社会開発協力部報告書

NO.007

REPUBLIC OF KENYA

AUGUST 1984

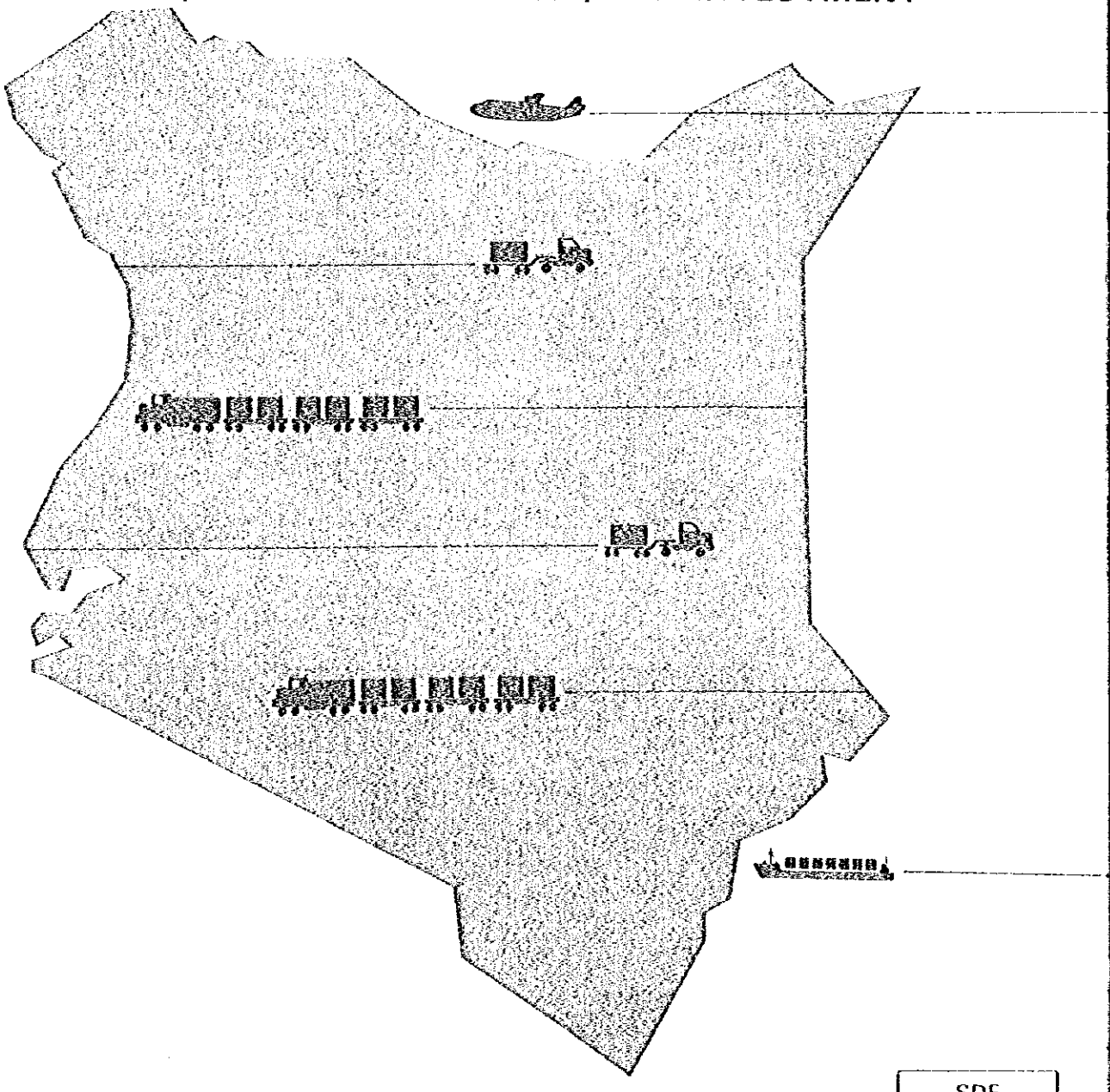
NATIONAL TRANSPORT PLAN

THE STUDY ON NATIONAL TRANSPORT
PLAN IN THE REPUBLIC OF KENYA

FINAL REPORT

VOL. I COMPREHENSIVE PLAN

ECONOMY, TRANSPORT DEMAND, AND INVESTMENT



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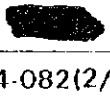

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JAPAN INTERNATIONAL
COOPERATION AGENCY

国際協力事業団	
受入月日 '84.11.16	407
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PREFACE

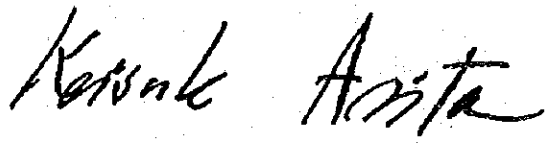
In response to the the request of the Government of the Republic of Kenya, the Government of Japan decided to conduct a study on the National Transport Plan in Kenya and entrusted the study to the Japan International Cooperation Agency (JICA). The JICA sent to Kenya a survey team headed by Mr. Shigetake Ikeda (Mitsubishi Research Institute Inc.) from January 1983 to June 1983 under the guidance of the Advisory Committee chaired by Professor Yoshiji Matsumoto, University of Tokyo.

The team held discussion with the officials concerned of the Government of Kenya on their national transport plan and conducted a survey in Kenya. Subsequently, further studies were made in Japan and the present report has been prepared.

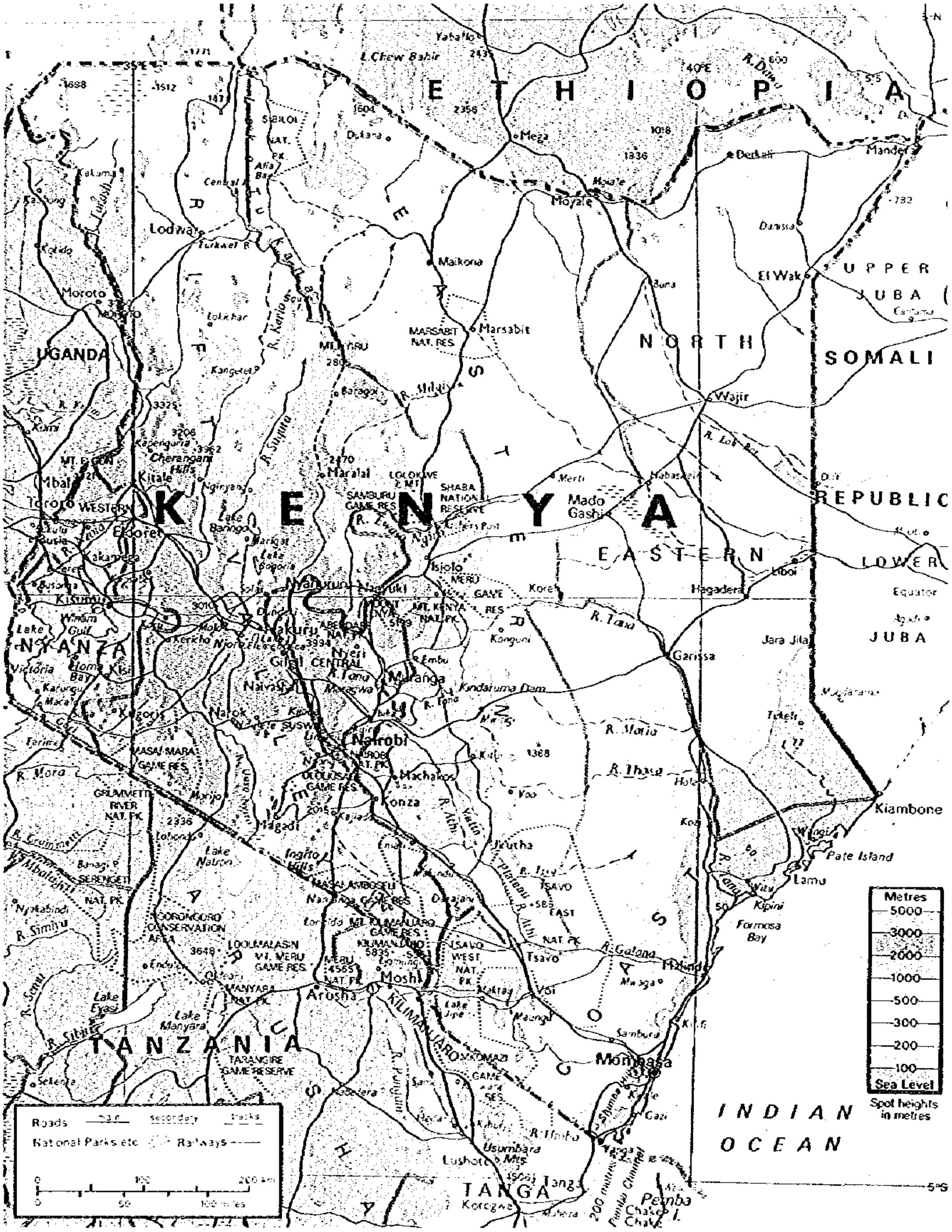
I hope that this report will serve for the development of the transport sector in Kenya and contribute to the promotion of friendly relations between our two countries.

I wish to express my deep appreciation to all the officials concerned of the Government of Kenya for their close cooperation extended to the team.

August 1984



Keisuke Arita
President
Japan International Cooperation Agency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KENYA
UGANDA
TANZANIA
SOMALI
REPUBLIC
NORTH
EASTERN
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LOWER
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INDIAN
OCEAN
Lodwar
Moroto
Maikona
Marsabit
Moyale
Mandera
El Wak
Wajir
Mado
Gashi
Isiolo
Nanyuki
Nyahururu
Nakuru
Nyeri
Gilgil
Naivasha
Narok
Nairobi
Machakos
Konza
Magadi
Kisumu
Kitale
Eldoret
Kisii
Tororo
Garissa
Hagadera
Liboi
Kiambone
Lamu
Pate Island
Formosa
Bay
Malindi
Voi
Tsavo
Mombasa
Moshi
Arusha
Tanga
Lake
Victoria
Lake
Natron
Lake
Eyasi
Lake
Manyara
KILIMANJARO
Metres
5000
3000
2000
1000
500
300
200
100
Sea Level
Spot heights
in metres
Roads
National Parks etc
Railways
5°S

EXCHANGE RATE

US$1.00 = Ksh12.63 = Yen 240

K£1.00 = Ksh20

ABBREVIATIONS

MOTC	–	Ministry of Transport and Communications
KQ	–	Kenya Airways Limited
KR	–	Kenya Railways Corporation
KPA	–	Kenya Ports Authority
KPC	–	Kenya Pipeline Company

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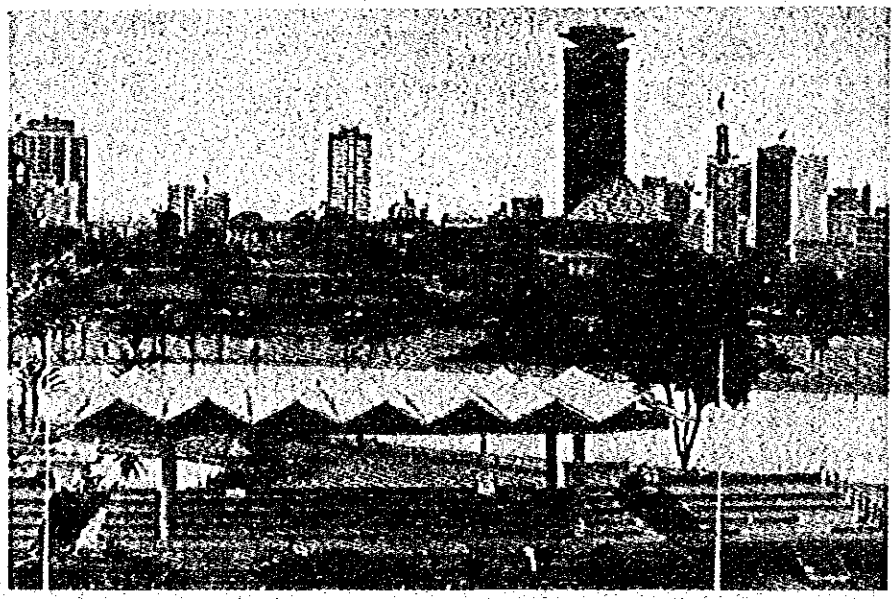
PART I. INTRODUCTION

1. Introduction

2. Organisation of the Report



1. Introduction

1.1 Objective

The objective of the study was to formulate a comprehensive plan for a National Transport System in Kenya integrating the various modes of transport into an optimum transport system. The plan was prepared in two phases: the first phase covers the period 1984–1988, coinciding with Kenya's fifth Five Year Plan, and the second phase covers the period 1989 to 1993 and from 1994 onwards.

