



# The Fishing Sub-sector & Ghana's Economy

**THE FISHING SUB-SECTOR AND  
GHANA'S ECONOMY**

RESEARCH DEPARTMENT

BANK OF GHANA

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The Sector Study reports are prepared for the deliberations of the Board of the Bank of Ghana. The reports are subsequently made available as public information. This Sector Study report was prepared by the Research Department under the general direction of Dr. Ernest Addison, Director of Research. The team that worked on this report were Dr. Johnson Asiama, Mr. Ibrahim Abdulai and Mrs. Salamatu Dotse. We are grateful to the staff of the Ministry of Fisheries who assisted the team with relevant data.

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# TABLE OF CONTENTS

<b>1.</b>	<b>INTRODUCTION</b>	<b>1</b>
<b>2.</b>	<b>BACKGROUND – THE FISHING INDUSTRY IN GHANA</b>	<b>4</b>
2.1	History	4
2.2	Current Structure	8
2.2.1	Fish Species	8
2.2.2	Types of Fisheries	9
2.2.3	Fishing Methods	13
2.2.4	Legal and Regulatory Framework	15
<b>3.</b>	<b>ECONOMIC CONTRIBUTION</b>	<b>18</b>
3.1	Employment	19
3.2	Fishery Products Exports and Foreign Exchange Earnings	20
3.3	Livelihood Support	21
3.4	Food Security	22
3.5	Poverty Reduction	23
<b>4.</b>	<b>THE WAY FORWARD</b>	<b>24</b>
<b>5.</b>	<b>SUMMARY AND CONCLUSION</b>	<b>31</b>



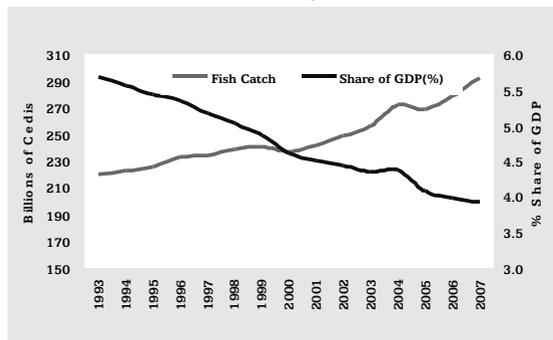
# 1. INTRODUCTION

The importance of the fisheries sector in the socio-economic development of the country cannot be overemphasised. With a marine coastline of 550 kilometres stretching from Aflao in the East to Half Assini in the West, the fishing industry plays a major role in sustainable livelihoods and poverty reduction in several households and communities. The sector is estimated to contribute about 3.9 per cent of the nation's gross domestic product (GDP) and 11 per cent of the Agriculture GDP (GSS, 2008 Budget). For a long time, fish has remained the preferred and cheapest source of animal protein with about 75 per cent of total annual production being consumed locally.

In Ghana the average per capita fish consumption is said to be around 20-25kg which is higher than the world average of 13kg. Importantly, as much as 60 per cent of animal protein in the Ghanaian diet country - wide is thought to be from fish, which

accounts for 22.4 per cent of household food expenditures. As noted in an address by the Minister for Fisheries at the 2007 'Meet the Press'<sup>1</sup> Series, held on August 28th 2007, "...the Country has fish production potential that is latent. We have good soil and a large expanse of water bodies, a resource which needs to be harnessed to the optimum. In fact, 10 per cent of the entire land surface of Ghana is covered by water. Also in terms of human capacity, we also have a fairly good stock of expertise and know how in the Country".

Chart 1:1 Fish Catch (¢'bn and % GDP)



In spite of the apparent potential of the fishing industry, the sector has recorded consistent decline in terms of output over the years (Chart 1.1). For example, the contribution of the fisheries sector to GDP has declined from around 6 per cent in 1993 to about 3.9 per cent in 2006 even though in nominal terms, fish catches seem to have been growing steadily. In terms of absolute output, fish landing was estimated at about 800,000 metric tons per annum in the past but this has fallen to an annual fish catch of 480,000 metric tons currently. Secondly, the technology used in fishing in Ghana has not kept pace with developments elsewhere as subsistence activity still accounts for a large share of output. On the side of fishing regulation, a lot is being done to support the sector currently with the creation of a separate Ministry to cater for the fishing industry since 2005. The problems of the sector however remain largely unresolved in spite of the huge potential for national output growth. Moreover, developments such as the introduction of the new economic partnership agreement (EPA) are likely to have adverse consequences for the industry.

This study contributes to the debate on how to scale up output in the fishing industry from the current 3.9 per cent of GDP to above 7 per cent of GDP that was last recorded in 1993. Specifically, the study throws light on the contribution of fishing to output and employment, and discusses some of the emerging issues in the industry. It also discusses the way forward on how to scale up the contribution of the sub-sector. The paper acknowledges the efforts by government and the Ministry of Fisheries to develop a regulatory and policy framework to arrest the decline in the industry. Of particular reference is the passage of the Fisheries Act, Act 625 of 2002 and current efforts to enhance its effective implementation through supplementary legislation. Secondly, the paper sees the case for the Ministry for Fisheries to focus on aquaculture given the fact that the country abounds in numerous dams and dugouts as well as rivers, which make aquaculture fishing feasible countrywide. Indeed, aquaculture fishing is making significant contribution to the economies of Kenya, South Africa, Cote d'Ivoire and Burkina-Faso.

These countries export fish particularly tilapia on a large scale to many other African countries and to Europe. The paper also argues that in most of the major fishing countries, modern technology is being employed to increase fish production and harvesting. For example, technology has made available fast growing species of Gift Tilapia, which combines good taste and large size, and is accepted all over the world. In Singapore, modern technology has been used to scale up the production of catfish for export to the extent that Singapore now accounts for more than 30 per cent of tropical fish production in the world. Thus, Ghana stands the chance of being among the world's biggest players in fish production if the appropriate level of attention were paid to the fishing industry, particularly through modern technology in fish farming. Moreover, fish is a renewable resource and hence can contribute sustainably to output growth for a long time.

The paper also calls for more investment in Tuna fishing and processing as well as other value addition projects that together have the potential to generate a lot of employment and foreign exchange. The paper is structured in five sections. Section 2 provides a brief background to the fishing industry in Ghana, outlining its history and the current structure. Section 3 evaluates the contribution of the fishing sector to Ghana's economy based on income, employment and poverty reduction. Section 4 outlines the way forward and proposes a number of areas of intervention that could restore a vibrant fishing industry in Ghana. Section 5 concludes the study.

