension service. The Department of Fisheries is also involving NGOs as service providers, by providing them with technical information and backstopping. Furthermore, large-scale commercial aquaculture is being promoted, by putting in place a policy framework conducive to attract investors through a practical, 'one-stop' interface.

Fish utilization

Although fish consumption trends are not established in this country due to lack of time series data, it is assumed that all the fish landed in Malawian waters are for direct human consumption. Fish is often consumed in small amounts with daily meals. Much of the fish is consumed in rural areas and thus contributes to the nutritional needs of some of the poorest people in the country.

Fish landed can either be sold to the consumer fresh, iced, frozen, smoked, sun-dried or para-boiled and then dried. Utilization of fresh fish is more popular in villages and towns near the lakes and rivers, while most remote rural areas are supplied with processed fish. About 90% of the fish from capture fisheries in Malawi is preserved by means of smoking or roasting (40%), and sun-drying (50%) and the rest is in fresh, chilled and frozen forms. There are a number of fish processing techniques practiced in Malawi, ranging from the traditional type like dug-out smoking ovens and drying racks made of reeds and mats to the improved facilities such as Bena kiln (modified Ivory Coast kiln) and wire drying racks.

Fish markets

Fish processing and trading is a major occupation among many fishing communities including women in Malawi since most of the fish sold to distant markets is in dry form for easy storage. In most fishing communities in Malawi, the traditional fish marketing system is characterized by fishermen landing their catches on scattered beaches, normally in small quantities. The practice has been that fishers have little bargaining power in the sales of their catch, with most marketing activities being dominated by fish traders who also to some extent function as a source of informal credit, providing necessary cash for the fisher's family needs, especially during the extended seasonal periods of limited catch and income. This situation creates a strong inter-dependence between traders and fishermen which influences market decisions over the latter.

Most of the landing sites in Malawi are basically used as market sites, mostly with few chilling facilities. There are two methods used in selling fish on a beach. First, fish can be sold either by auction whereby bidding is done by

the traders or by selling fish in dozens by charging a predetermined price by the fisher. Auctioning is common in some places on Lakes Malawi, Malombe and Lake Chilwa for fresh fish especially of those most valuable species and where demand is quite high.

Some of the small-scale commercial fishing companies have their own fish handling, processing and marketing facilities at their landing bases. An example of this is MALDECO fishing company, which has its own ice plants, cold rooms, freezing plants, smoking kilns, within its premises very close to Lake Malawi and insulated fish distribution lorries. These insulated lorries are used to distribute fish to their fish market outlets in urban centres.

FISHERY SECTOR PERFORMANCE

Economic role of fisheries in the national economy

The fisheries sector in Malawi is an important source of employment, rural income, food security, import substitution and biodiversity. In 2002, fish had a beach value of about MK1.5 billion (approx. 21 million US$), and contributed about four percent to Gross Domestic Product (GDP). The fish industry supports nearly 1.6 million people in lakeshore communities and makes substantial contributions to their livelihoods, by supporting approximately nine percent, 18 percent, 15 percent, nine percent and 30 percent of the people in Karonga, Nkhata Bay, Nkhota Kota, Salima and Mangochi districts, respectively. Furthermore, 13 percent of the people in Zomba, Machinga and Phalombe districts, as well as six percent of the people in the Lower Shire Valley derive their livelihood from fishing.

Within the agricultural and natural resources sector, fisheries is the second largest employer, second from the crop sector. It has the largest number of employees (4) per enterprise, compared to 3.8 under crops; it generates the largest profit per employee per hour (K50.15) (2002 figures) compared to mining (K16.64) and crops (K5.94).

Demand

The demand for fish in Malawi is very high, as a result all fish that is caught is consumed locally. Because fish is on high demand, it is easily traded in both rural and urban communities. Overall, Malawians today find it more difficult and more expensive to obtain fish than ever before.

Supply

The supply of fish per capita has however, steadily fallen due to high population growth against declining fish production and this is a real threat to food and nutrition security in Malawi. In 1976, per capita annual fish supply was 12.9 kg. This had fallen to 7.9 kg in the 1990s and then decreased further to 3.6 kg in 2001. This is by far less than 13-15 kg per capita supply recommended by World Health Organization.

Fish trade

Fish marketing distribution consists mainly of fish traders, either processing their own catch or selling processed fish, utilizing public or private transport. The main fish species consists of chambo, utaka, kambuzi, mbaba, ncheni and kampango.

