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Development of African freight transport: The case of Kenya

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DEVELOPMENT OF AFRICAN FREIGHT TRANSPORT

– THE CASE OF KENYA

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and Poul Ove Pedersen

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Abstract

The Kenyan transport system is still to a large extent structured by physical infrastructure, legislation and institutions developed during the colonial period, and by import-substitution policies which during the first decades after independence to a large extent allowed the transport system to deteriorate. However, since the late 1980s the structural adjustment policies have led to a renewed interest both from the government and the donors in developing the transport infrastructure. At the same time trade liberalisation, deregulation of domestic trade and privatisation of the parastatals have since the mid-1990s led to a reshaping of both trade and transport which is still ongoing. The so-called logistical revolution, which since the early 1970s has revolutionised transport in the industrialised and industrialising world, has with a delay of two decades also reached Africa. This is resulting in much closer integration of transport into production and trade which tend to shift the focus away from the physical transport infrastructure to the institutional structures and organisations which support and exploit the infrastructures. This paper tries to describe the resulting transformation of the Kenyan transport system.

I. Development of freight transport in Africa:

Overview

THE INTERACTION BETWEEN TRANSPORT AND DEVELOPMENT

In Africa, as elsewhere, transport was until the late 1960s generally seen as a high priority area. Many new ports, railways and roads were built both before and after independence. This state of affairs, however, changed during the 1970s when transport was generally given low priority. This had serious consequences for the transport systems in the low-income African countries. It coincided with a shift from centralised to decentralised and local economic development in the industrialised countries, and a shift from export-orientation to import-substitution with a focus on self-reliance and local rural development in the developing countries. Transport was generally down-graded both in the national plans and in the rural development programmes carried out during the 1970s and early 1980s, and increasingly so as the economy tightened during the 1970s. Plans for rural roads were sometimes included, but few new long-distance roads were built and due to lack of funds for maintenance, long-distance transport was often left to decay. By the mid-1980s, the transport infrastructure had deteriorated and was often worse than it had been by the late 1960s (Pedersen 2001b).

The deterioration of the African transport systems was not just due to reduced investments in transport infrastructure. It was also a result of the economic institutions developed as part of the import-substitution policies introduced by most African countries during the late 1960s and 1970s. These involved a wide-ranging complex of regulation with the purpose of industrialising the countries:

- a) development of an industrial sector primarily on the basis of the existing home market and import of machinery and often also the necessary production inputs;
- b) high custom barriers to protect the developing infant industries;
- c) an over-valued currency which reduced the costs of imported machinery and production inputs;
- d) agricultural policies which focused on export crops to finance the imports necessary for the industrialisation process, and stable food production to guarantee food security and the supply of cheap food for the growing urban industrial labour force;
- e) development of social services, primarily education and health, in both rural and urban areas.

EFFECT OF AGRICULTURAL-INDUSTRIAL POLICIES ON TRANSPORT IN AFRICA

During the post-independence period, most countries in Sub-Saharan Africa developed a highly government-controlled agricultural sector with roots back in the later part of the colonial period. Production and marketing of the major crops were mainly controlled by crop-specific parastatal marketing boards. The purpose of the agricultural institutions and policies was, on the one hand, to support especially small-scale farming and rural development, and on the other hand, to expand the production of export crops, which in most African countries became an important source of government taxation and foreign currency, and the major food crops, in order to secure sufficient and cheap food supplies for the growing urban areas and rural areas with food deficit.

The marketing boards were responsible for the post-harvest trade, collection and processing of controlled crops. To reduce seasonal speculation in agricultural produce and encourage small-holder production for the market, the government (together with the marketing boards) fixed annual farm prices, often as a pan-seasonal and pan-territorial price. The farm prices were often fixed at a very low level, partly because pan-territorial pricing, poor rural infrastructure, farm input subsidies and inefficient organisation led to high costs for the marketing boards, partly because export crops often were heavily taxed, while farm prices for food crops often were kept low to secure low urban food prices. However, in Kenya the farm prices never became so low as in many other countries, because the land reform after independence had created a fairly large group of politically powerful African large-scale farmers who were able to secure relatively high farm gate prices.

In order to maintain the low prices, trade and transport of controlled crops became a monopoly of the marketing boards. Private trade was only allowed within the same rural district and even here crop buying was usually only permitted by the parastatal, marketing cooperatives or registered traders and at fixed prices and transport margins. However, the marketing cooperatives, which had developed in many rural areas before independence and during the 1960s, became increasingly controlled by the marketing boards, and private rural traders, who during the colonial period had sold farm inputs and consumer goods to farmers, bought their crops and provided credit, often at a high profit, were reduced to general stores or even closed.

The highly centralised control of the agricultural production and marketing by parastatal organisations resulted in a narrow sector planning, often for individual crops. This often led to concentration of processing industries in the large towns, partly because the pan-territorial pricing resulted in large implicit transport subsidies, partly because the tax and control functions of the

parastatals became more important than their efficiency, and partly because potential agglomeration economies at the local level were not taken into account in the sector plans. This concentration of the processing industries led to large increases in the demand for transport, firstly because food deficit areas were often supplied from central stores rather than from neighbouring food surplus areas, and secondly because it led to unnecessary transport of by-products from the processing industry. For example, for maize the by-products made up 20-30% of the crop weight and for oil crops even 50-70% of the weight. For maize and oil crops these by-products are used for the production of stock-feed. For Zimbabwe, Pedersen (1997) shows that because the transport of stock-feed was not subsidised, it was too expensive to return it to the peripheral rural areas. Instead, large-scale dairy farmers near the large towns used it, thereby constraining the development of livestock and economic diversification in the peripheral rural areas, and at the same time increasing the demand for scarce transport capacity.

Over time these agricultural policies had a number of often unforeseen negative consequences on development in general and transport in particular. At a general level these policies were more or less similar in most African countries. However, the implementation and consequences of the policies were different in different countries, and in some respects the negative consequences were less in Kenya than in other countries.

At independence, the level of industrialisation in African countries was generally low, even in the most industrialised of the countries, like Kenya and Zimbabwe. Most industrial products were imported from the developed countries, mainly the former colonial powers. The idea behind the import-substitution policies was to produce locally some of the goods that the country was then importing. This would save foreign currency and such goods would have a ready market. In principle, although such a strategy might have saved foreign currency in the long run, it required foreign currency in the short run to buy machinery and production inputs and also often qualified labour not available locally. In reality the new industries therefore became very import-dependent. This was to be paid for by agricultural export and donor support.

To reduce the costs of imports the currency was kept over-valued. However, this also reduced the incentive to export and resulted in scarcity of foreign currency. To encourage investments, the formal interest rates were kept low, but this increased the scarcity of capital. Access to both capital and foreign currency therefore became limited and prone to governmental control in the form of government allocations and import licences.

The technology and machinery imported was generally European Fordist-type technology, often of older date because it was simpler and required smaller markets than the newest technology. It

was therefore expected to fit better to the smaller African markets and lower labour qualifications. However, even this relatively simple technology required larger and more stable markets and access to more reliable infrastructure and input supplies than was available in the African countries, especially outside the capital cities. Therefore the new industries were difficult to maintain and mostly operated at low levels of capacity utilisation. In order to utilise their excess capacity and make up for an environment that could not deliver, they developed into self-sufficient, vertically integrated closed entities.

Many of the new industries were developed as parastatals or as joint ventures between national development corporations (controlled by the government or the ruling party) and multinational companies. Many received large donor support. In spite of the original wishes to develop an indigenous manufacturing industry, multinational companies and non-indigenous nationals, such as the Asians in East Africa, the Whites in Southern Africa and the Lebanese in West Africa, dominated the manufacturing sector. Most governments seem to have feared the development of an indigenous entrepreneurial class that could compete for power with the existing ruling class (Mkandawire 1999).

The goods produced by the import-substitution industries were mainly goods consumed by the urban upper and middle class, because the majority of the rural population consumed very few imported goods. The market for the new industry was therefore highly concentrated in the urban areas.

Most African countries had industrial development programmes that offered large benefits to industries willing to locate in towns and growth centres outside the capital. In Tanzania nine of the largest regional centres were in 1969 designated as growth centres (Mosha 1990; Darkoh 1994). In Zimbabwe some of the new district service centres, considered to have growth potential, were designated as growth points (Wekwete 1991), and Kenya introduced in 1986 a Rural Trade and Production Centre Programme (Gaile 1988). However, few industrial enterprises responded to these development programmes due to weak infrastructure, difficult access to the ministries where foreign currency allocations and import permissions had to be obtained, and difficult access to the national markets. Counteracting the decentralisation efforts was also the rapid development of a private or non-governmental service sector centred on the offices of multinational companies, donors, NGOs and international organisations, which in most African countries is much larger than the manufacturing industry and overwhelmingly located in the capital cities.

At the same time, many industries operated on semi-monopolistic markets, where the level of production was constrained by the limited access to scarce resources. The industrial markets

therefore remained a seller's market where almost anything could be sold often at the factory gate. There was therefore little incentive to develop effective marketing and distribution systems outside the capital city, let alone on the export market.

The expulsion of the Asian traders from the rural areas and the establishment of parastatal distribution companies which never functioned efficiently, became a hindrance to the development of efficient distribution in Tanzania, though less so in Kenya, where the Asians in many areas were substituted with Kikuyu traders.

The concentration of production and services, poor infrastructure and an often inefficient distribution in the formal economy has led to the development of a large informal small-scale economy on the un-served market between the formal economy and small-scale agriculture. The small enterprises consist both of producers, traders and other service providers, but a large share of them consists of retail traders and even the producers sell almost all their goods retail from their workshop and thus only serve very local markets.

DEVELOPMENT OF AFRICAN FREIGHT TRANSPORT DURING THE PERIOD OF IMPORT-SUBSTITUTION POLICIES

The low interest rates maintained in most African countries after independence made it relatively cheap to buy trucks and during the 1960s their number increased, as many rural traders bought trucks. However, as foreign currency became scarcer during the 1970s, the truck fleet stagnated or even contracted in most African countries. Import permits for vehicles were primarily given to parastatals and other large enterprises and it became increasingly difficult for individuals to obtain vehicles. Trucks were concentrated in the capital cities and large regional towns where most industries and parastatals were located. From here, crops could be collected and farm inputs distributed. Rural transport, which before independence had mostly been carried out by the private rural traders, was taken over by the marketing boards. They either invested in their own truck fleets or outsourced transport to state transport companies or sometimes to private trucking companies.

This centralisation of transport was expected to result in a more efficient use of the scarce transport capacity. However, in reality the efficiency rather went down. At the same time the demand for transport increased over time because production of the main crops, as a result of pan-territorial pricing, improved extension services and subsidised farm inputs, moved out to the peripheral areas where the distance to the market was long and the infrastructure poor. The efficien-

cy of rural transport is generally low because the demand for transport is highly seasonal and results in few return loads, but the traditional rural traders, who both bought a range of crops and distributed consumer goods and farm inputs, had a better chance of getting return loads than the specialised crop parastatals. The result was not only that the costs of the marketing boards increased, but also that they had increasing difficulties serving the farmers satisfactorily. The strong focus on monocropping tended to increase the seasonality and thus reduce transport efficiency.

During the 1970s, when it became increasingly difficult for the parastatals to maintain their crop purchasing monopoly in the rural areas, the transport monopoly often became a means to maintain the trade monopoly. The transport monopoly was often supported by restrictive licensing practices. Licences and import allocations to vehicles stationed in the rural areas, which would have supported an increased local and regional trade, were generally not given because such trade was seen as undesirable and prohibited. The centralisation of rural transport capacity in the specialised crop parastatals meant that small entrepreneurs and farmers had difficulties obtaining transport for alternative crops and other products. This partly contributed to the lack of diversification of products and markets, and made the rural areas sensitive to climatic and other instabilities. Thus a major problem for many small-scale irrigation schemes was lack of transport to market their produce.

As a result of the lack of motorised transport in the rural areas, most rural freight in Africa was carried by human porters (mostly women) or other forms of non-motorised transport (Barwell 1996; ILO 1997; Porter 2002).

The rural transport situation in Kenya has generally been less severe than in most other African countries, partly because the parastatal monopolies appear to have been maintained less strictly than elsewhere, and partly because the establishment after 1973 of a dense network of matatus or small minibuses plying both rural and urban roads all over Kenya (Alila et al. 2002).

Where railways existed the agricultural parastatals were generally required to use them. From their construction at the beginning of the 20th century, most African railways have operated with a deficit (Zimbabwe is an exception). To support the railways the colonial governments generally built feeder roads, but carefully controlling development of roads parallel to the railway lines. In both Tanzania and Ghana the last links in the main roads parallel to the railway lines were not built until the late 1950s, and when the roads finally were built the licensing system was used to keep trucks off the roads. Finally when the restrictive licensing system broke down during the late 1980s as a result of the pressure from structural adjustment, the agricultural parastatals continued to be required to use the railways when possible. In spite of this protection, the railways in

most countries deteriorated as rapidly as road transport and led to very long transport times (Pedersen 2001c and d, 2002a). For example, in Tanzania, it often took more than a month to ship goods by rail from western Tanzania to Dar es Salaam (Pedersen 2001d). In East Africa the railways deteriorated rapidly after the East African Community broke up in 1977. This was also the case in Kenya, even though she took over most of the rolling stock and management capacity after the East African Railways.

