

FINAL REPORT

**VOL. 1**

PRESENT CONDITIONS

# THE DEVELOPMENT STUDY OF GHANA SEA PORTS IN THE REPUBLIC OF GHANA

**February 2002**

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## PREFACE

In response to a request from the Government of the Republic of Ghana, the Government of Japan decided to conduct the Development Study of Ghana Sea Ports and entrusted the study to the Japan International Cooperation Agency (JICA).

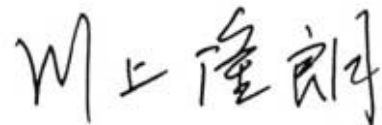
JICA selected and dispatched a study team headed by Mr. Takechiho TABATA of the Overseas Coastal Area Development Institute of Japan (OCDI) and comprised of OCDI and NIPPON KOEI CO.,LTD. to Ghana three times between November 2000 and December 2001.

The team held discussions with the officials concerned of the Government of Ghana and Ghana Ports and Harbours Authority (GPHA), and conducted field surveys at the study area. Upon returning to Japan, the team conducted further studies and prepared this final report.

I hope that this report will contribute to the promotion of this project and to the enhancement of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of Ghana for their close cooperation extended to the study.

February 2002



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Takao Kawakami

President

Japan International Cooperation Agency

## LETTER OF TRANSMITTAL

February 2002

Mr. Takao Kawakami  
President  
Japan International Cooperation Agency

Dear Mr. Kawakami:

It is my great pleasure to submit herewith the Final Report of The Development Study of Ghana Sea Ports in the Republic of Ghana (hereinafter referred to as 'Ghana').

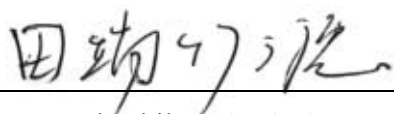
The study team of the Overseas Coastal Area Development Institute of Japan (OCDI) and NIPPON KOEI CO.,LTD (NIPPON KOEI) conducted surveys in Ghana over the period between November 2000 and December 2001 as per the contract with the Japan International Cooperation Agency (JICA).

The findings of this study, which are compiled in this report, were fully discussed with the officials concerned of the Government of Ghana and Ghana Ports and Harbours Authority (GPHA) to formulate the Development Study of Ghana Sea Ports.

On behalf of the study team, I would like to express my heartfelt appreciation to the Government of Ghana and GPHA for their diligent cooperation and assistance and for the heartfelt hospitality, which they extended to the study team during our stay in Ghana.

I am also greatly indebted to the JICA, the Ministry of Foreign Affairs, the Ministry of Land, Infrastructure and Transport and the Embassy of Japan in Ghana for giving us valuable suggestions and assistance during the preparation of this report.

Yours faithfully,



Takechiho TABATA

Team Leader for the study team  
The Development Study of Ghana Sea Ports in  
the Republic of Ghana

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## **List of Abbreviations**

AEC	Assumed Environmental Criteria
ASEAN	Association of Southeast Asian Nations
B/L	Bill of Lading
BOD	Biochemical Oxygen Demand
BOR	Berth Occupancy Ratio
BOT	Built-Operate-Transfer
BRV	Bulk Road Vehicles
BU	Bulk Carrier
C.D	Chart Datum
CEPS	the Customs Exercise and Preventive Service
CFS	Container Freight Station
CIF	Cost, Insurance and Freight
CM	Container/Multipurpose Carrier
CO	Container Cellular Vessel
COD	Chemical Oxygen Demand
CRMS	Computerized Risk Management System
CT	Container Terminal
CY	Container Yard
DO	Dissolved Oxygen
DO	Delivery Order
DR	Dock Receipt
DWT	Dead Weight Tonnage
EDI	Electric Data Interchange
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EPZ	Export Processing Zone
FEU	Forty-foot Equivalent Unit
FOB	Free On Board
GAFCO	Ghana Agro-Food Company
GBC	Ghana Bauxite Company
GC	General Cargo Carrier
GDP	Gross Domestic Product
GEPC	Ghana Export Promotion Council
GFZB	Ghana Free Zones Board
GHATIG	Ghana Trade and Investment Gateway Project
GPHA	Ghana Ports and Harbours Authority
GRC	Ghana Railway Corporation
GT(GRT)	Gross Tonnage
H1/3	Significant Wave Height
HWL	High Water Level
IALA	International Association of Lighthouse Authority
IAPH	International Association of Ports and Harbors
JICA	Japan International Cooperation Agency

KIA	Kotoka International Airport
KN	Kilo Newton (=0.102 tf)
L0	Wave Length
LOA	Length Overall
LWL	Low Water Level
MHWN	Mean High Water Neap
MHWS	Mean High Water Spring
MLWN	Mean Low Water Neap
MLWS	Mean Low Water Spring
MOF	Ministry of Finance
MOFA	Ministry of Food and Agriculture
MOL	Mitsui O.S.K Line
MORT	Ministry of Road and Transport
MPa	Mega Pascal (=N/mm <sup>2</sup> )
MR	Mate's Receipt
NCA	National Communication's Authority
NCP	New Container Platform ( at Takoradi Port)
NEAP	National Environmental Action Plan
OCDI	Overseas Coastal Area Development Institute of Japan
OECD	Organization for Economic Co-operation and Development
OECE	The Overseas Economic Cooperation Fund
PIANC	International Navigation Association
RO	Ro-Ro Vessel
Ro/Ro	Roll on / Roll off
RTG	Rubber Tyre mounted Gantry crane (= Transfer crane)
S.F.	Safety Factor
SAPS	Special Assistance for Project Sustainability
SO	Shipping Order
SS	Suspended Solids
T1/3	Significant Wave Period
TDC	Tema Development Cooperation
TEU	Twenty-foot Equivalent Unit
TFCC	Tema Food Complex
TG	Tugboat
TK	Tanker
TMA	Tema Municipal Assembly
TOR	Tema Oil Refinery
UNCTAD	United Nations Conference on Trade and Development
VALCO	Volta Aluminium Company Limited
VLTC	Volta Lake Transport Company
VRA	Volta River Authority
WAG	West Africa Gas
WTO	World Trade Organization

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## EXECUTIVE SUMMARY

### 1 Background of the Study

In Ghana there are two major ports: Tema Port and Takoradi Port. These two ports have fulfilled important roles, Tema Port as a main import port of whole Ghana and an export port of the East Ghana and Takoradi Port mainly as an export port of the West Ghana. However, a lack of deep berths, low working rate of cargo handling equipment and physical and functional decrepitude of port facilities have made it difficult for those ports to efficiently handle the rapidly increasing volume of cargoes.

In this context, GOG requested GOJ to conduct the development study of Ghana seaports. In response to the request, GOJ entrusted the Study to JICA. On July 20th, 2000, both sides agreed on the Scope of Work for the Study.

### 2 Objectives of the Study

- ◆ To provide a master plan for the development of Ghana Ports: Tema Port, Takoradi Port and / or a possible new third Port (hereinafter referred to as “Ghana Sea Ports”) up to the year 2020,
- ◆ To provide a short-term development and improvement plan for the Ports to meet demand up to the year 2010,
- ◆ To identify institutional development measures and provide an improvement plan for port management and operation to achieve competitive operational efficiency, and
- ◆ To carry out relevant technology transfer.

### 3 Study Implementation

#### 3.1 Study Period

November 2000 – February 2002

#### 3.2 Organization of the Study

(1) Counterpart Agency in Ghana

Ghana Ports and Harbours Authority

(2) Organization of the Study Team

Name	Assignment
Takechiho TABATA	Team Leader / Port Policy
Yoshihisa FUJITA	Port Planning / Investment Planning
Hideki YOKOMOTO	Regional Development
Koji ESAKI / Kei KUROSE	Port Management and Operation / Port Promotion
Masashi MURAYAMA	Financial Analysis
Fujio SAIGUSA	Demand Forecast / Economic Analysis

Syojiro KOGA  
 Yushi ANDO  
 Kazuhiko DOHI  
 Shane REID

Engineering Design / Construction Program / Cost Estimation  
 Natural Conditions  
 Environmental Consideration  
 Coordination

### 3.3 Flow Chart of Study

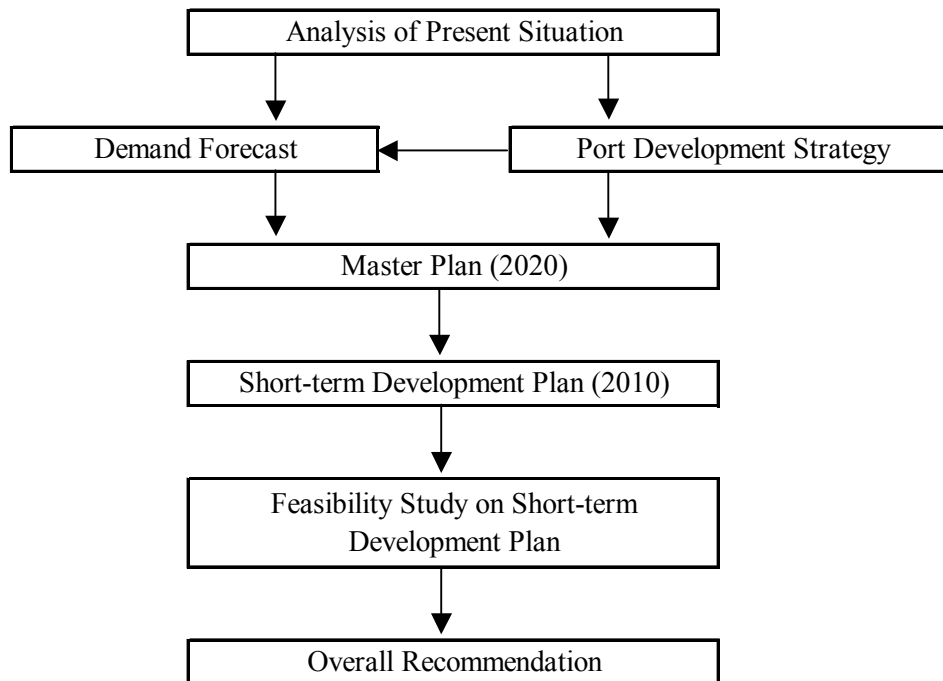


Figure Flow Chart of the Study

## 4 Development Plan of Takoradi Port

### 4.1 Development Principle

- ◆ Functioning as the main export port of commodities produced in West Ghana such as manganese, bauxite, cocoa and timber.
- ◆ Functioning as an import port of commodities consumed in West Ghana such as foodstuff and consumer goods. (Appropriate role sharing with Tema Port will be important in this regard.)
- ◆ Supporting industrial development and agriculture by providing necessary facilities for import of materials and export of manufactured goods and crops.

### 4.2 Future Cargo Demand Forecast

Future Cargo Demand Forecast

	1991	2000	2010	2020
All Cargo (tons)	1,639,468	3,056,516	5,124,256	9,198,434
Container Cargo (TEUs)	9,112	39,805	136,196	407,742

### 4.3 Master Plan

#### (1) Scale of Berths

Scale of Berths for Master Plan of Takoradi Port

Facility	No.	Dimension / Capacity
Container Berths	2	Length 300m, depth 12m
Multipurpose Berths	3	Length 300m, depth 12m
Manganese Berth	1	Length 200m, depth 12m
Clinker Berth	1	Length 260m, depth 13m
Bauxite Berth	1	Length 260m, depth 13m

#### (2) Cost estimates

The total estimated cost for the implementation of the Master Plan is US\$ 249,7 millions.

