

<b>FISHERY COUNTRY PROFILE</b>	<b>Food and Agriculture Organization of the United Nations</b>	<b>FID/CP/GHA</b>
<b>PROFIL DE LA PÊCHE PAR PAYS</b>	<b>Organisation des Nations Unies pour l'alimentation et l'agriculture</b>	 <b>March 2004</b>
<b>RESUMEN INFORMATIVO SOBRE LA PESCA POR PAISES</b>	<b>Organización de las Naciones Unidas para la Agricultura y la Alimentación</b>	

## THE REPUBLIC OF GHANA

### 1. GENERAL ECONOMIC DATA

<b>Area:</b>	238,539 km <sup>2</sup>
Area of continental shelf:	23,700 km <sup>2</sup>
Length of the coast:	528 km
Population (2002):	20,1 million
GDP (current) (2002):	US\$ 6.0 billion
GNI <u>per caput</u> (current) (2002):	US\$ 270
GDP fisheries (2002):	3% of GDP

### 2. FISHERIES DATA

#### Commodity balance (2001):

	<b>Production</b>	<b>Imports</b>	<b>Exports</b>	<b>Total supply</b>	<b>Per caput supply</b>
	'000 tons live weight				kg/year
Fish for direct human consumption	451 227	192 177	49 419	593 991	29.7
Fish for animal feed and other purposes <sup>2</sup>	60	-	-	-	-

<b>Employment (2002):</b>	
Primary sector:	210 400
Secondary sector:	315 600

Gross value of fishery (2002):	US\$ 251 208 887
Trade (2002):	
Value of imports:	US\$ 50 million
Value of exports:	US\$ 94 million

### 3. THE MARINE SUB-SECTOR

By far the marine sub-sector is the most important source of local fish production, delivering more than 80% of the total supply.

#### 3.1 Main Resources of the Marine Sub-Sector

In Ghana, there are small pelagic species of the families Clupeidae (Sardinellas, Scombridae - chub-mackerels and Engraulidae (anchovies), large pelagic species of the family Thunidae (tunas). There are also fisheries for demersal species of the families Sparidae, Lutjanidae, Mullidae, Pomadasysidae, Serranidae, Polynidae and Penaeidae (Marsah at al 2001).

##### 3.1.2 The Small Pelagic Resources

For the small pelagic resources the biomes fluctuates significantly (1 bid). It is however estimated that the maximum catch the small pelagic fishery can sustain is 180,000 tons (DOF 2001).

Landings of sardinella fluctuate so much so that in some years (e.g. 1973 and 1978) they reached points of near collapse, then from the 1980s, there as a remarkable increase with an all time high of 140,000 metric tons in 1992, (Mensah at al 2001) Ever since, landing declined reaching 64,000mt in 1997 (ibid). According to Mensah *et al.* the abundance of chub mackerel (*S. Japonicus*) is so variable from year to year that it is almost impossible to predict its abundance. Similarly anchovy landings fluctuated between 19000mt in 1986 and 82,700mt in 1996, with an all time high of 93,000mt in 1987 (ibid). Mensah *et al.* (2001) however affirm that these fluctuates could be attributed to phases of decline that most pelagic worldwide experience from time which is linked inter alia to changes in the marine environment.

##### 3.1.3 The Large Pelagic Resources

The main commercial tuna resources which occur in Ghanaian Waters are the yellowfin. (*Thunnus albacares*), skipjack (*Katsuwonus pelamis*) and bigeye (*Thunnus obesus*) (Mensah *et al.* 2001, 2003). A Tuna Task Force set up by Government of Ghana in 1989 recommended that the country's tuna production be increased from an average of about 36,000 mt to 60,000mt annually (Koranteng 1998a). In 1999, the total catch was over 83,000 mt but the average landing for the period 2000-2002 was 09.400mt (Mensah at all 2003).