DEVELOPMENT OF RURAL-URBAN HOUSEHOLD LINKAGES

Concentration of services, poor infrastructure and an often inefficient distribution in the formal economy has not only led to the development of a large small-scale informal economy, but also to the development of intense rural-urban-linkages at the household level: food is carried from the rural to the urban areas and industrial goods the other way. Many rural households depend on remittances from work migrants to the urban areas. In eastern and southern Africa these intense rural-urban linkages have their origin in the pattern of work migration and divided households developed during the colonial period, when only men were allowed to migrate to towns; but they have continued to develop long after independence because of the strong restrictions on rural trading (Tacoli 1998). These rural-urban linkages were mainly based on public passenger transport which was often much better developed than the rural freight transport in order to serve the migrant workers.

Today these individualised rural-urban linkages play an important role in solving many of the problems for both rural and urban households caused by centralised development: poor access to services in the rural areas and expensive food in the large urban areas. However, as a long-run solution to development, individualised rural-urban linkages are an expensive substitute for an institutionalised system of service and commodity distribution, and a substitute that has primarily developed because the present institutionalised and market-driven rural-urban distribution systems function poorly.

THE CHALLENGE OF THE LOGISTICAL REVOLUTION AND OTHER DEVELOPMENTS IN TRANSPORT

In the industrial sectors the import-substitution policies created a seller's market where almost anything that could be produced could also be sold, often from the factory gate. There was therefore no incentive to develop an effective marketing and distribution system. The import-substitution policies were also expected to reduce the demand for overseas transport. However, contrary

to expectations it led to a rapidly growing import sector, and thus resulted in an increasingly skewed demand for overseas transport that reduced the utilisation of sea transport and thus increased the shipping rates.

The logistic revolution and containerisation, which during the 1970s and 1980s revolutionised freight transport in the industrialised and industrialising countries, had until the late 1980s only limited impact on African transport. As primarily manufactured goods were containerised, it was largely irrelevant for African export. African imports were to a large extent containerised, because the European exporters wanted to protect their goods, but the impact of this on the transport cost was probably limited because African infrastructure was not geared to receive the containers. Thus, a large share of the import containers were emptied at the port partly due to complex custom procedures and partly because low labour costs (and therefore low loading costs) made it cheaper to transport the goods on trucks without the container. Therefore it was mainly containers in transit to the landlocked countries and containers to large multinational corporations that went inland. However, during the 1990s, trade liberalisation and privatisation started a process of change that was invigorated by increased competition from South Africa following the end of the embargo on South Africa in 1994. At the same time restructuring of the transport system at a global scale, partly as a result of transport liberalisation, is changing the position of Africa in the global transport network. In the following two chapters, we shall discuss some of the changes underway in the world transport system as manifested and contextualised in Kenya, and their likely consequences on development. In Section 2, we shall examine the development of the domestic/inland transport and in Section 3, we concentrate on overseas shipping and air transport. Finally in Section 4, we summarize and conclude.

2. Development of Kenyan inland freight transport

In this chapter we shall analyse the development and recent changes in the Kenyan inland freight transport system: the railways, the motorised road transport, the pipelines and the non-motorised rural transport. When doing this, we shall look at both the extension and structural changes in the transport network and the changing competition and complementarity between the different modes of transportation and service.

Traditionally the different transport modes have often been seen as competing for the same traffic, and transport policies in Kenya and other African countries have often attempted to protect the railways from what was seen as unfair competition from road transport (Hazlewood 1964). However, the different modes of transport do complement each other, and with increasing focus on logistics, core competence and inter-modal transport there seems to be more reason to focus on how the different modes of transport (the railways and the different motorised and non-motorised means of transport) can complement each other and could work together improving the extent, efficiency and quality of the transport system.

RAILWAY TRANSPORT

Development of the railway network

The origin of the modern transport system in Kenya was the port in Mombasa and the railway line built during the 1890s and the first years of the 20th century, linking the port to Nairobi and further on to Kisumu with a ferry connections to Port Bell (near Kampala) and Jinja in Uganda and to Mwanza, Bukoba and Musoma in Tanzania.

During the first thirty years of the century the railway was extended with a number of branch lines. Thus the Voi-Taveta line, which links up to the Tanga line in Tanzania, was built between 1914 and 1918 mainly for military strategic purposes and to provide access to the sisal plantations in the Taita-Taveta district; a branch line to tap the soda ash deposits of Lake Magadi was completed in 1915; the Nairobi-Thika line was opened in 1913 and extended to Murang'a, Nyeri and Nanyuki by 1930; the line to Eldoret was completed in 1924 and in 1928 extended to Kampala to become the major trunk line to Uganda; additional branches were built to Solai, Nyahururu, Butere and Kitale (Hill 1950; O'Connor 1965; Ongaro 1995). In total the Kenyan railways have 2050 km of metric-gauge, single tracks.

Kenya railways were originally built for strategic reasons and, as was the case with many other African railways, they were never a great economic success. One of the original reasons for the colonial governments' colonisation policies was to create an agricultural export production, which could pay for the railway (Miller 1971); and both before and after independence Kenyan transport policies have been geared to keep the traffic on the railway, though often in vain (Hazelwood 1964). Before the Second World War, road construction policies focused on building feeder roads to the railways and tried to avoid improving the roads parallel to the railways. When this after the war became impossible, truck route licensing was used to keep competing truck transport parallel with the railways down at a minimum, and when that also became impossible after independence, the large parastatals responsible for transport of most of the agricultural transport as well as cement were required to use the railways as much as possible. Thus most of the country's coffee and tea and a number of other commodities were transported by railway (Irandu 2000). However, since deregulation of the domestic agricultural trade started during the 1980s it has been a losing battle.

When the East African Railway Company was split up into three national companies in 1977, the Kenyan Railway Corporation was forced to operate with unsustainably low rates, and even then was often not paid by its parastatal customers. By the early 1990s much of the rolling stock was run down due to inadequate maintenance. In addition much of the track, which was old and from the beginning built with very sharp curves, needed renewal; consequently derailments were frequent. Efficiency was therefore generally low. Locomotive availability was less than 50%. Out of a fleet of 198 locomotives only 53 was available for traffic on the lines; the rest were small shunting locomotives or out of order; and out of 6,400 freight wagons only 3,700 were available on any specific day. In order to increase the capacity, KRC rented 10 large South African locomotives in 1994. They were returned in 1998 when the locomotive availability started to go up. It reached 60% in 1999-2000 (Irandu 2000).

Table 2.1. A comparison between Kenya Railway Corporation (KRC) and Zimbabwe's National Railways (ZNR)

	Kenya 1995	Zimbabwe 1996
Length of rail network (km)	2,085	2,759
No. of locomotives	198	240
Locomotives available on the main lines	51	169
No. of freight wagons (of these available)	6,400 (3,700)	11,200 (10,450)
No. of passenger coaches (of these available)	516 (358)	282 (282)
Net ton-km (millions)	1,309	5,011
Passenger-km	385,000	1,568,000
No. of employees	15,800	11,900

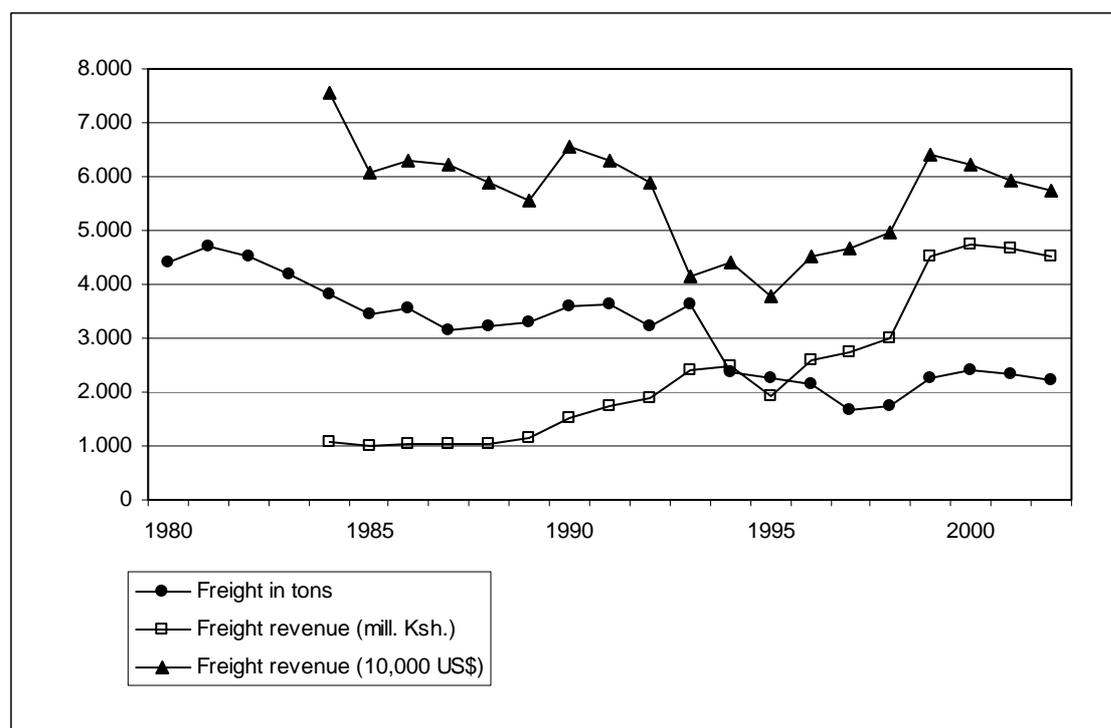
Sources: KRC, Annual Report 1995-96; ZNR, Fact and figures, 10th edition 1996

In Table 2.1, elements of KRC are compared with those of Zimbabwe's National Railways (ZNR), which has a network that is not so different from KRC's. Whereas KRC has a rail network of 2,085 km, 198 locomotives and a fleet of 6,400 freight wagons and 516 passenger coaches, ZNR has a rail network of 2,759 km, 240 locomotives and a fleet of 11,200 freight wagons and 282 passenger coaches. But whereas KRC by the mid-1990s carried 1,309 ton-km and 385,000 passenger-km, ZNR carried about four times as many, namely 5,011 ton-km and 1.57 million passenger-km, and had an employment of 11900 or only 75% of KRC's employment (15,800). Even then ZNR also had huge problems and felt that their employment should down to about 5,000 (Pedersen 2002a).

During the mid-1990s Kenya Railway Corporation (KRC) underwent an organisational reform, which increased the autonomy of the organisation to set its own rates. This resulted in a more flexible rate structure, allowing higher rates for up-going (Mombasa to Nairobi) traffic than for down-going (Nairobi to Mombasa) (which is much smaller than the up-going traffic), which makes it easier to compete with road transport¹; at the same time some peripheral activities, such as hotels and catering, were sold. However, the staff was still too large, and the capital injection necessary to turn the organisation was not forthcoming. Plans to privatise the railway corporation were not realised due to political resistance.

From 4.5 million ton in the early 1980s traffic, KRC's total freight traffic dropped to only 1.7 million ton in 1997/98 (see Figure 2.1). However, during the late 1990s traffic increased to 2.3 million ton in 2000/01, but since then it has declined slightly again to less than 2.2 million ton in 2002/03. Apart from the Butere-Kisumu line (which also has been closed periodically due to derailments) most of the branch lines had been closed at the time of the fieldwork in 2002. Only the Nanyuki line was operated, but only to the fertilizer factory in Thika. The Magadi line has been privatized and the operations taken over by the Magadi Mining Company.

¹ At least partly as a result of this the percent of empty wagon km went down from 30% to 25% during the early 1990s (KRC, Annual report 1995-96), which is probably not bad considering the very skew traffic distribution both in agricultural transport and in the import-export trade.

Figure 2.1. Trends in Freight and revenue of Kenya Railways.

Source: Statistical abstracts, Central Bureau of Statistics, Republic of Kenya, various years.

Table 2.2. Trends in freight and freight revenues of the Kenyan Railways (annual averages over the periods)

Year	1000 Ton	Million ton-km	Total freight revenue		Freight revenue	
			in mill K.sh.	in mill US\$	per ton (US\$/ton)	per ton-km (UScent/ton-km)
1998-2002	2,192	1,460	4,284	58.5	26.8	4.0
1993-1997	2,418	1,273	2,430	43.1	19.2	3.4
1988-1992	3,385	1,867	1,465	60.4	17.8	3.2
1984-1987	3,486	1,857	1,033	65.3	18.8	3.5

Source: Statistical Abstracts, Central Bureau of Statistics, Republic of Kenya, various years.

At the same time the railway freight rates were increased not only in Kenyan shillings but also in dollar terms (Table 2.2). After some fluctuations in the mid-1990s due to devaluations, the average freight rate per ton-km increased from 3.2-3.3 US cents per ton-km around 1990 to 4.5 US cents per ton-km in 1998, but has since then dropped to 3.7 US cents per ton-km in 2001 and

2002². As a result KRC's freight revenue increased 70% in dollar terms from the low point of 38 million US \$ in 1995 to 64 million US \$ in 1999, or about the same as around 1990. Since 1999 the freight revenue has again decreased slowly to 57 million US \$ in 2002.