Fish marketing and distribution network has been very densely concentrated in the Southern part of the Central Region and the whole of the Southern Region. This reflects a series of factors such as the existing north-south variations in the country's fish production patterns and population densities, the road system, the proximity to market centres and certainly also the comparatively high road transport costs. For longer distances, transportation of dried or smoked fish, lake steamer and public bus services provide the most efficient and versatile means of transportation of traders. Depending on the quality of processing, dried fish has a shelf life of at least one month. The product is easier to transport and store than fresh fish and the pressure to sell does not exist for the dried fish.

Public retail markets exist in all principal urban centres of Malawi including Lilongwe, Blantyre Limbe, Zomba and Mzuzu. Sometimes fresh fish is available in Kasungu and Mzuzu. In most public retail markets, fresh fish is sold on separate stalls by size and piece, but not usually displayed on ice. Only in some supermarkets is fresh fish sold on price per kilogram basis. Dried/smoked fish is sold on public markets by piece or in small heaps for given prices, and not by weight.

Apart from 2000, fish imports have generally been increasing for the past four years showing that demand for fish in Malawi is still growing. Most of the fish imported came from Zimbabwe, South Africa, Tanzania, Mozambique, Thailand, Namibia, Swaziland and China.

On the other hand, fish exports have been fluctuating. It was observed that most of the fish products exported from Malawi are re-exported which have been increasing indicating a growing number of middlemen who supply overseas and coastal fish resources to other neighbouring countries. The re-exports constitute over 80 percent of the total products exported especially since 1997. These re-exports include fish such as frozen shrimps and prawns, trout salmonid, cod fish and flat fish.

The Malawi Export Promotion Council

In terms of aquarium fish trade,in 1999 Malawi exported a total of 40 821 units of aquarium fish at a value of K8 476 768.

The aquarium fish was exported to various countries like Belgium, Denmark, France, Germany, Japan, Netherlands, Portugal, South Africa, Sweden, Switzerland, United Kingdom and the United States of America. This is the only fisheries sector that is promoted by the Malawi Export Promotion

Council (MEPC).

FOOD SECURITY

The fishery sector provides vital and unique nutritional benefits such as protein, vitamins, minerals and micro-nutrients. Therefore, it is apparent that the sector has a significant impact on food and nutrition security especially in the lake districts. In addition, studies have revealed that fishing communities are better off in terms of meal frequency, meal composition, meal diversity, availability of household assets and the level of income with which they buy food to ensure household food and nutrition security.

As a result, the sector is employing a significant proportion of the population as fishers, processors and traders enabling them to earn income for purchase of food to meet their household food and nutrition security. Households which vend in fish find it advantageous to sell fish and purchase other food items to improve their household food security and nutritional status.

Employment

In 2003, the fisheries sector directly employed around 62 000 people, and about 350000 people were in secondary employment. This figure includes fish farmers. About 57850 were crew and gear owners in capture fisheries. The rest were employed in fish processing, fish trading, and boat building.

Rural development

Fish drives the commercialization of rural economies, with a multiplier effect of 1:4, between the point of production and consumption, thus improving food marketing and rural incomes. To promote rural development and improved fisher incomes, the Department of Fisheries established centralized fish landings, which were called "Fisheries Economic Centers" especially in the southern part of Lake Malawi, in Mangochi District.

FISHERY DEVELOPMENT SECTOR

Constraints

It has been documented that there are localized overfished inshore waters due to the type of fishing craft and gear used by the fishers. However, it was discovered that there is about 40 000 mt of fish that can be caught annually from Lake Malawi. These are pelagic off-shore stocks that are being underutilized. The problem with the fishers is the acquisition of appropriate fishing gears to tap the underexploited stocks.

In line with this challenge will be to formulate and enforce management regulations that will stop fishers from fishing in in-shore waters when they acquire off-shore fishing equipment.

Development prospects/strategies

Malawi's development policy expresses the need for reduction of poverty, ignorance and disease by the achievement of rapid and sustainable economic growth and an improvement in income distribution. The policy recognizes that for the welfare of Malawians to be improved, economic growth will have to exceed population growth. The fisheries sector has a key role to play in poverty reduction through the provision of rural employment and, more importantly, through its contribution to household food security.

Three options for increasing fish through capture fisheries and aquaculture have been identified: a) Good management of capture fisheries to ensure that yields are maintained at sustainable levels, b) Harvest of unexploited resources from the capture fisheries, and c) Aquaculture enhancement programme, which is being spearheaded by The Chambo Restoration Strategy (CRS). While the other two approaches are being addressed through projects, the CRS is in the process of being translated into both development and research projects.

