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Can ports contribute to the economic development of the regions they serve? : an examination of the potential, if any, of using the Kenya Ports Authority as an engine for Kenya's economic recovery and development

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WORLD MARITIME UNIVERSITY

Malmö, Sweden

CAN PORTS CONTRIBUTE TO THE ECONOMIC DEVELOPMENT OF THE REGIONS THEY SERVE? An examination of the potential if any of using the Kenya ports authority as an engine for Kenya's economic recovery and development.

By

STANLEY NDENGE CHAI

Republic of Kenya

A dissertation submitted to the World Maritime University in partial fulfilment of the requirements for the award of the degree of

MASTER OF SCIENCE

In

MARITIME AFFAIRS

(PORT MANAGEMENT)

2005

Declaration

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

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

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Abstract

This dissertation examines the role of a port in the economic development of a country. It looks at the historical development of ports and sea trade, the contribution of ports and shipping to human civilization. The adaptation of ports to changing needs of sea trade and global commerce.

The dissertation looks at the deliberate policy initiatives, and administrative changes that have evolved over the years. The methods that ports specialists have employed to influence policy decisions and investments in ports.

It looks at the Kenyan economy, the sectorial contribution to GDP with emphasis on the Kenya Ports Authority and the maritime sector. The dissertation looks in detail at the Kenya Ports Authority, its present position, its strength, weakness, and its potential to contribute to the economic development of Kenya.

The dissertation finally proposes policy changes to the port and maritime sector, and investments required based on an analysis of forecasted growth of the region the port serves.

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ABBREVIATIONS

| | |
|-------|---|
| AGOA | African growth opportunity Act |
| AV | Added Value |
| BC | Before Christ |
| BOT | Build Operate and Transfer |
| CFS | Container freight station |
| CIF | Cost insurance and freight |
| DRC | Democratic republic of Congo |
| EDI | Electronic Data Interchange |
| EPZ | Export processing zone |
| EPZA | Export processing zone authority |
| ESCAP | Economic and social commission for Asia and the Pacific |
| FLT | Fork Lift truck |
| FIPA | Foreign Investment Protection Act |
| GDP | Gross Domestic Product |
| G8 | Eight most Industrialised countries |
| IPC | Investment Promotion Centre |
| IPS | Industrial Promotion Services |
| IT | Information Technology |
| KM | Kilo metre |

| | |
|--------|--|
| KPA | Kenya Ports Authority |
| KPC | Kenya Pipe Line Corporation |
| MCT | Mombasa Container Terminal |
| MFA | Multi-Fibre Agreement |
| MUB | Manufacturing Under Bond |
| RMG | Rail Mounted Gantry crane |
| ROT | Rehabilitate Operate and Transfer |
| RTG | Rubber tired Gantry crane |
| PI | Productivity Index |
| SNA | System of National Accounts |
| SSG | Ship to shore gantry crane |
| SWOT | Strength, weaknesses, opportunities and threats |
| TEU | Twenty foot equivalent Unit |
| UK | United Kingdom |
| UNCTAD | United Nations conference on trade and development |
| USA | United States of America |
| VAT | Value Added Tax |
| VDS | Vessel delay surcharge |

INTRODUCTION

Background

Seaports are such an integral part of international seaborne trade that, any mention of ports conjures images of wealth, high earning jobs and economic development of the regions they are situated. Yet the reality is that, some ports such as those of Rotterdam, Singapore, Hong Kong are more successful in this respect than the ports of Mombasa and Dar es Salaam

Ports regions seem always to have been at an advantage when compared with those regions which are not situated by the sea or on rivers and the former have always been characterized by a relatively high standard of living which has also been reflected in their cultural achievements (Vleugels, 1969, p.239).

According to the Economic and Social Commission for Asia and the Pacific (ESCAP) the Netherlands has been able to sustain a relatively high economic growth rate because of the Port of Rotterdam, in spite of the intensely competitive environment in the Europe. (ESCAP, 2002, p.1) .The success of Singapore is attributed to the Port of Singapore which has successfully been able to attract foreign firms, in manufacture/assembly and has developed a transport logistic centre (ESCAP, 2002, p.2)

If this is true, how is it that, the regions served by the port of Mombasa are the second to last poorest region in Kenya? According to the Kenyan Economic Survey 2004, the poverty gap index in the coast province ranges from 9.5 percent in Bura in Tana River district to 38.1 percent in Ganze constituency in Kilifi district. In essence it implies that the residents of Ganze constituency are on average 38 percent below the absolute poverty line.(Kenya Economic Survey 2004, p.197).

Even taking the argument further to include the entire sub-Saharan Africa, Kenya with a seaport is not substantially richer than its landlocked neighbours. The question one is compelled to ask is, why is this the case?

Scope of Study

The scope of this study is not to reinvent the wheel, but rather to explore the history of port management and policy in the big picture of economic development, by examining the best practices in this respect and try to relate them to the Kenyan situation. The study looks at the impact of changes in trade pattern on ports, the way ports have adapted to these changes, and the main methods that have been used to try to influence governments and policy makers to invest in ports developments. The study looks at the weaknesses and strength of the Kenyan economy, and the key concerns of the manufacturing sector which is the key sector for the Kenya's economic recovery and development. The study also looks at the strength and weaknesses of the port of Mombasa, identifies the key issues that may be the main bottle neck to smooth flow of goods. In Chapter Five, the strength and weaknesses of the economy and the port is merged and a way forward presented. Finally in Chapter Six, conclusions and recommendations are presented.

Methodology of Study

The following methodology will be used in writing this dissertation.

- Lectures delivered by WMU professors and visiting professors
- Sources of information and observations gathered during field trips.
- Material from the WMU library.
- The Kenya Economic survey 2004.
- Kenya Ports Authority
- Information and statistics gathered from various companies and institutions
- The World Bank port tool kit.

-UNCTAD & ESCAP publications.

-Periodicals, magazines and newspapers.

Problems encountered

The biggest problem encountered was to get funds to buy data from principle sources. Most of the data from the Central Bureau of Statistics and the Kenya Economy Survey had to be purchased at considerable cost to the author. Effort had to be made to borrow money for the purchase and airlifting of the same to Malmö. Personal financial sacrifices had to be made to make the data available on time to write this dissertation.

1 CHAPTER ONE

THE INFLUENCE OF PORTS IN ECONOMIC DEVELOPMENT

1.1 Introduction

This chapter will look at the historical influence of sea trade and ports to economic development and development of early civilization and cities. It will progress to the definition of ports as seen by various interest groups, and the influence of trade over the years to port development.

1.2 Historical perspective

When looking at the history of Seaports and their influence on creating wealth to the regions they are situated, it is necessary to look at the history of sea trade. Ports like shipping which are complimentary to each other are the mother of seaborne trade. The history of sea trade can be traced to the valley situated between the rivers Euphrates and Tigris, where early civilization is reputed to have taken place in the year before 4000 BC.

Martin Stopford in his book *Maritime Economics* argues that economic wealth of different regions are the product of centuries of economic evolution in which merchant shipping, ports have played a major part.

The earliest known illustration of a ship is a river craft drawn on the walls of an Egyptian tomb built about 3100 BC. Over the next thousand years there is fragmentary evidence of developing coastal trade in the Arabian Gulf and the East Mediterranean. At the time there were three civilizations located in the valleys of the river Nile (Egypt), the Tigris and Euphrates rivers (Mesopotamia) and the Indus River (Harapa). Each river system probably had a population of

about three quarters of a million ... These areas were linked by land , but sheltered coastal sea routes provided an environment in which maritime trade could develop.(Stopford, 1997,p.255).

Martin Stopford shows in his westline theory, the growth and economic prosperity of many cities of the world, courtesy of shipping and ports. These include most of the prosperous regions of the world, from Lebanon, Greece, Italy (Rome), Spain, The Netherlands, North America, Japan and Korea. The most remarkable insight is that, even a country like Lebanon, with a poor arid hinterland, could prosper due to the sea trade.

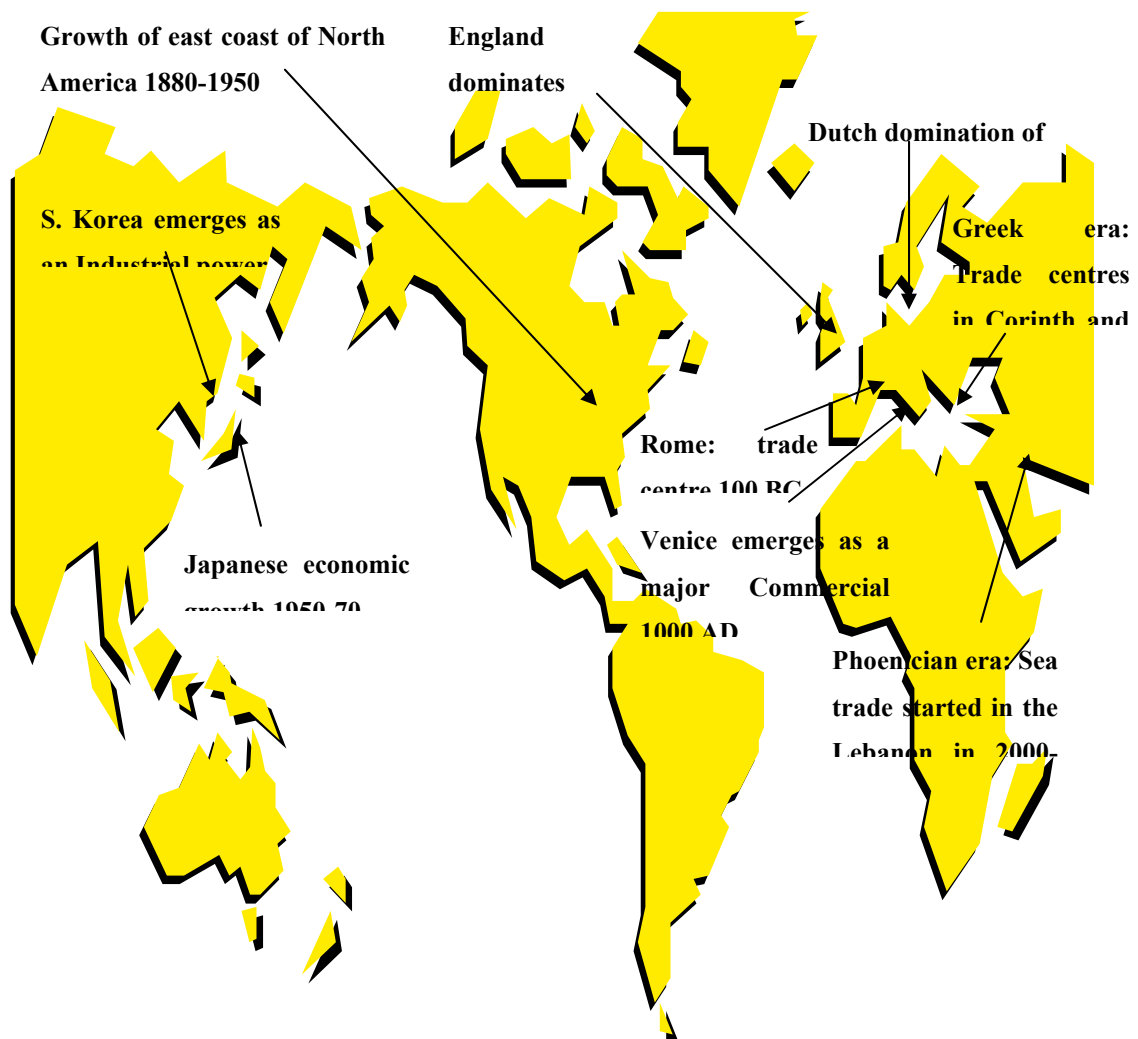


Figure 1: Regions that developed due to sea trade and therefore ports

Source: Adopted from Martin Stopford, 1997

1.3 The need for trade

Perhaps, the significance of a seaport and shipping to economic development will be appreciated if the need for trade is understood.

The need for trade arises from the global and regional unequal distribution of natural resources. This difference necessitates exchange and hence the movement of goods

from one place to the other and sometimes across oceans. The difference in resources is the biggest driving force for trade (Ma, 2005, p.6).

These productive resources are called factors of productions. (Ma, 2005, p.6.)

- Land (differences in climate, resources, location, availability, cost)
- Labour (differences in costs, habits/attitudes, regulations...)
- Capital (differences in availability, quantity and cost...)
- Technology (differences in production and management know-how, marketing...)

The exchange of goods is further augmented by the attitude of the players involved. Generally the believers of the theories of trade such as, absolute advantage and comparative advantage, postulate that trade has a mutual benefit to all the players involved. It is important to note that, the “Mutual benefit” to trade school of thought is the driving force of the modern day development of trade and hence increased importance of seaports and shipping.

1.4 Seaports and Shipping as catalyst of economic development

The importance of seaports and shipping in this scheme of things is the ability of shipping to provide cheap and fast transport of the goods produced and exchanged, and seaports to facilitate that transfer of the goods from sea to land. In his book Wealth of nations, Adam Smith saw shipping “as the source of cheap transport which can open up wider markets to specialization” (as cited in Stopford, 200, p.3) Adam Smith saw shipping as a catalyst of economic development. At Chapter three of his book wealth of nations Smith states:

As by means of water carriage a more extensive market is opened to every sort of industry than what land carriage alone can afford it, so

it is upon the sea –coast, and along navigable rivers, that industry of every kind naturally begins to subdivide and improve itself, and it is frequently not until a long time after that those improvements extend themselves to the inland parts of the country...a broad wheeled wagon attended by two men and drawn by eight horses in about six weeks time carries and brings back to London and Edinburgh nearly 4 tons weight of goods. In about the same time a ship navigated by six or eight men, and sailing between the ports of London and Leith, frequently carries and brings back 200 tons weight of goods. Since such, therefore, are the advantages of water carriage, it is natural that the first improvements of art and industry should be made where this conveniency opens the whole world for the produce of every sort of labour (Smith, 1976, p.22, as cited in Stopford, 1997, p.39)

This early observation of Adam Smith is vindicated today by the fact that, shipping carries almost 90% of the world trade by volume (Ma, 2005, p.11), and more and more countries prosperity is maritime dependent. This has been achieved by advancement in transport and information technology, massive inland infrastructure and advancement in port handling equipment to cope with these new developments.

Table 1 shows a list of selected maritime countries and their level of maritime dependence.

Table 1: Maritime Dependence of Selected Countries (MDF)

| No. | Countries | MDF | No. | Countries | MDF |
|-----|--------------------|-----|-----|----------------------|-----|
| 1 | Malaysia | 74% | 16 | Kenya | 15% |
| 2 | Norway | 54% | 17 | Mexico | 15% |
| 3 | Saudi Arabia | 43% | 18 | Indonesia | 13% |
| 4 | Korea, Republic of | 32% | 19 | South Africa | 12% |
| 5 | Thailand | 26% | 20 | Poland | 11% |
| 6 | Australia | 25% | 21 | Ghana | 11% |
| 7 | Japan | 20% | 22 | United States | 11% |
| 8 | Philippines | 20% | 23 | China | 10% |
| 9 | Chile | 19% | 24 | Iran ,Islamic Rep.of | 9% |
| 10 | Nigeria | 19% | 25 | Colombia | 8% |
| 11 | Viet Nam | 18% | 26 | Argentina | 7% |
| 12 | Extra-EU trade | 17% | 27 | Brazil | 7% |
| 13 | Algeria | 17% | 28 | Pakistan | 6% |
| 14 | Morocco | 16% | 29 | Bangladesh | 5% |
| 15 | Turkey | 15% | 30 | India | 4% |

Source: Ma Shuo (2004) based on IMF and World Bank Data

The maritime dependence of a country is calculated by taking the value of the country's seaborne trade divided by GDP and multiplied by 100%. It is important to note from the table above that the list although not exhaustive, includes some of the most developed countries of the world.

1.5 The nature and evolution of Maritime transport

It has been stated earlier that, the strength of maritime transport is in its ability to transport cargo cheaply and fast. The unit cost of transporting a parcel of cargo through maritime transport is reputed to be the lowest. This is because of the economies of scale derived from the ability to carry large quantities of cargo over long distances and in the same voyage. Over the last 50 year or so, technological innovations has resulted to the average size of all various types of ships to tremendously increase, cargo unitized, and specialized ship types developed. These developments in ships went hand in hand with increased development of seaports and faster cargo handling facilities in ports. According to Martin Stopford, this development has enabled the shipping industry to almost keep the cost of transport constant over the years compared to other modes of transport such as air, road or rail.

Because of low transport costs, the demand for maritime transport has been tremendous. This can be shown by the various kinds and volumes of commodities transported. According to UNCTAD, the total world seaborne trade in terms of cargo loaded in 2003 was 6,168 million tones of which 2,203 was liquid cargo, 1475 million tones were the major bulks (iron ore, grain,coal,bauxite,phosphates) and the remaining 2,490 were minor bulks.

Table 2: Development of seaborne trade selected years (Goods loaded 2003)

| Year | Tanker cargo | | Dry cargo | | | | Total (all goods) | |
|------|-----------------|-------------|-----------------|-------------|--|-------------|----------------------|-------------|
| | Million tons | % change | million tons | % Change | of which: main bulk commodities million tons | % change | million tons | % change |
| 1970 | 1,442 | | 1,124 | | 448 | | 2,566 | |
| 1980 | 1,871 | | 1,833 | | 796 | | 3,704 | |
| 1990 | 1,755 | | 2,253 | | 968 | 2.2 | 4,008 | |
| 1999 | 2,068 | -0.6 | 3,604 | 1.9 | 1,196 | 7.7 | 5,672 | 1 |
| 2000 | 2,163 | 4.6 | 3,709 | 2.9 | 1,288 | 3.3 | 5,872 | 3.5 |
| 2001 | 2,174 | 0.5 | 3,717 | 0.2 | 1,331 | 1.6 | 5,891 | 0.3 |
| 2002 | 2,129 | -2.1 | 3,819 | 2.8 | 1,352 | | 5,948 | 1 |
| 2003 | 2,203 | 3.4 | 3,965 | 3.8 | 1,475 | 9.1 | 6,168 | 3.7 |

Source: UNCTAD: Estimated by the UNCTAD secretariat on the basis of annexes II and data supplied by specialized sources.

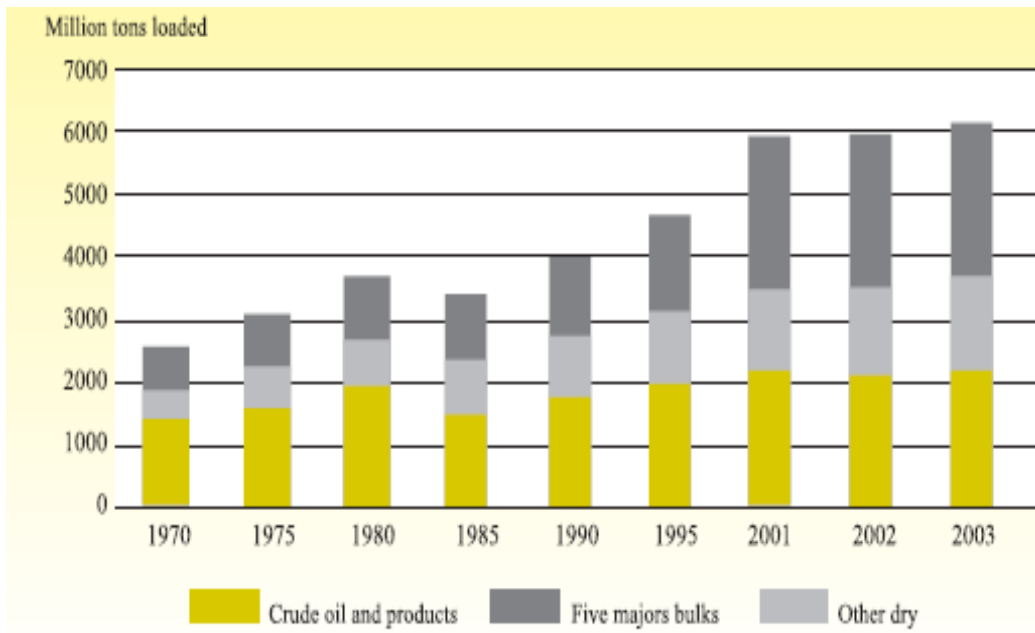


Figure 2: International seaborne trade for selected years

Source: UNCTAD.(2004): Review of maritime Transport, various sources

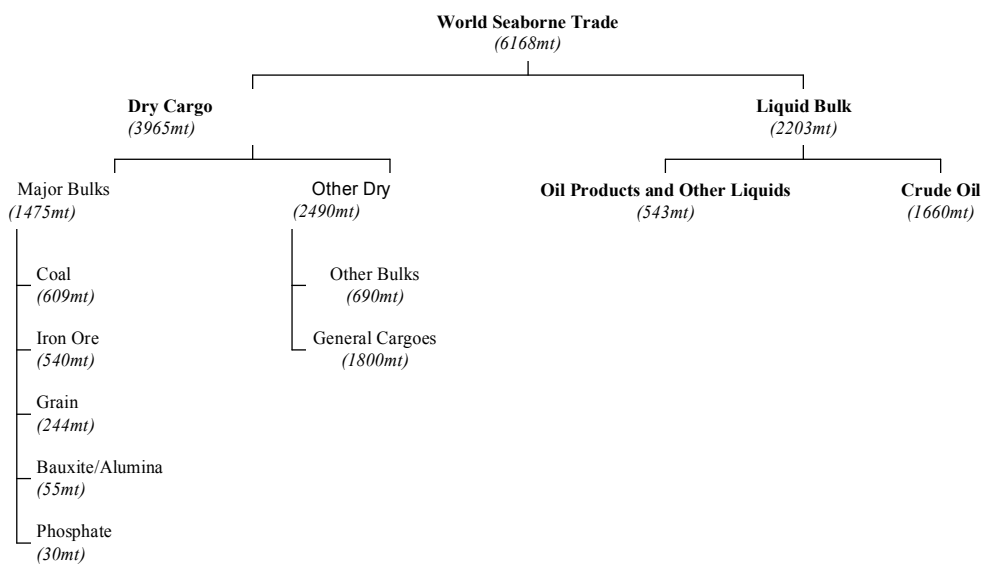


Figure 3: Structure of World seaborne trade (With traffic figures of 2003)

Source: Ma Shuo WMU- 2005. Maritime Economics.

The evolution and growth of the maritime demand and structure of the same is of profound importance to seaports and shipping. It does dictate the kind of ships to be employed and the kind of cargo handling facilities to be employed in ports. The ability of ports to attract business depends to a large extent on the kind of facilities they have to handle various kinds of the cargoes traded in the routes served by the particular port.

Having seen the historical aspect of the seaborne trade, and its growth over the years, it is important now to look at what is a seaport, its peculiar characteristics in seaborne trade and the major influences affecting its development.

1.6 Definition of a Seaport

Authors have defined a port differently. Martin Stopford in his book *Maritime economics* defines a port as

a geographical area where ships are brought alongside land to load and discharge cargo, usually a sheltered deep-water area such as a bay or river mouth (Stopford, 1997, p29).

He sees the concept of a port in three dimensions. As a port proper, as a port authority being the organization responsible for providing the various maritime services required to bring ships alongside, and as a terminal being a section of the large port consisting of one or more berth and dedicated to a particular type of cargo.

Taylor in his book 'Seaports', defines sea ports as places to which ships resort to load and discharge cargoes...a point of transfer between sea and land (Talyor, 1974, p.3). He goes on to observe that while it s largely true today, it is however an over simplification. He sees a seaport as a competitive industry, competing against each other within a commercial and financial environment.

Vleugels, defines the ports as “a collection of arrangements made to link land transport with water (sea) transport” (Vleugels, 1969, p.240)

Alderton defines seaports

as areas where there are facilities for berthing or anchoring ships and where there is equipment for the transfer of goods from ship to shore or ship to ship (Alderton, 1999, p.2).

Alderton goes further however to define the seaport in terms of Operations, Function/geographical and legal.

Operational definition of seaport

Port. A town with a harbour and facilities for a ship/shore interface and customs facilities

Harbour. A shelter, either natural or artificial, for ships.

Dock: an artificially constructed shelter for shipping

Legal definition

Port means an area which ships are loaded with and/or discharged of cargo and includes the usual places where ships wait for their turn or are ordered or obliged to wait for their turn no matter the distance from the sea (Alderton, 1999, p.9)

One common feature that all these port experts seem to agree is that the port is a point of transport modal transfer from sea to land or land to sea, or sea to sea in the case of transshipment. Even in the case of transshipment, the containers almost always touch the key apron on land before they are loaded again to the ship, leading

to the common phrase one ship move equal two yard moves in transshipment operations.

Yet depending on the size of the port, types of cargo handled, etc, each port will have its own types of equipment to cater for the type of trade it handles. While the definitions have concentrated on the traditional functions of the port, that of transfer of cargo from one mode to the other, a close examination of a port reveals a complex organization, with many vested interests from many parties. The fact that ships carry huge loads means that there is need for storage to reduce the lots size to be carried by the other smaller modes of transport. Because of the need to store and distribute, ports have taken a large than life profile. Patrick Alderton summaries the importance of a port as follows.

- The main transport link with trading patterns and thus a focal point for rail and motorways
- A major economic multiplier for the nation's prosperity. because they attract commercial infrastructure in the form of banks, agencies as well as industrial activities
- Where most delays take place...
- Where most repairs are carried out
- Where most costs are incurred
- Where customs and government policies are implemented.

