MINISTRY OF FOOD AND AGRICULTURE

INFORMATION ON FISHERIES IN GHANA

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April 2004
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PROFILE OF GHANA

Ghana is located on the west coast of Africa and is bounded on the north by Burkina Faso, on the west by Côte d'Ivoire, on the east by Togo and on the south by the Gulf of Guinea. The climate is tropical with ambient temperature generally between 21 and 32°C (70-90°F). The difference in climatic conditions within the year is due mainly to the amount and distribution of rainfall. The population of Ghana is estimated at about 18.4 million (2002) and grows at a rate of 2.5% per annum. Most of the population is concentrated in the southern to middle part of the country.

Ghana has a total land area of 238,537 km² (92,100 sq. miles), a coastline of about 550 km long and a relatively narrow continental shelf. With a surface area of around 8,480km², the Volta River basin dominates the country's riverine system. Ghana is richly endowed with natural resources including mineral wealth, extensive forests resources, water bodies and arable land suitable for crop and livestock production.

Ghana has a multiparty parliamentary democracy, with an executive President. There are 10 Administrative Regions and the 110 Districts. There is a Local Assembly in each District that ensures grassroots participation in the formulation and implementation of government policies and the general development of their areas of jurisdiction. The economy of Ghana traditionally depends on primary production and exports of cocoa and minerals. From reforms that started in the early 1980s, the Government expects restoration of a healthy growth in the economy and to raise the living standard of the population. The private sector plays a leading role in the economic development process of the country.

THE AGRICULTURAL SECTOR

Agriculture contributes 45-50% of the GDP and about 75% of export earnings of Ghana. It also provides a livelihood for about 70% of the population and raw materials for agri-industries. Ghana's agriculture is predominantly smallholder, traditional and rain-fed. Fish is the country's most important non-traditional export commodity and the fisheries sub-sector accounts for about 5% percent of the agricultural GDP. The fisheries sub-sector is dominated by private sector capture fisheries, and fish farming to a lesser extent. The fisheries and fish farmers are represented by producer organizations the umbrella body of which is the National Fisheries Association of Ghana (NAFAG).

The Directorate of Fisheries of the Ministry of Food and Agriculture is responsible for policy formulation and implementation, management and control of the fishing industry under the general guidance and direction of a Minister of State for Fisheries and a Fisheries Commission. The Directorate has five operational divisions including Marine Fisheries Research Division that undertakes research and monitoring of various aspects of fish and fisheries. Under the current Fisheries Act the Directorate of Fisheries and the Fisheries Commission are to be integrated into one body.

The legal basis for fisheries management in Ghana involved ordinances, laws and regulations. The current law on fisheries is the Fisheries Act 625 of 2002, which conforms to relevant sections of the FAO Code of Conduct for Responsible Fisheries. The Directorate of Fisheries has also elaborated fishery management plans for marine and Lake Volta fisheries and is preparing Fisheries Regulations to give effect to the Fisheries Act 625.
THE FISHING INDUSTRY

The fishing industry comprises marine fisheries, freshwater fisheries and aquaculture. The marine fishing industry consists of three main sectors, namely, artisanal, inshore and industrial sectors. There are nearly 10,000 dugout canoes and about 123,000 fishermen in the marine artisanal sector. These operate from 304 landing centres in 185 fishing villages. The inshore fleet consists of about 230 locally built wooden-hulled trawler/purse seiners that operate from eight landing centres. The industrial sector is made up of large-sized trawlers, shrimpers, tuna boats (pole-and-line) and tuna purse-seiners that operate only from Tema and Takoradi. Only Ghanaian nationals are permitted to engage in artisanal and inshore fishing in Ghana. All tuna vessels are operated on joint-venture basis with Ghanaians having at least 50% shares as required by the Fisheries Act 625 of 2002.

Exploited resources in Ghana’s marine waters include small pelagic species, large pelagic species and demersal species. The fisheries are affected by the seasonal upwelling that occurs in Ghanaian coastal waters. The high biological activity that takes place in the sea during the upwelling periods (December - February and July - September) increases production of fish food and most marine fishes spawn during this period. The stocks become more readily available to the fisheries for exploitation.

Fishing in Lake Volta contributes about 90% of the total inland fishery production in Ghana. About 80,000 fishers and 20,000 fish processors and traders are engaged in this fishery. Only planked canoes, numbering about 17,500 are used in the Lake Volta fisheries, thus the fishery is solely artisanal. Fish landings are dominated by cichlid species.

AQUACULTURE

Fish farming is relatively new to Ghanaians but its practice is becoming widespread in many parts of the country. There are about 1,000 fish farmers and over 2000 ponds with a total surface area of about 350 ha. Both extensive and semi-intensive cultures are practised involving tilapia and catfish species. At present, only experimental shrimp farms exist in Ghana. The development of fish farming in Ghana has been hampered by a number of problems which include weak extension services, inadequate supply of good quality fingerlings, lack of knowledge of fish pond management and high cost of pond construction. Government has taken some measures to accelerate the development of fish farming in Ghana. These include provision of a bulldozer, on hire purchase, to the Ashanti Fish Farmers Association (FFA), training of gangs of youth in areas with high aquaculture potential, to construct ponds for farmers and establishment of a hatchery near Kumasi to provide good quality fish fingerlings to fish farmers located in that part of the country.

POST HARVEST UTILIZATION

Post harvest utilization of landings is an issue of great concern in Ghana. The traditional methods of smoking, salting and drying are used to preserve most of the fish caught by the artisanal and inshore fleets. In the industrial sector, the fish is usually frozen at sea. The two tuna canneries in Ghana are located in Tema. Fish and seafood exports from Ghana are made up of tuna (whole, loins and canned), frozen fish (mostly demersal species), shrimps, lobsters, cuttlefish and dried/smoked fish. The country is doing its best to stay in compliance with European Union (EU) regulations regarding the processing and export of fish.
FISHERIES INFRASTRUCTURE

There are berthing facilities for large industrial fishing vessels at the deep-water ports of Tema and Takoradi. Inshore vessels operate from only eight centres along the coast; four of these centres (Tema, Elmina, Sekondi and Takoradi) have good landing facilities. Canoes usually operate from open beaches without any infrastructure.

