Development of containerisation in the Port of Conakry

Oumou Barry

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DEVELOPMENT OF CONTAINERISATION IN THE PORT OF CONAKRY

BY

OUMOU BARRY

(REPUBLIC OF GUINEA)

A dissertation submitted to the World Maritime University in partial fulfillment of requirements for the award of the:

DEGREE OF MASTER OF SCIENCE

IN

GENERAL MARITIME ADMINISTRATION

Year of Graduation

1992
I certify that all material in this dissertation which is not my own work has been identified and that no material is included for which a degree has been previously conferred upon me.

The contents of this dissertation reflect my personal views and are not necessarily endorsed by the University.

(Signature) ——
(Date) 19 October 1988

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I would like to acknowledge that this paper owes its existence to the Guinea government, especially to the National Director of Merchant Marine Mr. BADRAS YORA, Mr. BANGALY CAMARA General Director of the Autonomous Port of Conakry who realized me to participate in the two years General Maritime Administration course at World Maritime University and I express my sincere gratitude to ICOD (International Centre For Ocean Development) for sponsoring and providing the fund.

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ABSTRACT

Containerisation brought about structural changes not only in sea transport but also in land modes of transport. The technological adaptation to the container permitted the realization of door-to-door transport. The intermodality of containers allowed for the introduction of new organizational systems based on the needs of the cargo rather than on the characteristics of individual transport modes, the major effective change being the ability to transport goods by more than one mode of transport on the basis of a single document, the multimodal transport document.

Multimodal transport of container may also be looked upon as a response to changing transport requirements. Transport no longer constitutes an isolated process of moving goods from one point to another but has become an integral part of total production and marketing processes in the context of marketing logistic concepts.
DEDICATED TO

my wonderful parents
particularly my late father
SAIKOU YAYA, my mother FATOUMATA
DOUMBOUYA.

To the memory of my late sister
AISSATOU BOBO BARRY.
To my husband and future children
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ABBREVIATIONS

AB : Abidjan
AGEMAP: Association Guineenne des Entreprises de Manutention Portuaire.
BMOP : Bureau de la Main d'Oeuvre Portuaire
CA : Calabar
CK : Conakry
CO : Cotonou
CT : Container Terminal
DA : Dakar
DO : Douala
EMIN : Empty In
EMU : Empty Out
ENTRAT: Entreprise National de Transit et Transport
FC : Full Container
FR : Freetown
GETMA : Societe Guineenne d'Entreprise des Transports Maritimes et Aeriens
IDREM : Institut de Documentation, de Recherches et d'Etudes Maritimes. Abidjan (Cote d'Ivoire).
LA : Lagos
LCL : Less Container Load
LI : Libreville
LO : Lome
MA : Matadi
MT : Empty Container
MTTP : Ministere des Tranports et Travaux Publics
PAC : Port Autonome de Conakry
PG : Port Gentil
PH : Port Harcourt
PN : Point Noir
SOAEM : Societe Ouest Africaine d'Entreprises Maritimes.
SOCOPAO: Societe Commerciale des Ports de l'Afrique de l'Ouest.
SOGIJICOM: Societe Guineenne de Consignation et de Manutention
ST : Sao Tome
TAC : Terminal a Container
TEU : Twenty Foot Equivalent Units
WA : Warri
INTRODUCTION

Today the shipping industry is highlighted by the revolution of the containerisation transport system which is an important tool to rationalize the national and international strategies and policies to the overall development.

Containerisation is the modern contribution to the historic trend of diminishing transport costs and is therefore irresistible.

As containerisation is not science fiction, the considerable reduction in manpower throughout the transport industry will not transform men into the slaves of robots.

It is up to human inventiveness to develop containerisation further as a transport system of the utmost efficiency by which everybody profits directly or indirectly.

Containerisation is a system of transport whose scope and potential is first of all determined by the volume of trade. Trade has always been linked with transport. From its start some five thousand years ago to today, all transactions have involved transport.

Containerisation was seen as a sophisticated, expensive invention of the industrial trading countries, foisted on the developing countries without thought for their needs, controlled by multinational operators many thousands of miles away and requiring expensive investments in port and in land transport facilities which the developing countries could not afford.
Today the situation is radically different. Containerisation of developing country trades is proceeding apace; by 1992 it is unlikely that any purely break-bulk liner services will remain. Many problems remain, but much of the emotion has evaporated. This is partly because time has dispelled the worst fears and given an opportunity for the benefits of container services to be seen first hand. The western operators have also been able to point out several basic considerations about the adoption of container services in developing country trade, which have largely been accepted in the third world.

First, there are the sheer advantages of being able to put goods in containers, advantages for which developing country goods are just as suited as others. Developing country ports have been particularly prone to congestion, delay, loss and pilferage. Containers have reduced the losses and improved the outturn. Some type of developing country produce, such as tropical fruits, gain particularly from the fine temperature control possible with insulated containers, creating new markets for products like avocado pears. Early worries about sweat with products like cocoa and coffee beans were overestimated, aided by the use of ventilated containers when necessary. As in other trades, simpler packaging has been possible with many products, particularly semi-bulk and bagged cargo.

Certain dirty cargoes like hides, skins and bones, unpopular with western dockers at their destination, can satisfactorily be handled in liner containers. But cleaning containers can be expensive and time consuming.

Secondly, the imbalances in developing country liner trade have proved less severe and less of a disadvantage than feared. Developing countries typically run trade deficits with the west, balanced by aid and capital inflows. Further, many of their exports are bulk cargoes, much of which have never moves in liners.

It is true that empty containers have to be moved, but this is one of the costs of container services paid for by productivity improvements elsewhere in the service. It may also be noted that cross subsidization of lower value cargoes, such as developing country exports, by the higher value manufacturers, is not disturbed by containerisation. Reverting to the bulk cargoes, some of these were traditionally carried with liner cargo, for example, logs from West Africa, moving along with bagged coffee. The coffee is container compatible, the logs are not. The main point is that there is a competitive situation and no inherent disadvantage to the developing countries.

Thirdly, once traders in industrial countries had geared themselves up to the use of containers, they took their advantages for granted. The exporters of produce and other developing country cargoes who were geared up to use containers, have a quality or convenience edge over the others. With the passage of time there is less conventional handling capacity left in developed countries and it becomes virtually necessary for trade to be served by containers.

Fourthly, not all trade has to be containerised at once. The most important, or those involving least problems, can be dealt with first. Neither do all parts of the through transport chain have to gear up at once, particularly the inland leg.
In many developing countries, precisely because inland communications are poor, a great deal of industrial activity takes place in the vicinity of the ports. These key areas can benefit directly from door-to-door container traffic. In many developing countries, much of the produce comes from the hinterlands and traditionally moves to the port area in cargo lots suitable for shipping into break-bulk vessels. In Malaysia, for instance, the road between Kelang Port and Kuala Lumpur was improved. In India, four inland packing and customs clearance depots are being provided, with improved rail facilities to the ports. In East Africa a considerable number of containers are moved by road or rail through Mombasa and Dar-es-Salaam to and from landlocked countries: Uganda, Zambia, Malawi eastern Zaire. Specialized container trains now move between Nairobi and Mombasa. In West Africa containers are moved by road or rail through Senegal, Ivory Coast, Cameroon, Benin, Ghana, Congo to and from landlocked countries: Mali, Burkina-Faso, Niger, Chad and the Central Africa Republic.

Fifthly, the western container operators have been at pains to say that the so-called Multimodal Transport Operators (MTOs) are not an unknown quantity. The majority of those providing through transport services are the shipowners who have been present in liner trades for many years and who, together with their shipping agents, are well known commercial entities in the developing countries with whom they trade.

Sixthly, there is the point that containerisation has developed in a way very amenable to co-operative ventures. The European and Japanese shipowners have evolved consortium fleets. In some cases they have invested jointly in terminals. The shipping agencies have taken on the organization of landside operators at the other end of their trades, a method being extended to developing countries. The
opportunity thus exists for joint container service ventures between developed and developing countries. Nigeria and Ghana have both participated in African Container Express Venture as part of the UK West Africa Lines Service. Asian and European lines have become members of the ACE group in Far East trade.

From a technological point of view containers have developed well. But the administration, organisation such as documentation, low liability, customs adoption to it have been slow.

There is no doubt that with the passing of time, perceptions in developing countries of the considerations described above have eased their worst fears. This paves the way for progress. There are still particular problems (management, provision of capital, foreign exchange and labour) to be tackled if container services in developing country trades is to be successful.

The Republic of Guinea, as a maritime nation and as a developing country, is supposed to use and to develop container services in its ports.

Today, in order to meet the requirements of the containerisation in the port, to satisfy the needs of its customers and to develop its maritime traffic, the Port of Conakry has built a new container terminal.

The objective of the present study, entitled: "Development of Containerisation in the Port of Conakry", is to understand the transition of the port and to examine the changes made by the port and their effect on the development of a container transport system in the country.
This thesis is developed in VII chapters. The first chapter is entitled: "PRESENTATION OF THE AUTONOMOUS PORT OF CONAKRY" and it is the history of the evolution and a description of the port's (infrastructures and equipment).

Chapter II is a "DESCRIPTION OF THE GLOBAL TRAFFIC OF THE PORT BEFORE CONTAINERISATION". This chapter focuses on the evolution and the structure of port traffic.

Chapter III is entitled: "FACILITIES AND SERVICES SUPPLY" and explains the role of the port as a central link in the transport chain rather than a terminus. It explains public facilities (passengers and cargo, warehousing, coastal shipping) in the port.

Chapter IV is entitled: "THE INTRODUCTION OF CONTAINERISATION IN THE PORT". It pays attention to the presentation of the containerised traffic, evolution and analysis of the traffic; the trade ratio of containers and the container throughput in the West Africa region.

Chapter V is entitled: "DEVELOPMENT OF THE CONTAINER TERMINAL AND ITS ACTIVITIES" and gives a general view of the first container terminal of the port looking at the following aspects: structure of the storage yard of containers, container handling alongside quays, system of stuffing and stripping, computerization system data and documentation, stevedoring, personnel and the relations of the yard with the hinterlands.

Chapter VI is entitled: "CONTAINERISATION AND MULTIMODAL TRANSPORT IN AFRICA". It gives a description of the Africa transport system and analyses the main problems of how it faces rapid development of technology. This chapter focuses on the situation of transport in Guinea and explains the concept of multimodal transport and containerisation,
describes the main problems of landlocked countries and the co-operation which they need from transit countries.

Chapter VII is entitled: "THE NEW CONTAINER TERMINAL AND ITS FUTURE MANAGEMENT PERSPECTIVES". This chapter gives a brief description of the new terminal, rules and regulations relating to the exploitation, and management of the terminal. Finally, it gives the future benefits of this terminal for the port.

Finally, there is a general conclusion which will be followed by the future perspectives and recommendations.

This study has been carried out mainly by means of research, interviews, personal observations, extended field studies, field trips, lectures and also through other studies conducted on parts of the subject by UNCTAD/.
CHAPTER ONE

PRESENTATION OF THE AUTONOMOUS PORT OF CONAKRY

Brief presentation of the Republic of Guinea

Features

The Republic of Guinea is located at the western tip of West Africa. Guinea has land borders with six countries. In clockwise order from the northwest there are: Guinea-Bissau, Senegal, Mali, the Ivory Coast, Liberia and Sierra-Leone. The coast line along the Atlantic consists mainly of flatland with rivers, estuaries and mangrove swamps, some of which have been drained for farming. Rocky outcrops reach the sea at two places, one of which is the site of the capital, Conakry. Beyond the coast is a coastal plain about 43 miles/70 km. It is wide with gravelly soils, beyond which, in the west and the center of the country, lies the steep-sided Fouta Djallon.

East of Fouta Djallon are the Niger plains, which contain seasonally flooded valleys suitable for rice cultivation. In the southeast are the Guinea highlands, rounded mountains that rise to 5,750 ft/1,750 m (Mount Nimba). A relatively high rainfall and forested vegetation in these uplands allows cultivation of coffee, cola and other crops.

Area

94,925 sq. miles/245,857 sq. m.
Mean max. and min. temperatures

Mean temperatures in Conakry range from 79° F/26° C in July to 82° F/28° C in April.

Mean annual rainfall

A mean annual rainfall of 170 in/4,300 mm, most of which falls between May and November, with over 80 in/2,000 mm. of that during July and August. The Fouta Djallon plateau is drier, receiving about 70 in/1,800 mm, but rainfall is more evenly distributed throughout the year. Rainfall in the Guinea highlands is higher than in the Fouta Djallon, and again is more evenly distributed than on the coast.

Total population

According to the February 1983 census (base on a sample survey), the population was 5,781,014. Estimated population in mid-1985 was 6,075,000.

Ethnic composition

The population consists of about one-third Fulani (Fulbe), one-third Malinke, and a number of other ethnic groups, the largest of which is the Susu.

Religion

Most Guineans are Muslims, estimates ranging from 75% to 95% of the population. The rest of the population adheres to the traditional religions or Christianity.

1.1. **History of the port of Conakry**

From the end of the 15th century, Portuguese navigators approached the Guinean coast and set up good trading posts near the estuary "Rivieres du Sud". In the 16th century the European slave trade established the link sustaining the trade and the slave traffic with the population of the coast.

The French were particularly concerned about Guinea in 1837, when the Bordelais traders signed a treaty with the main coastal regions, where they fitted out the trading post for gold, ivory, precious wood.

The port of Conakry as a first port of trade of the country was remarkable for the construction of the railway Conakry-Niger-Sudan obtained by a treaty in July 1881; the work started in 1898. Since this date expansion of Conakry was assured and it has not stopped growing.

Another important element was the transfer of the "Iles de Loos" by the English in 1904, which gave to Guinea her definitive limits. From 1881 to 1958 Conakry became an important place as an administrative city and capital, but also as a port which linked Guinea to landlocked countries.

In October 1958, Guinea became independent. However, it was in August 1961 that the nationalization of the maritime transport was made. The total wind up of the structures and practices of colonial trade has deeply changed distribution and trade channels, as well as the development of the port.

Therefore, from 1958 to the end of 1970, the traffic of Conakry concentrated almost exclusively upon bauxite and aluminium exports, with very little general cargo traffic. So, the Guinean authorities understood that the port with its actual situation does not respond to the economic needs of
the country.

In 1910, the port handled 60,000 tons which gradually rose to 184,000 tons in 1938. The port of Conakry is the Guinean gateway for imports including foodstuffs, sundries, construction and machinery.

It is also functioning as an exporting port for aluminium produced by FRIGUIA, which is the largest income for Guinea and the largest aluminium plant in Africa and Europe. It went into operation in 1960.

The bauxite produced for export to the former Soviet Union by the Kindia mine which is located about 100 km north-east of Conakry is shipped by railway to Conakry port, where bauxite carriers of the 20,000-30,000 dwt class are considered as the largest that can enter the port.

1.2. Evolution of the port

The Republic of Guinea was reopened to western countries at the end of the seventies. At that moment it was evident that the port was not able to face up to the requirements of modern maritime traffic, as much as from the administrative and organizational, as the infrastructural and superstructural points of view. The port equipment was in improper condition.

Indeed, the port was not served by the ships of the West African Conference. Furthermore, shipowners practiced very high freight rates against other ports of West Africa. Until 1982, the responsibility for port operations in Conakry were divided among four organizations.

1— The Maritime Office was in charge of the buoys, the services of the captain of the port, and the maintenance of infrastructure and dredging operations;

2— the National Enterprise of Transit and Transport (ENTRAT) was in charge of the stevedoring operations and the transit of general cargo;

3— the Naval Guinean Society was in charge of towing and maritime consignments;

4— the General Administration of the port ensured the co-ordination of functions.

With the creation of the Autonomous Port of Conakry by Decree No 050/PRG/82 on 22 July 1982, this division of operational responsibilities was eliminated. From that date the port has taken all the responsibilities for the operations except transit, which remained the responsibility of ENTRAT.

To develop the scope of the creation of the A.P.C., the Guinean government seized the opportunity presented by from the International Association of Development, the African Bank of Development and the Federal Republic of Germany to obtain financial and technical assistance for the rehabilitation and development planning of the port.

This approach materialized putting into operation the first port project and providing technical assistance. The physical component of the first project began on 1 December 1983 and ended on 3 March 1987.

In April 1987, the port privatized the consignment, handling, storage and transit sectors.

The specialized firms in these sectors which were very well known in West Africa, wanted their operational agencies in the port.

This was new evidence of the increasing success of the port and allowed a look to the future with optimism.

1.3. **Description of the port**

**I- Generalities**

The port of Conakry is situated at the front of the north-west part of the peninsula of Kaloum, well protected from the strong winds coming from the West by the Isle of Tombo, at 9° 30 latitude North and 13° 43 longitude West (see Annex 1).

The port has the advantages of an exceptional geographic situation. It is protected from the sea by rock, with a channel access of 5,000 m in length and 150 m in width emerging upon the port basin. The port is accessible in any season and by any condition of tide with a water plane that is steady. The connection between road and railway links the port to the rest of the country.

**Hydrological Conditions**

Tides: The tides of the port are of a semi-diurnal type with a low diurnal irregularity. The level attain +3,8 m Z.P. (datum level) in spring tide and +1,1 m Z.P. in neap tides. With the influence of the winds, the level of water of +4,5 m Z.P. and one level of minimum water of +0,0 m in Z.P. can be attained.
Currents: In the port, the distribution of currents and waves is the following:

In tide: the current comes from the north and arrives at the port with a south-west direction parallel to the quays. It is canalized by the embankments of the port and takes a southerly direction at the exit, reducing the intensity. The average speed is about 0.60 m/s and high tide is produced 3 hours after that in the open sea.

In wave: The current comes from the south, knocks against the "Îles Tombo" and seems to deviate from the coast. Indeed, it is stronger along the embankments than along quays in the port. The average speed is about 0.50 m/s. It is produced 3-4 hours before high tide in the open sea.