## 2. BACKGROUND – THE FISHING INDUSTRY IN GHANA

### 2.1 HISTORY<sup>1</sup>

Ghana has been a regional fishing nation with a long tradition of a very active fishing industry dating back to as early as the 1700s and 1800s when Fante fishermen embarked on ocean fishing along the coast of Ghana. Bounded on the south by the Gulf of Guinea, Ghana has a 550 kilometre coastline and a total continental shelf area of about 24,300 square kilometres to support a vibrant marine fishing industry. Ghana also has a system of rivers, lagoons and lakes that form the basis of an inland fisheries industry.

Indeed, Fantes are reported to have been fishing in the coastal waters of Benin Republic and Cote d’Ivoire since the early 1900s (Atta-Mills et al, 2004). The first Ghanaian fishermen are believed to have arrived in Nigeria in 1916 (Overa, 2001) and in Liberia in the 1920s (Haakonsen, 2001). From there, Ghanaian fishermen extended to Senegal and as far as the Republic of Congo by the 1940s. By the early 1950s, the development of a semi-industrial fishing presence in foreign waters had established Ghana as a fishing power throughout West Africa (Agbodeka, 1992). However, this growth in the fishing sector was stalled from the 1970s to 1980s as economic conditions in Ghana deteriorated.

The fishing industry in Ghana started as an artisanal fishery with very simple and inefficient gears and methods operating close to coastal waters, lagoons, estuaries and rivers.

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<sup>1</sup> For a historical account of the pre-independence fishing industry, see the article by Barbara Walker titled, “Dividing and Conquering the Sea -The Colonial History of Marine Fishing and Property Rights in Ghana”, Institute for Social, Behavioral, and Economic Research; UC Santa Barbara. e-mail:bwalker@geog.ucsb.edu

Fish caught were mainly to meet domestic demand for fish especially in the towns and cities. There were limited exports to neighbouring West African countries. Upon the achievement of political independence in 1960, the importance of fishing was recognised as the fishing sector was included in the Ten-Year Economic Development Plan. Consequently, the new government invested heavily in the fishing sector between the 1960s and 1970s, as new vessels for offshore industrial scale fishing were acquired. In 1961, the State Fishing Corporation (SFC) was established to encourage local entrepreneurship in the fishing sector. The construction of the Tema harbour in 1962 also brought in its wake mechanized fishing including out-board<sup>2</sup> motors, in-board motors and heavy fishing vessels. In addition, with the establishment of the Tema Boatyard in 1962, a large fleet of wooden fishing vessels with lengths up to 70-feet were built for the industry.

Most of these vessels engaged in dual-purpose fishery, that is, bottom trawling and purse seining. Later, individual entrepreneurs imported steel boats with sizes ranging from 30'-120' into the country to carry out fishing in both trawling and purse seining for fin-fishes and shellfishes. Initially, fishing increased considerably in the late 1960s, from 105,100 tons of marine fish caught in 1967 to 230,100 tons in 1971. In 1982 the yield was 234,100 tons, composed of 199,100 tons of marine varieties and 35,000 tons of freshwater fish from Lake Volta. However, the industry was subsequently hit by fuel shortages, inadequate storage facilities, and the general economic difficulties of the 1970s and the 1980s.

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<sup>2</sup> *Actually, the use of outboard engines on canoes for example started in the 1950s. This was after the Fisheries Department had imported two 30-footer motorized fishing boats from the United Kingdom into the country for experimental fishing. The outboard motors enabled the canoes to move farther out to sea from the coast and to make bigger catches quickly in fewer hours or days than before. The success of the two 30-footer boats used by the Fisheries Department was such that in 1952, the Government of Ghana set up a Boatyard Corporation that built similar boats at the Sekondi Boatyard. Thus several in-board engine wooden vessels with length ranging from 27' – 32' were built, and when the Tema Boatyard was established in 1962, a large fleet of wooden fishing vessels with lengths up to 70-feet were built for the industry.*

Nevertheless, by 1988 the annual fish catch was about 302,900 tons and by 1991 it had dropped to 289,675 tons. In 2000, the total marine fish catch was 377,570 tons, and the freshwater catch (not including subsistence fishing) about 74,500 tons. Round Sardinella and European Anchovies together accounted for 49 per cent of the total catch. Exports of fish products amounted to US\$78.5 million in 2000. The interesting thing is that artisanal fishing has rather proved to be more viable as landings by the artisanal sector has increased consistently since the early 1960s whereas the semi-industrial sector peaked in the 1970s and has not been able to recover since.

Ghanaian fishermen had access to the coastal waters of other West African countries from the 19th century and this operation in foreign waters had flourished until most of these West African countries began to attain political independence. Such new governments began to limit the activities of these Ghanaian fishermen and this began the decline of Ghana as a regional fishing power. Also, with the negotiations for the United Nations Convention on the Law of the Sea (UNCLOS), and its adoption in 1982, the other West African countries began to enforce their Exclusive Economic Zones (EEZ) and thus, Ghanaian fishermen were gradually shut out from fishing grounds they had enjoyed until then. This together with the lack of finance and operating capital, lack of supporting infrastructure, and the general economic and political instability through the 1970s and 1980s resulted in a sharp decline in the industry.

Although some measure of political stability was achieved in the 1990s, deterioration of economic conditions at the time as well as the prohibitive cost of accessing distant fishing waters remained a constraint on the sector. By this time also, inshore marine resources had also been overexploited, contributing to further decline in the semi-industrial sector. A number of local fishing companies such as Mankoadze Fishing, Ocean Fisheries, Commodore, Obuorwe and Obedru, that had operated along the coast of West Africa in the 1960s and 1970s have either ceased operations or are now into fish

importation and retailing. This notwithstanding, the growth of the offshore tuna sector had maintained the catches in the industrial sector even though this remains relatively smaller as a proportion of total landings.

One cannot rule out the effect of large-scale poaching by foreign vessels in Ghana's waters, which has also contributed significantly to the depletion of fish stocks in Ghana's 200-nautical-mile maritime Exclusive Economic Zone. The most affected stocks are sea bottom-feeding fish. Tuna stocks reportedly remain unaffected. This is why the new fisheries law has been passed to curb overfishing and to help protect marine resources. Fishermen have also been banned from catching specified shellfish, and all fishing vessel operators are required to obtain licenses to operate within Ghana's territorial waters. The law provided for a regulatory body - the Fisheries Monitoring, Control, Surveillance, and Enforcement Unit--as well as a Fisheries Advisory Council.