It is not automatic that a port will attract the kind of business it desires. Changing trade patterns, the demands by shipping lines, competition from other ports for cargo, and the need to stimulate economic development by reducing transport costs, has meant that ports have to adapt to the changing environment. Ports therefore are essential adaptive entities. Before looking at the evolution of the ports over the years, the main facilities and services provided by a port should be looked at.

Table 3: Main Facilities and Services provided by a Port

| Services and facilities for Ships | Services and facilities for cargo |
|---|---|
| Arrival and departure | Basic |
| Navigation aids and vts | Cargo handling on ship and quay |
| Approach channel | Transport to/from storage |
| Pilotage, tags and mooring gangs | Storage /warehousing |
| Locks if (tidal) | Tallying,marking,weighing,surveying |
| Berths | Surveillance,protection,sanitary measures |
| Administrative formalities | Dangerous cargo section |
| Police, immigration, customs, health | Customs and documentary control |
| Supplies,water,bunkers | Receiving and delivery. |
| Telephone, repairs, medical, waste disposal | Receiving and delivery |
| Port state control | Additional “added value “ services |
| Cargo transfer | Cleaning and preparing cargo |
| Opening /closing of hatches | Setting up a logistic network |
| Breaking out/stowing | Setting up a marking package |

Source: Patrick Alderton. 1999. *Port management and operations*

The responsibility of who provides the above mentioned services depends on the ownership structure of the port. From the beginning most ports were state owned. With increased innovation in ships, unitization of cargo and automatic cargo handling equipment, information technology, (EDI, IT), ports needed to invest to

match these developments. The ports were public utilities, meaning that they were more concerned with satisfying social net benefits than profit maximization (Jansson & Shneerson, 1982, p.3). An investment in port facilities is normally a long term undertaking with a time horizon of between 10-25years. The costs are enormous and mainly sunk costs. Governments could not easily come up with funds to invest in ports, because of scarcity of funds, and competition with other public sectors for the scarce resources. Privatization of port services was also fiercely resisted by trade unions because of the fear of labour loses (World Bank port toolkit, module 3, p.5).

The result was ports investments grossly mismatched with maritime trade requirements. This was evident in the periods of early rapid trade development, with examples of average ships waiting time in Lagos Nigeria of 240 days in 1975 (Jansson et al, 1982, p3). The port had become a serious bottle neck to the smooth flow of goods. Private participation was therefore inevitable, and though still not fully adopted in some regions, it is certainly the way forward. Like in ships, there are now port generations.

1.6.1 Port evolution

Depending on the stage of development of a port, it can either be a first generation, second, third or even fourth generation port. Alderton summaries the differences in port evolution as shown in Table 4.

Table 4: Port evolution

| | First Generation | Second Generation | Third Generation |
|---|--|--|--|
| Period of development | Before 1960s | After 1960s | After 1980s |
| Main cargo | Break-bulk(bb) | bb and drybulk, liquid bulk | Bulk and unitized, containerized cargo |
| Attitude and strategy on port development | Conservative Changing point of transport mode | Expansionist. Transport, industrial and commercial center | Commercial. Intergrated transport node and logistic center. |
| Scope of activities | (1)Ship/shore cargo interface | 1) + (2) + cargo transformation. Industrial activities | (1) + (2) + cargo and information distribution. Full logistic potential |
| Organization characteristics | Independent activities, Information relationships | Closer relations between port and user. Loose relations in port activities. Casual relations between port and municipality | United and integrated relationships |
| Production characteristics | Cargo flow. Low value added | Cargo flow and transformation. Combined services improved value added | Cargo/information flow and distribution. Multiple service package. High value added. |
| Decisive factors | Labour/capital | Capital | Technology/know how |

Source: Alderton 1999: Summary differences in port evolution.

As explained earlier, this evolution went hand in hand with changes in the ownership and administration of ports. There are today many models of ports ownership in the world, but four prominent ones stand out.

According to the World Bank port tool kit (module3), the differences in these ownership regimes are evident on whether or not services provided are by public or private organization, whether they have regional, national or global orientation, ownership of infrastructure including port land, ownership of superstructure especially the ship to shore gantry cranes and yard handling equipments, and finally who employs the dock labour. Below is a summary of the models as presented by the World Bank port toolkit.

Table 5: Basic Port Management models

| Type | Infrastructure | Superstructure | Port Labor | Other Functions |
|-----------------------------|----------------|----------------|----------------|-------------------------|
| Public Service Port | Public | public | Public | Majority Public |
| Tool Port | Public | public | private | Public/Private |
| Landlord Port | Public | private | private | Public/Private |
| Private Service Port | private | private | private | Majority Private |

Source: World Bank port toolkit, Module 3

Public service port, are those that are either owned by the state, regional authority, or municipality. Most of the ports in developing countries, including the port of Mombassa fall in this category.

Tool port, where the government owns the infrastructure and superstructure, but operation of the same is leased out to private operators employing private labour force.

Landlord port. Government owns infrastructure and superstructure and labour private. Such as the port of Rotterdam in the Netherlands.

Private ports, ownership and control of waterways may be government, though with some variations. Land, infrastructure and superstructure and dock labor all privately owned. Examples are most of the ports in the United Kingdom.

The ownership structure is of immense importance because it has a bearing on the efficient management of the ports, the management policy it employs, its ability to quickly adapt to customer demands and attraction of much need private investments.

These types of port management models are subject of much debate as to which among them is the best. It is important therefore to look at the merits and demerits of each. Table 5 is a summary of the strength and weakness of these port management models as summarized by the World Bank Port tool kit module 3.

Table 6: Strong and Weak Points of Port Management Models

| | |
|-------------------------------|--|
| Public Service port: | |
| Strength: | Superstructure development and cargo handling operations are the responsibility of the same organization (unity of command). |
| Weakness: | There is no or only a limited role for the private sector in cargo handling operations There is less problem-solving capability and flexibility in case of labor problems, since the port administration also is the major employer of port labor There is lack of internal competition, leading to inefficiency Wasteful use of resources and under-investment as a result of government interference and dependence on government budget. Operations are not user-oriented or market-oriented Lack of innovation. |
| Tool Port: | |
| Strength: | Investments in port infrastructure and equipment (in particular ship/shore equipment) are decided and provided by the public sector, thus avoiding duplication of facilities. |
| Weakness: | The Port Administration and private enterprise jointly share the cargo handling services (split operation), leading to conflicting situations. Because the private operators do not own major equipment, they tend to function as labor pools and do not develop into firms with strong balance sheets. This causes instability and limits its future expansion of their companies. Risk of under-investment. Lack of innovation. |
| Landlord Port: | |
| Strength: | A single entity (the private sector) executes cargo-handling operations and owns and operates cargo-handling equipment. The terminal operators are more loyal to the port and more likely to make needed investments as a consequence of their long-term contracts. Private terminal handling companies generally are better able to cope with market requirements. |
| Weakness: | Risk of over-capacity as a result of pressure from various private operators. Risk of misjudging the proper timing of capacity additions. |
| Fully Privatized Port: | |
| Strength: | Maximum flexibility with respect to investments and port operations. No direct government interference. Ownership of port land enables market oriented port development and tariff policies. In case of redevelopment, private operator probably realizes a high price for the sale of port land. The often strategic location of port land may enable the private operator to broaden its scope of activities. |
| Weakness: | Government may need to create a Port Regulator to control monopolistic behavior. The Government (be it national, regional or local) loses its ability to execute a long term economic development policy with respect to the port business. In case the necessity arises to re-develop the port area, Government has to spend considerable amounts of money to buy back the port land. There is a serious risk of speculation with port land by private owners. |

Source: Worldbank Port tool kit module 3

1.6.2 Technological impact on port evolution

For a port to contribute to economic development it has to meet the changing demands of trade.

Ports have been described by the World Bank as adaptive entities. Meaning ports have to adapt to changes in trade and trade patterns, innovations in ships and ship types, cargo carrying and handling equipment etc.

Innovations in production of goods have had a profound impact on ports because of the need to move more volumes. Maritime demand has largely followed the growth in world total trade, such that when trade is up maritime demand is up and vice versa. (Ma, 2005, p.17). There is a clear correlation between the world production growth and maritime demand

Various forecasts suggest that world production is expected to grow by 3% a year in the next decade and maritime demand is expected to follow the same pattern. (Ma, 2005, p.17)

The first impact on ports is on the vessels calling in ports. Over the years there has been tremendous increase in types and size of ship fleet and vessel sizes. The biggest shipping fleet and probably the oldest in age is the tanker fleet.

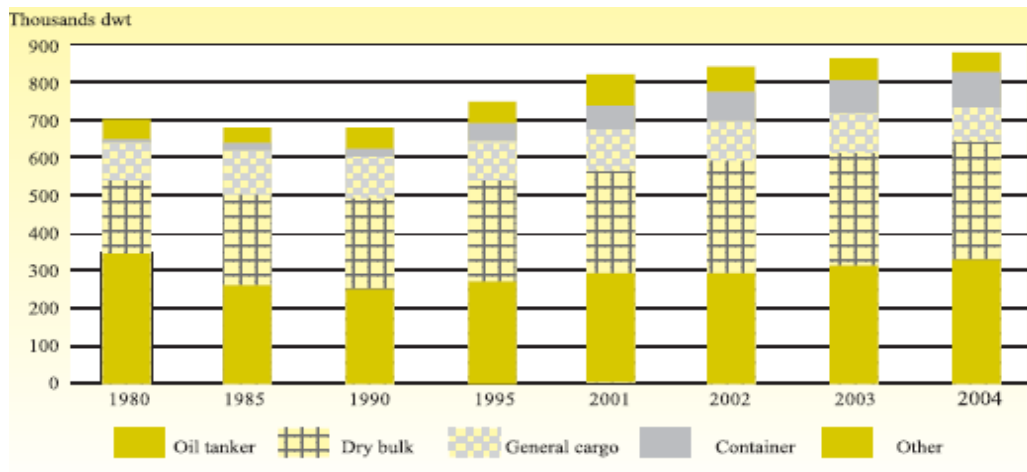


Figure 4: World fleet by principle types of vessels, selected years.

Source: UNCTAD. (2004). Review of maritime Transport, various sources

While the tanker fleet is considerably big, its overall individual ship size has also been increasingly significant. Ports have had to adapt to meet this changes in tankers, in terms of their specialty, cargo handling and draft requirements.

Table 7: Typical Tank dimensions in feet

| Deadweight tonnage | Length(feet) | Draft laden (feet) | Crude unloading rates (tons per hour) |
|--------------------|--------------|-----------------------|--|
| 32,000 | 650 | 35.5 | 3,000 |
| 75,000 | 820 | 43 | 6,000 |
| 106,000 | 930 | 50 | 9,000 |
| 217,000 | 1,075 | 63 | 12-15,000 |
| 326,000 | 1,135 | 81 | 15-18,000 |
| 471,000 | 1,245 | 93 | 20-30,000 |

Source: Jan Hock-wmu.2005. Oil terminal operations

Table 8: Average size of Tanker 1900 – 97

| Year | Size in (dwt) | Name & year of pioneer ship |
|-----------|---------------------|-----------------------------|
| 1900-1911 | 12,500 | Narraganset (1903) |
| 1911-1922 | 17,000 | SS Cadillac (1917) |
| 1922-1933 | 12,201 | British Fidelity (1938) |
| 1933-1944 | 16,467 | Esso Birmingham (1943) |
| 1944-1953 | 29,467 | SS Veluntina (1950) |
| | 45,000 | Tina Onassis (1953) |
| 1953-1964 | 122,867 | Universal Apollo (1959) |
| 1964-1975 | 206,106 | Idemitsu Maru (1966) |
| | 326,585 | Universal Ireland (1968) |
| 1975-1986 | 546,265 | Pierre Guillaumat (1977) |
| | 555,843 | Sea wise Giant (1980) |
| 1986-1997 | Averaged 300,000 | |

Source: Compiled by Martin Stopford from various sources.

The dramatic increase in size of tankers, though initially triggered by the closure of the Suez Canal in 1956, was given a boost by the increase in trade with Japan and the need to reduce ships unit cost. Increased “ship size had the effect of reducing unit shipping costs by at least 75 percent” (Stopford, 1997, p.23). While costs were reducing in shipping, ports on the other hand had to invest heavily to meet the requirements of these giant tankers. Investments required are in the form of dedicated

terminals, specialist's cargo handling facilities, Storage facilities and dredging to maintain the appropriate draft. These investments are not flexible and in the most they represent sunk costs, hence needing a lot of planning before investing.

Table 9 shows the generational classification of tankers and dimensions in meters.

Tanker sizes.

Table 9: Tanker generations and dimensions

| | | | | |
|-----------------------|-------|------|------|--|
| Coastal Tanker | 205 m | 29 m | 16 m | Less than 50,000 deadweight tons, mainly used for transportation of refined products (gasoline, gas oil,...). |
| Aframax | 245 m | 34 m | 20 m | Approximately 80,000 deadweight tons. |
| Suez-Max | 285 m | 45 m | 23 m | Between 125,000 and 180,000 deadweight tons, originally the maximum capacity of the Suez Canal. |
| VLCC | 350 m | 55 m | 28 m | Very Large Crude Carrier. Up to around 300,000 deadweight tons of crude oil. |
| ULCC | 415 m | 63 m | 35 m | Ultra Large Crude Carrier. Capacity exceeding 300,000 deadweight tons. The largest tankers ever built have a deadweight of over 550,000 deadweight tons. |

Source : www.people.hofstra.edu/geotrans/eng/ch5en/appl5en/tankers.html

The other significant category is the bulk carriers. According to MAN B & W, bulk carriers are the third largest in the ships trading fleet. Like the tankers, sizes have increased considerably over the years with the biggest bulker carrier being the Berge Stahl built in 1986 with 365,000 dwt., length overall 343m, breadth 63.5m and speed of 13.5knots.

These ships are mainly built to carry non packed commodities in bulk such as coal, iron ore, grain etc. They have profound impacts on port development in terms of the facilities required to handle them. Almost all bulk commodities are handled in dedicated terminals, use special mechanized cargo loading and unloading systems, large storage areas, and deep water draft.

Table 10 shows a summary of the different sizes of bulk carriers.

Table 10: Bulk Carriers classes and sizes

| Bulk carrier type | Dimensions | ship size(scantling) |
|--|---|------------------------------|
| Small Overall ship length up to | approx 115m | up to 10,000 dwt |
| Handy size Scantling draught up to | approx 10 m | 10,000 - 35 000 dwt |
| Handymax Overall ship length up to | Max 190 m | 35,000 - 55,000 dwt |
| Panamax Ship breadth equal to Overall ship length up to Draught up to | max 32.2 /32.3m 225 m - 289.6 m 12.04 m | 60,000 - 80,000 dwt |
| Capsize Breadth | appr. 43-45 m | 80,000- 200,000 dwt |
| VLBC-Very large bulk carrier Overall ship length up to | above 300 m | more than 200,000 dwt |

Source: www.manbw.com/files/news/files/4538/p9056.pdf

The third most important category is the container ships, probably the most important innovation of the 20th century. According to Maersk Sealand, the world demand of container transport has grown 8.7% on average over the last 20 years. In the same period, supply has grown on average 11.7 % p.a. (Hansen, 2005, p.25).

Containerization has had and is still having a tremendous impact on ports. This is because of the need to provide special facilities in terms of container berth and container handling equipment. Investment in container facilities in ports is not only expensive, but also long term and in most cases subject to rapid change. Port entry channels and berths have to be dredged to accommodate the increasing size of container ships. The container quay needs to be strong to withstand the heavy weights of the quay container cranes and other container handling equipment. The same goes for the container stacking yards.

Table 11: Container ship Generations

| | Period | Size in TEUs | Length (M) | Draft (M) |
|-------------------|-----------|--------------|------------|-----------|
| First Generation | 1956-1970 | 500-800 | 135-200 | < 9 |
| Second generation | 1970-1980 | 1,000-2,500 | 215 | 10 |
| Third generation | 1980-1988 | 3000-4000 | 250-290 | 11-12 m |
| Fourth generation | 1988-2000 | 4,000-5,000 | 275-305 | 11-13m |
| Fifth Generation | 2000-2004 | 5000-8000 | 335 | 13-14 |
| Sixth generation | 2005-? | over 8000 | 400-470 | 14.6-15.7 |

Source: <http://www.manbw.com/files/news/files/4672/P9028.pdf> and other sources.

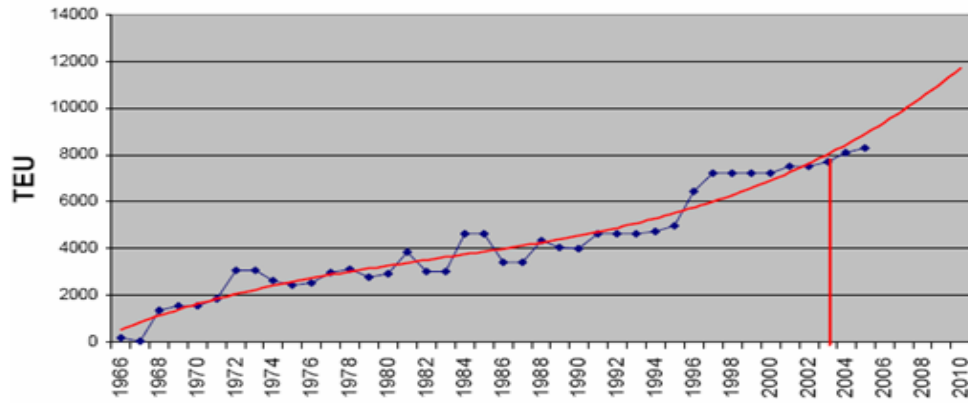


Figure 5: Maximum ship size by year of build

source: http://www.lr.org/image_library/articles/ulcs_table1.jpg

The growths in size of the container ships have gone hand in hand with the increased size of the ship to shore container gantry cranes (SSGs) as shown in Table 12. Ports have to invest in these facilities.

Table 12: Ship to Shore Gantry crane (SSG) Population

| Crane description | Operating at end 2003 | Due for delivery in 2004-05 |
|---------------------|--------------------------|--------------------------------|
| Panamax | | |
| Outreach below 44m | 1855 | 70 |
| Post-Panamax | | |
| Outreach 44-48 M | 578 | 32 |
| Outreach 48-52 M | 391 | 51 |
| Outreach 52-56 M | 202 | 36 |
| Outreach 56-60 M | 60 | 31 |
| Outreach 60-62 M | 99 | 52 |
| Outreach 62-64 M | 66 | 34 |
| Outreach 64-66 M | 46 | 78 |
| Outreach Over 66 M | 6 | 34 |
| Grand total | 3303 | 418 |

Source: Andrew Foxcroft data

Note: outreach is measured from seaward rail.

The more advanced and big they become the more expensive they are. Ports are spending a lot of financial resources to buy these equipments. A typical Post Panamax gantry crane weighing 980 tonnes with outreach waterside of 46m, back reach 15.2 m and lifting capacity 40.6 tonnes has a price tag of 6-7 million dollars. A super –Post-Panamax-gantry (type CTA) weighing 1,800

tonnes, with waterside outreach of 61m and back reach 16.5m, and lifting capacity 57 tonnes with double trolley and lashing platform with twin lift has a price tag of approximately 20 million dollars. (Biescke, 2005, p.3).

Table 13: Types, costs and characteristics of Container yard handling

| Type | Annual | <u>Traffic</u> | Investment | Life | Operating |
|---------|---------|----------------|------------|------|-----------|
| | Moves | | Million \$ | | costs |
| RMG | 120,000 | 40,000 | 2.2-2.5 | 25 | 350,000 |
| RTG | 65,000 | 20,000 | 0.75-0.90 | 15 | 250,000 |
| S/K | 32,500 | 13,000 | 0.75 | 8 | 240,000 |
| FLT | 21,000 | 7,000 | 0.4 | 8 | 210,000 |
| Tractor | 16,000 | 8,000 | 0.075 | 10 | 130,000 |

Source: Gary et al Unctad-wmu-2005.

The equipment is not only expensive to buy; it also incurs high operating costs per year. International seaborne trade is increasingly being containerized and ports will have to invest more in this facilities and equipments. The growth of nominal container fleet is projected to grow even by a faster pace than it is presently. This is related to the projected container traffic demand in future.

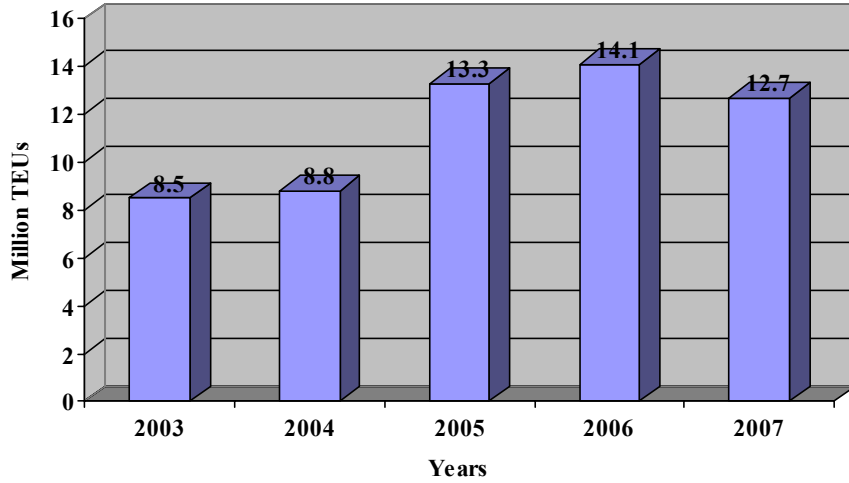


Figure 6: Supply outlook-Nominal capacity

Source: Maersk Sealand, 2005.

Even in the less containerized regions of Sub-Saharan Africa, containerization is projected to increase by a phenomenal 122% by 2015. (see Table 14)

Table 14: Container throughput forecast (Million TEU)

| Region | 2004 | 2010 | 2015 | % |
|---------------------|-------------|-----------|-----------|------------|
| Mid-east /India | 23.6 | 39 | 58 | 146 |
| Sub-Saharan Africa | 6.3 | 10 | 14 | 122 |
| Australasia/Oceania | 6.9 | 10 | 13 | 88 |
| Total | 36.8 | 59 | 85 | 131 |

Source: Gary-wmu-2005. Container terminal planning.

Ports in these regions, the Kenya port included, need to plan ahead. For the port to contribute to the economic development of Kenya, it needs to adapt and invest to meet the changing needs of ships and changing trade requirements. Governments need to be informed of the need to invest in ports.

Investment in port is expensive and with competing interests for government revenue, ways need to be found to convince governments of the importance of investing in the port sector. The second chapter will look at the ways ports do to influence governments to invest in the port sector.

2 CHAPTER TWO

METHODS USED TO INFLUENCE INVESTMENTS IN PORTS

2.1 Introduction

Chapter one has highlighted the challenges faced by ports in trying to adapt to changing needs of ships, ship types, cargo handling equipments and changing trade patterns. For a port to be relevant it has to adapt to these dynamic changes and invest accordingly. Yet investment in port is expensive, long term, and inflexible. In the main these investments represent sunk costs. Because of competing government priorities in investment and scarcity of resources, methods have to be devised to influence investments in port, without risking being labelled the recipient of unfair subsidy.

For the port of Mombasa to contribute to Kenya's economic development, it needs to invest in world class port facilities to meet the challenges of modern shipping demands. It is not the purpose of this chapter to go into details of actual port impact Calculations, but rather to highlight the various reasons and methods used to study economic port impact studies, with a view of providing an insight in to what the port of Mombasa can do to influence investment at the port.

2.2 Reasons for port impact studies.

Port development experts have used port economic impact studies to the regions they are situated to measure the contribution of the port in the economy of the region.

According to Professor Cariou, the studies are important for at least six reasons:

1. A port is a national infrastructure (even if private) and participates to the national wealth. It has a structural effect
2. A port is a public service in most cases

3. It may be the only point of transfer of import and export (islands poorly equipped inland transport countries
4. A port becomes a logistical platform where more than 30 professionals intervene, interfere and are increasingly implementing additional value added services. New services are set up in ports (inland depots, CFS, block trains, feeder services ...)
5. Its efficiency (quality and cost) is a key element of the global supply chain of the external trade.
6. The economic impact is one major element for decision making when selecting alternative projects (cost-benefit analysis) (Cariuo,2004,p.32)

Because of the foregoing, it is only logical that countries, governments and communities that have ports should develop them to meet the requirements of international trade and enjoy the benefits that go with a vibrant port.

The right port policy and investment in port infrastructure and superstructure requires the blessing of the government policy and decision makers. The government has however limited resources and competing sectorial needs to allocate those resources.

If a port is not well appreciated in terms of the real and potential contribution it/can make in the national economy, and due to the high costs of investment in port infrastructure, which is mainly sunk costs, it can easily be relegated to the periphery of resource allocation priorities.

According to Vleugels (1969) the economic impact studies of port on the regions they serve is done to

1. Show to what extent the port acts as a generator of socio economic revenue and prosperity
2. To use the research results as evidence to influence the community and possibly higher authorities.

2.3 Port economic impact.

According to Cariou (2004), “the impact means the consequences of an economic activity on the environment”. (Cariou, 2004,p32). For a port to exploit its maximum economic potential this environment has to be understood and harnessed.