Railways and container transport: possible core business?

One of the problems with the monopolistic policies, which until the 1990s supported the railways, is that the railways continued to be seen as an all-round mode of transport instead of concentrating on those parts of the transport market where they have a chance to compete with road transport. Since the 1980s this has increasingly been the container traffic between the port of Mombasa and Uganda and the inland container terminals in Nairobi, Kisumu and Eldoret operated by the KRC. Still the container traffic does not appear to have been prioritised as a core business activity, even though the KRC have had large difficulties expanding their capacity of flat-bed wagons to meet the growing demand for container transport. For the same reason it has also been very difficult for them to cut the wagon turn-around and transport time by organising block trains (Irandu 2000). Block trains need less shunting, which especially on single line railways is very time consuming. Not until 2000 did the railways begin to organise block trains, hard pressed by the shipping industry. This has reduced the normal turn-around time to 5-7 days between Mombasa and Nairobi, although it is possible to do it in 3 days. However, in 2002 the container travel time on the railways from Mombasa to Kampala was still 10-14 days, at least partly due to poor coordination between the Kenya and Ugandan railways at the border crossing in Malaba, while it only took 5 days by road and ideally should not take more than 24-36 hours (Irandu 2000).

These improvements in the organisation of KRC have resulted in some increase in the railway's share of the container traffic. Data from the period 1996-2000 show that between 20% and 23% of the imported full containers left Mombasa by railway and 78% by road. According to our interviews this apparently had increased to about 30% in 2002. However, none of the empty import containers and very few of the empty export containers went by railway, so of the total container traffic only 14-17% went by railway.

² These average railway rates are much lower than the truck rates found below in the section on road transport. However, the average rates are not directly comparable to the trucking rates which tend to be rates for the up-going traffic only. Due to differences in the up- and down-going rates the real difference is therefore smaller than indicated by these figures. Also railway rates probably have to be lower than the truck rates in order to be competitive, because rail transport often requires additional local transport to and from the stations. However, the main problem of the railways is probably not the rates, but low speed and poor services.

Of the 30% import containers going by rail, 24% went to KRC's container depot in Embakasi (Nairobi) and only 6% to other destinations.

However, due to KRC's more flexible tariff policies the railways have been able to increase their share of export containers. Thus their share of full export containers increased from 10% in 1996 to 19% in 2000, while their share of empty export containers increased from only 2.6% in 1996 to 8.1% in 2000. This increased KRC's return freight in the container traffic from 58% in 1996 to 72% in 2000, which is clearly important for the economy of the railways. However, at the same time the road transporters managed to maintain an almost complete balance between import and export containers (Table 2.3).

Table 2.3. Modal split between rail and road transport of containers to (exports) and from (imports) Mombasa, 1996-2000

Year	Road			Rail			Rail in percent of all container transport		
	Import	Export	Export in percent of imports	Import	Export	Export in percent of imports	Import	Export	All
1996	83,992	87,488	104	17,190	10,032	58	17	10	14
1997	89,421	82,871	93	16,618	9,641	58	16	10	13
1998	95,739	95,052	99	20,448	12,745	62	18	13	15
2000*	88,574	83,611	94	20,069	14,523	72	20	15	17

* Estimated on the basis of data for the first 8 months in 2000.

Source: Unpublished data from Kenya Ports Authorities.

While the railways have been able to increase their share of the container traffic, their share of the total import traffic through Mombasa decreased rapidly from 13% in 1996 to only 3% in 1999 and 2000.

Is there a new role for the railways in Kenyan development?

The new government in Kenya, which came into power in December 2002, seems more determined to turn the railways around than the old one. In November 2003 the traffic on the Nanyuki line was resumed and so was the passenger traffic to Kisumu, which had been suspended for some years, and block trains to Kampala were carried through to Kampala without change of locomotives. As part of the new government's Economic Recovery Strategy (Government of Kenya 2003) there are now also plans to prepare KRC for privatisation through a management contract which within three years shall offer a unitary concession on the railway operations to a private operator. At the same time the marine services on Lake Victoria will be divested.

Although the Voi-Taveta line is closed there seems to be an interest in reopening it. Thus Caltex has apparently expressed interest in supplying Arusha with oil from Mombasa; and in Tanzania the South African Trans Africa Railway Company (TARC), which has license to operate on Tanzania Railway Corporation's rail network, is interested in extending its activities into Kenya, but the Tanzanian government seems to be against it, fearing that Tanga port will lose traffic to Mombasa (Pedersen 2001c). TARC opened in 2000 a transfer station in Kidatu in Tanzania, which links the southern African railway network with the narrower gauge network in East Africa, and today operates container trains from South Africa to Tanzania and Uganda, which in the future may become a serious competitor to Mombasa and the northern corridor.

Kisumu port and shipping on Lake Victoria

The port in Kisumu has from its inception in 1899 been managed by the shifting railway corporations as part of the railway network (Ogonda and Onyango 1994). The port handles both local trade to the towns of Mwanza, Bukoba and Musoma in Tanzania and Port Bell and Jinja in Uganda, and overseas imports and exports to and from the neighbouring countries of Tanzania, Uganda, Rwanda, Burundi and the Democratic Republic of Congo. One of KRC's small container depots is located at the port. Goods are brought by railway and road to be trans-shipped into railway ferries linked to short port railways at the main lake ports. About three quarters of the goods trans-shipped through the port are for local consumption within the lake and a quarter for transit to Uganda and other countries. The main goods trans-shipped through the port are: petroleum products, maize, groundnuts and simsim, beans, second hand clothes, cement, wheat, machinery, sugar, telephone posts, iron sheets, plastic ware, hides and skins, coffee, cotton bales, cotton seed and beer. However, KRC's shipping activities have generally declined during the last decade and KRC has now only one ferry left. In addition to the traffic managed by KRC, there is also a small-boat traffic, which mainly serves the small landing places and fishing communities along the lakeshores.

As a result of privatisation of the Tanzanian lake traffic, a private shipping industry has been developing rapidly since the late 1990s on the Tanzanian side of the lake, where the number of ferries has increased from one to seven. In 2000 the lake shipping activities of the Tanzania Railways Company (TRC) were after ten years' discussion detached from TRC as the Marine Services Company. There are now also plans to privatise the Kenyan lake shipping (Government of Kenya 2003).

During recent years a large share of the freight to Kampala has come through Kisumu and Lake Victoria, because of problems at the Ugandan railway between Busia and Kampala, and in spite of severely reduced capacity on the Kisumu branch line which due to poor rails can only carry 8

wagons per train. With improved standard at the Ugandan railway and introduction of block trains between Mombasa and Kampala, one would expect most of the traffic to go by train via Malaba.

To improve the service on the Kampala-Mombasa line, plans are considered for joint operation of the Kenyan and Ugandan railways (Irandu 2000). In 1998 the Uganda Railway Corporation carried 147 million ton-km (Uganda Statistical Abstract 1999)(compared to KRC's 1,111 million ton-km) and in 1997 it ceased to carry passengers.

ROAD TRANSPORT

Development of the road network

The modern road system in Kenya started with the Mackinnon-Slater roads from Mombasa through Nairobi to Busia and Uganda, which were built during the 1890s as a predecessor to the railway. During the first half of the 20th century the road network was gradually extended to serve the British administration and the consecutive waves of European settlements and mining areas, though feeder roads were also built into the African reserves (Ogonda 1986, 1992).

Table 2.4. Development of the classified road network in Kenya

Year	Km bitumen roads	Increase over the previous 5 years (km)	Km earth and gravel roads	Increase over the previous 5 years (km)
2000	8,937	265	54,354	-916
1995	8,672	729	55,270	929
1990	7,943	1,212	54,341	6,891
1985	6,731	1,190	47,450	1,520
1980	5,541	1,494	45,930	-2,354
1975	4,047	1,112	48,284	10,354
1970	2,935	870	37,930	-1,954
1965	2,065	1,431	39,884	14,703
1960	634	280	25,181	3,463
1955	354	-	21,718	-

Source: Statistical Abstracts, Central Bureau of Statistics, Republic of Kenya, various years

By 1950 closer networks of roads were concentrated in Western Kenya, the Kenya highlands and at the coast, while the road networks in the northern, north eastern and southern parts of the country were more sparse; a pattern, which still pertains today. The 1950s and early 1960s witnessed an intensified road construction programme. Direct roads were developed between the most important centres, and sections of the main roads with heavier traffic were bituminised.

This wave of road construction culminated with the building of the Nairobi-Thika dual carriage-way. The length of classified roads almost doubled from 22,000 km in 1955 to 42,000 in 1965, while the length of bituminised roads increased from only 354 km in 1955 to 2065 km in 1965.

During the 1970s and 1980s the bituminisation of the main roads continued, but much of the focus shifted from the main roads to the Rural Access Roads Programme (RARP) and Special Roads Programme (SRP), which especially during the early 1970s and late 1980s contributed to the expansion and improvement of the rural road network. Up to the mid-1980s, Kenya had a higher standard of road transport infrastructure and lower transport costs than most countries in Sub-Saharan Africa. However, during the late 1980s and the 1990s the situation changed, as the quality of the road network deteriorated during the last 10-15 years. The poor state of roads is largely due to inadequate maintenance and gradual erosion of public sector capacity to effectively plan, finance and manage basic road infrastructure. Other factors contributing to road deterioration are increased traffic volume, high axle loads, overloading and inadequate capacity in railway transport. The financial constraints facing Kenya have contributed to lack of funds to maintain the roads. Of course, total revenues from the road transport sector through fuel taxes, motor vehicle import duties, licences and fees have been rising considerably as a proportion of total tax revenues, but these revenues have not been allocated for road maintenance because of the government's budgetary constraints (Republic of Kenya 1997; Wasike 2001).

Road freight transport

Road transport is by far the most important mode of land freight transport. However, the development of road transport does not just depend on the development of road infrastructure, but also on the development and structure of the truck fleet. In 2003 there was 57,800 trucks and lorries in Kenya and in addition 159,500 vans and pick-ups. Most of these vehicles are own-account vehicles only allowed to transport goods owned by the truck-owner, while 17,700 of the trucks have license to carry freight for other's account. These make up the trucking industry.

Between independence and the late 1990s the number of privately owned trucks and lorries increased from about 10,000 to about 40,000, while the number of trucks in the trucking industry increased from 2,500 to 7-8,000. The number of privately owned trucks grew, especially from the mid-1960s to the mid-1970s. Then growth stopped during the next ten years after the collapse of the coffee boom. After trade liberalization in 1984 the number of trucks increased again during the late 1980s, but stagnated during the early 1990s. Since the mid-1990s it has again increased. During most of the period the trucking industry has made up 20-25% of the privately owned truck fleet.

However, until 1998 the vehicle statistics did not comprise vehicles owned by the state and by parastatal organizations. How many these are we do not know, but when they were included in the statistics in 1998, the figures increased with about 30% above the growth rate during the years before and after 1998. If this holds throughout the period, the trucking industry does not cover more than 15% of the truck fleet.³

The dominance of own-account trucks is common in most African countries. There are at least three reasons for this. Firstly, the parastatal organizations and large private industries have generally had much better access to cheap credit and foreign currency to import vehicles and spare parts than potential small private trucking companies. Secondly, although the trucks in trucking companies are generally utilized more efficiently than own-account trucks, there were under the import-substitution policies few incentives to increase efficiency, especially if this meant reduced control. Thirdly, independent transport operators were, especially in the rural areas, seen as potentially bypassing the parastatal agricultural monopolies, and therefore not encouraged. The trucking industry therefore mainly consisted of large trucking companies partly serving the transit traffic between the port in Mombasa and the landlocked countries, and partly operating on long-term contracts with the parastatals.

However, during the 1990s the situation changed as a result of the deregulation both of the agricultural trade and of the transport sector. The licensing of trucks for hire appears to have been administered less strictly than before. It has increasingly been accepted that rural traders and other truck owners rent their trucks out, even though they have no license to do so. Farmers' access to transport has therefore increased during the 1990s, although the informal deregulation has been subject to corrupt practices (see e.g. Ikiara, Jama and Amadi 1994). When the number of licenses for trucks for hire (TLBs) in 2000 increased from 7,700 to 17,700, this is likely largely to be a result of a changed administrative practice and confirmation of changes which have taken place in practice during the 1990s. Fees on TLBs were abolished in 2002 and TLBs are now issued for both trucks and light vehicles on request⁴ ⁵. As a result the number of TLBs for freight

³Up to the late 1980s, a government parastatal, Kenya National Transport Company (KENATCO), operated freight trucks and taxi services. Due to financial difficulties and the government privatization policies, the company was sold and today only operates taxi services. According to Anyango (1997) the collapse of the parastatal opened the way for many small-and-medium-sized Kenyan operators to enter the traffic market.

⁴ A similar development has taken place in most African countries and many countries have completely stopped licensing trucks for hire, e.g. Ghana and Zimbabwe (see Pedersen 2001b and 2002a).

transport had in 2002 increased to 25,800. This is rapidly transforming the trucking and transport industry and improving the access to transport all over the country.