There are cold stores and ice plants in all major fish landing centres, especially in Accra, Tema, Sekondi and Takoradi but the capacity for ice production is quite limited.

A number of engineering and fabrication workshops are located in Tema, Accra and Takoradi. The PSC Tema Shipyard provides dry-docking and repair facilities for all categories of fishing vessels. The wooden-hulled inshore vessels lack such facilities.

INVESTMENT OPPORTUNITIES IN THE FISHERIES SUB-SECTOR

The fisheries sub-sector of the agriculture sector in Ghana has diverse opportunities for investment. Recommended areas are as follows:

i. Tuna Fishing (in joint-ventureship with Ghanaians);
ii. Post Harvest Utilization of landings;
iii. Fish Meal Production for aquaculture;
iv. Fish and Shrimp/Prawn Farming;
v. Mariculture;
vi. Manufacture of Fishing Nets, Netting and other Fishing Materials; and
vii. Repair and Maintenance of Fishing Vessels
THE FISHING INDUSTRY

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1.0 PROFILE OF GHANA

1.1 Location and Climate
Ghana is located on the west coast of Africa, about 750 km north of the equator and approximately between latitudes 4° N and 12° N and longitudes 3° W and 1° E. Tema, the industrial city, which is adjunct to Accra, the capital city of Ghana, is on the Greenwich Meridian. Ghana is bounded on the north by Burkina Faso, on the west by Côte d’Ivoire, on the east by Togo and on the south by the Gulf of Guinea.

Ghana has a tropical climate with ambient temperature generally between 21 and 32° C (70-90° F). The difference in climatic conditions is due mainly to the amount and distribution of rainfall. There are two rainy seasons, from March to July and from September to October, separated by a short cool dry season in August and a relatively long dry season in the south from mid-October to March. Annual rainfall in the south averages 2,030 mm but varies greatly throughout the country, with the heaviest rainfall in the south-western part. There is only one rainy season (September to October) in the northern part of the country.

The dominant wind in Ghana is the south-westerly monsoon which is a relatively weak wind reaching a maximum speed of only 5 ms⁻¹ during the boreal summer.

The coastal oceanography of the western Gulf of Guinea (i.e. the area between Côte d’Ivoire and Benin) is made up of a major upwelling season (July-September), a minor upwelling season (December-January) and warm (or thermocline) periods between them. During the upwelling periods sea temperature falls and high biological activity takes place to increase production of fish food. Most fishes spawn during this period and stocks are more readily available to the fishers for exploitation.
1.2 The Land and Natural Resources

Ghana has a total land area of 238,537 km² (92,100 sq. miles), a coastline of about 550 km and a coastal area consisting of plains and numerous lagoons. The land is relatively flat and the altitude is generally below 500 m above sea level, with more than half of the country below 200 m above sea level. In the north, vegetation is predominantly savannah, while the south has rain forest interspersed with savannah.

The country has an extensive road network that links all the regions and district capitals. There are motorways of concrete and asphalt, highways and feeder roads of bitumen. Most roads are motorable all year round. There are international airports in Accra (the capital city), Kumasi and Tamale in the northern part of the country. Airports in Takoradi, Sunyani, Wa and Tamale are used only for internal flights.

Ghana is richly endowed with natural resources that include mineral wealth, extensive forest resources, water bodies and arable land suitable for crop and livestock production. The mineral resources include sizeable deposits of gold, diamond, bauxite and manganese. The forests hold game, wildlife and other forest products.

The country has a relatively narrow continental shelf that breaks around 75-120 m depth and has a total area of about 24,300 km². Ghana ratified the UNCLOS III Convention in June 1983 and has therefore jurisdiction over 200 nautical miles of Exclusive Economic Zone (EEZ) with a surface area of nearly 200,000 km².

The Volta River basin dominates the country's riverine system and includes the 8,480km² Lake Volta, formed behind the Akosombo hydroelectric dam.

1.3 The Population, Education and Health

The population of Ghana is estimated at about 18.4 million (2002) and grows at a rate of 2.5% per annum. Most of the population is concentrated in the southern part of the country with the highest density occurring in urban and cocoa producing areas. There is complete freedom of religion in Ghana; the population comprises Christians, Muslims and Traditional Religions with Christianity being the dominant religion.

The country's literacy rate in 2000 was about 54 %. The educational system provides for a nine-year free, compulsory, universal, basic education, which is followed by a middle-level 3-year
secondary/technical/Commercial or Vocational education. The tertiary level consists of Teacher Training Colleges, and diploma and degree awarding institutions. There are also specialised management, technical and vocational institutions responsible for human resource development, which ensure an immediate availability of skilled and trainable labour force as well as technical and managerial personnel. In addition, there are special international schools that follow the curricula of some foreign examination bodies.

Ghana has a good health delivery service. All regional and district capitals as well as most towns have hospitals, polyclinics or clinics. The two (2) teaching hospitals in Accra and Kumasi have facilities for treating special cases.

1.4 The Government
Ghana has a multiparty parliamentary democracy, with an executive President, based on a constitution, which guarantees the separation of powers between the executive, legislature and the judiciary. The presidency has a four-year term and an incumbent can serve for a maximum of two terms.

There are 10 Administrative Regions and 110 Districts. A decentralised central government administration has been fostered at local government level where there are 10 Regional Co-ordinating Councils, 110 Metropolitan, Municipal and District Assemblies which serve to involve grassroots participation in the formulation and implementation of government policies and the general development of their areas of jurisdiction.

1.5 The Economy
The economy of Ghana traditionally depends on primary production and exports of cocoa and minerals. Agriculture remains the dominant sector of the Ghanaian economy. About 60% of the Ghana labour force is employed in agriculture whose production is concentrated on staple food crops and cocoa. The service sector is the second largest employer consisting largely of trade and public sector services. The industrial/manufacturing sector is next in importance.

Food expenditures account for a significant component of household budgets and, hence, agriculture has a significant influence on real wages, the rate of inflation, private savings and investment and overall macro-economic performance.