### 4.4 Short-term Development Plan

#### (1) Main Facilities

List of Main Facilities in the Short-term Development Plan of Takoradi Port

Facility	No.	Dimension / Capacity
Container Berth	1	Length 300m, depth 12m
Multipurpose Berth	1	Length 300m, depth 12m
Manganese Berth	1	Length 200m, depth 12m
Bauxite/Clinker Berth	1	Length 260m, depth 13m
Berth for small craft	1	Length 150m, depth 5m
Navigational aids	1	1 Light beacon, 5 Buoys
Tug boat	1	2,420 Hp
New approach channel	1	One way, width 160m, depth 13m
Turning basin 1	1	Radius 220m, depth 12m
Turning basin 2	1	Radius 200m, depth 13m
Container yard	1	10.5 ha
Breakwater extension	1	400m
Revetment	1	480m, 270m, 160m
Access road improvement	1	1 set
Inner harbour road	1	1 set
Container crane	2	45 tons
Multipurpose crane	1	45 tons
Transfer crane	6	40 tons, 1 over 4
Top lifter	3	35 tons, 15 tons

Tractor head	16	For container cargo
Trailer	16	For container cargo

## (2) Cost Estimates

The total estimated cost for the implementation of the Short-term Development Plan is US\$ 136.5 millions, of which the foreign portion is US\$ 116.4 millions (85.2%) and local portion is US\$ 20.1 millions (14.8%).

## (3) Appraisal of Short-term development Plan

### Economic Appraisal

The economic rate of return (EIRR) for the project are 22.7% and consequently the project is considered to be economically feasible from the viewpoint of the national economy of Ghana.

### Financial Appraisal

The financial rate of return (FIRR) for the project is 10.4% and the project is considered to be financially feasible.

## (4) Environmental Impact Assessment (EIA)

EIA is conducted in accordance with Ghana EDI system. It is noted that there is no decisive factors to rule out the implementation of the project if adequate mitigation measures are taken in such matters as disposal of contaminated sea bottom sediment, dust dispersal, noise nuisance and waste management.

## **5 Development Plan of Tema Port**

### **5.1 Development Principle**

- ◆ Sustaining and developing physical distribution of Ghana as the largest port.
- ◆ Functioning as a leading container port in West Africa.
- ◆ Functioning as a main import port of commodities consumed in Ghana such as foodstuffs, consumer goods and materials.
- ◆ Functioning as an export port of commodities produced in the east part of Ghana such as aluminum, petrol products, other manufactured goods, cocoa products and other foodstuffs.
- ◆ Supporting industrial development and agriculture by providing necessary facilities for import of materials and export of manufactured goods and crops.

## 5.2 Future Cargo Demand Forecast

Future Cargo Demand Forecast

	1991	2000	2010	2020
All Cargo (tons)	3,647,010	6,001,643	10,126,771	18,334,847
Container Cargo (TEUs)	70,923	166,149	485,313	1,049,940

## 5.3 Master Plan

### (1) Scale of Berths

Scale of Berths for Master Plan of Tema Port

Facility	No.	Dimension / Capacity
Container Berths	4	Length 300 – 350m, depth 13-14m
Multipurpose Berths	2	Length 280m, depth 11.5m
Valco Berth	1	Length 190m, depth 11.5m
Oil Berth	1	Dolphin, depth 11.5m

### (2) Cost Estimates

The total estimated cost for the implementation of the Master Plan is US\$ 365.2 millions.

## 5.4 Short-term Development Plan

### (1) Main Facilities

List of Main Facilities in the Short-term Development Plan of Tema Port

Facility	No.	Dimension / Capacity
Container Berths	2	Length 300m, depth 13m
Navigational aids	1	2 Light beacons, 2 Buoys
Tugboat	1	2,500Hp
New entrance channel	1	One way, width 160m, depth 15m
New turning basin	1	Radius 290m, depth 14m
Container yard	1	25ha
New breakwater	1	1,350m, 200m
Revetment	1	630m
Access road development	1	1 set
Inner harbour road	1	1 set
Parking space	1	12,200m <sup>2</sup>
Container crane	4	45 tons
Transfer crane	12	40 tons, 1 over 4
Tractor head	16	For container cargo

## (2) Cost Estimates

The total estimated cost for the implementation of the Short-term Development Plan is US\$ 171.8 millions, of which the foreign portion is US\$ 145.0 millions (84.4%) and local portion is US\$ 26.7 millions (15.6%).

## (3) Appraisal of Short-term development Plan

### Economic Appraisal

The economic rate of return (EIRR) are 16.3% and consequently the project is considered to be economically feasible from the viewpoint of the national economy of Ghana.

### Financial Appraisal

The financial rate of return (FIRR) for the project is 10.3% and the project is considered to be financially feasible.

## (4) Environmental Impact Assessment (EIA)

EIA is conducted in accordance with Ghana EDI system. It is noted that there is no decisive factors to rule out the implementation of the project if adequate mitigation measures are taken in such matters as waste management and noise nuisance.

## **6 Management and Operation Plan**

### **6.1 Takoradi Port**

#### A new dedicated container terminal

As a common users berth, the terminal is operated by a single private company. Equipment including quayside gantry cranes is provided by it. As the cargo handling system of the terminal, the transfer crane system is selected because of its high operation efficiency, low maintenance cost and high working safety.

#### A new multipurpose berth

As a common users berth, the berth is operated by stevedoring companies. Equipment except multipurpose cranes and top lifters is provided by them.

#### New bulk berths

New bulk berths are leased to and operated by related private companies. Equipment is provided by them.

## **6.2 Tema Port**

### A new dedicated container terminals

As a common users berth, each container berth is to be leased to and operated by a single private company. Equipment including quayside gantry cranes is provided by it. As the cargo handling system of the terminal, the transfer crane system is selected because of its high operation efficiency, low maintenance cost and high working safety.

## **6.3 Proposals for Port Management and Operation**

### (1) Proposal for Improvement of Port Operation and Management

- ◆ Monitoring system by GPHA on the performance of operators and recommend the improvement of productivity.
- ◆ Introduction of 3 shift working system to enhance the utilization of facilities and to achieve more effective cargo handling operation.
- ◆ Introduction of port EDI system to realize efficient document transaction. It is worth considering that GPHA or a community of port related companies jointly establish a governing body of the port EDI system.

### (2) Proposals for Efficient Port Promotion

- ◆ To emphasize the high stability and reliability of Ghana Sea Ports.
- ◆ To improve efficiency through facility development and institutional change.
- ◆ To have periodic meetings with port users.
- ◆ To carry out port promotion activities both in Ghana and to foreign countries.

## RECOMMENDATIONS

Ghana is located at the geographical center of the ECOWAS region and functions as one of the leading countries of the region, particularly in terms of port activities. Together with the economic development of Ghana, cargo throughput in ports has been increasing year by year, with container cargo showing remarkable growth in recent years. However, physical layouts of port facilities have become old-fashioned and not suitable to the recent trends and technological advancements in sea transportation such as containerization and utilization of large vessels.

Seaports of Ghana have played an important role not only in the economic activities of Ghana but also those of landlocked countries such as Mali, Burkina Faso and Niger. And because of the recent political unrest of neighboring countries, transit cargoes to landlocked countries through Ghana seaports have been increasing rapidly. Therefore, development of Ghana seaports is indispensable not only to the economic development of Ghana but also to that of the ECOWAS region as a whole. And since neighboring countries are hampered by a political instabilities, now is a good opportunity for Ghana seaports to acquire leading positions in the region.

Based on the results of the Study, it is recommended that the Government of Ghana implement the short-term development plans of Takoradi Port and Tema.

### 1 Short-term Development Plan

The objectives of the short-term development plans are to efficiently handle the estimated future cargoes in 2010 and to promote the economic development of Ghana. The main components of the plans are summarized as follows:

List of Main Facilities in the Short-term Development Plan of Takoradi Port

Facility	No.	Dimension / Capacity
Container Berth	1	Length 300m, depth 12m
Multipurpose Berth	1	Length 300m, depth 12m
Manganese Berth	1	Length 200m, depth 12m
Bauxite/Clinker Berth	1	Length 260m, depth 13m
Berth for small craft	1	Length 150m, depth 5m
Navigational aids	1	1 Light beacon, 5 Buoys
Tug boat	1	2,420 Hp
New approach channel	1	One way, width 160m, depth 13m
Turning basin 1	1	Radius 220m, depth 12m
Turning basin 2	1	Radius 200m, depth 13m
Container yard	1	10.5 ha
Breakwater extension	1	400m
Revetment	1	480m, 270m, 160m
Access road improvement	1	1 set
Inner harbour road	1	1 set
Container crane	2	45 tons



Multipurpose crane	1	45 tons
Transfer crane	6	40 tons, 1 over 4
Top lifter	3	35 tons, 15 tons
Tractor head	16	For container cargo
Trailer	16	For container cargo

#### List of Main Facilities in the Short-term Development Plan of Tema Port

Facility	No.	Dimension / Capacity
Container Berths	2	Length 300m, depth 13m
Navigational aids	1	2 Light beacons, 2 Buoys
Tugboat	1	2,500Hp
New entrance channel	1	One way, width 160m, depth 15m
New turning basin	1	Radius 290m, depth 14m
Container yard	1	25ha
New breakwater	1	1,350m, 200m
Revetment	1	630m
Access road development	1	1 set
Inner harbour road	1	1 set
Parking space	1	12,200m <sup>2</sup>
Container crane	4	45 tons
Transfer crane	12	405 tons, 1 over 4
Tractor head	16	For container cargo

## 2 Enhancement of Cargo Handling Productivity

Measures to enhance the cargo handling productivity such as privatization of the cargo handling business, introduction of actual competition in the business and introduction of port EDI system are required. On the occasion of privatization of the cargo handling business, adequate measures should be taken to deal with workers of GPHA who will lose their jobs.

## 3 Enhancement of Communication with Port Users

To function and be prosperous as gateways of West Africa, Ghana Sea Ports should be become user-friendly ports. Port users' interests and opinions should be listened to carefully at frequent intervals and improvement measures should be taken quickly.

## 4 Operation of Dedicated Container Terminals

The dedicated container terminals which are proposed in the short-term development plans are the most important facilities for Ghana Sea Ports. To operate them efficiently, each terminal should be leased to a single operator and operated by it. The lease contracts should be well balanced in risk and responsibility between GPHA and the operator.

## PART I PRESENT CONDITIONS

## **Chapter 1 Socio-economic Conditions of Ghana**

### **1.1 Population**

In accordance with the provisional results of the 2000 Population and Housing Census, the total head count of the population was 18,412,247. The most significant increases occurred in Greater Accra (103%), Ashanti (53%), Northern Region (59%) and Western Region (59%) compared to the results of the 1984 Population and Housing Census. The intercensal rate of growth for the country has slightly declined from 2.6% (1970 - 1984) to 2.5% per annum (1984 - 2000). The fertility rate for women age 15 - 49 is 4.55 based on "Demographic and Health Survey 1998" by Ghana Statistical Service and Macro International Inc. 1999. Life expectancy is 57/61(Male/Female) years based on "World Development Report 1998/1999" by The World Bank.

Ghana-Vision 2020 aims to reduce the rate of population growth to 2% per annum by 2020 in order to achieve the objectives of human development.

Table 1.1.1 shows the results of the Population Census 1960, 1970, 1984 and 2000.

### **1.2 Gross Domestic Products (GDP)**

GDP growth rate in 1994 - 1999 was 4.4% per annum on average. The growth rate of agricultural GDP was 3.7% per annum in 1995, 3.9% per annum in 1999 and 4.4% per annum on average from 1994 to 1999. That of industrial GDP rose from 4.1% per annum in 1995 to 4.9% per annum in 1999 and was 4.7% per annum on average from 1994 to 1999. That of the service sector was 4.7% per annum in 1995, 5.0% per annum in 1999 and 5.3% per annum on average from 1994 to 1999.

Ghana-Vision aims to transform Ghana from a low-income to a middle-income country by achieving a long-term average rate of GDP growth of over 8% per annum.

Table 1.2.1 indicates increase of national GDP and its sector-wise composition from 1994 to 1999. Table 1.2.2 shows the percentage of GDP by Sectors.