II- Access to the port

- Sea side

The port is accessible by a channel oriented south to north with an 8.50 m in depth. This channel takes an inclination north-east across from the lighthouse of "Boulbinet" at 1 km from the entrance of the port basin. The limits west and east of the channel are marked by the buoys of the lateral system.

- Land side

The zone of the port is linked on dry land by 2 principal roads to the city of Conakry and 3 rail lines:

- the national railway (Conakry-Kankan 662 km)
- Conakry-Fria 350 km transport of aluminium
- Conakry-Kindia 150 km transport of bauxite
1.3.1. **Infrastructure**

The infrastructure of the port is organized as follows:

- A water plane of 180 hectares (ha);
- 10 posts of quay founded from 8 to 11 m;
- 2 combined bulk-tankers terminals with draughts of 11 m;
- 80,000 sq m of the earth platforms;
- 10,400 sq m of covered areas;
- 2,000 sq m of quay;
- a railway related to the network of the "National Office of Guinea's Railway".

1.3.2. **Equipment**

The port has a good equipment to ensure guarantees to its customers in the realization of all port operations devolved at a modern port such as:

- 2 motorboats for piloting and mooring;
- 2 tow engines of 1800 HP each;
- 5 cranes from 18 to 160 tons;
- 5 tractors with 13 platforms 10-40 tons;
- 25 fork-lift trucks 22-30 tons.

Nevertheless, in spite of everything that is mentioned above, it should be pointed out that the port has:

- workshops for maintenance and repair of the rolling engines equipped with machine-tools for the general mechanic; a joinery, and a warehouses for storage of exchange pieces.
- A yard of containers with a area of 23,000 sqm managed by the private companies; the capacity of storage is 255 teu (twenty foot equivalent unit) of which 28 teu are reserved
for the storage of reefer containers. (1)

- Berths and Cranage
  Two multipurpose berths, both with a length of 150 m and 250 m and a depth of 9 m. Two general cargo berths with a total length of 300 m and a depth of 8 m.

- Services
  DSS, ESTONIAN, GRIMALDI, I.T MAERSK, RMS-BACO NAVAL DELMAS, TRANSMARE, VAN DEN.

- Terminal facilities
  Total area 5 ha, storage 1,800 teu (three high), reefer points 30 electric plugs, equipment provided by private stevedores and quay operators.

- Consolidation
  CFS adjacent to terminal (warehouse 3) with a total area of 1,000 sq m, storage 50 teu, reefer points on terminal, fork-lifts 2 hyster H50*L (2.5 t).

- Computer system
  None

- Hours of working:
  0730-1500, 1500-2200, seven days a week (except holidays).

- Future plans:
  New container quay with a length of 250 m and a depth of 10 m. (2)

(1) Directorate of the Port of Conakry.
(2) Containerisation international yearbook 1989/1990
After giving a brief account of the Port of Conakry, which is the first port of the country, the author will give a short description of the port of Kamsar which is the second port is offered to enhance the reader's perspective of Guinea's Port capabilities.

- Description of the Port of Kamsar

Kamsar port is the second port in Guinea. It is situated on the east bank at the mouth of the Rio-Nunez River about 300 km north-west of Conakry. It was built in 1973 as a loading port for bauxite produced at CBG's mine "Guinean Bauxite Company". This mine is located in Boke which is about 140 km inland from the port. This port is under the jurisdiction of the "O.F.A.B", (Office d'Amenagement de Boke), an organization related to the "Ministry of Mines and Geology".

However, bauxite cargo handling operations at the port are independently conducted by the C.B.G. The port has a dredged access channel with a width of 120 m, extending over 17 km toward the ocean and about 11 m deep at the ocean end, of low tide. The channel is about 8 m deep at low tide near the port and of the channel.

At high tide, the channel becomes about 5 m deeper. The channel is surveyed every year for depth and dredged at a rate of about once every three years.

The wharf, which is used at Kamsar exclusively for loading bauxite on ships, faces the channel at a point about 1,800 m away from the shore. It is a table-like structure with a length of 260 m and a width of 18 m. It is built on pipes driven into the river bed and dredged to keep a water depth of 13 to 14 m around the wharf even at low tide.

-----------------
The wharf and the shore are limited by an approaching jetty. Bauxite and fuel oil are loaded into ships from their storage facilities on land by using conveyer belts and pipelines. The cargo handling capacity is about 4,000 tons per hour for bauxite and 450 tons for fuel. The onshore fuel storage can store 30,000 tons of "C" grade heavy oil and 6,000 tons of diesel oil.

The largest vessel that can enter through the access channel and berth in order to load at the wharf is considered to be about 225 m in length which equals to a 60,000 dwt class bauxite carrier. The largest ships so far actually accommodated at the wharf are ships of about 66,000 dwt.

In recent years more than 200 bauxite carriers have been entering the port every year. It is, said however, that congestion has rarely occurred.

Furthermore, there are two berths for general cargo ships at a different jetty. One of the berths is equipped with a crane and can accommodate a ship of up to about 100 m in overall length and 6 m in draft.

Among general cargo facilities are two tug-boats and two barges which are engaged in piloting and berthing services.

The other ports in Guinea are the port of Benty and the port of Boffa. The port of Benty was accessible to banana boats of about 8,000 dwt. Most bananas from the southern coast were moved through this port, but today these ports are not working as well as before.

CHAPTER TWO

THE AUTONOMOUS PORT OF CONAKRY
BEFORE CONTAINERISATION.

2.1. TRAFFIC OF THE PORT.

Table 2.1 (see p.20) shows the general evolution of the traffic of the port of Conakry since 1980. From 1980 to 1987 the grow in total traffic is around 64.09%, which represents an increase of tonnage handled of 1,879,930 tons.

The global traffic is generally broken down as follows: 20% in imports and 80% in exports, but in the last years a gradual increase of tonnage in import was noticeable. It has been discovered that import and export traffic can be divided into 3 main categories:

1- IMPORTS

- hydrocarbons
- bulk products
- general cargo

2- EXPORTS

- Bauxite
- Aluminium
- General cargo

In the years 1980-1987 hydrocarbons represented 42% of the imports. Since 1985 there is a tend of increasing tonnage. That is explained by the renovation of the commercial vehicle yard.

<table>
<thead>
<tr>
<th>YEARS</th>
<th>IMPORT (tons)</th>
<th>(2)</th>
<th>EXPORT (tons)</th>
<th>(2)</th>
<th>TOTAL TRAFFIC (tons)</th>
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<td>1980</td>
<td>680,503</td>
<td>23.20</td>
<td>2,252,889</td>
<td>76.80</td>
<td>2,933,392</td>
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<td>1981</td>
<td>449,791</td>
<td>18.13</td>
<td>2,004,460</td>
<td>81.87</td>
<td>2,454,251</td>
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<td>1982</td>
<td>823,000</td>
<td>21.61</td>
<td>2,985,608</td>
<td>78.39</td>
<td>3,808,608</td>
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<td>1983</td>
<td>760,331</td>
<td>19.31</td>
<td>3,161,274</td>
<td>80.61</td>
<td>3,921,605</td>
<td>+2.97</td>
</tr>
<tr>
<td>1984</td>
<td>856,344</td>
<td>18.91</td>
<td>3,671,539</td>
<td>81.09</td>
<td>4,527,883</td>
<td>+15.46</td>
</tr>
<tr>
<td>1985</td>
<td>937,230</td>
<td>20.87</td>
<td>3,553,200</td>
<td>79.13</td>
<td>4,490,430</td>
<td>-0.83</td>
</tr>
<tr>
<td>1986</td>
<td>1,000,226</td>
<td>21.42</td>
<td>3,670,261</td>
<td>78.58</td>
<td>4,670,487</td>
<td>+4.00</td>
</tr>
<tr>
<td>1987</td>
<td>1,122,277</td>
<td>23.32</td>
<td>3,691,045</td>
<td>76.68</td>
<td>4,813,322</td>
<td>+3.06</td>
</tr>
<tr>
<td>1980/87</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TOTAL</td>
<td>+64.09</td>
</tr>
</tbody>
</table>

SOURCE: STATISTICAL DATA OF THE PORT OF CONAKRY, 1990
The products in bulk for industry suffered a decrease between the years 1983 - 1986 with a slight recovery in 1987. The average percentage during these years was of 18.9%. The tonnage of clinker and caustic soda had a variation as a consequence of the variation in production of the industrial installations of SOPROCIMENT and FRIGUIA Companies. (1)

The general cargo has increased gradually percentage and in tonnage. The general cargo represents actually about half of the imports. The average percentage between the years 1983 - 1987 increased by 42%.

Bauxite is the most important cargo in terms of volume and tonnage percentage in the port of Conakry. It represents around 80% of the exports. The volume has increased from 1.5 million tons in 1980 to 2.5 million tons in 1983.

Since 1984 the tonnage exported is estimated around 3 million tons. This traffic is an indication of the competence of the "OFFICE OF BAUXITE OF KINDIA (O.B.K.)". The aluminium had a percentage of 30.7% in volume of the exports in 1980. Since 1984 this percentage has increased about 15%, so from 1980 to 1987, the average between the years 1980-1987 was 19.3%. The tonnage exported varied normally between 500,000 and 600,000 tons. The export of this product depended of the activities of the industrial Company FRIGUIA. (2)

-----------------------------
(1) (2) Yearbook of the Port of Conakry, 1988.
The cargo in exports since 1981 has represented less than 1% of the volume exported. Indeed it registered a minimum of 71,920 tons in 1980 and 5,574 tons in 1985. However, a tendency for recovery in the years 1986 and 1987 has been noticed, reaching a maximum level of 30,000 tons. This number is explained in major part by the re-exportation of the empty containers, which is the direct consequence of the introduction of modern containerised traffic.

The global volume of general cargo imported has exhibited an increase as shown in Table 2.2 between 1983 and 1987.

<table>
<thead>
<tr>
<th>YEARS</th>
<th>GENERAL CARGO (t)</th>
<th>GROWTH (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1983</td>
<td>214,913</td>
<td>-</td>
</tr>
<tr>
<td>1984</td>
<td>308,216</td>
<td>+43.4</td>
</tr>
<tr>
<td>1985</td>
<td>390,753</td>
<td>+26.8</td>
</tr>
<tr>
<td>1986</td>
<td>551,765</td>
<td>+41.8</td>
</tr>
<tr>
<td>1987</td>
<td>548,374</td>
<td>-0.6</td>
</tr>
</tbody>
</table>


The increase of general cargo between 1983 and 1987 was of 155.2%. For any port such an increase in volume and in
percentage can bring enormous problems at all levels. This is relevant for a port like the port of Conakry which had an increase of traffic during the period when the first investment project of the port renovation was going on. These deficits have been surmounted only by a continual improvement in export methods for the port, the workshops and the port administration.

The exceptional efforts made have brought the port of Conakry to an equal levels of performance with other West and Central African countries. In imports the group of foodstuffs has varied as follows:

<table>
<thead>
<tr>
<th>TABLE 2.3: EVOLUTION OF FOODSTUFFS :1983/1987</th>
</tr>
</thead>
<tbody>
<tr>
<td>YEARS</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>1983</td>
</tr>
<tr>
<td>1984</td>
</tr>
<tr>
<td>1985</td>
</tr>
<tr>
<td>1986</td>
</tr>
<tr>
<td>1987</td>
</tr>
</tbody>
</table>


The volume of foodstuffs imported as packed general cargo represents a percentage between 45% and 59% of the first necessity supplies for Guinea's population.
Rice, a basic food item has shown a strong increase between the years 1983 - 1986 of about 84.5%. In 1987 a gradual reduction was noticed (-15.2%) in imports of this item consequent to the new expansion of Guinea’s farming. On the other hand all the foodstuffs have been increased in a constant and remarkable way (see Table 2.4)

<table>
<thead>
<tr>
<th>PRODUCTS</th>
<th>VOLUME 1983</th>
<th>VOLUME 1987</th>
<th>GROWTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>flour</td>
<td>36,530</td>
<td>56,125</td>
<td>53.6</td>
</tr>
<tr>
<td>sugar</td>
<td>7,894</td>
<td>38,018</td>
<td>381.6</td>
</tr>
<tr>
<td>vegetables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>oil</td>
<td>3,094</td>
<td>9,010</td>
<td>191.2</td>
</tr>
<tr>
<td>miscellaneous</td>
<td>3,721</td>
<td>49,577</td>
<td>1,232.4</td>
</tr>
</tbody>
</table>

Another significant group is the one of construction materials which shows the following evolution: (see Table 2.5. P.25).
### TABLE 2.5: EVOLUTION OF IMPORTED CONSTRUCT/MATERIALS 1983/1987

<table>
<thead>
<tr>
<th>YEARS</th>
<th>TOTAL CONSTRUCT/MATERIALS (t)</th>
<th>VARIATION (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1983</td>
<td>25,896</td>
<td>-</td>
</tr>
<tr>
<td>1984</td>
<td>57,324</td>
<td>+121.4</td>
</tr>
<tr>
<td>1985</td>
<td>73,045</td>
<td>+ 27.4</td>
</tr>
<tr>
<td>1986</td>
<td>175,045</td>
<td>+139.7</td>
</tr>
<tr>
<td>1987</td>
<td>148,148</td>
<td>- 15.4</td>
</tr>
</tbody>
</table>


The growth from 1983 to 1987 is of 273.1%. This group represented only 2% of the volume of imports in 1983 and increased to 27% in 1987.

The group of construction materials is subdivided as follows: (see Table 2.6 P.26).
### TABLE 2.6: DIFFERENT TYPES OF IMPORTED CONSTRUCTION MATERIALS 1983/1987

<table>
<thead>
<tr>
<th>PRODUCTS</th>
<th>VOLUME 1983 (t)</th>
<th>VOLUME 1987 (t)</th>
<th>GROWTH (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>wood and plywood</td>
<td>970</td>
<td>4,547</td>
<td>368.8</td>
</tr>
<tr>
<td>metallic and iron products, metal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sheet, iron concrete</td>
<td>4,447</td>
<td>18,485</td>
<td>315.7</td>
</tr>
<tr>
<td>metallic and skeleton structures</td>
<td>2,598</td>
<td>2,994</td>
<td>15.2</td>
</tr>
<tr>
<td>metallic products</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>non-ironic</td>
<td>117</td>
<td>2,539</td>
<td>2070.1</td>
</tr>
<tr>
<td>cement</td>
<td>17,764</td>
<td>119,583</td>
<td>573.2</td>
</tr>
</tbody>
</table>


The global evolution of the group of construction materials is dominated by cement which represented 80% of the total construction materials in 1987. After the high increase in imports of cement from the years 1983 to 1986 it saw a reduction of 153,213 tons in 1986 and 119,583 tons in 1987. This gradual reduction is due to good planning in terms of orders which was better in relation to the real needs of the local market. *(1)*

*(1)* Yearbook of the Port of Conakry, 1988.
2.2. EVOLUTION OF TRAFFIC

Table 2.7 shows the evolution of the import and export traffic of the port from 1980 to 1990.

Taking the year 1980 as 100, this evolution can be presented as follows:

<table>
<thead>
<tr>
<th>YEARS</th>
<th>TONNAGE (1000 t)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>3,314</td>
<td>100</td>
</tr>
<tr>
<td>1981</td>
<td>2,855</td>
<td>86</td>
</tr>
<tr>
<td>1982</td>
<td>3,729</td>
<td>113</td>
</tr>
<tr>
<td>1983</td>
<td>3,924</td>
<td>118</td>
</tr>
<tr>
<td>1984</td>
<td>4,543</td>
<td>137</td>
</tr>
<tr>
<td>1985</td>
<td>4,488</td>
<td>135</td>
</tr>
<tr>
<td>1986</td>
<td>4,683</td>
<td>141</td>
</tr>
<tr>
<td>1987</td>
<td>4,810</td>
<td>145</td>
</tr>
<tr>
<td>1988</td>
<td>5,009</td>
<td>151</td>
</tr>
<tr>
<td>1989</td>
<td>5,040</td>
<td>152</td>
</tr>
<tr>
<td>1990</td>
<td>4,888</td>
<td>148</td>
</tr>
</tbody>
</table>

GRAPH 1
EVOLOUTION OF THE TRAFFIC OF THE PORT
It appears that after having shown a good rate of growth, the global traffic (imports + exports) stabilized during the year 1988 at a level of 5 million tons.