Ghana has a market-determined exchange rate system. The national currency is the Cedi (c), which was converted at GH$8,900 for 1 US$ in December 2003.

In the 1980s, the government introduced reforms to:

a) Restore and sustain macro-economic stability;
b) Improve the efficiency of public sector resource management; and
c) Create an incentive framework to enhance efficiency, encourage savings, investment and provide an enabling environment for private sector development.

The Government expects restoration of a healthy growth in the economy; improve poverty levels significantly enough to raise the living standard for the population. This could generate robust demand for goods and services to trigger supply response, and lead to robust and sustained rise in private savings and investment.
The private sector plays a leading role in the economic development process of the country. Co-ordinating this role is the Private Enterprise Foundation (PEF), an advocacy institution responsible for rapid and unimpeded private sector development. The policy thrust is to lessen public intervention and create an enabling environment for investment by engaging in continuous dialogue and establishing partnership between government, private sector, and developmental stakeholders.

Ghana is a member of the Multilateral Investment Guarantee Agency (MIGA) of the World Bank, which provides investment guarantees against non-commercial risk for investments in developing countries. Additionally, the Government has entered into bilateral Investment Promotion and Protection Agreements (lPPAs) with a number of countries to further enhance the protection and security of the investment regime.

1.6 The Agricultural Sector

Agriculture contributes 45-50% of the GDP and about 75% of export earnings of Ghana. It provides a livelihood for about 70% of the population and raw materials for agri-industries.

Ghana’s agriculture is predominantly smallholder, traditional and rain-fed. There is some degree of specialization zones; tree crops are mainly grown within the forest zone, mixed cropping of cereals and root crops are found in the transition zones with livestock in the savannah zones. Irrigated agriculture covers about 11,000 ha out of a total 6 million ha of land under cultivation. There is some integration of fish and livestock into the crop farming systems.

Examples of Landuse and Agricultural Produce

The resource base for sustained growth in agriculture is good but there is the need to properly manage it through adequate policy formation and implementation. There are large untapped agricultural land, good forest and fisheries resources. Total land area suitable for agriculture is 13 million ha. The local climate allows diverse agricultural activities all year round.
1.7 The Fisheries Sub-sector

Fish is the country’s most important non-traditional export commodity and the fisheries sub-sector accounts for about 5 percent of the agricultural GDP. In 2002, export earnings from fish and fishery products amounted to nearly 96 million US Dollars.

Fish is a preferred source of animal protein in Ghana, and about 75 percent of the total domestic production of fish is consumed locally. Fish is expected to contribute 60 percent of animal protein intake. The per capita consumption is estimated to be about 25 kg per annum.

The fisheries sub-sector of agriculture in Ghana is based on resources from the marine, inland (freshwater), and lagoon environments and also from aquaculture. Fishing activities in the marine sector range from artisanal through semi-industrial to industrial operations and exploiting both pelagic and demersal fishery resources. The Volta Lake, reservoirs, fishponds and coastal lagoons are the main sources of freshwater fish.
1.8 Fisheries Administration in Ghana

The Directorate of Fisheries of the Ministry of Food and Agriculture is responsible for policy formulation and implementation, management and control of the fishing industry under the general guidance and direction of a Minister of State for Fisheries and a Fisheries Commission. The Fisheries Commission advises the Minister in all matters pertaining to the industry. The current Fisheries Law (Act 625 of 2002) provides for the integration of the Directorate of Fisheries and the Fisheries Commission into a more robust Commission for the regulation and management of the utilization of fisheries resources of Ghana and the coordination of the policies in relation to them.

The Mission of the Fisheries Directorate “…is to promote sustainable exploitation and responsible utilization of fishery resources of Ghana through sound management practices, research, appropriate technological development for both culture and capture fisheries, effective extension and provision of other support services to fish farmers, fishermen, fish processors and traders for improved income and fish food security”.

The Directorate is under the leadership of a Director, and has five operational divisions namely; Marine Fisheries Management Division (MFMD), Inland Fisheries Management (and Aquaculture) Division (IFMD), Marine Fisheries Research Division (MFRD), Monitoring, Control and Surveillance Division (MCSD) and the Finance and Administration Division (FAD).

Organizational Chart for Fisheries Administration in Ghana at the National Level
The following are the functions of the Directorate of Fisheries:
1. Facilitate the formulation and implementation of appropriate policies in support of a sustainable fishing industry;
2. Ensure the implementation of the Fisheries Law and regulations;
3. Provide technical support to fishers, fish farmers, fish processors and traders on improved fisheries practices, efficient utilization and management of fisheries resources;
4. Play a facilitating role in development of fisheries infrastructure, input acquisition for fishers, fish farmers, fish processors and traders;
5. Initiate, coordinate, monitor and evaluate national programmes and projects in the fishing industry;
6. To collaborate with international organisations in the study and management of shared fish stocks;
7. To collaborate with the Human Resources and Management Division of MOFA in the development of skills of fisheries staff; and
8. To generate socio-economic data and information as a basis for improving the human capacity for the fishing industry.

The Marine Fisheries Research Division (MFRD) was set up as a follow-up of a Technical Assistance Programme of the UN Food and Agriculture Organisation, which started in 1962. Its mission was to conduct marine environmental and fisheries studies to help the Government of Ghana in its desire to modernise the fishing industry and manage the fishery resources. The Division undertakes research and monitoring in fisheries oceanography, fish and fisheries (stock assessment, fishery statistics, fish biology) and exploitation (fishing gear and techniques, technology transfer, etc).