Also, Ghana's involvement in the international fish trade has meant that the trade policies of its Western trade partners have had a direct impact on the country's fisheries sector, given its dependence on income from fish exports. Ghana is also a founding member of the World Trade Organization (WTO) and as such its participation in the international fish trade is regulated by WTO trade agreements.

In sum, inadequate trade policies, globalization of the fishing industry, dominance of foreign distant water fleets, declarations of exclusive economic zones (EEZs) by neighboring West African nations, overfishing and lack of adequate regulation have contributed to the decline of Ghana as a regional fishing nation; a position it had held since the 18th century. The prohibitive cost of access arrangements limited Ghana's access to distant waters, while the country's marine environments have been impacted by overexploitation of stocks and the use of destructive methods of fishing.

## 2.2 CURRENT STRUCTURE

The fishing industry in Ghana is based on fishery resources from the marine and to a lesser extent, inland or freshwater fisheries and aquaculture. The Volta Lake, reservoirs, aquaculture and coastal lagoons are the main sources of inland or freshwater fish. As already explained marine fishing is an important traditional economic activity of the coastal communities in Ghana and contributes over 80 per cent of the total fish catch. The small-scale artisanal marine fishing communities generally contribute about 30 per cent of the traditional sector landings. As seen in Table 2.1, fish production over the last decade has been fluctuating annually with a mean value of about 400,000 metric tons.

**Table 2.1: Fish Production in Ghana**

	Marine Fisheries Landings (MT)	Inland Fisheries Landings (MT)	Total Fish Landings (MT)
1997	395,839.70	76,200	472,039.70
1998	376,361.90	76,300	452,661.90
1999	332,641.00	89,400	422,041.00
2000	379,793.70	87,500	467,293.70
2001	365,741.20	88,000	453,741.20
2002	290,008.10	88,000	378,008.00
2003	331,412.00	82,450	413,862.00
2004	352,405.20	82,450	434,855.20
2005	322,789.60	82,654	405,443.50
2006	323,617.10	83,168	406,784.60

*Source: Ministry of Fisheries*

### 2.2.1 Fish Species

There are a wide variety of fishes available in Ghana's waters. These include, the anchovy, cassava fish, chub mackerel, flat sardinella, largehead hairtail, meagre fish, moonfish, red pandora, red snapper, round sardinella, skipjack, and yellowfin. In general however, these can be classified into pelagic (coastal) and demersal (deep sea) fish species. Pelagic fish species are those fishes that are characteristically mobile and migratory and live in open waters of the sea. Some commercially important species include round sardinella,

flat sardinella, skipjack, yellow fin, bumper and chub mackerel. On the other hand, demersal fish species are commonly found near and just beneath the sea bed. The major demersal fish species common in Ghanaian waters are the lujanidae (snappers), serranidae (groupers), and polynemidae (threadfins).

## 2.2.2 Types of Fisheries

The types of fisheries in Ghana can be classified into marine fisheries, artisanal fisheries, inshore fisheries, industrial fisheries, lagoon fisheries, and inland fisheries.

- **Marine Fisheries**

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

**Table 2.2: Marine Fish Production by Fleet 2000-2006**

	2000	2001	2002	2003	2004	2005	2006
<b>Canoe (M/T)</b>	275,964.69	236,355.26	200,769.2	238,796.34	267,909.8	218,871.854	231,680.63
<b>Inshore</b>	8,668.06	10,423.52	7,784.55	13,318.69	6,331.35	7,591.282	9,877.17
<b>Industrial (Shrimpers)</b>	1,224.03	310.02	249.03	295.88	291.96	442.98	297.35
<b>Industrial (Tuna)</b>	53,255	88,806.49	66,046.1	65,152.72	62,741.93	82,225.85	63,252.44
<b>Industrial (Ghana waters)</b>	1,5454.84	19,644.25	13,899.53	9,942.65	14,010.49	12,494.01	17,419.08
<b>Industrial (Foreign waters)</b>	25,227.07	13,019.64	-	-	-	-	-
<b>Paired Trawlers</b>			1,259.7	3,905.72	1,119.68	1,163.51	1,090.39
<b>Total</b>	379,793.69	*368,559.18	290,008.1	331,412	352,405.2	322,789.48	323,617.06

Source: Directorate of Fisheries of the Ministry of Fisheries

- **Inland Fisheries**

The inland fisheries cover fish production from Lake Volta, Aquaculture, Dams, other lakes and lagoons. However, fishery statistics are collected only from Lake Volta and Aquaculture. Table 2.3 shows some of the inland water bodies and their respective potentials. Currently, there are signs of over-exploitation of the fishery resources.

**Table 2.3: Lakes and Reservoirs and their Fishery Potential**

Lakes and Reservoirs	Area (Km <sup>2</sup> )	Fishery Potential (MT/year)
Volta	8,482	40,000
Bosumtwi	49.0	600
Weija	37.0	420
Kpong	36.5	--
Tano	18.6	22.5
Barekese	6.4	80
Others	117.0	145

Source: *FAO Year Book of Fisheries Statistics 1999*

Over fishing in the lake probably commenced with the introduction of active and illegal methods (such as bamboos, drag nets and winch nets) in the early 1980's. Between 65 and 70 per cent of commercial fish catch is landed by illegal fishing methods (Braimah, 1995).

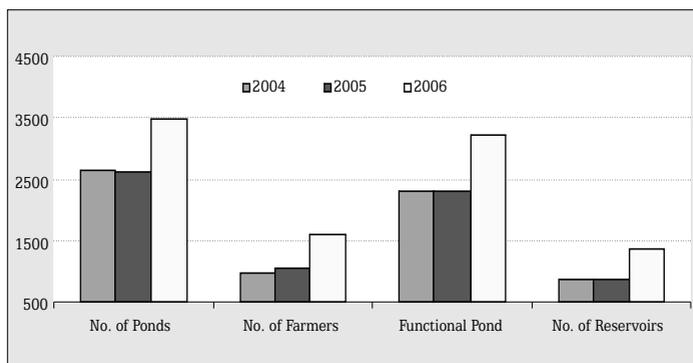
**Table 2.4: Inland Fish Production**

	Volta Lake	Rivers and Dams	Ponds	Total
2000	75,000	5,000	7,500	87,500
2001	75,000	7,000	6,000	88,000
2002	75,000	7,000	6,000	88,000
2003	74,500	7,000	950	82,450
2004	74,500	7,000	950	82,450

- **Aquaculture**

The aquaculture sub-sector consists of small-scale operators for whom aquaculture is not a major activity. These operators practice aquaculture as a subsistence farming activity. Fish farming started when fishponds were built in 1953 by the former Department of Fisheries in the northern part of Ghana. These were to serve as hatcheries to support the culture-based reservoir fishery development programme of the colonial administration and as a way of supplementing the national demand for fish and increasing livelihood opportunities. Thus fishing skills were taught in communities living near small reservoirs, which were not traditionally used for fishing. After gaining independence in 1957 the national government adopted a policy to develop fishponds within all irrigation schemes in the country. State-owned irrigation facilities were to be developed, as far as it was technically possible, under a policy of converting 5 per cent of the scheme into fish farms.