##### 3.1.4 The Demersal Resources

Estimates of the biomass of surveys show that the potential yield of the total demersal biomass on Ghana's continental shelf is between 36,000 and 55,000 mt per annum with an average of about 43,000mt (Koranteng 1998a, Koranteng 1998b). However, last decade landings (of about 50,000 mt annually) exceeded the potential yield, which clearly demonstrates the stress under which the fishery has been operating (Koranteng 1998a).

##### 3.1.5 Shrimp Resources

Even though there is specialized shrimps fishery in Ghana, Shrimps are caught by all fleets (except tuna fishing vessels) mainly from shallow waters and close to estuaries, (Mensah at all 2003). Artisanal operators catch shrimps mainly in beach seines, these are normally juvenile shrimps of very low commercial value

(ibid). Through a modelling approach, the maximum sustainable yield (MSY) of shrimps is estimated to be 350 met per annum excluding catches of artisanal fishers (Koranteng 1998b). Although catches have never exceeded the MSY, the industry showed signs of decline in the last six years (Mensah at al 2003).

### **3.2 Fishing Units**

The marine fishing industry in Ghana consists of three main sectors, namely small scale, (or artisanal on canoe), semi-industrial (or inshore) and industrial sub-sectors.

#### **3.2.1 The Artisanal Units**

The artisanal sub-sector is the most important in terms of fish outputs in the marine sector; it in fact contributed 60-70% of the marine fish output (Mensah at al 2003). In 2001 census, there were 9,981 marine artisanal canoes operating, many of which are wooden (Anon 2003).

Many large canoes are motorised with 40HP outboard engines (ibid). Smaller craft use sail power (ibid.)

Commonly used fishing gears are purse seines, beach seiners, set nets, draft gill nets and hook and line (Anon 2003).

Also worth mentioning are the *lagas* canoes These are a fleet of motorised canoes which specialise in hook and line, use ice to preserve high value fish insulated containers with some using electronic fish finding devices such as echo-sounders (ibid)

#### **3.2.2 Semi-Industrial/Inshore Fleet**

The semi-industrial fleet consists of locally built wooden vessels 8-37m in length with in-board engines of between 60 and 400HP, (Anon 2003).

Most vessels are dual purpose; they are able to use trawls or purse seines (ibid). The latter are more commonly used during the major and minor up welling seasons and trawling is practised in shallow waters during off-season, (ibid). In 2000, there were 169 inshore vessels (Mensah at al 2001, Anon 2003).

#### **3.2.3 Industrial Fleet**

Industrial vessels are large, steel-hulled foreign-built trawlers, shrimpers, tuna pole and line vessels and purse seiners (Anon 2003). A recent development in the sector has been the introduction of demersal pair trawling (ibid). As deep-sea vessel the industrial trawlers by law are to operate in waters deeper than 30m deep (Fisheries Act 625 2002).

CANOE/YEAR	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Canoes	8052			8688			8641		8610			
Beach Seine	852			775			790		769			
Others												
Semi-industrial vessels												
	183	169	153	160	155	164	153	165	149	173	173	169
• Trawlers	29	30	30	29	32	35	34	34	48	47	38	46
• Shrimpers	5	8	11	5	8	14	17	16	13	9	12	12
• Tuna Boats	35	34	29	28	25	26	29	35	34	31	33	34
• Pole & line (Bait boat)	35	34	29	28	25	26	29	33	29	24	24	24
Total (Industrial vessels)	69	71	73	63	65	75	81	83	97	91	89	88

**Table 1. Number of Marine Fishing Vessels in Ghana**

Source: Marine Fisheries Division MFRD, Tema, and Directorate of Fisheries Accra

The industrial fleet have freezing facility for preserving fish at sea and can stay for months at sea (ibid). It is reported (ibid) that the industrial fleet have undergone radical expansion in number since 1984 when Government of Ghana policy targeted industrial fishing as a mechanism for promoting non-traditional exports. The number of operating trawlers as reported to have increased from 10 (10) in 1984 to 48 in 1997, (ibid).