1.9 Fisheries Associations in Ghana
The fisheries sub-sector is dominated by a private sector capture fisheries. Fishers and fish farmers in Ghana are represented by producer organizations. There is a long list of fisheries associations in Ghana that exist for the interest of the fishers, fish processors and fish exporters. Some of these associations are national in character while others are regional or local. Some of the principal associations are:

- Ghana Inshore Fisheries Association,
- Ghana Tuna Association,
- National Inland Canoe Fishermen Council,
- Ghana National Canoe Fishermen Council,
- National Association of Canoe Fishermen,
- Ashanti Fish Farmers Association,
- Fish Processors Association of Ghana, and
- Tuna Traders Association
The National Fisheries Association of Ghana (NAFAG) is the umbrella fishers’ association and has the following objectives:

a) To promote, develop and protect the industry of fishing in Ghana and in particular to protect the interests of the members of the Association in so far as they carry on the said industry in Ghana.

b) To consider, represent and give effect to the views and opinions of the members in regard to all matters connected with the said industry in Ghana.

c) To promote or oppose legislation or other measures which could or might affect the members in the carrying on of the said industry in Ghana.

d) To collect and distribute statistics and information of any kind which affect or may affect the members of the Association.

e) To undertake the settlement by arbitration of all trade disputes.

f) To negotiate with the Union of Seamen/Trades Union Congress or other bodies, service conditions for the engagement of seaman of all grades.

g) To prepare and draw up in consultation with the Union of Seamen/the Trades Union or any other body, standard set or sets of Service Contract to be known as “The National Marine Fisheries Association Service Contract” (or such other name as the Association may determine) which may be adopted by the members of the Association for the engagement of Seamen on their vessels.

The modus operandi of fisheries management and enforcement of fisheries regulations can succeed only with the fullest participation of the associations, local authorities and the fishing communities. For this reason, the Directorate of Fisheries is engaged in education of the fishing communities and fisheries associations to actively participate in the management of the fisheries resources. This cooperation between government agencies and the fisheries associations appears to be the way forward in ensuring the sustainable exploitation of fisheries resources, the survival of fisheries enterprises and the strength and sustainability of fisheries associations.

2.0 THE FISHING INDUSTRY

The fishing industry comprises marine fisheries, freshwater fisheries and lagoon fisheries.

2.1 Marine Fisheries

2.1.1 Fishing Fleets
The marine fishing industry in Ghana consists of three main sectors, namely, small scale (or artisanal), semi-industrial (or inshore) and industrial sectors. The table below shows the number of operational vessels in each fleet in 1997-2002.
The nearly 10,000 dugout canoes used in the marine artisanal sector operate from 304 landing centres in 189 fishing villages. In 2001, the number of marine artisanal fishermen was put at over 123,000.

The inshore fleet consists of locally built wooden-hulled vessels measuring between 8 and 37m long and are used for purse seining during the upwelling (or sardineella fishing) seasons, and trawling during the off-season. The number of vessels has been decreasing over the past 15 years due to decline in target species and high cost of operation and maintenance.

Only Ghanaian nationals are permitted to engage in artisanal and inshore fishing in Ghana.

The industrial sector comprises large, steel-hulled, foreign-built trawlers, shrimpers, tuna baitboats (pole-and-line) and tuna purse-seiners. All tuna vessels are operated on joint-venture basis in which Ghanaians are to have 50% shares as required in the Fisheries Act 625 of 2002.

1.2.2 Fishing Gear

In the artisanal fishery, several types of fishing gears are used; these include:

- a wide variety of gilling and entangling nets,
- seine nets (purse and beach seines),
- handlines, and
- castnets.

At present, the inshore fleet operates only two types of gear, namely, trawl nets and purse seines. Gears operated by the industrial fleet comprise bottom trawls, shrimp trawls, tuna purse seines and tuna pole-and-line with live bait of anchovy.
2.1.3 Fishery Resources

In Ghana, there are fisheries for small pelagic species of the families Clupeidae (sardine), Scombridae (chub-mackerel) and Engraulidae (anchovies) and large pelagic species of the family Thunnidae (tunas). Fishing for sardinellas (Sardina aurita and Sardina maderensis) is one of the most important economic activities in the Ghanaian fishing industry. Large variations in landings of sardinellas are experienced from year to year due to changes in both anthropogenic and natural factors. The former is exemplified by changes in fishing effort and fishery strategies and the latter by changes in the duration and intensity of the seasonal coastal upwelling. The abundance of the chub-mackerel (Scomber japonicus) is also variable from year to year. The potential yield of the four most important small pelagic species (round sardinella,ENCH, Scomber japonicus, sardina, chub mackerel and anchovy) is around 200,000 MT per annum.

The main commercial tuna species, which occur in Ghanaian waters, are the yellowfin (Thunnus albacares), skipjack (Katsuwonus pelamis) and bigeye (Thunnus obesus). Recent assessments undertaken by the International Commission for the Conservation of Atlantic Tunas (ICCAT) indicate that yellowfin and bigeye tuna resources in the Atlantic are being optimally exploited and that skipjack tuna is under-exploited. Total landing of the three major tuna species by Ghanaian vessels is about 60,000 – 80,000MT per annum.

Some of the most valuable demersal species

There are also important fisheries for demersal species of the families Sparidae, Lutjanidae, Mullidae, Pomadasyidae, Serranidae, Polynemidae and Penaeidae. The potential yield of demersal fishes on Ghana’s continental shelf is estimated to be up to 55,000 MT per annum. In the last decade annual landings averaged about 50,000 MT.
In addition to the catch of the commercial shrimpers, shrimps are also caught by all fleets (except tuna fishing vessels), mainly from shallow waters and close to estuaries. The shrimp species available in Ghanaian waters are Penaeus notialis and Parapeneoplosis atlantic.

2.1.4 Fish Landings

Fish landings in the last six years, arranged by fleet and fish species, are presented in Annex A; a longer series is shown in Figure 1. The artisanal sector produces about 70-80% of the total annual marine fish catch; this is made up of mainly small pelagic fish species - sardinellas, mackerels and anchovy.

The semi-industrial fleet exploits sardinellas, mackerels and various demersal species. The average total landing of the fleet is about 5000 MT per annum. The fish landed by the industrial vessels are mainly demersal species like seabreams, cuttlefish and croakers. Shrimp production has been on the decline over the past few years. As a result, some of the shrimp fishing companies have converted their shrimp fishing vessels into bottom trawlers for fishfish.

The main species caught by the tuna vessels are skipjack, yellowfin and big-eye. The Fisheries Law requires that at least 10% of landings of commercial tuna vessels be sold on the local market (i.e. not to be exported). About 67% of the landed tuna is processed into lioins or canned mainly for export; the rest is sold locally.