At the same time there was during the 1990s an increased tendency for the large manufacturing companies to outsource their transport, partly in order to save capital, which has become increasingly expensive, and partly to increase the efficiency of transport. This has increased the market for the transport services. A large British logistics firm, Tibbett and Britten, has established a branch in Kenya in order to serve large industries not only with transport services, but also with storage and distribution.

Large trucking companies

A large share of the long-distance transport is carried out by large trucking companies with large vehicle fleets. The companies we interviewed had between 20 and 100 vehicles, with an average of 40. In terms of work force, they ranged from 50 to 150 workers, mainly drivers and loaders. Many of the large trucking companies serve the transit traffic to the landlocked countries: Uganda, Rwanda, Burundi and the Democratic Republic of Congo. Both on the transit and the domestic markets many of them operate on long-term contracts with large parastatal or private firms and organizations, for transport of raw materials, finished products and relief supplies. Transportation of relief supplies has in recent times become a major activity in the region due to the political instability in countries such as Rwanda, Burundi, Sudan and Somalia.

Most of the large trucking companies are located in the urban areas along the transit corridor. The goods from the region to the outside world are mainly agricultural products, e.g. coffee, tea, flowers and fruits and vegetables. This reflects the regions' agricultural orientation. The imports include malt, chemicals, machinery and equipments, fertilizers, and vehicles.

Transport related to agriculture tends to be very skew due to high seasonality, while the port-related transport of import/export and transit trade is skew because the imports tonnage now is five times larger than the export tonnage. It is therefore generally difficult for the large transporters to secure return freights. This means that trucks very often are empty on the return trip, which results in high transport rates. Some of the large firms have a local agent at the major destinations to look for return freight and inform the head office to re-route or deploy the trucks

⁵ In the passenger traffic, where TLBs were earlier only required for busses and vehicles operating in the tourist industry, the TLBs are now also required for *matatus*, but issued free of charge.

to pick it up, but most of them do not have such agents. In some companies the truck drivers are allowed to look for return freight, but most companies do not trust their drivers to do so.

Some of the large trucking companies have service vans which follow the trucks providing the necessary logistical support. Many companies now use mobile phones which have made communication with trucks on the road much easier.

Small truckers

Transport for hire in Kenya is dominated by small transporters. In 1997, small truckers operating less than 10 trucks, but mostly only one or two, were estimated to own 60-70 percent of the vehicle fleet and carry about 75% of the available cargo (Anyango 1997). These truckers operate mainly in the market of a specific locality or region (e.g. a district, province or town). Very few of the trucks are owner-operated. Most are operated by an employed driver and a turn boy. The vehicles vary in capacity from one ton trucks to 15 ton and are usually smaller than those operated by the large companies.

While some small transporters have long-term contracts, the majority operate on the spot market. The spot markets are designated sites where individually owned trucks wait for customers. The organization and management of the spot markets vary from one site to another, but generally prospective transport buyers approach the waiting trucks and negotiate the terms with the driver, operator or agent. At some sites there are brokers or agents, who negotiate conditions between prospective transport buyers and queuing trucks. At other sites there is open competition and scrambling for prospective transport buyers by the truck operators.

Trucks operated at the spot market carry a variety of goods ranging from industrial to household goods and few truckers specialize. There is, however, specialized spot markets in Nairobi concentrating on transport of building materials, such as sand, or on agricultural products, mainly horticultural products. The price negotiated is in most cases based on the distance to be covered rather than on tonnage. When a broker is involved in the negotiation of the terms, a commission of about 10 percent of the agreed price is usually charged.

Trucking rates

Trucking rates have traditionally been very high in Africa. In the late 1980s Rizet and Hine (1993) found trucking rates in West Africa at 8-10 US cents/ton-km, or five to six times higher than in Pakistan (1.5-2.5 US cents/ton-km). Anyango (1997) quotes domestic transport rates in Kenya in 1994 between 8.1 and 12.3 US cents/ton-km and a mean at 9.3 US cents/ton-km. Although rates in practice are most often given for specific distances, we have in order to be able to compare

with other studies computed ton-km rates on the basis of our interview data. These data indicate that the average transport rate in Kenya in 2001 was about 6 US cents/ton-km in domestic transport, but 7.5-8.5 US cents/ton-km in the transit traffic. This indicates that the domestic transport rates have decreased roughly with one third since 1994 due to the liberalisation of trade and transport.

In comparison, Pedersen (2001c) found domestic transport rates in Northern Tanzania in 2000 at only 3.8 US cents/ton-km, also as a result of a decrease during the 1990s. Most of the trade between Kenya and Tanzania is therefore carried on Tanzanian trucks. However, the rates for border-crossing traffic and in the southern corridor was found to be 8.9 US cents/ton-km or about the same as in Kenya. The low domestic trucking rates in Tanzania are not due to lower fuel prices, as the diesel prices during the 1990s were higher in Tanzania than in Kenya (Met-schies 2003).

Freight on passenger public transport vehicles: buses and *matatus*

Public bus and *matatu* transport also play an important role in the movement of goods, especially in short-distance inter-urban and rural transport. The *matatu* mode of transport has, since its official recognition in 1973, grown in importance. This is largely because the bus and truck transport system was inadequate in both rural and urban areas in Kenya. Thus the development of the *matatu* industry filled a transport vacuum and played an important role not just for passenger transport but also for freight (Khayesi 1993, 1999, 2001; Ogonda 1992; Mbutia 2002). Indeed, most urban and rural retailers and itinerant traders of agricultural and household goods use *matatus* to transport their wares to the market. The rates paid on *matatus* are based on the distance and the bulkiness of the commodity being transported.

Public buses are also used to transport goods between towns and between rural and urban centres. The quantities carried by this mode are limited because the buses are designed for passenger transport and not for freight. Nevertheless, urban and rural traders dealing in agricultural products, second-hand clothes or household goods often use busses to transport their wares to the market over both short and long distances.

Package distribution services

Since the 1990s a number of small companies have developed which offer door-to-door express delivery service of packages and small amounts of freight in competition with postal services and busses. They often operate with vans or pick-ups, but some small courier enterprises send escorted packages by the public transport system. The development of e-trade is likely to increase the demand for package distribution services dramatically.

PIPELINE TRANSPORT

To reduce the costs of oil transport and reduce the traffic of heavy oil tankers on the roads, a 449-km pipeline between Mombasa and Nairobi was, after long discussions, constructed in 1977-78 (Republic of Kenya 1970). It is operated by the Kenya Pipeline Company (KPC), which is a parastatal. The oil pipeline was extended to western Kenya in 1995, with three outlays at Nakuru, Kisumu and Eldoret (Republic of Kenya 1997). The pipeline has since the late 1990s transported about 2.8 million m³ per year and seems to experience increasing capacity problems. Especially the old part of the pipeline needs rehabilitation. To boost the pumping capacity KPC has recently constructed a new pump station that should increase the capacity from 160,000 litres per hour to 220,000 litres per hour. As a result the pipeline carried close to 3.0 million m³ in 2003 (Economic Survey 2004). There is a proposal to extend the pipeline to Kampala, under the aegis of the East African Co-operation agreement.

It is expected that this extension will reduce damages to Kenyan roads by heavy tankers transporting petroleum products to the neighbouring countries (Republic of Kenya 1997). However, KPC's transport rates are set at a level close to the trucking rates (3.40 K.sh. per m³ per km), so there are hardly any economic savings for the users of the pipeline. This is a transport rate which is more than double of most other comparable pipelines (Mecheo and Omiti 2003).

INTERMEDIATE, NON-MOTORIZED RURAL TRANSPORT

Transport planning has until recently tended to focus on motorised transport only. However, in the rural areas, where most of the Kenyan population live and earn their living, non-motorised transport plays a large but often overlooked role (For Kenyan data, see Khayesi 1993). This is most clearly the case in remote areas inaccessible for motorised transport, but also on rural roads open to motorised traffic a large share of the freight carried along the road will typically be head-loaded or carried by non-motorised means of transport. A study in Ghana (Riverson and Carapetis 1991) showed that up to 90% of the freight movements on rural roads with less than 25 motor vehicles per day were non-motorised and even on rural roads with more intensive traffic 25% of the freight movements were non-motorised.

Much agricultural produce is head-loaded, often over long distances to markets or truck collection points. To peripherally located farm households this represents a large cost and use of labour force which is often scarce in the harvest season. Long transport time may also impact negatively on the quality of produce and reduce the payment to farmers. This transport, which is generally the responsibility of the farmer, has generally been overlooked by the parastatals and private crop

traders, because it does not appear as transport costs in their accounts but is hidden in their payments to the farmers. For a number of African export crops (cocoa in Ghana, coffee in Tanzania and cotton in Zimbabwe) Pedersen (2002b) estimated the cost of transport to the buying point for the average farmer to be 10-25% of the total cost of transport between the farm and the European port, and between one and ten percent of the payment to farmers. However, here the labour costs were set at only one US\$ per day and for peripherally located farmers the share would be much larger and more important for their decision to engage in production for the market. The rural transport costs are clearly relatively more important for farmers' decision to market grain and other low value crops.

The non-motorized modes of transport comprise e.g. bicycles (*boda boda*), hand-carts (*mkokoteni*), animal carts and human porters. Although non-motorized transport modes carry a lower maximum weight and have a shorter range than motorized modes of transport, they have a larger flexibility in terms of travel routes and reach into remote rural areas, following foot paths and tracks which may occasionally be constructed, but often are made over time by the wear of users. Because of low labour costs the ton-km costs are also much lower.

Some bicycles and carts are owned by individual farmers and small businessmen and used for their own account. However, because individual owners may have difficulties utilising the investments efficiently, many bicycles and carts are operated for hire. Such bicycles for hire in both freight and passenger transport have since the 1980s spread rapidly from Uganda via Busia into both urban and rural areas in western Kenya under the name of *boda boda* (because they originally were used mainly to cross-border trade or smuggling between Kenya and Uganda) (Njenga and Maganya 1998; Howe and Bryceson 2000). Such bicycles for hire may be owned by the operator, but are more often hired for a fee from owners with one or more bicycles, who may not be involved in the actual operations. The physical requirements make the operation of *boda boda* and handcarts exclusively young male businesses. But it should be remembered that women are predominant when it comes to human porters, partly due to their traditionally greater role in the provision of labour for agricultural production and produce marketing.

In a number of provincial towns *boda boda* operators have established organisations which regulate the operations, for instance through requirements of registration, identification and dress code, operation of departure stages, and organisation of credit and welfare associations. This organisation has increased the security of transport and the trust between the operators and their costumers. Thus we found in a survey of small entrepreneurs in the small town of Siaya that they increasingly entrust *boda boda* operators to collect and deliver goods already paid for in wholesale shops or even giving them money for purchase and delivery of the goods to their shops/kiosks.

Thus wholesalers and retailers are linked up and there is a possible reduction of costs for small rural entrepreneurs who often order stock in relatively small quantities.

The use of hand carts has also been growing, though primarily in the urban areas (Howe and Bryceson 2000). Also here operators most often hire the vehicles (Seierup 2001). Studies from a number of African countries (e.g. Tanzania (Gibbon 1998) and Zimbabwe (Pedersen 2002a)) show that the use of ox or donkey carts was growing rapidly during the 1990s, especially in rural areas where trade deregulation has led to increasing incomes to small scale farmers. Unfortunately we have found no Kenyan studies supporting this. The reasons for this could possibly be that deregulation so far has had limited impact on the incomes of small-scale farmers, and that rural *matatu* transport reduces the needs for animal carts.

Since the late 1980s the World Bank and major donors have - as part of the poverty reduction programmes - also in Kenya been pushing for increased special support to non-motorised transport; and in the late 1980s the Kenyan government, as one of the first in Africa, gradually reduced the import tax on bicycles from 80% to 20%, resulting in a 35% reduction in the retail price and a 1,500% increase in imports (Howe 1995). However in spite of this, neither the general transport policies of Kenyan government (as well as of most other African governments) nor the donors have given high priority to non-motorised transport. In fact few of the road rehabilitation projects carried out during the 1990s comprised special considerations for non-motorised transport, but rather increased the speed and led to rapidly increasing accident rates for pedestrians and cyclists, which, especially in and around the large towns, have tended to push non-motorised traffic off the road (Howe and Bryceson 2000).

CONCLUSION

Service levels and efficiency of the transport system in Kenya are generally poor and transport rates high compared with international standards. However, poor transport is not just a problem because of the high transport costs. It is even more important because trade speculation and corrupt trading practices to a large extent are rooted in poor transport and communication and bottlenecks in the transport system. This is most significant in rural transport and in connection with the large transport terminals handling import-export trade.

In Ghana, Hine (1998) found that the price differences in the rural areas within 100 km of the city of Kumasi were up to 15 times larger than the differences in trucking costs could justify, but these large excess profits were only possible because of poor transport and communication. We

do not know of similar studies in Kenya, but trade speculation certainly also occurs in Kenya, although the absolute level may be lower due to the relatively well-developed rural *matatu* transport and agricultural parastatals which were probably less constraining than in many other African countries. Kenya also has a long tradition for rural road programmes, which during the 1970s and 1980s led to considerable increases in the classified rural earth and gravel networks. However, also in Kenya were the parastatal earnings before the liberalisation of agricultural trade to a large extent based on control over the transport system.