### 3.3 Marine Catch Profile

Over 300 different species of commercially important fish, 17 species of cephalopods, 25 species of crustaceans and 3 turtle species are caught from marine sources in Ghana (Anon 2003, Ofori-Adu 1988). Most domestic marine fish supply is from artisanal fishery and the most important marine resources are small pelagics especially the round sardinella, flat sardinella, anchovy and chub mackerel (Anon 2003). These species account for about 70% of total marine fish landed (NCU/SFLP 2000, Mensah et al 2001, Yeboah 1998).

**Table 2. Marine fish Landings by Species Groups (MT 1993-2002)**

SPECIES GROUP/ YEAR	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Small Pelagics	217811	180681	198455	291413	243917	213554	166149	263849	175436	140732
Large Pelagics	38982	37917	34835	38546	54361	66479	84610	54292	88807	66046
Sub-Total Pelagics	256793	218598	233290	329959	298278	280033	250759	318141	264243	206778
Demersal	33783	34829	30935	35971	40806	35868	43973	23356	-	-
Crustaceans	1712	2479	2676	2087	2381	1784	232	1559	-	-
Cephalopods	1716	2469	2946	3104	3422	3391	4114	1809	2804	3155
Others	19190	28792	66642	7241	50953	55286	33563	34929	-	-
Total	313194	287167	336489	378362	395840	376362	332641	379794	370953	290008

Average annual domestic marine production has been 358,000 tonnes between 1993 and 2000 and is approximately 80% of overall fish supply (Anon 2003).

### 3.4 The inland sub sector

Inland fish catches in Ghana, are taken from Lake Volta, Other Lakes, major rivers and aquaculture (Anon, 2003). The Lake Volta is the most important inland fishery (ibid). Other Lake fisheries include Bosomtwi, Weija, Barekese, Tano, Vea and Kpong (Anon 2003). There are a member of small reservoirs in the north of Ghana (Ibid), Vanden, Bossche and Bernacsek 1990).

#### 3.4.1 Main Inland Resources

According to Braimah (2001) the Lake Volta is rich in fish and about 140 species of fish could be identified in the Lake Volta (ibid). Fish landing are dominated by tilapia species (38.1%), *Chrysichtys* sp (34.4%), *synodrantis* sp (11.4%), Labes (3.4%), Mormyrids (2.0%) *Heterotis* (1.5%) *clarias* sp (1.5%), *clarias* sp (1.5%), *schilbeide* (1.4%), *odaxothrissa mento* (1.4%), *Bagrus* sp (1.35) and *Citharinus* sp (1.2%) and the rest which are less than 1% include *Alestes* sp, *Brycinus* sp, *Distichodus* sp, *Gymnarchus* sp; *Hydrocynus* sp and *Lates niloticus*, (Braimah

2001).

Total fish landings declined from 36,000 tons in 1971 to 28373 tons in 1998, with annual decline in catch per unit effort estimated at 0.255 kg/boat/day (ibid).

The average yield of fishery decreased from 46.8kg/ha in 1976 to 32.6kg/ha in 1998 (ibid.). Lake Volta's potential yield of 40,000 tonnes per annum has been exceeded annually since 1995 (Braithmah 2001, Anon 2003).

The most important of Ghana's lagoons is the Keta lagoon with a potential yield of 4,000 tonnes per annum (Balarim 1988, Anon 2003). The most important commercial lagoon species in Ghana are tilapia, grey mullets, crabs, shrimps and oysters (Anon 2003). Many lagoons are over-exploited, have changed their characteristics since the construction of the Akosombo dam or suffer extreme pollution (Anon 2003).

As regards aquaculture the main species cultured are Tilapia niloticus, Clarias gariepinus, Heterobranchus sp and other endemic species (ibid). Other species which are being introduced and grown on an experimental scale are Oreochromis macrochir common and silver carp and tiger prawn Panacus monodon (ibid).