The study has made recommendations on improvement of existing transport services and facilities and on formulation of a coordinated development and investment program for the transport sector of the Republic of Kenya.

1.2 Outline of the study

(1) Area under Study

The entire area of Kenya was the object of this study. Transnational means of transport such as maritime transport, air transport, and inland transport, all of which may cross international boundaries, were analysed giving due consideration to the present and future status of OD traffic in counterpart countries.

(2) Subjects under study

The study investigated railways, roads, road transport, ports, maritime transport, inland water-borne transport, air, civil aviation, and pipeline transport.

The study focused mainly on the inter-city traffic of the aforementioned transport modes.

(3) Plan and Planned Time Horizons

A comprehensive plan for a national transport system has been prepared which is consistent with Kenya's economic and regional development plans. In formulating the plan, the study team has considered the efficient use of the existing transport infrastructure. The transport development plan has been formulated in two phases.

1) Short-Term Transport Development Plan (FY 1984–1988)

Candidate projects proposed for incorporation into the Fifth Five Year Plan have been ranked and promising projects will herein be presented as a short term transport development plan. These are presented with a development time schedule and a corresponding investment plan.

2) Long-Term Transport Development Plan (FY 1989–2000)

A transport development plan for the period 1989–1993 and for 1994–2000 will herein be presented as a long-term national development plan.

2. Organisation of the Report

The contents of the final report specified in the scope of work are summarised in the following three reports:

1) Summary of Final Report.

2) Final Report, Vol. I Comprehensive Plan.

3) Final Report, Vol. II Transport Mode.

Volumes I and II of the final report are composed of the following parts respectively.

(1) Vol. I Comprehensive Plan: Economy, Transport Demand, and Investment

Part I	Introduction
Part II	Current Condition of Transport System and Its Issues
Part III	Current Socio-Economic Condition and a Future Framework
Part IV	Strategies for Transport Development
Part VI	Short and Long-Term Transport Plan

(2) Vol. II Transport Mode: Current Problems and Development Plan

Part I	Introduction
Part II	Railway
Part III	Road/Road Transport
Part IV	Port
Part V	Maritime Transport
Part VI	Inland Waterway Transport
Part VII	Civil Aviation
Part VIII	National Airline
Part IX	Pipeline

This Report corresponds to Final Report, Volume I.

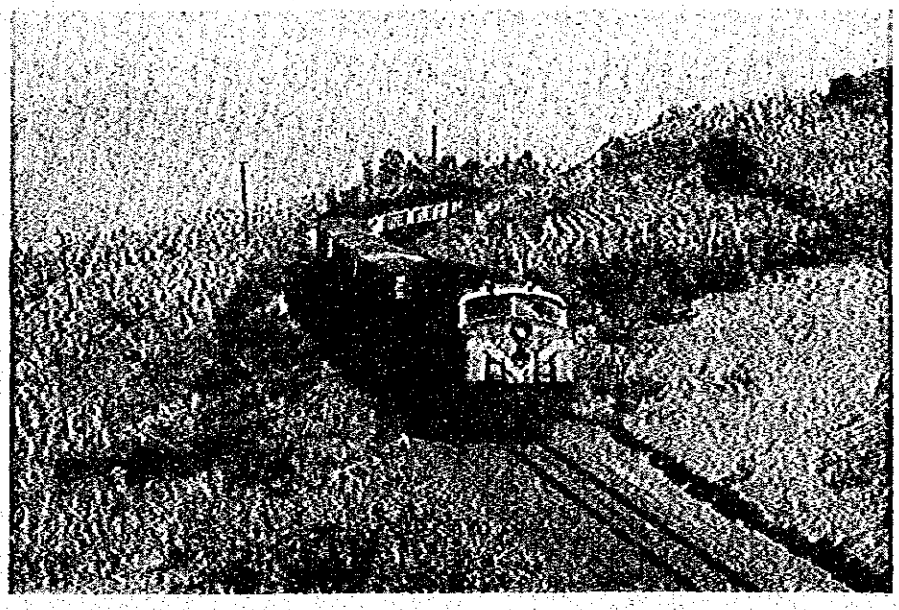
PAPT II. PRESENT CONDITION OF TRANSPORT SYSTEM AND THE ISSUES

1 . Present Transport System

2 . Trends of Transport

3 . Transport Administration and Its Organistion

4 . Financing of the Transport Sector



1. Present Transport System

The trunk network of transport in Kenya is the railway that connects the port city, Mombasa, with the capital, Nairobi. It then serves Uganda via the Lake Victoria region (Figs. 1-1-1 and 1-1-2). This route was built in the early 1900's when roads were constructed for the purpose of transporting materials to lay the railroad from Mombasa to Uganda. The network of roads and railways in Kenya has been extended gradually since that time.

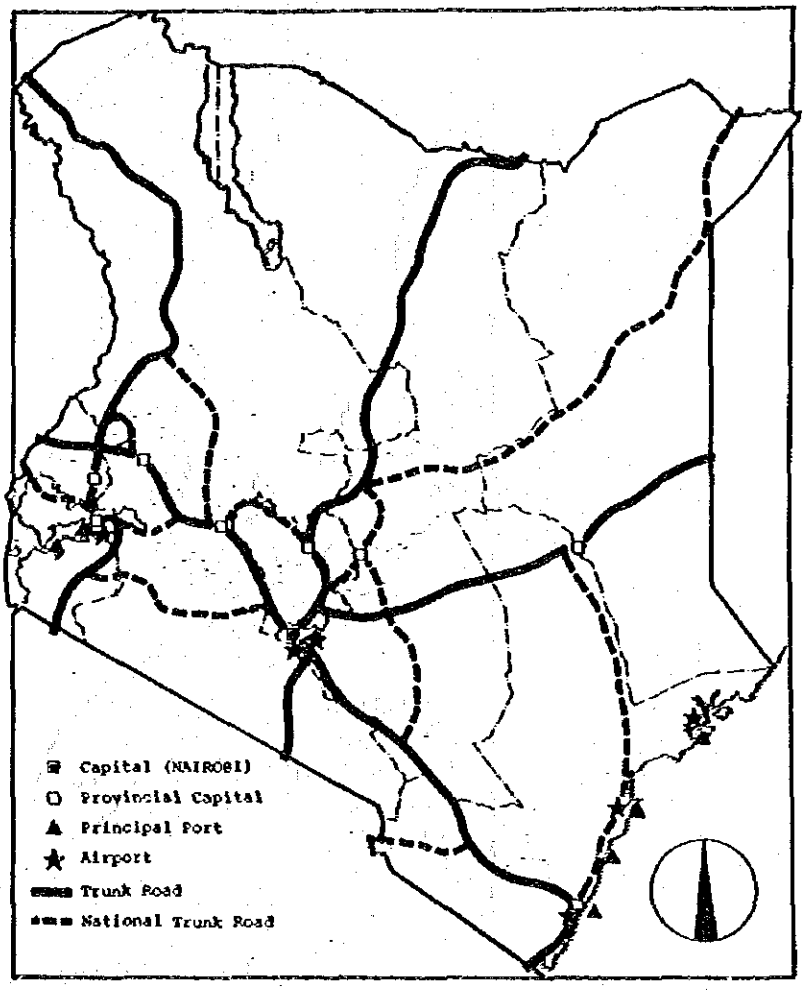


Fig. 1-1-1 Trunk Road Network, Principal Ports and Airports

At present, the total length of roads in Kenya is 52,941 km, of which trunk roads comprise 6,198 km (11.79%) and primary roads 7,670 km (14.59%). The remaining roads, which include secondary, minor and special purpose roads, account for 73.8%.

The total length of paved roads in 5,920 km (11%), although the quality of pavement is rather poor, the width narrow, and pavement strength insufficient. Some roads are covered with water during the rainy season, so that a good deal of the budget is allocated for road repair.

The total length of railways in Kenya was 2,650 km in 1980. Main and principal lines were 1,450 km while branch lines were 487 km.

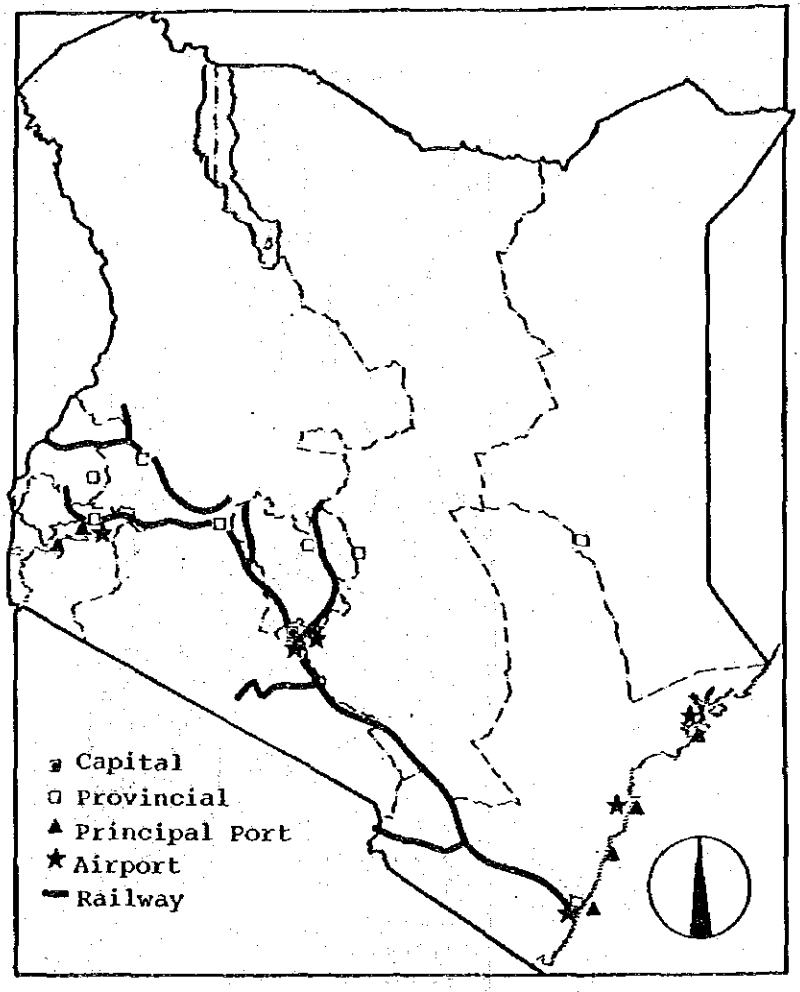


Fig. 1-1-2 Railway Network

The rails and rolling stock of railways in Kenya are very decrepit. The rail system is especially poor because the sea level at Mombasa, Nairobi, and Eldoret is quite different. Although diesel engines have been introduced recently, the average speed of operation is still slow.