As part of the structural adjustment policies, the World Bank and other donors during the 1990s pushed for restructuring and improvements of the transport system. Much of the focus has been on rehabilitating the main roads, which had suffered from neglected maintenance and also were hard hit by the 'el Nino' weather in 1997-1998, while the development of the rural road network almost stopped. To secure a better maintenance, the World Bank and other donors have pushed for establishing a road fund financed by a gasoline tax, for a more efficient (less corrupt) vehicle weight control, because large overweight is one of the main culprits in the rapid deterioration of the roads, and for involvement of the trucking industry in the administration of the road fund and the weight bridges in order to reduce corruption. However, this has been a very slow process with a lot of resistance from the political and administrative system.

Import liberalisation during the early 1990s led to a rapid increase in the number of trucks and vans; and the deregulation of the trucking industry by the end of the 1990s has made it possible for all truck owners to hire out their vehicles. Earlier this required a special licence which was mostly given in the urban areas. This is likely to increase the access to freight transport considerably, especially in the rural areas. At the same time scarcity of capital, high interest rates and push for higher efficiency due to increased competition have led many large, both private and parastatal, enterprises to outsource their transport, thereby increasing the market for the independent trucking industry. Similarly the shift of Kenyan export from Europe to COMESA has increased the demand for long-distance, intra-African trucking.

Due to the growing number of trucks, the railways have been under increasing competition from road transport during the 1990s. At the same time deregulation of the agricultural parastatals, which were earlier required to use the railways, has reduced the railways' protected market and increased the need for a restructuring of the Kenya Railways Corporation and the transport services it offers. However, the restructuring of the KRC has generally been a very slow and inefficient process, stopped by many vested interests, and the rail/road modal split has shifted in favour of the roads. The introduction of container block trains between Mombasa and Nairobi and Kampala in 2000 has increased the capacity of the railways to transport containers and

reduced the travel time considerably, although the travel time is still far too long and the railways unable to carry all the freight on offer. The new government, which came into power in 2003, seems to be trying to speed up the reform process.

With increasing inter-African trade it should be possible to develop a new market for railway transport. South African railways have been pushing for this to happen. However, this requires an increased collaboration and integration between the African railways, which seems to be met with strong hesitation from political vested interests, because of the changing patterns of trade and transport which may result.

As a result of the development of *matatu* transport since 1973, rural transport in Kenya has generally been better than in most other African countries. The recent deregulation of the trucking industry is likely to improve the situation even further. Still head-loading and different forms of non-motorised transport, such as bicycles, pushcarts and ox- and donkey-carts, play an important role in the rural areas and are likely to continue to do so. Although there are few studies in Kenya of these intermediate means of transport, they appear to have been growing in importance. However, the Kenyan Government has generally not been very interested in the development of intermediate means of transport, although Kenya was one of the first African countries to abolish import taxation on bicycles. Also the extension of the rural roads network almost stopped during the 1990s.

3. Development of overseas freight transport in Kenya during structural adjustment

Efficient overseas transport is a prerequisite for exploitation of the new trade opportunities offered by the present trend towards trade liberalisation. However, for a number of reasons African overseas transport has generally been very expensive compared with international standards.

UNCTAD (1998) estimated freight costs as a percentage of the total value of imports to be 14% in Africa, while they were 8% for the developing countries as a whole and only 4% for the developed countries. For the landlocked countries in Africa the freight costs even varied between 20% and 40%. The high transport costs in Africa are partly due to long distances caused by low densities and dispersed economic activities, but they are also a result of poor and poorly maintained infrastructure and inefficient structures and organisation of the transport system itself.

In spite of the high transport costs, studies of economic activities in Africa during the last thirty years have generally not seen transport as a major constraint to economic development. There are at least two reasons for this. Firstly, the import-substitution policies and politically imposed pan-territorial pricing introduced after independence tended to make transport costs invisible, even though they were costly to the economy. Secondly, export productions which could not bear the high transport costs, simply did not take place. The effect of poor and expensive transport is therefore seen in the structure of the economy rather than as a constraint to the existing economic activities.

In line with the development of new institutional economics, transport costs were substituted by the even larger transaction costs, which in Africa became almost synonymous with the cost of corruption and profiteering. However, much of the corruption and profiteering in Africa is based on monopolistic exploitation of bottlenecks in the transport system. The true cost of poor transport is therefore much larger than the 14% estimated by UNCTAD. The importance of transport therefore cannot be reduced to a simple cost figure. The structure and organisation of the transport system and the way it interacts with the production system is more important than the simple cost figure.

In this chapter we shall therefore look in detail at the structure and development of sea and air transport as they relate to Kenya.

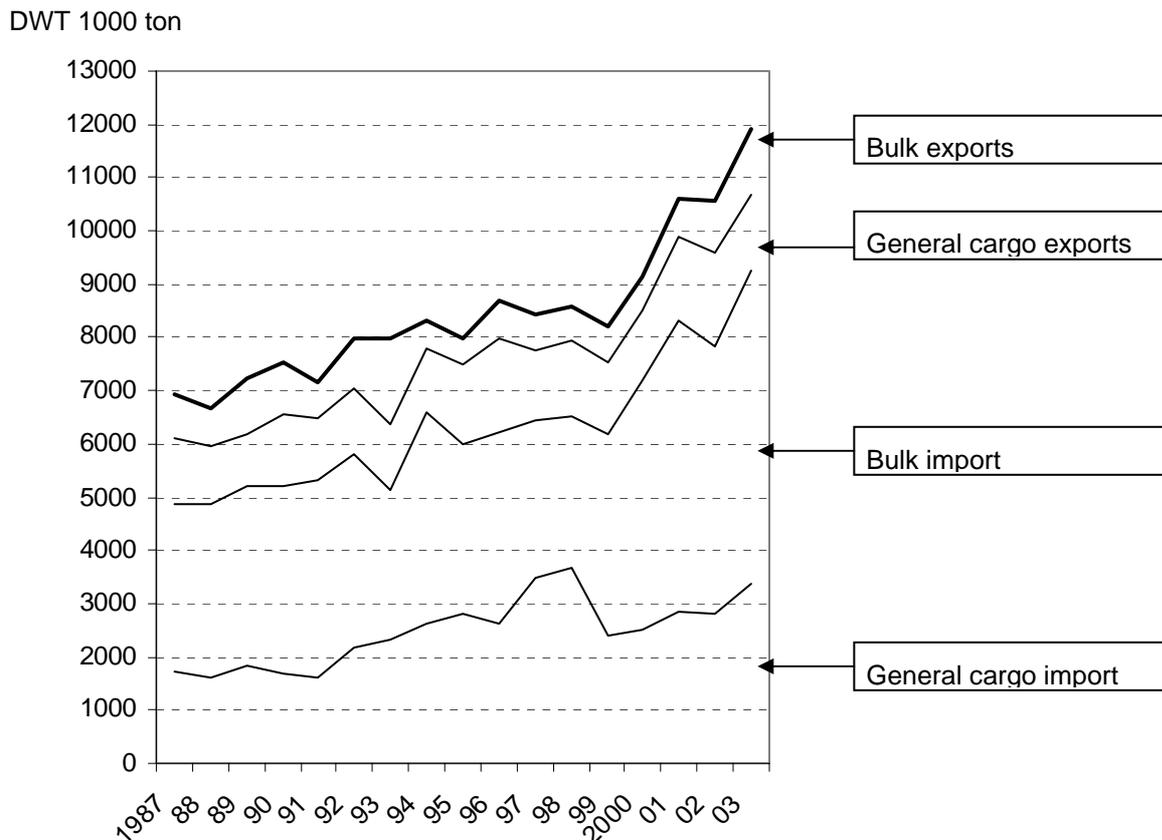
THE SHIPPING INDUSTRY

Mombasa Port and its traffic

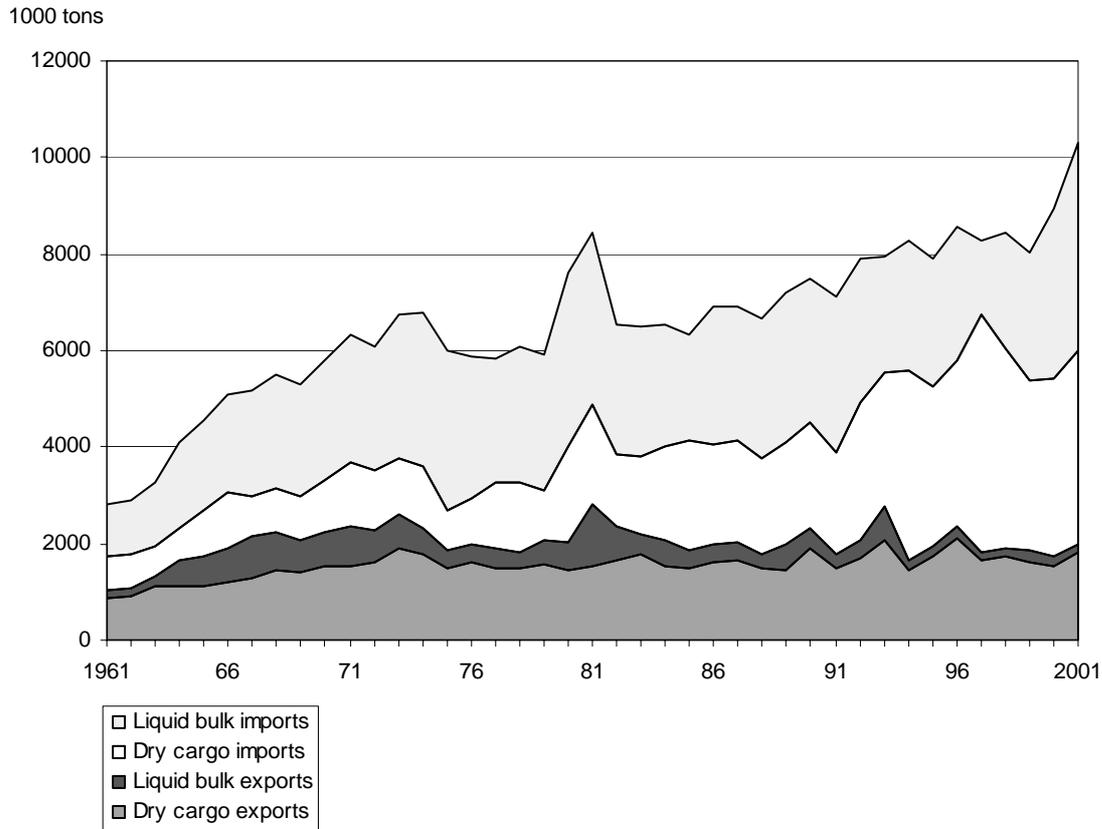
The port of Mombasa is the only international sea port in Kenya and the largest port in East Africa. Apart from a small but growing airfreight, practically all of Kenya's overseas foreign trade passes through the Mombasa port. In addition the port also serves as a transit point for part of the transit traffic to Uganda, Rwanda, eastern Democratic Republic of Congo, northern and north-western Tanzania and the Sudan.

Total throughput of the port of Mombasa has increased from about 7 million ton in the late 1980s to 11 million ton in 2003. While exports have stagnated around 2 million ton, imports have increased from around 5 million ton to more than 9 million ton in 2000, when the import tonnage was 4-5 times larger than the export tonnage (Figure 3.1).

Figure 3.1. Freight handled in Mombasa Port, 1987-2001 in DWT 1000 ton



Source: Kenya Ports Authority: Annual Bulletin of Port Statistics, various years.

Figure 3.1a. Traffic handled at Mombasa port, 1961-2001 in DWT 1000 ton

Source: Statistical Abstracts, Central Bureau of Statistics, Republic of Kenya, various years

About half of the imports consists of liquid bulk (mostly oil), about a third consists of dry general cargo (during the mid-1990s it was about half; iron and steel, grains and sugar, fertiliser and different industrial goods are important items), while dry bulk has increased over the years from about 10% to about 15% of all imports (mostly grains and fertiliser).

Exports of liquid bulk are much smaller than imports and have dropped from 12-13% of the imports to only 5%. Also dry bulk (mostly soda ash and cement) has been decreasing from 20-25% during the late 1980s to 10-15% around 2000, at least partly because some of the dry bulk export has been containerised. As a result dry general cargo (coffee, tea and soda ash are important items) has increased from around 60% to almost 80% of all exports (Figure 3.1a).