### **3.4.2 Fishing, Areas, Communities and landing sites in the inland Fishery**

The lake Volta covers a total of 1232 communities (Braithmah 2001). It has an average depth of about 19m (Gordon 1999, Braithmah 1999) a maximum depth of 90m (Gordon 1999) a maximum operating depth of 84.1m and a storage capacity of 190km (Braithmah 1999) and covers an area of 8,480km and a length of 410km (Gordon 1999). The lake bridges to climatic zones, the northern part of the lake having a single peak of rainfall which the south part has a bimodal rainfall pattern (Gordon, 1999). Lake Volta has an average depth of about 19m (ibid, Braithmah 1999), a maximum operating depth of 84.1m (ibid) and a storage capacity 190km<sup>3</sup> (Braithmah 1999). It covers an area of 8,480km of 410km (Gordon 1999).

On the Lake Volta one could count as many as 32 landing sites which often also serve as marketing centres. Among these are Kwamekrom, Tapa Abotoase, Dzemeni, Dambai, Akateng and Kpando Torkor.

#### **Lake Volta Fishing Units**

From the 1998 full frame survey, the total number of boats of all types was stated as 24,035 using 973 motor boats and no inboard engines, (Braithmah 2001). Generally only 25% of fishing villages on the lake use outboard motors and only 4% of all boats are equipped with engines (ibid).

#### **Lake Volta Fish Catch**

Fish catches in the Lake Volta show an initial steady rise from 3,000 tonnes in 1969 and then followed by a decline and stabilization at around 40,000 tonnes (Braithmah 1999). The Lake Volta account for about 16% as national output (Anon 2003).

### **3.5 Aquaculture**

Aquaculture is one of the inland fisheries even though its potential is largely under-exploited.

#### **3.5.1 Aquaculture Resources**

Whilst there are traditional measures and management measures such as 'atidjas' (brush parks in lagoons and reservoirs) 'hatsis' (fish holes) 'whedos' (mini dams in coastal lagoons and the culture of fresh water dams (Egeria radiata) in the lower Volta, more modern forms of aquaculture were introduced in the early 1950s (Anon 2003). The available data (ibid) suggests that there are about 2000 ponds in Ghana covering about 240 hectares.

Both extensive and semi-intensive cultures are practised in the aquaculture facilities in Ghana (ibid). Extensive culture is associated with dams, dug-outs and small reservoirs which are fished and restocked (ibid). Fish are cultured semi-intensively in earthen pond either of monoculture or poly culture (ibid).

Tilapia niloticus is the main species cultured with clarias gariepinus, Heterobranchus and other endemic species (FAO, 1998) Anon 2003) There is a clam (Egeria Radiata) fishery in the lower Volta River (Anon 2003). Other species which have been introduced and grown on an experimental scale are Oreochromis macrochir, common and silver carp and tiger prawn (Penaeus monodon).

### **3.5.2 Distribution of Aquaculture Facilities and Units**

Aquaculture is being promoted in at least 7 of the 10 regions of Ghana comprising Greater Accra, Ashanti, Western, Brong Ahafo, Volta, Eastern and Central Regions (Anon 2003).

The highest concentration of fish ponds are in the Greater Accra and Ashanti Regions (ibid).

### **3.5.3 Fish catch for Aquaculture Source**

The annual output of fish from aquaculture sources is estimated at 400mt (ibid).

## **4. FISH UTILIZATION**

In 1998, the demand for fish was estimated at 736,000 tonnes per annum (Akrofi 2002, Anon 2003).

### **4.1 Post Harvest Use of Fish**

The most important use of fish in Ghana is domestic consumption (Anon 2003). Average per capita Fish consumption in Ghana is estimated at 20-25kg higher than the World average of 13kg (ibid). Fish makes up 22.4% of food expenditure in all household 25.7% in poor household (Campbell and Twonsly 1995). Fish is recognized as the most important source of animal protein in Ghana (Aggrey Fynn 2001, Ghana NCU 2001) and all regions of the country, poor or rich, rural or urban (Anon 2003). Up to 60% of animal protein in the Ghanaian diet is thought to (ibid).