The environment can be said to be:

- (i) Physical or natural. The impact in this case refers to the consequences of the creation, existence or development of the port on the flora and fauna, landscape, pollution.
- ii). Human/labour. The impact here is on the consequences of port on the human elements, availability of labour force, know-how, technologic development etc.
- iii) Economic and social. The economic impact of the port, would be on extension or changes in income, costs, efficiency, trade, financial reserves, credit facilities, balance of payments...etc.

A port is known to contribute in two ways.

- a) Macro-economic via the regional or national wealth creation
- b) The seaborne trade and supply of hard currencies (Cariou,2004,p.33)

There is a systematic way followed to measure the macro-economic contribution to regional and national wealth which consists of defining the port hinterland, the types of impacts and the measurements to be employed.

The size of the port hinterland varies depending on whether the port is a local port, regional port, international port or transshipment port. The size of the hinterland is dependent first on the quality of port facilities (infrastructure, lay out, specialised equipment, storage facilities etc) and the quality of port services for ships and cargo. Second it is dependent on nature and quality of the inland transport system, the

distance and time taken to travel to and from the hinterland. Thirdly it is dependent on cost charged by the port (Cariou, 2004, p3). The port of Mombasa's hinterland extends to seven landlocked countries due mainly to the geographic location of the port and relatively superior infrastructure as compared to its competitors.

2.4 Kinds of Port Impact.

The economic impact of a port can either be primary or secondary. As such impact is categorised into three.

i). Direct impact. This measure the effect of the port on the organisations or firms directly linked to the port operations. It measures the initial round of employment and spending generated by port activities. These firms, organisations and individuals are directly dependent on the port and it's assumed that the existence of the port is their main reason for their location near the port. It usually refers to companies or organisations involved in port industry services associated with moving cargo through the port system, capital spending on new port construction or expansion and rehabilitation of projects.(Cariou, 2004,p.34., & Marad,1987,p.29).

ii) The indirect impact. This measures the effect on the port on the firms and organisations which are economically dependent on the primary activity. The indirect impact includes the effect on labour, services, materials and other items purchased by firms that supply the direct activities. Firms importing raw materials and exporting finished goods, distribution centres and traders. The port has significantly influenced their location. (Carstensen et al, 2001, p.29; & Cariou, 2004, p.34).

iii) The induced impact. The induced impact measures the effect of both the direct and indirect impacts on other sectors of the economy. There is a symbiotic relationship between firms. Inputs of one firm are outputs of another. Expenses of port and shipping professionals create incomes to other firms and professionals such as doctors, insurance providers, cars, and catering services among others.

2.5 Impact measurements.

A measurement of Port impact is based on estimates. Overall impact of the port is the total of both direct and indirect impact. During calculations, it is important therefore to get estimates of the direct or primary impact of the port. This will explain the impact of the port on port services industries and local port users in terms of sales, employment, income and taxes. The following methods have been used to calculate port impact.

(a) The Value added Approach

(b) Based on contribution to generally (in)efficiency economy

a) The Value added measurement

Measurement of quantifiable economic impact of ports can best be done by using the aggregate employment level and aggregate value added. Value added is the difference between total outputs less total inputs. Added value is also the sum of the remuneration of production factors, such as, salaries, wages, and profits which originates in the industries. (Vleugles, 1969,p.244).

Direct impact measurement is usually done through direct interviews or through published statistical data if available. For direct interviews, a problem exists of responses. Most businesses are wary of surveys and have neither the time, energy nor will to respond. For official statistical data, such as public accounts, because of administrative purposes “does not show time sharing, or value added among different activities”. (Cariou, 2004, p.36). It is also difficult to measure the share of added value of inland transport, necessitating estimation by use of a port coefficient.

Indirect impact can also be done by direct interview by identifying the companies that are directly linked to the port. This is especially so when dealing with a local port. Direct surveys and estimation by use of a port coefficient is common. Mass

calculation is normally very expensive and takes too long to survey firms. It has problems also because it assumes all the firms located inside the port area are linked to the port, and those outside of the port area are not. Flow calculation includes only a part of output and input of the firms linked to the port. This is important because it narrows added value to that truly generated by the port.

The success of the value added calculation depends on the co-operation from the public authorities and above all from the private sector, particularly those directly involved in port activities.

According to Vleugels (1969) the following aspects must be investigated.

- i) The distribution of income generated by the port, reflected in the incomes earned by the employee's courtesy to the port.
- ii) The geographic distribution of the employees
- iii) Comparison of income earned by port related employees as compared to incomes earned by other sectors of the economy
- iv) Total profits of port related companies, and the use to which the profits are put.

These will normally lead to the net added value.

Value added should be able to reveal which sectors of the overall port activity generate most income. The basis for this is to come up with an overall plan that supports the overall well being of the economy

b) Contribution to general (In) efficiency

This measurement indicator is preferred in ports to supplement added value, because the emphasis of ports to increase added value may lead to the reduction of added values of other sectors and may in turn lower the total value added. There is the example of increasing port efficiency which invariably involves reducing direct

employment at the port. However efficiency at the port has beneficial effect on the economy in terms of the reduction of the logistics costs for sea-borne trade.

This method measures the port impact on three fronts.

a) Impact on the export and import prices

This measures the impact on the port on the total logistics transport costs of the country.

A country's prosperity is dependent to a large extent on its ability to trade. Trade is global and mostly, maritime dependent. The competitiveness of a countries trade can greatly be enhanced by low logistics transport costs, of which ports are said to contribute 10% of the total supply chain costs. Port costs increase due to inefficiency of the port. Port inefficiency lead to long waiting time for ships due to port congestions, leading to vessel delay surcharges, freight rates increases or demurrage, longer transit time etc. Port inefficiency also leads to long dwell time for cargo in port and increases risks for cargo due to theft, deterioration, obsolescence and fire among others. The combination of all this is to increase the inventory carrying costs. Increased costs reduce the profitability of firms, and the competitiveness of export in the international market.

b) Impact on balance of payments

Inefficient port contributes in increasing total logistic costs which may worsen a country's balance of payments. This is because it may increase the prices of imports and reduce the country's exports competitiveness and therefore earning less foreign

exchange. A study of this can influence investments in port and port related infrastructure.

c) The Impact on project evaluation

Investments in port can be evaluated in terms of the contribution they make in the total economy. This is a macro-economic approach, similar to the micro-economic approach to firms where internal rate of return (IRR) is used to estimate expected return on an investment. Here a cost/benefit analysis can be performed analysing two situations. A situation with the project and another without the project. This is simulated and the results of the two situations can be evaluated and compared year after year. IRR gives the possibility to compare investment alternatives and as such it is vital for investment decision makers.(cariou,2005,p.41)

2.6 Conclusion

The methods highlighted above are not the only ones. Others such as Input-output put analysis have not been considered here because of its technicality. It may not be readily feasible in the immediate future in the Kenyan situation. The Value added method is a good indicator of the contribution of a port to the regions economy. It is however important to pay more attention to its inherent weakness. It may be difficult to get accurate data, which is mostly collected through surveys. The methods can however give a good picture of the importance of the port relative to the other sectors.

2.7 Case study example

Table 15 shows the contribution of value added to the various countries GDP. It is a good indicator to show the share of the port in the country's economy. It is given by the ratio of all the port value added in the country to the GDP of the country.

Table 15: Contribution of port activities to the GDP

| Ports | Methods | AV in Billions \$ | GDP in Billions \$ | % in the GDP |
|-----------|----------------|-------------------|--------------------|--------------|
| Belgium | 3 major ports | 10 | 224 | 4.4% |
| | Altogether | | | |
| France | Low estimate | 15 | 1280 | 1.1% |
| | High estimate | 18 | | 1.4% |
| Rotterdam | Global AV | 29 | 170 | 17.3% |
| | Direct AV | 5 | | 2.5% |
| Singapore | Port Authority | 124 | 850 | 1.3% |

Source: from P.Cariou, compiled by ISEMAR and B.Francou (1998)-converted US \$

3 CHAPTER THREE

STRENGTH AND WEAKNESS OF THE KENYAN ECONOMY

3.1 Introduction

To understand how the Port of Mombasa can contribute to the Kenya's economic development it is important to examine the location of the country, its brief history and the state of the various sectors of the economy. In this chapter the concerns of the maritime dependent sectors of the economy and potential growth areas will be identified.

3.2 Geographical Location

Kenya lies across the Equator on the Eastern side of the African Continent. Officially it is called the Republic of Kenya. The country is sandwiched between the Indian Ocean and Somali to the East, Tanzania to the south, Uganda to the west, Ethiopia to the North, and Sudan to the North-west.

Kenya's total land area is 582,650 sq.km, which includes 569,250 sq.km of dry land and 13,400 sq.km waters of lakes Victoria and Lake Turkana, and a plethora of other smaller lakes and rivers. The longest distance is from North to south of the country which is approximately 1,025km.

The Equator cuts across the country, but the land body extends to approximately Latitude 4⁰ N to 4⁰ S and Longitude 34⁰ E and 41⁰ E.

The country has a total of 3,477 km of land boundaries with its five neighbours distributed as follows. Border with Somalia (682 km), Ethiopia (861 km), Sudan (232 km) , Uganda (933 km) and Tanzania (769 km).

The country has a total coastline of 536 km, continental shelf claims extending up to 200 m depth or to the depth of exploitation, exclusive economic zone, 200 nm, and territorial sea 12 nm.

Kenya is the hub of African air travels. Flying to Nairobi, Kenya's capital city from Europe takes between 8-10 hours, from North America 16 hours, from the gulf region 4 hours and from Far East, Australia, 16 hours.

3.3 Climatic Conditions

Kenya's climate can general be described as tropical type, since the equator literally bisects the county. There is no evidence of the four distinctive seasons. What are evident are periods of high and low rain seasons. The highest rain season is in the months of March to May, while short rain season is September to December. Rainfall is greatest in the Kenya's highlands, and on the coastal zones. The Northern part of Kenya is mainly arid and semi arid with flat plains.

The western part of the country and the Great Rift Valley receives the greatest amount of rainfall; together with its good soils is the backbone of Kenya's agriculture

Temperatures are cool in the highlands, ranging from an average of 10⁰ C (50⁰ F) to an average of 26⁰ C (79⁰ F). The Coastal areas, temperatures range from 21.1⁰ C (70⁰ F) to 34⁰ C (93⁰ F). January and March are the hottest months while June and July are the coldest months.

3.4 Government and Brief History

The Kenyan government is a multiparty democracy with the current ruling party, the National Rainbow Coalition of Kenya (NARCK) being a coalition of 14 political parties. The Parliament is structured in the Westminster model of Great Britain, while the Presidency is along the United States model. This structure of government is bound to change soon, when the ongoing new constitution is adopted.

From a historical perspective, Kenya has known the presence of human kind since early civilisation. Records show the country has been a migratory path, passed by waves of people from all regions, Africa, Europe and middle east. The country developed its Lingua frank as early as the 10th century, the Swahili, which is a mixture of Bantu, Arabic and Portuguese. It is among the world's fastest growing languages with Swahili words such as 'Safari' (journey or travel) and 'Hakuna matata' (No problem) being common all over the world.

The port city of Mombasa has a history of over 500 years. The Portuguese arrived in Mombasa in the 15th century. This was the beginning of European domination of the region, till 1726 when the Arabs took over. The Arabs ruled the region till the 18th century when the British Empire took over. After internal struggle by various Kenya political groups, the country achieved independence in 1963. The initial government was multiparty, but it was soon reversed to single party till 1992 when it again reversed to multiparty democracy. To date the country has had three presidents.

3.5 The Kenyan Economy

Kenya has been undergoing persistently poor economic performance over the last two decades. There is a strong feeling which I share that the economy has not been performing to its potential. The consequence of this persistent poor growth is a continuous decline in per capita incomes. The per capita income for example

declined from USD. \$271 in 1990 to USD\$ 239 in 2002. It has experienced a persistent decline, with unemployment being almost 59% of the labour force.

Figure 6 shows the dramatic decline of the real GDP from 1997, reached to its lowest ebb of -0.2% in 2000. There was modest growth in 2001 to 2003. The increase to 4.6% in 2004 is still controversial even in government circles, the explanation being the adoption of the 1993 SNA (system of national accounts) method of calculation, as opposed to the 1968 SNA, which has been used to calculate the other figures.

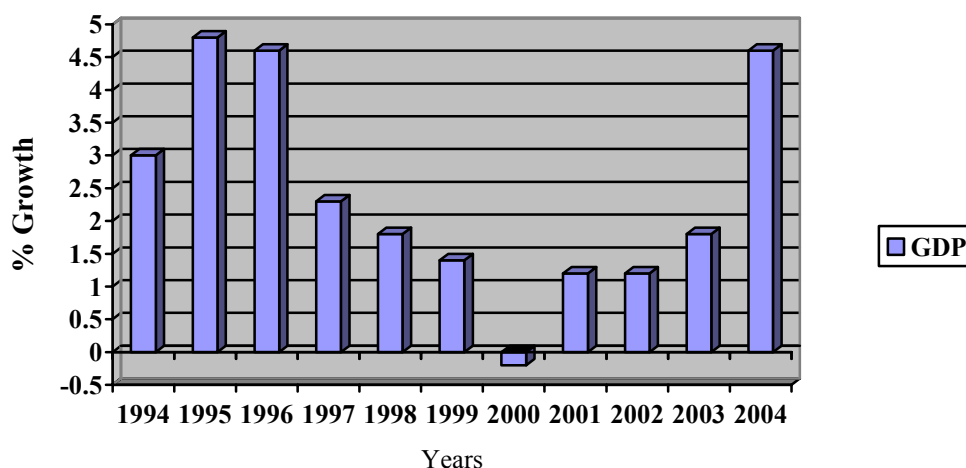


Figure 7: Real GDP growth from 1994-2004

Source: Compiled from economic survey of Kenya and other sources:

The Kenyan economy had all along been organised around the agricultural sector. To date agriculture accounts for over 26% of the GDP. To mitigate against this poor economic performance, the new government on a bid to revive the economy and reduce poverty, introduced a sessional paper on economic management for renewed growth and sustainable development. The emphasis is on increased role of the private sector in economic growth. The government has undertaken key economic reforms with a view to promote both domestic and foreign investment. These measures include abolishing export and import licensing, rationalisation and reducing of import tariffs, liberalisation of foreign exchange and price controls.

The government has gone further to set up the Investment promotion centre (IPC) to act as a one-stop shop to promote investment in the country. The IPC process all applications of new investments and forwards recommendations to the ministry of finance and planning for approval. The Foreign Investments Protection Act (FIPA) (Cap 518 laws of Kenya) guarantees repatriation of capital, after tax profits and remittance of dividends and interests accruing from investing in the country.

Other key incentives include, Investment allowance to the rate of 60% of investment in manufacturing and hotels any where in the country. Depreciation liberal rates are allowed for depreciation of assets based on value.

Government also has introduced Manufacturing under Bond (MUB), to encourage manufacturing in Kenya for world markets, which is open for both foreign and local investors. This programme offers the following incentives.

- (i) Exemption from duty and VAT on imported plant, machinery and equipment, raw materials and other imported inputs
- (ii) And 100% allowance on plant and machinery equipment and buildings.

The Kenya government has established the Export processing zones (EPZA). Companies operating in export processing zones enjoy the following benefits.

- (i) 10 years tax holiday and a float 25% tax for the next 10 years.
- (ii) Exemption from all withholding taxes on dividends and other payments to non-residents during the first 10 years.
- (iii) Exemption from import duties on machinery raw materials and intermediate inputs
- (iv) No restriction on management or technical arrangement
- (v) Exemption from stamp duty, and

- (vi) Exemption from VAT and operate on one licence only.

The list of the investment incentives is impressive, but the result on the ground is minimal. The country has never experienced the avalanche of foreign and local investments anticipated under these schemes. The economy is just struggling as shown by the GDP growth rates in figure 7.

To appreciate further the state of the economy, it should be appropriate to examine the sectorial contribution of the economy to GDP and the future trends.

3.5.1 The Agricultural sector.

As has been explained earlier, agriculture has all along been the mainstay of Kenya's economy. The focus since independence was to produce for self sufficiency in food supply and expansion in exports. This objective has been constantly undermined by the falling prices of agricultural produce in the international markets.

Crops grown for exports are coffee, tea, pyrethrum, maize, wheat, horticultural produce, sugar confectionery etc.

Table 16: Prices of principal Exports, 1999-2003 (Ksh. Unit) 1 ksh. = 76 usd\$

| Commodity | Unit | 1999 | 2000 | 2001 | 2002 | 2003 |
|---------------------|-------|--------|--------|--------|--------|--------|
| Maize(raw) | tonne | 12,044 | 67,679 | 42,857 | 10,664 | 39,962 |
| wheat | tonne | 19,870 | 18,192 | 17,524 | 17,847 | 17,391 |
| Coffee,unroasted | Kg | 168 | 135 | 117 | 132 | 107 |
| Tea | Kg | 127 | 162 | 127 | 126 | 126 |
| Horticulture | kg | 88 | 109 | 103 | 108 | 105 |
| Pyrethrum | kg | 1053 | 4,267 | 4,226 | 9852 | 6610 |
| Sugar confectionary | kg | 101 | 99 | 96 | 100 | 89 |

Source: compiled from Kenya economic survey 2004

The price of almost all commodities is either showing a downward trend or is just constant. As a result of this the agricultural contribution to GDP has also been falling.

Table 17 & 18 shows the differences between agricultural output and input at current prices and at constant (1982) prices. The difference between them, (output– input) gives the value added. This value added measures the agricultural contribution to the overall economy (GDP). Table 17 shows the agricultural output in current prices increased by 5.6% from Ksh. 148,909 million in 2002 to Ksh. 157,196 million in 2003. Agricultural inputs in the same period increased by 4.9% from Ksh.19, 326 million to Ksh. 20,278 million.

Table 17: Agricultural input and output, 1999-2003, Ksh.millions, 1 US\$ = 76 Ksh

| | 1999 | 2000 | 2001 | 2002 | 2003 |
|--------------------------|-------------|-------------|-------------|-------------|-------------|
| AT CURRENT PRICES | | | | | |
| Total output | 155,574 | 140,189 | 149,233 | 148,909 | 157,196 |
| Less Inputs | 15,638 | 15,936 | 17,935 | 19,326 | 20,278 |
| Value added | 139,936 | 124,253 | 131,298 | 129,583 | 136,918 |

SOURCE: Compiled from Kenya economic survey 2004

Table 18: Agricultural input and output, 1999-2003, Ksh.millions, 1 usd\$ = 76 ksh.

| | 1999 | 2000 | 2001 | 2002 | 2003 |
|----------------------------------|-------------|-------------|-------------|-------------|-------------|
| AT CONSTANT (1982) PRICES | | | | | |
| Total output | 27,999 | 27,407 | 27,534 | 27,958 | 28,405 |
| Less Inputs | 2,574 | 2,511 | 2,313 | 2,536 | 2,592 |
| Value added | 25,425 | 24,896 | 25,221 | 25,421 | 25,813 |

SOURCE: Compiled from Kenya economic survey 2004

The % GDP growth of agriculture from 1999 – 2003 in constant 1982 prices can therefore be shown in Table 19.

Table 19: Growth of GDP Agriculture 1999 – 2003 1982 constant prices

| | 1999 | 2000 | 2001 | 2002 | 2003 |
|-----|-------|------|------|------|------|
| GDP | -2.08 | 1.3 | 0.8 | 1.5 | 0.3 |

Source: extracted from the Kenya economic survey

Clearly from table 19, the contribution of agriculture for these five years was very low. With continued downward trend to international prices of agricultural produce and the refusal of the G8 countries to remove subsidies on agriculture at least in the immediate future the growth of agricultural GDP is likely to be minimal.

3.5.2 Tourism

Kenya is a tourism country and over the last few years, tourism has surpassed coffee and tea in foreign exchange earnings. The strength of Kenya on tourism is its location and climatic conditions. It possesses unparalleled scenic beaches, unique wildlife, cultural diversity and warm hospitality. It is the by word for Safari (touring).

Kenya was voted the second best leading eco-tourism destination in the world after Egypt. According to Kenya tourism board, Kenya was the destination of choice in adventure and eco-tourism (Daily nation 12th July 2005).

The major challenge facing tourism in Kenya is the adverse travel advisory issued by UK and USA especially in 2003 and the terrorist attacks in 1998 and 2002. However according to the Kenya Central Bureau of Statistics, international arrivals increased by 14.5 % from 1,001,300 in 2002 to 1,146,100 in 2003. The tourism earning show a marked increase in 2004. The country earned ksh.42 billion (usd. \$552,631,579) last year and it is expected to rise to Ksh.59 billion this year.

Table 20: Visitors arrivals by purpose of Visit, 1999-2003 '000s'

| Purpose | 1999 | 2000 | 2001 | 2002 | 2003 |
|----------------|--------------|----------------|--------------|----------------|----------------|
| Holiday | 749.9 | 778.2 | 728.8 | 732.6 | 684 |
| Business | 94.4 | 98.3 | 92.1 | 86.6 | 182.1 |
| Transit | 107.4 | 138.5 | 152.6 | 163.3 | 219 |
| Other | 20.6 | 21.5 | 20.1 | 19 | 61 |
| Total | 969.3 | 1,036.5 | 993.6 | 1,001.3 | 1,146.1 |

Source: Kenya central bureau of statistics 2004

The growth of tourism GDP has been positive throughout the period under review and if current trends will not be reversed, the growth is likely to be higher in future.

Table 21: Tourism GDP growth rate 1999 – 2003 1982 constant prices, Percentages

| Year | 1999-00 | 2000-01 | 2001-02 | 2002-03 | 1999-03 |
|-------------|----------------|----------------|----------------|----------------|----------------|
| GDP | 1.01 | 1.3 | 1.6 | 1.4 | 1.5 |

Source: Extracted from the Kenya economic survey 2004

The period 2002-2003 was marked with adverse advisory notices from UK and USA against visiting Kenya.

3.5.3 Manufacturing

This is the sector that is hoped to spearhead the economic recovery, create employment and reduce poverty. Over the years the economic sector has recorded mixed performances. The government has introduced several measures to promote and give incentives to new investments and existing investments. According to Ismail Mboya, Kenya has the most developed manufacturing sector in East Africa. (Mboya, 1994,p.20). According to the Central Bureau Statistics, the sector is the

second biggest employer in Kenya after Agriculture. The manufacturing activities are shown in the Table 22.

The table confirms the reasons for the persistent decline in the countries GDP. Most sectors recorded modest or declining growth. Example while the clothing sector recorded substantial gains compared to 2002 the footwear sector recorded a decline.

There is significant decline in the textile sector, of -25.5 percent. The decline in this sector is significant because it is at the heart of the AGOA (African Growth and Opportunity Act), an initiative to increase trade opportunities with USA and which is expected to attract investments in the export processing zones.

The Kenya Economic Survey suggests that this decline in manufacturing is due to constrained consumer spending, high energy costs, insecurity, and poor infrastructure. Others cited are increased production costs due to escalating prices on raw materials, high fuel prices, and appreciation of the Kenya shilling against the dollar. There is little explanation of the courses of this escalating costs or how poor infrastructure is contributing to these high costs.

Table 22: Quantum index of manufacturing Production, 1999 – 2003, 1976=100

| Industry | 1999 | 2000 | 2001 | 2002 | 2003 | % change 2003/2002 |
|----------------------------|------|-------|----------|----------|-------|-----------------------|
| Meat and dairy products | 84.3 | 85.9 | 86.1 | 88.6 | 93.5 | 5.7 |
| Canned vegetables, fish | 373 | 391.8 | 423.3 | 432.2 | 450.4 | 4.5 |
| Grain mills products | 201 | 157.6 | 143.1 | 148.9 | 133.6 | -10.3 |
| Bakery products | 345 | 295.5 | 299.9 | 304.4 | 302.4 | -0.7 |
| Sugar and confectionery | 237 | 206.1 | 195.2 | 223.7 | 204.6 | -8.5 |
| Miscellaneous foods | 228 | 246.4 | 262.3 | 247.2 | 258.6 | 4.6 |
| Food manufacturing | 205 | 199.4 | 200.8 | 208.5 | 207.1 | -0.7 |
| Beverages | 155 | 166.4 | 157.9 | 165.7 | 189.3 | 14.2 |
| Tobacco | 193 | 160.2 | 155.9 | 158.6 | 162.7 | 2.6 |
| Beverages and tobacco | 160 | 166.1 | 158.2 | 165.4 | 187 | 13.1 |
| Textiles | 119 | 115.5 | 114.7 | 114.9 | 85.7 | -25.5 |
| Clothing | 155 | 167.2 | 172.8 | 178.4 | 188 | 5.4 |
| Leather and footwear | 48.6 | 54.6 | 59.5 | 61.6 | 58.7 | -4.7 |
| Wood and cork products | 82.3 | 75.1 | 71.7 | 31.6 | 27 | -14.3 |
| Furniture and fixtures | 55.9 | 56.1 | 57 | 51.3 | 50.4 | -1.7 |
| Paper & paper products | 238 | 258.5 | 263.3 | 262.5 | 248.8 | -5.2 |
| Printing & publishing | 466 | 424.5 | 424.5 | 447.3 | 448.9 | 0.3 |
| Basic industrial chemicals | 163 | 140.6 | 147.1 | 136.3 | 150.2 | 10.2 |
| Petroleum & o. chemicals | 617 | 659.4 | 741.8 | 751.6 | 816.5 | 8.6 |
| Rubber products | 591 | 588.1 | 581.1 | 548.5 | 534.2 | -2.6 |
| Plastics products | 698 | 781.8 | 837 | 919.3 | 964.4 | 4.9 |
| Clay and glass products | 1632 | 1191 | 1,052.40 | 1,049.80 | 1056 | 0.6 |
| N/metallic min. products | 217 | 153.8 | 139.1 | 137 | 151.1 | 10.3 |
| Metallic products | 270 | 238.1 | 237.7 | 228.7 | 232.7 | 1.8 |
| Non-electrical machinery | 85.1 | 86.1 | 89.1 | 86.2 | 87.1 | 1 |
| Electrical equipment | 188 | 188.7 | 199.4 | 195.5 | 207.1 | 6 |
| Transport equipment | 360 | 241.5 | 212.6 | 227.7 | 236.7 | 3.9 |
| Misce. manufactures | 918 | 1150 | 1,190.90 | 1,170.70 | 1190 | 1.6 |

Source: Kenya Central Bureau of statistics 2004.