![Figure 1: Total Marine Fish Landings in Ghana by Ghanaian fishing vessels and showing contribution by canoes.](image)

2.2 Freshwater Fisheries

Fishing in Lake Volta contributes about 90% of the total inland fishery production in Ghana. Formed about 40 years ago, Lake Volta, with a shoreline length of about 5,200 km and a length of about 400 km (from north to south), is the largest man-made lake in Africa. A tremendous fishing opportunity was offered by the creation of the lake and fishers from various parts of Ghana moved into the lake area. At present, about 80,000 fishers and 20,000 fish processors and traders are engaged in this fishery.

2.2.1 Fishing Fleets

Only planked canoes are used in the Lake Volta fisheries, thus the fishery is solely artisanal. There are about 17,500 such canoes actively fishing in the Lake Volta.

2.2.2 Fishing Gears

The types of fishing gears being operated in the Lake Volta fishery include the following:

- castnets,
- gill nets,
- hook-and-line, and
- traps.
2.2.3 Fishery Resources
During its formative years, over 100 fish species were found to inhabit the lake. Cichlids accounted for about 50% of the catch in those years. Nearly 40 years on, the commercial fish landing are still dominated by cichlids species.

2.2.4 Fish Landing
Annual landings of freshwater fish in Ghana are shown below. The top ten species, in terms of landings are as follows: Tilapia (38.1%), Chrysichthys spp. (34.4%), Synodontis spp. (11.4%), Labeo spp. (3.4%), Mormyrids (2.0%), and Heterotis spp. (1.5%). Other species of commercial importance are Carias spp. Schilbeida, Odaxothrissa spp. and Bagus spp. Significant seasonal and annual variations are recorded in fish production from inland sources.

2.3 Lagoon Fisheries
There are more than 50 lagoons of various sizes located in the coastal area of Ghana. These lagoons provide an important source of protein and other resources for the communities that live around them. The lagoons also contribute significantly to the biodiversity and status of fish stocks in coastal waters as many fish species spend part of their life cycle in these lagoons.

Currently, these lagoons are under stress from man-induced activities (e.g., physical alteration and destruction of habitat as a result of changing land use and pollution). The mangrove forests that fringed many of the lagoons have been lost. Consequently, fisheries in the lagoons are threatened mainly due to irresponsible fishing but also from environmental degradation.

2.3.1 Fishing Gears and Fish Species
Fisheries in the lagoons are solely artisanal and yet they play an important role in the economy of some coastal communities. Many fishing gears are used in the fishery; these include cast nets, dragnets and traps of various types. Tilapia (mainly Serathorelon melanoterion or the Blackchin tilapia) are the most abundant species in all the lagoons.

A number of freshwater and marine fish species are also caught in the lagoons. These include Tilapia zillii and Claraia spp. (mud fish) in the former and Ethmalosa fimbrata (bonga) and Sciaenichromis macrurus (sole) in the latter. Some marine species like Lutjanus fulvus (snapper), Caranx hippos (jack mackerel), and Epinephelus aeneus (groupers) only make short incursion into the lagoons.

2.3.2 Management
In Ghana, management of fisheries in lagoons is linked to traditional beliefs in the form of taboos and other cultural practices. With the introduction of Christianity and other western practices and greater mobility of fishers, many of the traditional rules and regulations are no longer adhered to. There is therefore a need for the adoption of effective conservation measures for sustainable exploitation of the fishery resources of the lagoons.
3.0 AQUACULTURE

Even though fish farming is new to Ghanaians, its practice is becoming widespread in the country, especially in the Ashanti, Brong Ahafo, Central, Eastern, Volta and Western Regions. Fish farming has become a credible option for increasing fish production in Ghana since fish production from the sea and the Lake Volta appears to have reached maximum possible levels. In spite of its potential, the rate of development of aquaculture in Ghana has been much slower than desired.

3.1 Culture Methods and Species Cultured
There are about 1,000 fish farmers working on over 2000 ponds with a total surface area of 350 ha. Both extensive and semi-intensive cultures are practised. Extensive culture is associated with dugouts and small reservoirs, which are fished and restocked. Fish are cultured semi-intensively in earthen ponds either as monoculture of tilapia or polyculture of tilapia (especially Oreochromis niloticus) and catfish.

3.2 Culture of Shrimps
Shrimp/prawn farming has not caught on in Ghana even though research has shown that there is great potential for commercial farming of the local shrimp species Penaeus notialis and P. kerathurus. The culture of the freshwater prawn, Macrobrachium spp, is also being investigated.

The first real attempt at introducing commercial shrimp farming in the country in recent past dates back to the early 1990s when a company imported Penaeus monodon post larval (PL) shrimp from Thailand and tried to grow them in makeshift hatcheries at the Volta River estuary at Ada. Though the initial growth trials were successful, the project could not take off due largely to the initial scale of operation and other financial problems. A frantic and systematic shrimp development program, using local shrimp species, Penaeus notialis and P. kerathurus has been underway in the lower Volta since 1992. Research into various aspects of the development of local shrimp species has been carried out with remarkable success.

3.3 Aquaculture Production
Total production from aquaculture in Ghana is estimated to be only 1,200 MT per annum.

3.4 Constraints
The smooth and orderly development of fish farming in Ghana is hampered by a number of problems, which include:

1. weak extension services,
2. inadequate supply of good quality fingerlings,
3. lack of knowledge of fish pond management, and
4. high cost of pond construction,

3.5 Recent Developments in Aquaculture
Government recognizes that the way in which aquaculture was promoted in the past led to disappointing results. However it also acknowledges that there are lessons to be learnt which could pave the way for future development of the sub-sector. Aquaculture is now considered an integral part of development activities that fall under the agriculture sector and a proposed Aquaculture Policy focuses on the following:
- Increased private sector productivity of all types of farm inputs (i.e. improved seeds, breeding stocks, farm labour and management),
- Diversification of range of products and services,
- Increased farm yields and improved access to marketing with a view to increasing farm incomes, contributing to poverty reduction and creating the image of aquaculture as a viable economic activity.