The port of Mombasa is Kenya's principal port facing the Indian Ocean. Other ports include Kilifi, Malindi, and Lamu. Along Lake Victoria, there are Kisumu, Homa, and Kendu Bay. Port facilities have become obsolete thereby delaying containerisation. It is important to determine the direction of change in the transport mode to encourage the use of containers by railway.

Marine transport activities have been suspended since 1980 as a result of the financial difficulties of the Eastern African National Shipping Line.

A pipeline with the total length of 449 km was laid between Mombasa and Nairobi in 1978. This system is of the latest model and transports five different types of light product oil.

There are two international airports, Jomo Kenyatta International Airport in Nairobi and Moi International Airport in Mombasa. Medium-size airports include Kisumu, Malindi, and Wilson Airports. Kenya has as many as 460 aerodromes, when privately owned ones are counted. This fact presents a problem of safety for aircraft flights.

Inland water transport is, at present, operated in Lake Victoria by Kenya Railways Corporation. However, ships are obsolete and the new wagon ferries of the Corporation are not in use at present.

2. Trends of Transport

This section discusses the trends of modal split.

2.1 Land Transport

2.1.1 Passengers

– Passengers are transported on land via railway or roads. In 1982 the number of passengers via railway was 2,279 thousand persons (or 5.5% of the total), and that via road was 39,169 thousand (94.5%).

Based on passenger kilometres, the modal split ratios of railway and road transport were 12.1 percent and 87.9 percent, respectively (Table 2-1-1).

Table 2-1-1 Passengers Transported on Land Transport

	Passengers		Passenger Kilometres	
	(thousands)	Share(%)	(millions)	%
Railway (including inland waterway)	2,279	5.5	625	12.1
Road	39,169	94.5	4,550	87.9
Total	41,448	100.0	5,175	100.0

– The above indicates that a trip via railway is longer than a road trip. The average length of passenger trip by railway transport is 274 kilometers and that of road transport is 111 kilometres (Table 2-1-2).

Table 2-1-2 Average Passenger Trip Length and Freight Transport Distance

(km)

	Passenger	Freight
Railway	274	499
Road	111	235

2.1.2 Freight

– 4,473 thousand tonnes of freight (27.1%) was transported by railway, and 12,030 thousand tonnes by road (72.9%).

Based on tonnes/kilometers, modal split ratios were 45.0 percent for railway and 55.0 percent for road (Table 2-1-3).

– Thus, the distance of freight transport via railway was longer than that via road: 500 kilometres for railway and 235 kilometres for road.

Table 2-1-3 Freight Transported on Land

Mode	Tonnes (thousands)	Tonnes Share (%)	Tonne Kilometres (millions)	Tonne Kilometres %
Railway (including inland waterway)	4,473	27.1	2,307	45.0
Road	12,030	72.9	2,825	55.0
Total	16,503	100.0	5,132	100.0

2.1.3 Petroleum Transport

– Petroleum is transported partially by railway and pipeline through the line haul, and partially by road transport through the feeder line.

– That transported by pipeline was twice as large as that by railway (Fig. 2-1-1).

– The petroleum product transported by pipeline is light product oil, whereas that transported by railway is heavy product oil.

– During the period 1978–82 the highest volume of pipeline traffic was in 1980 when 1.464 million cubic metres was recorded. The volume declined, however, in 1982 (Table 2-1-4).

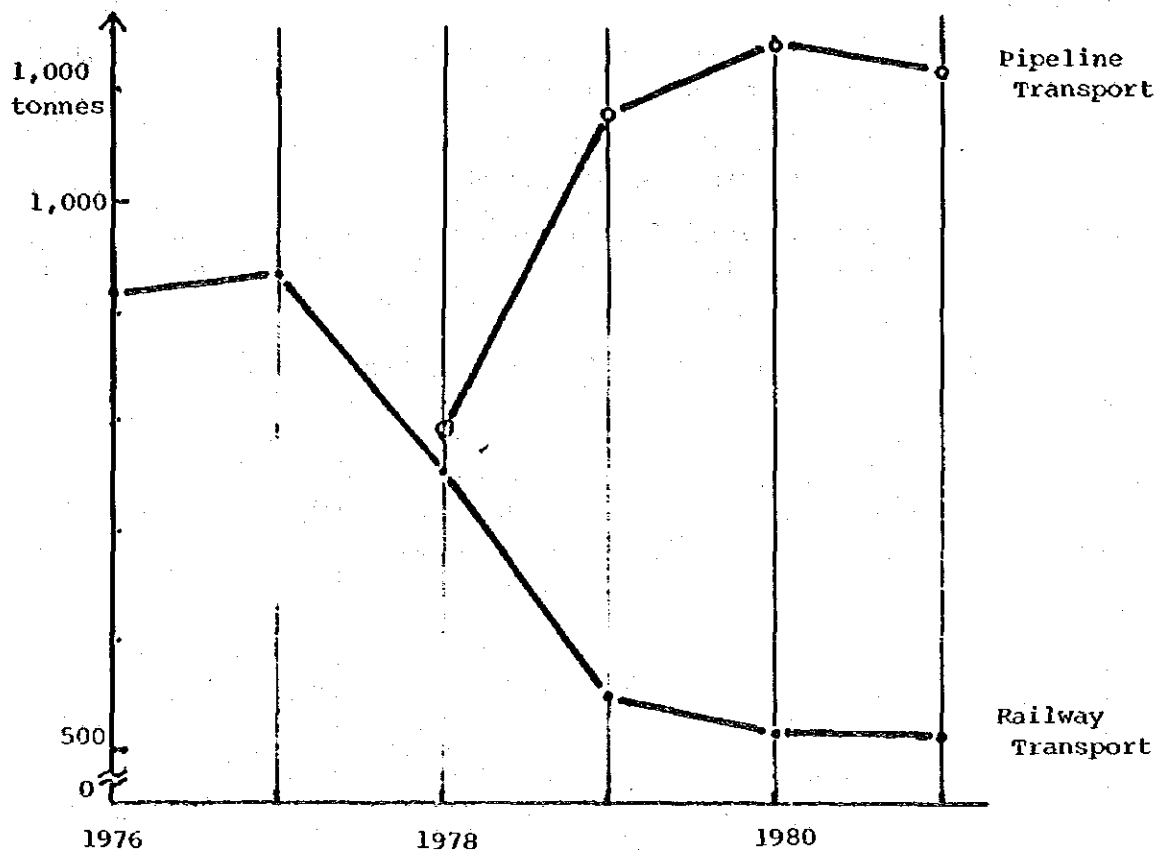


Fig. 2-1-1 Modal Share of Pipeline Transport and Railway Transport

Table 2-1-4 Pipeline Throughput of White Petroleum Products

(Cubic Metres' 000)

	Motor Spirit Premium	Motor Spirit Regular	Kerosene Illuminating Oil	Light Diesel Oil	Industrial Diesel Oil	Autur Jet Fuel	Total
1978*	277.0	126.0	56.6	275.4	5	276.8	1,016.8
1979	317.0	185.1	92.3	396.3	-	380.8	1,371.4
1980	337.5	203.4	103.0	417.8	-	402.1	1,463.7
1981	276.4	209.8	112.0	431.0	-	409.4	1,438.5
1982	241.3	186.4	103.0	392.3	-	335.6	1,258.4
Share (%)'82	19.2	14.8	8.2	31.1	-	26.7	100.0

* Not a fuel year.

Source: Statistical Abstract 1982

2.2 Sea Transport

– In 1981, the traffic volume of Mombasa Port was 8,432 thousand DWTs or 99.9% of total cargo volume handled by all Kenyan ports that year. Total traffic volume of small ports (Lamu, Malindi, Shimoni, Kilifi) was 7 thousand DWTs. (Table 2-2-1).

Table 2-2-1 Cargo Handling Volume in Kenyan Ports

(thousand DWTs)

Ports / Year	MOMBASA			Small Ports (LAMU, MALINDI, SHIMONI, KILIFI)	Total
	Total	Export	Import		
1978	6,067	1,800	4,267	11	6,078
(Share)	(99.8)	(29.6)	(70.2)	(0.2)	(100.0)
1981	8,432	2,805	5,627	7	8,439
(Share)	(99.9)	(33.2)	(66.7)	(0.1)	(100.0)

Source: Annual Bulletin of Port Statistics 1981 (KPA).

– For the period 1978–1982 (Table 2-2-2), the 1981 maximum of 8,432 thousand tonnes is the largest volume handled at Mombasa port.

– At Mombasa port, the volume of import cargo outnumbered that of export cargo, in 1981 representing 66.7% of the total and in 1982 64.0%.

Table 2-2-2 Freight Handled at Mombasa Harbour, 1978–1982

('000 tonnes)

		1978	1979	1980	1981	1982*
Import	Share %	70.3	65.5	64.9	66.7	64.0
Dry Cargo		1,480	1,037	2,003	2,060	1,489
Bulk Liquids		2,787	2,822	3,467	3,567	2,705
Total		4,267	3,859	5,470	5,627	4,194
Export	Share %	29.7	34.5	27.1	33.3	36.0
Dry Cargo		1,486	1,560	1,438	1,531	1,675
Bulk Liquids		314	474	598	1,274	689
Total		1,800	2,034	2,036	2,805	2,364
Total Freight Handled		6,067	5,893	7,506	8,432	6,558
	Share %	100.0	100.0	100.0	100.0	100.0

* Provisional
Source: Economic Survey 1983

2.3 Air Transport

- There are three main airports in Kenya: Nairobi (Jomo Kenyatta International Airport), Mombasa (Moi International Airport), and Wilson Airport.
- Among the main airports the Nairobi Airport has the major share both in terms of the number of passengers (80%) and volume of freight traffic (60%). (Tables 2-3-1 and 2-3-2).