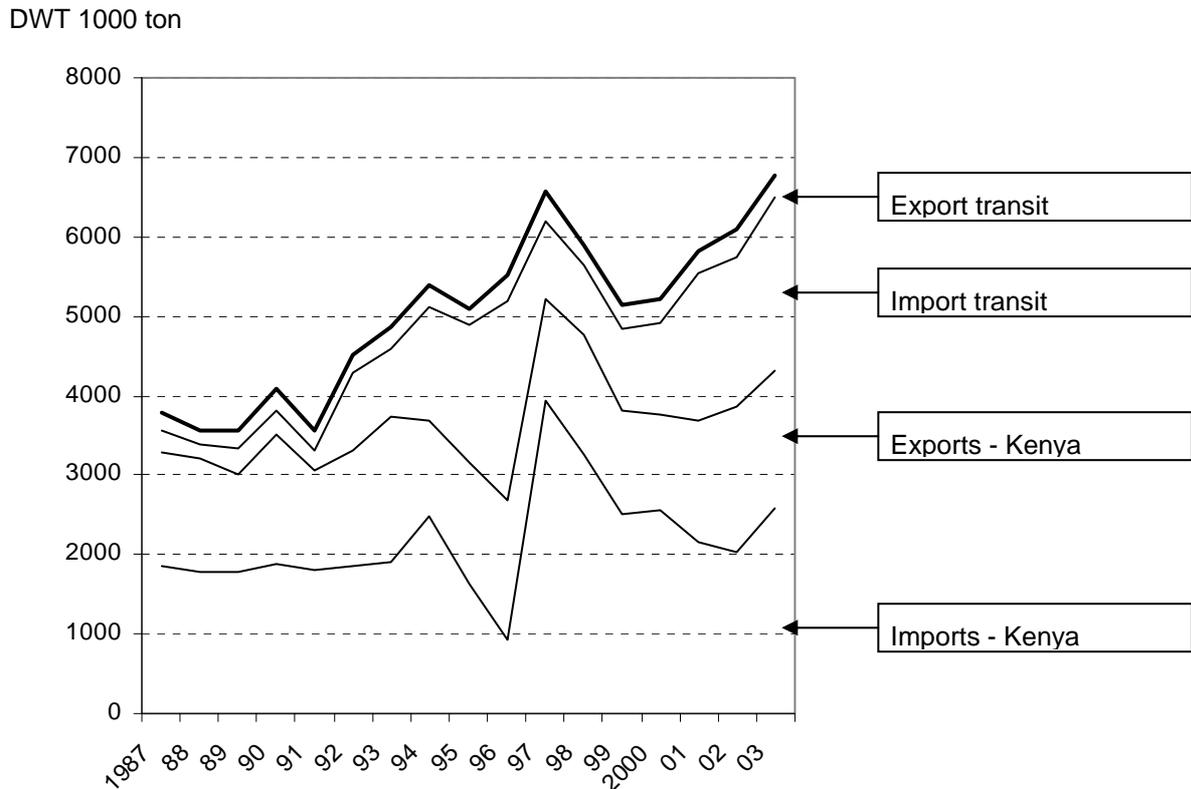
The development of transit traffic and port competition

Transit traffic to the neighbouring countries increased from 10-15% of the total throughput during the late 1980s to 20-30% during the late 1990s, but with a high peak in the mid-1990s

where it reached 51% of the total traffic in 1996, largely due to food aid and war imports in the lake region. In the years after 2000 it has been around 36%.

Most of the increase in the transit traffic is due to growing imports. While transit imports increased slowly from about 220,000 ton in the late 1980s to about 300,000 ton around 2000, imports increased from less than 300,000 ton in the late 1980s to 2.2 million ton in 2003. This means that the transit traffic over the years has become much more skew than the domestic traffic. While imports during the late 1980s were only about 30% larger than exports for both domestic and transit traffic, imports were by the late 1990s about twice as large as exports for the domestic traffic, but almost four times larger for the transit traffic, and in 2003 transit imports were eight times larger than exports, while imports were only 50% larger than exports in the domestic traffic (Figure 3.2). This skewness in the transit traffic is clearly one of the reasons for the very large transport costs on imports to the landlocked countries.

Figure 3.2. Transit freight as a share of total dry cargo throughput (bulk + general cargo) DWT 1000 ton.



Source: Kenya Ports Authority: Annual Bulletin of Port Statistics, various years.

Table 3.1. Throughput (imports + exports) in 1000 ton (both dry and liquid cargo) via Mombasa and Dar es Salaam distributed by country of origin

Country of origin	Via Dar es Salaam 1996/97		Via Dar es Salaam 1997/98		Via Mombasa 1999		Via Dar es Salaam 1998/99		Via Mombasa 2000		Via Dar es Salaam 1999/2000		Via Mombasa 2001		Via Dar es Salaam 2000/2001		Via Mombasa 2003	
	Mombasa	Dar es Salaam	Mombasa	Dar es Salaam	Mombasa	Dar es Salaam	Mombasa	Dar es Salaam	Mombasa	Dar es Salaam	Mombasa	Dar es Salaam	Mombasa	Dar es Salaam	Mombasa	Dar es Salaam	Mombasa	Dar es Salaam
Kenya	6,916	-	7,328	-	6,735	-	7,477	-	8,180	-	8,873	-	-	8,180	-	8,873	-	-
Tanzania	89	2,399	58	2,753	63	3,027	93	3,039	146	3,063	182	3,039	146	3,063	182	3,039	146	3,063
Uganda	872	87	842	57	1,012	94	1,115	197	1,670	145	1,894	197	1,670	145	1,894	197	1,670	145
Rwanda	167	16	94	55	109	70	72	222	109	123	177	72	109	123	177	72	109	123
Burundi	-	-	1	-	4	-	3	-	7	-	4	3	-	-	-	4	-	-
DR of Congo (North East)*	106	183	60	107	52	132	76	163	68	150	72	76	163	68	150	72	68	150
DR of Congo (South East)	-	122	-	71	-	88	-	109	-	100	-	-	109	-	100	-	-	-
Others	110	902	72	858	68	687	96	281	117	260	125	96	281	117	260	125	117	260
Total	8,258	3,709	8,455	3,902	8,045	4,100	8,931	4,014	10,297	3,843	11,326	8,931	4,014	10,297	3,843	11,326	8,931	4,014
Total transit	1,342	1,310	1,127	1,149	1,310	1,073	1,454	975	2,117	780	2,453	1,454	975	2,117	780	2,453	1,454	975
Transit in % of all traffic	16%	35%	13%	29%	16%	26%	16%	24%	21%	20%	22%	16%	24%	21%	20%	22%	16%	24%
Transit to/from Uganda, Rwanda, Burundi and North East DRC	1,145	286	997	219	1,177	297	1,266	582	1,854	418	2,453	1,266	582	1,854	418	2,453	1,266	582
	80%	20%	82%	18%	80%	20%	69%	31%	82%	18%	82%	69%	31%	82%	18%	82%	69%	31%

* Only part of the transit through Dar es Salaam to DRC goes to the lake region. Based on data for a single year from TAZARA and TRC, this is estimated to be 60% of the total transit traffic through Dar es Salaam to DRC.

Sources: Kenya Ports Authority, Annual Bulletin of Ports Statistics, various years; Tanzania Harbours Authority: Annual Report and Accounts, various years.

The transit traffic through the port in Mombasa partly depends on the competition with the port in Dar es Salaam for the transit traffic from Uganda, Rwanda, Burundi and the Democratic Republic of Congo. Although the distance from Dar es Salaam to the landlocked countries is longer than from Mombasa, Dar es Salaam is favoured by truck transport rates, which are lower in Tanzania than in Kenya. The transit traffic therefore partly depends on the efficiency and port tariffs in Mombasa relative to those in Dar es Salaam.

Transit traffic has generally been more important for Dar es Salaam than for Mombasa, partly because the domestic traffic is 2-3 times larger in Mombasa than in Dar es Salaam. During the era of apartheid policy in South Africa when much of Zambia's and Malawi's foreign trade passed through Dar es Salaam, more than 50% of the throughput in Dar es Salaam was transit. However, during the 1990s the transit traffic through Dar es Salaam from Zambia and Malawi decreased rapidly. It has therefore become increasingly important for Tanzania to increase its transit traffic from the lake region. Table 3.1 indicates that during the late 1990s about 20% of the transit traffic to and from the lake region was going through Dar es Salaam. Only in 2000 was Dar es Salaam able to increase its share to 31%, because the major shipping lines shifted their traffic away from Mombasa due to increasing delays and galloping corruption. This reflects that although the average port days per ship during the 1990s fell from more than six to between 3 and 4 days, they increased in 2000 to 4.3, while they were only 3.0 days in Dar es Salaam (see Table 3.2). However, in 2001 the average number of port days per ship in Mombasa was down at 2.9 days and Mombasa again increased its share of the transit traffic to the lake region to 82%.

**Table 3.2. Efficiency indicators for Mombasa and Dar es Salaam ports
(three year averages)**

	Mombasa					Dar es Salaam	
	87-89	90-92	93-95	96-98	99-01	96/97-97/98	98/99-00/01
Dry cargo ship arrivals	819	853	1,029	1,063	1,027	640	691
Dry cargo throughput (1000 ton)	3,606	4,162	5,426	5,992	5,390	1,713	2,335
Throughput per dry cargo ship	4,406	4,782	5,294	5,654	5,248	2,677	3,379
Average port days per ship	6.0	6.2	5.2	4.1	3.7	3.9	3.0
Ton per gang shift	149	195	235	251	355	134	200

Sources: Kenya Ports Authority: Annual Bulletin of Ports Statistics, different years; Tanzania Harbours Authority: Annual Report and Accounts, various years.

Labour productivity in the port measured as ton moved per gang shift has also increased during the 1990s from about 150 ton to 433 ton in 2001. Although labour productivity in Dar es Salaam has also increased, it was only 230 ton per gang shift in 2000/01.

The share of Tanzanian foreign trade going through Mombasa also seems to be growing. In 2001 it was about 5%. With complete liberalisation of the East African trade the share of Tanzanian trade from the Kilimanjaro and lake regions going through Mombasa is likely to increase further to a level similar to what it was before the breakdown of the former East African community in 1977.

However, in spite of Mombasa's dominant role in the transit traffic from the countries in the lake region there is likely to be a strong and even increasing competition for the transit trade in the future, because the landlocked countries have an obvious interest in maintaining competing outlets for their trade. Although the productivity of Mombasa port has increased further since 2001 (to 460 ton per gang shift in 2003) and the average number of port days per ship has been cut to 1.6, the productivity of Dar es Salaam port has also improved rapidly since its container terminal was leased to a private company: Tanzania International Container Terminal Services (TICTS), backed by the large Hongkong-based Hutchison Whampoa. According to the director of TICTS, the container terminal now moves 22 containers per hour compared to only 16 in Durban and 8 in Mombasa (according to KPA it is actually 9). Therefore the main problem in Dar es Salaam now is the poor land transport linking the port with its hinterland (BBC News 1 April 2003).

At the same time, the opening in 2000 of a railway connection from Tanzania to South Africa may, although its capacity at present is limited, in the future lead to serious competition from Durban port. At the same time a growing share of the import to Uganda and Tanzania is coming from South Africa and other African countries, which reduces the overseas trade and also strengthen the development of the transport corridor to South Africa. That KRC after many years of delay opened the container block train connection to Mombasa in April 2000 at the same time as the transfer station in Kidatu, which connects the railway systems of southern and eastern Africa, was opened, may be an incident, but it may also be because KRC and the port in Mombasa realise the potentially serious competition from Durban.

Although labour productivity in Mombasa has been increasing, and the average number of port days per ship has decreased during the late 1990s and early 2000s, the waiting time in the port is still long, compared to international standards, due to complex bureaucracy, inefficient customs clearance and unavailability of railway wagons in the port (Anyango 1997). The port has also been associated with corruption and related malpractices that have diverted traffic to competing ports.

Shipping lines and agencies

The shipping industry consists of general freight and bulk freight. General freight has traditionally been transported by shipping lines serving specific routes, e.g. between Europe and East Africa, while the bulk traffic is carried in chartered tramps boats. Shipping rates were set by the sea conferences, which are cartels of shipping companies serving a specific route. After independence the new developing countries generally found that the rates set by the conferences were unreasonably high and they wanted to establish their own shipping companies in order to cut the transport costs. In order to support the new shipping companies, a UN charter in the early 1970s gave a country the right to transport 40% of the freight generated by its own trade; the trade partner got the right to transport another 40%, while third-country shipping companies only got the last 20%. To take advantage of this, many countries without a shipping industry established shipping companies, which chartered slots in foreign ships. In Kenya, the Kenya National Shipping Line was established as such a parastatal shipping line without ships of its own.

However, the benefit of the new shipping companies generally proved to be limited because they were co-opted into the conferences. Although the new shipping companies got a share of the profit, the transport rates generally did not go down, because the new companies, which were among the least efficient, were unable to press the rates down.

During the 1980s, when general shipping had increasingly turned into container shipping, a number of large independent container shipping lines started to undercut the conferences, among them Maersk and a number of southeast Asian shipping companies. This led to increased competition and falling freight rates, which has closed most of the African shipping companies or reduced them to companies without ships. It also started a process of restructuring and increased concentration of global container shipping. In Africa Maersk has been leading in this process. Globally Maersk has restructured its shipping network into a hub-and-spoke system focused on a series of large highly efficient hub-ports linked by an 'around the world' shipping route linking the American east coast via the Mediterranean sea and Suez to the Middle East, southeast Asia, the Far East and America's west coast. This route is served with very high frequency by very large container ships with a capacity to carry 6,600 containers. To feed these large container ships Maersk has established feeder routes to the main ports on the around-the-world route. Thus West Africa is served via Algeceiras in Southern Spain, while East Africa is served via Salala on the Arabian Peninsula. This gives Maersk a certain disadvantage on the route to Europe, where many other companies have direct connections, but an advantage on the routes to the Far East and America, where the service traditionally has been lower, but where the transport markets are rapidly growing. As a result Maersk and its subsidiary, the South African Safmarine, have since the mid-1990s been able to take over a large share of the African market for container transport.