Scenes from the Ministry of Food & Agriculture’s Pilot Aquaculture Centre at Kona-Odumasi in the Ashanti Region

The Government has adopted the following measures, among others, to accelerate the development of fish farming in Ghana:

1. Provided a bulldozer, on hire purchase, to the Ashanti Fish Farmers Association (FFA) Under the agreement for its use, the FFA is to pay the full cost of the bulldozer by hiring it out for the construction of fishponds;
2. Instituted training of gangs of youth in areas with high aquaculture potential, to construct fishponds for farmers;
3. Instituted training of extension staff (of the Ministry of Food and Agriculture) and farmers in fish farming;
4. Promoting the formation of Fish Farmers Associations;
5. Established a hatchery near Kumasi to provide good quality fish fingerlings to fish farmers located in that part of the country and
6. The Water Research Institute of the Council for Scientific and Industrial Research also has a hatchery at Akosombo in the Eastern Region.

Fish are cultured semi-intensively in earthen ponds either as monoculture of tilapia or polyculture of tilapia and catfish. Cage and pen culture may be practised in lakes, lagoons and rivers. Cage culture in ponds has recently been introduced and is being practised on one commercial fish farm. Pen culture with tilapia, recently introduced in the Keta lagoon, has been very successful. For any such operation in the Lake Volta, permits are required from the Volta River Authority (VRA), the Water Resources Commission and the Environmental Protection Agency (EPA) before commencement of the operations.
4.0 POST-HARVEST UTILIZATION OF LANDINGS

4.1 Traditional Fish Processing
Smoking, salting, drying, icing, freezing, cold storage and canning are used in preserving and processing fish in Ghana. The traditional methods of smoking, salting and drying are used to preserve most of the fish caught by the artisanal and inshore vessels. Smoking is the most popular processing method and in general, about 80 per cent of the fish is consumed smoked. The type of fish determines, to a large extent, the method used to preserve it and this is related to the preferences of consumers.

4.2 Industrial Fish Processing
When industrial tuna fishing started in 1962 by Messrs Star Kist Foods Inc. of USA, over 80% of the tuna was exported deep-frozen to Star Kist’s Cannery in Puerto Rico. The export of deep frozen tuna to Puerto Rico came to an end in August 1994 when Star Kist established the Pioneer Food Cannery (PFC) in Tema to purchase and process all exportable tunas landed in Ghana into loins/fully-canned products. The only other operational tuna processing plant is Ghana-Agro Foods Company (GAFCO) also located in Tema. This is smaller than the PFC plant.

Industrial processing of tuna

There are two major tuna canneries in Ghana; these are located in Tema. Products from these plants go to European Union (EU) countries, USA, other African countries and domestic markets.
Fish and seafood exports from Ghana are made up of tuna (whole frozen, tuna loins and canned products), frozen fish (mostly demersal species), prawns, shrimps, crabs, lobsters, cuttlefish and dried/smoked fish. Exportable demersal fish species include groupers (Epinephelus spp), seabreams (Sparidae), snappers (Lutjanidae), red mullet (Pseudupeneus prayensis), sardines (Ommatiasidae) and John dory (Zeus faber). With the exception of canned tuna, export of value-added forms of fishery products is very small and many exporters only trade in whole/round form of various species, thus obtaining minimum earnings from the trade. To maximise earnings from fish export, it is essential that the products be diversified, especially with value-addition.

Through a sustained effort to improve and maintain hygienic conditions at landing centres, the country is enforcing European Union (EU) regulations regarding the processing and export of fish, particularly as related to the principles of HACCP (Hazard Analysis Critical Control Points).

Some Canned Tuna Products

4.3 Manufacture of Feed for Aquaculture

The Ghana-Agro Food Company (GAFCO), located in Torn, is a major feed manufacturing company in Ghana. The company has the capacity to deliver feed to any fish farmer upon request and according to the feed formulation requirements of the farm. Feeds from GAFCO are widely available and used in the country. There are several other small feed manufacturing plants in the country.
5.0 FISHERIES INFRASTRUCTURE

5.1 Landing facilities
There are berthing facilities for large industrial fishing vessels at the deep-water ports of Tema and Takoradi. Inshore vessels operate from only seven centres along the coast; four of these centres (Tema, Elmina, Sekondi and Takoradi) have good landing facilities for this class of vessels. The Ghana Ports and Harbours Authority manages all ports and harbours in Ghana and provide excellent facilities for bunkering, stowing, and handling. Electricity and water supplies are widespread and stable.

Landing facilities for artisanal fishing crafts are not sufficiently developed. The canoes usually operate from open beaches and have to go through violent surf to and from fishing. This occasionally results in serious accidents and damage to canoes. There are improved landing facilities for canoes at Tema, Elmina and Sekondi.

On Lake Volta, there are well-developed landing facilities at Kpando-Torkor (in the Volta Region) and Yei, (in the Brong Ahafo Region). At Yei, the landing facility is part of a modern Community Fisheries Complex, which also has processing, and storage facilities and a wholesale market.

5.2 Cold Storage and Ice Production
There are cold stores and ice plants in all major fish landing centres, especially in Accra, Tema, Sekondi and Takoradi. The installed cold storage capacity in the country is in excess of 180,000 MT.

The capacity for ice production is quite limited, despite the high demand for ice for fishing operations and for social functions.

5.3 Shipbuilding, Ship Repairs and Maintenance
At present, there is a limited capacity for boat building in Ghana compared to the situation two decades ago. This is due to high cost of materials and low demand for fishing vessels.

A number of engineering and fabrication workshops are located in Tema, which is the hub of the fishing industry in Ghana. A number of private companies in Tema, Accra and Takoradi operate engineering workshops and a foundry for all kinds of repairs. The PSC Tema Shipyard provides dry-docking and repair facilities for all categories of fishing vessels.

5.4 Skilled Manpower in the Fishing Industry
Ghana boasts of qualified and experienced personnel for the fishing industry. Throughout West Africa, Ghanaian fishermen are known for their excellent skills.