Table 2-3-1 Passenger Traffic at Main Airports*

('000)

Airport / Year	NAIROBI	Share (%)	MOMBASA	Share (%)	Wilson Airport	Share (%)	Total	Share (%)
1978	1,353	78.0	327	18.8	55	3.2	1,735	100.0
1979	1,455	79.0	337	18.3	50	2.7	1,842	100.0
1980	1,568	78.2	392	19.6	44	2.2	2,004	100.0
1981	1,557	78.9	368	18.6	50	2.5	1,975	100.0

* Sum of landed, embarked and in-transit passengers
Source: Statistical Abstract 1982

Table 2-3-2 Freight Traffic at Main Airports*

(Metric Tonnes)

Airport / Year	NAIROBI	Share(%)	MOMBASA	Share(%)	Wilson Airport	Share(%)	Total	Share(%)
1978	31,688	54.5	26,276	45.2	167	0.3	58,131	100.0
1979	28,216	60.1	18,444	39.3	269	0.6	46,929	100.0
1980	32,758	54.9	26,641	44.6	281	0.5	59,680	100.0
1981	32,864	59.7	22,184	40.3	20	0.0	55,068	100.0

* Sum of landed and loaded freight
Source: Statistical Abstract 1982

3. Transport Administration and Its Organisation

Transport administration and transport business in Kenya are characterised by the following two points:

i) Transport administration is the responsibility of more than one Ministry, although the Ministry of Transport and Communications (MOTC) plays the central part.

ii) Transport business is carried out by many parastatals.

This section describes the organisation of transport administration in Kenya.

3.1 Organisation of MOTC

The Ministry of Transport and Communications is in charge of the planning, designing, implementing, and administering of development programmes and projects for the various modes of transport which include roads, railways, air transport, ports and harbours, and inland waterways; posts and telecommunications services and facilities are also included. In addition, essential services, such as materials research and testing, meteorological services, mechanical and transport operations, and air and road transport licensing are under the jurisdiction of the Ministry. Railways, ports, airways, and posts and telecommunications facilities and services are operated by parastatal organisations which are expected to generate revenues to maintain their operations, while the road subsectors, aerodromes, and other related services rely wholly upon the Central Government for their budgetary appropriations.

There are at the present time eight Departments and/or Divisions concerned with transport within the Ministry of Transport and Communications. (Fig. 3-1-1)

(1) Technical Division

This division is responsible for the coordination of all activities undertaken by the Provincial Engineers, the Mechanical and Transport Department, the Materials and Research Branch, the Staff Training Department, and the Aerodromes Department, including such matters as professional and technical manpower recruitment and training.

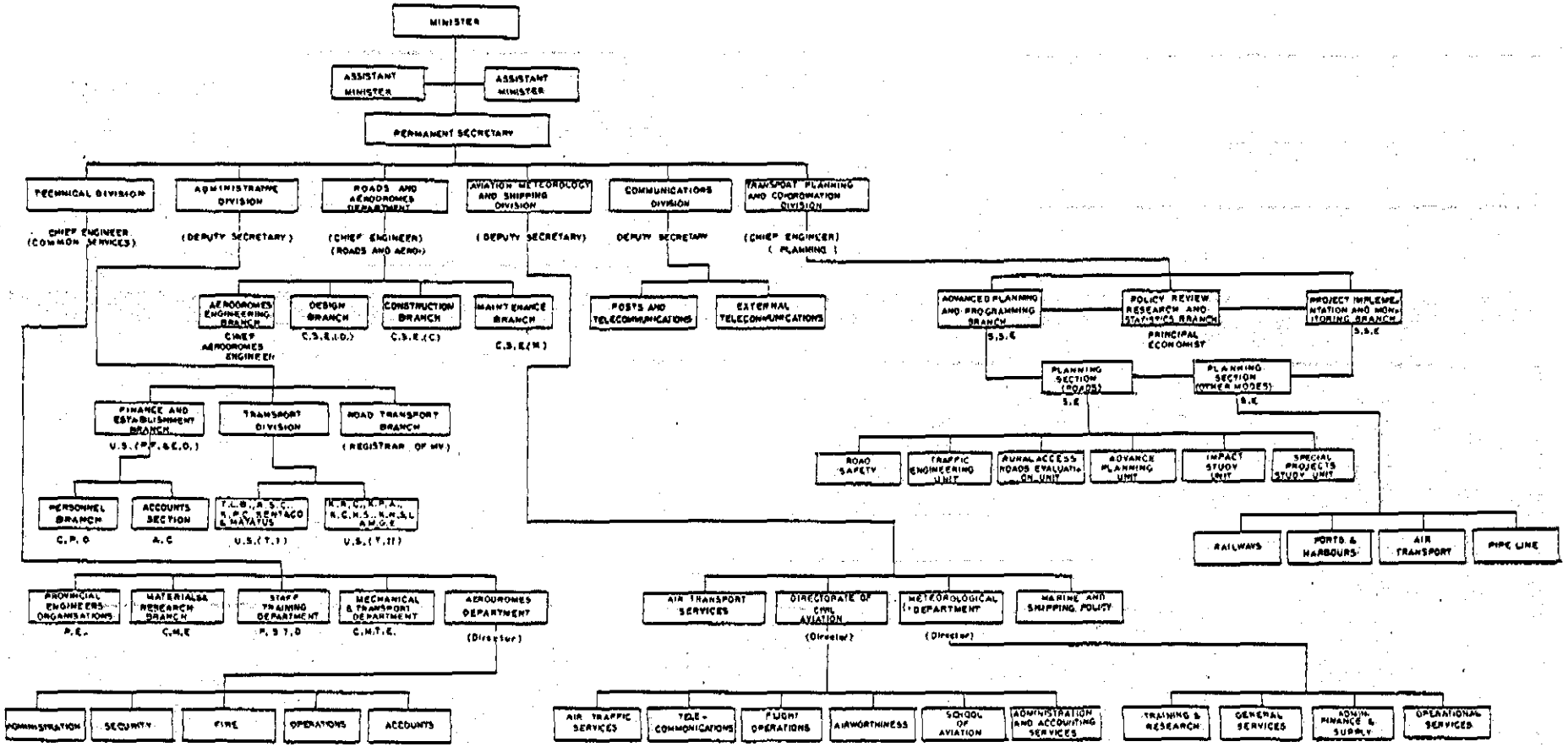


Fig. 3-1-1(a) Organisation Chart of The Ministry of Transport & Communications

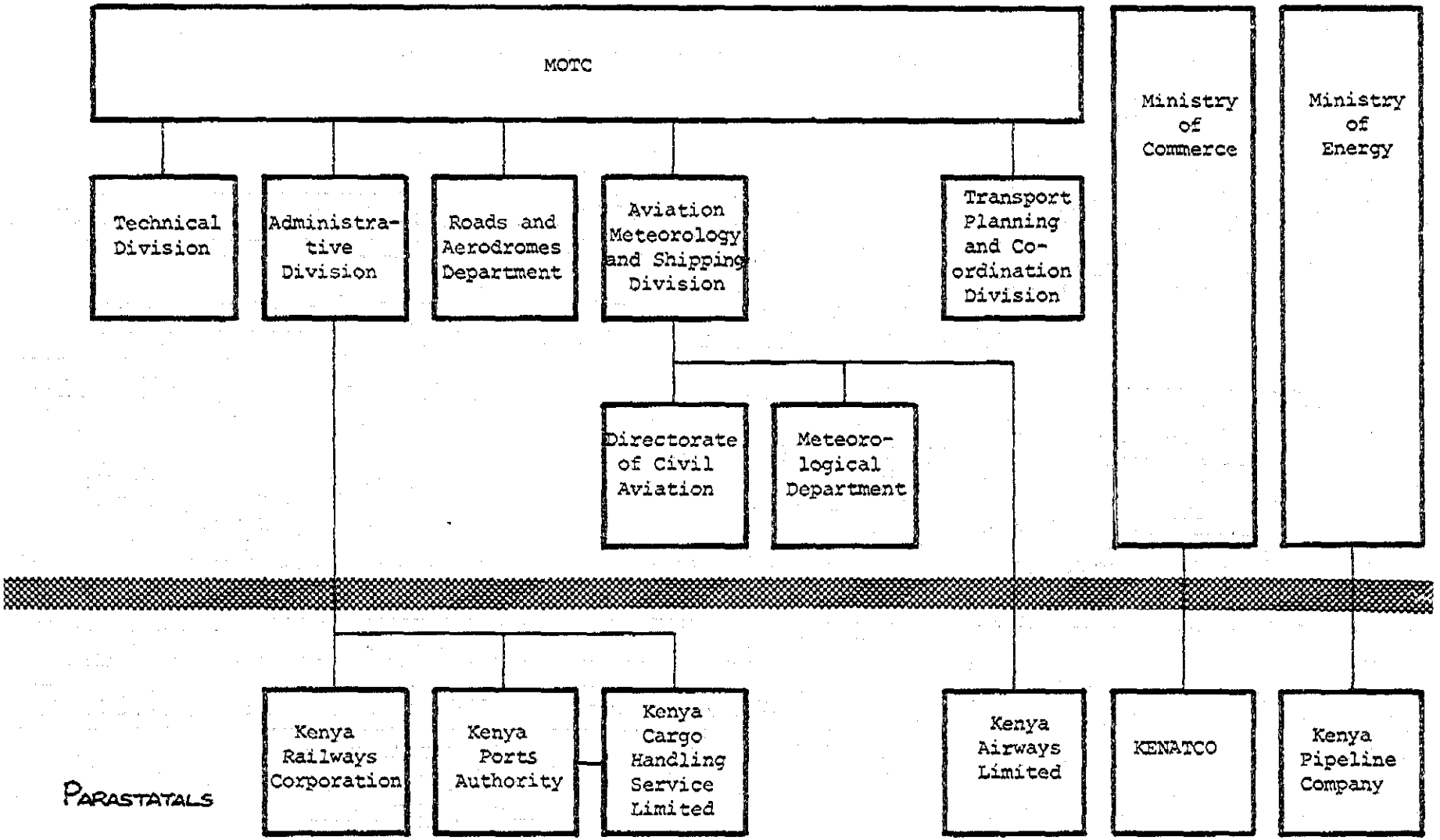


Fig. 3-1-1(b) Organisation Chart of Principal Parastatals

(2) Administrative Division

This division is responsible for all administrative matters pertaining to budget, personnel, road transport, and motor vehicle licensing; and administrative issues pertaining to Kenya Railways, Kenya Ports Authority and Kenya Cargo Handling Services, Kenya Transport Company (KENATCO), vehicle inspection centres and weighbridges, inter-state traffic, inter-territorial licences and tariffs, and road safety matters.

(3) Roads and Aerodromes Department

This Department is responsible for the planning, design construction and maintenance of the classified road network including the unclassified rural access roads. Moreover, it handles all the technical matters pertaining to aerodromes.

(4) Aviation Meteorological and Shipping Division

This Division is responsible for all matters pertaining to aviation, meteorology, and shipping, including matters related to Kenya Airways, Kenya Flamingo Airways, Kenya Airfreight Handling Company, Kenya National Shipping Line; and matters related to the negotiations and review of air services agreements and bilateral maritime agreements, including liaison with inter-governmental and international organizations which deal with aviation, meteorological and shipping matters, such as IATA, ICAO, AFRAA, ITA, UNCTAD, etc.