Table 2.8 indicates the condition of this traffic for the first nine months of 1991 and also the provisional one for the whole of 1991 determined by simple extrapolation. The global tonnage obtained is valued equally at 5 million tons (see following Table)

<table>
<thead>
<tr>
<th>PRODUCTS</th>
<th>REALIZATION</th>
<th>EXTRAPOL.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-hydrocarbon</td>
<td>329,074</td>
<td>438,764</td>
</tr>
<tr>
<td>2-bulk cargo</td>
<td>281,728</td>
<td>375,637</td>
</tr>
<tr>
<td>caustic soda</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMPORT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>clinker, lime</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-general carg</td>
<td>417,511</td>
<td>556,681</td>
</tr>
<tr>
<td>including bulk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cargo (rice, flour etc...)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-total import</td>
<td>1,028,313</td>
<td>1,371,083</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-bauxite</td>
<td>2,204,290</td>
<td>2,939,053</td>
</tr>
<tr>
<td>IMPORT</td>
<td>6-aluminium</td>
<td>498,797</td>
</tr>
<tr>
<td></td>
<td>7-general carg</td>
<td>28,080</td>
</tr>
<tr>
<td></td>
<td>8-total export</td>
<td>2,731,167</td>
</tr>
</tbody>
</table>

| total global              |             |           |
| import/export             | 3,759,480   | 5,012,639 |

2.3. STRUCTURE OF THE TRAFFIC

For determining the traffic structure, the year 1990 can be taken as a reference point (see following Tables)

<table>
<thead>
<tr>
<th>Classification</th>
<th>TONS</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>hydrocarbons</td>
<td>442,636</td>
<td>9</td>
</tr>
<tr>
<td>bulk cargo (others)</td>
<td>383,252</td>
<td>8</td>
</tr>
<tr>
<td>than bauxite and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>alumina</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bauxite</td>
<td>2,925,651</td>
<td>60</td>
</tr>
<tr>
<td>alumina</td>
<td>612,510</td>
<td>12</td>
</tr>
<tr>
<td>general cargo (including package cargoes)</td>
<td>524,075</td>
<td>11</td>
</tr>
<tr>
<td>TOTAL</td>
<td>4,888,124</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Statistical Data of the P.A.C. Edition 1988
### TABLE 2.10. GLOBAL STRUCTURE OF THE PORT TRAFFIC DURING THE YEARS 1980 / 1987

<table>
<thead>
<tr>
<th>PRODUCTS</th>
<th>1980 (t)</th>
<th>1981 (t)</th>
<th>1982 (t)</th>
<th>1983 (t)</th>
<th>1984 (t)</th>
<th>1985 (t)</th>
<th>1986 (t)</th>
<th>1987 (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I - IMPORT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A - BULK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Hydrocarbures</td>
<td>275,793</td>
<td>276,629</td>
<td>315,432</td>
<td>315,432</td>
<td>341,422</td>
<td>427,935</td>
<td>344,080</td>
<td>378,166</td>
</tr>
<tr>
<td>* Clinker</td>
<td>114,465</td>
<td>114,465</td>
<td>142,825</td>
<td>50,735</td>
<td>75,225</td>
<td>132,784</td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Miscellaneous</td>
<td>404,710</td>
<td>176,162</td>
<td>502,347</td>
<td>20,621</td>
<td>13,225</td>
<td>26,400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B - GENERAL CARGOES</td>
<td>214,913</td>
<td>214,913</td>
<td>308,216</td>
<td>390,753</td>
<td>551,765</td>
<td>548,375</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II - EXPORT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A - BULK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Bauxite</td>
<td>1,489,665</td>
<td>1,453,221</td>
<td>2,440,944</td>
<td>2,550,386</td>
<td>3,184,405</td>
<td>2,965,686</td>
<td>3,080,308</td>
<td>3,103,831</td>
</tr>
<tr>
<td>* Alumina</td>
<td>691,304</td>
<td>545,703</td>
<td>529,026</td>
<td>602,493</td>
<td>480,545</td>
<td>581,937</td>
<td>559,141</td>
<td>545,526</td>
</tr>
<tr>
<td>* Miscellaneous</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>3,652</td>
</tr>
<tr>
<td>B - GENERAL CARGOES</td>
<td>71,920</td>
<td>5,536</td>
<td>15,638</td>
<td>6,395</td>
<td>5,577</td>
<td>30,732</td>
<td>38,036</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>2,933,392</td>
<td>2,440,251</td>
<td>3,808,608</td>
<td>3,921,605</td>
<td>4,527,883</td>
<td>4,490,430</td>
<td>4,67,407</td>
<td>4,813,322</td>
</tr>
</tbody>
</table>

**SOURCE:** STATISTICAL DATA OF THE P.A.C. (1990)
2.3.1. TRAFFIC IN BULK CARGO.

The traffic in bulk (hydrocarbons, bauxite, aluminium and other bulk cargo) represents the major part of the traffic of the port, about 89%. This traffic is subject to homogeneous transport of cargo by ship.

The conditions of transport are a compromise between the seller and the buyer in the case of a transport contract and/or a charter party which fixes among others the rate of the loading and unloading, also the penalties (overtaxes) which are not directly related to these rates. (1)

The auxiliaries of transport (agent, packer, forwarding agent) very rarely intervened in this type of transport. The agent's work, the representative of the shipping line, is limited in general to the assistance to the crew (cash to master, medicine etc...) and to the ship (declaration of the ship, supplying water etc...). Concerning cargo handling it is, in a general, taken care of in a very specific way (pipelines).

2.3.2. TRAFFIC IN GENERAL CARGO

The traffic of general cargo represents 11% of the global traffic (group of containers included). (2)

Taken into account in this traffic is the sharing of cargo which is handled in complete lots: rice, flour, sugar, cement. It was indicated that this cargo is treated in regular liner service and elsewhere is included in the statistics of the port under the category of "general cargo".

(1) (2) Yearbook of the Port of Conakry, 1988.
It is certainly the insufficient size of the lots which has relegated the treatment of this cargo under the conditions of regular liner service. It is in this type of traffic that all the transport auxiliaries have intervened "massively". This traffic has shown a very good rate of growth. Its' level has doubled in 10 years.

**TABLE 2.11: STRUCTURE OF GENERAL CARGO: IMPORT/EXPORT**

<table>
<thead>
<tr>
<th></th>
<th>1980</th>
<th>1990</th>
<th>BALANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMPORT</td>
<td>241,908</td>
<td>476,605</td>
<td>+ 97%</td>
</tr>
<tr>
<td>EXPORT</td>
<td>16,131</td>
<td>47,470</td>
<td>+194%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>258,069</td>
<td>524,075</td>
<td>+103%</td>
</tr>
</tbody>
</table>


Nevertheless, during the year 1986, a certain settling of the traffic was noticeable in a determined average such as (1000 t).
GRAPH 2

VARIATION OF THE TRAFFIC (1980/87)

YEARS


Import  Export

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IMPORT</td>
<td>559</td>
<td>548</td>
<td>592</td>
<td>509</td>
<td>477</td>
<td>557</td>
<td>540</td>
</tr>
<tr>
<td>EXPORT</td>
<td>31</td>
<td>38</td>
<td>43</td>
<td>31</td>
<td>47</td>
<td>37</td>
<td>38</td>
</tr>
<tr>
<td>TOTAL</td>
<td>590</td>
<td>586</td>
<td>635</td>
<td>540</td>
<td>524</td>
<td>594</td>
<td>578</td>
</tr>
</tbody>
</table>

Source: Statistical Data of the port. Edition 1988

This traffic represents the peculiarity of a disequilibrium between imports and exports. One part of this traffic of general cargo is containerised, and this will be discussed later in the evolution of containerised traffic.
CHAPTER THREE

FACILITIES AND SERVICES SUPPLY

3.1 The role of the port

The container system has changed largely the traditional function of modern ports. The port which is considered as the terminal stage in either sea or land transport of goods. The Port now is a link in the chain of the container trip from the door of the supplier to the door of the demanding trader.

The basic prerequisite is that the modern port must be able to turn round the container ships in it minimum time. This needs first of all a well-organized and highly administered port authority with less documentation procedures, flexible customs and health inspection regulations. Second, the inner construction of the port and its outer land approaches needs to be set according to the requirements of this system. Unless these two needs are fulfilled, the huge capital committed to mechanized cargo handling and the ways of container transport yields losses and failures.

In that respect, the highly developed countries with efficient port management and efficient inland transport organizations, are in more favorable position than less developed countries in running mass production container ports.

One of the important results of containerisation is the concentration of traffic in two or three main ports on each major trade route, with wide nets of feeder services connecting them with secondary ports in the region. Fierce expensive competition may arise between important ports in
the same area, each trying to win as the favorite choice of container traffic. Those who do not win, will retreat to a secondary position. Thus considerable investment with uncertain returns, may be spent on ports.

With containerisation, fewer ships, carrying greater quantities of cargo, will enter the ports. As harbour dues are usually assessed against net or gross registered tonnage, this tendency could affect the total income of the port authorities.

On a trade route, a criterion for deciding on the number of ports of call for carrying a certain volume of cargo is the capacity of the container ships. For large container ships, it is preferable to enter one port with feeder services at each end, while small container ships can divert to another two ports in the round trip for picking up a considerable additional quantity of containers.

At a time of fierce competition between container lines, different ports may be able to serve the container traffic. If oligopolic conditions emerge, the few remaining companies would concentrate on a small number of specialized central container ports. The choice of ports would be according to many measures such as efficiency, rate of turnaround, and minimum labour disputes.

Source: Port Management Textbook Containerisation. Bremen 1985
3.2 PUBLIC FACILITIES

3.2.1. Passengers and Cargo

Considering the flow of passengers and cargo between the industrial town Kamsar and the capital Conakry, fluctuation has been noticeable during the year. One of the important factors affecting it is the lack of adequate roads.

During the dry season (6 months), the recorded average percentage of capacity of the existing ship "Laye Samoura" is 80%, and during the rainy season 95%. In the latter case, the increase is due to the reluctance of people to travel by car or lorry. Their preference to travel by ship which gives them the possibility to travel cheaply, safely and quickly. The passengers travelling between Conakry and Kamsar generally consist of about 75% businessmen and about 25% tourists.

They usually carry manufactured goods with them, such as refrigerators in small containers and rice in bags. About 10 to 15 imported cars, and other personal cars are often carried by the ship from one town to another. Taking into consideration the possible future development of the flow of passengers, cargo and cars, and the statistics obtained from the operation of the existing ship "Laye Samoura", a replacement vessel should be able to carry 100 tons of cargo as well as 300 passengers in first and second class with their luggage, and 15 cars on a Ro-Ro car deck.
3.2.2. Warehouses

Three warehouses, W1, W2, W3, are entirely restored and represent a storage area of 9,000 sqm managed by private companies. The warehouses are spaced out from quay 2 to quay 5, directly accessible to loading and discharging of cargo. (see drawing page 73)

Beyond this in the east zone of the port there are 4,000 sqm of warehouses that have not been restored. They are utilized by the Navy, the customs and two private firms (from W6 to W10).

3.2.3. Coastal Shipping

Conakry and Kamsar are the international seaports of Guinea. In 1987, 3.1 million tons of bauxite were exported through Conakry and 9 million tons through Kamsar. A US $ 38 million port rehabilitation programme, supported by the World Bank and other donor agencies, was carried out in Conakry from 1983 to 1987 and included the upgrading and extension of quays and storage facilities. A naval repair dockyard and deep water port facilities were also to be constructed at Conakry, at a cost of $ 60 million as part of a further (1989-1992) port extension programme.

CHAPTER FOUR

INTRODUCTION OF CONTAINERS INTO THE PORT

The containerisation system was introduced in Guinea and especially in the port of Conakry around the years 1981-1982, the period when the first container ship started calling at the port and at that time the containers were called "metal boxes". However, the container traffic started to be exploited intensively in 1984.

Therefore, for the reception of containers, the trade of the port of Conakry has its yard of containers enclosed and entirely paved as part of the execution of the first stage of the project of port rehabilitation. With an area of 22,184 sq meters, this yard is occupied by AGEMAP (*) with its members sharing the space in the following proportions in the basis of contracts (see table 4.1).

<table>
<thead>
<tr>
<th>TABLE 4.1: OPERATING COMPANIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORDER NUMBERS : COMPANIES       : OCCUPIED AREAS : %</td>
</tr>
<tr>
<td>1 : SOAEM-Guinea : 3,020 : 13.61</td>
</tr>
<tr>
<td>2 : SOGUICOM : 11,495 : 51.92</td>
</tr>
<tr>
<td>3 : DELMAS-Guinea : 6,046 : 27.25</td>
</tr>
<tr>
<td>4 : SATA-Guinea : 1,623 : 7.32</td>
</tr>
</tbody>
</table>

(*) AGEMAP: Association Guineenne des Entreprises de Manutention Portuaire.
For the reception of containers (particularly empties) and their provisional storage before or after loading and discharging operations, the port also has in the perimeter near the trade quays, a paved area which has a high occupation rate.

Today, the port operation is has been entirely operated by the private companies since April 1987. This is a way to respond efficiently to the requirements of the containerisation system which is getting more and more important in maritime transport. Because of complete changes, responsibility has been given to the private operating societies which are exploiting the infrastructure, the installations of reception, fenced yard of containers and the entirely covered common area.

Today, the yard of containers is divided and distributed to private societies which are involved with the handling operations. Each society has a specific area, its own warehouses, offices for personnel and the handling equipment. These companies are: SOGUICOM, SOAEM, DELMAS, GETMA, and SOCOPAO (which is not mentioned in table 4.1).

-----------------------------
SOURCE: Port autonome de Conakry: Division des infrastructures et équipements.
4.1 PRESENTATION AND ANALYSIS OF THE CONTAINERIZED TRAFFIC

In the rest of the world, the containerized traffic has shown a spectacular expansion as a result of the advantages that containerisation provides. Nevertheless, the reception of containers in the port supposes that it is well prepared for this purpose from the operational and administrative infrastructure point of view.

Designed and built as a terminal for general cargo, the port has 4 berths numbered from 2 to 5 with a total length of 480 m utilized for the loading and discharging of conventional cargo, of Ro - Ro traffic and containers. It has also a yard of containers with a storage capacity of 255 teu with maximum stacking up to 3 containers high.

The exploitation of these berths is characterized by the fact that more than 50% of cargoes are directly discharged from ship to lorry; this means under hoist.

Table 4.2 (page 43) shows the characteristics concerning the growth of traffic in containers. These figures varied from 4,711 (teu) in 1983 to 24,261 (teu) in 1987 with a difference of 19,550 (41.5%).

However, it is important to point out that the export of containers has a deficit compared with the import of containers. As in many ports of developing countries, the containers are less utilized in the export trade due to the lack of appropriate containerized products. The case is more remarkable for the port of Conakry which exports mostly bauxite and aluminium.
<table>
<thead>
<tr>
<th>YEAR</th>
<th>TEU (1)</th>
<th>ANNUAL INCREASE (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1983</td>
<td>4,711</td>
<td>-</td>
</tr>
<tr>
<td>1984</td>
<td>7,783</td>
<td>65.2</td>
</tr>
<tr>
<td>1985</td>
<td>12,630</td>
<td>62.3</td>
</tr>
<tr>
<td>1986</td>
<td>16,819</td>
<td>33.2</td>
</tr>
<tr>
<td>1987</td>
<td>24,261</td>
<td>44.2</td>
</tr>
</tbody>
</table>


Several factors account for the origin of this circumstance:

* The most important factor is linked to the liberalization of trade in Guinea. Actually this orients purchases to countries which offer the most attractive prices.

* The state has opened the door to the replacement of the infrastructure and to investment at all levels; also it has provided access to consumer goods with a consequent creation of new maritime traffic trends.

* Lack of containerized products: with respect to the continuous increase of container traffic (5%) from 1984 to (44.2%) 1987. Actually the duration of storage increased on average for:
  - Full containers to 18 days (FC)
  - Empty containers to 30 days (MT)
The annual debit is variable as a function of the levels of storage between 7,650 and 10,030 FC and also between 6,500 and 8,530 MT.

In reducing the duration of storage for full container to 10 days and increasing that for empties to 40 days, the debit would increase by about 12,540 FC and 10,660 MT simultaneously (see table 5.1). P.68

Coming back to the different companies operating in the port, it is necessary to present each company with its assigned area for its traffic of general cargo and containers.

**A* SOGUICOM: SOCIETE GUINEENNE DE CONSIGNATION ET DE MANUTENTION**

This company was created on 1 April 1987. It is a joint stock-company which consists of 180 employees of which 4 are expatriate. Its amount of capital is 15 million of GF. Its shareholders are:

- S.N.G (Guinea) : 40%
- RHEIN-MAAS (Germany) : 20%
- GRIMALDI (Italia) : 15%
- DEEPSEA-SHIPPING (Danmark) : 16%
- 6+C AFRICA LINE (GRIMALDI+COLELFRET) : 10%

TOTAL : 100%

SOGUICOM has an area for containers of about 11,495 sqm. The following table (see page 46) shows the volume of general cargo and containers traffic handled by the company from 1988
Traffic of general cargo and containers

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of ships (entered)</td>
<td>99</td>
<td>92</td>
<td>81</td>
<td>113</td>
<td>123</td>
</tr>
<tr>
<td>2- conventional tonnage:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Import</td>
<td>4,931</td>
<td>42,262</td>
<td>36,182</td>
<td>80,154</td>
<td></td>
</tr>
<tr>
<td>Export</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,041</td>
</tr>
<tr>
<td>Total</td>
<td>4,931</td>
<td>42,262</td>
<td>36,182</td>
<td>81,195</td>
<td></td>
</tr>
<tr>
<td>3- container tonnage:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Import</td>
<td>9,644</td>
<td>52,475</td>
<td>65,113</td>
<td>77,763</td>
<td></td>
</tr>
<tr>
<td>Export</td>
<td>-</td>
<td>13,849</td>
<td>18,584</td>
<td>22,765</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9,644</td>
<td>66,322</td>
<td>83,697</td>
<td>100,528</td>
<td>109,667</td>
</tr>
<tr>
<td>4- number of container:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Import</td>
<td>565</td>
<td>3,936</td>
<td>4,167</td>
<td>4,944</td>
<td></td>
</tr>
<tr>
<td>Export</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>565</td>
<td>3,936</td>
<td>4,167</td>
<td>4,944</td>
<td>5,393</td>
</tr>
<tr>
<td>5- Total tonnage (2+3:14,575</td>
<td>108,584</td>
<td>119,879</td>
<td>181,723</td>
<td>198,243</td>
<td></td>
</tr>
</tbody>
</table>
SOGUICOM receives on average 123 ships of regular lines and about 10 tramping ships annually. It constituted the majority of 200,000 tons of general cargo traffic. The tonnage loaded by the bulk carriers and consigned by it is about 175,000 tons.

PERSONNEL AND HANDLING EQUIPMENT

* PERSONNEL

SOGUICOM has 40 persons assigned to handling operations.

* HANDLING EQUIPMENT

- Trucks
  - Hyster H920: 48 t
  - Hyster H620: 28 t
  - Hyster H80E: 12 t
  - Hyster H30E: 4 t
- Tractor OHAVA: 40 t

The traffic taken care of by the company has shown a good growth. It has grown from 108,584 tons in 1989 to about 200,000 tons in 1991.

SOGUICOM assures the consignment of tramp ships from diverse shipowners and charterers for cargo in bulk. The tonnage of containers for imports and exports is 100,528 tons.