Training of seagoing personnel, for both the inshore and industrial fishing fleets, is done at the Regional Maritime Academy located at Nungua, near Tema. The Academy trains deck, bridge and engineering personnel.
6.0 FISHERIES POLICY, LAW AND REGULATIONS

The development of fisheries policy in Ghana has followed the development of the fishing industry. The legal basis for fisheries management in Ghana evolved from ordinances into laws and regulations. The first legal backing for the rules controlling fisheries was the Fisheries Ordinance enacted in 1946 as Cap 165. This was followed by Fisheries Regulations to give effect to Cap 165. With time revisions were made to meet the challenges of the fast-developing fishing industry.

The law was continuously reformed to:

- sustain and regulate the exploitation of national fishery resources;
- improve Ghana’s access to international markets within the domain of the international fish trade;
- obtain optimum benefits for Ghanaians as owners of fish-related enterprises, as employers of the fishing industry, as consumers of fish products and as beneficiaries of foreign exchange earnings from fish trade;
- enhance investment in a private sector-driven industry; and
- improve the fishery management system.

Currently, the law on fisheries in Ghana has been consolidated into the Fisheries Act of 2002 (Act 625).

As regards fish production it is noteworthy to observe that the current Fisheries Act (2002) conforms to the relevant sections of the FAO Code of Conduct for Responsible Fisheries with particular emphasis on gear selectivity and an effective institutional framework. The Fisheries Act also gives legislative backing to the recently established Monitoring, Control and Surveillance Division of the Fisheries Directorate with clearly defined legal powers to regulate fishing operations. The Division draws strength from the inclusion of a number of security agencies, especially the Ghana Navy, in its surveillance operations.

The Directorate of Fisheries under the Ministry of Food and Agriculture has also elaborated fishery management plans for marine and lake Volta fisheries. A new set of Fisheries Regulations to give effect to the Fisheries Act 625 (2002) is under preparation.
7.0 INVESTMENT OPPORTUNITIES IN THE FISHERIES SUB-SECTOR IN GHANA

The fisheries sub-sector of the agriculture sector in Ghana has diverse opportunities for investment. Recommended areas are elaborated below.

7.1 Tuna Fishing (in joint-ventureship)
There are about 40 tuna vessels registered under the Ghana Flag and operate mainly from the Port of Tema. The Fisheries Act allows foreigners to partner Ghanaians in the exploitation of the tuna resources, mainly for export.

7.2 Post Harvest Utilization
There are two operational tuna processing plants and other smaller plants that process mainly demersal fishes and cephalopods both for export and the local markets, especially in the hospitality industry. There are opportunities for production of fish fillets, steak, etc. using locally caught fish.

7.3 Fish Meal Production
There is great potential for the manufacture of feed mill for the aquaculture, poultry and livestock industries in Ghana as the major inputs are readily available locally. For example, anchovies abound in Ghanaian waters, especially from September to January, and annual landings averaged about 67,000 MT in the last seven years. The fish offal from the two major tuna canneries, amounting to about 12,000 MT per annum, is another important source of protein for fish meal production. Soya and maize are also available in the country.

7.4 Finfish and Shrimps/Prawns Farming
Ghana is well drained and has vast areas suitable for aquaculture development. With the assistance of the Food and Agriculture Organisation (FAO) the Ministry of Food and Agriculture has mapped out areas in Ghana that are suitable for general aquaculture, including shrimp and prawn farming. At present only a small fraction of the area (less than 0.05%) is being used for pond culture.

The possibility also exists for the production of fish in cages in dams and reservoirs in the country. Ghana's irrigation policy allows 5% of all irrigation sites to be used for aquaculture.

7.5 Mariculture
There appears to be a high potential for the culture of fish in marine, estuarine and lagoon environments although no serious work has been done in this area. In recent years, there has been interest in pen culture in coastal lagoons in Ghana. In the Keta lagoon for example, a project involving a Non-Governmental Organisation and local fishers has been successfully implemented.

7.6 Manufacturing of Fishing Nets and Netting Materials
There is high demand for fishing inputs such as nets, floats, ropes and twines for the 10,000 marine canoes and 17,500 canoes on the Lake Volta and also for the 250 inshore and the 80 industrial fishing vessels. All these and fishermen fishing in the other rivers and impounded system create a sizeable market for fishing inputs. Similar market exists in the West African sub-region for such products. Efforts are being made by some entrepreneurs to produce these items locally but the bulk of it is still imported from abroad.

7.7 Repair and Maintenance of Fishing Vessels
Drydock and ship repairs facilities exist at Tema mainly for the industrial vessels. The other landing sites lack good repair facilities, especially for the wooden-hulled inshore vessels and the establishment of such a facility will be welcome.
## Annex A: Summary of Marine Fish Production in Ghana, 1996-2002

### 1. Canoes

<table>
<thead>
<tr>
<th>Year</th>
<th>Round Sardinella</th>
<th>Flat Sardinella</th>
<th>Chub Mackerel</th>
<th>Anchovy</th>
<th>Frigate Mackerel</th>
<th>SearaBreams</th>
<th>Burrito</th>
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### 2. Inshore Vessels

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<tr>
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<th>Flat Sardinine</th>
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### 3. Industrial (Ghana Waters)

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<th>Flying Gurnard</th>
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### 3. Industrial (Foreign)

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### Total

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<td>2590.1</td>
</tr>
<tr>
<td>6</td>
<td>PAIRED TRAWLERS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>i SEABREAMS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ii CUTTERFISH</td>
<td></td>
</tr>
<tr>
<td></td>
<td>iii BURRITO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>iv CAJAS FISH</td>
<td></td>
</tr>
<tr>
<td></td>
<td>v OTHERS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL P. TRAWLERS</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>TUNA VESSELS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>i YELLOWFIN</td>
<td>12242.4</td>
</tr>
<tr>
<td></td>
<td>ii BIGEYE</td>
<td>615.1</td>
</tr>
<tr>
<td></td>
<td>iii SKIPJACK</td>
<td>24384.7</td>
</tr>
<tr>
<td></td>
<td>iv OTHERS</td>
<td>112.5</td>
</tr>
<tr>
<td></td>
<td>TOTAL Tuna Vessels</td>
<td>37254.7</td>
</tr>
<tr>
<td>8</td>
<td>TOTAL LANDINGS</td>
<td>448904.5</td>
</tr>
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</table>
ANNEX B: CONDITIONS FOR JOINT VENTURESHIP IN TUNA FISHING IN GHANA

Type of Fishing
Tuna fishing is the only area where the fisheries law (Act 625 of 2002) allows foreign participation, i.e. Joint Ventureship.