Table 1.1.1 Population Census 1960, 1970, 1984, 2000 and Intercensal Growth

	Population				Rate of Increase			Growth Rate (annual average %)		
	1960	1970	1984	2000	1960-1970	1970-1984	1984-2000	1960-1970	1970-1984	1984-2000
All Regions	6,726,815	8,559,313	12,296,081	18,412,247	27.2	43.7	49.7	2.4	2.6	2.5
Western	626,155	770,087	1,157,807	1,842,878	23.0	50.3	59.2	2.1	3.0	2.9
Central	751,392	890,135	1,142,335	1,580,047	18.5	28.3	38.3	1.7	1.8	2.0
Gt. Accra	541,933	903,447	1,431,099	2,909,643	66.7	58.4	103.3	5.2	3.3	4.4
Eastern	1,044,080	1,209,828	1,680,890	2,108,852	15.9	38.9	25.5	2.0	1.8	1.4
Volta	777,285	947,268	1,211,907	1,612,299	21.9	27.9	33.0	1.5	1.0	1.8
Ashanti	1,109,133	1,481,689	2,090,100	3,187,601	33.6	41.1	52.5	2.9	2.5	2.6
Brong Ahafo	584,920	766,509	1,206,608	1,824,822	30.4	57.4	51.2	2.7	3.3	2.6
Northern	631,573	727,618	1,164,583	1,854,994	36.9	60.1	59.3	3.2	3.4	2.9
Upper West	288,706	319,865	438,008	573,860	10.8	36.9	31.0	1.0	2.3	1.7
Upper East	468,638	542,858	772,744	917,251	15.8	42.3	18.7	1.5	2.6	1.1

Sources: Population & Housing Census(1960,1970,1984 & 2000) by Ghana Statistical Service

Table 1.2.1 Gross Domestic Product by Sectors  
(At Constant 1993 Prices)  
(Billion Cedis)

Item	1994	1995	1996	1997	1998	1999*	Change Between 1998 and 1999	
							(Abs)	(%)
<b>Agriculture</b>	<b>1,456.7</b>	<b>1,511.2</b>	<b>1,590.1</b>	<b>1,658.4</b>	<b>1,743.2</b>	<b>1,810.8</b>	<b>67.6</b>	<b>3.88</b>
Crops and Livestock	1,003.0	1,038.4	1,103.5	1,132.7	1,182.5	1,238.1	55.6	4.70
Cocoa Production and Marketing	121.3	134.7	138.6	151.5	168.3	167.5	-0.8	-0.48
Forestry and Logging	109.6	111.8	114.8	139.5	153.5	163.9	10.4	6.78
Fishing	222.8	226.3	233.2	234.7	238.9	241.3	2.4	1.00
<b>Industry</b>	<b>994.5</b>	<b>1,035.3</b>	<b>1,084.4</b>	<b>1,153.3</b>	<b>1,190.1</b>	<b>1,248.4</b>	<b>58.3</b>	<b>4.90</b>
Mining and Quarrying	222.1	234.3	244.2	257.8	273.5	281.7	8.2	3.00
Manufacturing	368.7	375.4	388.4	416.9	433.6	454.4	20.8	4.80
Electricity and Water	104.9	111.2	118.3	130.4	117.4	126.6	9.2	7.84
Construction	298.8	314.4	333.5	348.2	365.6	385.7	20.1	5.50
<b>Services</b>	<b>1,118.6</b>	<b>1,170.8</b>	<b>1,220.3</b>	<b>1,300.2</b>	<b>1,378.7</b>	<b>1,447.8</b>	<b>69.1</b>	<b>5.01</b>
Transport, Storage & Communication	176.1	183.5	192.7	206.6	218.0	231.0	13.0	5.96
Wholesale and Retail Trade, Hotels etc	237.1	252.5	273.4	299.4	317.4	338.0	20.6	6.49
Finance, Insurance & Business Services	165.2	170.1	177.3	189.2	201.5	209.6	8.1	4.02
Government Services	430.4	451.9	462.6	482.4	512.3	532.8	20.5	4.00
Community, Social & Personnel Services	72.9	74.8	75.6	81.1	85.9	91.0	5.1	5.94
Producers of Private Non-Profit Services	36.9	38.0	38.7	41.5	43.6	45.4	1.8	4.13
<b>Sub-total</b>	<b>3,569.8</b>	<b>3,717.3</b>	<b>3,894.8</b>	<b>4,111.9</b>	<b>4,312.0</b>	<b>4,507.0</b>	<b>195.0</b>	<b>4.52</b>
Net Indirect Taxes	429.3	442.7	456.4	422.0	434.7	449.9	15.2	3.50
<b>GDP in Purchaser's Values</b>	<b>3,999.1</b>	<b>4,160.0</b>	<b>4,351.2</b>	<b>4,533.9</b>	<b>4,746.7</b>	<b>4,956.9</b>	<b>210.2</b>	<b>4.43</b>

\* Provisional

Source: Ghana Statistical Service

Table 1.2.2 Gross Domestic Product by Sectors  
(Percentage Share excluding net indirect taxes)

Item	1994	1995	1996	1997	1998	1999*
<b>Agriculture</b>	<b>40.8</b>	<b>40.7</b>	<b>40.8</b>	<b>40.3</b>	<b>40.4</b>	<b>40.2</b>
Crops and Livestock	28.1	27.9	28.3	27.5	27.4	27.5
Cocoa Production and Marketing	3.4	3.6	3.6	3.7	3.9	3.7
Forestry and Logging	3.1	3.0	2.9	3.4	3.6	3.6
Fishing	6.2	6.1	6.0	5.7	5.5	5.4
<b>Industry</b>	<b>27.9</b>	<b>27.9</b>	<b>27.8</b>	<b>28.0</b>	<b>27.6</b>	<b>27.7</b>
Mining and Quarrying	6.2	6.3	6.3	6.3	6.3	6.3
Manufacturing	10.3	10.1	10.0	10.1	10.1	10.1
Electricity and Water	2.9	3.0	3.0	3.2	2.7	2.8
Construction	8.4	8.5	8.6	8.5	8.5	8.6
<b>Services</b>	<b>31.3</b>	<b>31.5</b>	<b>31.3</b>	<b>31.6</b>	<b>32.0</b>	<b>32.1</b>
Transport, Storage & Communication	4.9	4.9	4.9	5.0	5.1	5.1
Wholesale and Retail Trade, Hotels etc	6.6	6.8	7.0	7.3	7.4	7.5
Finance, Insurance & Business Services	4.6	4.6	4.6	4.6	4.7	4.7
Government Services	12.1	12.2	11.9	11.7	11.9	11.8
Community, Social & Personnel Services	2.0	2.0	1.9	2.0	2.0	2.0
Producers of Private Non-Profit Services	1.0	1.0	1.0	1.0	1.0	1.0

\* Provisional

Source: Ghana Statistical Service

### 1.3 Trade

Total merchandise trade was valued at US\$5,344.7 million in 1999 with an increase of US\$357.4 million compared to the previous year. Merchandise exports amounted to US\$2,116.6 million, while merchandise imports totaled US\$3,228.1 million, resulting in a trade deficit of US\$1,111.5 million for the year. The value of merchandise trade is shown in Table 1.3.1.

Table 1.3.1 Merchandise Trade

Unit : Million US\$

Year	Exports(FOB)	Imports(FOB)	Trade Balance
1995	1431.2	1687.9	-256.7
1996	1570.1	1937.0	-366.9
1997	1489.9	2128.2	-638.3
1998	2090.8	2896.5	-805.7
1999	2116.6	3228.1	-1,111.5

Source: Annual Report 1999 by Bank of Ghana

The recent export trends of traditional and non-traditional products are shown in Table 1.3.3 and Table 1.3.4 respectively.

Cocoa, gold and timber exports contributed to the major export commodities and together accounted for approx. 68% of total export earnings in 1999. In order to establish an economy less influenced by seasonal variation in crops and market price of a single product, the diversification of exports to non-traditional products has been developed and promoted since 1985. The export of non-traditional products has been expanding especially in the area of agricultural and processed products. The export of non-traditional products increased remarkably from US\$62 million in 1990 to US\$404 million in 1999 as shown in Table 1.3.2.

Table 1.3.2 Non-Traditional Exports by Sectors

Unit : Million US\$

	1984	1987	1990	1993	1996	1999
Agriculture	0.93	18.79	28.78	26.11	50.27	84.50
Manufactures	0.97	9.11	33.11	43.01	233.04	313.25
Handicrafts	0.01	0.06	0.45	2.57	2.92	6.66
Total	1.91	27.96	62.34	71.69	276.23	404.41

Source: Ghana Export Promotion Council

Imports Sections and Imports of Selected Important Items are shown in Table 1.3.5 and 1.3.6 respectively.

The main import items are machinery and transport equipment for non-oil imports which account for about 40% of the total imports. Oil imports increased sharply on account of the steep rise in oil prices in the second half of 1999.

The main trading partners are OECD countries for both import and export. The main trading partners in Africa are Togo, Cote d'Ivoire and Nigeria. Most crude oil is imported from Nigeria.

Table 1.3.3 Traditional Exports by Commodities

	1995	1996	1997	1998	1999*
<b>Cocoa Beans</b>					
Value(US'M)	361.1	479.8	384.4	541.6	497.3
Volume(Tonnes)	237,262	349,067	261,251	327,327	346,768
<b>Cocoa Products</b>					
Value(US'M)	28.4	72.2	85.2	78.8	55.1
Volume(Tonnes)	13,864	45,382	53,265	48,380	39,389
<b>Gold</b>					
Value(US'M)	647.2	612.4	579.2	687.8	710.8
Volume(Fine Ounces)	1,689,470	1,584,380	1,747,018	2,346,918	2,550,766
<b>Diamond</b>					
Value(US'M)	14.8	13.4	11.4	10.6	9.0
Volume(Carat)	645,100	634,192	562,651	556,590	487,522
<b>Bauxite</b>					
Value(US'M)	10.4	8.5	10.8	7.4	7.6
Volume(Tonnes)	526,335	383,612	536,732	341,121	355,762
<b>Manganese</b>					
Value(US'M)	6.4	7.1	11.5	12.1	21.7
Volume(Tonnes)	193,096	229,227	355,232	375,426	656,007
<b>Timber&amp; Timber Products</b>					
Value(US'M)	190.6	146.8	172.0	171.0	173.7
Volume(Cubic Metres)	590,000	364,771	442,017	416,164	432,358
<b>Residual Oil</b>					
Value(US'M)	17.3	22.1	0.0	18.8	54.6
Volume(Tonnes)	156,007	196,100	0	226,143	485,106
<b>Electricity</b>					
Value(US'M)	53.0	58.1	67.6	26.1	16.8
Volume(KWH'M)	2,456	2,573	2,887	460	361
<b>Coffee</b>					
Value(US'M)	1.2	1.4	3.6	8.3	7.8
Volume(Tonnes)	2,000	869	3,144	6,811	6,719
<b>Sheanuts</b>					
Value(US'M)	0.8	4.5	6.7	7.9	6.9
Volume(Tonnes)	3,000	21,467	320,018	32,782	32,498
Non-traditional Commodities	100.0	143.6	157.1	228.0	249.3
Other Exports	0.0	0.0	0.0	292.5	306.0
<b>Total Exports(US'M)</b>	<b>1,431.2</b>	<b>1,570.0</b>	<b>1,489.9</b>	<b>2,090.8</b>	<b>2,116.6</b>

\*Provisional

Source: Annual Report 1999 by Bank of Ghana



Table 1.3.4 Non-Traditional Exports by Commodities  
(Million US\$ Dollars)

	1998	1999	Change Between 1998 and 1999	
			Abs	%
<b>Agricultural Products</b>	<b>61.7</b>	<b>70.0</b>	<b>8.4</b>	<b>13.6</b>
(Horticulture)	19.8	27.2	7.4	37.6
Pineapples	8.8	13.1	4.3	48.9
Assorted Vegetables & Fruits	0.0	0.0	0.0	0.0
Yam/Cocoyam	4.8	6.5	1.7	36.4
Other Vegetables & Fruits	6.2	7.6	1.4	22.7
(Fish and Seafoods)	21.0	20.9	-0.1	-0.4
Tuna Fish	7.0	8.7	1.7	24.2
Frozen Fish	8.4	6.2	-2.2	-26.4
Dried/Smoked Fish	1.6	1.4	-0.1	-8.2
Others	4.0	4.6	0.6	13.9
(Kola Nuts)	0.8	1.2	0.4	49.3
(Others)	20.1	20.7	0.6	3.1
<b>Processed &amp; Semi-Processed Products</b>	<b>159.9</b>	<b>172.6</b>	<b>12.7</b>	<b>8.0</b>
(Aluminium Products)	12.2	14.8	2.6	21.5
Aluminium Sheets/Coils/Plates	6.1	8.4	2.3	37.0
Others	6.0	6.4	0.3	5.7
(Prepared Foods, Beverages)	80.3	68.3	-12.1	-15.0
Tuna Loins/Canned Tuna	77.3	61.9	-15.4	-19.9
Others	3.0	6.4	3.3	109.8
(Common Salt)	2.8	3.4	0.6	22.1
(Non-Ferrous Metal Scrap)	3.1	2.2	-1.0	-30.6
(Natural Rubber Sheets)	5.5	4.8	-0.7	-12.2
(Others)	56.0	79.2	23.2	41.3
Foam Mattres	1.8	11.4	9.7	546.7
Steel Billets	1.8	1.9	0.1	5.1
Processed Tabaco/Cigarettes	0.8	2.0	1.2	155.7
Palm Oil	19.7	0.6	-19.1	-97.1
Others	32.0	63.3	31.3	97.9
<b>Handicrafts</b>	<b>6.4</b>	<b>6.7</b>	<b>0.3</b>	<b>4.2</b>
Assorted Handicraft	2.2	1.9	-0.3	-15.1
Basketware	3.1	3.7	0.7	22.1
Others	1.1	1.1	-0.1	-7.0
<b>Total Non-Traditional Exports</b>	<b>228.0</b>	<b>249.3</b>	<b>21.3</b>	<b>9.4</b>

Note: Data excludes Cocoa and Cocoa Products, Wood Products, Sheanuts and Coffee.