Table 23: Manufacturing growth rate 1999-2003 constant 1982, Percentages

| Year | 1999-00 | 2000-01 | 2001-02 | 2002-03 | 1999-03 |
|------|---------|---------|---------|---------|---------|
| GDP | -1.4 | 0.8 | 1.2 | 1.4 | 0.4 |

Source: Extracted from Kenya Central Bureau of statistics.

Table 24: Manufacturing sector – Output, Wages, and value Added at current prices 1999-2003, ksh. Billion. 1 US\$ = 76 Ksh..

| Year | Value of Output | Intermediate consumption | Value added | Total wages paid |
|------|-----------------|--------------------------|-------------|------------------|
| 1999 | 742.5 | 656.8 | 85.7 | 32.9 |
| 2000 | 661.2 | 565.1 | 96.1 | 36.9 |
| 2001 | 669.6 | 565.5 | 104.1 | 40.5 |
| 2002 | 684.7 | 565.6 | 119.1 | 45.2 |
| 2003 | 726.7 | 581.2 | 145.5 | 55.2 |

Source: Kenya central bureau of statistics 2004

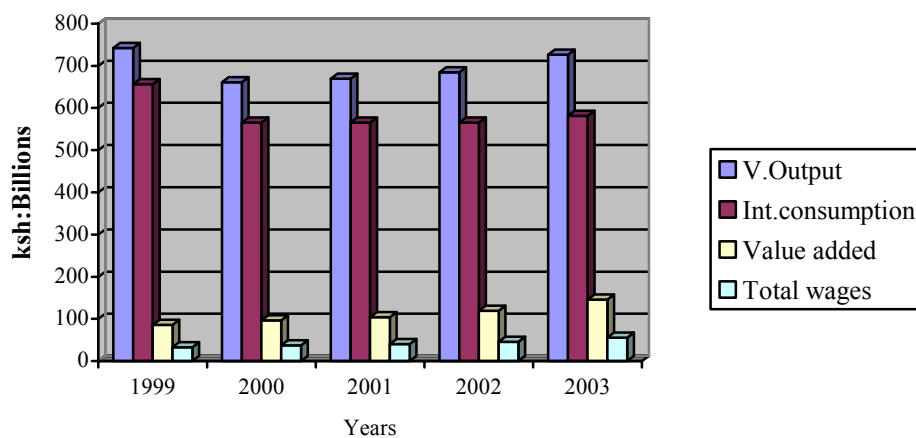


Figure 8: Manufacturing sector, output, wages, and value added

Sources: Figures obtained from Table 24.

Table 24 shows value of output increased by 6.1% in 2003 compared with 2.3% in 2002. Value of intermediate consumption rose by 2.8% while total wage paid in the sector increased by 22.1% in 2003. These positive indicators call for more effort to increase investment and productivity in this sector. Effort should be directed towards correcting the concerns eloquently highlight by the Kenya economic survey.

The potential of the manufacturing sector can be seen in the Export processing zones (EPZ). Despite the myriad of production problems sighted above, the EPZ shows a promising future. Table 25 summarises activities at the EPZ.

Table 25: Selected EPZ performance Indicators 1999-2003

| Year | 1999 | 2000 | 2001 | 2002 | 2003 |
|--|-------|-------|--------|--------|--------|
| Gazetted zones (numbers) | 16 | 19 | 23 | 31 | 37 |
| Enterprises operating | 22 | 24 | 39 | 54 | 69 |
| Employing locals | 4,684 | 6,487 | 13,444 | 26,447 | 35,000 |
| Numbers- expatriate | 83 | 133 | 314 | 701 | 935 |
| Total workers | 4,767 | 6,620 | 13,758 | 27,148 | 35,935 |
| Export sales (ksh M) | 3,020 | 3,635 | 5,962 | 9,741 | 13,273 |
| Domestic sales (ksh.M) | 706 | 755 | 538 | 932 | 1,384 |
| Total sales Ksh. (M) | 3,726 | 4,390 | 6,500 | 10,673 | 14,657 |
| Foreign imports Ksh M | 2,126 | 2,349 | 399 | 7,043 | 9,223 |
| Local purchases of goods and services ksh. | 955 | 1,229 | 2,235 | 1,127 | 5,085 |
| Investment (Ksh. M) | 5,941 | 6,107 | 8,950 | 12,728 | 15,709 |

Source: Compiled from Kenya central bureau of statistics 2004

The figures show the potential of the sector to achieve the intended goals of generating employment, earn foreign exchange, harness investment, promote technology transfer and increase value added for domestic inputs. Employment for example increased by 32 % to 35,000 in 2003 from 26,447 in 2002. According to the Kenya Economic Survey bulletin, indirect employment attributed to the EPZ is estimated at 11,667, being employment mainly from sub-contracting and supplies. This brings total employment created to about 46,667.

From Table 25, total cumulative capital investment is ksh.15.7 billion, representing a 23.6% increase from 2002 figures. The Kenya Economic Survey estimates value added by EPZ at 32 % of the total turn over.

These gains are likely not to be sustained if remedial action is not taken. According to report appearing on the East African newspaper, there is a potential fear of closure of the EPZ enterprises in the textile sector following the expiry of the Multi-Fibre Agreement (MFA) that placed quotas on exports from individual countries to US market. The Kenyan EPZ is reported to have already lost 6,000 jobs since October 2004, due to increased exports from China. (East African, May 16, 2005). The News paper reports that the threat from China can be stifled if Kenya can address logistical issues that amplify production costs. These are listed as delays in port clearance, poor transport and communication systems and high power costs.

3.5.4 International Trade

Kenya is experiencing trade deficits with most of its international trading partners. This is because, most exports are agro based which have less value compared to the high value imports. In 2003, the trade deficit widened even more because of the increased importation of food to alleviate hunger (see Table 26). The overall merchandise trade deficit for example increased by 11.6 % from Ksh.88, 427 million in 2002 to Ksh.98, 690 million in 2003. The export trade ratio has been above 50% hitting over 60% in the years 2002 to 2003. The widening of the trade deficit combined with declined aid disbursements, has meant the financing of the deficits from the domestic market. This has had the added problem of increased cost of borrowing money for investments in the domestic markets because most funds are directed to buy treasury bonds and treasury bills to finance the deficit. The total result is low investment in the economy, low GDP, less employment and increased poverty.

Table 26: Balance of Trade, 1999-2003 (ksh.million) 1US\$. = 76ksh..

| Description | 1999 | 2000 | 2001 | 2002 | 2003 |
|-------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Exports(f.o.b): | | | | | |
| Domestic exports... | 115,405.50 | 119,764.00 | 121,433.90 | 131,394.10 | 136,708.80 |
| Re-exports..... | 7,153.40 | 14,763.40 | 26,156.00 | 37,889.30 | 46,444.80 |
| Total | 122,558.90 | 134,527.40 | 147,589.90 | 169,283.40 | 183,153.60 |
| Imports (c.i.f): | | | | | |
| Commercial | 199,808.20 | 240,473.00 | 285,105.90 | 254,006.30 | 278,838.40 |
| Government.. | 6,592.40 | 7,331.00 | 5,001.30 | 3,703.70 | 3,005.50 |
| Total..... | 206,400.60 | 247,804.00 | 290,180.20 | 257,710.00 | 281,843.90 |
| Balance of trade | - 83,841.70 | -113,276.60 | -142,518.30 | - 88,426.70 | - 98,690.30 |
| Total trade.... | 328,959.50 | 382,331.40 | 437,698.10 | 426,993.40 | 464,997.40 |
| Cover ratio in % | 59.40 | 54.30 | 50.90 | 65.70 | 65.00 |

Source: Kenya bureau of statistics 2004

Table 27 shows the changes and % changes in the value imports and exports during the period 2002-2003 to give a picture of the merchandise trade deficit above.

Table 27: Domestic Exports change in Value, quantity and price selected items 2002-2003 Value (kshs. Million) 1 Usd\$ = 76 ksh..

| Commodity | 2002 | 2003 | change | %change |
|---------------------|--------|--------|--------|---------|
| Tea | 4,205 | 4,010 | -195 | -4.6 |
| Coffee ,unroasted | 6,541 | 6,286 | -255 | -3.9 |
| Maize raw | 1,693 | 125 | -1,568 | -92.6 |
| Soda ash | 2,127 | 2,392 | -265 | 12.5 |
| Fluorspars | 734 | 664 | -70 | 9.5 |
| Horticulture | 28,334 | 36,485 | 8,151 | 28.8 |
| Beer made from malt | 48 | 75 | 27 | 56.3 |

Source: central bureau of statistics 2004

The value of Kenya's key exports products has been falling, while those of imports have been increasing by a big margin. To bridge the gap, the country has to necessarily move from the mainly agricultural sector to the manufacturing and logistics services. To do this the cost of production has to come down significantly.

Table 28: Imports change in Value, quantity and price selected items 2002-2003

Value (kshs. Million) 1 Usd\$ = 76 ksh

| Commodity | 2002 | 2003 | change | %change |
|----------------------------------|--------|--------|---------|---------|
| Medicinal & pharmaceutical prod. | 8,678 | 9,728 | 1,050 | 12.1 |
| Iron & steel | 11,115 | 319 | -10,796 | -97.1 |
| Maize | 229 | 1,417 | 1,188 | 518.8 |
| Textiles fibres | 1,566 | 1,845 | 279 | 17.8 |
| Crude petroleum | 23,940 | 25,415 | 1,475 | 6.2 |
| Motor vehicles | 14,382 | 17,955 | 3,573 | 24.8 |
| Industrial machinery | 25,474 | 32,764 | 7,290 | 28.6 |

Source: compiled from Annual trade report customs and excise dept./central bureau of statistics Kenya 2004.

3.5.5 The Transport Sector

The cost of transport, especially multimodal transport and logistics services determine to a great extent a countries level participation in the global economy. According to UNCTAD, a doubling of transport costs leads to a drop in the economic growth rate by more than half a percentage point (UNCTAD,2003,1) This is because transport is the main component of logistics services and its overall share in logistics costs is the highest. Also transport infrastructure is essential for economic and social development. The rise in global trade as seen in Chapter One is as a result of efficient, fast and reliable transport infrastructure and system. As seen in the manufacturing sector, one of the top reasons attributed to the slow growth or decline

of the sector is poor transport infrastructure which increases the cost of production making the cost of doing business in Kenya very high.

The transport sector in Kenya groups together, road transport, rail transport, air, sea/shipping, pipeline, communications and other services incidental to transport. These will be examined briefly in this section, but a more detailed analysis of the maritime transport will be examined in Chapter Four, which forms the core of this study.

3.5.5.1 Road transport

The Kenya Economic Survey 2004 states that road transport is the most developed mode of transport in Kenya, but it adds that the dilapidated status of the road has constrained earnings accruing from road transport industry (Kenya Economic Survey 2004, p.186).

In terms of earnings, the freight traffic earned Ksh.20, 677 million in 2003 as compared to Ksh 19,422 million in 2002, representing an increase of 6.5%. Passenger earnings over the same period increased by 5.2 %.

Table 29: Earnings from Road traffic, 1999- 2003 ksh. Millions. 1 US\$ = 76 Ksh.

| | 1999 | 2000 | 2001 | 2002 | 2003 |
|---------------------------|---------------|---------------|---------------|---------------|---------------|
| Passenger traffic | 9,764 | 10,026 | 13,394 | 16,745 | 17,614 |
| Freight traffic | 8,788 | 11,477 | 12,265 | 19,422 | 20,677 |
| Total Road traffic | 18,552 | 21,503 | 25,659 | 36,167 | 38,291 |

Source: CBS Kenya 2004

The condition of the road network determines the efficiency of the port in terms of container turn around to and from the hinterland. It also determines the cost of transport.

According to the Kenya roads board, roads in the country are classified into 6 classes.

- i) Class A. International trunk roads linking international boundaries or terminating at international ports such as the road connect the Mombasa port, Nairobi and Malaba.
- ii) Class B. These are national trunk roads linking provisional headquarters to each other or to higher class roads
- iii) Class C. These are primary roads linking district headquarters to each other or to higher class roads
- iv) Class D. Secondary roads linking locally important centres to each other or to high class roads
- v) Class E. Minor roads, linking minor centres
- vi) Class F. Special purpose roads including those for tourists, township, agriculture and strategic purposes.

Table 30: Classified Road net work in Kenya in Km.

| | Bitumen roads | Gravel | Earth | Total (KM) | % of total |
|--|---------------|--------|-------|------------|------------|
|--|---------------|--------|-------|------------|------------|

Trunk road network (Class A, B, C), Ministry of roads and public works

| | | | | | |
|---------|-------|-------|-------|-------|-----|
| Class A | 2,886 | 717 | 152 | 3,755 | 6% |
| Class B | 1,433 | 842 | 524 | 2,799 | 4% |
| Class C | 2,487 | 3,209 | 1,972 | 7,668 | 12% |

Rural Road network (Class D, E and others)

| | | | | | |
|---------|-------|--------|--------|--------|------|
| Class D | 1,167 | 6,484 | 3,565 | 11,216 | 18% |
| Class E | 751 | 7,206 | 18,592 | 26,549 | 42% |
| Class F | 214 | 8,724 | 2,366 | 11,304 | 18% |
| Total | 8,936 | 27,182 | 27,171 | 63,291 | 100% |
| % | 14% | 43% | 43% | 100% | |

Source: compiled from Kenya roads board 2005

Table 31:Unclassified Road net work in Kenya in Km.

| | Road type | KMs | % total |
|--------------------|-------------------------|---------|---------|
| Urban Road network | | | |
| City councils | Adopted urban streets | 7,000 | 5.27% |
| County councils | Rural roads and tracks | 110,000 | 82.20% |
| Kenya world life | Roads in national parks | 6,000 | |
| | National reserves | 2800 | 6.60% |
| Forest dept | | 8,800 | 6.00% |
| Total | | 133,800 | 100% |

Source: compiled from Kenya roads board.2005

From tables 30 and 31, the total road network in Kenya is 199,091 km. Of this 63,291 is classified, which is 31% of the total network. According to the Ministry of Roads and Public Works, the country has not been able to develop road infrastructure because of the poor economic growth over the years. According to a road condition survey conducted in 2002 by the materials board of the Ministry of Roads and Public Works, of the classified roads, 17% is in good condition, 39% is in fair condition, 27% in poor condition and require rehabilitation, and the rest 16% is failed and requires reconstruction. This is reflected in the dismal performance of the economy and the increased costs of transport.

3.5.5.2 Rail Transport

The railway line in Kenya starts from the port of Mombassa to the border of Kenya and Uganda, and distance of 1,086 km. Branch lines comprise of 1,028 km of rail.

The railway line is a vital link of the Mombassa port with its hinterland countries of Uganda, Burundi, Rwanda, Tanzania and Democratic republic of Congo.

According to the Kenya Economic Survey, the railway line carries 30% of the total cargo handled at the port. The desire is to have more cargo carried by rail, but like the road network, rail has its share of problems manifested in the non-standardisation of its locomotives and tracks, resulting in high maintenance costs and high tariffs to maintain the service. It is also faced with low availability of locomotives, which is below 50%. For the efficient operation of the port, efficient railway services are a must not an option.

From Table 32, railway traffic in tonnes continued to decrease from 2000/2001 financial year to 2002/2003. It decreased by 2.8% in the year 2002/2003 as compared to 2001/2002. This phenomenon does not augur well for the economy and the efficiency of the port of Mombassa.

Table 32: Railway traffic, 1999 - 2003

| | 1998/1999 | 1999/2000 | 2000/2001 | 2001/2002 | 2002/2003 |
|-----------------------|-----------|-----------|-----------|-----------|-----------|
| <u>Freight:</u> | | | | | |
| Tonnes... | 2,200 | 2,400 | 2,330 | 2,227 | 2,165 |
| Tonne-km... | 1,492 | 1,557 | 1,603 | 1,638 | 1,571 |
| Revenue /tonne-km cts | 303 | 332 | 290 | 293 | 2260 |
| Revenue millions | 4,514 | 4,727 | 4,660 | 4,514 | 4,133 |

Source: Kenya Central Bureau of Statistics Kenya 2004

3.5.5.3 Pipeline transport

The Pipeline extends from the Port of Mombasa to the border towns of Kisumu. A total distance of 896 km. The pipeline was started to build a multi-product line to connect the Port of Mombasa to the hinterland.

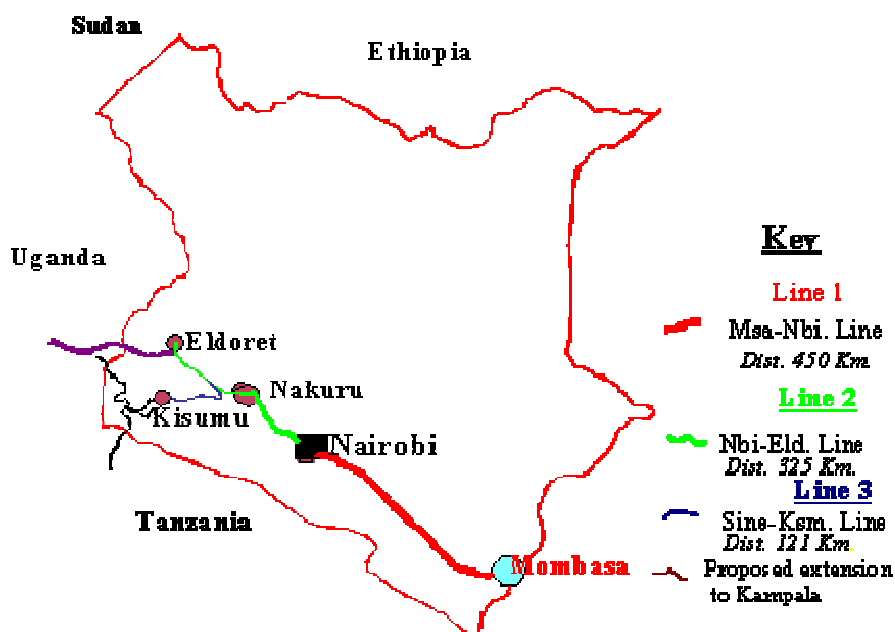


Figure 9: The Kenya pipeline network

Source: Kenya Pipeline Corporation,

The objective was and is to offer an efficient, safe, reliable and environmental friendly transport service. To date the pipe line can be said to have contributed in reducing road degradation, road carnage, helped to provide rural electrification in the areas it serves. According to the KPC, it is proposed to extend the line to Uganda.

Table 33: Pipeline throughputs of white petroleum products, 1999 – 2003 ('000 cu.m)

| | 1999 | 2000 | 2001 | 2002 | 2003 |
|---------------------------|---------|---------|---------|---------|---------|
| Motor spirit(premium) | 631.0 | 598.6 | 624.3 | 625.2 | 675.0 |
| Motor Spirit (regular) | 192.4 | 184.2 | 177.0 | 154.5 | 104.2 |
| Kerosene illuminating oil | 443.5 | 397.8 | 372.8 | 375.7 | 389.6 |
| Light diesel oil | 876.9 | 980.7 | 1,003.4 | 913.5 | 1,057.0 |
| Jet fuel | 639.4 | 622.0 | 639.4 | 692.2 | 739.2 |
| Total | 2,783.2 | 2,783.3 | 2,816.9 | 2,761.1 | 2,965.0 |

Source: central bureau of statistics Kenya, 2004

The demand for pipeline services continues to grow as shown in Table 33. The petroleum sector is liberalised and industry sources say the pipeline is inadequate. More investments need to be done to fulfil the growing needs of the landlocked countries. With peace in Sudan, and development of oil reserves in this region, the pipeline will be expected to play even a more increasing role.

3.5.5.4 Air Transport.

The airport transport industry is vital to the economic and social development of Kenya, particularly in the support of trade. It is the backbone of the first growing tourism and horticultural industries.

At present there are three international airports in Kenya: Jomo Kenyatta International Airport (Nairobi), Moi International Airport (Mombasa) and Eldoret International Airport (Eldoret). There are three domestic airports for airline services

though some like Malindi Airport gets international traffic also. Others are Wilson Airport (Nairobi), and Kisumu Airport in Kisumu.

Table 34: Airfreight (tons) and Passengers (000), 1999-2003

| | 1999 | 2000 | 2001 | 2002 | 2003 |
|------------------|-------------|-------------|-------------|-------------|-------------|
| Cargo tonnes | 246,255 | 272,721 | 256,953 | 222,540 | 217,955 |
| Passengers (000) | 4,002 | 4,383 | 4,329 | 4,474 | 4,747 |

Source: compiled from Central bureau of statistics Kenya 2004

There is a drop in cargo traffic which is attributed to the cargo flights ban in late 2003 by the British airways for security reasons.

3.6 Population and employment.

3.6.1 Population

Kenya's population has been growing at an average rate of 2.21% over the last five years to stand at 32.2 million in 2003. The population is heavily youth, with those between the ages of 0-14 years being over 40% of the population.

Table 35: Population growth 1999 - 2003

| Year | 1999 | 2000 | 2001 | 2002 | 2003 |
|----------------------|------|------|------|------|------|
| Population(millions) | 29.5 | 30.2 | 30.8 | 31.5 | 32.2 |

Source: Central Bureau of Statistics

Table 36: Age structure of population 2003

| Age structure | male | female | Total | % of Total |
|---------------|-----------|-----------|------------|------------|
| 0-14 yrs | 6,662,409 | 6,495,468 | 13,157,877 | 40.9% |
| 15-64 | 9,126,847 | 8,962,905 | 18,089,752 | 56.22% |
| 65 and over | 399,050 | 527,427 | 926,477 | 2.88% |

Source: compiled from various sources.

The working age group which comprises the 15-64 age group accounts for 56.22% of the total population. There is a big labour pool.

3.6.2 Employment

Being basically an agricultural economy, employment is mostly in the small scale farming and pastoralists activities. According to the Kenya Economic Survey, labour market indicators show that job creation is linked with the level of economic activity.

In 2003 employment outside small scale farming and pastoralists' activities reached 7,338,500 from 6,851,600 in 2002. The informal sector (self employed) contributed over 94.3% of this growth in jobs.

Table 37: Total recorded employment: 1999 – 2003 (000)

| | 1999 | 2000 | 2001 | 2002 | 2003 |
|---|---------|---------|---------|---------|---------|
| Wage employees | 1,688.7 | 1,695.4 | 1,677.1 | 1,699.7 | 1,727.6 |
| Self-employed and unpaid family workers | 65.1 | 65.3 | 65.4 | 65.5 | 65.7 |
| Informal sector | 3,738.8 | 4,150.9 | 4,624.4 | 5,086.4 | 5,545.2 |
| Total | 5,492.6 | 5,911.6 | 6,366.9 | 6,851.6 | 7,338.5 |

Source: compiled from Central Bureau of Statistics Kenya 2004

The figures above refer to the recorded numbers, but caution should be taken that most economic activities in the informal sector may not have been captured. Based on the figures above, total unemployment stands at around 59.4 % of the total labour force. $(10,751,252/18,089,752)*100$.

The employment statistics in Kenya show that there is a marked increase in the employment by the private sector. (Kenya Economic Survey 2004, p.53). The share of private sector employment over total employment in 2003 was 61.9%. $(1,068.6/1,727.7)$. The highest growth in employment in the private sector was realised in the manufacturing sector, which grew by 6.3 during 2003. While agriculture is the biggest employer, employment growth rate grew by 1.3% only. The public sector employment shows marked decline in all sectors except mining and quarrying. This is because of the government policy to have a leaner work force and reduce overall wage public bill. Clearly from the Table 38, the Manufacturing sector has more potential to create employment, increase disposable income to Kenyans, increase consumption, and create critical mass consumption and even spur more manufacturing activities. The concern of the manufacturing industry need to be addressed. The maritime sector has to play its share in this regard.