(5) Transport Planning and Coordination Division

The new Transport Planning and Coordination Division, which was established in late 1980, is in charge of the overall planning and programming of both short and long term projects in transport and communications; the review and overall analysis of national transport policy for the effective development of investment and pricing criteria, and inter-modal coordination; ensuring the compliance of national transport policy with the goals and objectives enunciated in the National Development Plan; and liaison with the Ministry of Economic Planning and Development on matters relating to the planning of projects and facilities for transport and communications.

(6) Directorate of Civil Aviation

The Directorate of Civil Aviation is responsible for the administration of the Civil Aviation Act which includes the provision of all air navigational and communications facilities within Kenyan air-space, licensing of aviation personnel and aircraft, air traffic control, search and rescue operations and liaison with ICAO and other international bodies on matters pertaining to civil aviation.

(7) Meteorological Department

This Department is responsible for the overall policy, administration, and

organisation of meteorological activities in the Republic, including representating the Government in the World Meteorological Organisation.

(8) Aerodromes Department

The Aerodromes Department is responsible for the overall planning, development, and improvement of airports, for which the Engineering Division of the Department comes under the Chief Engineer (Roads and Aerodromes) who provides the necessary technical guidance and direction. Moreover, the Aerodromes Department is responsible for property management and allocation, management of airports, and handling of matters relating to all international civil aviation organisations, such as ICAO, IATA, etc.

3.2 MOTC-Related Parastatals

There are 4 parastatals (corporations and companies) falling under the Ministry of Transport and Communications, and their major duties and responsibilities are briefly described in the following paragraphs.

(1) Kenya Railways Corporations (KRC)

Kenya Railways Corporation takes charge of operating the Kenya railways system, which has the total length of 2,036 km, of which the main trunk line has 1,074.2 km from the port of Mombasa to the Kenya/Uganda border at Malaba, and feeder links have 961.8 km.

(2) Kenya Ports Authority (KPA)

The Kenya Ports Authority is primarily responsible for managing the ports and harbour facilities which play an important role in international trade not only for imports and exports in Kenya, but also for the landlocked countries of Eastern and Central Africa, such as Uganda, Rwanda, Burundi, Southern Sudan, and Eastern Zaire.

(3) Kenya Cargo Handling Services Limited (KCHS)

The Company operates in close collaboration with the Kenya Ports Authority, with which it enters into contractual agreement to carry out such operations as stevedoring, lightering, sharehandling, and warehousing of imports and exports.

(4) Kenya Airways Limited (KQ)

Kenya Airways provides air transport services, inside and outside Kenya, to carry passengers, mail, and cargo. As for domestic services, Kenya Airways operates over 40 flights a week between Nairobi, Mombasa, Malindi and Kisumu, while its international routes cover 19 capital cities in Europe, Asia, the Middle East, Indian Ocean, and Africa.

3.3 Other Ministries

The Ministry of Transport and Communications does not operate alone

because it is a service organisation. The output of the Ministry in terms of transport and communication facilities and services affects nearly all socio-economic development sectors; the Ministry coordinates and/or links its activities with various GOK Ministries (Fig. 3-3-1) which include the following:

(1) Office of the President

(a) Constitutional and policy analysis on development programmes.

(b) Traffic police, driving tests, vehicle inspection centres (vehicle weighbridges).

(c) Personnel development, training, etc. (D.P.M.)

(d) Inspection of Statutory Boards.

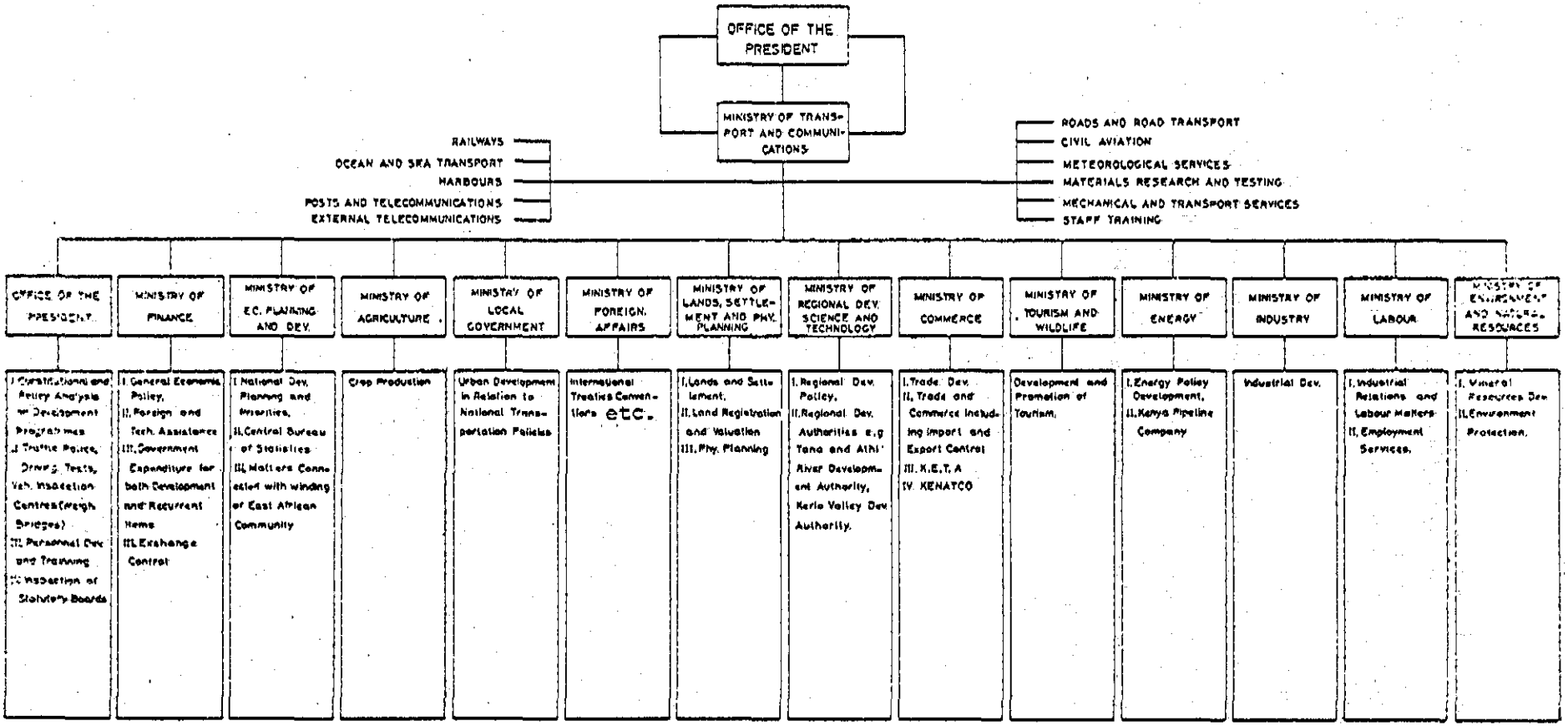


Fig. 3-3-1 Ministries whose work is in some way related to the Ministry of Transport and Communications

(2) Ministry of Finance

(a) General economic policy.

(b) Foreign and technical assistance.

(c) Government expenditures for both development and recurrent items.

(d) Exchange control.

(3) Ministry of Economic Planning and Development

(a) National development planning and priorities.

(b) Central Bureau of Statistics.

(c) Matters concerned with the union of the East African ommunity.

(4) Ministry of Agriculture

(a) Crop production and distribution systems.

(b) Integrated agricultural development programmes.

(c) Rural access roads and special purpose roads.

(5) Ministry of Local Government

(a) Urban development in relation to issues of national transport policy.

(b) Inter-urban transport facilities.

(6) Ministry of Foreign Affairs

(a) International treaties.

(b) Conventions, etc.

(7) Ministry of Lands, Settlement and Physical Planning

(a) Lands and settlement.

(b) Land registration and valuation.

(c) Physical planning.

(8) Ministry of Regional Development, Science, and Technology

(a) Regional development policy.

(b) Regional development authorities, such as the Kerio Valley Development Authority, Lake Basin Development Authority, Tana and Athi River Development Authority, etc.

(9) Ministry of Commerce

(a) Trade development.

(b) Trade and commerce including import and export control.

(c) Kenya External Trade Authority.

(d) KENATCO.

(10) Ministry of Tourism and Wildlife

(a) Development and promotion of tourism.

(b) Liaison with MOTC on the planning and construction of tourist roads.

(11) Ministry of Energy

(a) Energy policy development with particular reference to energy consumption by the transport sector.

(b) Kenya Pipeline Company and the effects of the pipeline on inter-modal coordination, such as road and rail.

(12) Ministry of Industry

(a) Industrial development.

(b) Vehicle assembly and manufacturing.

3.4 Issues

The unique organisation of transport administration in Kenya has the following issues:

i) Responsibility for transport administration covers many different bodies in Kenya. The Transport Planning and Coordination Division is incharge of coordination among these bodies to carry out measures which ensure improvement in the overall transport system. But this Division is not effective and it is necessary for it to intensify these coordination functions.

ii) Parastatals monopolize the transport business and their efficient management is necessary.

4. Financing of the Transport Sector

(1) MOTC's Departments

The recurrent expenditure and development allocation for MOTC's principal transport-related departments was appropriated in the fiscal year of 1982/83-government budget as indicated in Table 4-1. Within the development budget, the budget for roads takes the largest portion of all departments. In comparison, the total recurrent expenditure for aerodromes and civil aviation is just half the recurrent expenditure for roads.

Table 4-1 Public Expenditure by Transport Mode (1982/1983)

(K£'000)

MOTC's Department	Gross Recurrent Expenditure	Gross Development Expenditure	Total Expenditure
Roads	17,544 (227)	65,389 (25,240)	82,933 (25,467)
Aerodomes	3,881 (-)	5,536 (1,000)	9,417 (1,000)
Civil Aviation	3,928 (-)	1,949 (-)	5,877 (-)

Figure in ( ) means Appropriation in Aid.

Meanwhile, road-transport-related annual revenue of the central government reached K£57.7 million in 1980 as shown in Table 4-2. 54% of the annual revenue came from petrol and diesel taxes, 35% came from import duties for vehicles, and the remaining 11% came from licences. Also, aerodrome-related annual revenue totalled K£6 million for the fiscal year 1981/82, of which K£4 million came from aviation landing fees and K£2 million from airport passenger tax.

Table 4-2 Central Government Revenue from Road Vehicles

(K£'000)

	1978	1979	1980	1981*
Licences	4,112	5,217	6,042	6,572
Petrol and Diesel Oil Taxes	36,443	37,120	31,229	42,573
Consumption Tax	17,313	21,032	29,976	41,710
Import Duty	19,130	16,088	1,253	863
Other Import Duties	16,634	13,362	20,470	17,214
Total	57,189	55,699	57,741	66,359

Source: *Central Bureau of Statistics*

* Tentative

(2) Parastatals

MOTC's transport-related parastatals are Kenya Railways Corporation, Kenya Ports Authority, and Kenya Airways.

1) *Kenya Railways Corporation*

The financial results of Kenya Railways for 1979 and 1980 are indicated in Table 4-3.