Source: Annual Report 1999 by Bank of Ghana

Table 1.3.5 Imports by Section  
(Million Cedis)

	1992	1993	1994	1995	1996
Food & Live Animals	98,668	165,859	211,349	182,862	309,089
Beverages & Tobacco	4,216	4,498	8,525	4,224	7,137
Crude Materials Inedible except Fuel	42,014	47,041	77,559	80,280	134,752
Mineral Fuel Lubricants & Related Mat.	165,670	107,546	226,344	219,500	242,382
Animals, Vegetable Oil & Fats	3,412	7,868	5,210	7,021	8,834
Chemicals	79,335	102,283	196,101	245,951	466,053
Manufactured Goods Classified by Mat.	131,731	176,061	319,875	310,407	640,670
Machinery & Transport Equipment	348,292	467,900	856,827	789,528	1,869,735
Miscellaneous Manufactured Articles	77,214	76,031	127,403	142,443	412,972
Others	0	1	0	7	8,474
Total	950,554	1,155,089	2,029,193	1,982,222	4,100,098

Source: Quarterly Digest of Statistics Sep.1998 by Ghana Statistical Service

Table 1.3.6 Imports of Selected Important Items  
(Million Cedis)

	1992	1993	1994	1995	1996
Rice	32,500	31,380	46,437	24,442	26,005
Wheat	10,766	16,877	33,195	31,476	45,794
Flour	1,361	1,470	833	252	301
Milk & Cream	5,704	6,280	6,548	4,197	3,694
Canned Fish	1,646	2,545	5,611	2,296	3,802
Sugger	11,280	25,154	35,522	27,353	42,625
Palm Oil	2,196	4,175	2,247	487	508
Alcoholic Beverages	1,906	2,382	5,134	2,103	3,047

Source: Quarterly Digest of Statistics Sep.1998 by Ghana Statistical Service

## 1.4 Agricultural Sector

### 1.4.1 Overview

Agriculture, which has for a long time contributed more than 40% of both GDP and foreign exchange earnings with a source of livelihood for about 60% of the Ghanaian population, is a dominant sector of the economy in Ghana. For many years, the Ghanaian economy recorded positive growth rates as a result of the high growth rates of the agricultural sector.

The agricultural sector has performed better in the second half of the 1990's than in the first half. The sector grew at an average rate of 4.6% from 1995 to 1999 and 1.1% from 1990 to 1994. However, the provisional growth of 3.9% in 1999 was lower than the 5.1% growth recorded in 1998.

The agricultural sector consists of 5 sub-sectors: crops, cocoa, livestock, fisheries and forestry. The production trends of major commodities are shown in Table 1.4.1 - 1.4.6.

Ghanaian agricultural production is heavily dependent on natural rains. In 1999, agricultural output and farmer incomes suffered from extensive flooding in the three northern regions of the country that constitute the Guinea Savannah Agricultural Belt.

### 1.4.2 Performance of Major Commodities

#### (1) Staple

Northern Ghana - Upper West, Upper East and Northern regions is the main area where staple foods are produced. As a result of timely and adequate rainfall in the major production areas for crops, all the major starchy staples recorded increases in output in 1999. The total output of the starchy crops, namely cassava, yam, cocoyam and plantain increased by 11.1% to 14.85 million tonnes compared with 13.36 million tonnes in 1998, as shown in Table 1.4.1. On the other hand, due to adverse weather conditions especially in the northern parts of the country, there were decreases in the production of all the major cereal crops, namely, millet, sorghum and rice in 1999.

Table 1.4.1 Production of Selected Crops  
Unit : Thousand Metric Tonnes

	1996	1997	1998	1999
<b>Cereal</b>	<b>1,770.0</b>	<b>1,669.2</b>	<b>1,813.8</b>	<b>1,686.1</b>
Maize	1,007.6	996.0	1,015.0	1,014.5
Rice	215.7	197.1	281.1	209.8
Millet	193.3	143.5	162.3	159.8
Sorghum	353.4	332.6	355.4	302.0
<b>Starchy Staples</b>	<b>12,761.2</b>	<b>12,712.4</b>	<b>13,363.4</b>	<b>14,848.0</b>
Cassava	7,111.2	6,999.5	7,171.2	7,845.4
Cocoyam	1,551.8	1,146.5	1,576.7	1,707.4
Yam	2,274.8	2,748.0	2,702.9	3,249.0
Plantain	1,823.4	1,818.4	1,912.6	2,046.2

Source: Statistical Division, Ministry of Food and Agriculture

## (2) Cocoa

Cocoa remains the major traditional agricultural export commodity of the country and normally accounts for 30 to 40% of total exports. Most cocoa is produced by about 1.6 million peasant farmers on plots of less than 3 ha in the forest areas of the Ashanti, Brong-ahafo, Central, Eastern, Western and Volta regions.

The output of cocoa in the 1998/1999 season was estimated as 420,000 tonnes, about 2.7% higher than 401,000 tonnes produced in the previous season as shown in Table 1.4.2. The output in 1998/1999 was the highest in the season during the decade of the 1990s, contributed about 15.3% to the world output, and placed the country in the second position after Cote d'Ivoire. The average output of cocoa during the second half of the 1990s was 372,000 tonnes, about 33% higher than the average output during the first half of the decade, and the country established itself as the second world producer in the second half of the decade.

Table 1.4.2 Cocoa Production

Unit : 1,000ton

Period	Output	World Output	Share (%)	Rank
1989/90	295.1	2,407	12.3	3rd
1990/91	293.4	2,506	11.7	3rd
1991/92	242.8	2,278	10.7	3rd
1992/93	312.0	2,485	12.6	2nd
1993/94	254.7	2,435	10.5	4th
1994/95	309.5	2,348	13.2	2nd
1995/96	403.9	2,916	13.9	2nd
1996/97	317.0	2,713	11.7	3rd
1997/98	409.0	2,683	15.2	2nd
1998/99	420.0	2,747	15.3	2nd
Five Year Ave.				
1989/90-1993/94	279.6	2,422	11.5	3rd
1994/95-1998/99	371.9	2,681	13.9	2nd

Source: Ghana Cocoa Board, ICCO Newsletter, No.13, Feb.2000

## (3) Fisheries

Domestic Fish Production and Fish Imports and Exports are shown in Table 1.4.3 and 1.4.4 respectively.

Generally, the total fish catch in the country increased during the decade of the 1990s. During the first half of the decade the average fish catch per annum was 373,000 tonnes and grew to 447,000 tonnes during the second half of the decade an increase of 20%. The catch from the marine waters and inland waters averaged 317,000 tonnes and 56,000 tonnes per annum during the first half year of the decade and increased to 374,000 tonnes and 73,000 tonnes during the second half of the decade, respectively.

Table 1.4.3 Domestic Fish Production

Unit : MT

	1994	1995	1996	1997	1998	1999
<b>Marine</b>	<b>287,057</b>	<b>336,490</b>	<b>448,005</b>	<b>395,840</b>	<b>376,362</b>	<b>382,579</b>
Canoes	211,637	210,659	298,249	215,125	189,459	204,013
Inshore	6,038	6,371	8,353	7,294	6,137	7,261
Industrial Vessel	29,967	20,049	25,104	17,528	16,848	19,826
Shrimp Vessel	2,442	2,689	2,590	1,652	653	1,631
Industrial Vessel	-	62,817	76,454	100,616	97,698	97,698
Tuna Vessel	36,973	33,905	37,255	53,625	65,568	52,149
<b>Inland</b>	<b>54,200</b>	<b>65,100</b>	<b>65,100</b>	<b>76,200</b>	<b>75,660</b>	<b>75,000</b>
Volta Lake	42,000	52,000	52,000	62,000	62,000	60,500
River, Lagoon etc	12,200	13,100	13,100	13,500	13,660	14,500
Others	0	0	0	700	0	0
<b>Total</b>	<b>341,257</b>	<b>401,590</b>	<b>513,105</b>	<b>472,040</b>	<b>452,022</b>	<b>457,579</b>

Source: Fisheries Dept., Ministry of Food and Agriculture

Table 1.4.4 Fish Imports and Exports

Unit : ton

	1994	1995	1996	1997	1998	1999
<b>Fish Imports</b>	<b>18,827</b>	<b>2,250</b>	<b>1,000</b>	<b>0</b>	<b>43,942</b>	<b>41,641</b>
Imported Fish	18,827	2,250	1,000	0	43,942	41,641
<b>Fish Exports</b>	<b>32,289</b>	<b>29,050</b>	<b>36,695</b>	<b>36,695</b>	<b>57,856</b>	<b>na</b>
Tuna	26,928	23,157	30,682	30,682	52,454	na
Other Fish	5,091	5,575	5,749	5,749	5,280	na
Shrimp	270	318	264	264	122	na

na: Data not available

Source: Fisheries Dept., Ministry of Food and Agriculture

#### (4) Livestock

The Ministry of Food and Agriculture has continued with its policy of encouraging participation in livestock production. With the exception of pigs, the production of all the major food animals namely: cattle, sheep, goats and poultry increased in the decade of the 1990s, by 12%, 20%, 45% and 88% respectively. The population of pigs declined steadily from 470,000 heads in 1990 to 330,000 heads in 1999, a decline of 30% over the decade.

Table 1.4.5 shows recent Livestock Production.

Table 1.4.5 Livestock Production

Unit : Thousand Unit

	1995	1996	1997	1998*	1999*
Cattle	1,123	1,248	1,268	1,274	1,288
Sheep	2,010	2,207	2,477	2,575	2,658
Goats	2,156	2,340	2,616	2,791	2,930
Pig	365	318	364	339	331
Poultry	13,083	14,589	15,000	17,282	18,809

\* Provisional

Source: Veterinary Services Dept., Livestock Statistics, Ministry of Food and Agriculture

### (5) Forestry

Forest covers more than one-third of the total land area of Ghana, not all of it suitable for commercial exploitation. Commercial forestry is concentrated in Western Region in southern Ghana.

Forestry and logging sector contributed about 4% of the GDP and about 8% of the total export income ranking third after gold and cocoa in the commodity exports in 1999. The sector employs 7,000 persons with a source of livelihood for about 2 million people and supplies 75% of the country's energy requirement. The government took measures to control the exploitation including the temporary suspension of log exports due to the excessive exploitation of forest resources in 1993-94. Timber harvest of 1 million m<sup>3</sup> per year has been prescribed as a sustainable level in order to prevent degradation of forest resources.

Presently, exports of timber have been containerized due to movement to high valued products. According to the Forestry Commission, export of timber and timber products is expected to reach 500,000 m<sup>3</sup> per annum in 2010. Table 1.4.6 shows Trends in Timber Harvest.