For domestic consumption fish is often purchased fresh, smoked salted, dried, salted and dried, canned, fried or grilled (ibid).

Other than for human consumption, some fish such as anchovy and tuna official are used for fish meal (ibid).

### **4.2 Marketing and Trading in Fish Products**

Small pelagic species are mostly sold in smoked form whereas demersal species are sold fresh at landing beaches, fish markets or from cold stores, (Anon 2003).

During the main fishing season, the consumption of fish and in particular fresh fish increases in coastal and inland areas (ibid).

In the lean season fish is mostly sold and purchased for consumption in smoked form from local sources and frozen form from external imports (ibid).

Some consumers prefer pelagic fish with a high fat content (ibid).

As regards price, sardinellas, anchovies, mackerel are relatively cheap and popular and consumed by the majority of Ghanaians (ibid).

Sea bream snapper, shrimp, lobster grouper, cattle fish are sold to and consumed by the more wealthy (ibid) Dried anchovies are mostly sold and consumed in the north of the country and remote rural areas (ibid).

In locations far away from major sources of fish protein, fish is mostly sold and consumed in smoked form (ibid).

Some ethnic groups prefer or abhor certain types of fish for normal domestic consumption or for certain events (ibid).

### **4.3 External trade in fish products**

#### **4.3.1 Fish Exports**

It is estimated that the total value of fish exports from Ghana increased from US\$ 68,558,638 to 83,849,463 between 1997 and 2000.

**Table 3. Value of Fish Exported 1997 - 2000**

FISH	QUANTITY	VALUE us\$
1997	31,709	68,558,638
1998	41,316	100,311,867
1999	51,651	82,911,428
2000	53,060	83,849,463

Source Mensah et al 2001

As regards foreign exchange earnings, fish exports have remained among the top three most important non-traditional exports (Mensah et al 2003).

From all indications, tuna is the most important fish export product, in terms of foreign exchange earnings (ibid).

Canned tuna is by far the most important non-traditional foreign exchange earner, even exceeding fresh tuna exports by far (ibid). Other important fish products apart from canned and fresh are:

A wide variety of fish including tilapia, shark fin classified together as "frozen fish" salted fish or "smoked fish" depending on the form of presentation".

It is estimated that up to 12% of total national fish product is exported (ibid). The available data (ibid) suggests a consistent rise in fish exports over the years (ibid). Key on the export destination list of Ghana are the European Union, Japan, United States of America, Canada, Togo, Mali, Cote d'Ivoire, Burkina Faso, Benin, Nigeria, Hong Kong and Singapore (ibid).

#### **4.3.2 Fish Imports**

Given that Ghana is known to be only 60% fish self-sufficient and that fish availability from local sources is seasonal, fish is imported to fill the seasonal and annual deficits (ibid).

Frozen horse mackerel (*Trachurus trachurus*, chub mackerel (*Scomber japonicus*) as well as sardinella are imported through the Tema and Takoradi Ports and distributed through the internal trade channels, during the lean season November to May (ibid). Dentex species and (used in the poultry industry) are also imported to a lesser degree. Fish imports to Ghana are mainly from Morocco, Mauritania, Namibia, Norway, the Netherlands, Belgium, Senegal and the Gambia (Mensah et al 2003, Anon 2003, Mensah et al 2003).

Up to 64,000 metric tons of fish was imported annually over the past 10 years though the quantities imported fluctuated widely (Mensah et al 2003).

### **4.4 Fisheries in the National Economy**

The fisheries sector plays a major role in the national economy. It contributes 3% of Gross Domestic Product (GDP), provides employment to the labour force and contributes to the foreign exchange of the country is a major source of animal

protein assumption and assists in the alleviation of rural poverty.