B. DELMAS-GUINEE

DELMAS-GUINEE was created in September 1987. It is a joint stock-company which consists of 136 employees of which 4 are expatriate. Its shareholders are:
- DELMAS-VIELJEUX (French): 87%
- Guinean's private: 13% (which are not participating in the management).

DELMAS-GUINEE has an area for containers of about 7,669 sq m. The following table shows the volume of traffic of general cargo and containers handled by DELMAS from 1988 to 1991.

### TRAFFIC OF GENERAL CARGO/CONTAINERS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Number of ships entered</td>
<td>60</td>
<td>67</td>
<td>64</td>
<td>57</td>
<td>57</td>
<td>62</td>
</tr>
<tr>
<td>2- Conventional tonnage:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Import:</td>
<td>6,000</td>
<td>6,000</td>
<td>37,000</td>
<td>38,000</td>
<td>41,450</td>
<td></td>
</tr>
<tr>
<td>Export:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Total:</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>-----------------</td>
<td>-------------</td>
</tr>
<tr>
<td>3- Container tonnage:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Import:</td>
<td>78,600</td>
<td>72,050</td>
<td>72,050</td>
<td>52,400</td>
<td>57,168</td>
<td></td>
</tr>
<tr>
<td>Export:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Total:</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>-----------------</td>
<td>-------------</td>
</tr>
<tr>
<td>4- Number of containers:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Import:</td>
<td>6,000</td>
<td>5,500</td>
<td>5,500</td>
<td>4,000</td>
<td>4,364</td>
<td></td>
</tr>
<tr>
<td>Export:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Total:</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>-----------------</td>
<td>-------------</td>
</tr>
<tr>
<td>5- Total ton:</td>
<td>84,600</td>
<td>78,050</td>
<td>109,050</td>
<td>90,400</td>
<td>98,618</td>
<td></td>
</tr>
</tbody>
</table>
The information above, given by the society, is not good enough due to the fact that there is no possibility for MT containers to be re-exported. Nevertheless the table above allows one to review the tonnage and the number of containers for imports.

DELMAS-Guinee has a traffic of 100,000 tons of general cargo for which the transport is made by the shipping line DELMAS. The portion of the containerized traffic has changed from 93% in 1988 to 58% in 1991. The number of containers handled is about 4,400.

PERSONNEL AND HANDLING EQUIPMENT

* PERSONNEL

The personnel assigned to the handling operations and the handling equipment operation is 81 persons (operation); 63 (maintenance)

* HANDLING EQUIPMENT: DELMAS is equipped as follows:

- Hyster 920 : 45 t
- Hyster 620 :
- Clark 300D: 14 t (Spreader)
- Clark 200D: 9 T
- Hyster 250DH
- Hyster 80
- Linde
- JCB

Most of this equipment is around five years old. Concerning the transit cargo, DELMAS has been involved not in it since 1990. DELMAS discharges on average/month 150 full containers for imports and 140 empties for exports.
In the case of bulk cargo, DELMAS operates about 12 ships/year of the shipping line LAURITZEN which discharges 230 - 240,000 tons of clinker/year.

The portion of each type of traffic in 1991 was established as follows:

- conventional traffic: 42%
- containerized traffic: 58%

SQAEM; SOCIETE QUEST AFRICAINE D'ENTREPRISES MARITIMES

SOAEM was created in Guinea in 1987. It is a joint stock company. In fact, this company existed before independence. It left Guinea in 1962 due to the monopolisation of these activities by the National Entreprise E.N.T.R.A.T.

SOAEM has an area for containers of about 3,020 sqm. The following table shows the volume of traffic in general cargo and containers handled by the society.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Number of ships entered:</td>
<td>67</td>
<td>92</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>2- Conventional tonnage:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Import:</td>
<td>-</td>
<td>146,000</td>
<td>58,139</td>
<td></td>
</tr>
<tr>
<td>Export:</td>
<td>-</td>
<td></td>
<td>743</td>
<td></td>
</tr>
<tr>
<td>Total:</td>
<td>-</td>
<td>146,000</td>
<td>58,882</td>
<td>64,235</td>
</tr>
<tr>
<td>3- Containers tonnage:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Import:</td>
<td>-</td>
<td>52,615</td>
<td>70,868</td>
<td></td>
</tr>
<tr>
<td>Export:</td>
<td>-</td>
<td>769</td>
<td>691</td>
<td></td>
</tr>
<tr>
<td>Total:</td>
<td>-</td>
<td>53,384</td>
<td>71,559</td>
<td>78,065</td>
</tr>
<tr>
<td>4- Number of containers:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Import:</td>
<td>-</td>
<td>3,528</td>
<td>4,876</td>
<td>5,319</td>
</tr>
<tr>
<td>Export:</td>
<td>-</td>
<td>69</td>
<td>51</td>
<td>61</td>
</tr>
<tr>
<td>Total:</td>
<td>-</td>
<td>3,597</td>
<td>4,932</td>
<td>5,380</td>
</tr>
<tr>
<td>5- Total tonnage (2+3):</td>
<td>119,384</td>
<td>130,441</td>
<td>142,300</td>
<td></td>
</tr>
</tbody>
</table>

In spite of an increase in number of calls between 1990 and 1991, the global tonnage handled by the company has been decreasing by about 29%. However, the development of containerisation in cargo transported by the company's shipping partners (+46%) is noticeable.

SOAEM has a traffic of 140,000 tons of general cargo from which transport is made generally in the regular lines. A portion of 55% of this traffic was containerized in 1991. The minimum number of containers handled is about 5,400.

- PERSONNEL AND HANDLING EQUIPMENT

Concerning the handling activity, the society did not communicate the permanent employees allocated to the activity and also the specific means which permit it to appreciate its own capacity in this field.

In the case of bulk cargo, SOAEM assures a consignment from about 120 Russian ships per year for the transport of bauxite with a tonnage of about 3 million tons. It is also in charge of 30 tramp ships for discharging petroleum products, 318,000 tons as estimated for 1991.

DST GETMA: SOCIETE GUINNEENNE D'ENTREPRISE DES TRANSPORTS MARITIMES ET AERIENS

GETMA was created on 3 December 1987. It is a joint stock-company. The company was founded in 1979 on the basis of an agreement between the government of Guinea and the French company DAHER and CIE. It was changed to a holding
company in December 1987 with participation of the Guinean state through the SOCIETE NAVALE GUINEENNE (S.N.G).

GETMA consists of 60 employees of which 2 are expatriate. The following table shows the volume of traffic in general cargo and containers handled by the company.

<table>
<thead>
<tr>
<th>TRAFFIC OF GENERAL CARGO/CONTAINERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>---</td>
</tr>
<tr>
<td>1- Number of ships entered:</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>2- Conventional tonnage:</td>
</tr>
<tr>
<td>Import:</td>
</tr>
<tr>
<td>Export:</td>
</tr>
<tr>
<td>Total:</td>
</tr>
<tr>
<td>3- Containers tonnage:</td>
</tr>
<tr>
<td>Import:</td>
</tr>
<tr>
<td>Export:</td>
</tr>
<tr>
<td>Total:</td>
</tr>
<tr>
<td>4- Number of containers:</td>
</tr>
<tr>
<td>Import:</td>
</tr>
<tr>
<td>Export:</td>
</tr>
<tr>
<td>Total:</td>
</tr>
<tr>
<td>5- Total tonnage(2+3):</td>
</tr>
</tbody>
</table>
GETMA controls the traffic of 168,000 tons of general cargo of which about 138,000 tons is the import of rice. The society operates with a single shipping line (MAERSK) which loads and discharges about 2,000 containers/year of a tonnage of 30,000 tons.

In terms of bulk cargo GETMA operates on the basis of a contract with ELF, operating 19 tankers per year with a tonnage of 118,000 tons.

- PERSONNEL AND HANDLING EQUIPMENT

* PERSONNEL

GETMA employs 15 persons assigned to the handling sector of which 2 are warehousemen and 3 guards. The effective productive personnel is 10 persons (foremen, engine drivers, timekeeper).

* HANDLING EQUIPMENT

It has the following handling equipment:

- Crane = OMEGA : 18 t
- Trucks = Hyster : 15 t
- Caterpillar : 3 t
- lancer Boss : F 6
- FENWICK :
- Fork : 4.5 t

On the transit side, GETMA employs 19 persons in charge of maritime transit cargo operations. It has two lorries for transport and hydraulic crane on lorry.
The traffic controlled by the company doubled between 1989 and 1990. On the conventional traffic side it is rice which represents the essential tonnage. The representation of MAERSK also permitted an important development in containerised traffic. GETMA has changed from on average handling about 21 containers/month in 1990 to 156 containers/month in 1991 (in imports).

**SOCOPAO: SOCIETE COMMERCIALE DES PORTS DE L'AFRIQUE DE L'OUEST**

SOCOPAO was created at the end 1987 and started working on 1 March 1988. It is a holding company. It effectively has 23 persons of which one is an expatriate.

SOCOPAO has the following activities:

- shipping agency
- cargo handling
- transit operations

SOCOPAO rents from the port a warehouse of about 1452 sq meters; it received in May 1990 a fork-lift truck Hyster 620B for an amount of 35 million CFA F; it has 2 permanent persons for the cargo handling activity.

It was using the services of SOAEM in handling operation activities until the end of January 1990. Since February 1990, SOCOPAO took charge of cargo handling activity on its own.

**TRANSIT ACTIVITY**

The company has not communicated the tonnage in transit operations. Actually it is in charge of the "Programme
Alimentaire Mondial" (PAM) for the distribution of rice for the Liberian refugees.

- TRAFFIC OF GENERAL CARGO HANDLED BY SOCOPAO

The statistics of the previous years are not available. At the end of November 1991, the society handled:

* Rice: 10,931 t
* Old iron: 2,727 t
* Miscellaneous: 750 t

Total: 13,270 t

The figures for 1991 can be estimated by simple extrapolation:

* Rice: 10,931 t
* Old iron: 2,727 t
* Miscellaneous: 818 t

Total: 14,476 t
4.2 EVOLUTION AND ANALYSIS OF THE CONTAINERIZED TRAFFIC

Along with the rehabilitation of the port, there has been an introduction to modern maritime traffic such as container ships, Ro-Ro vessels, barges and other specialized ships. In this context a new group has appeared in the statistics representing 30,420 tons with a tendency to grow.

Actually, the traffic in general cargo exported plays a low role in the activities of the port and it is characterized essentially by the re-exportation of MT containers. The general cargo represented on average is 0.8% of total export during the period 1980/1987.

<table>
<thead>
<tr>
<th>TABLE 4.1 (TONES INCLUDE TARE WEIGHT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conakry (total)</td>
</tr>
<tr>
<td>IMPORT 1986 1987 1988 (estimate)</td>
</tr>
<tr>
<td>loaded teu 8,547 12,000 -</td>
</tr>
<tr>
<td>empty teu 232 0 -</td>
</tr>
<tr>
<td>Tonnage 133,770 200,000 -</td>
</tr>
<tr>
<td>EXPORT</td>
</tr>
<tr>
<td>loaded teu 507 650 -</td>
</tr>
<tr>
<td>empty teu 7,533 10,500 -</td>
</tr>
<tr>
<td>tonnage 24,910 35,000 -</td>
</tr>
<tr>
<td>TOTAL teu 16,819 23,150 -</td>
</tr>
<tr>
<td>TOTAL tonnage 164,680 235,000 -</td>
</tr>
</tbody>
</table>

### TABLE 4.2: EVOLUTION OF THE CONTAINERIZED TRAFFIC

<table>
<thead>
<tr>
<th>Tons</th>
<th>Import</th>
<th>Export</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>176,584</td>
<td>11,626</td>
<td>188,210</td>
</tr>
<tr>
<td></td>
<td>218,024</td>
<td>11,072</td>
<td>229,096</td>
</tr>
<tr>
<td></td>
<td>179,557</td>
<td>14,888</td>
<td>194,445</td>
</tr>
<tr>
<td></td>
<td>154,879</td>
<td>9,285</td>
<td>165,164</td>
</tr>
<tr>
<td></td>
<td>206,505</td>
<td>12,380</td>
<td>218,885</td>
</tr>
<tr>
<td></td>
<td>206,505</td>
<td>12,380</td>
<td>218,885</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Num. of cont. (teu)</th>
<th>Import</th>
<th>Export</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12,308</td>
<td>11,767</td>
<td>24,075</td>
</tr>
<tr>
<td></td>
<td>12,225</td>
<td>10,673</td>
<td>22,898</td>
</tr>
<tr>
<td></td>
<td>11,814</td>
<td>8,235</td>
<td>19,049</td>
</tr>
<tr>
<td></td>
<td>14,967</td>
<td>8,005</td>
<td>22,972</td>
</tr>
<tr>
<td></td>
<td>11,225</td>
<td>8,779</td>
<td>19,904</td>
</tr>
<tr>
<td></td>
<td>14,967</td>
<td>8,005</td>
<td>22,972</td>
</tr>
</tbody>
</table>

GRAPH 3
Evolution of Containerised Traffic

<table>
<thead>
<tr>
<th>Year</th>
<th>Imp/Tons</th>
<th>Exp/Tons</th>
<th>Imp/TEU</th>
<th>Exp/TEU</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1989</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1992</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Today the condition of the containerised traffic corresponds to the following estimate.

- Number of imported containers: 15,000 teu
- Containerized tonnage in import: 206,000 tons
- Part of containerized traffic: 37%

The major part of exported containers are empties.

In conclusion, it is to say that on the basis of an estimation of the figures of 1991, the traffic of the port is made up as follows:

- Traffic in bulk: 4,420,000 t
- Traffic of general: 594,000 t of which cargo 37% in containers

The port companies which offer the major activities and services related to ship and cargo (consignment, handling transit) had the initial objective of assuming the control of traffic in general cargo and in bulk by providing the most helpful equipment for ship operations.

4.3 THE TRADE RATIO OF CONTAINER IN AFRICA

**Definition of container ratio**

"The container ratio is the proportion of the volume for general cargo carried on containers to the total volume of general cargo carried on liner services".

Viewed in terms of world container development and according to the Marad statistics the container ratio of JAPAN, the U.S. and Europe by trade routes to Africa is as follows:
Trade routes container ratio
Japan to Africa 37%
US to Africa 14%
Europe to Africa 49%

During the African symposium in Abidjan (Ivory Coast) 1984, it has been shown that the trade between Europe and West Africa is 20% containerised.

Problems of the imbalance in the trade

Two questions arise in considering the suitability of container services to West African countries' conditions; imbalance of trade and its overall size. For the sub-region the trading pattern is import of manufactured goods and export of produce and commodities. Little trade is likely to be completely balanced. But, the container service has become greatly imbalanced as the export cargoes of these countries are unsuited to a container service.

This point is important because container service costs are more sensitive to imbalance than those of break-bulk services, for the simple reason that empty journeys are unrenumerated journeys. Container imbalance is thus an extra cost which has to be traded against other benefits of a container service.

As far as size is concerned, the break-bulk liner trade of this region today is not served by ships of less than about 7,000 grt. Most are in the range of 9,000 - 16,000 grt. A straight comparison with container ship size to achieve the same amount of work is not meaningful in generalised terms, since variables like distance, number of port calls and acceptable frequency all affect the answer.

The imbalance between loaded containers entering the West African market with South bound cargoes and the empties
returning North bound or less containers loaded has been presented in the table below by IDREM.

The imbalance of the "in" and the "out" of the import and export of containers in the region is as follows:

<table>
<thead>
<tr>
<th>Ports</th>
<th>&quot;in&quot;</th>
<th>&quot;out&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abidjan</td>
<td>1984</td>
<td>1</td>
</tr>
<tr>
<td>Conakry</td>
<td>-</td>
<td>37</td>
</tr>
<tr>
<td>Cotonou</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td>Dakar</td>
<td>1983</td>
<td>2.5</td>
</tr>
<tr>
<td>Douala</td>
<td>1984</td>
<td>1.7</td>
</tr>
<tr>
<td>Lagos (2 p)</td>
<td>-</td>
<td>45</td>
</tr>
<tr>
<td>Libreville</td>
<td>-</td>
<td>2.7</td>
</tr>
<tr>
<td>Lome</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>Port Gentil</td>
<td>-</td>
<td>7</td>
</tr>
</tbody>
</table>

Source: IDREM, Abidjan (January, 1986)

The higher ratio of imbalance as presented above and with consideration of West African countries is held by Nigeria (Lagos), then follows Guinea (Conakry).

The best balanced trade economy is represented by Ivory Coast whose imports are higher than exports. This is mainly due to its agricultural production which is by far, the highest in the region. They have also started to adapt many of their commodities to the container system.
Table 2. THE PARTIAL RATE OF CONTAINERS

<table>
<thead>
<tr>
<th>City</th>
<th>Year</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abidjan</td>
<td>1984</td>
<td>37%</td>
</tr>
<tr>
<td>Cotonou</td>
<td>1984</td>
<td>26%</td>
</tr>
<tr>
<td>Dakar</td>
<td>1983</td>
<td>35%</td>
</tr>
<tr>
<td>Douala</td>
<td>1984</td>
<td>44%</td>
</tr>
<tr>
<td>Lagos</td>
<td>1982</td>
<td>16%</td>
</tr>
<tr>
<td>Libreville</td>
<td>1984</td>
<td>66%</td>
</tr>
<tr>
<td>Lome</td>
<td>1984</td>
<td>33%</td>
</tr>
<tr>
<td>Matadi</td>
<td>1984</td>
<td>20%</td>
</tr>
<tr>
<td>Port Harcourt '82</td>
<td></td>
<td>12%</td>
</tr>
</tbody>
</table>

SOURCE: IDREM, Abidjan (January, 1986)

These rates indicate higher percentages for Libreville, Douala, Abidjan, Dakar, and Lome. However meaningful analysis is very difficult without a close study of fluctuations from one year to another within the same port.

4.4. CONTAINER THROUGHPUT

The West African container throughput in 1970, represents some 50% of that of the continent. In 1980, the continent as a whole represented some 3.8% of the world total; the region, with some 1.3% of the world total controlled some 30% of the continent's throughput. But, it was overtaken by the south African Region which reached the level of 1.6%.