Table 1.4.6 Trends in Timber Harvest

Unit : Thousand Cubic Meters

	1990	1991	1992	1993	1994	1995
On-Reserve	1,056	996	587	266	505	167
Off-Reserve	234	233	731	1,416	1,295	1,027
Total	1,290	1,229	1,318	1,682	1,800	1,194

Source: Ministry of Lands and Forestry

### 1.4.3 Non-Traditional Agricultural Exports

The data on export quantities of the major agricultural export commodities indicate considerable increases in 1999 as compared with 1998 as shown in Table 1.4.7. The quantity of cotton seed exported in 1999 increased by nearly 300%, and that of cashew nuts and frozen tuna increased by 200% and 130% respectively.

The number of different agricultural commodities which featured in the non-traditional exports in 1999 was 74, as compared to 50 in 1990 as shown in Table 1.4.8. The total number of exporters of the non-traditional agricultural commodities also increased from 666 in 1990 to a peak of 1,711 in 1996 and then declined steadily to 1,232 in 1999. During the first half of the decade, the number of exporters averaged 1,045 per annum and increased to 1,444 per annum during the second half of the decade, showing an increase of 38.2%.

Table 1.4.7 Volume of Major Non-Traditional Agricultural Commodities Exported  
( In Metric Tonnes)

Commodity	1994	1995	1996	1997	1998	1999
Pineapple	14,954	15,764	27,603	25,124	15,401	23,440
Cotton Seed	24,107	5,511	5,722	6,658	4,396	17,699
Kola Nut	9,089	9,924	10,940	7,674	5,752	9,344
Yam	5,323	6,866	8,086	7,018	7,421	9,763
Cocoyam	na	na	na	na	111	106
Vegetables	1,449	2,142	5,344	3,706	3,857	4,574
Cashew Nuts	600	289	541	3,572	1,822	5,572
Banana	583	1,857	3,295	4,008	2,905	3,383
Mangoes	9	26	43	80	136	167
Pawpaw	20	na	949	1,430	936	1,780
Tuna Frozen	4,249	1,440	3,622	6,959	6,608	15,409
Frozen Fish	3,761	6,149	6,209	4,813	4,716	4,061
Lobsters,Shrimps	256	314	413	276	216	350
Processed Fish	176	447	3,008	2,660	2,832	2,859
Flowers	na	na	na	na	5	26
Lemon,Lime,Oranges	na	na	na	na	695	781

Source: Ghana Export Promotion Council

Table 1.4.8 Distribution of Exporters by Non-Traditional Agricultural Commodity

Commodity	1994	1995	1996	1997	1998	1999
Yam	188	205	243	208	152	132
Cocoyam	na	na	na	60	63	55
Smoked Fish	174	168	221	205	74	33
Banana	94	105	160	3	2	3
Plantain	na	na	na	141	109	82
Aubergine	104	120	175	156	136	110
Pineapples	66	69	73	57	52	42
Lobsters,Shrimps	53	55	54	51	27	16
Onions,Shallots	9	28	35	36	36	41
Frozen Fish	29	28	37	29	17	19
Pepper,Chilies	35	26	83	89	86	77
Fresh Okra	26	44	69	54	45	48
Beans	na	26	na	39	41	39
Snails	na	na	49	50	26	17
Melon seed	na	na	46	45	39	37
Corn husk	na	na	40	39	40	32
Others	437	434	561	470	367	449
<b>Total Exporters</b>	<b>1,206</b>	<b>1,280</b>	<b>1,711</b>	<b>1,654</b>	<b>1,344</b>	<b>1,232</b>
<b>Total Commodities</b>	<b>58</b>	<b>61</b>	<b>63</b>	<b>68</b>	<b>72</b>	<b>74</b>

Source: Ghana Export Promotion Council

## 1.5 Industrial Sector

The industrial sector, which contributes least to national output behind agriculture and service, consists of four sub-sectors; manufacturing, mining and quarrying, electricity and water, and construction.

During the last five years of the last decade which falls within the first step of the Vision 2020, industry recorded an average annual growth rate of 4.4% compared to the targeted level of 9.3%. The industrial sector which suffered a severe set back in 1998 on account of the energy crisis recovered in 1999 with an overall growth in output of 4.9% as against 3.2% in 1998 and a target of 6.3%. The sector contributed 27.7% (based on 1993 constant prices) to GDP. The higher rate of growth of industry in 1999 reflected largely in strong growth of 7.8% in the Electricity and Water sub-sector following increased electricity generation resulting from improvement in the water level of the Volta Lake.

### 1.5.1 Manufacturing

The main sub-sector of the Industrial Sector is manufacturing which has contributed about 60% of the value of industrial production over the years as shown in Table 1.5.1 and 1.5.2. The performance of the manufacturing sub-sector took a dramatic downward turn from a 14.55% average annual growth over four years between 1984 and 1987 to register a minimum growth in the last ten years of 1.1% in 1991 and a maximum of 6.4% in 1997. The dismal performance of the manufacturing sub-sector over the last decade, which affected the overall industrial performance, worsened in 1998 due to the acute energy crisis. Most factories were forced to run below capacity. Steel and aluminum producers, which rely on power supplies, were particularly hard hit.

Table 1.5.1 Industrial Sector's Growth Rates and Percentage Share of GDP  
(1994 1999)

	1994	1995	1996	1997	1998	1999
(Growth Rate %)						
GDP	3.8	4.5	5.2	4.2	4.6	4.4
Industry	1.3	3.3	4.2	6.4	3.2	4.9
Manufacturing	1.5	1.8	3.0	5.4	4.0	4.8
(% of GDP)						
Industry	14.3	14.3	14.2	14.8	14.5	14.6
Manufacturing	8.3	8.3	8.1	8.4	8.3	8.3

Source: The State of the Ghanaian Economy in 1999 by the Institute of Statistical Social and Economic Research (ISSER), University of Ghana



Table 1.5.2 Share of Industry and Sub-sectors in Real GDP  
(1994-1999)

	1994	1995	1996	1997	1998	1999
Industry	14.3	14.2	14.2	14.8	14.5	14.6
Manufacturing	8.3	8.3	8.1	8.4	8.3	8.3
Mining & Quarry	1.5	1.5	1.5	1.6	1.6	1.6
Elect. & Water	1.5	1.6	1.6	1.7	1.5	1.5
Construction	3.0	2.9	3.1	3.1	3.1	3.2

Source: The State of the Ghanaian Economy in 1999 by the Institute of Statistical Social and Economic Research (ISSER), University of Ghana

Performance of major industries is as follows.

#### (1) Cement

GHACEM Limited, which was established in 1967 and is jointly owned by Scancem (94.5%) and the Ghana government (4.5%), was the only supplier of cement in Ghana before March, 2000. GHACEM has two factories at Tema and Takoradi, and its production rate in 1999 was about 2 million tonnes per annum, with production capacity of 2.4 million tonnes. Majority of raw materials such as clinker, gypsum has been imported.

The current growth rate of cement consumption is about 5% per annum. Presently GHACEM has no plan to expand facilities in order to meet the growth rate of cement consumption in Ghana.

#### (2) Aluminum

The original concept of the Volta River Project included the following:

- Bauxite Mining and Alumina Plant
- Construction of the Akosombo Dam and Hydro-electric Plant
- An Aluminum Smelter

As the financing for the entire project was not feasible, it was decided to proceed with the Dam, Hydro-electric Plant and Smelter with the development of the bauxite and alumina operations later. Volta Aluminum Company Limited (VALCO), which is jointly owned by Kaiser Aluminum & Chemical Corporation 90% and Reynolds Metals 10%, arranged the financing of the Aluminum Smelter and commenced operations in 1966. Presently VALCO is consuming 43% of the electricity generated by the Akosombo Dam. Alumina has been imported from Jamaica, Venezuela and Brazil. The production rate of the aluminum is about 180,000 tonnes per annum, with production capacity of 200,000 tonnes and about 90% of the products has been exported mainly to Europe.

Four lines are presently operated of the total 5 lines of the aluminum manufacturing plant in VALCO and power supply consumed in 3.5 lines is guaranteed by an Agreement with the government. VALCO plans to operate all lines of the aluminum manufacturing plant by purchasing electricity from a third party.

Production of Some Selected Important Manufactured Commodities is shown in Table 1.5.3.

Table 1.5.3 Production of Some Selected Important Manufactured Commodities  
(In Thousand )

	Unit	1991	1992	1993	1994	1995	1996	1997*
Milk	Litres	24,500	23,100	23,800	23,600	25,400	27,600	29,400
Ice Cream	Litres	1,041	1,054	1,048	1,620	3,291	3,582	3,820
Edible Oil	Tonnes	16.3	19.0	25.9	31.9	35.3	37.2	39.7
Wheat Flour	Tonnes	98.0	121.0	141.4	131.9	136.6	140.4	149.7
Cocoa Butter	Tonnes	8.0	7.1	7.2	8.1	8.1	11.1	11.8
Cocoa Liquor	Tonnes	7.5	6.5	7.8	9.8	9.8	13.4	14.3
Cocoa Cake	Tonnes	10.0	7.7	7.3	7.0	7.2	9.8	10.6
Cocoa Powder	Tonnes	1.08	0.46	1.30	5.35	3.67	5.02	5.35
Beer	Litres	57,300	64,900	61,000	63,100	65,200	69,800	75,500
Soft Drinks	Crates	2,300	3,300	3,600	3,500	3,900	4,200	4,600
Cigarettes	Sticks	1,566,000	1,477,000	1,647,000	1,680,000	1,713,000	1,747,300	1,747,000
Cloth	Meters	23,400	19,000	41,000	34,200	34,200	34,900	34,500
Paints	Gallons	486.9	606.9	667.6	728.3	730.3	774.1	834.7
Toilet Soap	Tonnes	0.8	1.6	2.6	3.2	4.3	4.6	5.0
Laundry Soap	Tonnes	34.6	35.8	40.1	52.3	65.4	69.3	74.7
Petrol	Tonnes	283.7	191.8	192.4	260.1	195.8	199.7	12.7
Kerosine	Tonnes	81.7	58.8	73.6	80.8	97.8	99.8	27.0
Diesel & Gas Oil	Tonnes	296.5	233.5	223.5	315.9	263.5	268.8	23.2
Cement	Tonnes	713.7	1023.9	1192.5	1298.0	1544.0	1548.6	1446.3
Iron Rods	Tonnes	-	26.2	29.6	48.1	51.7	56.0	56.6

\*Provisional

Source: Quarterly Digest of Statistics Sep. 1998, by Ghana Statistical Service

### (3) Agro-processing

Ghana Agro-Food Company (GAFCO), formerly Tema Food Complex (TFCC), which was established in 1996 and is jointly owned by the Swiss based Industrie Bau Nord (IBN) Group (75%) and the Ghana government (25%), is producing foods and feeds such as flour, canned fish, fishmeal etc using both local and imported raw materials.

Production rate of flour is 50,000 tonnes per annum and wheat is imported from USA. The production rate of feeds is 35,000 tonnes per annum and maize of 5,000 - 10,000 tonnes per annum is imported. Canned fish is produced using tuna of 15,000 tonnes per annum purchased from the Tema Fishing Port and exported mainly to Europe.

Future consumption rate of flour and feeds in Ghana will likely increase based on current market trends. GAFCO has sufficient capacity to meet the future demand in Ghana.

### 1.5.2 Mining and Quarrying

The growth of the mining and quarrying sub-sector was rapid between 1987 and 1993 with an average annual rate of 9.8%. However, between 1994 and 1999 the sub-sector grew at an average rate of 4.9%. This is the only sub-sector in the industrial sector, in which the growth rate dropped during the past decade, and the growth rate of 3% achieved in 1999 happens to be the lowest since 1987.

Table 1.5.4 shows the Mineral Production from 1990 to 1999.