**Chart 2.1: Total Census of Fish Ponds and Reservoirs**



In the period between 1990 and 2004, the technology of fingerling production improved tremendously. Fingerlings have been produced from concrete tanks and hapas in addition to earthen ponds, as was the practice in the previous years. Although fish seed is still being obtained from rivers and reservoirs in remote areas, private

commercial entities produce fingerlings of tilapia far in excess of their requirements and are willing to sell the surplus.

Tilapia is the major species and constitutes over 80 per cent of aquaculture production. The catfishes (*Clarias* sp, *Heterobranchus* sp) and *Heterotis niloticus* account for the remaining 20 per cent. While fish production from aquaculture has been growing steadily, the contribution of aquaculture to the national economy has, however, not been disaggregated, so its importance is not fully recognized. There is a lack of data and general information relating to aquaculture. For instance, information and data are not available on the exact contribution of aquaculture to food security, employment and poverty alleviation. Notwithstanding this challenge, it has been estimated that the production from ponds and culture-based fisheries is worth about US\$1.5 million a year. Even though fish farming is new to Ghanaians, its practice is becoming widespread in the country, especially in the Ashanti, Central, Eastern, Volta and Western regions. It has become a credible option for increasing fish production in Ghana since production from both marine and Inland sources appear to have reached their maximum potentials.

**Table 2.5: Regional Distributions of Fish Ponds and Reservoirs – 2006**

REGIONS	PONDS		Total No. of	Total Surface	RESERVOIRS	
	No. of Ponds	No. of farmers	Functional Ponds	area of Ponds (ha)	No. of Reservoirs	Total surface area of reservoirs (ha)
Greater Accra	239	188	239	76.25	154	219.75
Eastern	441	283	430	30.2	0	0
Volta	362	295	350	78.5	110	55.4
Central	898	393	750	98	96	639.01
Western	810	100	810	68.38	24	118.89
Ashanti	425	232	400	119.25	0	0
Brong Ahafo	297	106	255	38	2	40
Northern	0	0	0	0	437	832.21
Upper East	0	0	0	0	319	966.22
Upper West	0	0	0	0	228	298.89
Total	3,472	1,597	3,234	508.58	1,370	3,170.37

Source: Ministry of Fisheries

Clearly, the focus of policy needs to be intensified in the context of fish farming. As already discussed, the country abounds with numerous dams and dugouts as well as rivers, which make aquaculture fishing not only feasible but also countrywide. The experience elsewhere is that aquaculture fishing makes immense contribution to the economies of Kenya, South Africa, Cote d'Ivoire and Burkina-Faso. These countries export fish particularly tilapia on a large scale to many other African countries and to Europe, and this had helped to improve their economies. Ghana stands to benefit from the industry even better, given its landscape and could also easily export to countries north of Ghana and Europe.

### 2.2.3 Fishing Methods

As explained, the type of vessels used in fishing in Ghana currently range from dugout canoes, canoes with outboard motors, locally built trawlers, and large steel-hulled foreign built vessels used for industrial fishing. These are explained below. The dugout canoes and canoes with outboard motors are mostly used by the artisanal fishermen while trawlers and steel-hulled vessels are used mainly by the semi-industrial and industrial fisheries. These are described along the lines of the different types of fisheries already discussed.

- **Artisanal Fisheries**

This is a type of fishery system with an open beach using very basic fishing methods such as the use of dug out boats (canoe) often powered with outboard motors. The use of canoes can be found in almost all 300 landing sites in 200 fishing villages along the Ghanaian coastline. It is generally considered small-scale fishing because it is dependent solely on local resources. The artisanal sub-sector consists of about 11,219 traditional canoes and employs a wide range of fishing gear which includes purse seines ("poli/watsa"), beach seines, drift gill nets (DGN), and surface set nets. Artisanal fishermen also use various forms of bottom set-nets, hook and line ("lagas"). The lagas and the DGN fleet

operate beyond the 50 meter depth zone. The lagas are however well equipped with ice, food and fishing aids like fish finders and Geographical Positioning System (GPS). The artisanal sub-sector produces about 70-80 per cent of the total annual volume of marine fish catch comprising mainly of small pelagic fish species and to a much lesser extent some valuable demersal fish species (Marine Fisheries Research Division, Ministry of Fisheries)

**Table 2.6: Canoe Frame Survey-2004**

	Volta	G/Accra	Central	Western	National
Fishing Villages	29	48	43	75	195
Landing Beaches	63	68	103	100	334
Canoes	736	2,781	4,450	3,246	11,213
Outboard Motors	323	2,144	2,097	1,841	6,405
Levels of Motorization (%)	43.9	77.1	47.1	56.7	57.1
Fishermen	17,382	35,168	44,303	27,366	124,219

### • **Semi-Industrial Fisheries (Inshore)**

The operators in this type of fishery use locally built wooden vessels measuring 9-12 meters in length. They number about 240 and are fitted with 30-90hp diesel engines. They fish during the upwelling seasons using purse seines mainly in the inshore waters between 30-50m depth where they compete with the canoe fleet. The semi-industrial fleets produce about 2 per cent of the total marine catch. This is made up of valuable demersal species like sole, shrimp, cassava fish, cuttlefish, burrito caught in trawls and small pelagics caught in purse seines during the upwelling seasons. Pelagic fish species are those fishes that are characteristically mobile and migratory and live in the open waters of the sea. Some commercially important species include round sardinella, flat sardinella, skipjack, yellow fin, bumper and chub mackerel. On the other hand, demersal fish species are commonly found near and just beneath the sea bed. The major demersal fish species of importance in Ghanaian waters are of the families sparidae (red fishes), pomadasidae (burros).