It is estimated that over 150,000 fishers are engaged in marine capture fisheries (Mensah at al 2003). It is also estimated about 1.5 – 2 million people rely on and /or provide support to these fishers, these include their wives, children, close relatives as well as conoe carvers, input suppliers and office workers for industrial fleet (ibid). It is suggested that about 500,000 fish workers engage in processing, distribution and Source Mensah at al 2001.

#### **4.5 Demand and Supply of Fish**

Evidence from the available data (Mensah at al 2001, 2003) indicates on the average (1990-2000) an annual production of fish of 335,000mt, with wide annual and seasonal fluctuations.

The annual demand for fish is currently estimated at about 600,000mt (ibid), implying on an annual fish deficit averaging 265,000 mt.

### **5. RESEARCH**

Fisheries research in Ghana is carried out mainly by the Marine Fisheries Research Division (MFRD).

The MFRD:

- Monitors the marine environment and assesses its changes in so far as they affect fisheries;
- Estimates annual fish production by the various fishing fleets operating in marine waters;
- Undertakes biological studies of commercially important fish species;
- Assesses stocks of demersal pelagics fishery resources; undertakes studies and development of fishing gears;
- Provides information required for the preparation of the fisheries management plans; and
- Collaborates with sub-regional, regional and international organisations in the study and management of shared fish stocks.

Over the years, the MFRD has within its aforementioned mandate through:

- Daily recording of sea surface temperatures and determination of salinity at 8 (Keta, Tema,, Winneba, Elmina, Takoradi, Cape Three Points, Axim and Half Assini) locations;
- Working the Tema Oceanographic reference once a week to measures parameters including temperature, salinity, dissolved oxygen, wind speed and direction, density, turbidity and the colour of the sea water; and
- Sampling of zooplankton, carrying out phytoplankton studies using ICITA net;
- Biological research to understand the biology of selected species in various resource groups;
- Statistical research to assess the biomass of fish stocks involving acoustic surveys for pelagic species, trawl surveys for demersals and the compilation of total annual catch by gear species number and size of vessels in co-operation with the Food and Agriculture Organization of the United Nations (FAO) and the International Commission for the Conservation of Atlantic Tunas (ICCAT);
- Conducting periodic canoe frame surveys in 1986, 1989, 1992, 1998).

From January 1999 to September 2000, DOF in collaboration with the Mike Dillon and Associates of U.K acting on behalf of the Natural Resources Institute (NRI)

also of the U.K. undertook a field-based experiment on the use of ice by the hook and line lagas fishery. The purpose of the study was to improve the quality of fresh landed fish through the use of insulated boxes. The study was funded by the DFID.

## **6. FOREIGN AID**

Several external agencies have provided support for the development of the fisheries sector. The World Bank has been instrumental in funding several major fisheries initiatives aimed at institutional studies and capacity building. For example the Fisheries Sector Capacity Building Project (FSCBP) was predominantly a World Bank funded project.

The European Union has funded initiatives concerned with the fish export sector.

The United Nations Development Programme UNDP funded the Yeji Artisanal Fisheries Integrated Development Project.

The Food and Agriculture Organization of the United Nations (FAO), through its fisheries department, facilitates and works to secure the long term sustainable development and utilization of fisheries and aquaculture in Ghana. A key focus of the FAO is its assistance in the implementation of CCRF. The FAO's participation in the Yeji Artisanal Fisheries Integrated Development Project is particularly noteworthy.

The Department for International Development (DFID) through its Post Harvest Fisheries Research Programme has supported several fisheries initiatives in Ghana.

Another important sponsor of fishery initiatives in Ghana is JICA a Japanese NGO.

The Chinese Government is also known to have given a grant valued at US \$5.0m to the Government of Ghana for the purchase of fishing nets and ropes for the artisanal sector.

In 1996, the Danish International Development Agency (DANIDA), through its Private Sector Development Programme sponsored a fishing vessel restructuring programme initiated by the Ghana Government.

The MFRD also works in technical collaboration with the International Commission for the Conservation of Atlantic Tunas (ICCAT).