Table 1.5.4 Mineral Production

	Gold ('000kg)	Diamond ('000carats)	Bauxite ('000tonnes)	Manganese ('000tonnes)
1990	16.6	150.3	382.1	364.0
1991	26.1	419.4	485.1	415.2
1992	31.5	584.5	498.2	448.4
1993	38.6	616.0	417.4	286.4
1994	43.3	722.8	500.3	186.9
1995	51.3	294.2	426.1	269.2
1996	42.0	714.7	383.4	266.4
1997	46.5	770.5	506.6	436.9
1998	66.1	823.1	442.5	536.9
1999	72.1	648.0	353.1	541.4

Source: Ghana Statistical Service, Quarterly Digest of Statistics, Various Issues & Ghana Chamber of Mines

Gold dominates the mining sector and is one of Ghana's two most important sources of the foreign exchange earnings. Ghana's gold reserves lie in the Ashanti Region, which has vast resources, and in Western and Central regions, where alluvial mining take place. Gold production in 1999 rose by 9% over the 1998 level to 2,538 million fine ounces. However, in spite of the 9% increase in the volume of gold exports, the value of exports rose by only 3% over the 1998 level on account of the drop in gold price.

Ghana has bauxite reserves, of which only a small proportion is currently mined, in the Western Region. The production of bauxite in 1998 dropped from 506,600 metric tonnes in 1997 to 442,500 tonnes due to the electricity crisis. The sole producer of bauxite in the country, the Ghana Bauxite Company, failed again in 1999 to recover from the slump in production as it continued to record negative growth in output. The Volta Aluminum Company (Valco) does not process Ghanaian bauxite into alumina, but imported raw materials instead, mainly from Jamaica.

Ghana is one of the world's largest exporters of manganese. The Ghana Manganese Company Limited, which is the sole producer of manganese in Ghana, registered an increase in production in 1999 compared to the previous year. Over the last ten years, the growth of the manganese industry has not been consistent. It experienced an increased growth rate between 1990 and 1992, 1995 and 1997 to 1999 whilst 1993, 1994 and 1996 saw declines in growth.

Performance of major industries is as follows.

#### (1) Manganese

Ghana Manganese Company Limited, which is jointly owned by the UK based Ghana International Manganese Company (GIPC / 90%) and the Ghana government (10%), is the sole producer of manganese in Ghana.

One hundred per cent of products has been exported and the manganese deposits in the present mine is expected to be about 20 million tonnes. The mine is located at a distance of about 60 km from Takoradi Port. The company is active in investing railway facilities, especially wagons, to increase the transport capacity up to 900,000 to 1,000,000 tonnes per annum.

The company expects exports to grow up in future with up to 1 million tonnes, considering the present circumstances such as transportation system, port conditions.

#### (2) Bauxite

Ghana Bauxite Company (GBC), which is jointly owned by the Canadian based Alcan (80%) and the Ghana government (20%), is the sole producer of bauxite in Ghana.

One hundred per cent of products has been exported mainly to Europe and Canada and its deposits in the present mine (Hill No.2&3) are expected to be about 40 million tonnes. The mine is located in Awaso with a distance of about 250 km from the Takoradi Port. Presently, 85% of the bauxite is transported by railway, while the remaining volume is transported by road. The company is conducting large scale investment including the rehabilitation of track and purchase of new wagons to the railways in order to increase the transportation capacity up to 1.2 million tonnes per annum.

The company expects exports to reach 1.2 million tonnes per annum in 2010 and 1.5 million tonnes per annum in 2020.

### **1.5.3 Energy**

#### (1) Electricity

The total generation capacity in the country is 1,542 Megawatts. Of the total generation capacity in Ghana, 70% is generated by hydro-based, 28% by thermal plants and 2% by a diesel plant with a

standby mode. About 45% of the population have access to electricity currently, which is very low coverage. The total national demand for electric energy is estimated at 7,500 GWh annually, with 7,000 GWh generated locally and the remaining 500 GWh imported, and to grow at 10 to 14% per annum. Electricity Generation and Consumption is shown in Table 1.5.5.

The main problem facing consumers is unreliable electric power supply. On average the total outage hours per consumer per annum in the country is estimated at 120 hours. The outages are generally due to poor infrastructure at the sub-transmission and distribution levels, which indicates a low level of consumer awareness of energy efficiency, conservation practices and inadequate access to energy efficient technology.

The government has embarked on power sector reforms. The main thrust of the reform strategy is to shift emphasis from the country's traditional reliance on organization to finance the development of power utilities to the private sector, and create competition in order to achieve the desired efficiency in the power industry.

The crisis in 1998 have hastened the government and private-sector initiatives to developed alternative power sources. Several new turbines have been added to Ghana's oil- and gas-fired power plant, a station recently constructed at Aboadse, raising its output to 440 MW. This expansion, plus the installation of two more turbines to bring total power generation to 660 Mw by the end of 2001, has been carried out by a US contractor in operation with the plant's owner, the state-owned Volta River Authority. Another US based company is building a 220 MW gas-fired combined-cycle plant at Tema, primarily to serve the country's major gold mines.

## (2) Petroleum

The Ghanaian continental shelf and adjacent on-shore areas are known to contain oil and gas. In 1983 Ghana National Petroleum Corporation was established by the government with a broad mandate to undertake the exploration, development and disposal of petroleum including natural gas in the country. However, upstream infrastructure for oil and gas is not well-developed in Ghana, and searching activities are currently under performing.

Ghana's main downstream infrastructure is the Tema Oil Refinery (TOR), which was established in 1963. The current capacity of Tema Oil Refinery is 45,000 barrels per day. This is lower than the national demand and finished products are imported into the country at higher cost. The company has planned to build a new plant by 2002, which has a refining capacity of 14,000 barrels per day, and expects that the import of crude oil will increase up to 2 million tonnes in future to meet the demand in Ghana. The company also forecasts that the oil consumption in Ghana will increase with a growth rate of 5% per annum.

Petroleum distribution infrastructure in the country consists of a network of storage facilities, road and ocean tankers, and retail outlets. There are 7 main storage depots in the country such as Accra Plain Depot with a storage capacity of 21,000m<sup>3</sup>, Mami Depot with a capacity of 7,373m<sup>3</sup>, Akosombo Depot with a capacity of 2,000m<sup>3</sup>, Takoradi Depot with a capacity of 17,834m<sup>3</sup>, Kumasi Depot with a capacity of 18,383m<sup>3</sup>, Buipe Depot with a capacity of 11,500m<sup>3</sup> and Bolgatanga Depot with a capacity of 6,600m<sup>3</sup>. The total storage capacity amounts to 84,694m<sup>3</sup>

which consists of 32,904m<sup>3</sup> for Gasoline, 34,100m<sup>3</sup> for Gas Oil, 16,890m<sup>3</sup> for Kerosene and 800m<sup>3</sup> for LP Gas.

Products are transported from the Tema Oil Refinery to Takoradi by small ocean tankers and the railway is used to transport some of the products, particularly diesel, from Takoradi to Kumasi. The bulk products are hauled by Bulk Road Vehicles (BRV) operated by both marketing companies and private owners. The transportation of petroleum products to the northern parts of the country consists of a pipeline from the Tema Oil Refinery to Akosombo. Petroleum products are conveyed by lake transport from Akosombo to the Buipe Depot. From the Buipe Depot the products are hauled by BRV to the Bolga Depot.

The national demand for petroleum products is about 1.6 million tonnes per annum and growing at an average rate of 5% per annum. Approximately 60% of petroleum products in the country is consumed by the transport sector, 23% by the industrial sector, 7% by agricultural sector and 10% by the household and commercial sectors.

The main problem regarding the petroleum products is the frequent upward revision of prices which is the consequence of a number of factors including the depreciation of the cedi and the implementation of the deregulation policy.

Ghana has been involved in competing plans to build offshore gas pipelines to Cote d'Ivoire and Nigeria. The government of Ghana and Cote d'Ivoire signed an agreement in 1999 to proceed a feasibility study of the pipeline to convey off-shore Ivorian gas between the two countries. Another project, West Africa Gas (WAG) pipeline, is a massive US\$400 million regional project expected to be completed by 2003 and involving the government of Ghana, Nigeria, Benin and Togo, plus oil giants Shell and Chevron. The WAG pipeline will provide Nigerian gas to the other countries.

Table 1.5.5 Electricity Generation and Consumption  
(Million Kilowatt-Hour)

	1994	1995	1996	1997	1998	1999
(Generation)						
Akosombo	5,077	5,094	5,520	5,711	3,166	4,289
Kpong	1,001	1,021	1,105	1,140	664	880
Tema Diesel	28	19	2	12	37	0
Takoradi Thermal Plant	-	-	-	22	1146	755
Total Generation	6,105	6,133	6,627	6,885	5,013	5,925
Import from Cote D'Ivoire	61	320	228	660	573	1,032
Total Available for sale	6,165	6,453	6,855	7,545	5,586	6,956
Hydro Power as %	99.0	95.0	96.7	91.3	89.7	85.2
(Consumption)						
Valco	2,275	2,198	2,212	2,467	927	1,928
Electricity Corp.	2,466	2,693	3,089	3,387	3,024	3,493
Mines	590	654	718	748	713	696
Exports	418	285	348	422	460	326
Others	225	247	291	317	313	361
Total Consumption	5,974	6,077	6,658	7,341	5,437	6,804

Source: Volta River Authority (VRA)

## **1.6 Services Sector**

The services sector consists of: transport, storage and communication; wholesale, retail trade, restaurants and hotels; finances, insurance, real estates and business services; government services; community, social and personal services; and producers of private non-profit services. The most important service activities in a developing economy like Ghana, that facilitate and stimulate economy growth, are transport, storage and communications which are classified into one sub-sector.

The real growth in the services sector slowed down in the 1990s with its contribution to GDP averaging about 38% in the first half of the 1990s. From the mid-1990s, the contribution of services sector declined further and is recently stable at about 29% per annum. The growth rate of the services sector was 5.0% in 1999, which is 1.0% less than the 6% growth in output of services in 1998.

### **1.6.1 Transportation**

It is significant to note that despite the importance of transport, storage and communication, their contributions to real GDP have fallen from their levels in the first half of the 1990s (about 5% per annum) and are now hovering around 4% per annum in the second half of the 1990s.

Provision of transport infrastructure is entirely the responsibility of the public sector. In the 1990s, government attached the highest priority to the rehabilitation and maintenance of all modes of transport infrastructure in order to lengthen their useful lives. As a result, allocations to the transport and communication sector's development budget averaged over 33% of total development expenditure in the 1990s.

In spite of the heavy expenditure on the sub-sector, the road network remains largely in a deplorable state and several feeder roads and trunk roads leading to important food producing areas are not usable by vehicles, particularly in the rainy season. This often causes a negative impact on urban food prices, inflation and farm incomes.

### **1.6.2 Telecommunication**

Since 1996, the government has been implementing telecommunications sub-sector reform policy aimed at introducing privatization, liberalization and competition into the telecommunication industry with the intention of accelerating modernization and expansion of the industry and improving customer satisfaction. To oversee healthy competition and to maintain standards in the industry, the National Communication's Authority (NCA) was established by an Act of Parliament in 1996, as part of the policy reform. By the end of 1999, NCA had been able to license and regulate about 56 communications service providers.



Table 1.6.1 Subscription to Telephones in Ghana

Number of Lines Company	1992	1998	1999*
Ghana Telecom	100,000	136,541	191,158
Cellular Operators	19,000	43,000	68,800
Total	119,000	179,594	259,958

\*Provisional

Source: National Communicators Authority, Accra

### 1.6.3 Tourism

Available data indicate that tourism is the third largest contributor to Ghana's foreign exchange earnings, contributing about 11% per annum in the 1990s. For the decade, 1990 to 1999, earnings from tourism have grown at a remarkable rate about 18% per annum on average as shown in Table 1.6.2.

Table 1.6.2 International Tourist Arrival and Receipts

Year	Arrivals (Persons)	Receipts (US\$ Million)	Percentage Change
1990	145,780	81.00	12.5
1991	180,000	118.00	45.7
1992	200,000	168.00	42.4
1993	256,682	205.62	22.4
1994	271,310	227.60	10.7
1995	286,000	237.20	2.4
1996	304,860	248.80	6.7
1997	325,438	265.59	6.7
1998	348,959*	301.44	13.5
1999	372,000*	342.00*	13.5
Average		219.95	17.7

\*Provisional

Source: Tourist Board, Ministry of Tourism

Realizing the potential in tourism, the government invested substantially in the sub-sector in the past decade. Tourism was boosted by a new 15-year Master Plan for tourism development which was initiated in 1996 to alert the private sector as well as government agencies dealing with the provision of infrastructure necessary for the tourism sub-sector, and to identify opportunity and programme development that are necessary for sub-sector.