All the three options above will require strengthening the institutional framework, through a) Policy review, b) Legislation review, c) increased private and public sector capacity, d) Decentralization of the Department of Fisheries.

RESEARCH

A Fisheries Research Unit (FRU) was established in 1962 and is based in Monkey Bay. The role of the FRU is to undertake relevant and problem-solving management oriented research programmes. Its main goal is to provide information necessary for sustainable exploitation, management, conservation of biodiversity and investment in the fisheries sector through appropriate biological, technological, sociological and environmental research programmes. However, the research agenda of the FRU is to a greater extent determined by the needs of the users.

The core areas of emphasis include: (a) Stock Assessment, which covers catch and effort statistics, frame surveys, monitoring and fish population analysis; (b) Exploratory surveys that aim at identifying underexploited fish stocks with a view of increasing production; and (c) Bio-limnology research, which aim at understanding the biology and environmental factors that influence the distribution and abundance of fish.

However, the FRU only carries out research in capture fisheries. Research in Fish farming is done by the National Aquaculture Center (NAC) based in Domasi, Zomba.

EDUCATION

All fisheries training is done at Mpwepwe in Mangochi, where the Malawi College of Fisheries (MCF) is located. Its main purpose is to develop capacity, knowledge and skills by providing appropriate training programmes

for the Department of Fisheries and User communities in Malawi and in the SADC region. The Malawi College of Fisheries is mandated to execute fisheries management training programmes for both user communities and the Department of Fishers. There are three main areas of focus for the courses that are provided at the college, these are User community tailored courses, Pre-service and In-service courses.

FOREIGN AID

On-going projects

Currently, there are two main projects that are running, one in capture fisheries and the other in fish farming. The first one is the Lake Malawi Artisanal Fisheries Development Project, that is being funded largely by the African Development Bank. With a total loan cost of UA6.93 million (US$9 million) and a grant of UA0.84 million (US$1 million). The project started in October 2003 and is being implemented under four components: (i) Fish Production and Marketing Development; (ii) Credit Delivery; (iii) Capacity Building and Institutional Strengthening; and (iv) Project Management.

The second project is the Project on Aquaculture and Technical Development of Malawian Indigenous Species for fish farming. The project is being funded by the Japanese government through JICA and is based at Domasi, Zomba. Through this project, aquaculture techniques suitable for the local fish species and environment are being studied and developed. The project aims at the transfer of this technology to Malawian counterparts and then farmers in an efficient manner. The project follows a comprehensive approach to technical transfer that consists of:

- Dispatch of both short and long term Japanese experts;
- The provision of equipment and development of infrastructure such as laboratories, hatchery and staff houses; and
- Training of Malawian counterparts in Japan and other Asian countries such as the Philippines and Malaysia.

Planned projects

There is one project proposal that is currently being considered for funding by the Icelandic Government through the Icelandic International Development Agency (ICEIDA). The project is called Small-Scale Offshore Fishery Technology Development Project. The overall objective of this Project is to aid in the development of an offshore small-scale fishery to allow small-scale fishers to expand their operations to underexploited resources in the deep-water demersal and pelagic zones of southern Lake Malawi in order to improve food security and income of rural fishing communities in the Nankumba Peninsula, Monkey Bay.

FISHERY SECTOR INSTITUTIONS

The Department of Fisheries, established in 1946 by an Act of Parliament, is a government department that is mandated to protect and conserve the national fish heritage of Malawi, through appropriate research and application of appropriate control mechanisms. Since then, it has carried out various research experiments and provided guidance based on sound technical foundation for the development of the fishery industry in Malawi.

The activities of the Department are guided by the Fisheries and Aquaculture Policy of 2001, the Fisheries Conservation and Management Act of 1997, and the Fisheries Strategic Plan that outlines the different strategies for the development and management of the sector.

GENERAL LEGAL FRAMEWORKS

The fisheries regulations governing the Malawi fisheries are contained in the Fisheries Conservation and Management Regulations 2000. The regulations are categorized in order to cater for the needs of the various functions of fisheries management, such as protection of the breeding stock, the juvenile fish and fishing effort. Broadly, these are in the form of closed seasons, closed areas, mesh size restrictions, minimum takeable size of fish, fishing net maximum headline length, and fishing licences.