The net operating deficit was K£679 thousand for 1979, but increased to K£1,854 thousand for 1980. Since capital servicing charges are now making up about 10% of the operating revenue, the net deficit for 1980 has expanded to K£5.2 million. 82% of the total revenue came from goods traffic. Maintenance expenses comprised 28% of the operating expenses, followed by 25% for locomotive running expenses. Depreciation accounted for 14.5%.

Table 4-3 Financial Results of Kenya Railways Corporation

(K£'000)

	1970	1980
Operating Revenue	29,260	33,377
(Goods Traffic)	(24,436)	(27,428)
Operating Expenses	29,939	35,231
(Maintenance)	(8,747)	(9,826)
(Locomotive running Expenses)	(6,764)	(8,926)
(Depreciation)	(4,110)	(5,110)
Net Operating Deficit	679	1,854
Capital Servicing Charges	2,887	3,350
Net Deficit	3,566	5,204

The Corporation's gross public debt at the end of 1980 amounted to K£22.6 million. Government subsidies and equity were K£56.1 million for the same period.

Capital expenditure for the year 1980 amounted to K£16.1 million, which included the purchase of capital equipment by the Kenyan government valued at K£10.6 million.

2) Kenya Ports Authority (KPA)

The financial summary for the period between 1978 and 1980 is indicated in Table 4-4. The rate of return on capital employed improved from 13.5% in 1979 to 16.7% in 1980. General reserves attained a level of K£76.4 million. These facts demonstrate that the Kenya Port Authority is in a good financial situation.

Table 4-4 Financial Summary of KPA

(K£ '000)

	1978	1979	1980
Revenue (including net revenue receipt)	36,635	34,850	46,555
Working expenses	21,505	21,305	26,705
Net earnings	15,130	13,545	19,850
Debt servicing charges (including other charges)	1,920	1,665	1,700
Balance surplus	13,210	11,880	18,150
Public Debts (less sinking fund)	17,720	17,250	15,985
Capital expenditure		9,595	7,850

3) Kenya Airways

The financial summary of Kenya Airways for the past three-year period is illustrated in Table 4-5. Kenya Airways has sustained losses every year since its inception. The deficit for the 1983–1988 period is projected as follows:

	Budget deficit (K£ million)
1983/84	2.50
1984/85	2.00
1985/86	1.50
1986/87	0.50
1987/88	—

Table 4-5 Financial Summary of Kenya Airways

	1978/79	1979/80	1980/81
Revenue	28,340	34,515	39,078
Expenditure	30,566	40,820	44,188
Interest	1,199	1,698	2,192
Net Operating Loss	-3,325	-8,003	-7,302

(3) Kenya Pipeline Company

The 1980 financial summary of the Kenya Pipeline Company is presented in Table 4-6. The rate of return on shareholder capital employed rose dramatically to 67% in 1980, in comparison with 36% in 1979. The financial situation of the Kenya Pipeline Company is thus extremely favorable.

Table 4-6 Financial Summary of Kenya Pipeline Company

	1980
Income	18,623
(Oil transport revenue)	(18,141)
Expenditure	8,663
(Depreciation)	(2,030)
Income before taxation	9,960
Taxation	1,353
Net income	8,607

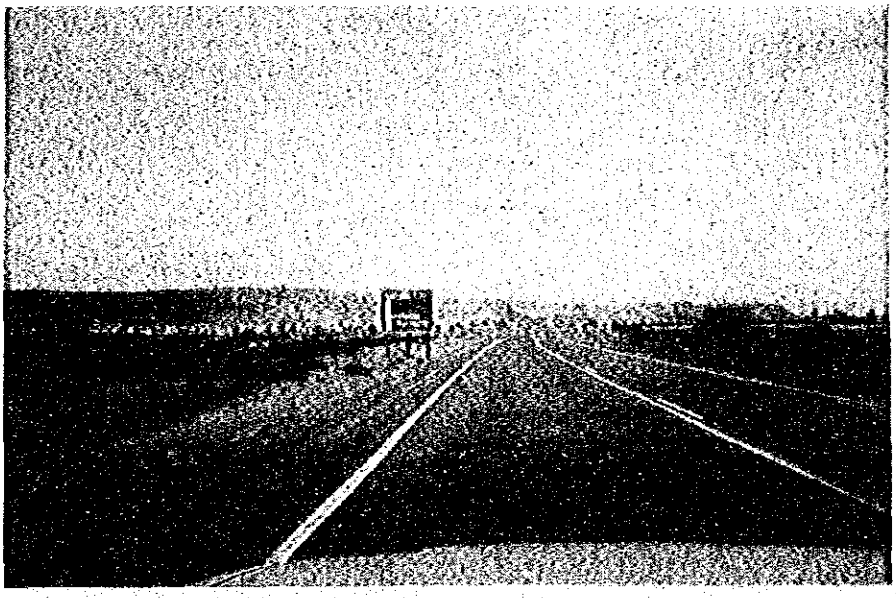
PART III. CURRENT SOCIO–ECONMIC CONDITIONS AND A FUTURE FRAMEWORK

1. Population

2. Economy

3. Regional Development and Production

4. Tourism



1. Population

1.1 Review of Population Growth

The total population of Kenya was 16,667 thousand as of 1980 and population growth rate is estimated as 3.8% p.a. The three population censuses conducted in 1948, 1962 and 1969 show populations of 5,406 thousand, 8,639 thousand and 10,943 thousand, respectively. In terms of growth they registered a high and relatively constant rate of 3.3–3.4% p.a. over the period 1948–1969.

The census conducted in 1979 indicated the fertility ratio (the average number of children born alive by a woman up to the age of 50) was 8 births per woman. Fertility ratio of the urban population including Nairobi is less then 6 births, significantly lower than other areas.

Population concentration in the urban areas has increased annually as shown by the high growth rate of 6% p.a. in those areas. Table 1-1-3 indicates the trend of urban population relative to total population to be 4.83% in 1948, 8.42% in 1969, and 10.56% in 1979.

Population growth by provinces is seen as follows. The city of Nairobi registered a high population growth rate of 5% p.a. over the years 1962-1979. The Northeastern Province registered a rate of 4.28% p.a. over the past ten years, although it is a region of low population density. Nyanza Province had the lowest population growth rate at 2.22% p.a. over the years 1962–1979.

Table 1-1-1 Population Growth in Kenya 1948–1979

Year	Population	Average Annual Growth	
		Number	Rate (%)
1948	5,406,000		
1962	8,636,000	231,000	3.3
1968	10,943,000	330,000	3.44
1979	15,327,000	399,000	3.43

Source: Population Censuses, Kenya, 1948, 1962, 1969 and 1979.

Table 1-1-2 Area Population, and Growth Rate 1962–1979

Provinces	Area km^2	Population (000's)		Density per km^2		Growth rate % per year	
		1969	1979	1969	1979	1962-'69	1969-'79
Nairobi	684	509	828	745	1,356	5.6	4.98
Central	13,173	1,676	2,346	127	178	3.2	3.42
Coastal	83,041	944	1,343	11	16	3.4	3.59
Eastern	154,540	1,907	2,720	12	24	3.0	3.61
Northeastern	126,902	246	374	2	3	1.4	4.28
Nyanza	12,525	2,122	2,644	169	211	3.7	2.22
Rift Valley	170,162	2,210	3,240	13	19	3.1	3.84
Western	8,223	1,328	1,833	162	22	3.8	3.27
Kenya	569,249	10,943	15,327	19	27	3.4	3.41

Table 1-1-3 Growth Rate of Major Towns, 1948–79

Towns	Population				Growth rate		
	1948	1962	1969	1979	1948 - 68	1962 - 69	1969 - 79
Nairobi	118,976	342,500	509,286	827,775	7.9	5.8	5.0
Mombasa	84,746	179,575	247,073	341,148	5.5	4.7	3.3
Nakuru	17,625	38,181	47,151	92,851	5.7	3.3	7.0
Kisumu	10,899	23,526	32,431	152,643	5.7	4.7	16.8
Thika	4,435	13,952	18,387	41,327	8.5	4.0	8.4
Eldoret	9,193	19,605	13,196	50,503	6.7	-1.1	14.4
Nanyuki	4,090	10,448	11,624	18,986	7.2	1.4	5.0
Kitale	6,338	9,342	11,573	28,327	3.1	3.3	9.4
Malindi	-	5,818	10,757	23,275	-	9.2	8.0
Kericho	3,218	7,692	10,144	29,603	6.7	4.0	11.3
Nyeri	2,705	7,857	10,004	35,753	7.9	3.5	13.6
Total (excluding Malindi)	261,225	653,678	921,626	1,618,916	6.6	4.9	5.7
%	(4.83)	(7.57)	(8.42)	(10.56)			

Source: Population Censuses, Kenya, 1948, 1962, and 1969.

The high growth rate of the population over the past 10 years significantly reduced the growth rate of per capita GDP: 1.8% p.a. over the years 1969–1980 when per capita GDP at 1980 constant price was 115 K£ and 140 K£ for 1969 and 1980, respectively.

Table 1-1-4 GDP and Population

	1969	1980	Annual Growth Rate over the years 1969-1980
GDP at factor cost in 1980 constant price (Kb million)	1,260	2,229	5.3%
Population (thousands)	10,943	15,909	3.5%
GDP per capital (Kb)	115	141	1.8%

1.2 Population Prospects

The future size of Kenya's population will depend more on fertility trends than on mortality trends. The crude death rate is relatively low (1.5%) compared to other countries in Africa, and the scope for further decline is limited.

The national population is projected in two cases using different figures for birth rates and death rates. The underlying assumptions for the two scenarios are described below.

Scenario A. Decline in fertility and mortality toward the year 2000.
An average annual growth rate of 3.63%.

Scenario B. No change in fertility and mortality.
An average annual growth rate of 4.1%.

Table 1-2-1 Population Projection

('000)

	1980	1985	1990	1995	2000
Scenario A	16,667	20,084	24,089	28,610	34,000
Scenario B	16,667	20,333	24,872	30,522	37,505

It is reasonable to assume that the fertility rate will gradually decline toward the year 2000 to 6–7 babies per woman, the current rate in the city of Nairobi.

Table 1-2-2 Projected Population by Area, 1979–2000: SCENARIO A

Provinces	1969	1979	1980 *3)	1985	1990	1995	2000
Nairobi	509 (5.6)*1)	828 (4.98)*2)	897	1,145	1,419	1,860	2,312
Central	1,676 (3.2)	2,346 (3.43)	2,511	3,012	3,565	4,292	4,964
Coastal	944 (3.4)	1,343 (3.59)	1,440	1,727	2,072	2,460	2,924
Eastern	1,907 (3.0)	2,720 (3.61)	2,916	3,515	4,240	5,064	5,984
Northeastern	246 (1.4)	374 (4.28)	403	502	626	772	918
Nyanza	2,122 (3.7)	2,645 (2.22)	3,058	3,595	4,192	4,921	5,576
Rift Valley	2,210 (3.1)	3,240 (3.84)	3,483	4,258	5,179	6,379	7,548
Western	1,328 (3.8)	1,833 (3.27)	1,960	2,330	2,746	3,262	3,774
Total	10,943	15,324	16,667	20,084	24,089	28,610	34,000

*1) Growth Rate % per year, 1962 – 1969.
*2) Growth Rate % per year, 1969 – 1979.
*3) Revised figure based on 1979 population census.