## **Chapter 2 Present Conditions of Transportation**

### **2.1 Railways**

#### **2.1.1 Infrastructure**

The railway system consists of a triangular network connecting Accra, Kumasi and Sekondi-Takoradi. The network is divided into Western, Eastern and Central lines for operational purpose. Map of the Ghana Railway is shown in Figure 2.1.1

The national railway network covers a track distance of 1,300 km with branch lines serving mining areas and is predominantly made up of a single line system distributed on a gauge of 1,067 mm and a sleeper density of 1,401 sleepers per kilo meter. There are only 30 km of double line. The ballast cushion is about 0.5 cubic meters per meter, while the desired standard is 0.84 cubic meters per meter. The Western Line is generally fitted with 75 lb rails to take heavier locomotives. The Central and Eastern Lines, which are fitted with 60 lb rails, have an axle load capacity of 14 tons and the design speed is about 80 km/hr, but currently a maximum speed limit of 50 km/hr has been imposed due to the poor physical condition of the rail infrastructure. The network is also characterized by numerous sharp curves which also tend to reduce speed. The railway network has a total of 180 stations. The infrastructure at the stations are generally old and require rehabilitation and replacement. Signaling and Telecommunications Systems are based on overhead cables, which are frequently destroyed by bush fire, vandalized or stolen and often in system failure. Communication lapses constitute one of the major causes of long transit times.

The railway is not well integrated with the other modes, especially Tema Port and Volta Lake transport facility. There is no link between the Eastern Line, which serves Accra, and Tema Port. Such a link is expected to play a major role in the bulk supply of petroleum products from the Tema Oil Refinery to the Kumasi Depot and a link between Tema and Akosombo could bring on the bulk transport of both liquid and solid cargoes by lake transport to serve the northern regions and possibly Burkina Faso.

#### **2.1.2 Rail Transport Services**

The Ghana Railway Corporation is the sole operator for the national railway network. The Corporation has a fleet of 40 mainline locomotives of which 35 are operational and the average age is 7 years, and 32 shunting locomotives but only 5 are operational. There are about 430 wagons of various sizes and 339 are in effective use with the rest awaiting repairs. Most of the wagons, especially the mineral wagons, are over 40 years old. Currently there are no container chassis for the haulage of containerized cargoes.

The current fleet of passenger coaches were acquired in 1982, and deteriorated badly. About 100 are in effective use while there is a total stock of 154. Due to the shortage of coaches, the frequency of passenger services has been reduced significantly with services provided on alternate days on the Central and Eastern Lines.

In 1999, the railway mode carried 1.2 million passengers and provided 126 million passenger-kilometers. Total freight transported in 1999 amounted to 975,000 tonnes. Freight transportation is the dominant activity for the Corporation and freight traffic consists of export

commodities such as cocoa beans, timber, bauxite and manganese.

Passenger and Freight Traffic by Railways and Railway Freight Traffic by Principal Commodities are shown in Table 2.1.1 and 2.1.2 respectively.

Table 2.1.1 Passenger and Freight Traffic by Railways

Unit : × 1000

Year	Passenger Traffic (persons)	Freight Traffic (tonnage)
1990	1,897	724
1991	1,323	740
1992	1,159	661
1993	1,355	773
1994	2,006	777
1995	2,238	810
1996	1,931	944
1997(up to Sep.)	1,600	617

Source: Quarterly Digest of Statistics December 1998 by Ghana Statistical Service

Table 2.1.2 Railway Freight Traffic by Principal Commodities

Unit : 1000ton

Year	Total	Manga- nese	Bauxite	Cocoa	Timber	Build. Material	Petrole. Products	Others
1990	724	261	356	62	31	2	9	4
1991	740	305	362	41	20	1	8	2
1992	661	278	325	26	18	5	5	3
1993	773	273	439	25	29	1	-	7
1994	777	208	492	22	50	1	2	3
1995	810	188	518	15	89	1	1	35
1996	944	297	499	34	53	5	-	47
1997*	617*	190*	335*	17*	25*	13*	-	37*

Source: Quarterly Digest of Statistics December 1998 by Ghana Statistical Service / \*up to Sep.

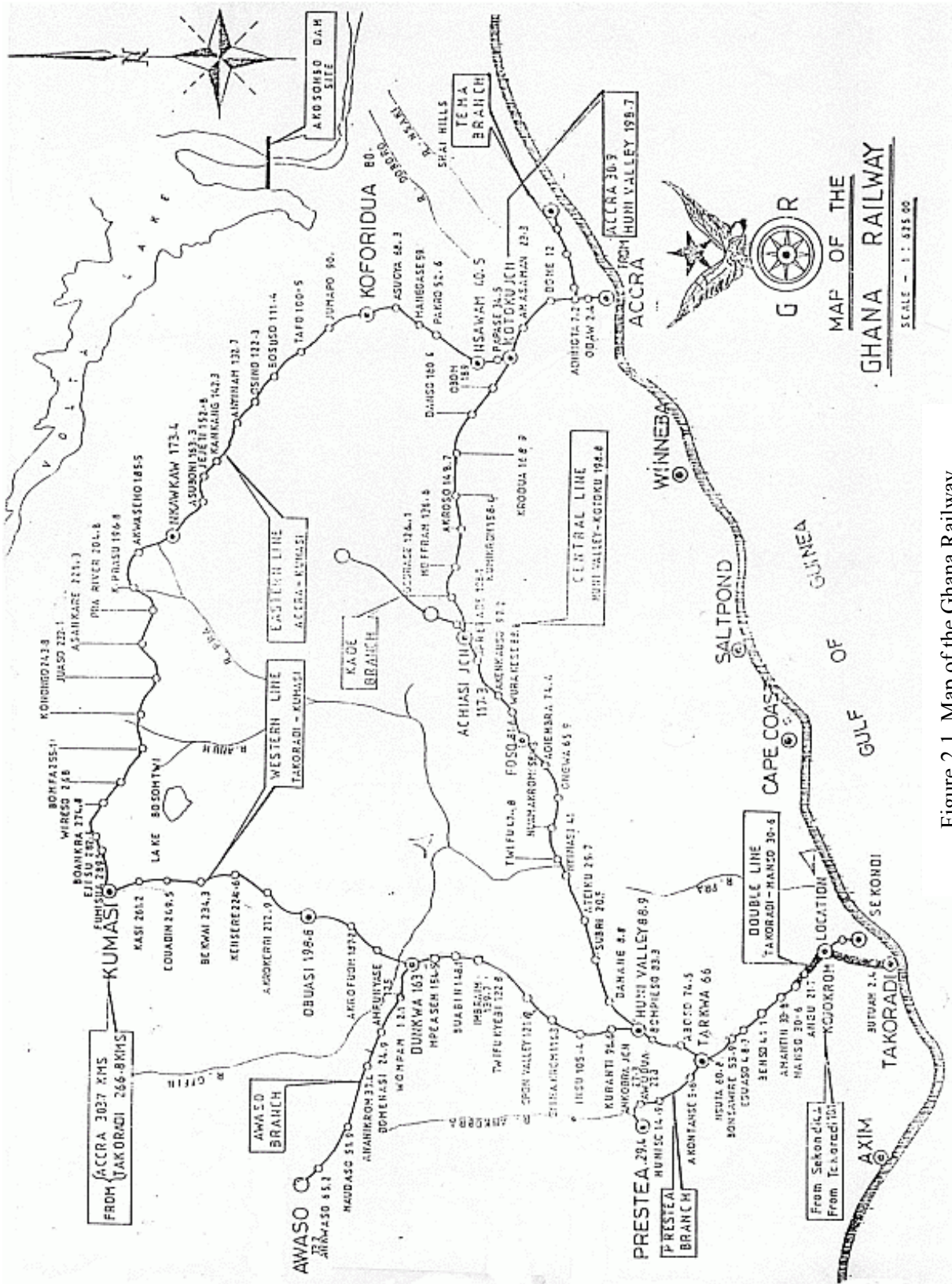


Figure 2.1 Map of the Ghana Railway

## **2.2 Roads**

### **2.2.1 Infrastructure**

According to the government statistics, road transport is the principal domestic carrier, accounting for around 98% of freight moved. The road infrastructure of the country consists of about 13,250 km of trunk roads, 24,000 km of feeder roads and 2,913 km of urban roads, and there is a total road network of about 41,000 km. Road density in Ghana is about 2,000 km per million person, which means that there is a well established road network in Ghana. However, due to a huge maintenance backlog, a significant proportion of the network, especially feeder roads, is in poor condition, providing limited or no access to motorized vehicles.

The trunk road network consists of National Roads, Inter-Regional Roads and Regional Roads. About 42 % of the trunk road network is paved. For the entire trunk road network in Ghana, the road condition mix in 1999 is given as: 33 % in good condition, 37 % in fair condition and 30 % in poor condition.

The condition mix of the entire feeder road network in the country shows 27 % good, 23 % fair and 50 % poor, and only 3 % is paved. About 52 % of the feeder road network is considered to be maintainable with the remaining 48 % being non-maintainable. Unpaved roads require frequent maintenance, especially in the forest belt, to make them motorable throughout the year. Feeder roads help to increase the access of the rural dwellers to urban based infrastructure and services to enhance agricultural productivity and to improve their standard of living.

About 58 % of the urban roads are paved and 55 % of the paved urban roads are currently in good condition, while 27 % in fair condition and 18 % in poor condition. For the unpaved roads, only 12 % is in good condition, 22 % in fair condition and 66 % in poor condition. The urban road conditions have contributed in part to the traffic congestion in the major cities.

Road transport infrastructure still has a large backlog of deferred maintenance and rehabilitation work, and needs to attract continuing investment to keep pace with the increasing demands of the country for socio-economic development.

Figure 2.2.1 shows the present road network in Ghana.

### **2.2.2 Road Transport Service**

The provision of road transport services, for both passengers and goods, is dominated by the private sector, and the private sector carries 97 % of all national passenger traffic and 94 % of freight. Entry into the road transport industry is free and unrestricted. The main problems faced by Ghanaians in connection with the road transport services provided by the private sector include old and weak vehicles with frequent break-downs, high rate of accidents, unprofessional services, delays, frequent upward revision of fares and sometimes over-loading. Scheduled bus operations are also absent in the cities.

The vehicle fleet in the country has been growing at an annual rate of about 10 %. The road

capacity needs increasing to handle increased traffic levels. The congestion is also the result of the predominant use of low-capacity vehicles instead of large scheduled buses for public transport in the cities and towns of the country.

### **2.2.3 Trans-West African Highways**

The development of road links between Ghana and its neighbor countries (Togo, Burkina Faso and Cote d'Ivoire) has been sought for encouraging regional trade and tourism. The road development agreed in principle by West African countries as Trans-Africa Highways are as follows.

- Route N1 : Lome (Togo) - Aflao - Accra- Elubo - Abidjan (Cote d'Ivoire)
- Route N6 & N10 : Accra - Kumasi - Tamale - Paga - Ouagadougou (Burkina Faso)
- Route N13 : Navrongo - Tumu - Kupulima - Leo (Burkina Faso)
- Route N6 : Kumasi - Sunyani - Berekum - Gonokrom - Abengourou (Cote d'Voire)
- Route N12 : Techiman - Wa - Hamile - Bobo Dioulasso (Burkina Faso)

In addition, the North-South Central Corridor (Route N10 / Burkina Faso Boarder Paga - Bolgatanga - Tamale - Kumasi) included in the major traffic corridor have the highest priority in the medium and long-term highway development programme to support national development. And also the north-south corridors including Route N12 (Elubo - Sunyani - Wa - Burkina Faso Boarder) have higher priority as a key routes for national integration and regional development.