The analysis made by IDREM presents the throughput of some 21 ports in the region; but merely on the number of containers. (see following table)
Partial Analysis

As far as 22 ports are concerned with the container traffic, statistical figures are not always available for each of them. The study carried out by IDREM covered the period 1982/1984 and included 9 principal ports of the region approximate some 400,000 teu handled as follows:

<table>
<thead>
<tr>
<th>Port</th>
<th>Year</th>
<th>TEU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abidjan</td>
<td>1984</td>
<td>96,632</td>
</tr>
<tr>
<td>Cotonou</td>
<td>&quot;</td>
<td>10,588</td>
</tr>
<tr>
<td>Douala</td>
<td>&quot;</td>
<td>58,367</td>
</tr>
<tr>
<td>Lagos</td>
<td>1982</td>
<td>117,222</td>
</tr>
<tr>
<td></td>
<td>1984</td>
<td>45,000</td>
</tr>
<tr>
<td>Libreville</td>
<td>1984</td>
<td>30,196</td>
</tr>
<tr>
<td>Lome</td>
<td>1984</td>
<td>20,100</td>
</tr>
<tr>
<td>Matadi</td>
<td>1983</td>
<td>16,500</td>
</tr>
<tr>
<td>Port Harcourt</td>
<td>1982</td>
<td>18,800</td>
</tr>
<tr>
<td>Ports</td>
<td>Years</td>
<td>Container Traffic</td>
</tr>
<tr>
<td>--------------</td>
<td>-------</td>
<td>-------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nouadhibou</td>
<td>1980</td>
<td></td>
</tr>
<tr>
<td>Dakar</td>
<td>1983</td>
<td>22013</td>
</tr>
<tr>
<td>Conakry</td>
<td>1984</td>
<td>4846</td>
</tr>
<tr>
<td>Freetown</td>
<td>1980</td>
<td>Na</td>
</tr>
<tr>
<td>Monrovia</td>
<td>1982</td>
<td>Na</td>
</tr>
<tr>
<td>San Pedro</td>
<td>1984</td>
<td>14</td>
</tr>
<tr>
<td>Abidjan</td>
<td>1984</td>
<td>42030</td>
</tr>
<tr>
<td>Takoradi</td>
<td>1982</td>
<td>Na</td>
</tr>
<tr>
<td>Tena</td>
<td>1982</td>
<td>Na</td>
</tr>
<tr>
<td>Lone</td>
<td>1984</td>
<td>17324</td>
</tr>
<tr>
<td>Cotonou</td>
<td>1984</td>
<td>9335</td>
</tr>
</tbody>
</table>

Na= Not Available

Source: ADREM (Abidjan, 1986)
Container traffic in the West/Cent Afri

Main ports

Number of TEU (Thousands)

DA  CK  FR  SA  AB  LO  CO  LA  WA  PH  CA  DO  LI  PG  PN  MA
Type of commodities in the trade

The figures are from a study carried out by the Cameroon National Port Authorities and which represents some of the major containerized commodities of south-bound imports from the EC to the region.

A - SOUTH BOUND CARGO

List 1

- Wine
- Cements
- Car spare parts
- Lubriants
- aluminium
- Iron and Iron sheets
- Hardware
- Pharmaceutical products
- Wheat and flour
- Dried fish
- Preserved food
- Beer and mineral water
- Industrial chemicals
- Fertilizers
- Granulated sugar
- Corn wheat semolina
- Glass wares
- Plastics wares.
List 2: Containerisable commodities but not containerised.

- Bulk wheat (sometimes in open-top container)
- Frozen fish
- Rice

List 3. Non containersable commodities.

- Vehicles and big engines for public works
- Salt
- Nitrate
- Butane gas
- Clinker
- Gypsum (containerised in small quantity)
- Bitumin

The North bound cargo consists mainly of:

- Timber
- Cocoa
- Coffee
- Cotton
- Groundnuts
- Tobacco
- Logs
- Rubber
- Oil cake (palmtree)
- Sawn wood
- Bran
- Copper
- Zinc
- Skins and hides
List 2 - containerisable commodities but not containerised:

- Vegetables; Bananas in reefer containers.

During the African symposium held in Abidjan in 1984, participants have outlined that the following commodities can be fully adapted to container transport in West African trade. Among these are:

- Fruits and vegetables
- Fish and meat
- Mineral resources
- Timber
- Cotton and textiles
- Oil of oily fruits
- Skins and hides
- Rubber
- Cocoa and products
- Coffee and products

Consequently, beyond financial considerations which have to sustain the acquisition of the appropriate boxes, there now exist many regulations to be implemented for the carriage of these commodities, for instance, sanitary regulations.

Even then containerisation of these products is going to vary according to the degree of evolution of national industrialization and foreign trade.

Source: IDREM, Abidjan (January 1986)
CHAPTER FIVE

THE DEVELOPMENT OF THE CONTAINER TERMINAL AND ITS ACTIVITIES

5.1. STRUCTURE OF THE YARD

5.1.1. Container storage

In the big ports, the storage of containers brings enormous problems due to the lack of enough places and the containers often have to be piled up.

However, this solution consists of three disadvantages. It requires a very tough ground which is not always the case on the edge of the sea. It is difficult to remove containers from the bottom. Finally, if the containers are empties, they risk damage. (see annex 4)

Indeed, speaking about the storage capacity of the yard of containers of the Port of Conakry, the need for space by unit was determined in consideration of the geometry of the earth platform. The area for movement and services, and exploitation with fork-lifts, and the diagram of debit of yard of containers depends on the duration and mode of storage (unit/year). See Table 5.1. Page 69.

### TABLE 5.1: DEBIT OF YARD OF CONTAINERS DEPENDING ON THE DURATION AND MODE OF STORAGE (UNIT/YEAR)

<table>
<thead>
<tr>
<th>Duration of Storage</th>
<th>Mode of Storage</th>
<th>FC = 18d MT = 30D</th>
<th>FC = 14d MT = 30D</th>
<th>FC = 10d MT = 40D</th>
</tr>
</thead>
<tbody>
<tr>
<td>FC = 2 MT = 3</td>
<td></td>
<td>7,650</td>
<td>9,110</td>
<td>9,910</td>
</tr>
<tr>
<td>MT = 3</td>
<td></td>
<td>6,500</td>
<td>7,740</td>
<td>8,430</td>
</tr>
<tr>
<td>FC = 3 MT = 3</td>
<td></td>
<td>9,560</td>
<td>11,490</td>
<td>11,580</td>
</tr>
<tr>
<td>MT = 3</td>
<td></td>
<td>8,130</td>
<td>9,510</td>
<td>9,850</td>
</tr>
<tr>
<td>FC = 3 MT = 4</td>
<td></td>
<td>10,030</td>
<td>11,840</td>
<td>12,540</td>
</tr>
<tr>
<td>MT = 4</td>
<td></td>
<td>8,530</td>
<td>1,060</td>
<td>10,660</td>
</tr>
</tbody>
</table>


- Full containers 80 sq meters per ground lot,
- Empty containers 30 sq meters per ground lot.

Taking into account the need per ground slot on one side and the available area on the other side, the capacity (number per unit for storage simultaneously) depends on the number of containers stacked on top of each other (see Table 5.2, Page 70).
TABLE 5.2. CAPACITY OF THE EARTH PLATFORM

<table>
<thead>
<tr>
<th>STACKING</th>
<th>NEED OF AREA</th>
<th>AVAILABLE</th>
<th>NUMBER OF</th>
</tr>
</thead>
<tbody>
<tr>
<td>DESIGN</td>
<td>UNIT/sq m</td>
<td>AREA/sq m</td>
<td>sq m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FC</th>
<th>MT</th>
<th>6</th>
<th>40</th>
<th>600</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>10</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>26.7</td>
<td>29,000</td>
<td>820</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>26.7</td>
<td>870</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>7.5</td>
<td>740</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


The yard of containers of the port is divided into 4 zones. Its organization depends on the system chosen by the operators to manipulate the containers:

* Zone 1: zone for re-stacking reserved for containers prepared to be loaded on board the ship;

* Zone 2: zone for import of containers;

* Zone 3: zone for MT containers;

* Zone 4: parking area for both full and MT containers.

The full reefer containers are placed near the electric plug installations; the two mobile cranes are utilized for the various operations in the yard and mainly in the handling of the containers at the pre-stacking and stuffing and stripping zones; and the trucks are utilized for stacking and moving the containers from the yard to the berth and vice-
versa. The delay of storage is 3 months, after that the container is at the disposal of customs who are responsible for the stripping of the container and return of it to the loading port. \(^{(1)}\)

5.1.2. Storage area for imports

The area for import of containers consists of two blocks which are separated by a lane for fork-lift trucks being one block for full and another for MT containers.

The containers are stacked following a plan for location established before the discharge of the ship. They are also separated according to their classification indicated in each box (dangerous goods, containers "LCL"-"FCL", Reefer etc...).

5.1.3. Storage area for exports

The port of Conakry being served by several shipping companies, the area for export is divided into sections and situated immediately behind berths No 2 and No 3.

Each company has its own set up in sections and rows for each ship and for each port of destination, on the basis of number of containers for each port of destination.

\(^{(1)}\) Information provided by SOGUICOM: container services, December 1991.
The containers which contain dangerous goods are classed and stored in a single place for the security of the port and the users. Indeed the major problem of containers in some ports of developing countries is the reutilization of these containers for export.

This is the case in the Port of Conakry where about 80% of its exports are based on bauxite which cannot be containerised, contrary to Zaire which has, for a long time, started to containerised exported copper and the smelter.

Therefore, full containers, once emptied by the consignees are stacked after systematic control. Whenever there is a need to repair containers, then are dispatched to a country which has the conditions available for repairing containers. This is due to the fact that the port has no container repair facilities which are indispensable for this kind of traffic even if only small repairs are made there.

5.1.4. Containers Handling Equipment Alongside the Quay

Built in the beginning of the century for reception and handling of conventional cargo and not for containers, the port has no gantry cranes for loading and unloading containers.

The operation is executed by the ship's handling equipment (derricks) to truck platforms and vice-versa and then transported by the fork-lift to the storage yard. The working rate is estimated at about 5 to 8 containers per hour. (3)
In rare exceptions a shift in service can handle 7 to 10 containers per hour. A Port gantry crane would ensure the link between the quay and the storage area. But, the whole system is made by the truck and the towing tractor. This is a risky operation for pedestrians and the small vehicles circulating in the port area, due to the intense traffic of mobile cargo handling equipment.

The fork-lift which guarantees the link between quay-yard-warehouse is of low efficiency in turnaround, due to poor visibility for the driver in the circuit.

5.1.5. System of Stuffing and Stripping

The port has neither the warehouses especially for stuffing and stripping nor the earth platform made only for that activity.

However, the paved 10,400 sq meters represents the warehouses.

\[
\begin{align*}
WC1 \text{ and } WC2 &= 6250 \text{ sqm} \\
WC3 &= 2750
\end{align*}
\]

These are utilized simultaneously for the storage of the containers. And stuffing and stripping of containers. Very often this activity is done in the yard.

---

5 M.PAELINCK. "La Vitesse moyenne/navigate a deux crochets est de l'ordre de 15 conteneurs/heure et atteindra 20 conteneurs a la fin de l'année 1983". Marches Tropicaux du 20 Juin 1983
The agents who are in charge of the performance of this activity are in constant contact with the authorities of the yard from which they receive operating instructions. The cargo received for stuffing and stripping is grouped by port of destination in one of the warehouses mentioned in the document duly and given fully to the customer. The lack of appropriate installations for the stuffing and stripping operations is one of the disadvantages for the customers.

5.2. COMPUTERIZED DATA SYSTEM AND DOCUMENTATION

5.2.1. Computerized Data System

In the contemporary era, the development of maritime traffic and the increase in container handling in terminals is certainly linked to the establishment of computerized data systems.

However, the traditional methodology of communication by portable radios was the norm in developing countries and today the computer, being a tool for quick treatment of information, has more advantages than traditional communication by walkie-talkie.

Operationally, the computer is a strong asset in the planning of the activities of a container terminal, also in administrative data processing, giving the precise information for decision making.

Hence, the container terminal of the port is equipped with a computer of medium capacity.
The various messages in the operational procedures are given by the computer as well as instructions given by the port such as:

- the loading
- the discharging
- the movements of containers

In the view of every container terminal, the container terminal of the port has 2 kinds of activities: i) the treatment of containers for import, ii) the treatment of containers for export.

It is noted that the administrative treatment for imports is very different from that for exports due to the different characteristics of information and formalities required. However, the base of both of the operation system is a permanent exchange of information through data processing.

With exports there is a "booking number", which has an instruction on the positioning of containers. With exports except the authorization of delivery of container or the cargo, all information is available in the network.

Finally, to be more explicit on the administrative procedures of import and export of containers, the Port must try to simplify this system of computer data as much as possible.
IMPORT CYCLE

Full containers

a- The following documents are submitted by the agent

The Manifest with stowage plan is transmitted before the arrival of ship for pre-planning purposes at the terminal and its facilities

- Unloading:

  stacking list,
  damage list/report,
  list of transshipment and stacking position.

b- Delivery

  list of FCL delivery full,

  procedures:

  submission of consignment note,
  check document,
  delivery settled in yard

  location
  truck loading and gate pass
  final check at gate.

Once the containers are discharged, they are strictly controlled and reintroduced in the administrative cycle with all the information concerning their condition in the yard.
EXPORT CYCLE

Empty containers:

a- booking number,
b- positioning,
c- documents:
- list of daily movements,
- stock list at request.

COMPUTERIZED INLAND MOVEMENTS

- Movement of delivery (daily),
- Return of MT containers to the yard (EMIN),
- Technical inspection in the yard,
- MT containers out for stuffing (EMU),
- Return of FC containers for export (FUEX).  

(1) Information provided by DELMAS-GUINEA: Janvier 1992
5.2.2. **Documentation in the port**

The progress of containerisation has led to a new situation in world shipping and port conditions. The terminal operators have been forced to cope with this development regarding their organization and operational procedures. The fundamental operational changes require adequate and up-to-date documentation and information systems, which meet the internal demands for effective disposition and the external demands of the forwarders and shipping lines.

Such a documentation system can either be designed as a manual system or as a computer system. The choice depends mainly on the quantity of containers to be handled per year and the extent to which the general objectives of a container terminal should be fulfilled.

Therefore, a system must be used by terminals which can relate each particular container to the information required for efficient yard marshalling and proper sequential loading or discharge. Such a system is fundamentally one of date acquisition, storage, and processing requirements, tailored to suit the special requirements of the container terminal operators.

The implementation of a computer-system has to be performed carefully as it normally implies fundamental changes of existing organizational and operational procedures.

Therefore, such a computer-system should be implemented in stages in order to avoid any sudden change of the personnel concerned.
First, it should be mentioned that the Port of Conakry, besides the various different systems of the individual companies is operating as follows:

In the container terminal the different types of documents which are needed are:

- Bill of lading,
- A cargo manifest,
- An outward manifest for transshipment,
- A legal declaration for custom.

For the transshipment operations all related shipping documents are required between the period of discharge from the first ship and the loading into the second.

5.2.3. Stevedoring

BMOP: BUREAU DE LA MAIN D’OEUVRE PORTUAIRE

BMOP was created by Decree No 106/PRG/1987 of 17/08/1987 which stipulates:

ART.5: BMOP is organized under the umbrella of AGEMAP.

ART.6: No enterprise or organization can utilize a stevedore’s services without the authorization of BMOP.

BMOP has no real juridical statute. It is an office which ensures, for AGEMAP, the administrative and functional organization of the stevedores.

BMOP ensures the stevedore’s payment, but does not invoice the employing companies.

BMOP issues the operating companies: debit notes indicating the salaries and social insurance contributions and also the expenses of BMOP’s management.

Until December 1991, it was practically impossible for a society to employ port man-power without being a member of AGEMAP.

Through BMOP the 5 companies grouped in AGEMAP have stopped access to port stevedoring.

In December 1991, AGEMAP accepted that the companies which are not members of this Patronal Association, but with a permit from the Ministry of Transport can employ the stevedores managed by BMOP.

1) BMOP: Bureau de la main d’oeuvre portuaire
The invoice is made by one of the 5 societies which are members of AGEMAP and they take into account the investments made during the creation of BMOP for the applicable tariffs. This is an interim measure before the problem of access to the activity is solved.  

To illustrate, these are 2 indicators of port technical performance:

a- Tons of general cargo handled by shift/hour

- 1982 (ENTRAT period): 5 t/shift hour
- 1986 (APC period): 18 t/shift hour
- 1991 (private companies): 22 t/shift hour

b- Tons of general cargo handled by ship/day

- 1982: 200 t/ship day
- 1986: 365 t/ship day
- 1991: 390 t/ship day

REMARKS

For 1991 the objective fixed by the World Bank was 550 t/ship day, but this has not been possible, due to the fact that the security of the port is not assured during nighttime.

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Information provided by AGEMAP Directorate
This excellent productivity of port man-power was obtained in shifts by the organization of stevedores.

The 250 shifts with the permanent stevedores of the port are divided into:

* 14 shifts for shore handling, each shift composed of a shift chief and 9 stevedores.

* 10 shifts for operation on board, each shift composed of a shift chief, a crane operator and 3 stevedores.

The composition of each shift is stable. A stevedore always stays in the same shift. The guaranteed minimum salary of a stevedore has been 50,000 GF (1) per month since December 1991.

A stevedore with high performance, if he so wishes, can be attached to a shift often solicited by the operating societies and, with a system of premiums and payment on supplementary working hours, his salary can be 125,000 GF. This is 2.5 times higher than the guaranteed minimum salary.

Of course, a stevedore rated at a low performance and who prefers the monthly guaranteed salary will be in the shifts less solicited by the companies.

Certainly, actions are taken by the Trade Union trying to keep the salaries of all stevedores at the same level for the same category and the same qualification, as in a public organization and in state companies.