- **Industrial Fisheries (offshore/distant waters):**

The type of vessels used is mostly made up of (61), 30-200hp diesel engines, and large steel-hulled foreign built vessels. They operate in Ghanaian waters and restricted to between 50-75m deep, but frequently stray into shallow waters. In all, they account for about 6 per cent of the volume of marine catch. The catch also includes high value cephalopods that are frozen at sea for export. Currently, a fleet of 29 vessels use either purse seine or the pole and line with live bait (anchovy) to land tunas (skipjack, yellow fin and bigeye).

## **2.2.4 Legal and Regulatory Framework**

In terms of regulation, the framework has indeed evolved as various governments have since independence implemented various legislative interventions in the fisheries sector. For example, in the early 1960s, the Fisheries Act and the Fisheries Regulations, 1964 (L.I. 364) were enacted. In 1972 the government of the National Redemption Council (NRC) promulgated the Fisheries Decree, 1972 (N.R.C.D. 87). In 1977, the Fisheries (Amendment) Regulations 1977 (L.I. 1106) were passed by the same government to amend the Fisheries Regulations, 1964 (L.I. 364). In 1979 the government of the Armed Forces Revolutionary Council (AFRC) also promulgated the Fisheries Decree, 1979 (A.F.R.C.D. 30).

In that same year, the Fisheries Regulations, 1979 (L.I. 1235) were promulgated. In 1991, the government of the Provisional National Defence Council (PNDC) promulgated the Fisheries Law, 1991 (PNDCL 256) to repeal the AFRC 30 whilst saving the Fishing Boats Regulations, 1972 (L.I. 770) and the Fishing Boats Regulations, 1974 (L.I. 988). In 1993, the Fisheries Commission Act, 1993 (Act 457) was passed amending PNDCL 256. Finally, in 2002, the Fisheries Act, 2002 (Act 625) was enacted by the current government to consolidate with amendments all the foregoing laws on fisheries; to provide for the regulation and management of fisheries;

to provide for the development of the fishing industry and the sustainable exploitation of fishery resources and to provide for connected matters.

Clearly, virtually every government during Ghana's post-independence period, passed laws to regulate the fisheries industry, and this gives a good indication about the importance of the industry. In the 2007 Budget Statement, the government authorised a review of the Fisheries Policy to serve as a basis for the development of the fisheries sector. A Draft Fisheries Regulations intended to give effect to the Fisheries Act of 2002 (Act 625) and to streamline activities and bring about uniformity in the fishing industry is also being prepared for approval by Parliament.

### **The Fisheries Act 625 of 2002.**

The current legislation governing the fisheries sector, Fisheries Act 625 of 2002, amends and consolidates past laws on fisheries. It provides for regulation and management of fisheries, the development of the fishing industry and the sustainable exploitation of the resources. It attempts to streamline legislation to respond directly to chronic and emerging issues and to conform to the national and international fishery resource development and management strategies. Specifically, the act consolidates and strengthens the legislation establishing the Fisheries Commission to oversee the Fisheries Directorate, which becomes a secretariat with structures responsible for policy-making, administration and enforcement. Consistent with the current fisheries management and development strategies, the act provides:

- rules and regulations to control industrial, semi-industrial and artisanal fishing through registration and licensing;
- protection and promotion of artisanal and semi-industrial fisheries through extension services, technology transfer,

exemptions, reserved areas for semi-industrial and artisanal fisheries, development of landing facilities, and cooperation among small-scale fish processors and marketers;

- establishment of fishing zones, closed seasons and fishing reserves;
- protection of gravid and juvenile lobsters and other crustacea, juvenile fish and marine mammals;
- protection of fisheries water from pollution;
- proactive MCS and enforcement through a special unit to work in collaboration with the Ghana Navy, Air Force, Ministry of Defence and Ministry of Justice for effective policing and prosecution of offenders;
- arrest, seizure, detention, fining, forfeitures and temporary bans for offending fishing vessels;
- promotion and licensing of aquaculture projects, ensuring that they conform to environmental laws and specified operational standards; and
- establishment of a fisheries development fund to help partially finance the execution of the fishery development and management strategy and enforce its rules and regulations.

### 3. ECONOMIC CONTRIBUTION

The importance of fish in the Ghanaian diet cannot be overemphasized. It provides the Ghanaian consumer with about 60 per cent of his or her animal protein needs. According to the 2007 Budget Statement, the country's total annual fish requirement is estimated at 720,000 metric tons (mt), while annual production averages 400,000 mt. This leaves an annual deficit of 320,000 mt which is made up through the importation of US\$200 million worth of fish into the country yearly.

**Table 3.1: Share and Contribution to Gross Domestic Product by Kind of Economic Activity (in Purchaser's Values at Constant 1993 Prices)**

	Share of GDP			Contribution to Growth		
	2005	2006	2007**	2005	2006	2007**
Agriculture	36.0	35.4	34.7	1.5	1.6	1.4
Crops and Livestock	23.8	23.0	22.7	0.8	0.8	0.9
Cocoa Prodn & Marketing	4.6	4.4	4.3	0.6	0.1	0.2
Forestry and Logging	3.6	3.4	3.3	0.2	0.1	0.1
Fishing	4.1	4.4	4.4	0.0	0.7	0.2

The fisheries sector contributes significantly to the national economy in terms of food security, employment, poverty reduction, GDP and foreign exchange earnings. Moreover, the sector is significant for its gender distributions. Men are involved in fish harvesting, undertaking the main fishing activities in the artisanal, semi-industrial and the industrial sectors, while women are the key players in on-shore post-harvest activities, undertaking fish processing, storage and trade activities. Many are also engaged in the growing frozen fish distribution trade as well as marketing fish within and outside the country. Major players in post-harvest fishery activity are the fish mummies who informally fund artisanal fishing and provide financial support in fish processing and trade.

As discussed in the introduction, the contribution of the fishing industry in real terms has been declining over the years. This is against the backdrop of the potentials that the industry has in reducing poverty in the economy. It is important to note that the overall contribution of aquaculture to the economy of Ghana has not been disaggregated from the contribution of fisheries to the national economy. Livelihood opportunities often identified are those of marine and inland capture fisheries. Therefore a comprehensive study that disaggregates the respective performance of aquaculture and marine and inland fisheries would be critical in capturing the full contribution of the fishing industry to the economy.

### 3.1. EMPLOYMENT

The fishing industry provides employment for many rural and urban people in Ghana. It has been estimated that about ten per cent of the population is involved in the fishing industry from both urban and rural areas and women are key players in post harvest activities (IMM 2004a, 2004b).