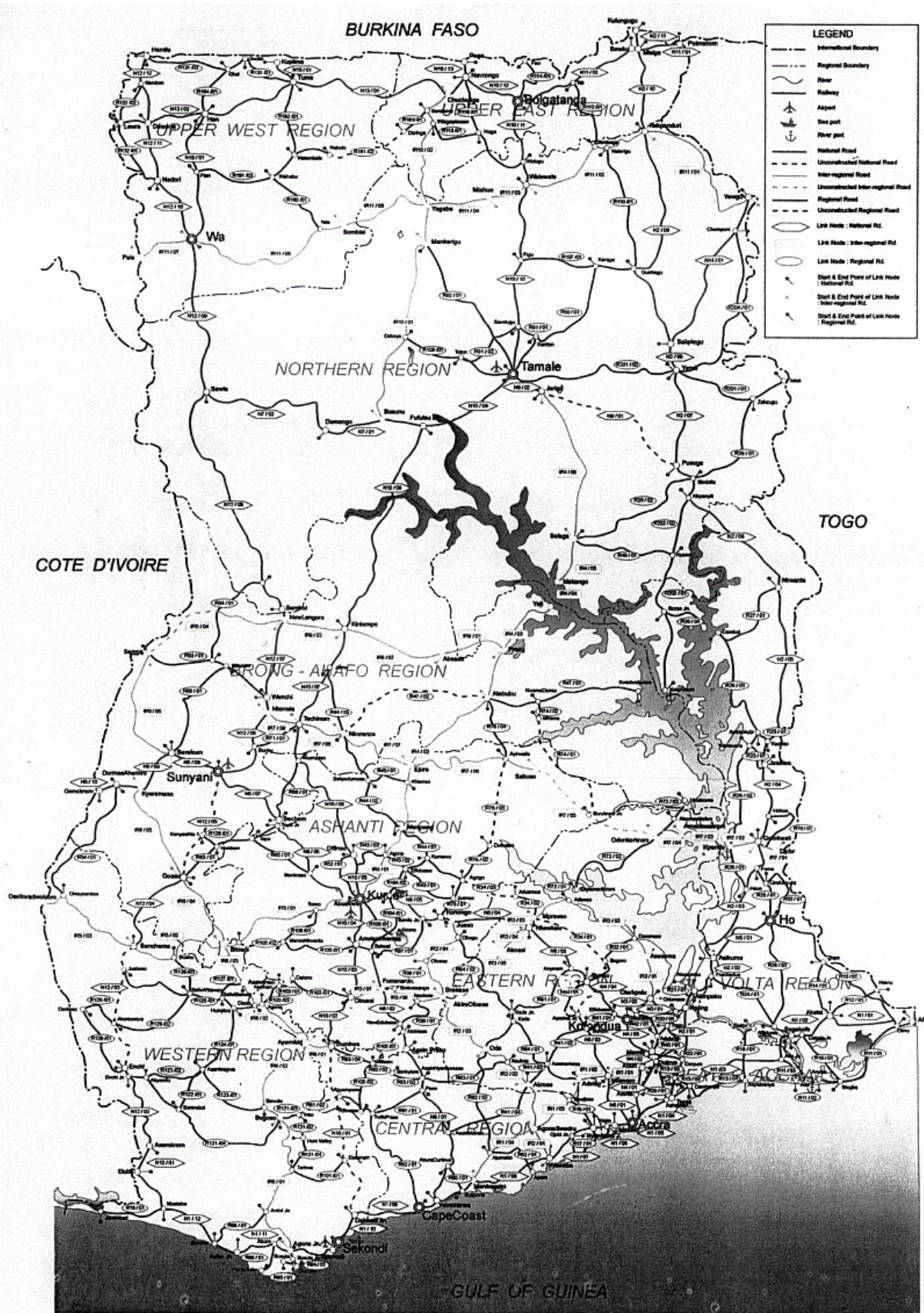


Figure 2.2 Present Road Network in Ghana

### **2.3 Sea Transport**

Ghana has two commercial sea ports located at Tema, a distance of about 30 km east of Accra, and Takoradi, a distance of about 250 km west of Accra. The two ports handled over 90 % of the country's import and export trade.

Takoradi Port has an enclosed water area of 880,000 m<sup>2</sup> and a total quay length of 945 m. There are four multi-purpose berths with a maximum draught of 9.5 m at berth and buoy berths with a maximum draught of 10.97 m. Takoradi Port is the major export port of the country and handles more than 70 % of the total national exports comprising timber, bauxite and manganese. It also handles 60 % of the national volume of cocoa exports.

Tema Port has an enclosed water area of 1,660,000 m<sup>2</sup> and a total land area of 3,900,000 m<sup>2</sup>. Its total quay length is 2,196 m comprising 12 multi-purpose berths with a maximum draught of 9.6 m. There are two privately owned berths, namely the VALCO berth with a length of 175 m and the oil berth with a length of 244 m. Tema Ports has 200,000 m<sup>2</sup> of container stacking area capable of holding 8,000 TEUs and 290 refrigeration points for plugging refrigerated containers. There are a marshalling area of 19,200 m<sup>2</sup>, a storage area of 53,270 m<sup>2</sup> with cover and open storage of 97,200 m<sup>2</sup>. Tema Port currently handles about 70 % of total national cargo throughput comprising 85 % imports and 15 % exports. Major imports are made up of containerized general cargo, alumina, clinker, grain, sugar, crude oil and petroleum products.

The two ports have benefited from extensive rehabilitation works. Under the Economic Recovery Programme, a Ports Rehabilitation Project was initiated to rehabilitate the severely run-down infrastructure and facilities at the ports of Tema and Takoradi. The first phase of the rehabilitation was completed in 1991, and the second phase was launched from 1992 – 1995. The second phase has four components : (a) Dredging of the ports; (b) Rehabilitation of the Timber sheds, Berth 1 and 2, and the West Lighter Wharf, all at Takoradi; (c) Construction of a 6.2 km access road from the Port of Tema to the Motorway roundabout to link the major trunk roads in the country; and (d) a Master Plan Study.

### **2.4 Inland Waterway**

The Volta Lake is owned by the Volta River Authority (VRA). The infrastructure consists of a navigable waterway of about 415 km extending from Akosombo to Buipe.

The Lake transport services are operated by the Volta Lake Transport Company (VLTC), a subsidiary of VRA. It operates general cargo/passenger services between the Port of Akosombo in the south and the northern port of Buipe and there are intermediate stops at Kete Krachi and Yeji. In 1999, 21,439 passengers were carried on the north-south route. The VLTC also transport petroleum products from the Akosombo Bulk Storage Depot by barges to the Buipe Storage Depot and 23,840 tonnes of liquid cargo were transported in 1999. Total cargo transported in 1999 amounted to 63,524 tonnes.

At present, cargo from the Tema Port which is destined for Burkina Faso has been transported by road through Buipe .



## **2.5 Air transport**

### **2.5.1 Infrastructure**

Ghana has one international airport, the Kotoka International Airport (KIA) in Accra, and three domestic airports in Kumasi, Tamale and Sunyani. There are a military airport in Takoradi and airstrips at Obuasi and Paga.

The Kotoka International Airport has a terminal building, a single runway of 2,800 m and a freight terminal. The arrival hall and baggage claim areas have recently been refurbished and expanded to handle increasing number of passengers. One of the main problems at KIA is the congestion at the departure hall and the KIA Phase 2 Programme, which will increase capacity by 300 %, has been planned. KIA has a dedicated freight terminal building, which was constructed in 1995, and a new export shed with cold storage facilities is under construction.

### **2.5.2 Transport Services**

Ghana is currently served by 16 airlines including Ghana Airways. Ghana Airways is the dominant carrier and accounts for more than 42 % of departing passengers and about 40 % of arriving seats at KIA. However, due to under capitalization, Ghana Airways has weak fleet flexibility and a poor punctuality record. In 1999, aircraft movement at KIA amounted to 9,107. Almost 60 % of departures from KIA are destined for Lagos or Dakar through Abidjan.

Airlink, operated by the Ghana Airforce, is the only airline which operates domestic passenger services and is not able to meet the present demand for domestic air transport services. New airlines joined the domestic airlines operations in 1998, but they failed by 1999 due to high operating costs and management problems.

There are currently three registered cargo operators in Ghana and they carry over 45 % of the freight uplift in the country, mainly non-traditional exports to European destinations. The rest are mainly imports which are carried by the scheduled airlines.

KIA can be considered as one of the leading airports in the West/Central African region. It ranks first in terms of cargo, third in terms of domestic passengers and fourth in terms of transit passengers. In 1998, about 484,826 international passengers used KIA, which registered a growth in passenger traffic of 13.6 %.

Figure 2.5.1 shows Transport in Ghana.

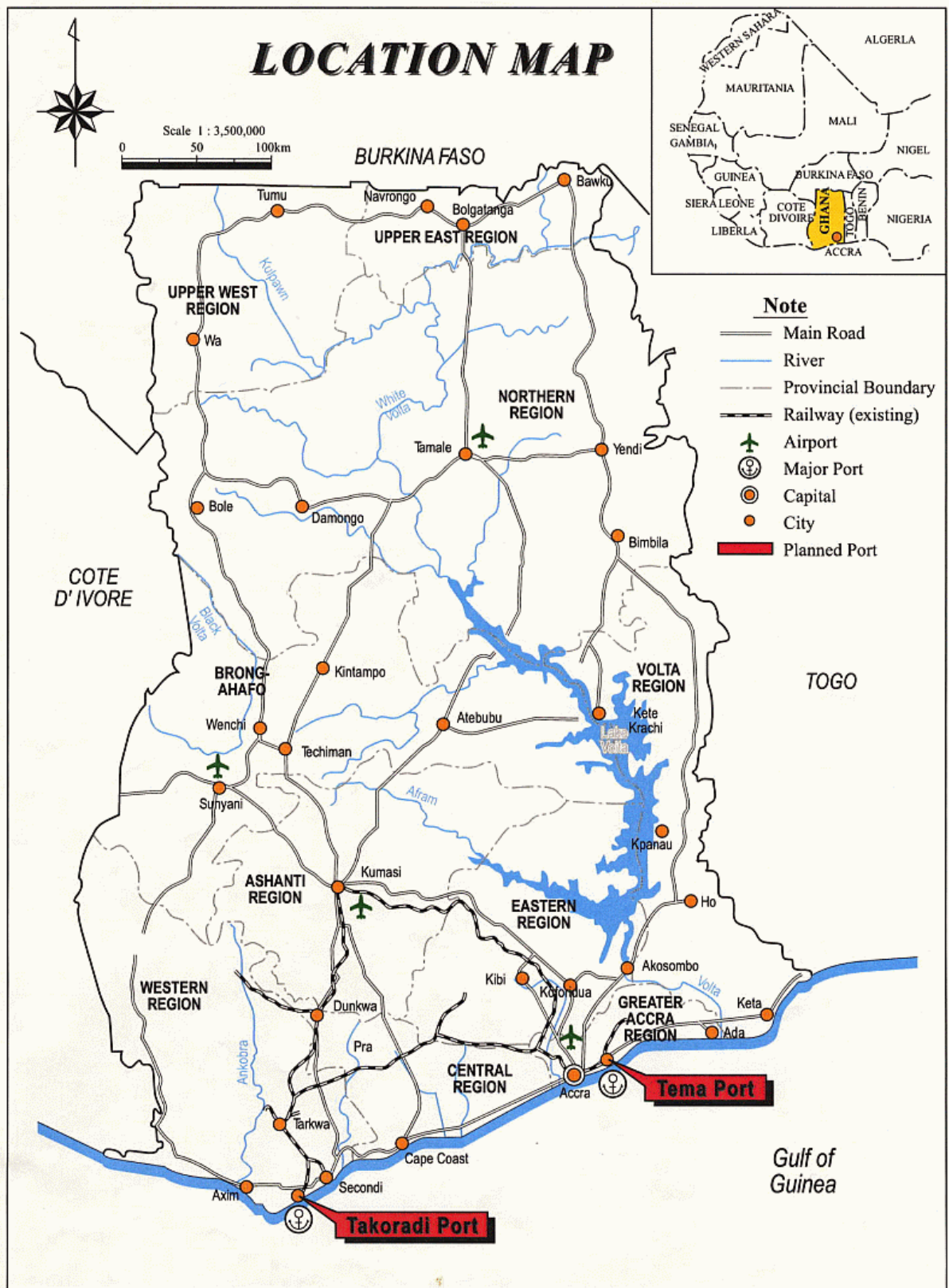


Figure 2.5.1 Transport in Ghana