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(1) Guinean Franc (GF): 100 GF = 1 FF (French Franc)
Up to now BMOP has maintained this structure of salaries which is evidently more motivating. The question is: should BMOP be maintained in the structure of AGEMAP or not?

If the idea is to maintain the level of the productivity of the port man-power by motivation though the structure of salaries, the answer is certainly yes. But there should also be provisions permitting other approved operating companies to have access to the BMOP man-power without being necessarily members of AGEMAP.

5.3. RELATION OF THE YARD WITH THE HINTERLAND

The Port is an important element of the transport chain and plays an essential role in the policy of economic development. (1)

The Port of Conakry as in any other port, whatever its geographical situation, whether located on the coast, alongside, or inland, is a point of passage through which the country is in communication with the rest of the world, and also a vital element in international trade. (2)

The Port of Conakry is an essential element of maritime transport in Guinea. The country’s hinterland is large. The only railway which passes through three-quarters the country is very decrepit and rarely works, which is the reason why all the containers are transported by road, resulting in the slowness of the "door to door" transport system.

---

(1) DOMINIQUE VELUT. Le role du Port dans le developement economic

(2) JEAN GEORGES BOUDELAINE. Administration et exploitation portuaires
This, indeed, is not the single reason. The administrative and customs procedures are a major problem that require looking into by the authorities. The loading lorries are waiting all day at the unit exit door inside the port causing blockage and congestion in the port. (1)

Certainly the customs officials are suspicious of the iniquities of the integrated door to door system.

In Africa, the mentality of a door to door transport system, covered by scrupulous administration of the documentation processing, is very difficult because of overindulgence in control procedures. It is clear that commonly the shipment of sulfate and tools have been used as a disguise for shipment of illegal goods. (2)

Indeed, the port has a single gate for entrance and exit purposes. The containers whether full or MT, use the same linkage with locations outside of the port.

The technical operations and the handling operations are made simultaneously inside the yard and at the exit door of the port.

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(1) Engorgement portuaire: cas du Port de Conakry.
(2) AVENTIN. Le conteneur et les pays en voie de developement LLOYD. Anversois, no 38337/02/02/1984.
1- **In the yard**

Inside the yard the control is carried out as follows:

- verification of the seal of FC,
- technical inspection of MT or FC with a record of its condition on the card,
- delivery of containers to the customer and the information about services,
- finally they proceed for damage repairs.

2- **The exit of containers at the main gate**

At this level the control is made as follows:

- customs control,
- container number and the lorry carrier,
- the identification of drivers,
- and finally the destination of the container.

These operations are most of the time the source of port congestion. This kind of limit improvement in they the productivity rate! Why not create a zone for customs control and secondary operations between the yard and exit gate of the Port?

The weighing of containers is made on a single scale unit established between the entrance and the exit gates of the port. This is also one of the reasons for the slowness of the operations inside the port.
EXAMINATION OF THE AVAILABLE CARGO HANDLING EQUIPMENT

The diversity of the types of cargo in maritime transport naturally affects cargo handling operations.

The port uses a variety of equipment well which allows it to obtain a better efficacy and productivity in the cargo handling operations (loading, discharging, transit etc...).

Nevertheless, on the basis of the quantities of cargo forecasted, the method of handling and storage envisaged for the year 1988/1992 the following was assumed:

. 1 ship discharging containers,
. 1 ship discharging cargo designated to the platforms (machines, vehicles, equipment etc...),
. 3 ships discharging general cargo, sharing the same handling equipment and warehouses every time by 50%.

The Table below shows the actual situation of the equipment for 1988. (see Table 5.3. P 87)
### TABLE 5.3: REVIEW OF EXISTING EQUIPMENT IN 1988

<table>
<thead>
<tr>
<th>Description</th>
<th>Capacity</th>
<th>Operational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fork-Lift</td>
<td>2.5</td>
<td>1</td>
</tr>
<tr>
<td>Trucks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Hyster&quot;</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Trucks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;D and K&quot;</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Trucks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Hyster&quot;</td>
<td>28</td>
<td>2</td>
</tr>
<tr>
<td>Fork-Lift</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>Cranes</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Cranes</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Mobile Crane</td>
<td>160</td>
<td></td>
</tr>
<tr>
<td>Platforms</td>
<td>10 - 40</td>
<td>6</td>
</tr>
<tr>
<td>Tractor</td>
<td>20 - 40</td>
<td>2</td>
</tr>
</tbody>
</table>

- PERSONNEL OF THE YARD

The personnel of the yard for each of the different companies which are operating in the container terminal consist of 1 general supervisor responsible for the yard and for each sector mentioned above, and a chief with 2 or 3 persons who assume the control of each sector and establish the daily shipping movements. In general, there are 10 persons working in each yard, plus 3 guards.

CHAPTER SIX

CONTAINERISATION AND MULTIMODAL TRANSPORT IN AFRICA

6.1. THE AFRICAN TRANSPORT SYSTEM

Transportation may be viewed as a technological and organizational system that aims to transfer people and goods from place to place, in order to balance the spatial and economic gap between demand and supply centres. That gap might be on a local, regional, national, continental, or even global scale. The total transport concept approaches transportation from a comprehensive and inclusive viewpoint, while carefully analyzing the role of each component of the system in the light of the interrelations between all the variables of which the system is composed. The total transportation concept also recognizes that it is a sub-system of a much wider and complex economic, political and social structure.

Transportation, like many other systems in developing countries, has been changing rapidly over the last few decades. Any attempt to evaluate and analyze these changes must first consider the principal components of the system and the available options. Options or decision variables are those aspects of transportation that can be changed directly by the decision of individual groups or institutions. In the case of international trade, the options available can be divided into two groups: those dealing with the transportation system itself; and those dealing with the political, economic and social environments that provide the framework within which the transportation system operates.
Africa consists of many transit and land-locked countries in which the transport infrastructure has been progressively developed over time, but which suffer from several handicaps. Among these are:

a- a lack of co-ordination between modes of transport along any given route and at transshipment points,
b- a lack of effective co-operation between transport systems at an operational level,
c- a bad or inefficient framework for co-operation between land-locked countries and their neighbors,
d- inadequate transit traffic facilities and services.

The foregoing has produced a poor transit traffic system deficient in the production, supply and utilization of information.

THE CONTEXT

The worldwide transport community is changing very rapidly, including the sub-regions where some district trends have appeared. From the technological point of view, cargo moving in containers has increased as a proportion of total traffic; this tendency helps the through transport concept and encourages the view of the transport chain as an integrated system. Using specialized equipment, the handling of containers at transport mode interfaces permits higher traffic throughput. At the same time, interest in cargo centres and freight stations continues to grow. Pressure is also increasing for the standardization of documents and the facilitation of administrative procedures along the various transit corridors. \(^{(1)}\)

\(^{(1)}\) UNCTAD/SHIP/MISC.72
On the negative side, one has to note the general deterioration of the conditions of the roads. This is due to the lack of maintenance and partly to the overloading of vehicles, but also to an increased demand for road transport. This development is particularly pronounced where the railways do not provide an adequate service.

Falling tonnages carried by rail reflect a withdrawal of customer support caused by many factors. These include the lack of a commercial policy in dealing with customers, poor operating performance, high levels of pilferage and another reason, increasingly important in this day and age, the absence of important on consignment positions within the network.

Most of the railways networks under discussion have single track lines, and interconnect with other networks at a very limited number of places. They have simple operating rules, and are engaged in hauling low density traffic over long distances.

Information is scant and the means for its transmission outdated and in many cases unreliable. Documentation reflects the present operating environment and slow procedures, resulting from poor communications. This means that valuable operational information can be held-up, or lost because it does not reach the right person at the right time.

As a consequence of the above, cargo movements can be seriously hampered by a number of occurrences, including the following:

- A lack of appreciation of the common interest between public and private operators, for example, at a modal interchange facility where information may not flow freely between road haulers and the railways operator.
- Slow development of sectorial interest, for example, matters of mutual interest to the freight forwarding community.

- Delays at border posts where goods can become immobilised for one of a number of reasons connected with paperwork: the presentation of illegible or error-ridden documents, or supporting documents missing.

- Inadequate means of communication between transport operators (internal and external telephone links are often difficult to obtain, the use of telefax is uncommon and again depends on telephone lines, and telex is also unreliable for the same reason).

Networks lacking efficiency are expensive to operate, and when high costs are passed on to the customers, they can constitute a barrier to the development of trade. Many currencies in the sub-regions are non-convertible, restricting the availability of running equipment, spare parts and materials.

6.2. SUB-REGIONS

The transport sector in the sub-regions consists of a variety of organizations with different backgrounds, constitutions and policies. These include: ministries, governments, departments, public corporations, parastatal companies, public transport authorities, public/private joint venture companies, multinational and local private companies (1).

1 UNCTAD/SHIP/MISC.72
The sphere of their interests vary from the global, to the regional, to the national level. Their individual objectives do not always appear to be complementary to one another.

A more competitive transport environment brought about by a general increase in the quality of service, can result in a reduction, or at least a containment of the levels of transport costs in Africa.

Irregular patterns of cargo flow can occur along any transport chain and in either direction. They reflect the ups and downs in the demand for transport services which can be caused by several factors, including:

- seasonal produce (exports),
- letters of credit requiring shipment of goods prior to the end of the year (imports),
- famine relief operations (imports),
- start-up completion of substantial construction projects (imports),
- closure/opening of an alternative corridor (imports or exports),
- deterioration/improvement of shipping services or costs to/from the corridor outlet (imports and exports),
- inland transport costs and land side transit times (imports /exports),
- national financing bills and budgets (imports).
6.3. SITUATION OF TRANSPORT IN GUINEA

Transport System

In spite of decided achievements in this sector, boosting the national economy is seriously handicapped by the still critical inadequacy of its transport system. Any improvement in the situation today depends on the rapidity of its rehabilitation; however, the scale of the task, and the level of funds required to carry it out, are out of all proportion to the national capacity for financing and the traditional level of mobilization of external resources. This creates a serious danger of putting a curb on the economic redeployment process and tends to slow things down in a way that is difficult to accept if this means the extraordinary mobilization of resources over the last few years cannot be pursued and increased.

Except for the system of specialized public transport connected with the mining enclaves and covering a relatively small part of the territory, most of the public road and rail networks, port installations and airport equipment have reached a stage where they are virtually unusable, largely because they have gone through a long period when the funds available for their upkeep have been inadequate. Public or auxiliary transport activities, which belong almost exclusively to the state, have experienced the same problems and undergone the same deterioration.

Source: UNITED NATIONS Conference on the less developed countries (Paris, 3-14 September 1990).
The country's efforts at economic rehabilitation over the last few years, giving a high priority to rehabilitation of the transport infrastructure, clearing-up of the quasi-public sector and encouragement of private initiative, are beginning to show results. The transport system is slowly coming back into operation, and the long-term prospects are encouraging, but there is still a great deal to be done.

The country's road network, with no more than 13,000 km of roads and tracks for a territory of 245,857 km, thus constituting one of the least crisscrossed networks in the region, has reached such a state of dilapidation in the last few years that only 10% of its length can be regarded as really in working condition.

The country's basic road network—inter-regional and international—some 6,000 km in length, consists structurally of only about 1,300 km of metalled road, while rather more than 2,500 km, or nearly 45% of this network, consists merely of poor dirt tracks. The asphalt-road network is for practical purposes usable only over 70% of its length. The dirt roads are usable over only 30% and tracks are virtually unserviceable.

The infrastructure crossing waterways is equally inadequate, with large numbers of temporary bridges and 28 ferries, most of them in an advanced state of dilapidation if not completely out of order.

To add to this alarming road infrastructure situation, the road vehicle yard is very inferior—some 30,000 vehicles, 80% of them concentrated in the capital. A very mixed bag, mostly dilapidated, in spite of a decided improvement over the last few years. There is virtually no country-wide gasoline distribution system, and there is a persistent weakness in the vehicle maintenance and upkeep sector.
Several public communication infrastructure projects, which have found external financing over the last five years, are gradually helping to improve the situation in the sector. In this connection, the third road project has made it possible to rehabilitate nearly 700 km of basic asphalt roads, or nearly 60% of metalled network, and the Guekedou-Seredou project has helped to extend the same network by nearly 130 km.

The road component of the sectoral transport project is embarking on the rehabilitation of 225 km of the basic asphalt road network, while the fourth road project involves a large-scale programme for extending this network, over a total stretch of 500 km. It likewise provides for work on the basic dirt road network in the form of local road repairs designed to give it a minimum of practicability depending on its rehabilitation. The "river crossing" project is helping to improve the practicability of road infrastructure.

Finally, several agricultural development projects, now being carried out or on the point of starting up involve a track rehabilitation sector. This rehabilitation covers a total mileage of nearly 5,000 km of tracks, covering 60% of the total network of tracks in the country.

With regard to the rail transport, Guinea has four railway lines covering a total length of 1,040 km, including three private lines used for the evacuation of ores. The only public railway line, 662 km in length, links Conakry and Kankan. It is very old and hardly usable. The decrepit state of the rolling stock has brought the exploitation of this line virtually to a standstill. This mode of transport is undoubtedly necessary, but it is short of funds for its rehabilitation and modernization.
Turning to another subject, the river transport potential offered by sections of the river Niger and its tributary the Milo has not yet brought about the establishment of infrastructure for its exploitation.

The equipment of the commercial port of Conakry and the ore-loading port of Kamsar have reached a point and a state of wear and tear and obsolescence which is critical, and the situation is aggravated by the inefficiency of the operators of the port and port surroundings. This alarming situation was made even worse by the traffic explosion which came about with the opening-up of the country.

The first harbour project, completed at the end of 1987, made it possible to rehabilitate this harbour facility, and a new project, now under way, and financed as part of the sectoral transport project, has undertaken an extension of its capacity. The prospects of growth in traffic and the development of fishing activities and industry as well as port activities, auger well for further extensions.

The international airport at Conakry has experienced the same downgrading, and this has seriously affected the international traffic serving the country. The project for the rehabilitation of airport infrastructure has made it possible to improve this facility greatly. The nine aerodromes in the interior of the country, on the other hand, are hardly usable. This, combined with the poor quality of the equipment of the national airline company "Air Guinea", considerably restricts the services to the interior of the country.

The civil aviation section of the sectoral transport project, now underway, is engaged in the rehabilitation of the Conakry airport and that of four aerodromes in the interior of the country.
Finally, the primary roadways of the capital have recently been rehabilitated, along with part of the service roadways. However, considerable financing is still needed to round off the rehabilitation and modernization programme.

6.4 THE CONCEPT OF MULTIMODAL TRANSPORT

Since World War II the transportation industry has experienced many changes especially in three main areas: demand for transportation, transport technology, and organization of a transport system. During the 1950's and early in 1960, general trade met many obstacles due to old vessel capacity rather than lack of efficiency in port operations. It was clear that there was a need to change to satisfy transport demands, so it came in through technological innovation in cargo handling equipment, in ship design and in port facilities.

The major changes were presented during the 1960's and 1970's with unitization, of containerised cellular ships, Ro-Ro vessels and gantry cranes. Since this period small changes have taken place in the transport system. All of these changes have been set to reach a higher level of efficiency and effective maritime service.

The basic objective of this rather recent transport system improvement is to facilitate the movement of goods under continuous supervision and responsibility of a single transport operator. Thus, this operator would in turn relieve shippers of the need to approach modal carriers discretely or through intermediaries.
The other objective is to increase overall transport efficiency by aiming at the optimum modal split within the transport process. This system primarily takes into account the needs of the cargo itself rather than the transport mode. It does so by ensuring an integrated transport process between the consignor and consignee, which is unlike the traditional unimodal transport system.

The major requirement of cargo, as already seen, is that it gets to its destination on time, in good condition and at as low a price as possible. In this context, it is considered the most important and overriding single element of the concept of multimodal transport.

It is, therefore, believed that it is the physical concept of containerisation enables these cargo requirements to be satisfied. This intermodality, that is the ability of all modes of transport to move containers linked with relatively simple transfer operations, allows for an optimum modal split, thus making use of the advantage of each mode for the benefit of the cargo.

Multimodal transport of containers may also be looked upon as a response to the changing transport requirements of today. By this, it means that transport no longer constitutes an isolated process of moving goods from one point to another but has become an integral part of the total production and marketing process in the context of marketing logistic concepts.

The development of such marketing-logistic concepts was initiated by the cargo interest, so that the transport industry offers on a large scale, total distribution services geared to the needs of the cargo which only started in the early seventies with the advent of containerisation. Thus, it is seen that it has been a rather recent development that
6.5. **MULTIMODAL TRANSPORT AND CONTAINERISATION**

The past decades have been characterized by important structural changes in general cargo shipping, including technological as well as organizational changes. In an attempt to cut down the costs of maritime transport mainly by reducing cargo handling costs, and the time of the ship in port, and by realizing economies of scale, and unitization especially containerization was introduced in international shipping in the late 1960's. After being confined for a time to trade among developed countries, which is characterized by relatively large cargo volumes and balanced trade flows, these new methods of shipment were also introduced in the trade of developing countries.

The main reason for the introduction of container transport was the increasing cost of labour in developing countries.

The need to increase labour productivity called for capital intensive transport systems in which quantitative labour inputs were minimized. These technological changes not only brought about a process of capital/labour substitution, but also increased the efficiency and speed of transport, mainly by speeding up handling operations in ports through greatly reduced packing requirements and handling processes at all transfer points.

In many of UNCTAD's report, it has been acknowledged that there are disparities between developed and developing countries in terms of shipping tonnage (type and ownership), institutional and physical infrastructure, port facilities, cargo mix, physical distribution systems, material handling methods, and capital and labour factors. Such dissimilarities arise mainly from a difference in the stage of development, which creates a time/space gap.
Thus, the desirable types of transport technology to be adopted at present may be different at each end of the trade route. In international trade, new transport technology can be employed at its best if the transfer units (containers) remain unbroken for as long as possible and, most importantly, if they are carried under multimodal transport arrangements.