Table 38: Wage Employment by Industry and sector, 1999-2003, '000s'

| PRIVATE SECTOR | 1999 | 2000 | 2001 | 2002 | 2003 | % change |
|---|--------------|----------------|----------------|----------------|----------------|------------|
| Agriculture and Forestry | 249.6 | 251.3 | 254.7 | 256.3 | 259.6 | 1.3 |
| Mining and quarrying | 4.5 | 4.6 | 4.6 | 4.6 | 4.7 | 2.2 |
| Manufacturing | 183.6 | 182.9 | 183.1 | 196.4 | 208.7 | 6.3 |
| Electricity and water | 1.5 | 1.5 | 1.6 | 1.7 | 1.8 | 5.9 |
| Building and construction | 52.2 | 52.3 | 52.4 | 52.5 | 53.1 | 1.1 |
| Trade, restaurants and Hotels | 147.3 | 149.1 | 150.8 | 151.4 | 156.7 | 3.5 |
| Transport and telecommunication | 43.7 | 44.5 | 46.2 | 47.7 | 49.3 | 3.4 |
| Finance, Insurance, Real Estate and business services | 68.1 | 68.8 | 68.8 | 68.6 | 69.1 | 0.7 |
| Community, social and personal services | 239.4 | 247.8 | 256.5 | 261.5 | 265.6 | 1.6 |
| Total Private sector | 989.9 | 1,002.8 | 1,018.7 | 1,040.7 | 1,068.6 | 2.7 |
| PUBLIC SECTOR | | | | | | |
| Agriculture and Forestry | 62.9 | 60.9 | 57.8 | 57.3 | 56.5 | -1.4 |
| Mining and quarrying | 0.7 | 0.7 | 0.6 | 0.6 | 0.7 | 16.7 |
| Manufacturing | 36.3 | 35.8 | 33.5 | 33.4 | 33.0 | -1.2 |
| Electricity and water | 21.6 | 21.2 | 19.8 | 19.6 | 19.3 | -1.5 |
| Building and construction | 27.0 | 26.3 | 24.4 | 24.0 | 23.5 | -2.1 |
| Trade, restaurants and Hotels | 6.4 | 6.4 | 6.1 | 6.1 | 6.1 | - |
| Transport and telecommunication | 40.9 | 39.7 | 38.1 | 37.8 | 37.6 | -0.5 |
| Finance, Insurance, Real Estate and business services | 16.7 | 16.2 | 15 | 14.6 | 14.2 | -2.7 |
| Community, social and personal services | 486.3 | 485.3 | 463.1 | 465.5 | 468.2 | 0.6 |
| Total Public sector | 698.8 | 692.5 | 658.4 | 658.9 | 659.1 | 0.0 |

Source: Kenya Economic Survey 2004.

A summary of all GDP growth rates by sector is shown in the Table 39. The depressed nature of economic activities is evident, though in some sectors such as agriculture and manufacturing, there is evident of growth recovery. Agriculture grew from 0.8% in 2001-2002 to 1.5 % in 2002-2003, while manufacturing grew from 1.2% to 1.4 %. GDP growth rate of the Maritime sector is not directly evident, because it is lumped together in the category transport, storage and communication. This category is showing a declined growth from 2.6% in 2001-2002 to 1.5% in 2002-2003. The lumping together of the maritime sector with other sectors is a mistake, because the contribution of the maritime sector in the economy is not clearly captured. This denies the sector the appropriate attention it deserves.

Table 39: Growth of Gross Domestic Product, 1999-2003, Percentages.

| | | Constant (1982) prices | | | | |
|----------|---|------------------------|------------|------------|------------|--------------|
| | | 1999-00 | 2000-01 | 2001-02 | 2002-03 | 1999-03 |
| A | NON-MONETARY ECONOMY | | | | | |
| | Forestry | 1.1 | 2.3 | 2.1 | 1 | 1.7 |
| | Fishing | -0.9 | 10.2 | 3.6 | 2.6 | 3.3 |
| | Building and construction | 0.5 | 0.9 | 1.3 | 2.2 | 0.7 |
| | water collection | 2.5 | 2.8 | 2.6 | 1.6 | 2.6 |
| | Ownership of dwellings | 1.4 | 1.6 | 1.5 | 1.6 | 1.6 |
| | Total Non-Monetary Economy | 1.2 | 1.7 | 1.7 | 1.7 | 1.6 |
| B | Monetary Economy | | | | | |
| 1 | .Entreprises and non-profit institutions | | | | | |
| | Agriculture | (2.08) | 1.3 | 0.8 | 1.5 | 0.3 |
| | Forestry | (1.96) | 0.9 | 0.8 | 0.8 | 0.6 |
| | Fishing | (2.11) | 0.8 | 0.5 | 3 | 0.1 |
| | Mining and quarrying | 0.87 | 1 | 0.8 | 2.5 | 1.2 |
| | Manufacturing | (1.40) | 0.8 | 1.2 | 1.4 | 0.4 |
| | Building and construction | (1.51) | -0.5 | 0.3 | 2.2 | (0.20) |
| | Electricity and water | (4.10) | 1.5 | 1.2 | 2 | 0 |
| | Trade, restaurants and Hotels | 1.01 | 1.3 | 1.6 | 1.4 | 1.5 |
| | Transport and telecommunication | 2.00 | 3.2 | 2.6 | 1.5 | 2.3 |
| | Finance, Ins. R. Estate and business services | 0.40 | 1 | 0.8 | 3 | 1 |
| | Ownership of dwellings | 1.40 | 1.8 | 1.5 | 1.7 | 1.6 |
| | Other services | 0.50 | 1 | 1 | 1.8 | 1.1 |
| | Less: imputed bank services | 1.20 | 1.9 | 2 | 0.9 | 1.9 |
| | Total | (1.00) | 1.3 | 1.1 | 1.8 | 0.9 |
| 2 | .Private Households(Domestic services | 2.4 | 2.6 | 2.3 | 2.4 | 3.0 |
| 3 | Producers of Government services | | | | | |
| | Public administration | | | | | |
| | Defence | | | | | |
| | Health | | | | | |
| | Education | | | | | |
| | Agriculture services | | | | | |
| | Other services | | | | | |
| | Total | 1 | 1 | 1 | 2 | 1.0 |
| | Total Monetary Economy | 0 | - | 1 | 2 | 0.9 |
| | Total Non-Monetary and Monetary economy | | (1) | 1 | 2 | 1 |
| | Population growth rate | 3 | 2 | 2 | 2 | 2.3 |
| | Gross Domestic product per capita. | (3) | (1) | (1) | (1) | (1.3) |

Source: Kenya Economic Survey, 2004

The overall picture is that gross domestic product per capita has continued to be in the negative, even with a constant population growth rate. This situation has to be reversed. Sectors showing great potential are the manufacturing sector and tourism, transport and communication. They have a high employment rate, high added value, and high contribution to GDP.

Key concerns of the manufacturing sector as seen above is high costs of production, which makes goods produced in Kenya to be less competitive in the international market. As a result direct foreign and local investment has been minimal, and even those who have invested are relocating to other countries. Key among the concerns raised is delay at the Port of Mombasa, high logistics costs, due to poor roads, and high power tariffs. The Port of Mombasa if well managed can contribute to the economy of Kenya, by facilitating smooth, fast and cheap transport.

Chapter four will look at the strength and weakness of the Port of Mombasa in detail and try to identify the key issues that may be the contributing factor to the high production costs in the manufacturing sector.

4 CHAPTER FOUR

THE STRENGTH AND WEAKNESS OF THE MOMBASA PORT

4.1 Introduction

The Port of Mombasa can contribute to Kenya's economic growth if it can contribute in reducing the cost of production in the country's manufacturing sector. This can be possible by facilitating smooth flow of goods and therefore reducing total transport costs.

The productive sectors of the economy such as the manufacturing sector have cited the port as a major hindrance to the manufacturing activity. Number one reason for the high production costs incurred by the manufacturing sector is delays at the port. This is increasing total logistics costs and the cost of doing business in Kenya. The port has to perform to international standards for the manufacturing sector to be competitive. This Chapter will examine the mandate of Kenya ports authority and the main strength and weakness of the Port of Mombasa to try to understand the reasons why the port is accused of being the main bottle neck in the economic recovery and development of the Kenyans economy.

4.2 KPA Mandate

The Kenya Ports Authority (KPA) is a statutory body under the Ministry of Transport set up by an Act of Parliament (Cap 391) in 1978. It is mandated by the Act to do the following.

- (i) To maintain, operate, improve and regulate all scheduled sea ports situated along Kenya's coastline.
- (ii) To facilitate sea borne trade in the most efficient manner.

- (iii) Scheduled ports include: Mombasa, Lamu, Malindi, Kilifi, Mtwapa, Kiunga, Shimoni, Funzi, and Vanga.

Of the scheduled ports mandated by the act, the Kenya Ports Authority has managed to develop only the Port of Mombasa. Although there is a lot of potential for the Port of Lamu, it is not developed and activities taking place there are minimal and irregular, mostly in the cruise shipping business and small dhows.

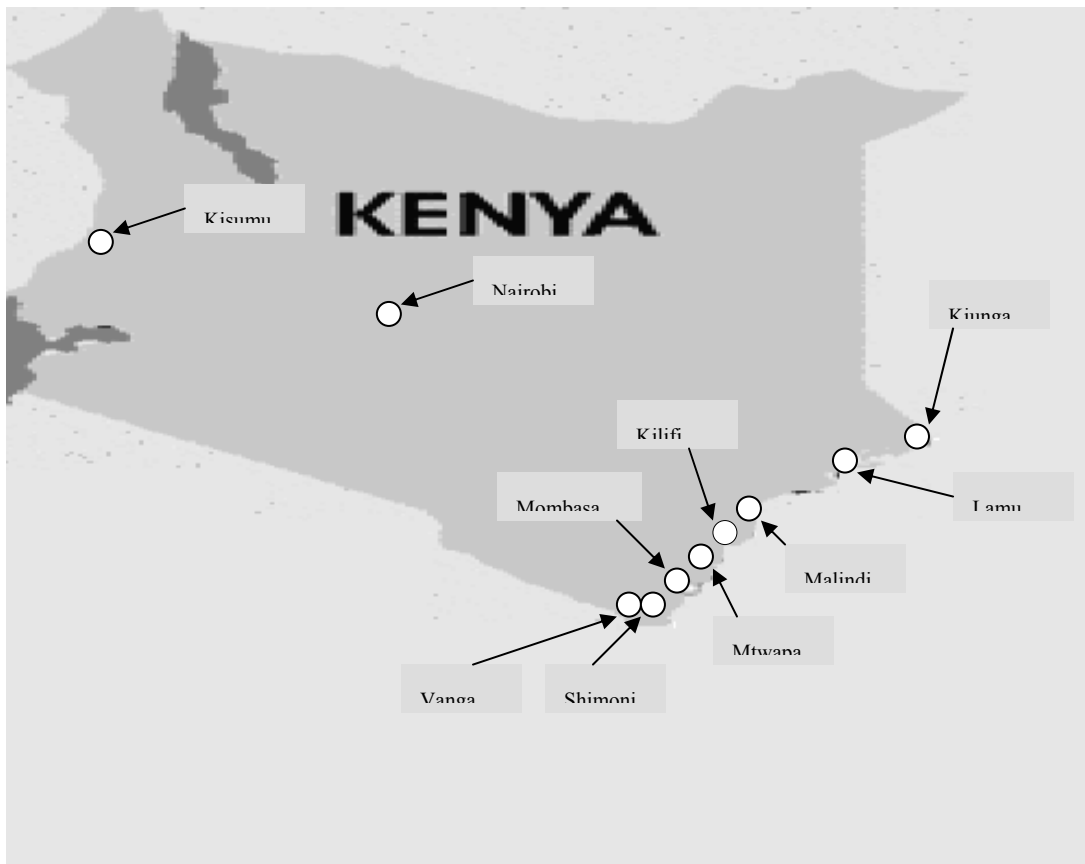


Figure10: Location of the various ports along the Kenyan Coast

4.3 Port of Mombasa, Brief history and Strategic Position:

4.3.1 Brief History

The history of the port of Mombasa can be traced back to the famous spice trade between the East Coast of Africa, the Indian peninsula, and the Arabia Gulf some 500 years ago. This trade was mainly by sailing dhows which called at the Mombasa Old Port situated on the North side of Mombasa Island now famously called the Old town.

With growing trade and the need to open up the interior of East Africa through the construction of the Kenya-Uganda railway line in the 18th century, the port grew rapidly. The development of the modern port facilities was started in Kilindini in 1896.

4.3.2 Strategic Position

The port of Mombasa is strategically located to serve, the vast and rich agricultural hinterland of Kenya, and the transit landlocked countries of Uganda, Rwanda, Burundi, Easter part of the Democratic republic of Congo (DRC), southern Sudan, Northern Tanzania and southern Ethiopia. It is the hub of KPA operations. A major port of call for international shipping lines serving the whole of Great Lakes region and the horn of Africa.



Figure 10: Map showing the strategic location of Kenya and Mombasa Port

Source: Kenya Ports Authority.

The Port of Mombasa is comparatively close to Europe and the Middle East and has a large captive cargo base.

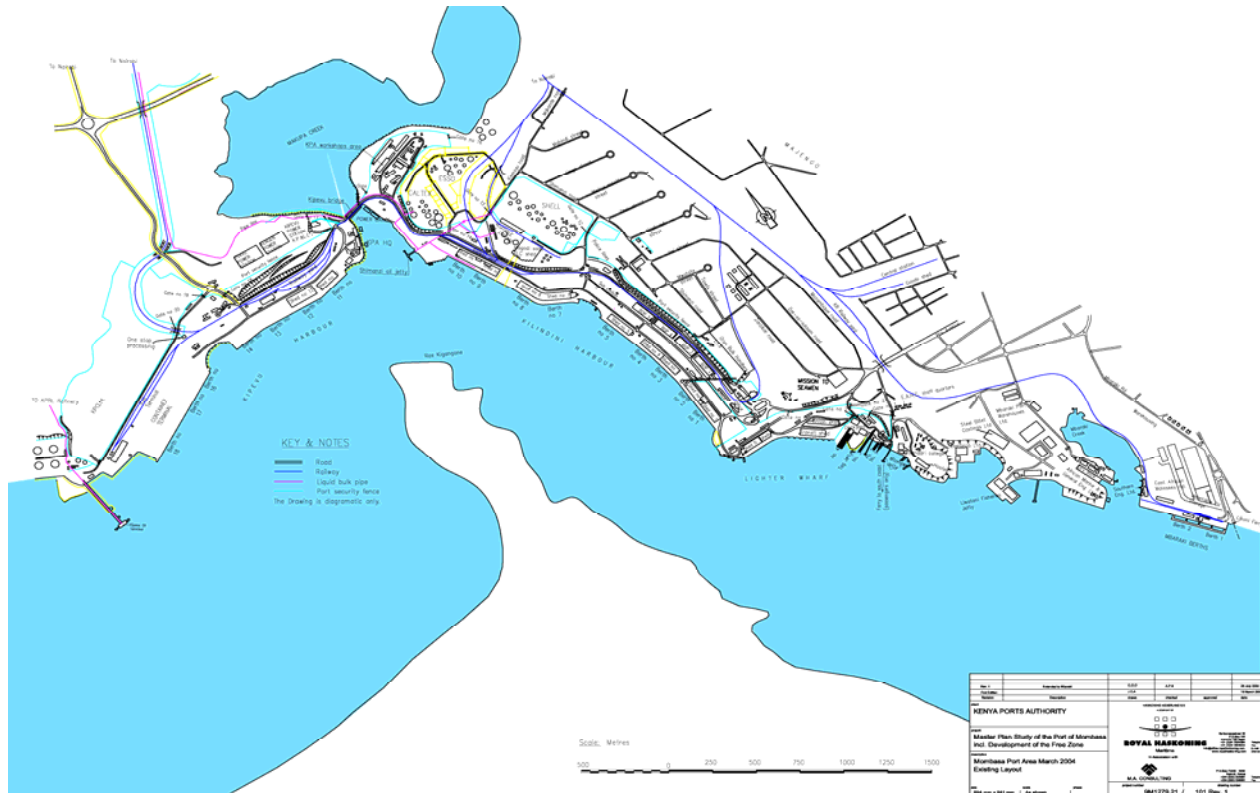


Figure 11: The Port of Mombasa

Source: Kenya ports authority

The Port of Mombasa is the second largest port in terms of tonnage and containers handled after Durban in South Africa. Figure 13 and 14 show container handled and general cargo in ports in the Indian Ocean rim.

TEU Handling, 1997 - 2003

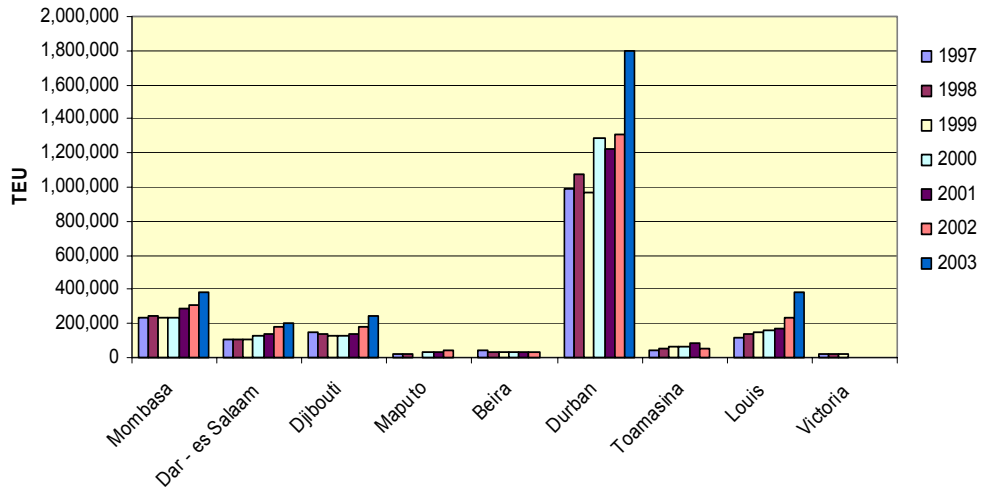


Figure 12: Port of Mombasa comparative position

Source: compiled from KPA and other sources.

Cargo handling in various ports 1997 - 2003

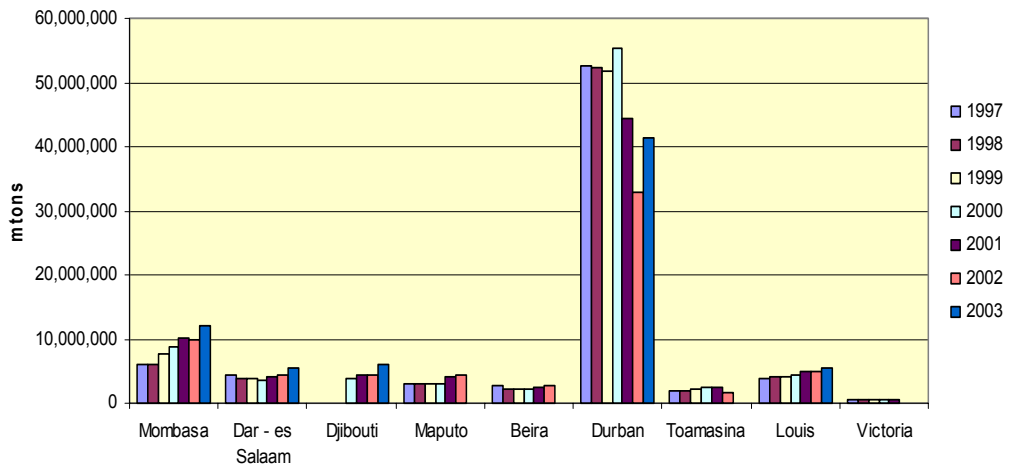


Figure 13: Port of Mombasa comparative positionn

Source: compiled from KPA and other sources

After Durban, Mombasa is the best connected port in the region, with 17 shipping lines calling with direct connectivity to over 80 ports in the world.

The strategic position of the port makes it a very potential hub for trade. Figures 13 & 14 show the port of Mombasa experienced considerable growth in the last five years especially in containers. Mombasa after Durban in South Africa and Port Louis in Mauritius experienced the largest growth in container traffic at approximately 17%. The Port of Mombasa also handles a consistent 80% market share on transit trade to Uganda, Rwanda, Burundi, and East DRC.

4.4 Mombasa Port cargo throughput and Analysis

4.4.1 Container throughput

The container traffic at the Port of Mombasa shows a steady growth far above the international average of around 10%. Between 2004 and 2003 the container traffic grew by 15.31 %. This kind of growth has considerable constrain on the available facilities.

The Mombasa container Terminal (MCT) has three (3) berths with a total quay length of 596 metres and an average dredged draft of 13 metres. The Area under the Terminal is 20 hectares and has a design capacity of 250,000 TEUs. In the year 2004 MCT handled 438,597 TEUs. It means therefore that with 2004 container throughput of 438,597 TEUs the Utilization capacity of the terminal is:

$$\begin{aligned} & 438,597/250,000 \\ & = 175.44 \% \end{aligned}$$

This is almost twice its design capacity. The result is acute congestion at the terminal. This is even acknowledged by the management in their current news bulletin

As of 1st June 2005 the port was holding 10,027 containers and our holding capacity is about 7,200 only. This has resulted in congestion, which is hampering smooth port operations (KPA, June 2005)

From the news bulletin, it shows the daily holding capacity at the stacking yard has exceeded by 39.26%. Because of this congestion, shipping lines calling at the port are charging a vessel delay surcharge (VDS) of US \$ 70, significantly increasing the total transport costs to manufacturers and consumers.

Table 40: Container throughput 1999-2003

| | | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | Growth 2004 |
|---------------|--------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Imports | Full | 92,014 | 95,243 | 117,855 | 127,424 | 159,379 | 189,911 | 19.16% |
| | Empty | 16,969 | 17,103 | 16,642 | 15,935 | 14,160 | 14,007 | -1.08% |
| | Total | 108,983 | 112,346 | 134,497 | 143,359 | 173,539 | 203,918 | 17.51% |
| Exports | Full | 61,192 | 62,186 | 72,176 | 75,765 | 78,460 | 90,539 | 15.40% |
| | Empty | 47,122 | 44,729 | 58,058 | 58,935 | 78,749 | 109,895 | 39.55% |
| | Total | 108,314 | 106,915 | 130,234 | 134,700 | 157,209 | 200,434 | 27.50% |
| Transshipment | Full | 14,059 | 16,542 | 24,727 | 26,746 | 43,778 | 29,336 | - 32.99% |
| | Empty | 1,061 | 1,125 | 1,042 | 622 | 5,827 | 4,909 | - 15.75% |
| | Total | 15,120 | 17,667 | 25,769 | 27,368 | 49,605 | 34,245 | - 30.96% |
| Total | Full | 167,265 | 173,971 | 214,758 | 229,935 | 281,617 | 309,786 | 10.00% |
| | Empty | 65,152 | 62,957 | 75,742 | 75,492 | 98,736 | 128,811 | 30.46% |
| TOTAL: | | 232,417 | 236,928 | 290,500 | 305,427 | 380,353 | 438,597 | 15.31% |
| Growth rate | | | 1.94% | 22.61% | 5.14% | 24.53% | 15.31% | |

Source: compiled from KPA statistics

The congestion at the port can be explained from various angles. As has been seen, the total container capacity is overwhelmed. Other factors can be revealed if looking at the Berth occupancy, the shore cranes, the yard equipment and the port container traffic forecasting.

(a) Berth Occupancy.

Berth occupancy at the container terminal is very high. It averaged 82.6 % in 2003 and 87.3% in 2004, with rates of over 90% in individual months.

Table 41: Berth occupancy (%) –Mombasa Container terminal

| Month/year | 2000 | 2001 | 2002 | 2003 | 2004 |
|-------------------|-------------|-------------|-------------|-------------|-------------|
| January | 83.9 | 60.4 | 68.9 | 77.6 | 87.7 |
| February | 86 | 63.8 | 74.8 | 79.4 | 91.9 |
| March | 72.7 | 79.5 | 74.7 | 83.6 | 88.6 |
| April | 70.7 | 79.2 | 76.6 | 82.6 | 89.7 |
| May | 74.7 | 72.7 | 82.7 | 92.4 | 83 |
| June | 78.6 | 81 | 80.4 | 84.1 | 91.2 |
| July | 68.2 | 75 | 79.1 | 81.1 | 85.3 |
| August | 76.4 | 74.1 | 71 | 80 | 87.8 |
| September | 67.2 | 68.9 | 73.3 | 74.5 | 74.2 |
| October | 60.3 | 61.3 | 68.3 | 90.3 | 88.6 |
| November | 58 | 77.8 | 75.5 | 85.7 | 87.8 |
| December | 60.8 | 77.7 | 83 | 80.1 | 92.1 |
| Average | 71.5 | 72.6 | 75.7 | 82.6 | 87.3 |

Source: Kenya Ports Authority: monthly review of Port working

High berth occupancy like this leads to congestion in the port, hence the charging of vessel delay surcharge by the shipping lines. Ships earn money while sailing not when waiting for a berth in port. The combination of VDS, freight charges, port handling charges and, KPA fees, and the time taken to clear and transport goods inland contribute significantly to the high costs of production and doing business in Kenya. The cause of the high berth occupancy can be attributed to insufficient berths; few or unreliable shore gantry cranes, and insufficient and inadequate container yard equipment.

(b) Shore and Yard equipment analysis

Equipment at the port is under the engineering department which maintains and repairs for and on behalf of the Operations Department. According to the Engineering Department, the condition of the equipment is as follows. There are four (4) ships to shore gantry cranes (SSGs), eleven (11) rubber tired gantry cranes (RTGs), two (2) rail mounted gantry cranes and seven (7) reach stackers.