Thus in Ghana Maersk and a French company each controls 40% of the container market, and in Zimbabwe Maersk alone controls 40%.

In Kenya the market is less concentrated, but Maersk (17%) and Safmarine (9%) together control 26% of the container market, followed by MSC (13%) and P&O Nedloyd (14%). The concentration of the traffic on fewer shipping lines and larger ships has resulted in an increased throughput per ship arrival (see Table 3.2), which has probably contributed to the increased labour productivity in the port and reduced the costs. However, as a result of the rapid concentration, shipping rates started to increase after 2000.

Kenya National Shipping Line is today owned partly by the Kenya Ports Authority (45%) and partly by the Mediterranean Shipping Company (MSC) (also with a 45% share). The company charters slots for the MSC only, so it almost operates as an agent for MSC.

Shipping lines have traditionally been represented in the port by a shipping agent. The role of the shipping agent is to serve the ships when they are in port and to secure freight for them. There are about 10-15 shipping agencies based in Mombasa. The agencies are typically Kenya firms. These firms may serve a number of different shipping lines, usually lines serving different destinations. However, there has been a trend for the large shipping lines to establish their own agencies or buy a local agency, which then only serves them. For example P&O Nedloyd acquired Mackenzie Maritime, while MSC acquired Oceanfreight. The Kenya Shipping Agency is a third variant of the same. It started as a parastatal (though it had nothing to do with the Kenya National Shipping Line) but has now been sold to a Kenyan-owned private company.

Containerisation and the forwarding industry

When general freight was containerised in the industrialised countries during the 1970s it was part of the so-called logistical revolution. High-value industrial freight was containerised partly for security reasons and partly to reduce the cost and time of trans-shipment between land and sea transport and make door-to-door transport possible. Large international forwarding companies started to organise and control door-to-door transport, increasingly on the basis of edp and telecommunication. They issued door-to-door bills-of-lading and developed into shipping companies without ships and became a very profitable part of the shipping industry. Since the mid-1990s the large shipping companies, led by Maersk, have been increasingly active in developing door-to-door services of their own in competition with the large forwarding companies.

When containers were introduced in the industrialised countries, exports of industrial goods to the developing countries were also containerised, mostly for security reasons. Since the late 1970s

an increasing share of the imports of general freight to Kenya has thus been containerized. Also an increasing share of the exports traditionally transported in bags, including tea and coffee, has been containerized, primarily 'at the shipping lines convenience' in order to avoid exporting empty containers. However, containerisation of bagged or bulk goods may also be beneficial for the exporter, because it protects the goods from both theft and bad weather, and also makes it possible to ship freight more continuously when a container is full rather than waiting for a full shipload.

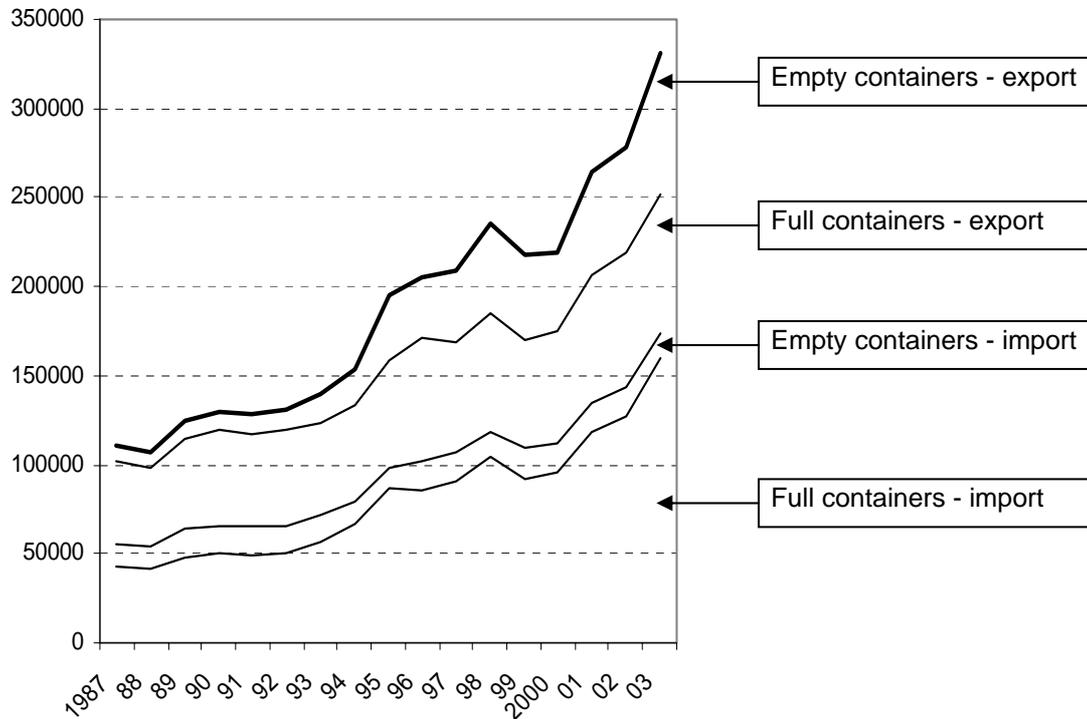
Figure 3.3 shows the development of the container throughput at the Mombasa since 1987. The annual number of full containers imported through Mombasa gradually increased from about 43,000 in 1987 to 159,000 in 2003, while the number of full export containers rose from about 46,000 to 78,000 in 2003. To make up for the difference, 45,000 empty containers also had to be exported. The rate of containerisation of general cargo increased from 41% in 1987 to about 76% in 2003 (see Figure 3.4).

As part of the indigenisation policies and in order to reap some of the profits in the forwarding industry most African countries, including Kenya, have attempted to establish a domestic forwarding industry. This has resulted in the establishment of a large number of small forwarding firms. However, very few of them have been able to develop into full-fledged forwarders issuing their own bills-of-lading, and then only by being accepted as local agents of large international forwarders. Most have remained small - often briefcase - customs clearance agents, and many have a bad reputation for corruption and customs fraud.

The container traffic to and from Mombasa port is carried either by road or railway. A large share of the containers with freight to the domestic market is stripped or stuffed at the port or at the private container depots in Mombasa, and the freight moved by truck without the container. It is mostly transit containers and containers to the inland container depots and to large multinational firms which continue inland, while most of the domestic export is containerised at the port or at depots near the port. Therefore the developing countries generally do not have the same advantage of containerisation as the industrialised countries. There are several reasons for this. Firstly, and perhaps most importantly, labour costs to empty containers and load the trucks are much lower than in the industrialised countries. Secondly, transport costs are cheaper without containers because there can be more freight on the truck without the container, partly because one does not need to carry the container and partly because it is easier to carry overweight without the container; at the same time most of the receivers of the freight simply do not have the necessary cranes or forklifts to handle the containers. Thirdly, cumbersome custom regulations often require containers to be emptied for inspection and then it may not pay to fill them again.

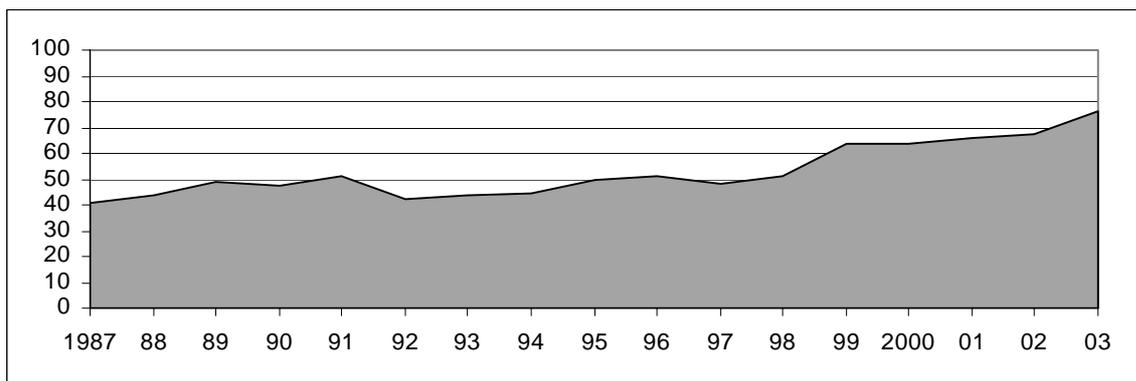
Figure 3.3. Development of the container throughput of Mombasa Port in TEU.

No. of containers



Source: Kenya Ports Authority: Annual Bulletin of Port Statistics, various years.

Figure 3.4. Percent containerisation*



* This assumes an average weight per TEU of 11 ton. For the late 1980s and early 1990s this corresponds closely to the data presented by Hoyle and Charlier (1995).

Container-scanning equipment, which will make opening of containers unnecessary, has recently been introduced in Mombasa, and may change the situation. Fourthly, many containers are consolidated containing freight belonging to different owners and therefore have to be split.

AIR TRANSPORT

Kenya has presently two international airports: Jomo Kenyatta International Airport in Nairobi and Moi International Airport in Mombasa. The recently constructed Eldoret Airport has been built to international standard but so far has no regular international traffic. However, Eldoret Airport and the three smaller airports: Kisumu, Malindi and Wilson Airports (in Nairobi) are served by domestic routes. In addition, there are a number of airstrips throughout the country, some of which are now served by regular domestic routes with small planes.

International air transport has during the 1980s and 1990s undergone as rapid a transformation as the shipping industry. The highly regulated international air transport market, which developed after the Second World War on the basis of bilateral agreements between national airline companies, has been deregulated and the airline industry has been through a process of rapid concentration: in the USA through mergers and in Europe through collaboration and code-sharing agreements between the national airlines. The direct routes between the national airports, which resulted from the bilateral agreements, have increasingly been replaced by hub-and-spokes networks focusing on large hub-airports. Here connections between the hubs are served with high frequencies and large airplanes, while connections between smaller centres are routed between one or more hubs and served with lower frequencies and smaller planes. This increases the capacity utilisation and reduces the costs.

This restructuring of the airline network has also taken place in Africa during the 1990s. The small national airlines in Africa have generally lost out in the increased competition and many of the smaller African capitals have lost direct international connections (Pedersen 2001a), while traffic has been concentrated on a few hub airports: Johannesburg in Southern Africa, Abidjan, Lagos and Dakar in West Africa and Nairobi and Addis Ababa in Eastern Africa. Thus in East Africa the Jomo Kenyatta International Airport in Nairobi, with 2.7 million passengers in 1999, had more passengers than the other six international airports in East Africa together (Mombasa 890,000, Dar es Salaam 580,000, Entebbe 450,000, Zanzibar 240,000, Kilimanjaro 190,000 and Eldoret 20,000 passengers (Irindu 2001)).

Kenya Airways, which was created as the national successor to the East African Airways when the East African Community broke up in 1977, is one of the few African airlines which have benefited from the restructuring process. By securing a code-share agreement and partnership with a large European airline (KLM), Kenya Airways has been able to turn Nairobi into a major East African hub airport, with a passenger traffic increasing from 1.9 million passengers around 1990 to almost 3.5 million passengers in 2003.

The other large international airport in Kenya, Moi International Airport in Mombasa, doubled its traffic during the 1980s but has stagnated since 1990 at about 8-900,000 passengers. This is at least partly caused by stagnation of the tourist industry due to political instability and more recently the terrorist scare.

In recent years Nairobi has also become the centre for a number of small regional airlines operating with small airplanes. Most of the traffic uses Wilson Airport, which has increased its passenger flow from 60,000 passengers around 1990 to 250,000 passengers around 2000.

At the same time airfreight has been growing rapidly. Most of the airfreight is concentrated at the Jomo Kenyatta International Airport in Nairobi where the freight traffic increased from around 60-70,000 ton around 1990s to 169,000 ton around 2002⁶. Most of this growth in freight traffic has taken place since 1998. The largest share of this airfreight consists of exports of flowers and fresh fruits and vegetables (FFV) (Barrett et al. 1999; Dolan and Humphrey 2001)⁷. However, there is also a considerable trade in high value manufactured products, especially import of spare parts. As a result of the dominance of flowers and FFV exports are much larger than imports (about 123,000 ton export against 45,000 ton imports). About 60-70% of the airfreight goes to Europe. Air freight to the Middle East increased in 1998 from 3% to 15-20%. In 2002 Europe's share of the traffic dropped to 49%, primarily because airfreight to Africa and the Middle East increased.

⁶ In comparison the airport in Entebbe handled 26,000 ton and that in Dar es Salaam 11,000 ton in 1999. The smaller airports, Moi, Kilimanjaro and Zanzibar, handled little more than 2,000 ton each and Eldoret Airport 4,200 ton.

⁷ The airport in Nairobi attracts horticultural export not only from Kenya but also 90% of the horticultural export production in northern Tanzania. Although Kilimanjaro International Airport attempts to develop its capacity to handle the horticultural export, its low flight frequency results in a large risk for delays which may lead to dramatic reduction in the value of the produce (Pedersen 2001c).