These two conditions have far-reaching implications for the physical infrastructure and political framework within which the operators act.

At the present, containers carried as part of the seaborne foreign trade of developing countries rarely move beyond the port boundaries into the country. This is largely due to the inadequate inland transport infrastructure, but partly also to the administrative shortcomings, especially with regard the customs procedures, which have not yet been adapted to the needs of container through transport.

Some developing countries have already committed considerable resources to containerisation. In most cases investments have been concentrated on shipping and port activities, but demand for capital extends beyond these most immediate requirements to all links in the transport chain, e.g. to inland transport modes as well.

Consequently, the effective implementation of multimodal transport requires not only investment in facilities but also, equally important, overall structural changes ranging from trade and transport practices to the revision and, as far as possible, to regional harmonization of legal documentary and customs procedures. Developing countries have to set the framework not only regulating multimodal transport but also for promoting the activities of indigenous multimodal transport operators.
Promotion of multimodal transport and optimum use of infrastructure require careful consideration of institutional aspects. Each government must decide to what extent the public sector should actively participate in transport operations and establish a clear-cut functional division between the public and the private sectors in the transport of containers.

6.5. THE LAND-LOCKED COUNTRIES AND THE TRANSIT PROBLEMS

PROBLEMS OF LOCALISATION

There are five land-locked countries in the West-Africa region which are:

- Burkina-Faso
- Central Africa Republic
- Chad
- Mali
- Niger

These countries are considered by the international community as being among the poorest in the world.

They generally rely on the export of one commodity, that is cattle for Burkina-Faso, timber for the Central African Republic, cotton for Chad, hides and skins for Mali, and uranium for Niger.

In addition to the general problems of their development, they have a lack of an appropriate multimodal
transport system, and are facing those of transit through neighboring coastal states.

Ports of loading and discharging of goods for these land-locked countries are at a considerable distance from the production or consumption centers and ports in neighboring countries. Some transit corridors have been accepted even if not defined for the use of the carriage of their foreign trade. Thus, transit operations incur several changes in transportation during transfer. The following ports are used by these countries:

- Abidjan for Mali, Burkina-Faso and Niger,
- Conakry and Dakar for Mali,
- Douala and Pointe-Noire for Central Africa Republic,
- Lagos and Douala for Chad.

The following distances are from the hinterland to the sea.

i. Burkina-Faso

By railway: Ouagadougou–Abidjan .................1145 km
By railway: -"- -"- Lome........................1000 km
By road : -"- -"- Abidjan.....................1195 km
By road : -"- -"- Lome........................980 km

ii. Niger: Niger–Benin

By road : Niamey–Parakoua
By railway: Parakoua–Cotonou
From Niger to Nigeria

By road and railway: Maradi—Lagos..............1140 km
Zinder—Lagos..............1140 km

From Nigeria to Togo

By road: Niamey—Lamakara—Lome..............1283 km

iii. Mali: - through Senegal

By train: Bamako—Kayes, Kidira, Kaolack......1290 km
Through Ivory Coast
Bamako—Sikasso, Bouake—Abidjan............1158 km

Plans have been drawn up with Soviet help to link Mali with the Guinean rail system.

By road: Bamako—Ouagadougou
Ouagadougou—Abidjan
Conakry—Bamako

By train: Segou—Abidjan via Bobo Diouloasso........1168 km
By road: Mopti—Abidjan via Bobo Diouloasso........1258 km

iii. Chad: - through Cameroun: Ndjamen—Douala

By road: Kousseri—Maltani—Mora Ngaoundere........780 km
Moundou—Lar Figuil..........................365 km
By railway: Ngaoundere—Douala..................927 km

Through the Congo: Ndjamen—Pointe Noire

By road: the transequatorial
Through Nigeria
By road: Ndjamen—Lagos
Abidjan and Lagos present an identical situation. This affects to a great extent all the imports and exports and the movement of containers in transit to/from the neighboring land-locked countries. For example:

1- For Chad

- In 1986 from Douala to Djamena, out of 960 containers handled, 55% were transported by road and spent 40 days on return; 45% transported by train and spent 59 days on a return.

- Douala-Moundou (Chad) in 1986, out of 192 containers handled, 50% transported by truck in 40 days, and 50% by rail in 59 days. It means that in taking into account the time spent at the port the transit time of a container is roughly about 80 days for Chad.

2- For the Central African Republic

Out of 1487 containers handled from Douala to Bangui, 91% transported by road (30 days), and 9% transported by rail (40 days) of the 24 days spent in the port a complete operation with the container is between 54 and 64 days for the Central African Republic.

At the sub-regional level, a common approach to an infrastructural project is one of the most difficult problems for international transport in general and container transport in particular.

If the infrastructure is to be used mainly for the transit trade, the transit country may be unable or unwilling to finance such a costly programme.
The transiting country might have to make a considerable financial contribution which is actually a considerable concern for the land-locked countries in West Africa.

A common approach is necessary for infrastructural planning to be adopted in order to optimize the use of scarce capital resources.

It is desirable to draw up guidelines at the regional or at the intra-regional level, on international co-operation in terms of infrastructure investments, financing and levying charges on users of international transport.

In order to assist the West African countries in coping with the financial problems arising from the need to upgrade the existing infrastructure, some solutions have been suggested. For example, between Chad and Cameroun there is an agreement in train-blocks of 900 tons, a reduction of 50% on port dues, a reduction of 25% on stevedoring for cargo in transit, the allocation of warehousing for the cargo in transit.

CHAPTER SEVEN

THE NEW CONTAINER TERMINAL AND ITS FUTURE MANAGEMENT PERSPECTIVES

7.1. Brief description of the new container terminal

The most important port component of the sectorial related project is lot 1-A, that is, the one concerned with the container terminal.

Indeed, upon a provisional amount of 16.3 billion 7.2 billion of GF negotiable volumes was agreed. The new container terminal is composed of a quay in concrete block, with a total of 270 m length. Its is foundation is at 16 m above the datum level, with a tidal range of 3 m. The environs behind the quay wall were made of about 500,000 cubic meters of sand with a filtering sheet of 25 m breadth which was about 50,000 cubic meters of rock.

The dredging was conducted down to -10.50 m at quayside it to receive container ships or Ro-Ro vessels up to 25,000 tons capacity. (see Annex 2)

The stacking of containers can be made at 3 levels in an area of 8 ha prepared for storage purposes given the possibility of stacking 50,000 boxes per year.

All the draining of rain water is provided for a system of gutters in concrete previously settled in the sand which includes a cobbling composed of 5,6 million elements in concrete.
Three lighting masts and 60 plugs for refrigerated containers are installed. A generating set of 430 KVA which assures the lighting and generator supply of power to the container plugs in case of power cuts is installed. Warehouses of 1,200 sq meters are built for the stuffing and stripping of containers.

Entrance and exit gates are built for custom's control and security with an administrative building for the management of the terminal.

The construction of the terminal was carried out in 36 months by the Philipp Holzmann Company of Germany.

7.1.1 Regulations for Exploitation

A project on general regulations for the exploitation of the new terminal was elaborated by the Commercial and Exploitation Directorate of the A.P.C.

The outstanding aims of the project on regulations are the following:

1- ship-priorities

- priority of use of the container terminal is given to container ships and Ro-Ro vessels

Source: information provided by the port Director and the Infrastructure and Equipment Division.
In a case of availability of the terminal it be used for multipurposes under the reservation that the cargoes loaded or discharged may be in the majority packaged in containers;

- it is the Autonomous Port which, in case of dispute between shipowners and consignees relating to the priority of berthing of ships, finds the solution that it judges best.

2- Utilization of the installations

- The utilization of the storage of containers should be made in conformity with the general scheme of the organization established by the operator in connection with the port Directorate;

- the zone alongside the quay is reserved for ship operations during their call;

- the warehouses for stuffing and stripping can be used only for the intended purpose which they were made for. Goods can be deposited there only if related to the operations of stuffing and stripping of containers.

3- Traffic and parking of road vehicles

The short term parking is reserved for the vehicles from which the occupant has formalities to accomplish in the administrative building, with a duration of parking limited to 30 minutes;

Division Infrastructure et Equipement du Port Autonome de Conakry. Janvier 1992
The long term parking is intended to give priority to tow lorries loaded, which are at the admission or departure points of the terminal, with a duration of parking limited to 2 hours.

- The access of vehicles inside the terminal is controlled by:
  - access labels
  - entrance notes
  - printed documents for visits or identification.

4- Penalizations in case of infringement

All infringements of the regulations of the exploitation of the container terminal are liable to penalties enforced by the port police.

This project of general regulations seems to correspond to the orientations of the IDA's (1) mission made in November 1991 in Conakry, except for the following points:

- total prohibition, without exception, of storage of general cargoes in the container terminal. This point is particularly important, because the temptation will be strong to use part of the delimited platforms for the storage of general cargoes.

(1) IDA = International Development Assistance
- For the penalizations in case of infringement, the regulation project gives power to the port police to carry out the necessary action. The IDA's mission insists on specific penalties and particularly severe ones.

The consultant's point of view is that the regulations' project for the exploitation of the C.T corresponds in its headlines to the rules generally applied in this field. However, some aspects should be developed in detail in co-ordination with the terminal operator who will be selected (see point 7.1.1), particularly with regard to:

a— the destination of the non-used areas during the first years of exploitation,

b— the conditions of entrance and exit in the C.T,

c— the harmful effects,

d— the penalties in case of infringement.

7.1.2 Management of the container terminal

For the management of the C.T, several assumptions have been made:
- the management of the C.T by the port itself,
- the management by only one private operator,
- the management by the patronal association of the handling companies of the port (AGEMAP),
- the management by an association of port operators to be created.
This association will be opened to all operating enterprises in the port approved by the Ministry of Supervision (M.T.T.P) which requires sufficient guarantees:
- professional competency,
- financial means,
- possession of specialized equipment for container handling,
- deposit of guarantee to the port.

This issue is vital for the future orientation of relationships between the port and the private enterprises operating in the port. To entrust the management to one private society or to the patronal association AGEMAP would be to reinforce the dominating position of the existing five companies in the port. This solution results in the following difficulties.

First, to make these new installations practically at the exclusive disposal of the companies already established.

Second, it restricts competition. Indeed in these conditions it will not be easy for a new company, with foreign capital, Guinean capital or with joint capital (joint venture) to get access into the port business.

Third, it limits the prospects of long term development of the port as a transit port for the hinterland and as a feeder port, because such development may not be within the strategy of the actual societies established, i.e., one of these companies like Delmas, which is set up in all the ports of West Africa.

It should not be forgotten that AGEMAP is a closed company. The veto of one of these 5 existing companies can
can forbid access if the management of this Patronal Association (AGEMAP) has the operation of the terminal entrusted to it.

The opinion of the consultant is that it would be preferable to foresee up to now the creation of a society for exploitation of the terminal, whereby the port would be the majority contributor to infrastructure, and also responsible for necessary arrangements in the exploitation sphere which will safeguard the future development of the port.

It is unfortunate that this question was not forthrightly faced earlier. It is now difficult for the port, with insufficient preparation and without specialized assistance, to take the decisions which will secure its future.

An agreement project was elaborated by the Commercial and Exploitation Directorate of the port which highlights:
- the obligations of the parties,
- the duration of the convention,
- the conditions of utilization of the platforms,
- some exploitation rules for the terminal, notably in term of tracking containers.
- the deposit of a guarantee 15 millions GF, which seems very low according to the importance of the installations.

This project will most likely be amended at the time of negotiations with the selected operator. In the case when there is a decision to create a company for exploitation, some aspects of the exploitation project
should be reviewed.

7.1.3. Benefits of the container terminal

The tariffs study conducted in November of 1991 does not give a valid picture of the real benefits of the terminal. It only mentions that it brings an appropriate contribution to the general equilibrium of expenses and income of the port. The consultant did not agree with this point of view. It is essential that the terminal is treated as an independent identity so that assurance of the self-generated benefits are clearly seen from the very beginning.

If these benefits could not be assured the causes of such a situation and its respective remedy would have to be examined. For example, in negotiating with the authorities over the methods of retrocession of the loans which were used for constructing and equipping the terminal, current circumstances must be evaluated.

If these arrangements for the new agreement provisions could not be achieved, the entity would be working at a loss; therefore, it is vital to know precisely how much of a loss.

In cases whereby the opinion to create a company of exploitation of the C.T will be revealing, the above point will be certainly treated with priority.

The financial consultant's mission does not give a study upon the tariffs proposed, because he thinks that a
price and tariffs cannot be limited by simple costs of investment.

It is also necessary to take into account the maintenance and the exploitation costs which are tackled in this tariffs study of the container terminal for the future.
7.3 IMPACT OF CONTAINERISATION ON THE NATIONAL ECONOMY

The impact of a containerisation system upon the Republic of Guinea, particularly with regard to the effects of the two main factors which are conditions of foreign trade and conditions of labour and capital will now be discussed.

a- Conditions of foreign trade

This factor in applying the container system is the availability of a sufficient flow of commodities convenient for containerisation in both directions of each trade route all year. The main idea of the profitability of containers is the mass transportation of goods, which calls for bigger sizes of ships.

As Guinea’s ports usually have lower handling costs so containers are only convenient to those ports when using bigger ships and thus, reducing relatively the cost of sea voyages and time spent at ports. Smaller ships will have higher costs per unit at sea, faster turnrounds at ports, while the reduction in costs of handling cargo when using containers may become small or negligible due to the prevailing low costs of conventional methods.

It should be added that Guinea lacks an appropriate infrastructure for containerisation such as a wide inland transport network. Most of the roads are not wide or straight enough and are too weak for the transport of large and heavy containers. They usually have customs regulations which are inflexible. The result is that containers have to be filled and emptied in the vicinity of the port area. Thus, the handling costs per ton of cargo are increased, unless the
transportation system offsets this disadvantage.

The high capital investment required for the preparation of ports means that the capital equipment and constructed berths should be fully utilized so as to cover the depreciation and capital charges within the relatively short life of rapidly changing technological equipment. Without sufficient continuous mass transportation of goods in both directions, these heavy investments will not be justified.

The main problem is the insufficient volume of containerisable foreign trade, but as the development process in the country is directed towards expanding industrialization, it may be felt that the structure of trade would change with the development of industry. If a newly industrialized country wants to produce commodities with competitive prices in world markets, it must depend on economies of scale. With that aim, a policy of regional groupings of countries, is usually advocated and is applied so that wider markets can be obtained. In this decade, increased volumes of manufactured goods on a large scale are likely to flow through the ports making the cost reductions of containerisation sound more realistic. It is necessary for Guinea to predict the time needed to reach that stage. A prerequisite stage is to develop and construct the required inland infrastructure, to change the customs regulations and to modernize the ports administration, so as to match the new system when it is applied.

Another element which must be considered in the prediction of the country's development is connected with volume of trade and its geographical position in relation to its trade markets. As containerisation largely neutralizes differences of stevedoring expenses and costs in ports, the difference in distances would be a more prominent factor.
Mechanization of the handling process will increase the productivity of labour. Mechanization would need more skilled labour, and may open new spheres of industries such as repairing and maintenance of equipment and the containers, or the construction of the containers themselves. However, a bottleneck would be created in finding the required number of qualified labourers and administrators.

Using advanced countries’ technology as it is, for the purpose of increasing labour productivity at this stage, would be a mistake. It will cause waste of valuable capital and available manpower.

The basic concept of the container system is the idea of “continuous flow”, where one product, i.e. the transportation of standardized containers, is produced by a specialized type of equipment with the work moving fairly continuously from one machine to another as in a stream. The organization of transport production must be built on a balanced stream line of products so that all equipment is used as fully as possible and no delays or congestion occurs. Continuous flow production requires extremely close scheduling of work, both within and between kinds of transport, forming a long chain of cargo transportation and also between numerous sources of cargo supply and cargo demand. Such a production system puts a great strain on the managerial administration and labour force of a country. It needs a very efficient level of organization composed of highly trained technical personnel. Probably these completed systems from developed countries would be harmful if adopted as such. They must be modified in accordance with Guinea’s need.
The second dangerous aspect would be the effect on manpower of suddenly transferring the traffic to one or two ports in the region and decreasing the importance of many other harbours which will put another social burden on the shoulders of government and on planning.

Guinea should choose the system of transport technology which suits our own conditions regarding:

1- cargo consideration (value, volume and physical properties),

2- port facilities (berths, water conditions, land conditions and handling equipment),

3- infrastructure conditions (highways, railways, inland waterways),

4- labour force situation,

5- trade route characteristics (distance from the markets, space utilization through the months of the year, import/export rates of trade movements), and

6- degree of industrial development

A combination of multimodal transport systems exist in addition to conventional systems and the fully specialized systems of transport. The capital intensity of modern transport systems has influenced recent trends towards favoring the more flexible of such systems. Thus one must assess the viability of mixed technology in the sense of appropriate technology, e.g., the viability of multi-purpose transport systems by using multi-purpose ships and multi-purpose terminals as against conventional, specialized and multi-purpose systems.
7.3 BENEFITS OF CONTAINERISATION FOR THE PORT OF CONAKRY

The container system provides the opportunity to manipulate standard units of cargo by highly mechanical means throughout the journey from first packing place to destination.

There is an opportunity to make large cost savings in through transport costs by standardizing the methods of carriage and transfer between modes. Essentially, the goods are packed into large boxes providing protection from the weather and bad handling throughout their transit.  

In the case of the port of Conakry, containerisation gives:
- a very high facility for the shipper and also for the consignor in the door-to-door transport system,
- reduces cargo insurance costs,
- provides quick forwarding of goods, fast handling operations and viability in trade exchanges,
- reduces working time (in port and on land),
- ensures safety of cargo against bad weather and thefts.

Disadvantages exist at the moment because the transport of containers requires a high investment which involves a lot of capital, and the non-flexibility of loading some cargo in containers such as cacao, coffee, etc.... On the social side, it has seen the reduction of manpower.