The sector is also important from a gender perspective. Men are involved in fish harvesting, undertaking the main fishing activities in the artisanal, semi-industrial and the industrial sectors while women are the key players in on-shore post-harvest activities, undertaking fish processing and storage and trade activities. Many are also engaged in the frozen fish distribution trade as well as marketing fish within and outside the country. It is estimated that a total of 500,000 fishermen, fish processors, traders and boat builders are employed in the Fisheries Sector. These people, together with their dependents, account for about 10 per cent of the population (Afful, 1993; Anon, 1995; Quartey et al., 1997). A canoe census conducted for the marine fisheries in 2001 estimated the number of artisanal fishermen at 120,000 (Bannerman et. al., 2001).

IDAF (1993) estimated that about 300,000 fisher folk depend on Lake Volta for their livelihood, of which 80,000 are fishermen and 20,000 are fish processors/traders.

### 3.2 FISHERY PRODUCTS EXPORTS AND FOREIGN EXCHANGE EARNINGS

Fishery and fishery products have gradually become the country's most important non-traditional export, accounting for over 50 per cent of earnings from non-traditional export. Table 3.2 presents the quantity by commodity/species and value of selected fish and fishery products exported between 2000 and 2006.

**Table 3.2: Fish Exports (2000-2006)**

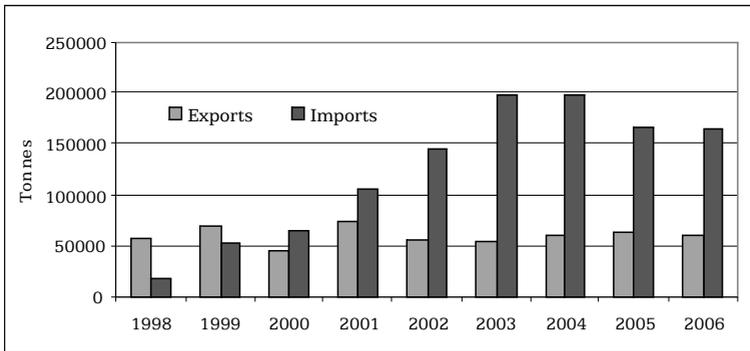
Year	Tuna Fish	Values	Frozen Fish	Values	Prawns/Shrimps	Values
	(Tonnes)	US\$	Tonnes	US\$	Tonnes	US\$
2000	13,733.30	5,437,038.46	6,719.90	5,585,970.35	106.07	332,054.62
2001	16,880.50	10,291,921.77	8,088,369.03	0.69	0.69	2,612.00
2002	17,809.80	12,191,012.84	1,779,220.00	6,205,265.46	947	1,935.06
2003	13,430.50	8,900,713.59	5,321.36	10,658,485.60	0.48	2,000.00
2004	657.47	858,018.00	769	370	959.3	259,037.00
2005	7,526.72	5,223,291.00	48,823.14	18,404,886.00	115.83	349,048.00
2006	49,580.84	39,433,575.00	-	-	180.76	726,525.00

*Source: Ghana Exports Promotion Council*

In 2006, about 60,000 metric tons of raw and processed fish were exported; earning over US\$80 million for the country. The smoked/dried fish, salted fish and aquarium fish are from inland fisheries. The rest are from marine fisheries and are from the landings of industrial (including shrimpers) and tuna fleets. The lobsters are mainly from the landings of artisanal fleets. Export earnings from fish and fish products are a significant source of foreign exchange for government. In terms of foreign exchange earnings it is the second most important Non Traditional Export (NTE) after horticultural products, making

up 5 per cent of total NTEs. Fish and seafood increased their share of non-traditional agricultural export products from 25 per cent in 2000 to 33 per cent in 2001 (ISSER 2003). With respect to national economic development, increasing trends in fish exports reflect a major advance in the pursuit of national non-traditional export policy objectives (Mensah et al 2003). Exports generate foreign exchange and revenue in the form of taxes for the government. The various policy initiatives being pursued by the government in the fisheries sector should further help position the sector as a sustainable foreign exchange earner for the country.

**Chart 3.1: Fish Exports and Imports (1999-2006)**



### 3.3 LIVELIHOOD SUPPORT

Whilst the fisheries sector as a whole is thought to support the livelihoods of over 1.5 million people in Ghana (FAO 1998), there are no specific data on the numbers of people directly or indirectly benefiting from the post-harvest sector and it is often almost impossible to separate post-harvest livelihoods from fisheries livelihoods in general. The same people are often engaged in both sectors; divided between household members so that benefits from harvesting and from post-harvest activities are pooled. It is probable that almost all fisheries-related livelihoods in the country either include post-harvest fisheries activities or are closely affected by them in one way or the other (Mensah et al 2001).

The post-harvest sector provides a large and varied range of livelihood activities, not only for fishermen, women fish processors and the traders who dominate the sector at landing sites as well as in urban and rural markets, but also for a vast number of people engaged in the various stages of the post-harvest process. These include those employed in processing and trading, labourers who pack, store, load, unload and transport fresh and processed fisheries products on foot or by trolley for short distances, people providing transport and storage services, export processors, cannery workers, fishmeal manufacturers and their staff, and those engaged in the production of packaging for different types of products.

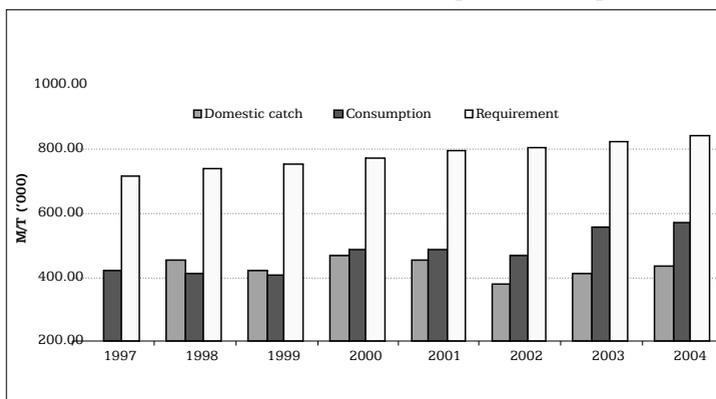
There are also those who supply production and processing inputs and services such as boat builders, mechanics, timber and fuel wood providers, food vendors, drinking bar operators and many other supporting activities. The livelihood opportunities provided by the post-harvest sector range from full-time employment to seasonal, occasional or opportunistic involvement in different stages of the post-harvest chain. This range of opportunities is important as it allows engagement in the sector to be combined with other livelihood activities allowing people in coastal and lakeshore areas to diversify their livelihood strategies and cope with seasonal or cyclical variations in addition to other options (Campbell & Townsley 1995, Mensah et al 2001).