Table 42: Container equipment at Mombasa Port

| Type | No. | Year of Comm. | Operation Req' ment | Available |
|----------------|-------|---------------|---------------------|-----------|
| SSGs | 4No | 1983 | 6 No. | 4No. |
| RTGs | 11No. | 1983 | 14No. | 9No. |
| RMGs | 2No | 1983 | 2 No. | 2No. |
| Reach stackers | 7No. | 1998(2No) | | |
| | | 2002/3 5No. | 10No. | 5No. |
| Front Loaders | 3No. | 1993/4 | - | 3No |
| Terminal | 26No | 1979 -82 | | |
| Tractors | 30No | 2000-03 | 55No | 46No |
| Empty Handlers | 2No | 2003 | 2No | 2No |

Source: KPA engineering department

- 1) According to the Engineering Department the 4 SSGs are 22 years old and unreliable. One SSG 1801 was completely refurbished between March 2001 and August 2002 at a cost of US. \$2.5 million. In November 2003, a residual life expectancy test was done on the SSG 1801 and revealed a life span of 5 years. There is a plan to replace it.
- 2) Of the 11 rubber tired gantry cranes, only 9 are operational. They were prototypes acquired in 1983. They underwent refurbishment between 1994 and 1997, and revealed an expected life span of 10 years after date of completion. They are however too slow, can not cope with operations and are supplemented by reachstakers. There is a plan to replace them.

- 3) The two RMGs were acquired in January 1983; they are now 22 years old, have not been rehabilitated and are extremely unreliable. There is also a plan to replace them.

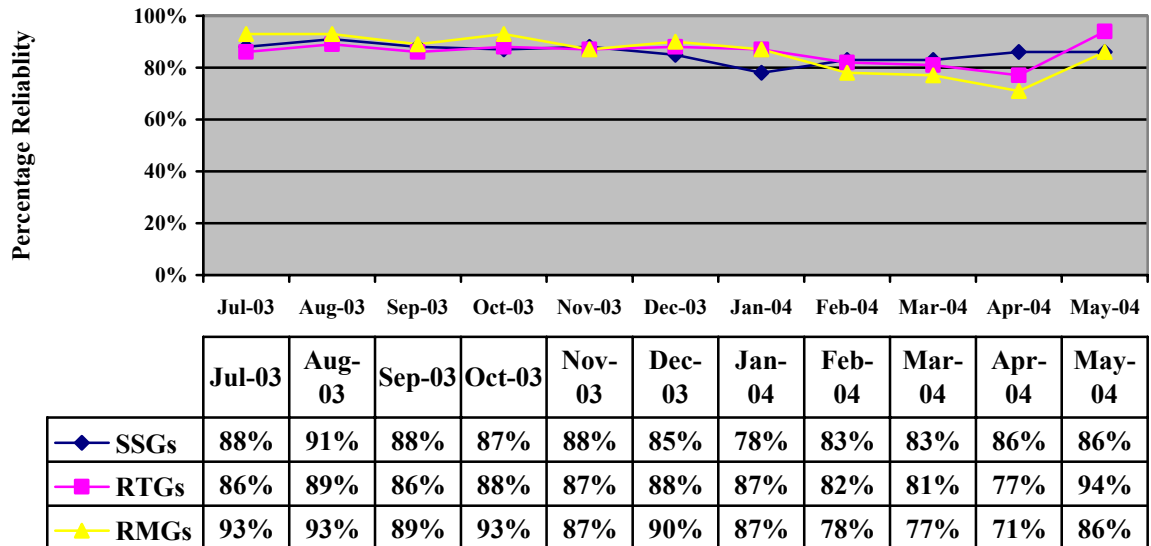


Figure 14 :Gantry equipment reliability from jul-03 to may 04

Source: KPA Engineering Department

The reliability level across all equipment is low compared to international standards. During our tour of Singapore and Rotterdam, even reliability of 98% was not considered good enough. The level of reliability and availability can be reflected in the weekly ship performance indicators as shown in the figure 16.

On average ship performance is 12 moves per hour which is low even by African standards. The port needs to perform to international standards in order to reduce transport and inventory holding costs, which is the main cause of high manufacturing costs in Kenya.

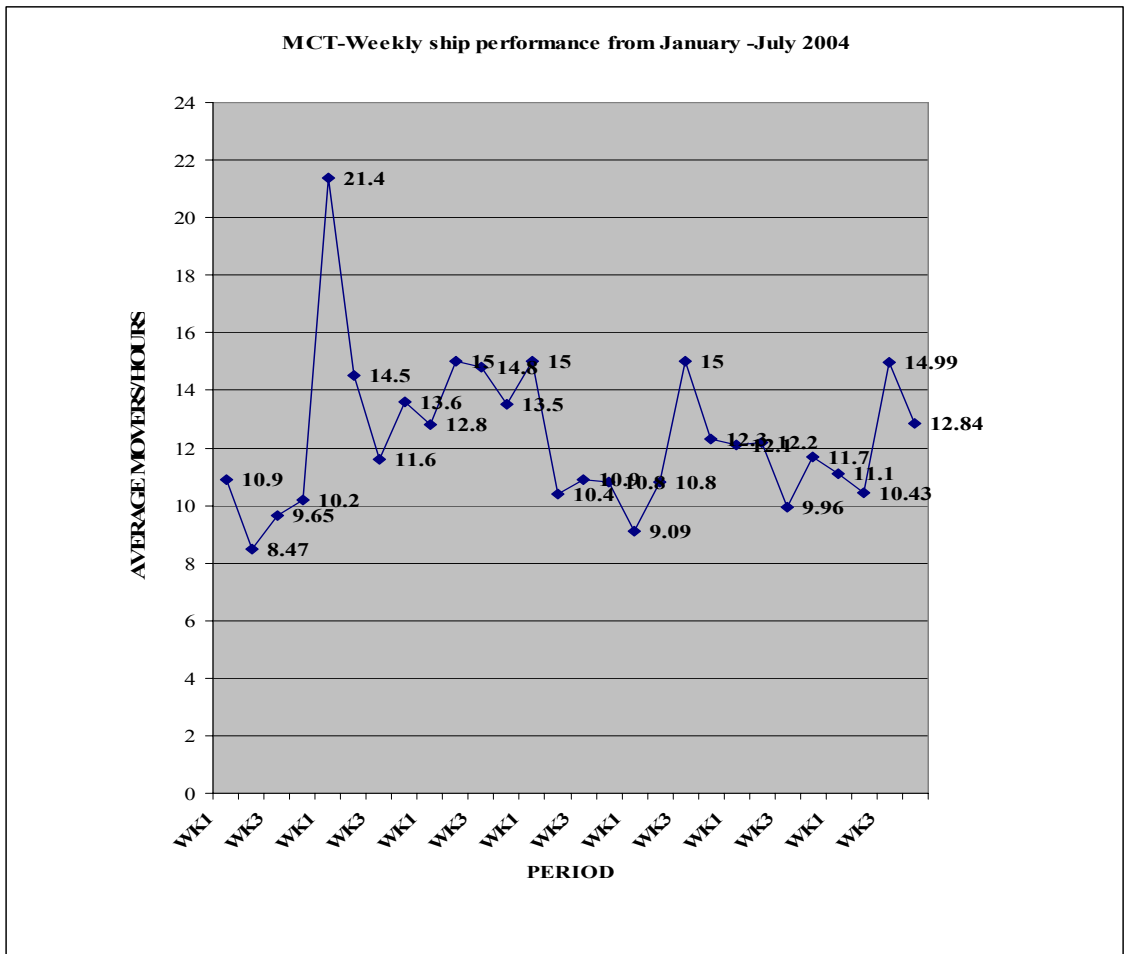


Figure 15: Weekly ship performance at the Mombasa Container Terminal (MCT)

Source: Compiled for MCT operations data 2004

International crane productivity as at 2002

Table 43: Showing moves per ship, in Middle East, USA, Europe, S.America and Africa

| <u>Middle East</u> | <u>Moves per vessel hour</u> | <u>Far East</u> | <u>Moves per vessel hour</u> | <u>USA</u> | <u>Moves per vessel hour</u> |
|---------------------|------------------------------|------------------|------------------------------|-------------|------------------------------|
| Beirut | 45 | Hong Kong | 45 | Baltimore | 68 |
| Dubai | 110 | Singapore | 76 | Charleston | 41 |
| Nhava Sheva | 30 | Sydney | 34 | Freeport | 45 |
| Average Middle East | 61 | Average Far East | 52 | Average USA | 51 |

| <u>Europe</u> | <u>Moves per vessel hour</u> | <u>South America</u> | <u>Moves per vessel hour</u> | <u>Africa</u> | <u>Moves per vessel hour</u> |
|---------------|------------------------------|----------------------|------------------------------|----------------|------------------------------|
| Antwerp | 43 | Buenaventura | 32 | Durban | |
| Barcelona | 37 | Portaleza | 14 | Beira | 10 |
| Bremerhaven | 43 | Santos | 31 | Djibouti | 22 |
| Felixtowe | 35 | Valparaiso | 39 | D.E.S | 25 |
| Hamburg | 46 | | | Mombasa | 12 |
| | | | | Tema | 15 |
| | | | | Lagos | 10 |
| | | | | Dakar | 22 |
| Ave. Europe | 41 | Ave. S.America | 29 | Average Africa | 18 |

Source: Gary c (2005) Improving port performance (IPP3) Port productivity

While various causes can be associated to low moves per vessel hour, from the analysis of the container equipment in Table 43, the dilapidated condition of the equipment may be one of the biggest causes. To reduce total transport costs, the level of productivity at the port should be very high. An investment in equipment, right maintenance and repair policy should be in place. The Figure 17 reinforces the view that the equipment at the port is the main cause of the vessel performance at the port.

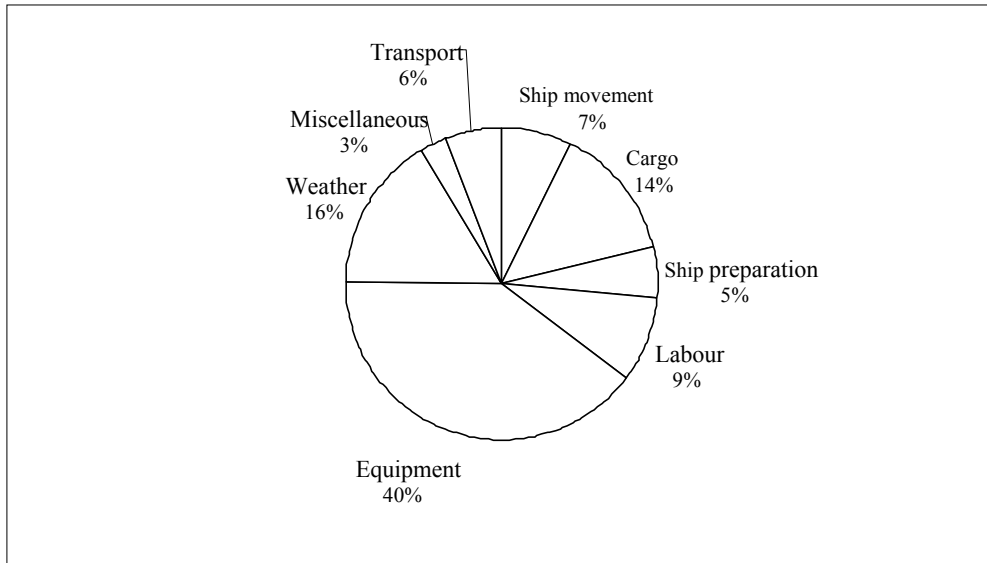


Figure 16: An Analysis of causes of ship waiting time Jan – Dec 2003

Source: compiled from data obtained from the KPA operations.

Note: Equipment: cranes, derricks delays

Cargo: Shifted and over stowed cargo

Transport: Awaiting road transport

Ship movement: Changing Berth

An analysis of the yard handling equipment such as tractors reveals the same problem of low availability. This has a profound negative effect on the movement of containers from the quay apron to the import stack, export stack and general handling within the yard. Delay and congestion is unavoidable in such a case, and increased costs to shippers and consignees. This trickles down to the overall total costs of production in the economy, and reduces competitiveness of the Kenyan products abroad, high consumer prices at home, low employment and increased poverty.

Terminal Tractors Average Availability for 2004

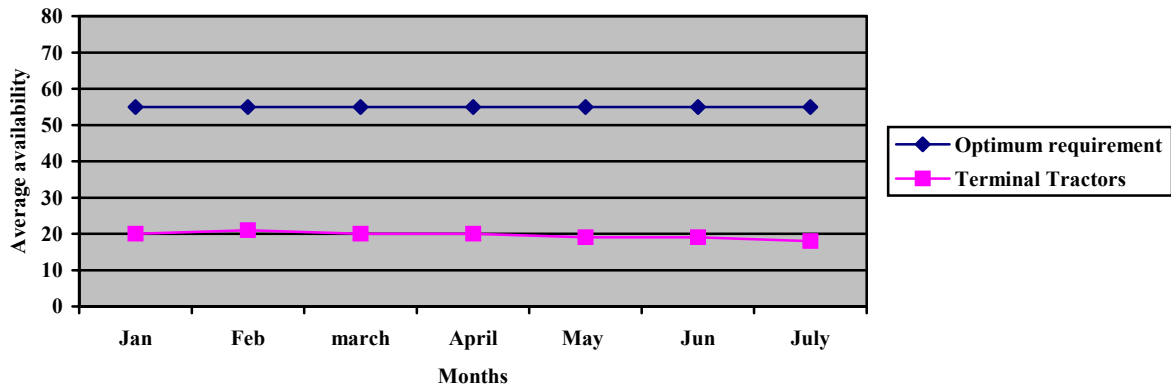


Figure 17: Mombasa port average monthly availability of tractors

Source: compiled from KPA engineering department

Table 42, shows most of the tractors were acquired between 1979 and 1982. They are over 25 years old. With changes in technology, there is definitely a problem in obtaining spare parts, and therefore maintenance is uneconomical.

The congestion at the container terminal is therefore a combination of low availability of the quay gantry cranes, and yard equipment leading to high berth occupancy and high berth waiting time for ships. This leads to congestion in the port, hence the charging of vessel delay surcharge. The cost thus incurred in delays is reflected in the high manufacturing costs. This proves the concern of the EPZ firms and other manufacturing concerns of the delays at the port.

(c) Forecasting

Forecasting trade growth is a prerequisite for good port management. It informs management in advance of the need to provide facilities ahead of demand to avoid congestion at the port.

Of the three container berths at the port, two berths, number 16 and 17 were commissioned in 1975. That is about 35 years ago. The third, number 18 was

commissioned in 1985, some 25 years ago. There has never been any investment in new container berth to date. The port and the economy is therefore suffering as a result.

While lack of financial resources to invest in new facilities could be a limiting factor, good forecasting can prod management to look for sources of finance in advance for investment in port facilities. Looking at the port forecasting figures, poor forecasting could be one of the fundamental reasons of the inadequacy of facilities at the port.

Table 44: Projected container Traffic growths 2000-2010 at 3% and 5%

| YEAR | 3% GROWTH TEUS | 5% GROWTH TEUS |
|-------------|-----------------------|-----------------------|
| 2000 | 263,000 | 273,000 |
| 2001 | 270,000 | 287,000 |
| 2002 | 278,000 | 301,000 |
| 2003 | 286,000 | 316,000 |
| 2004 | 294,000 | 332,000 |
| 2005 | 303,000 | 348,000 |
| 2006 | 312,000 | 366,000 |
| 2007 | 321,000 | 384,000 |
| 2008 | 331,000 | 403,000 |
| 2009 | 341,000 | 425,000 |
| 2010 | 351,000 | 445,000 |

Source: KPA corporate planning

The forecast figures in Table 44 are as forecasted by the Kenya Ports Authority management. If compared with the actual figures and actual growth rate, the picture is wide apart.

Table 45: Showing the actual container throughput and actual % growth compared to port own forecast

| YEAR | Actual s | Actual % growth | 3% GROWTH TEUS | 5% GROWTH TEUS | Diff 3% | Diff 5% |
|------|----------|-----------------|----------------|----------------|----------|----------|
| 2000 | 236,928 | 1.94 | 263,000 | 273,000 | 26,072 | 36,072 |
| 2001 | 290,500 | 22.61% | 270,000 | 287,000 | -20,500 | -3,500 |
| 2002 | 305,427 | 5.14% | 278,000 | 301,000 | -27,427 | -4,427 |
| 2003 | 380,353 | 24.53% | 286,000 | 316,000 | -94,353 | -64,353 |
| 2004 | 438,597 | 15.31% | 294,000 | 332,000 | -144,597 | -106,597 |
| 2005 | | | 303,000 | 348,000 | | |
| 2006 | | | 312,000 | 366,000 | | |
| 2007 | | | 321,000 | 384,000 | | |
| 2008 | | | 331,000 | 403,000 | | |
| 2009 | | | 341,000 | 425,000 | | |
| 2010 | | | 351,000 | 445,000 | | |

Source: S.N.Chai. Compiled from figures in Table 44 and others

While the port is forecasting to handle 445,000 TEUs at 5% growth rate by 2010, the actual figures for 2004 is 438,597. This is only 6,403 less containers. According to the port forecast, in 2004 they should have handled 332,000 TEUs at constant 5%

growth rate. The Actual for 2004 is 380,353 TEUs which is 106,597 more than the forecasted figures or a difference of 24 %. With such errors in forecasting trade growth, it can be very difficult to provide the right facilities ahead of demand. The result is normally congestion. Congestion in the Berth and container yards hinders smooth operations in port with costly financial implications for the port, importers, exporters and shipping lines. This is reflected in the low investment levels in the economy.

4.4.2 General Cargo Throughput and Analysis

The general cargo section of the port consists of 13 berths with a total quay length of 2,448 metres and a maximum dredged depth of 11 metres. It has a design capacity of 20 million tons. General cargo traffic in 2004 was 12, 920 million tons. Capacity utilization at the general cargo terminal is therefore $(12,920/20,000)*100$. This is approximately 64.40%

The general cargo throughput shows that dry exports registered a significant growth in 2004 as compared to 2003, while bulk liquids registered a negative growth. There was an increase in the exports of tea, soda ash, and cotton. The introduction of the AGOA (African Growth Opportunity Act) could be attributed to the increase in cotton growth and export. Overall, general cargo tonnage is experiencing a steady growth over the period under review.

Table 46: General Cargo traffic Handled 1999 – 2004 ('000'DWT)

| Exports/year | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | Growth |
|------------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| Dry exports | 1609 | 1,523 | 1,803 | 2,171 | 1,797 | 2,248 | 25.10% |
| Bulk Liquids | 236 | 199 | 196 | 209 | 271 | 246 | -9.23% |
| Total exports | 1,845 | 1,722 | 1,999 | 2,380 | 2,068 | 2,494 | 20.60% |
| Imports | | | | | | | |
| Dry Imports | 3,524 | 3,704 | 4,005 | 3,918 | 4,767 | 5,422 | 13.74% |
| Bulk Liquids | 2,676 | 3,505 | 4,294 | 3,926 | 4,491 | 4,595 | 2.32% |
| Total Imports | 6,200 | 7,209 | 8,299 | 7,844 | 9,258 | 10,017 | 8.20% |
| Total Export & Imports | 8,045 | 8,931 | 10,298 | 10,224 | 11,326 | 12,511 | 10.46% |
| Transshipment | 143 | 196 | 303 | 340 | 605 | 409 | -32.40% |
| TOTAL | 8,188 | 9,127 | 10,601 | 10,564 | 11,931 | 12,920 | 8.29% |
| Average Growth | | 11.47% | 16.15% | -0.35% | 12.94% | 8.29% | |

Source: compiled from KPA corporate development statistics.

Domestic trade grew by 8.42% in 2004 as compared to 2003. Domestic trades as compared to total traffic constitute approximately 74% of the total traffic. This trade is mainly captive, being solely from Kenya.

Domestic Traffic = 9,620

Total Traffic = 12,920

% Share = $(9,620/12,920) * 100$

= 74.46%

Table 47: Domestic Traffic compared to Transit and Transshipment 1999-2004 ('000' dwt)

| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | Growth |
|---------------|-------|-------|--------|--------|--------|--------|-------------|
| Domestic | 6,735 | 7,476 | 8,180 | 8,009 | 8,873 | 9,620 | 8.42% |
| Transit | 1,310 | 1,454 | 2,117 | 2,215 | 2,453 | 2,891 | 17.86% |
| Transshipment | 143 | 196 | 303 | 340 | 605 | 409 | - 32.40% |
| Total | 8,188 | 9,126 | 10,600 | 10,564 | 11,931 | 12,920 | 8.29% |

Source: KPA: corporate development statistics.

Trade imbalance is in favour of imports. The Import to export ratio is almost 5 to 1 (10,017:2,494). This imbalance is too wide and efforts need to be done to bridge the gap. With such a ratio it means ships do not have enough outbound cargo. The transit traffic has been showing a steady growth over the same period. In 2004 it registered a growth of 17.86%. This is traffic to the landlocked countries. With increased peace in Sudan, Rwanda, Burundi and DRC, this traffic is expected to increase considerably in future.

(a) Berth occupancy

Berth occupancy in the general cargo terminal averaged 38.5 in 2003 and 33.6 in 2004. This is generally within acceptable limits and does not pose any immediate danger. (See table 48.)

Table 48: Berth occupancy (%) – General Cargo Berths

| Month/year | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------------|-------------|-------------|-------------|-------------|-------------|
| January | 55.8 | 34.7 | 40 | 30.5 | 22 |
| February | 48.8 | 45.6 | 42.4 | 37.7 | 31 |
| March | 36.4 | 48.3 | 41.2 | 39.4 | 21 |
| April | 51.7 | 40.3 | 35.8 | 37.4 | 34 |
| may | 44.4 | 46.6 | 49.2 | 47.5 | 39 |
| June | 37 | 43.1 | 50.1 | 37.4 | 42.1 |
| July | 33.4 | 48.5 | 35.4 | 40.1 | 32 |
| August | 40.8 | 42.4 | 37.2 | 43.3 | 37 |
| September | 53.3 | 41.5 | 28.9 | 30.8 | 34 |
| October | 53.9 | 35.8 | 39.2 | 37.9 | 22 |
| November | 42.5 | 40.6 | 28.5 | 38.3 | 42.4 |
| December | 50.4 | 47.8 | 40.7 | 41.8 | 47.1 |
| Average | 45.7 | 42.9 | 39.1 | 38.5 | 33.6 |

Source: Kenya ports Authority: monthly review of Port working

(b) General cargo handling equipment

The general cargo handling equipment is old, dilapidated and insufficient and is significantly affecting performance. The mobile cranes were acquired in 1985. Most of the other equipment is between 15 and 22 years old.

According to the Engineering Department, a forklift has a lifespan of five years. The majority of the forklifts at the port are 15 to 22 years old and are very unreliable. Even with low berth occupancy, cargo handling rates are very low, because of the state of the cargo handling equipment. The concern of the manufacturing sector is again vindicated.

Table 49: Conventional Equipment

| Type | Total in use as At 31/12/2004 |
|--------------------------|----------------------------------|
| 1.Mobile cranes | |
| 5 tonnes cranes | 1 |
| 11 ton '' | 5 |
| 15 ton '' | 1 |
| 25 ton '' | 2 |
| 35 ton '' | 1 |
| 43 ton '' | 1 |
| 2.Travelling cranes | |
| 5 tons cranes | 17 |
| 7tons '' | 5 |
| 10 tons '' | 2 |
| 7-20 ton '' | 2 |
| 15 tons '' | 8 |
| 3. Portal Electric Fixed | 3 tons |
| 4. Electric overhead | |
| 2 ton cranes | 1 |
| 3 ton '' | 1 |
| 10 tons '' | 1 |
| 5.Under hung Jib | |
| 1.5 tons crane | 8 |
| Wall bracket cranes | 6 |
| 6.Forklifts Trucks | |
| 1.5/2/3 tonne | 34 |
| 5 tonne | 11 |
| 10 tonne | 6 |
| 16 tonne | 6 |
| 5. Tractors | 4 |

Source: KPA <http://www.kpa.co.ke/content.asp?cat=STORAGE>

The low level of performance at the port can be well understood if compared against international performance standards in the various cargo categories.

Table 50: Mombasa port Actual Performance against International standards 2004

| | Actual performance | International standard |
|-------------------|---------------------------|-------------------------------|
| Container | 12 mph | 30 mph |
| Soda ash | 39 tph | 100 tph |
| Agri-bulk | 200 tph | 200 tph |
| Ferilizer | 41 tph | 60 tph |
| GC(Import) | | |
| .Bags | 30 tph | 50 tph |
| .Steel | 46 tph | 75 tph |
| .Mix/conventional | 30 tph | 50 tph |
| Vehicles | 29 vph | 80 vph |
| KOT | 755 tph | 800 tph |

Source: compiled from KPA, IPP3 and various sources.

The level of performance is well below the international standards in all sectors with the exception of Agri-bulk. This is because, the port privatized the handling of agri-bulk commodities and a state of the art grain bulk handling facility was installed. The result is productivity comparable to the best in the world. Equipment in the port is very important issue that needs to be addressed for the port to play its role in the Kenyan economy.

The immediate challenge is for the port to invest in modern equipment to speed the cargo handling productivity.

4.5 Port Labour

The Kenya Ports Authority currently employs around 5,553 employees down from 11,127 employees in 1986. Of the 5,553 employees 2,129 are casual employees. The size of the labour force is huge considering the size of the port. The Human Resource Department describes the labour force as lethargic and a drain in the port resources since it consumes 57% of the port total expenditure.