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(1) EDMUND J. GUBRINS. The Shipping Industry GORDON AND BEACH Science Publishers. NEW YORK, LONDON, PARIS, MONTREUX, TOKYO.
1- GENERAL CONCLUSION

The motivation and drive behind the development of technical innovations by the shipping industry is derived from the constant search for methods of operation, which will reduce or at least stabilize the rapid escalation in costs associated with traditional practices. This is especially true when considering liner shipping where, until very recently, labour costs accounted for a significant proportion of total operating costs.

The major innovation has been "the development of containerisation" as described in chapter Five. As more and more routes are containerised, either fully or partially, the system has come to be regarded as the answer to the problems besetting general cargo shipping.

There are, however, a number of disadvantages attached to containerisation which have generated a great deal of research into, and development of, other methods of handling and carriage that fulfil the basic aims of unit load systems, namely, quick handling in port, intermodality and greater productivity from the cargo carrying units.

Containerisation of any trade route involves the shipping and transport industries in planning and building a complete network exclusively for the handling of standard sized units, which calls for a large injection of finance for ships, building port facilities, supplying containers and re-training of the existing work force.

The equipment must be intensively used in order to earn sufficient returns to repay capital expenditure, if economic benefits are to be realized.

The container system requires that shipowners, port operators and inland transport companies accept that the infrastructure be designed to cater to a particular type of cargo packaging.

Containerisation brought about structural changes not only in sea transport but also in inland modes of transport. The technical adoption of the container permitted the realization of door-to-door transport. The intermodality of containers allowed for the introduction of new organizational systems based on the needs of the cargo rather than on the characteristics of individual transport modes, the major effective change being the availability of transporting goods by more than one mode of transport on the basis of a single document.

The design and management of the port system is a vital factor in the success or failure of the whole containerisation system.

The Republic of Guinea and particularly the port of Conakry which have decided to respond to the challenge of containerisation, have a number of options available (as will be described in the recommendations). Depending on circumstances, a purpose built container terminal may be the appropriate response, with all its accompanying financial outlay, or else an intermediate solution may be the more sensible one, adopting existing facilities or constructing the less expensive multi-purpose type of terminal. The policy decision to be taken is not whether to face up to containerisation, but how and what type of technology to adopt and what pace of change to choose. Key decision makers
must be aware of the alternatives and choose the route most appropriate for their own port, country and trading circumstances. They should not be forced into a decision by the countries at the other ends of their trade routes.

The port for containerisation should be integrated into the country's development plan in general and the transport network plan in particular. A port is no longer a separate entity but is an integral part of a total multimodal transport system. Port investment needs to be synchronized with that of ship operators, inland transport operators and other ports in the country and regions, as well as those at the end of the trade routes. Unless these relationship are recognized, wastage of capital resources is unavoidable, as imbalances in the transport chain become bottlenecks. A major sufferer of all such problems is the port, the vital link in that chain, the central connecting point between transport modes.

An overlook of the present maritime development and its related issues shows that the economic and social situation of West Africa in general and the Republic of Guinea in particular must be considered as a global problem. The world economy and the related production process must not be necessarily integrated in the confines of a country or a region.

Therefore, it is urgent to plan for new poles of industrialization through the means of investment in Guinea's economy in order to breach the actual factors which increase the tension among the shipping community.

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In other words the containerisation system everywhere needs a good infrastructure, specialized equipment and qualified personnel.

The Republic of Guinea lacks the appropriate infrastructure for containerisation, such as wide inland transport networks. Most of the roadways and railways are not wide or straight enough and too weak for the transport of large and heavy containers. There are usually customs regulations which are inflexible. The result is that containers have to be filled or emptied in the vicinity of the port area. The main problem is the insufficient volume of containerised foreign trade. Mechanization of the handling process will increase productivity of labour. Mechanization will need more skilled labour, which in turn may open new spheres for industries such as repairing and maintenance, or even the construction of containers. However, a bottleneck would be created in finding the required number of qualified labourers and administrators. At the same time, the abundant unskilled labour, already working would be spared.

It means that the Republic of Guinea, and especially the port of Conakry, to be more efficient, and to be able to develop a container transport system and to overcome the impediments, needs an effective infrastructure (road, rail inland transport, etc...), and specialized equipment for container purposes. The port must have the available area for container terminal, a computerized overhead container handling system and also qualified personnel. All these aspects should be taken into consideration by the Port Authority together with the government to respond to available conditions for containerisation system today.

Although container penetration is developing in Guinea and especially in the port of Conakry, it is possible to postulate sets of conditions under which the conventional
system has to survive for some years. This will be presented with further developments.

Some recommendations are now to be considered relating to the future organization, management, exploitation and maintenance, administration and training of the personnel of the new container terminal of the port.

2- RECOMMENDATIONS

It have seen that containerisation has deeply changed the landscape of seaports. What is not so apparent is that changes just as great have been necessary in administrative, managerial, operational and maintenance systems. Without changes in management structures and procedures, and in the manpower and operating practices employed in the port, the expensive container and its high-cost equipment will not reach to its expected level of efficiency and cost effectiveness. The authorities must pay attention to these institutional aspects of terminal planning as much as the more obviously "glamorous" ones.

a- Container Terminal Organization

Today the use of "terminal" is now extended to unitized and particularly containerised facilities, which provide a comprehensive range of specialized services to all users. If a container terminal is to work smoothly and efficiently, its activities must be integrated and coordinated; this requires a high degree of management control, and a unified organizational structure.
In order to properly plan, coordinate and supervise the high speed and complex flow of containers through the terminal, it is essential for the terminal to be controlled by a single entity or organization, responsible for all the activities within the terminal area. "Unit of command" is the key to effective terminal management, whether achieved by public or private investment and ownership, by the "owner" of the terminal managing all its activities himself, or leasing the terminal to a single operator to manage.

b- Container Terminal Management

Once the terminal organization has been decided, its management structure must be established. This should have its own corporate identity, best achieved by forming a new operating company with its own clear set of objectives, power and responsibilities. The management team will administer and control all day to day activities at the terminal, through delegation to departmental heads. Quick decision making is essential.

c- Manpower Management

Containerisation has fundamentally changed the nature of dockwork and revolutionized port working practices. It has significantly reduced manpower requirements and created severe social and economic problems for communities dependent on port work. The impact of technological change on employment is one of the most intractable policy issues facing senior management in the seaports of developing countries.

If the experience of developed countries' ports is repeated in developing countries then there will be a significant reduction in the total number of port employees as containerisation proceeds. This will affect all categories
of dockworkers, supervisors, administrators, maintenance and management grades, but the most serious reductions will have to be made in operations staff directly involved in cargo handling.

It is the responsibility of senior management to establish the policies to deal with these manpower problems, through a long-term plan arrived at by discussion and agreements with the government, trade union representative and other interested parties. The starting point is a detailed inventory of present manpower levels: a skill inventory, an analysis of present age structure of employees, their experience and qualifications. The future requirements must be predicted, based on traffic forecasts and must take into account the nature, extent and rate of technological change in the port. It is only then that alternative manpower strategies can be considered and evaluated, so that labour supply and demand can be brought into balance.

**d- Specialized skills**

In the past, the essential requirement for a dockworker was physical strength; cargo was manhandled piece by piece. The work was considered unskilled, attracted recruits with little education, and offered poor employment career prospects. Employment was casual, training rare and industrial relations poor. The dockworker had low status. The introduction of mechanization in the 1950s and 1960s brought a need for a new man with some specialized skills, but little training was offered in developing countries ports.

Containerisation is a different matter, however. Expensive, complicated, mechanical handling equipment, operating at high speeds, needs a skilled, specialized workforce. Gantry crane drivers, and straddle carrier drivers
are a new breed of dockworker, bearing much greater responsibility than their predecessors. The "dockworker" is now more properly referred to as a "port technician", a highly skilled employee with a thorough knowledge of modern cargo handling methods. Clearly not all existing dockworkers will be suitable for this retraining.

Recruitment, salary scales, training and promotional policies must clearly reflect this change of status. The men recruited now face a 30-40 year career in the industry; not only must they come to grips with the present technology but also be prepared to meet many major changes during their working lives. Educational background is now very important, and it is not inappropriate to take on recruits with graduate or similar qualifications for operational and supervisory posts, not just desk jobs.

In fact, new training schemes will be needed for all grades of staff, including clerical and administrative, supervisory and management personnel, as they change from filing and paper invoicing to computer operations. It may be that suitable courses already exist in nearby educational establishments, while some staff may have to be trained overseas, for most trainees, training will have to take place in the port.

e- Working Conditions

Commissioning new specialized container terminals gives senior management the chance to rewrite management labour conditions of work to match the new working practices needed. Shift work must be adopted fully, to make economic use of the expensive facilities. Three shifts a day, for 365 days a year, is a worthwhile aim. Overtime must be available when required, and there must be freedom to transfer qualified labour from other areas of the port at peak periods.
Traditional demarcation between grades of employees should be eliminated or reduced to a minimum. The emphasis must be on versatility, and the ability to move workers between different tasks, as necessary, to meet varying demands.

f. Operating practices

If the container is to operate efficiently, new operating practices and procedures must be established from the start. That might seem easy, because we are dealing with a largely uniform and homogeneous unit. The container is handled in one area of the port by specialized equipment. In practice, the large number of almost indistinguishable boxes passing through the terminal, the many and varied moves they may make before leaving, and the high speed of the complex flow patterns all combine to make the setting of good operating practices a challenging task.

g. Maintenance procedures

A persistent problem in developing countries is high down time and poor availability of mechanical handling equipment, resulting from poor operating and maintenance procedures. On a conventional general cargo berth, a shortage of a particular type of equipment or a breakdown during operations can be partly overcome by bringing up alternative equipment or deploying more labour. In a container terminal, the size and the weight of containers and the need for specialized lifting attachments means there are few plausible alternatives if equipment is not available. The establishment of a maintenance and repair facility under a qualified engineer requires suitable workshops, a properly trained workforce, effective spare parts/materials policies, and a planned maintenance scheme.
h- Workshop facilities

The size of the terminal's workshop will depend on the type and quantity of equipment in operation, but existing port facilities will inevitably be inadequate to service such large items as straddle carriers. New workshops with overhead cranes and access platforms are needed, where equipment can be regularly maintained and a place provide to which broken down equipment can be towed.

i- Staff Training

Knowledge of petrol and diesel internal combustion engines is no longer sufficient for today's maintenance staff. They must have detailed knowledge of hydraulic, electrical and mechanical systems in order to service the advanced technology and sophistication of modern cargo handling equipment. Obviously, good training schemes for existing and new staff must be provided, either within the port's own training centre or by arrangement elsewhere.

j- Container Terminal Security

On the face of it, a sealed and well packed container, checked by customs, should be proof against pilferage and damage to goods, but insurance premiums continue to rise, indicating that such losses are still major problems for ports. In some ways the problems are more baffling than for break-bulk cargoes, as it is very difficult to point out exactly where the loss has occurred. Therefore security of containers and their contents should be of prime concern to terminal operators.

Since a container terminal is operationally self-contained, it can be completely surrounded by security fences, and entry should be rigorously restricted to authorised personnel only. The only access point is the gate
complex, and strict security checks must be routine there.

k- Administrative Systems

The prime benefit of containerisation, the rapid international transport of cargo door-to-door, without making up and breaking down the unit on the journey, is much reduced if onward movement is delayed at the seaport terminal. Customs formalities are one source of such damaging delays, and present great opportunities for streamlining.

There are several possible causes of customs delays, including problems such as shippers and importers may be late in applying for, preparing and lodging the appropriate documents and licenses, or may make errors in completing them. The fault here rests at the door of the cargo owners or their agents, of course. The customs authorities themselves often put obstacles in the way of door-to-door container operations, by insisting on item-by-item examination of the contents of a container.

Of course, customs authorities have their jobs to do, relating to the flow of goods into and out of the country, collecting the relevant taxes and duties, and preventing the illegal import and export of controlled commodities. Customs should work closely with port authorities, transport undertakings, shippers' organizations and other interested parties to revise and improve customs and clearance procedures.

Given a spirit of cooperation between senior port officials and their colleagues in the customs authority, and close collaboration between middle management in the terminal and customs officials, great improvements are possible in customs procedures and working rules.
Besides the different aspects mentioned above relating to the administrative, managerial, operational and maintenance systems of the terminal, the port of Conakry also has three possible levels to implement and develop a containerisation system in Guinea. These possible levels are: the national level, the regional level and the international level.

1- The national level

- The development of decentralised structures in shipping activities through participation of nationals in the acquisition of shares in the shipping companies.

- A full emphasis on maritime training of staff and managers as a key tool for all maritime activities related to national development.

- The development of a multimodal transport system is the backbone of containerisation in Guinea, since all problems of documentation, customs regulations, international conventions will be solved under this system.

- The activation of the railway project between Conakry-Bamako and the other neighboring countries is a real maritime opportunity for the exploitation of the new container terminal.

Therefore, the Port Authority must look at the commercial impact of this project, looking at its positive and negative aspects. How many containers are going to be handled? What is the role of the Port of Conakry is going to be? And, what will be the capacity of the Port for the reception of containers.
The Port Authority must also look at the technological side is going to be developed, the infrastructure of the system that exists, the human resources through training and education and finally international co-operation. Perhaps most importantly what Organization is going to finance the project?

The port of Conakry has faced the political liberalization of transport since 1984 and competition among shipping companies. It must be well organized, and should sell its competitiveness at all levels and particularly at the logistical level and in port promotion.

Open liner services at the cheapest cost, even if provided by the feedering services round the world have to be studied.

As worldwide networks have become the fashion, liner conferences have to redefine their own scope instead of binding all the cargo under protectionism.

The creation of national shippers' council must be reinforced in order to bring them into competition with foreign competitors.

2- The regional level

In order to develop shipping structures which could reinforce regional cooperation, the following must be created:

- the development and experience of a regional representative for each freight bureau in every port in Europe,
the development a port of transshipment which could be the cheapest for such operations in the region and analyse all aspects for the development of a feeder system,

- the setting up of a leasing center for containers,
- the development of an intra-regional market among countries,

- the regional fleet must be experiment among the leading container traffic countries in the region on a charter basis,

- the development facilities for transportation of cargo from the coastal countries to the landlocked countries by using roads, railways, and rivers, as many of the latter are navigable at a certain periods, such as the Niger and the Milo rivers.

3- The national and regional levels

Using the Niger river for container transport

Most of the Guinean rivers are navigable only for short distances. The Niger is navigable from July to November from Kouroussa to Bamako in Mali. Milo, the largest tributary of the Niger, is navigable by shallow barges as far as Kankan. Traffic is limited to poled barges and canoes on other rivers at present. The total length of inland waterways is 1,295 km (804 mi).

Therefore, there are three possibilities using the Niger river as a means of container transport from Guinea which is it source to Bamako, Niger, Benin, Nigeria where it joins the Atlantic ocean.
Long-term project

Either the Guinean Government in co-operation with the other governments in the sub-region has to take the initiative in the dredging the river; or they try to build artificial lakes like lake Volta built in Ghana (VLTC) from Tema to Buipe, and from Tema to Ouagadougou for container transport. There is also a possibility of using specialized designed barges.

Actually the port of Conakry cannot serve some West African land-locked countries like Burkina-Faso, Niger, Chad and the Central African Republic because of the long distances between Guinea and these countries and also the economic situation of Guinea. If the port of Conakry is intended to serve the other landlocked countries, it will perhaps be a long-term project.

Short term project

In my view, Bamako (Mali) is the most likely landlocked country that Conakry can serve at the moment, because of the short distance between the two countries.

Actually Bamako is mostly served by Abidjan (Ivory Coast) and Dakar (Senegal) for container transport, due to the fact that they already have railway links between their ports and Bamako, besides which they have container facilities services.

Conakry is still serving Bamako in general, but does not yet serve container transport because of the lack of good infrastructure and equipment. Plans have been drawn up with Soviet help to link Mali to the Guinean railway system a long time ago.
Now the question is, if the port of Conakry must compete with neighboring countries' ports like Abidjan, Dakar, Sierra-Leone and Liberia, the Guinean authorities together with the Port Authority, must pay attention to the investment in infrastructure in the country and specialized equipment in the port.

The authorities must try to take into consideration the aspects mentioned above i.e. using the Niger river. This perhaps costs less compared to the building of railways and roads, thus making it possible to respond to the needs of the customers from many countries in the sub-region.

3- The international level

The West African countries and UNCTAD has to establish all the regulations related to the container system in a code, and develop sets or conditions for a regional multimodal system.

International organizations have to promote industrial development, particularly for agricultural products.

In my view it would be possible and interesting to apply the land bridge concept to Africa in the future. Now the question is from where to where, and how.

For example, containerisation has encouraged the development of land bridges using high capacity railway links between ports at opposite sides of land masses for onward movement by sea. The most important railway land bridge links are the Trans-Siberian and the United States. There is also a land bridge across Canada from the Port of Halifax to
Vancouver, and another is being developed across Mexico.

The Trans-Siberian land bridge conveys containers from Europe on the Trans-Siberian route via Nakhodka and Vladivostok to Hong-Kong, Japan and South-East Asia.

The US land bridge links the US and West coast ports and is used mainly for containers moving between Europe and Japan. This route reduces the sea transit by seven days as compared with the Panama canal route.

This means that for long-term projects the African governments should think about the land bridge concept and try to apply it to Africa, in order to link Africa's East and West coast ports, especially for container transport.

The concept of a landbridge is not impossible in Africa, but before the implementation of this landbridge there must be a feasibility assessment. This is necessary since the linkage between East and West Africa is very poor, the technology is very limited and political factors are some of most burning problems and the most difficult ones.
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2 Lecture on Container Terminal Development. UNCTAD WMU,
ANNEX 1. PORT OF CONAKRY
ANNEX 3. STRIPPING OF CONTAINER IN THE TERMINAL
ANNEX 4. ACTIVITY IN THE CONTAINER TERMINAL