While the airfreight traffic at the Moi and Wilson airports has been fairly stable at about only 3-4,000 ton annually at each of the airports, the airfreight at the group of 'other airports' has since 1998 increased rapidly from a few hundred kg to 45,000 ton in 2003. Part of this is due to the new airport in Eldoret.⁸ However, the airfreight at Eldoret airport only reached 12,000 ton in 2002 and dropped to 8,000 ton in 2003, so other provincial airports must be involved as well.

Most of the airfreight is carried in passenger flights with excess capacity. However, especially since the late 1990s a growing share of the exports has been carried by specialised all-cargo planes because excess capacity of the passenger flights had been used up. In order to increase the capacity utilisation of the all-cargo planes, they carry high-value industrial products from Europe to Johannesburg in South Africa and pick-up flowers and FFV in Harare, Lusaka and Nairobi on the way back to Europe.

CONCLUSION

International transport has been undergoing a rapid transformation since the 1970s, known as the logistical revolution. Deregulation and privatisation have resulted in a rapid reorganisation, concentration and differentiation of the shipping and airline industries. To increase the efficiency, transport networks have been changed from direct links between the transport terminals towards more hierarchical hub-and-spokes networks, where large centres with hub-ports are served with frequent direct connections and large ships or airplanes to other hub-ports, while smaller ports are served by smaller vehicles and via one or more hub-ports. At the same time port-to-port links have increasingly been substituted by multimodal transport organised by large forwarding companies controlling the transport flow all the way from origin to destination, from door-to-door. The increasing concentration and hierarchisation of the transport flows have tended to reduce the distance-dependent transport costs on the main transport links and therefore increased the relative importance of transfer and transaction costs at the large transport terminals. The efficiency of the ports and airports has therefore become increasingly important for the transport system. Only efficient terminals with a large traffic, which are able to secure a fast loading and unloading of freight, a rapid flow of freight through the terminal and good land traffic connections to their hinterland, are able to become full-fledged hub-ports.

⁸ During the late 1990s the Kenyan government attempted actively to increase the airfreight traffic on the new airport in Eldoret. However, a considerable part of the resulting traffic consisted of import of consumer goods (including second hand clothes) evading customs payment.

Due to import-substitution policies and strong state regulations, this process of concentration and hierarchisation of the transport system has generally been slow to take place in Africa. Only as a result of the structural adjustment policies introduced since the late 1980s, has the transport systems started to change. In air transport this has benefited Kenya where the international airport in Nairobi, through collaboration between Kenya Airways and KLM, has been able to develop into the most important hub in Eastern Africa with many regional feeder routes. However, although Mombasa is the far largest port in East Africa, it has not been able to expand its market beyond the domestic market and its traditional hinterland in the landlocked countries and thus develop into a hub. There are a number of reasons for this. Firstly, there is a strong political resistance in Tanzania against opening the border for increased port competition from Mombasa. Secondly the truck and railway systems linking the port to its hinterland are hardly more competitive than the Tanzanian land transport. Thirdly, the port in Mombasa is no more efficient than that in Dar es Salaam. In periods it has been clearly been worse.

Monopolisation and control of the large ports and airports have made them large money earners both for the state and for politically favoured individuals who have been allowed to by-pass the customs control and often also control the flow of import goods into the country. This seems to be one of the major reasons for the generally very slow process of administrative reform or privatisation of the African ports and airports. It is widely believed that the political patronage system in Kenya, which before liberalisation of the agricultural trade was largely financed by the parastatal organisations, during the 1990s increasingly has been financed through excess profits earned through customs evasion and informal control of the import trade of for instance maize, sugar and second-hand clothes. In Kenya this has been the case especially in the Mombasa port and the new airport in Eldoret.

In spite of the improvements taking place during the 1990s, there is still a very long way to go before Kenya has a modern integrated transport system. The logistical revolution in the industrialised part of the world's transport system was originally a response to growing labour costs and dependent on large capital investments in efficient transport and large-scale transport terminals. Conditions in Kenya, and in Africa more generally, are different, and containerisation and other elements of the logistical administration, which have been introduced in Africa on initiative from the industrial countries, have been slow to spread because they fit poorly into the African economies and therefore also are much less beneficial than in the industrialised countries.

However, the Kenyan government has also, as most other African governments, been slow to respond to the new developments. The white paper on *Integrated National Transport Policy* (Republic of Kenya 2004) being developed by the new government, which came into power in Decem-

ber 2002, may be a step in the right direction. It pinpoints many important problems in the present Kenyan transport system, but it seems to want to do everything at the same time and does not attempt to prioritise the many tasks ahead. As has happened with so many brilliant sessional papers published by earlier Kenyan governments, implementation may therefore be difficult to achieve.

4. Summary and conclusion

The Kenyan transport system is still to a large extent structured by physical infrastructure, legislation and institutions developed during the colonial period, and by import-substitution policies which during the first decades after independence to a large extent allowed the transport system to deteriorate. However, since the late 1980s the structural adjustment policies have led to a renewed interest both from the government and the donors in developing the transport infrastructure. At the same time trade liberalisation, deregulation of domestic trade and privatisation of the parastatals have since the mid-1990s led to a reshaping of both trade and transport which is still ongoing. The so-called logistical revolution which since the early 1970s has revolutionised transport in the industrialised and industrialising world has with a delay of two decades also reached Africa. This is resulting in much closer integration of transport into production and trade, which tends to shift the focus away from the physical transport infrastructure to the institutional structures and organisations which support and exploit the infrastructures.

Corrupt tendering practices have often increased the cost of infrastructure construction or reduced its quality. At the same time chronically under-budgeted maintenance costs have often led to rapid deterioration of transport infrastructure. Rapid containerization and the trend during the 1990s towards increasing the size of transport vehicles generally increased the maintenance problems and also the demand for new and larger infrastructures. This has led to serious bottlenecks in all modes of transport infrastructure. Especially in the case of road transport increasing vehicle size and the inability or political unwillingness to control over-weight has led to rapidly deteriorating roads. Roads which were designed to last 20-25 years have been worn down in 5-10 years, because the wear of roads increase by almost the fifth potent of the axel load (i.e. when the axel load is doubled, the wear increases by 30 times). One of the main efforts of donors financing the road construction has therefore been to improve the maintenance practices and weight control.

However, it is especially in transport operations that institutional and organizational factors have become more important. There are mainly two reasons for this. Firstly, transport costs are very sensitive to efficient utilization of the available transport capacity. This again to a large extent depends on the ability to obtain return freight. Although the transport costs per ton-km generally go down when the size of vehicles increases, it also becomes more difficult to exploit the increased capacity efficiently. Secondly, speed and regularity of transport have become increasingly important as a result of internationalization and the introduction of new production organizations, such as just-in-time and lean production, which require goods delivered within often very narrow time windows. Especially for high-value goods, the frequency of departures on railways,

shipping and airlines has therefore become more important, at the same time as focus has shifted from the individual modes of transport to multi-modal, door-to-door transport. This has led to pressures for radical changes in the transport sector to which the large state transport organizations have generally been slow to respond.

The two reasons for the increased importance of the institutional and organizational factors are partly conflicting, because larger vehicles together with higher frequencies result in increased transport capacities which can only be utilized effectively at routes with large regular transport flows. A result of this has been a restructuring of the transport networks into hierarchical networks focused on main lines and key nodes with large traffic densities. While the hierarchisation of the transport networks in the industrial world started during the 1970s and 1980s, it generally was delayed in Africa by strong government regulations. However, during the 1990s the African transport networks experienced a rapid hierarchisation. At a global scale this has tended to marginalize most of Africa to a relatively peripheral position, and within Africa it has led to a new regionalization. This is most clearly seen in air transport, where the international route network increasingly has been focused on a limited number of hub-airports (Johannesburg in Southern Africa, Lagos, Abidjan and Dakar in West Africa and Nairobi and Addis Ababa in East Africa) from which other African cities are served by feeder lines. Thus in a number of capital cities the number of direct connections to Europe has gone down, because they are increasingly served via the hub. In African sea transport, the concentration of traffic on fewer hub-ports has generally been delayed by poor cross-border land transport, but there is a strong competition between ports to achieve hub status. The only case of a clear hub port is the port of Durban, which has been able to extend its hinterland far into southern and eastern Africa, through the development of both feeder shipping lines and international railway transport; also international trucking, which until recently was strongly concentrated in Zimbabwe, has increasingly moved to South Africa.

At the same time the organization and control of the transport flows have become increasingly important. This is especially the case in international shipping, where the size of vehicles is largest, and in air transport, where the cost of transport is very high. During the 1970s this led to two important changes in the transport system, namely introduction of containers and establishment of large international forwarding companies organizing door-to-door transport and controlling an increasing share of the international freight transport. Also in Kenya, as in other African countries, containers and international forwarding companies have during the 1980s and 1990s become increasingly important in the import-export trade, but mainly in the transit traffic to the inland countries and to the inland container depots, while door-to-door container transport is mostly limited to transport to and from large multinational companies. For a number of reasons

many containers are still emptied and loaded at or near the port: many containers are consolidated containers with goods to several consignees; due to low labour costs the cost of loading and emptying containers is low at the same time as the trucks can carry more goods without the container; few potential receivers of containers have the forklifts or cranes necessary to handle the containers. Therefore African countries generally benefit less from containerization than the industrialized countries. During the 1970s Kenya, as most other African countries, attempted to establish her own forwarding companies in order to obtain a share of the growing profits in the international forwarding industry. However, most African forwarders remain small custom-clearing firms, because to control international freight flows requires a global presence which African forwarders generally do not have. Therefore only a few firms which have been accepted as agents for large international forwarders have been able to grow.

Since the mid-1990s the forwarding industry has been met with increasing competition from the shipping industry where the large container shipping companies have established their own forwarding companies in order to get a share of the growing profit in the forwarding industry. This increased competition from the shipping industry is partly due to the strong concentration in African container shipping, which took place during the late 1990s. This has partly been made up for by a rapidly growing forwarding market in air transport, although the market also here has been under pressure from the airlines' own forwarding wings.

In land transport, where the forwarding industry has generally played a limited role, forwarding has recently become more important. Also in Africa there are signs that the forwarding industry may become more important, especially in the growing international freight transport within Africa.

The ports have traditionally been major bottlenecks in the African transport system. This is also true for Kenya's port in Mombasa. With the increasing size of ships, inefficiency in freight handling in the ports tends to lead to longer waiting times for ships, at the same time as the cost of waiting goes up. There has therefore been increasing pressure from both the shipping industry and the transport buyers to increase the efficiency of the ports. However, the port has been a major income earner both for the government and for politically powerful groups which benefit from the inefficient and corrupt practices in the port. Attempts to reorganize the port have been met with strong resistance and therefore been very slow, although considerable improvements have taken place during recent years. The recent increases in port productivity are apparently to a large extent due to fear of increasing competition from Dar es Salaam and Durban for the traffic from Uganda and the other countries in the lake region caused by South African investments in the Tanzanian railways and privatization of the container terminal in Dar es Salaam.

Part of the problem of the port of Mombasa is the poor land connections between the port and its hinterland. The railways should in principle be well suited to carry the increasing number of containers inland, but have been unable to do so. This is partly due to old and poorly maintained infrastructures, but also due to transport policies which since the colonial times have treated the railway as an all-round mode of transport, operating on a market highly protected by constraints on the road traffic. Since introduction of the structural adjustment policies during the 1980s, most of these constraints have been eroded. However, the Kenyan Railway Company has been unable to restructure its operations to serve efficiently the most profitable parts of its market, to which the container traffic clearly must belong. Consequently, the railway has lost out to the trucking industry during the 1990s. This is partly due to lack of capital and many vested interests, but also due to lack of focus on the container traffic. Thus Irandu (2000) is silent about the container traffic, as is the Economic Recovery Strategy for Wealth and Employment Creation 2003-2007 and the Integrated National Transport Policy (Green Paper version 4 of 6th January 2004).

The number of trucks in Kenya grew rapidly during the 1990s. There has also been an increasing differentiation in vehicle size, as also the number of pick-ups and other small transport vehicles increased rapidly. At the same time the licensing of trucks has since the late 1990s been increasingly liberalized so that today everyone with a truck can transport goods for others. This has undoubtedly increased the access to motorized transport in the rural areas and among small enterprises, although the access to motorized transport always was better in Kenya than in most other African countries, due to the extensive *matatu* system developed since the 1970s. However, it is a more open question to which extent the competition in the large-scale trucking industry has actually increased. Our rough estimations indicate that the trucking rates have gone down by a third since the mid-1990s. However, the trucking rates are still considerably higher in Kenya than in Tanzania with the result that most of the traffic between Kenya and Tanzania is carried by Tanzanian trucks.

Although motorized transport has increased rapidly, non-motorized transport still plays a very important role, especially in the rural areas. More detailed information does not exist, but it is clear that both bicycle and animal carts play an increasing role. Reduction of the import tax on bicycles has contributed to this. However, transport planning still takes far too little account of the non-motorized transport. Thus the Economic Recovery Strategy for Wealth and Employment Creation 2003-2007 has nothing to say about the non-motorized transport, and although The Integrated National Transport Policy green paper from January 2004 mentions it in the background section, very little is said about it in the policy section.

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