### 3.4 FOOD SECURITY

Fish is recognised as the most important source of animal protein in Ghana and is consumed by most people in all regions of the country from the rural poor to the urban rich. Various species of marine and inland fish are available in a variety of different product forms and can be bought in quantities to suit the buying power of the consumer. It provides the consumer with about 60 per cent of his or her animal protein intake. Although current information is not available, average per-capita consumption of fish is thought to

be high - at between 20 and 25 kg - the world average is 13 kg. In 1987 marine fish contributed 85.5 per cent and inland fish 14 per cent of per capita consumption (Vanden Bossche & Bernacsek 1990). It makes up 22.4 per cent of food expenditure in all households and 25.7 per cent in poor households and is thus a very significant part of the diet (Campbell & Townsley 1995).

**Chart 3.2: National Fish Catch, Consumption and Requirement**



### 3.5 POVERTY REDUCTION

The role of the sector in terms of poverty reduction is very important. Many poor and vulnerable people rely on the fisheries sector either directly or indirectly for their livelihoods. Post-harvest fisheries activities clearly provide a wide range of full-time and seasonal livelihood opportunities to many vulnerable people. According to Mensah et al 2001, in spite of the difficulties faced by post-harvest operators and fishers on the Volta Lake, there is considerable internal migration to the area, especially from coastal communities that are faced with declines in production. New entrants take up fisheries associated activities, suggesting that fisheries offer a fall-back livelihood strategy for many displaced from other activities in other areas.

## 4. THE WAY FORWARD

It is clear that fish production from both the marine stocks and fresh water and lakes stocks have been dwindling since the 1970s. It is argued that the country's fish consumption requirement is about 720,000 metric tons even though the annual fish harvest or fish supply is just about 400,000 metric tons. Thus, Ghana which used to be a regional power in fish production now spends more than US\$200 million to import the shortfall annually. This is notwithstanding the fact that Ghana has the potential to turn around this trend. Ghana has a large expanse of water bodies, and in fact about 10 per cent of the entire land surface is covered by water. It is also argued that there is a fairly good stock of expertise available that can be harnessed to promote the development of the sub-sector.

The problems of the fishing industry in Ghana are indeed varied, ranging from inadequate infrastructure such as landing sites leading to high post harvest losses, poor fishing vessels and gear, inadequate storage facilities in the fishing centres, inadequate aquaculture infrastructure, lack of enforcement of the regulatory framework regarding fishing in Ghana's waters, and inadequate monitoring of Ghana's waters.

As argued by Atta-Mills et al (2004), the decline in Ghana's fishing industry can also be viewed in the context of other West African countries that are also facing declining catches. The authors argue that overfishing, overcapacity, habitat degradation, and inequitable access agreements have contributed to the decline in catches throughout West Africa. They also cited ineffective monitoring, control and surveillance which often is not able to check foreign vessels that intrude into their exclusive economic zones. Thus they called for neighbouring countries to pool their resources together to develop a regional monitoring, control and surveillance (MCS) system to deal with foreign fleets that illegally access their EEZs

or operate outside agreement provisions. The authors also argued that European Union access agreements often do not benefit West Africans, economically and socially. It often creates unemployment in the fishing sector which compels governments to take the blame on immigrant fishermen such as the eruption of violence between the indigenous population and immigrant fishing communities in recent years in some West African countries<sup>3</sup>.

The authors also made the important observation that the fishing sector was not covered under the New Partnership for Africa's Development (NEPAD) even though there were plans for achieving food security in African countries, through the improvement in agricultural performance. These did not include measures to manage marine resources. It is however agreed that Ghana's new fisheries law has enough provisions to address most of the factors that have led to a decline in the fishing industry. It is refreshing to note the range of interventions that the Ministry for Fisheries is currently pursuing in this regard. The Ministry is vigorously pursuing and intensifying fish farming (Aquaculture), to be able to meet the shortfall in fish production in the country. As one of the strategies, the Ministry is training selected farmers in fish farming techniques and helping them to establish their farms to increase overall fish production in the country.

The Fisheries Regulations, which is aimed at enhancing the effective implementation of the Fisheries Act 625 of 2002, is currently being considered for passage into law. The new regulations could, for example, enable aquaculture farmers to seek redress when their fish gets stolen or their establishments are tampered with. The regulations would deal with regular monitoring and inspection of aquaculture establishments, fish seed production certification, fish breeding and responsible aquaculture practice.

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<sup>3</sup>For example, in December 1998, Ghanaian fishermen were driven out of parts of southwest Cote d'Ivoire when local inhabitants burned their settlements.

Other areas include, tampering with aquaculture establishments, aquaculture record keeping, transfer of fish within the country and penalties for the violation of each regulation.

Also, the Ministry has introduced community-based fishing management committees in all fish landing sites in the country, as a way of integrating the fisher folk in the management and administration of fishing. These Committees are made up of stakeholders of the Industry in the various fishing communities who would co-manage the fishery resources in their communities with the state by regulating fishing activities through enforcement of the fishery laws. The Ministry of Fisheries has also introduced an input credit system under which fingerlings and fish feed are being produced on loan to prospective fish farmers<sup>4</sup>. It is clear that the Ministry of Fisheries has been doing quite a good job since its establishment in 2005 in addressing the problems of the fishing industry in Ghana. This notwithstanding, there is the need to intensify efforts at improving the contribution of the sector. These include:

- **Restricting Access to Ghana's Waters by Large Foreign Fishing Vessels.**

It is alleged that European Union (EU) vessels increased their fish catches off West Africa 20-fold between 1950 and 2001 even as EU subsidies of this fleet increased from US\$6 million dollars in 1988 to US\$350 million in 2001, artificially increasing their profits. In this regard, there is the need to put in place a state of the art monitoring system such as a radar satellite together with Navy speed boats that can help monitor Ghana's waters more efficiently and ensure that fish stocks are not exploited illegally.

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<sup>4</sup> *It is estimated that about 15,000 new ponds have been constructed in addition to the existing 4,000 fish ponds and cages. It is also estimated that the number of fish farmers in the country has increased to about 5,000 from the existing number of about 1,200.*

Such a system will also help with environmental monitoring, especially now that Ghana's oil industry is about to take off.