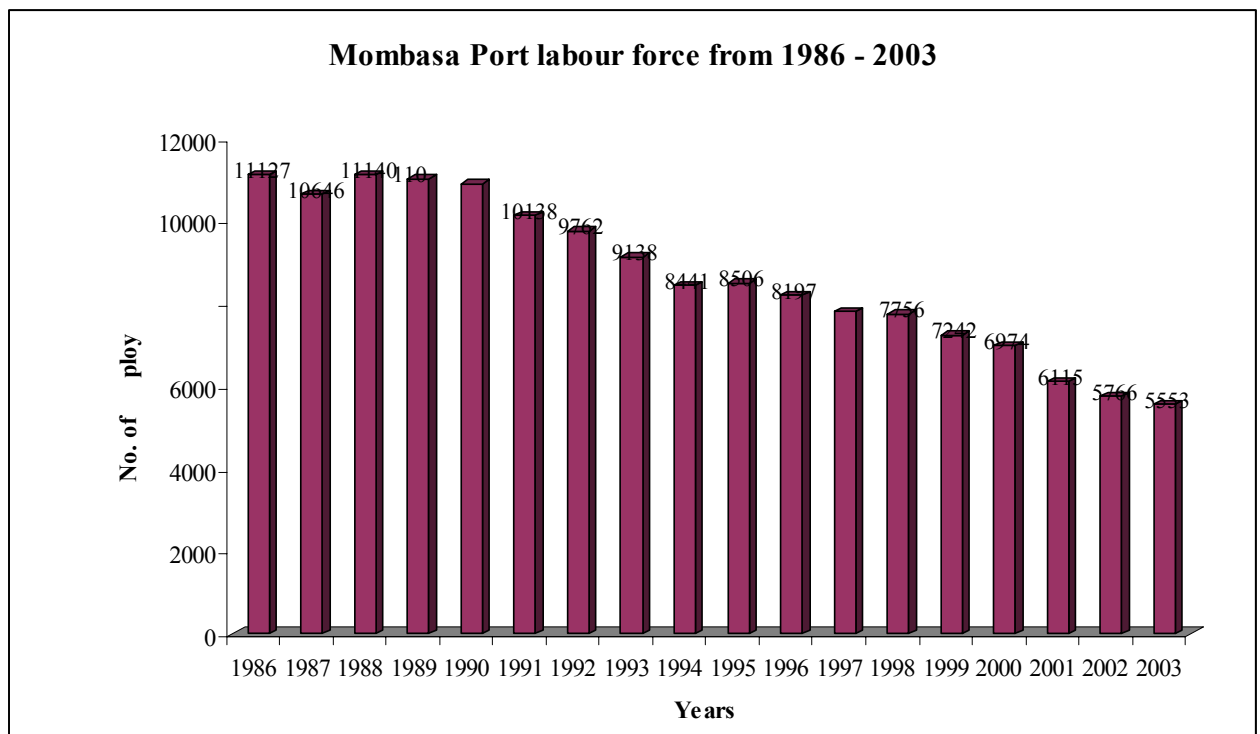


Figure 18: Mombasa port labour force from 1986 to 2003

Source: Kenya ports Authority Human resource department.

From 1986 to 2003 the labour force at the port was reduced by approximately 50%. The port management desired level is 2,500 employees. It is instructive to know that

half of the total labour force is casual workers, divided into three groups working three month each on rotation. Officially the port has freezed employment except for critical areas only.

The labour force apart from being bloated is accused of low productivity, negative work culture, resistant to change, bad work practices, rigid and militant union, and poor supervision. All these attributes can easily relegate the port to an insignificant port and a major hindrance to international trade.

To transform the port to efficiency the labour force need to be transformed into a commercial thinking force (bottom-line consideration) with positive work ethics.

Human resources need to positively and adequately complement competent staff and motivate workers to meet corporate objectives. There is a need to re-engineer work systems and process, focus on customer and embrace change. This can be achieved by optimizing individual/team performances.

The Human resources have many challenges, prominent of them being low productivity due to HIV/Aids, old age and corruption. Productivity at the port is greatly hampered by high incidence of HIV/Aids infection. The port needs to step up effort to create awareness among its workers. Aids is also consuming a lot of money in medical care and burial expenses. According to the medical records, the total number of employees and their dependants infected with aids is approximately 17.5% of the total 22,153 people.

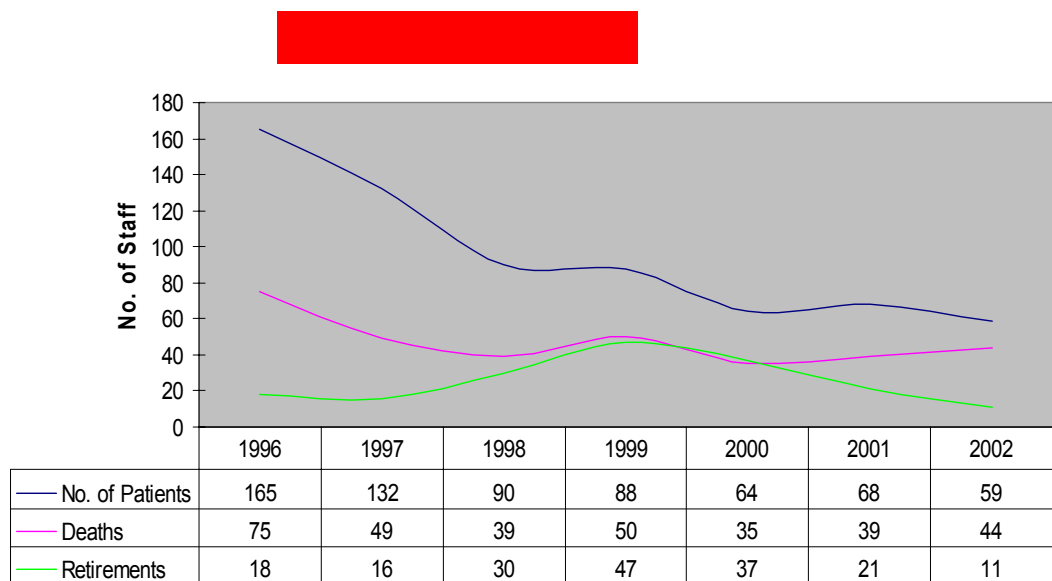


Figure 19: Mombasa Port HIV patients, Deaths and Retirement from 1996- 2002

Source: Kenya ports Authority, Human resource department.

With such high rates of infection productivity at the port is seriously compromised. The deaths shown in figure 19 represent those by HIV/Aids only. Other causes of dieses still claim the lives of staff at the port. Figure 21 shows total retirement and deaths at the port. In 2002 of the total 50 deaths reported, 44 of them were due to HIV/aids. This is 88% of the total deaths in 2002.



Figure 20: Labour wastage 1996-2002

Source: Kenya ports Authority, human resource department

The high number of deaths per year affects productivity. It poses a challenge to management to ensure continuity through succession planning. It affects effective training to address current and future business needs, because the highly skilled people are lost through death.

Age structure is another factor that is a challenge to the port. The port has officially frozen employment, and the current composition of the labour force is old age skewed. The retirement age in Kenya is 50-55 years. (See Figure 22).

61% of the labour force is 40 years and above, and 25% is of retirement age. Only 9% of the labour force is under 30 years old. The transfer of skills to the young

generation is at risk, and management should be careful, otherwise the port will be affected by unskilled labourers.

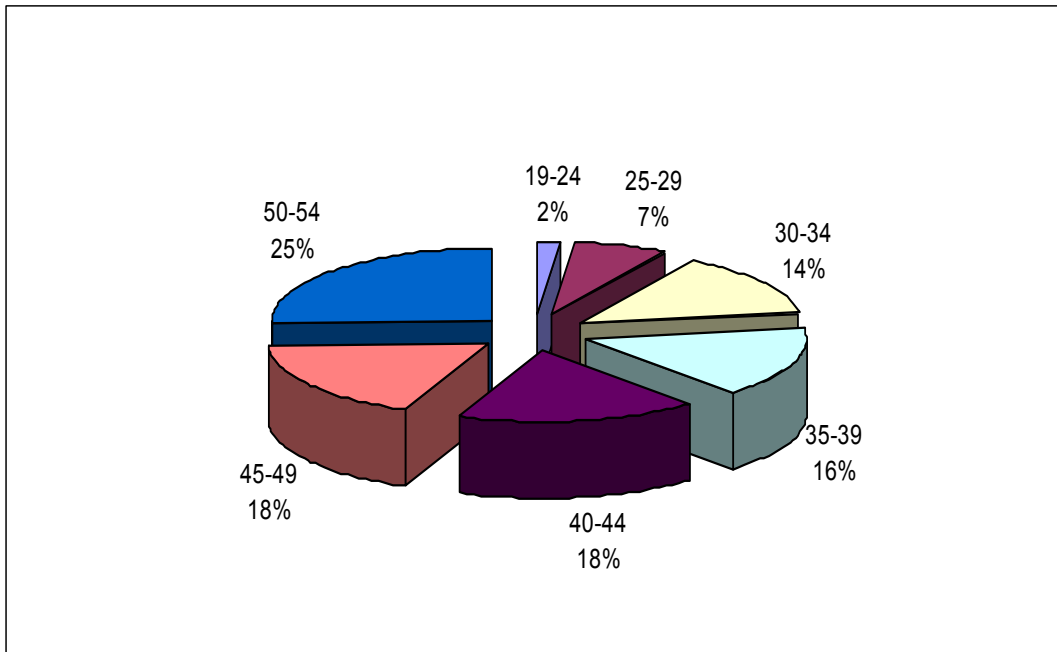


Figure 21: Age structure of the port labour force

Source: KPA: human resource department:

4.6 Financial position

Since the financial year 1999/2000 the port has been posting positive return on capital employed (ROCE). This is very good for the port.

Working capital which is current assets minus current liabilities has been positive since the financial year 2001 to 2003 and is projected to take the same trend. This means the port has enough liquidity to meet its current financial obligations

Table 51: 6 year Balance sheet summary (Ksh.m) 1998/99-2003/04

| | 98/99 | 99/00 | 00/01 | 01/02 | 02/03 | 03/04 (Jul-May) |
|-------------------------------|--------|--------|--------|--------|--------|-----------------|
| Assets Employed | 18,921 | 18,359 | 17,955 | 18,454 | 16,286 | 15,307 |
| Current Assets | 3,622 | 3,641 | 4,446 | 4,694 | 5,078 | 6,153 |
| TOTAL | 22,543 | 22,000 | 22,401 | 23,148 | 21,364 | 21,460 |
| Cap & Gen Reserves | 15,207 | 16,121 | 13,445 | 12,107 | 9,876 | 11,741 |
| Current Liabilities | 4,929 | 3,856 | 7,117 | 8,678 | 2,340 | 858 |
| Long Term liabilities | 2,407 | 2,023 | 1,839 | 2,363 | 9,148 | 8,861 |
| TOTAL | 22,543 | 22,000 | 22,401 | 23,148 | 21,364 | 21,460 |
| ROCE | (4.5)% | 5.0% | 9.0% | 7.3% | 5.0% | 10.7% |

Source KPA Finance department:

Table 52: 6 year Financial summary: Income and Expenditure 1998/99 -03/04

| | 98/99 | 99/00 | 00/01 | 01/02 | 02/03 | 03/04 (Jul-May) | 04/05 (Budget) |
|--------------------|---------|-------|-------|-------|-------|-----------------|----------------|
| Income | 7,157 | 7,564 | 8,416 | 8,865 | 8,495 | 9,177 | 9,600 |
| Expenditure | 8,163 | 6,473 | 6,350 | 7,184 | 7,367 | 6,890 | 7,998 |
| Surplus | (1,006) | 1,091 | 2,066 | 1,681 | 1,128 | 2,287 | 1,602 |
| Profit/Inc | (14) % | 14 % | 25 % | 19 % | 13 % | 25 % | 17% |

Source: KPA: Financial department

The port has been registering positive profit growth for the last six years since the 1990/00 financial year. This is very important since the port will be able to finance

infrastructural development in the port. The good financial performance is attributed to good financial practices that have rained in run away costs, and streamlined procurement. As a result total stock levels have significantly fallen over the same period.(see figure 23)

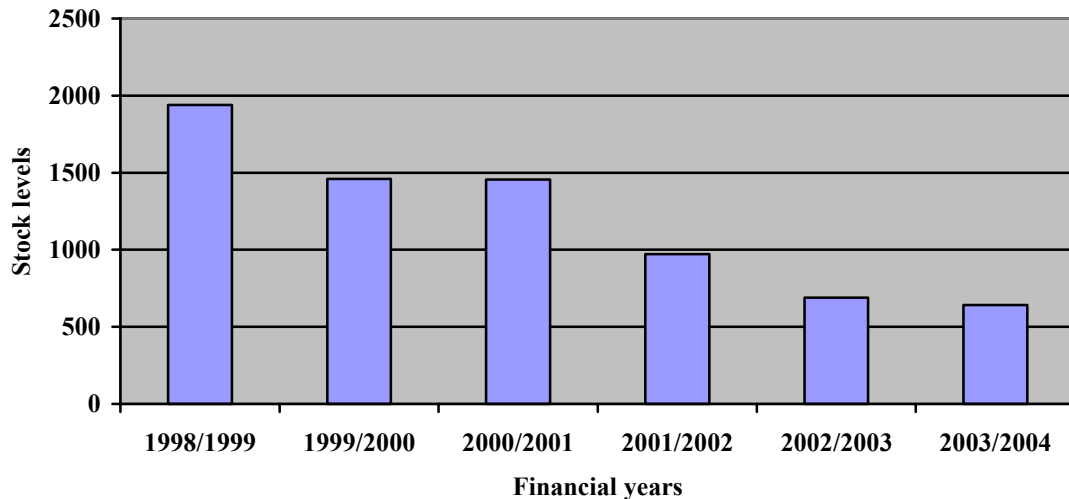


Figure 22: Mombasa port-stock level 1998/99-2003/04

Source: KPA Financial department.

This is good news for the port. Financial discipline is crucial for the survival and development of any firm. More so for a port that requires heavy investments in infrastructure.

4.7 SWOT Analysis of the Mombasa Port.

4.7.1 Strengths

- (i) Strategic location-large captive cargo base
- (ii) Natural and sheltered deep water harbour

- (iii) Proximity to Europe and Middle East
- (iv) Strong market position
- (v) Sound financial management

4.7.2 Weaknesses

- (i) Congestion at the container terminal
- (ii) Low cargo productivity
- (iii) Inefficient Hinterland connection
- (iv) Lack of land
- (v) Old and dilapidated cargo handling equipment
- (vi) Corruption.

4.7.3 Opportunities

- (i) Increase in container traffic
- (ii) Gateway function to the hinterland/emerging peace
- (iii) Opportunities to develop transshipment traffic
- (iv) Opportunities to develop logistics platform-free trade zone
- (v) Upcoming joint concession of Kenya railway and Uganda railways.

4.7.4 Threats:

- (i) Competition from other ports
- (ii) Continued decline of road infrastructure network

(iii) Delay in privatization of Kenya and Uganda railways

(iv) Political interference

For the port to contribute to the economic development of Kenya it has to capitalize on its key strength and emerging opportunities and do all that is necessary to remove its key weakness and combat any emerging threats. The next chapter will look at the various measures the port can take to make it contribute effectively to the economic development.

5 CHAPTER FIVE

MAKING THE PORT OF MOMBASA SERVE THE KENYAN ECONOMY

5.1 Potential of the Port

From the Swot analysis of the port, the biggest strength is the strategic geographic location of the port. This extends to the whole country. The country is strategically located, and for economic revival this strategic location has to be exploited.

The Port of Mombasa is the easiest and natural gateway to several landlocked countries such as Uganda, Rwanda and Burundi. Mombasa's comparative advantage goes beyond the borders of these countries and includes countries such as Eastern Congo (DRC), Southern Sudan and even Northern Tanzania. All these latter countries mentioned have ports of their own and access to the sea. But all three are large countries and the port of Mombasa can service large swathes of all three countries more effectively because of the geographic location and existing infrastructure. (Think of the Germany Ruhr region and port of Rotterdam). For example the port of Mombasa and Kenya as a country, is much better equipped to service Southern Sudan than Port Sudan. As for Eastern Congo, the distance to the sea is very long compared from Mombasa, and the transport infrastructure is either poor or almost zero. Parts of Northern Tanzania can better be served from Mombasa, because the nearest Port of Tanga in Tanzania is not a deep-sea port.

Another significant feature is that Southern Sudan and Eastern Congo have huge oil and mineral resources. Because of civil war in both countries the potential to exploit these minerals has been stifled over the years. But the emerging peace where Kenya as country has played a big role is changing the picture. The likelihood of greater economic activity, and its positive spin-off for Kenya, is very real. The push to build a railway line from Juba in Southern Sudan to link up with Kenya's railway network

is another promising future (<http://slpmtoday.com>). As a matter of economic strategy Kenya should facilitate such a development, because what is good for Southern Sudan is certainly good for Kenya. The economic ripple effect goes beyond the transport aspects and will positively boost virtually every aspect of Kenya's economy. The port will be a central player.

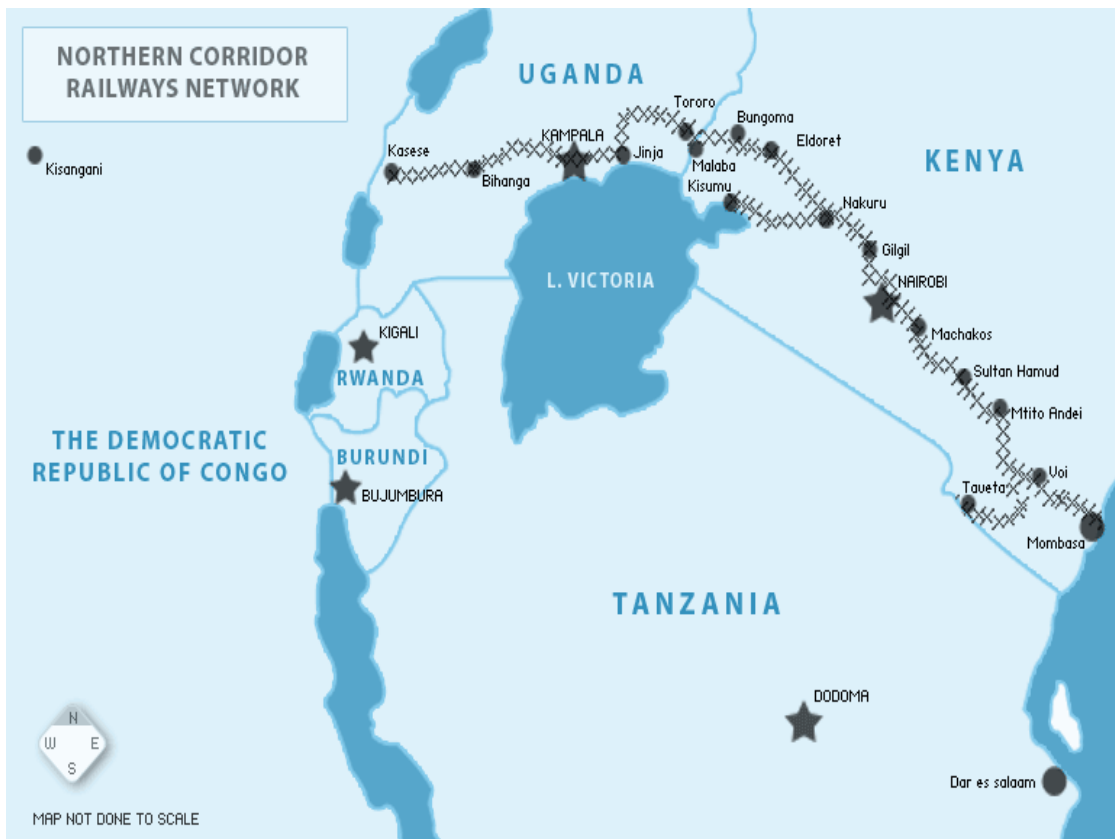


Figure 23: Map: Showing the Rail network to the landlocked countries

Source: Kenya Ports Authority.

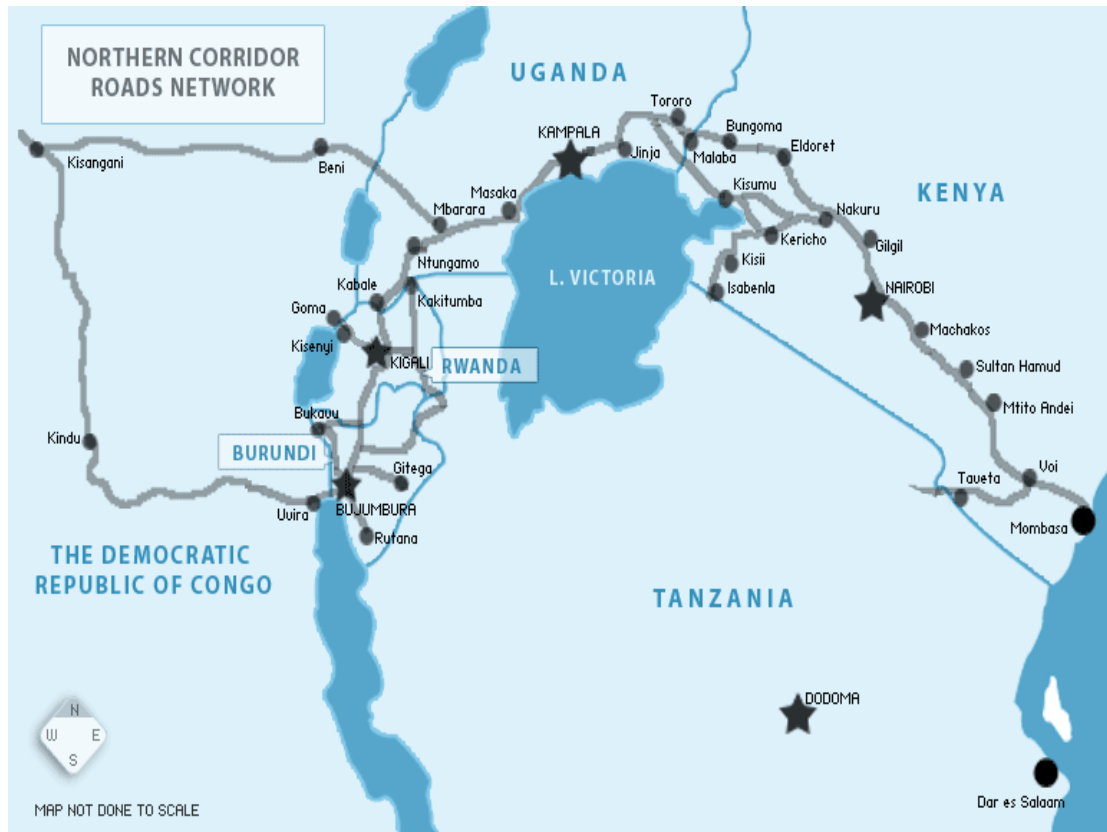


Figure 24: Map: Showing the Road network from the Port to the Hinterland

Source: Kenya Ports Authority

5.2 Key Concerns:

For the port to contribute to the Kenyan economy, it has to satisfy the requirements of users/industry. In chapter three, it has been shown the biggest generator of GDP and employment is the tourism and manufacturing industry. The EPZs have grown significantly though not satisfactorily. These modest gains are threatened to be stifled by the flight of industries to other regions, despite all the investment incentives. Already the Kenya processing zones (EPZs) have lost 6,000 jobs since October 2004 (East African newspaper, 16 may, 2005). The Ministry of Trade and Industry estimates that half of jobs in the textile sector-totalling 18,000 are at risk as

companies producing for export under the incentive regime take reduced orders or no orders due to stiff competition from Chinese firms. The reasons for lack of competitiveness as highlighted by most of the EPZs industries are high logistics costs, which amplify production costs. These include delays at the port, poor transport and communication systems and high power costs. According to EPZA public relations manager Mr Jonathan Chifallu, Kenya's apparels sector under current conditions has productivity Index (PI) of USD\$3,457 per annum, compared with India's USD\$3,400 and China's USD\$ 4,400 (East African newspaper, May 26, 2005).The difference can easily be bridged if the logistics bottlenecks are removed. The same applies to other manufacturing sectors.

5.3 The way forward

The port should not be a bottle neck in the supply chain to feed the needs of the industry. It should be a facilitator: It Should enhance rather than hinder manufacturing and other logistics and value added activities. According to ESCAP, ports to be effective have to address the increasing demands of port users, which include requirements for logistics services in ports. All this is due to the changing business and trade practices. The revolution in world trade leading to globalisation of production and consumption, has led to manufacturing companies to “use raw materials, labour, factories wherever in the world are most attractive” (Ma, 2005,p.1). To survive industries must go where the advantage lies. The port of Mombasa must therefore take advantage of this world production and consumption phenomena by providing the necessary environment to attract these multinationals. The port should know that production has changed from product based to process based international division of labour (Ma, 2005, p.2). This has profound impact both to shipping lines and ports. It means both have entered into the production process and not merely modes of transport. The goods transported are of increased value such as semi finished products. Time has become of essence. Congestion in port is no longer acceptable. The cost of holding inventory is just too much, and delay is no longer

acceptable. The port has to bring down the total cost of transport. The cost of transport in global trade is 5-6% of the value of global trade while in Africa; Kenya included is 11-12% of value of trade (UNCTAD; 2004). The ports alone constitute two thirds of the total freight bill (UNCTAD). It is expected that an even greater change will occur in the global business in the next 10 years than it did occur in the last one hundred years (ESCAP; 2002, p.5).