2. Economy

2.1 Review of Economic Growth

2.1.1 Kenyan National Economic Profile

Kenyan economy has registered a moderate growth of 3.9% p.a. in real terms over the period 1978–1981. Gross Domestic Product (GDP) at market prices has grown from 2,058 K£ million to 3,023 K£ million at current prices over the period 1978–1981. However, at 1980 constant prices the GDP market price was approximately 2,391 K£ million, 2,488 K£ million, 2,626 K£ million and 2,734 K£ million for the years 1978, 1979, 1980 and 1981, respectively.

Per capital GDP at market prices has grown from 1,780 Ksh. in 1975 to 3,662 Ksh. in 1981 in current prices at an average annual rate of 12.7%. However, in real terms the average annual growth rate of per capita GDP has been 2% over the same period.

As the population growth during this period was estimated as 3.4% p.a., the real GDP growth per capita is seen to be only nominal, particularly for the years 1978–1981.

Major economic indicators in the period 1975–1981 are shown below.

Year	Exchange Rate		Current GDP at m.p. (K£ million)	Population '0000'	GDP per Capita (US$)	GDP Deflator 1980 = 100.00
	KSH/SDR	KSH/US$				
1975	9.66	7.343	1,192	1,339	242	60.46
1976	9.66	8.367	1,454	1,385	251	71.37
1977	9.66	8.277	1,860	1,433	314	84.23
1978	9.68	7.729	2,058	1,482	359	86.08
1979	9.66	7.475	2,277	1,532	398	91.46
1980	10.15	7.420	2,626	1,591	445	100.00
1981	11.95	9,045	3,023	1,651	405	110.56

Source: International Financial Statistics, IMF
Economic Survey, 1977–1982.

In the balance of payment, the basic balance continues to be in great deficit due to the worsening terms of trade.

As the prices of the major foreign exchange earners, coffee and tea, have continued to show no improvement since the fall of prices in 1978, and the almost tripled upsurge in crude oil import price has prevailed since 1977, the terms of trade index has dwindled to 72 in 1981 as against 131 and 105 for the years 1977 and 1978, respectively.

Balance of Payments Indicators

(Unit: K£ million)

Year	Export (FOB)	Import (CIF)	Balance of Trade	Net Balance of Services	Current Account
1977	468	529	-61	47	-15
1978	369	725	-356	71	-282
1979	386	685	-299	83	-216
1980	461	977	-516	142	-373
1981	463	995	-533	199	-334

Source: Economic Survey, 1982.

2.1.2 Sectoral Profile

Agriculture and manufacturing are the leading sectors in the Kenya economy and contributed 33% and 13% to GDP in 1981. This picture has not changed significantly over the past decade. In view of Kenya's position as one of the most industrialised countries in East Africa, the share of manufacturing is deemed to be relatively small. Recent figures for the period 1978–1981 indicate the agricultural sector has grown at 3.5% p.a. and the manufacturing sector at an average 9.2% p.a. The "trade, restaurant and hotels" sector is the third contributor and accounted for 10% of GDP in 1981. The major portion of the value added from this sector is deemed to come from tourism. It is to be noted that the magnitude of Government services is as large as 15% of GDP.

The transport, storage and communications sector embraces such economic transport activities as road, maritime, railway, inland water and air transport. The sector accounted for 6% of GDP in 1981. It is to be noted that the above major sector shares of GDP, except for the agricultural sector which is strongly affected by the international commodity market and incidental weather conditions, have been fairly constant over the years 1978–1981.

	Sector shares at 1976 prices				Growth rate % p.a. over 1976-1981
	1978	1979	1980	1981	
A. Traditional Economy	5.1	5.0	5.1	5.0	3.7
B. Monetary Economy	94.9	95.0	94.9	95.0	
Agriculture	36.0	34.2	32.8	33.3	3.5
Manufacturing	12.7	13.0	13.4	13.4	9.2
Retail/Wholesale	10.5	10.7	10.8	10.3	5.4
Transport/Communications					
GDP at factor cost in 1976 constant prices (K£. million)	1,483	1,545	1,591	1,667	5.4

Source: Economic survey, 1982.

2.1.3 Sectoral Contribution to Economic Growth

Industries have been separated into the four major sectors to analyse their sectoral contribution to the national economy. The four sectors are:

A: Agriculture, forestry and fishing

B: Mining and manufacturing

C: Wholesale and retail grade, restaurants and hotels

D: All other sectors except A, B, and C

The data employed are domestic products by kind of activity. The relationship between GDP at market price and domestic product by kind of activity are as follows:

GDP at m.p. = domestic product by kind of activity + bank service charges – indirect tax

The industry sector's contribution to the national economic growth is given by:

Sector J's contribution to growth rate
= (Sector J's current growth rate) x (Sector J's share of domestic product the previous year)

The individual sectoral contributions by year for the period 1971–1981 are given in Figure 2-1-1.

The total industry curve in the figure reflects the downturns and upturns of economic cycles.

The sectoral trend is elaborated as follows:

(1) Agriculture/Forestry/Fishing Sector (A)

This sector's economic upturn/stagnation cycle corresponds to the national one. The growth rate of the sector set the trend for national economic growth. It is noticeable that the contribution is no more than 50% even when the national economy was booming, while in the sluggish economies of 1974, 1979 and 1980, the sector registered negative growth in contrast to the positive contribution by the manufacturing sector (B) and other sectors (D).

(2) Mining/Manufacturing Sector (B)

The sector's contribution to growth rate is as much as 1–2% during the years observed. Its contribution is deemed to be modest.

(3) Wholesale and Retail Trade, Restaurants and Hotels Sector (C)

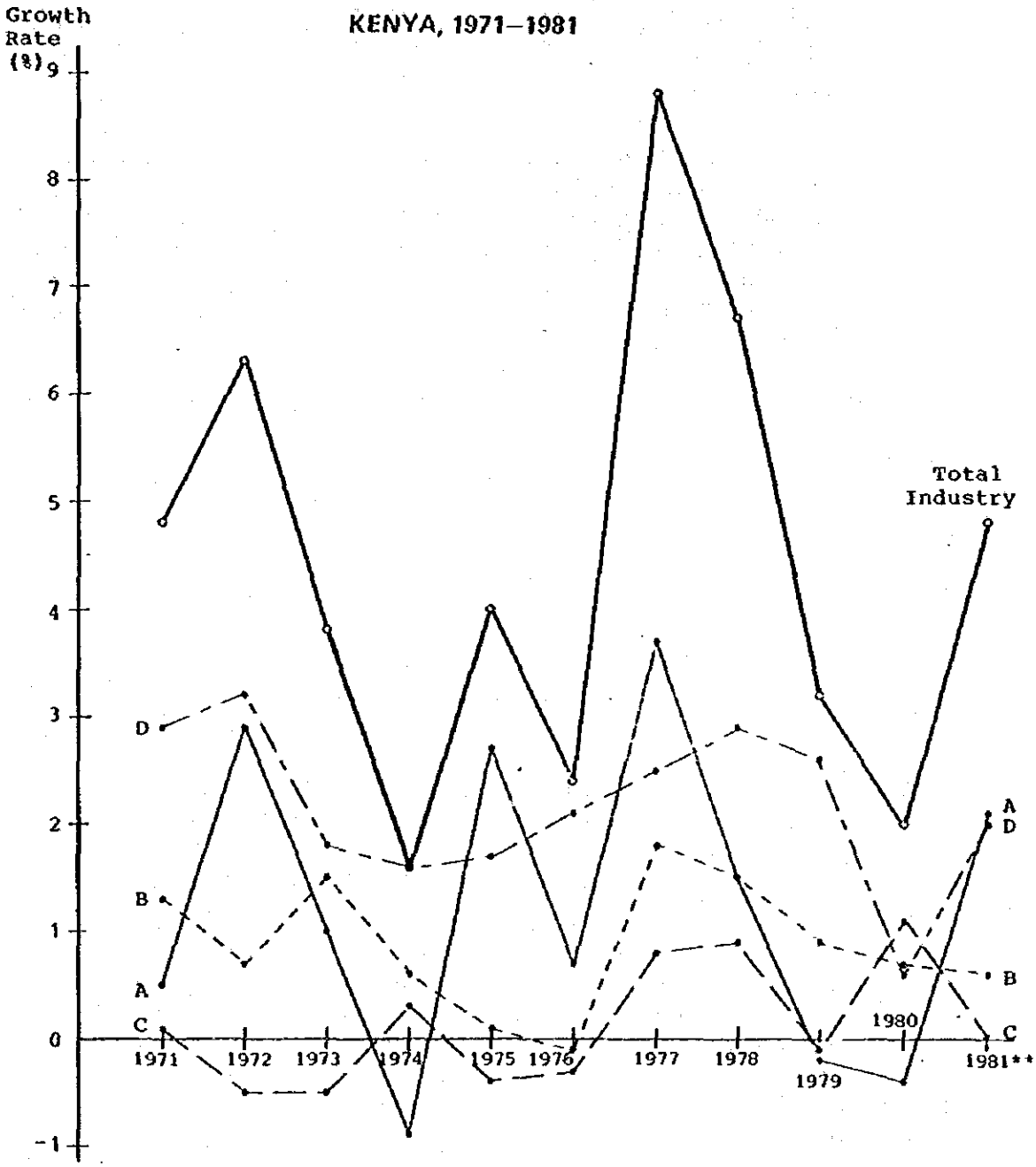
The sector's contribution to the growth alternates above and below the 0% level over the observed period, thus seeming to lack a driving force.

(4) Other Sectors (D)

These sectors have shown stable contribution in the long-term, more than compensating for the agricultural sector's negative growth when the economy was in a slump.

The analysis of the sectoral contribution to the economic growth is summarised as follows. Contributions by the mining/manufacturing sector (B) and by the wholesale and retail trade, restaurants and hotels sector (C) have not been significant. Significant contributions to the growth rate came mainly from sectors A and D. Sector D in particular – transport, finance, electricity and others -- enjoyed relatively stable growth despite the upturns and downturns of the business cycle.

Fig. 2-1-1 Sectoral Contributions* to Growth Rate



Note: * Sum of sectoral contributions corresponds to GDP at market price less indirect tax plus bank service charge.

** Tentative

LEGEND A: Agriculture, hunting, forestry, and fishing.
B: Mining and quarrying; Manufacturing.
C: Wholesale and retail trade, restaurants and hotels.
D: Electricity, gas and water; construction, transport, storage, and communication; Finance, insurance, real estate and business services; community, social and personal services.

Source: Yearbook of National Accounts Statistics, 1980. Vol. 1, Part 1; UN
Economic Survey,1982, Min. of Economic Planning and Development, Rep. of Kenya

2.1.4 Import/Export Trend

(1) Kenyan Import Trends

An analysis of Kenya's imports was made by segregating the statistics on individual articles into four categories: 1) Consumable goods, 2) Petroleum products, 3) Intermediate goods, and 4) Capital goods. The articles in each category are:

1) Consumable goods

Cereals, foods, live animals, dried milk, unmilled wheat, unmilled maize, beverages and spirits, and inedible crude materials except fuels

2) Petroleum products

Mineral fuels, lubricants and related materials, coal, crude petroleum, gas, oil, etc.