- **EU Fishing Policy**

EU fishing policy is also another important factor. Especially as regards the implications of a new ACP-EC Partnership Agreement on Ghana's fishing exports. Currently, Ghana's fish exports have zero-rated tariff to the EU market but this could change under a new agreement. There is the possibility of an erosion of Ghana's preferential access to and competitive advantage on the EU fish market. In particular, Ghana's fish and tuna exports will become uncompetitive, and profits from exports will be reduced as a result of decreasing volumes and depressed prices. Thus this could result in reduced government export receipts due to low volumes of exports and profits. Other effects could be increased unemployment and poverty, as exporting businesses will lay off workers to reduce production cost. Also, a new agreement might mean that Ghana would have to open up its waters to greater access by foreign fishing vessels. It is therefore important that a number of strategic measures are taken in this regard.

- **Coordination of Monitoring Efforts**

Government needs to work with other countries in the sub-region for increased coordination of monitoring efforts to maintain sustainable levels of harvest, so as to ensure a steady food supply in West Africa. This will help maintain the millions of people in the region whose livelihoods are tied to fishing.

- **Aquaculture**

It is also suggested that Ghana can achieve the desired breakthrough in fish production both for domestic consumption and export if fish farming and aquaculture could be done with modern techniques in fish cultivation. One can take a cue from Singapore which has significantly grown its capacity in fish farming as a result of its

application of modern aquaculture practice. For instance, it was formerly held that catfish for example would grow to 200 grammes in 9 months if you stock at 2 fish per square metre. But currently, one can stock 300 fish per square metre and still grow catfish to 1.5kg within 5 months on the average.

The catfish business has truly evolved with several innovations, and hence the increased interest in catfish production<sup>5</sup>. For example, Singapore has a population of just about 3.5 million people and yet account for more than 30 per cent of the world's tropical fish production.

This makes their airport the second largest cargo airport in the world; and tropical fish is the singular largest airfreight item in Singapore. Ghana currently has a long way to go in aquaculture, in spite of being in the business for so many years. According to statistics, Nigeria is the largest African aquaculture producer, with production output of over 15,489 tonnes per annum. This is closely followed by Egypt with output of about 5,645 tonnes.

Only five other countries: Zambia, Madagascar, Togo, Kenya and Sudan produce more than 1000 tonnes each. Hence Ghana needs to ride on the wings of technology in order to boost output in aquaculture<sup>6</sup>. It is recommended that training in freshwater Clarias catfish breeding should be aggressively considered in addition to the well known tilapia and other popular freshwater aquaculture species.

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<sup>5</sup> *It is argued that one of the factors that account for the success of Singapore in Catfish production can be traced to a relatively cheap technology based on an incredible palm-sized, convex glass lens that is used to actually enhance agricultural production*

<sup>6</sup> *This should involve simple but practical and effective techniques for artificial propagation of catfish with hormone injections and nursing techniques of hatchlings etc.*

- **TUNA**

The Tuna fishing industry is another huge potential that remains unexploited even though Ghana is said to be currently the fourth largest tuna producing country in the world. The problem here is that the Tuna processing and value addition sector remains undeveloped to the extent that the commercial supply chain is rather short.

It is therefore important that efforts are intensified to facilitate the establishment of tuna processing and value addition companies in the tuna industry. Currently, there are three companies that are involved in tuna processing. These are, Pioneer Food Cannery (PFC), MYROC, and GAFCO who are estimated to be processing about fifty per cent of total catches.

- **Modernization of the Fishing Industry**

The Ministry of Fisheries needs to intensify efforts towards the modernisation of the fishing industry through the provision of appropriate fishing gear. The Ministry is currently grappling with the monitoring of fishing vessels and the restructuring the marine fleet registry.

The Ministry is also supplying out-board motors to fishermen to support them in their fishing activities through credit programmes, constructing additional fish landing sites and providing storage facilities at those sites. However, these interventions need to be streamlined. Generally, it is argued that finance remains an Achilles heel for fish farmers for example, and this tends to constrain their activities. One wonders therefore why the Venture Capital Fund could not be made available as longer term finance to help revolutionize the aquaculture sector and to raise the scale of fish farming in Ghana<sup>7</sup>.

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<sup>7</sup>For example, an Indian Company, Fibroplast Marine has set up a Fiber glass Boat Building Company in Tema to manufacture fishing boats and fiberglass canoes.

Generally, there is the need for a comprehensive reform of the fishing industry with the objective of increasing the contribution of the fishing sector from 4.0 per cent of GDP to about 10 per cent of GDP. In other words, there is the potential to increase the contribution of the fishing sector to exceed that of cocoa, but this requires tremendous reforms and interventions in the sector.

## 5. SUMMARY AND CONCLUSION

The decline of Ghana as a regional fishing country, and the attendant economic and social impacts are rather worrisome, hence the need for remedial measures to arrest this situation. The paper has shown that the fishing sector is an important source of employment as well as a source of livelihood and nutrition for many Ghanaians. It has also shown that the reasons for the declining trend in the fishing industry in Ghana range from factors such as the declarations of exclusive economic zones (EEZs) by neighbouring West African nations, globalisation of the fishing sector, overfishing and lack of good management systems for the fishery resources, lack of infrastructure and modernisation of the industry, and poaching by European distant water fleets.

Also, the prohibitive cost of access arrangements limits Ghana's access to distant waters. This decline of the fishing sector has limited Ghana's ability to meet domestic demand as more than US\$200 million is spent to import the shortfall. The paper acknowledges the efforts of the Ministry for Fisheries and argues that the problems need to be addressed on several fronts. In particular, fish farming based on contemporary technology is a growing area of interest that needs to be explored, be it in the area of fresh water farming or aquaculture based on ponds and reservoirs, or marine.

The paper also draws attention to tuna fishing and calls for investments in tuna processing and value addition which has the potential to generate additional employment and foreign exchange for the economy. The paper also calls for efforts to address the potentially adverse impact of EU fishing policy on Ghana's fishing sector. Especially as regards the implications of a new ACP-EC Partnership Agreement on Ghana's fishing exports. Currently, Ghana's fish exports have zero-rated tariff to the EU market but this could change under a new agreement.

There is the possibility of an erosion of Ghana's preferential access and competitive advantage on the EU fish market. Finally, there is the need for tighter restriction of access to Ghana's waters by large foreign fishing vessels. This can be done more effectively if a radar satellite system of monitoring is established together with Navy speed boats that can effectively monitor Ghana's EEZ. Also, governments in the West African sub-region must work with each other more closely for increased coordination of monitoring efforts so as to maintain sustainable levels of harvest. This will ensure steady food supply in West Africa and maintain the millions of people in the region whose livelihoods are tied to fishing.

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