The port of Mombasa has to leapfrog from a first generation port (playing a simple role as the junction between sea and land transport system) to a third generation port, where the former services will be enlarged to include logistics and distribution services and production and transport is linked to form an international network (ESCAP,2002,p.21). According to ESCAP, those ports that have high productivity and advantage in cargo-handling services ,and offer value-added services are the most successful in the world and contribute more to their countries economies (emphasis mine).

5.3.1 Providing facilities ahead of demand.

Chapter four showed that the biggest problem at the port is congestion at the container terminal due to a combination of old, dilapidated and inadequate container handling equipment and container stacking yard.

The need to provide facilities and equipment a head of demand should be guided by the economic growth of the country and the region served by the port. Trade is said to grow almost three times as fast as GDP growth. Trade and GDP growth has a positive linear relationship (Ma, 2004, p.17). Second provision of port facilities should be guided by the need to provide for world class efficiency at the port. Therefore the ports container and future container growth forecasts should be taken into account.

The wide global trade growth should be factored. Market drivers such as global economic growth augmented by increased containerisation and outsourcing. For

example, average global GDP since 1980 has been approximately 2.8% and container growth has been growing at an average 8.7% (Hansen, 2005, p.14).

The characteristics of the Container market are capital intensive and economy of scale sensitive. There is therefore rapid consolidation and globalisation of operators. The top 4 operators half of which call at the port of Mombasa, are estimated to grow from about 36% market share today, to about 60% in five years. These and others are facing the same demands from shippers such as on time, every time delivery, fast and flexible response to changing markets, individual solutions to match supply chains, information management and transparency, and increased need for electronic booking.(Hansen,2005,p.29). Growing container terminal congestion is adversely affecting just-in time schedule reliability which is the hall mark of today's trade globalisation. The port of Mombasa has to be alive to these concerns and trade requirements and respond accordingly.

From the port of Mombasa future development plan, based on its container trade forecast, (see chapter 4), the port is planning to convert Berth numbers either berth 7-10 or 4-7 (decision not yet made) to a second container terminal to be ready by 2008. The new container terminal is planned to raise the current container capacity from 250,000 TEUs to 750,000 TEUs. The port is forecasting to handle 1million TEUs by 2020.

An examination of the current trade realities and expected future growth shows the port plans are grossly underestimated. Going by these plans the port will never be able to provide adequate facilities ahead of demand, considering that investing in port container facilities and equipment is a long term venture.

A forecast of expected container traffic growth should take into account the economic growth of the countries served by the port. Table 53 shows an analysis of the economic growth of the hinterland countries served by the port. Based on the average GDP growth, expected trade growth is forecasted.

Table 53: Real GDP growth rate of Port Hinterland countries and population

| | average | average | Actual | Actual | Actual | Actual | average | Population |
|----------|---------|---------|--------|--------|--------|--------|---------|------------|
| | 1983-93 | 1999-03 | 2001 | 2002 | 2003 | 2004 | 2003-07 | millions |
| Kenya | 4.1 | 1.9 | 1.2 | 1.2 | 1.8 | 4.6 | 3.1 | 32.2 |
| Tanzania | 3.4 | 4.5 | 5.7 | 6.2 | 5.6 | 6.7 | 6.6 | 36 |
| Uganda | 4.5 | 6.7 | | 6.8 | 4.7 | 5 | 5.7 | 25.5 |
| Rwanda | -2.7 | 9.1 | 6 | 9.4 | 4.8 | 3.7 | 4.2 | 8.4 |
| Burundi | 3.6 | -0.7 | | 3.6 | -1 | | 3.1 | 7.2 |
| Congo DR | -2.3 | -2.4 | | 3.5 | 5.6 | | 6.9 | 53.2 |
| Sudan | 3.5 | 6 | | 6 | 6 | | 7 | 33.5 |
| Ethiopia | 0.9 | 4.7 | | 2.7 | -3.7 | 11.6 | 6.8 | 68.6 |
| Average | 1.875 | 3.725 | 4.3 | 4.925 | 2.975 | 6.32 | 5.425 | 264.6 |

Source: world Bank and the various countries websites.

On average the real GDP growth has been around 5% in the period 2003/04. Container growth in the port has average 15% in 2004, meaning it has been approximately 3 times the rate of GDP growth of these countries. Most of these countries are coming out from war (Rwanda, Burundi, Congo DR, Sudan, Ethiopia and Northern Uganda.) They are also the beneficiary of 100% debt cancellation from the G 8 countries, i.e., their economic growth is likely to be positive in the long term. Based on this analysis it can be assumed that the 15% container growth rate at the port will be maintained. The container throughput forecast can therefore take the following trend.

Table 54: Container growth forecast for the port of Mombasa

| Year | TEUs. | Forecast | Year | Forecast |
|-------------|--------------|-----------------|-------------|-----------------|
| 2003 | 380,353 | | 2012 | 1,341,678 |
| 2004 | 438,597 | | 2013 | 1,542,930 |
| 2005 | | 504,386.55 | 2014 | 1,774,369 |
| 2006 | | 580,044.53 | 2015 | 2,040,525 |
| 2007 | | 667,051.21 | 2016 | 2,346,604 |
| 2008 | | 767,108.89 | 2017 | 2,698,594 |
| 2009 | | 882,175.23 | 2018 | 3,103,383 |
| 2010 | | 1,014,501.51 | 2019 | 3,568,891 |
| 2011 | | 1,166,676.74 | 2020 | 4,104,224 |

Source: S.N Chai. Based on true container throughput at Mombasa port

The port is forecasting to handle 1million TEUs by 2020. Its forecasting is based on 3% pessimistic and 5% optimistic scenarios. The 5% scenario shows it will handle 725,000 TEUs by 2020. Probably this is the reason the port is planning to increase capacity by 750,000 in 2008. Currently the terminal has an over utilisation of 175.44% and by 2008 it will have an over utilization of 102% even with the new container terminal in operation. Therefore more capacity should be planned than currently envisaged. From the forecast figures in Table 54, the port will handle 1,774,369 TEUs in the next 10 years.

1. Required investments:

(a) Berth requirements.

Formula: No. of berth = Quayside throughput p.a (in cont.)/ cont/h*h/shift * shifts/day * Gangs/vessel*working days p.a * Utilization factor.

Assuming:

(i) Berth utilization factor 0.65, (ii) gangs per vessel 2.5, working days 360, net effective hours 6.5hrs, average productivity 15cont/h per gang and 3 average shifts by day.

$$\begin{aligned}\text{No. of berths} &= 1,774,369/15*6.5*3*2.5*360*0.65 \\ &= 11 \text{ berths.}\end{aligned}$$

(b) Yard requirements (slots for full cont.)

Formula: No. of slots = Throughput p.a (in cont.)*Dwell time*Dwell time*Peak Factor/365 = Operational slots.

Assuming, average container dwell time 3 days, and a peak factor of 1.2

$$\begin{aligned}\text{No. of slots} &= 1,774,369*3*1.2/365 \\ &= 17,501 \text{ Operational Slots (TEU)}\end{aligned}$$

Static slots = Operational slots *1.15

$$= 17,501 * 1.15$$

$$= 20,126 \text{ static slots (TEU)}$$

(c) Yard Requirements (Area for full containers)

This is dependent on the type of stacking system. The port currently is using RTGs and reach stackers

(i) for RTG,

Formula: Area (ha) = No. of Static slots/land utilization (TEU/ha)

Land area for an RTG = 700TEU/ha.

No. of static slots = 20,126

Therefore Area(ha) = 20,126/700TEU/ha = 28.75 ha.

(ii): For Reach Stacker:

Area (ha) = 20,126/275 = 73 ha.

(d). Equipment requirement Quay.

Formula: No. of cranes = Throughput * peak factor /Annual moves of selected Equipment.

Assuming, a gantry crane of 80,000 moves p.a, 1.2 peak factor,

$$\begin{aligned}\text{No. of cranes} &= 1,774,369 * 1.2 / 80,000 \\ &= 27 \text{ Gantry cranes.}\end{aligned}$$

(e) Equipment requirements yard.

This depends on the system one decides to use either RMGs or RTGs or straddle carriers

The area where the particular equipment will be used has to be calculated. For simplicity, the area required for RTGs is considered.

Formula: No. of machines = Throughput * Moves per Cont. * peak factor / Annual moves of Selected Equipment.

(i) Kind of equipment = RTG

Annual moves p.a per RTG = 70,000

Assume the same throughput at the yard as at the Quay = 1,774,369

Assume Average no. of Moves per cont.in the yard = 3.5

Assume peak factor = 1.2

No. of machines = $1,774,369 * 3.5 * 1.2 / 70,000 = 106$ RTGs.

(f) Required Gate Lanes.

This depends on the truck time dispatch in minutes. In the International ports we have visited, which are highly automated such as Singapore, trucks take 23-25

seconds at the gate. At the port of Aarhus in Denmark, it takes approximately 25 seconds.

Formula: No. of Lanes = Trucks p.a * peak factor*min.per dispatch/52weeks*working days p.week*working h.p day *60min.

Assumed time for truck dispatch = 5 minutes. Peak factor 1.5

Assumed no. of loaded trucks (Gate-In & Gate Out) p.a (=no. import cont.200,000+100,000) = 300,000.

Assume also net effective working Hours per day = 16 hrs, and working days per week = 5.5

No of lanes = $300,000 * 1.5 * 5 / 52 * 5.5 * 16 * 60 = 8$ lanes, (3 in + 5 out)

There is need to provide 1 extra lane in each direction for unloaded trucks.

The container terminal concept chosen by the management will determine the kind of equipment to be bought. Basically the formula's above gives a good insight into the ideal number of equipment to buy. The most important question will be where to source the funds to acquire the appropriate equipment.

5.3.2 Financing the required investment.

While the port is doing well financial, it does not have enough financial reserves to undertake such a heavy investment. The stakeholders should expedite the enactment of the Kenya Maritime Act, and the Privatisation Act, to make possible the much talked conversion of the Mombasa port into a Land lord port and encourage private sector participation in the port development and delivery of services.

There is an “acknowledged financial and operational benefit of private participation in infrastructure development and service delivery” (Porteli, 2005, p5). Reasons for privatisation is cited as enhancing growth possibilities, guaranteed trade, generation of revenue to the government , and introducing private local and / or foreign private investment. According to John Porteli of Malta Free Port, private investment in ports rose from \$10 million in 1990 to \$4.3 billion in 1997, \$2.5 billion in 1999. Between 1990 and 1999 there was a cumulative investment of \$12 billion by the private sector in ports. Countries with port privatisation experience are Poland, Germany, Malaysia, Thailand, Brazil, Colombo, Mozambique, Tanzania, United Kingdom, Italy and Latvia. The World Bank is involved in 20 countries currently. The players in private port investments are, global stevedores such as ICTSI, Hutchinson, SSA, PSA, DPA, and shipping lines such as Maersk, Mediterranean shipping company(MSC), P&O ports, Evergreen, CMA-CGM-P&O ports. There are also niche investors such as Dragados, Eurogate and Arkas.

The management of the port looks well versed in the process of private participation in port development. Almost all the port development plans are either classified as they will be concessioned out or will be built under the BOT (Build Operate Transfer) arrangement, or ROT (Rehabilitate, Operate and Transfer). A word of caution is that in these negotiations, the interest of the port has to be well taken into account, especially the future development of the port and port income. An important lesson learnt in Malta (Freeport) is that during negotiations they did not feel shy to pull out if the deal did not look very good.

5.3.3 Export Processing Zones and Free trade Zone

The Export Processing Zones were the key economic revival strategies by the government to attract foreign and domestic investments. (See chapter Three). They have all the best legal and regulatory, financial incentives there possible could be. However they have only registered a modest growth, but show a very high potential if other issues are addressed. From Table 25 in Chapter Three, performance

indicators are that, from 1999 to 2003, EPZs have employed 35, 000 Kenyans' and have attracted foreign direct investment to the tune of Ksh.15.709 million (US\$.207 million). While very encouraging, it is not satisfactory. There is also the fear of flight. Earlier in this chapter the causes of flight was cited as high logistics costs which amplify production costs and reduce their products competitiveness in the international markets. This has been said is due to delay at the ports and poor transport and communication infrastructure. This can be explained from various aspects.

(a) Location of the EPZ and Costs of Holding inventory

Most of the EPZ are located at Athi-river in Nairobi. This is almost 500 km from the port of Mombasa. In a country with good roads, a truck travelling at 70km per hour could take approximately 7 hours. Manufacturing companies interviewed said a container can take up to two weeks to reach Nairobi. The fastest time to reach Nairobi is not less than three days. This is because of the bad roads and the numerous roadblocks and weighbridges on the way. The train service is also not reliable and as seen in Chapter Three it has an average availability of under 50%. Cargo therefore can take long to reach the EPZ for lack of rail wagons. The consequence of this delay is high cost of holding inventory.

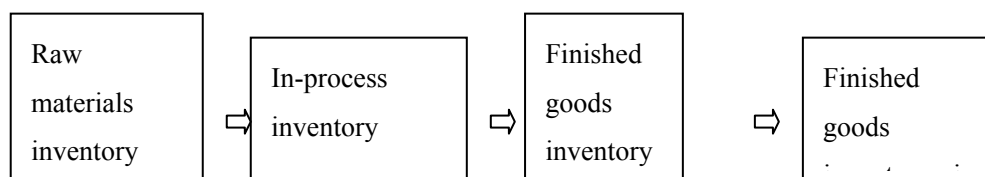


Figure 25:Inventory Positions in the Logistics system

Source: Ma, Shuo, 2004

All costs such as warehousing, capital costs and inventory risk costs are called inventory carrying costs. A high level of inventory carrying costs lowers corporate profitability and reduces competitiveness of the finished goods.

Warehousing costs are those incurred in hiring warehouses or investing in warehouses to keep inventory. Capital costs are the costs tied in the goods. It is idle capital which could have been used somewhere. If it is financed from a bank loan, it incurs a cost in terms of bank interest paid. Inventory risk costs are those associated with risk such as fire or theft, shrinkage. The longer the distance inventory travels increases the possibility of theft, damage, shrinkage and obsolescence. Manufacturers try to insure against these risks but then it pushes the cost of production.

There is also time spent at the port to locate a container at the container yard. A high placed official (requested anonymity) at the container terminal revealed that some containers can take as long as one month to be located. The reason is that they are stacked 5 high, and they are tallied manually every day. Tally clerks are however unable to tally those on top and in most cases they cannot physically determine where a particular container is.

Time taken at the port including documentation processing, and customs can easily take up to 60 days. If a container takes up to two weeks to reach Nairobi, then total time could be as much as 74 days. The seriousness of this time spent can be seen if inventory holding costs are calculated.

The inventory holding costs can be calculated in the following way.

(a) (i) Example: calculation of Inventory holding costs.

Assumptions:

- Manufacturer has imported raw materials worth US\$. 3 Million. (C.I.F value at the Port of Mombasa.)
- Import is financed by a bank loan at 15% (current rate in Kenya)
- No of containers 20, 20ft TEUS

Transport costs to Nairobi ksh.65, 000 (US\$855) for 20 foot container and Ksh 85,000(US\$1, 1118) for forty foot container.

- Total time taken to reach the EPZ in Nairobi 74 days

Formula: Inventory costs = VID/365

Where,

- **V** is the value of the goods
- **I** is the interests charged on the loan (capital costs)
- **D** is the number of days the containers took to reach Nairobi
- **T** total freight bill, to be added to value of goods.
(65,000*20=1,300,000ksh=17,105US\$)

$$\begin{aligned}
 \text{IC} &= \text{VID}/365 \\
 &= 3,017, 105 * 0.15 * 74 / 365 \\
 &= \underline{\underline{91,753 \text{ US\$}}}
 \end{aligned}$$

The importance of time can be seen if daily inventory costs are computed.

$$\begin{aligned}\text{Daily Inventory costs} &= \text{VID} * 365 \\ &= 3,017,105 * 0.15 * 1/365 \\ &= \underline{\underline{1,240 \text{ US\$ Per day.}}}\end{aligned}$$

$$\begin{aligned}\text{Hourly Inventory costs} &= 3,000,000 * 0.15 / 365 * 24 \text{ US \$} \\ &= \underline{\underline{52 \text{ US\$}}}\end{aligned}$$

This means for every hour spent the manufacturer is losing US\$ 52. This is too much money and it significantly increases the cost of production. After the goods have been processed, the finished goods, which are even of higher value, have to follow the reverse process again to the port for export.

Inventory holding costs assuming EPZ is located near the port.

- Value of goods = 3,000,000
- No. of days = 60 days
- Interest on Loan = 0.15

$$\begin{aligned}\text{IC} &= 3,000,000 * 0.15 * 60 / 365 \\ &= 73,973 \text{ US\$}\end{aligned}$$

If the EPZ was located near the Mombasa Port, the manufacturer could reduce the inventory costs by 19% even under current port performance conditions.

The location of the EPZ needs to be near the port. This is the trend the world over. The port of Rotterdam, Singapore, Antwerp, Yokohama, Hamburg, Marseilles, to name but a few, have all developed port-centred industrial clusters with considerable success. With such an arrangement value added activities can be developed. Value added activities such as, packing and repacking, labelling, testing, assembly, small manufacturing repair and maintenance. The port of Rotterdam has only 1,200 employees as opposed to Mombassa's over 5,000, but the Rotterdam has created over 300,000 employments indirectly. The port of Singapore direct and indirect contribution to GDP is 7.3%. (See Table 55).

Table 55: Contribution of Singapore maritime cluster to GDP in 2002

| | |
|----------------------------------|------------|
| No. of Establishments | 4,400 |
| No. of employees | 86,500 |
| Revenue (S\$) | \$ 41.5 Bn |
| Direct value added(S\$) | \$ 7.8 |
| Direct VA as % of GDP | 4.9% |
| Direct +indirect VA (S\$) | \$11.6 Bn |
| Direct + Indirect Va as % of GDP | 7.3% |

Source: MPA

Location of the EPZ at the port will reduce significantly the production costs and will open the possibility of just-in-time production system. The development of FTZ and EPZ, combined with an efficient and cost-effective container terminal, can entice carriers to modify their transport networks and establish transshipment operations at

the port of Mombasa. It is close to Middle East ports and Europe. An FTZ/EPZ sponsored by an international recognised developer can attract manufacturing companies to establish distribution, assembly, and light manufacturing activities at the port. There is synergy to be developed. Companies in the FTZ/EPZ generate cargo that is moved through the adjacent port, and ocean carriers can supplement their transshipment activities with FTZ/EPZ cargo. Employment is generated, government earns revenue and foreign exchange and the economy develops.

The location of EPZ is the prerogative of the Government through the Ministry of Planning, and Ministry of Trade and Industry. There is a need to convince the Government of the potential of using the port, and the advantages of using the port to attract foreign investments. As argued in Chapter Two, this can be done by port impact studies. The Kenya Economic Survey, which collects data on every aspect of the economy, and this data is used to prioritise government spending, should do more analysis on the maritime sector. The current issue has only a quarter of a page dedicated to the port, showing only the throughput at the port. (Kenya Economic Survey 2004, p. 188).

6 CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusions

The objective of this dissertation was to show how the Port of Mombasa can be used as an engine for Kenya's economic development. To do this, the history of ports and shipping has been traced from the early civilisation; and to show how ports and shipping have influenced economic development of the regions they are located in.

The need for trade necessitated by the differences in resource endowment and therefore needing cheaper means of transport has been explained.

The dissertation has attempted to show, the importance of ports and shipping in international trade. It has shown how ships and ports have contributed to global commerce by making possible the movement of large volumes of cargo, over long distances at low cost. The rapid growth of international seaborne trade and the importance of international sea trade where 90% of global trade by volume is transported have been shown.

Evidence has been provided for the impact of technological development and its impact on trade, ports and ships. Technological advancement in vessel sizes, specialty, cargo handling equipment and containerisation has been shown. The different generations of ships, tankers, bulk carriers and container ships have been explained.

Evidence of port evolution from the traditional cargo handling to a centre of industrial development and logistics platform has been explained. The different kinds of port ownership that have evolved over the years have been explored. From the service port, tool port, landlord port to private ports. A summary of the strength and weakness of the various modes of Port ownership is also given,

The need of investment in ports, to provide the necessary facilities and environment to meet today's trade challenges has led the dissertation to look at the port impact studies. The port impact studies are the measures used to convince policy makers and governments for the need to allocate funds for port development.

The dissertation has looked in detail the Kenyan economy, showing areas of growth and decline. It has looked at the areas of the economy that have a potential and where focus should be directed. It has looked at the reasons for decline of the agricultural sector, which is due to the falling commodity prices. The dissertation has explored the reasons for the minimal flow into the economy of the direct investments, which are needed to provide employment, generate revenue and reduce poverty. Foreign investment is low despite the provision of world class investment incentives that the Kenya government has provided. These have been seen to be high costs of production, caused by higher logistics costs. Evidence has been shown of the concerns of the manufacturers, of the delay at the port, poor roads network and communication. The port has been shown to be a big bottle neck to investment in the country.

The dissertation has also looked into great detail the port of Mombasa. The port ownership, the facilities available and their current condition has been examined. It has been shown the capacity of the port in so far as container traffic is concerned has been exceeded by over 70%. The numbers, age and condition of the facilities and their level of cargo handling productivity has been analysed. The same has been benchmarked with international cargo handling productivity standards. The port management own cargo volume forecast system, have been shown could be among the reasons for lack of adequate facilities at the port. The level of labour force, its age structure, and health condition and the financial aspects of the port have also been analysed.

Finally the dissertation has looked at the potential if any of the port to contribute positively to the revival and economic development of the country. This has been shown to be its strategic geographical location. It has a huge hinterland and large

captive cargo base, its close to Middle East and Europe. It has a high container growth rate and has potential to be the main gate way to the great lakes region.

Forecast trade volumes have been done based on current cargo volumes taking in to account the average GDP growth rate of the Hinterland countries served by the port. The forecasted figures have been used to calculate the required equipment at the Container terminal, the Yard area, the ground slots and the number of gate lanes.

The need to involve private participation in the provision of these facilities has been emphasised because of the scarcity of funds by the port. Examples of private participation in port privatisation have been shown and the extent of investment in the world ports currently.

The need for port impact studies have been emphasised to give a clear view to the policy makers and government of the need to provide funds for port development.

6.2 Recommendation.

Based on the discussion in the dissertation, the following recommendations are made.

(i) The port should set up a think tank, preferably the corporate division to start making port impact studies for the port of Mombasa. The objective will be to convince the central government of the need to allocate funds for port development, accelerate any legal or regulatory measures that are needed for port reform and development. The port should impress upon the Central Bureau of Statistics to supplement by doing an honest and detailed analysis of the port and the contribution it makes to the economy either directly or indirectly. This is because the economic survey is used by the Ministry of Planning and Finance to prioritise government projects.

(ii) The port should also do proper forecasting of trade volumes with the objective of providing facilities ahead of demand. The current situation where the capacity of the container terminal is exceeded by over 70% is totally unacceptable. Investments in

port facilities are expensive and long term. Long term projections of demand should be made and investment arrangements made in advance.

(iii) The port should accelerate the move to make it a landlord port. This has been the talk for the last 10 years. The resistance from politicians is because they do not know the benefits of port reform and the impact the port can have on the economy. Politicians need to be educated, but then with the absence of impact studies, it can be a harlequin task.

(iv) The port need to do dredging of its channels and berth. The maximum draft of 13 m is not deep enough to accommodate the bigger ships. Low freight costs are as a result of economies of scale of bigger ships. With increased volumes at the port, there will be a need for bigger vessels calling in the very near future.

(v) The port should make land available for the extra container terminal and FTZ/EPZ. Majority of the berths are general cargo berths. With most cargo being containerised, only a few dedicated general cargo berth should be operational and the rest should be converted to container terminals. The Dongo Kundu project should be implemented. It has been on the drawing board for over 20 years now. This forms the future growth area of the port. Development of the export processing zones in the port area is the way forward. All efforts should be made to provide land for such investments.

(vi) The port should lobby for the building, rehabilitating of the roads and railway networks. The congestion at the port is greatly enhanced by the poor road and railway connection to the hinterland. The road and railway sector is not under the port, but most of the road and railway is under the parent Ministry of Transport. The importance of the port and the railway and road network should be emphasised. The challenge would be to finance the construction of the roads and railway. There is need for legal reform, institutional and regulatory reform framework with a view to enhance the proper design of roads, integrity in road contract procurement, enhancing safety and proper and timely maintenance of roads network and allowing

private sector participation. The move to concession the railway line together with the Uganda railway line is a very positive step.

(vii) Port labourers. The average age of port labourers is very high. There is a really danger of lacking the necessary skills in the very near future. The port management has to review its labour requirements, train and ensure the impending retirements will not affect productivity. The higher incidence of HIV/AIDs is also a cause of concern. The Human Resource Department should step up awareness measures and education of the dangers of the diseases.

6.3 Concluding remarks

There is a big potential for the port of Mombasa to contribute to the economic development of the Kenya, just like in other regions of the world. However, a lot of investments need to be done in the port to bring it to world class standard.

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