Registration of Company
The company must be a limited liability company registered in Ghana with the Registrar General’s Department.

Share Structure
At least 50% of the shares in the tuna fishing vessel must be beneficially owned or controlled by a citizen of Ghana, the Government of Ghana, a company or partnership registered by law in Ghana which has its principal place of business in Ghana.

Management
To be able to sell catch in a European country or to the Pioneer Food Cannery (a tuna processing plant) in Ghana, the Managing Director of the fishing company must be a Ghanaian.

Crew Composition
The owners shall employ a master, officers and crew of which not less than 75% shall be Ghanaian.

Certificates Required on the Vessel
- Valid Class certificate
- Valid Survey report
- Valid Tonnage certificate
- Valid Oil pollution prevention certificate
- Valid Safety Equipment certificate
- Valid Radio and Communication Equipment certificate

Fish Transshipment/Export
All vessels must land their catch in Ghana before any transshipment or export is made. Foreign carrier vessels calling in Ghana for transshipment are required by law to obtain a transshipment licence upon payment of transshipment fees.

All fish exporters are required to complete Bank of Ghana Exchange Control Form A2. The amount of money to be repatriated into Ghana from fish exports is determined by the Bank of Ghana.

Acceptable Capacities of Tuna Fishing Vessels
Tuna pole and line (bait boat) and the Tuna purse seiners are the main ones operated in Ghana.
ANNEX C: PROCEDURE FOR ACQUIRING A FISHING LICENCE TO OPERATE A FISHING VESSEL IN GHANA

- Register a company in Ghana at the Registrar General’s Department and get the certificate of registration and company’s code. Shareholding should be 100% Ghanaian for trawling and shrimper operations and at least 50% Ghanaian for tuna vessel operation.

- Apply for a permit from the Hon. Minister of State in charge of Fisheries, and attach to the application:
  - a copy of the registration certificate of the company;
  - class certificate;
  - survey report;
  - tonnage certificate of the vessel intended for importation and operation; and
  - oil Pollution Prevention certificate.

- Gross Registered Tonnage (G.R.T.) of a trawler and a shrimper should not exceed 450 and 300 respectively. For a tuna vessel, it should not exceed 600 for a purse seiner and 500 for a pole and line.

- Application with documents should be sent to Hon. Minister for Roads and Transport for vetting (i.e. for class and sea worthiness). The Minister inquires from the Minister in charge of Fisheries as to whether the said vessel should be allowed into the country or not.

- The Minister for Fisheries grants the permit for the importation of the vessel if it is seaworthy and of required class. Validity period of a permit is one (1) year and the permit is not transferable.

- When the vessel is imported, the Shipping Commissioner at Takoradi would first register it under the national flag and it would be issued with a certificate of registration and an official number, which would be boldly embossed on the vessel.

- A fishing registration number is then issued to the vessel after the submission of the following documents to the Director of Fisheries and the vessel has passed the inspection conducted by the MCS Division of the Directorate:
  a. Certificate of registration of company
  b. Company’s code
  c. Survey report on the vessel
  d. Purchase agreement/Bill of sale
  e. Picture of vessel
  f. Certificate of Ghanaian registration
  g. Insurance cover for vessel and crew
  h. Filed MCS forms and report on inspection of vessel by MCS duly signed and stamped
  i. Safety equipment certificate
  j. Tonnage certificate
  k. Radio and communication equipment certificate

The vessel is then issued with a fishing licence for a specified period, usually one calendar year.
ANNEX D: DOING BUSINESS IN GHANA

Ghana Investment Promotion Centre

SETTING UP

- **PROJECT APPROVAL** is not required for investment in the economy, except in the following areas:
  - Petroleum Business - by Ministry of Energy
  - Minerals and Mining Business - by minerals Commission
  - Portfolio Investments – by the Ghana Stock Exchange
  - Free Zones activities – by the Ghana Free Zones Board

- **PROCEDURES:** one-stop approval and/or facilitation by respective Investment Promotion Agencies

- **OWNERSHIP:** Joint Ventures with Ghanaian partners are encouraged but 100% Foreign participation is allowed

- **EQUITY:**
  - US$10,000 for JV with Ghanaian partner
  - US$50,000 for 100% Foreign ownership
  - US$300,000 for Trading activity

- **EXPATRIATE EMPLOYMENT:** Automatic quotas tied to Investment Capital
  - 1 quota for US$10,000-US 100,000 paid-up capital
  - 2 quotas for US$100,000- US 500,000 paid-up capital
  - 4 quotas for US$500,000 – plus paid up capital

INVESTMENT INCENTIVES

- Corporate tax: 8% on non-traditional export income, 25% for hotels and 32.5% for others
- Location all incentive: 25-50% tax rebates
- Tax holidays: indefinite for cocoa farming; 3 to 10 years depending on sector; 10-years for Free Zones with 8% corporate tax thereafter
- Tariff exemption: 100% duty exemption for production equipment

INVESTMENT GUARANTEES

- Constitutional provision
- Investment laws which guarantee 100% transfer of profits, dividends, etc.
- MIGA membership
- Investment Promotion & Protection Agreements (Bilateral)

INVESTMENT OPPORTUNITIES

- Check our website at [www.gipc.org.gh](http://www.gipc.org.gh) for a comprehensive listing of projects in these areas:
  - Free Zones
  - Petroleum Business
  - Private Sector Joint-Ventures
  - Privatisation of State-Owned Enterprises
  - Infrastructure

For further information please contact us at [info@gipc.org.gh](mailto:info@gipc.org.gh)

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