3) Intermediate goods

Animal and vegetable oil and fat, chemicals, paints, pharmaceutical products, soap, synthetic fertiliser, paper, synthetic fibres, iron and steel, and metal products

4) Capital goods

Machinery and transport equipment, vehicles

In terms of value, capital goods accounted for 30% of all imports during the period 1963–1966, fluctuated above and below that figure for the next few years and in 1972 increased to more than 40%; it has remained near 30% in the 1980s.

Intermediate goods were 35–41% of total imports in terms of value between 1963–1974. In 1975 they began declining and have levelled off to 25–26% in the 1980s.

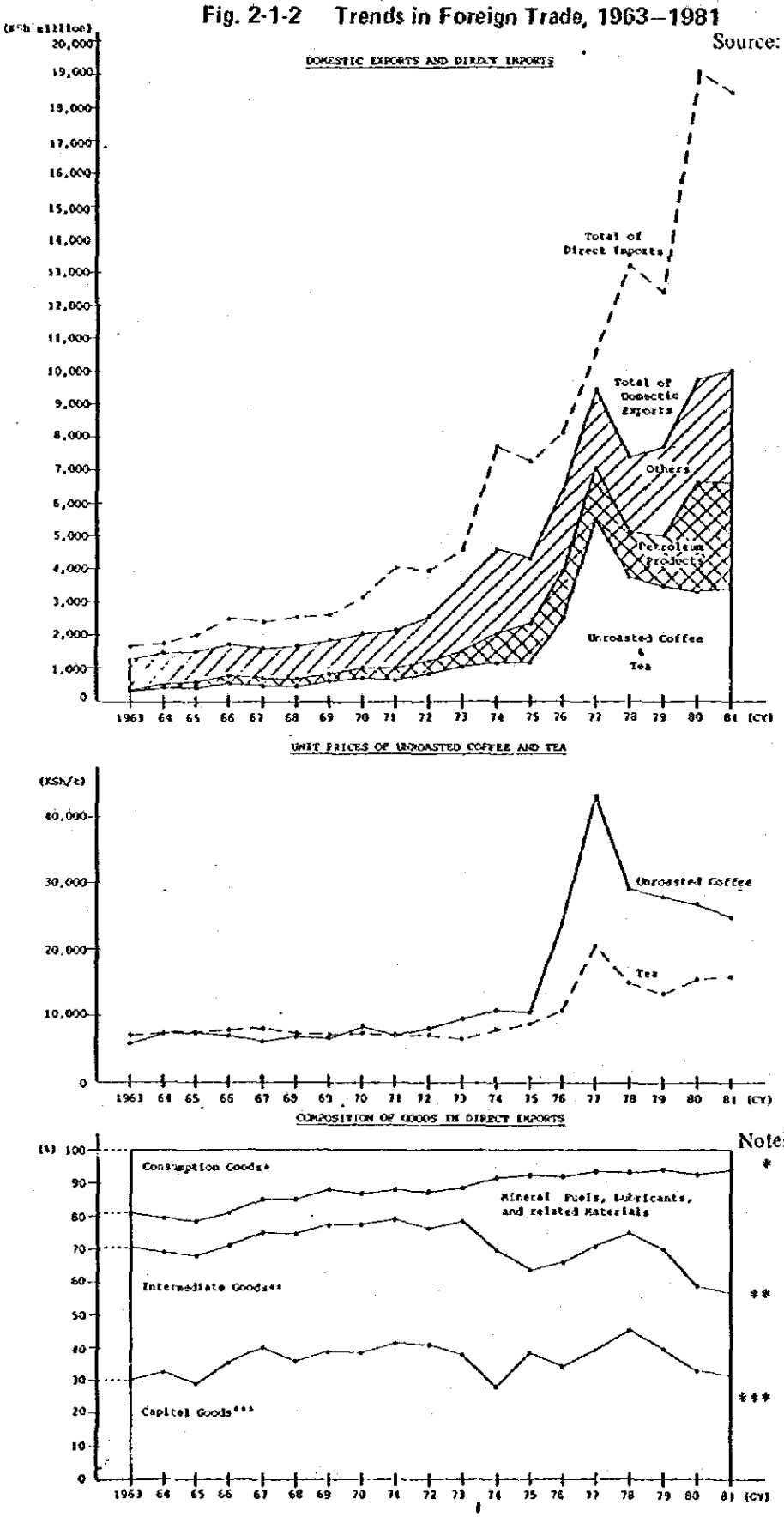
Consumable goods were 20% of total imports between 1963–1966, levelled off to 10% from 1967–1973 and have been 5–8% since 1974.

Imports of mineral fuels, primarily crude petroleum, accounted for 9–10% during 1963–1973. In 1974 this increased to 20% and has been 33–37% in the 1980s.

The long-term trends of the four categories can be seen as follows. Capital goods have been continuously purchased at the the foreign market price, because such goods are essential for Kenya's economic growth. During 1963–1977, capital goods were a stable 30–40% of total imports. They reached a high of 45.5% in 1978, and since then have decreased to 30% in recent years.

Increasing mineral fuel imports since 1974 have caused the decrease in imported consumable and intermediate goods which have higher price elasticity.

Fig. 2-1-2 Trends in Foreign Trade, 1963–1981



Source: Sixteenth Annual Report for FY Ended 20th June, 1982, Central Bank of Kenya

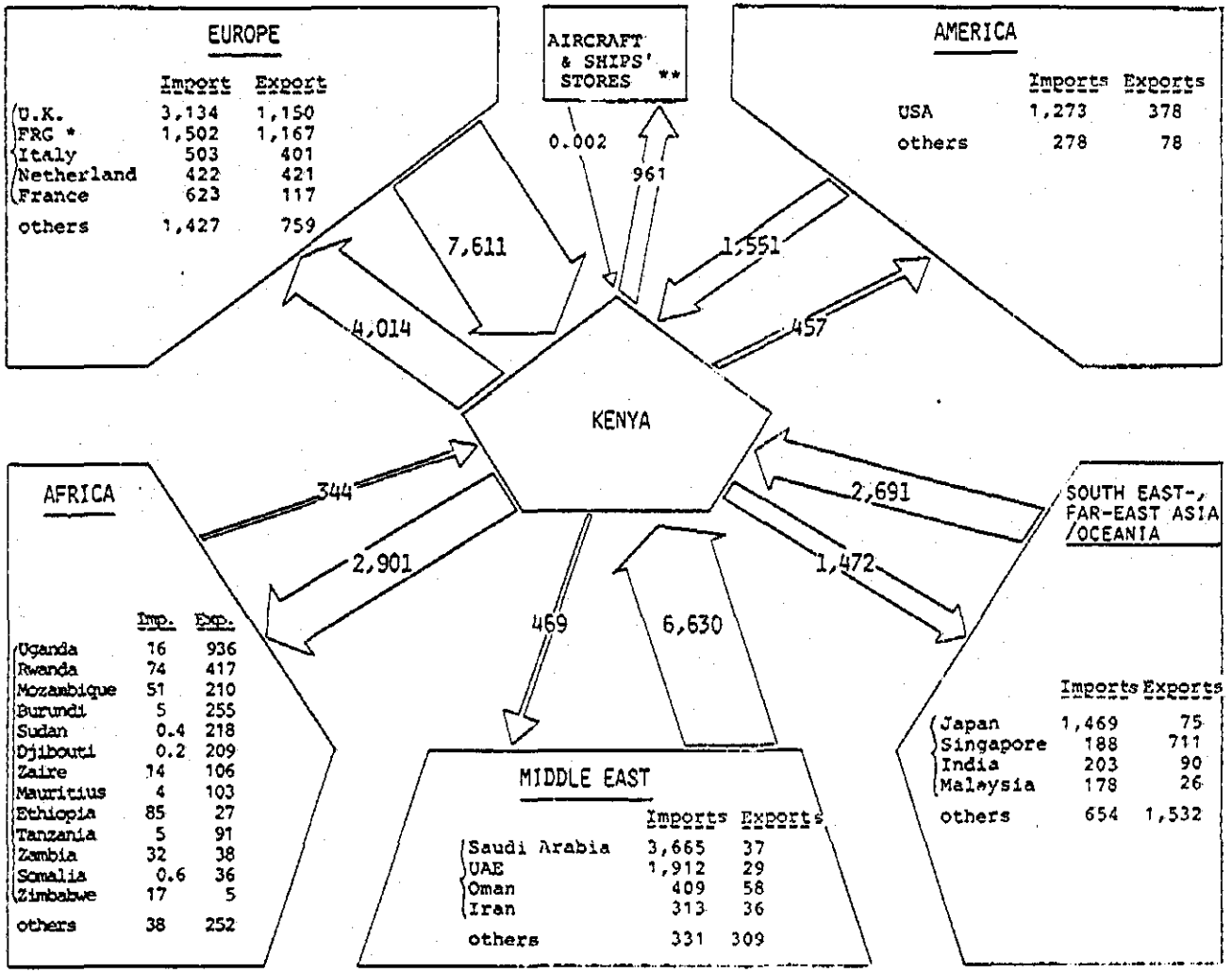
Notes:

* Food and live animals; beverages and tobacco; crude materials, except fuels; commodities and transactions not classified according to kind.

** Animal and vegetable oils and and fats; chemicals, manufactured goods classified chiefly by materials.

*** Machinery and transport equipment, miscellaneous manufactured articles.

Fig. 2-1-3 Imports/Exports of Kenya, 1981



Unit: KSh million

Note *) Federal Republic of Germany
**) Goods supplied as aircraft or ships' stores

Source:
Annual Trade Report, CY 1981
Customs and Excise Dept. Ministry of Finance, Republic of Kenya

(2) Export Trends of Kenya by Major Commodities

The major export commodities in terms of shipment value are petroleum products, unroasted coffee, tea, fruits/vegetables, and cement: 30%, 22%, 12%, 6% and 3% of total domestic export value respectively as of 1981.* Each of the other commodities represents less than 2% of the total.

In terms of export value, the CY 1981 trade statistics indicate that cement (6,000 thousand tonnes), petroleum products (1,300–1,800 million litres), and soda ash (100 thousand tonnes) are the major commodities, followed by fluorspar, unroasted coffee and tea ranging from 70 to 1000 thousand tonnes, and sisal and canned pineapple at about 40 thousand tonnes.

The trends in individual commodities with respect to total domestic export value and quantity are elaborated below:

1) While the share of unroasted coffee was as high as 30% during the boom years 1977–1979, it has stabilised at 19–20% since 1980. The lower figures are deemed to be stable since they also are indicative of the level during 1965–1975. In terms of quantity, exported coffee has fallen to a level of 80,000 tonnes since its peak of 94,000 tonnes in 1977.

2) In terms of value tea has show a range of 10 to 13% of total domestic exports, except in the boom years 1977 to 1979 when it was more than 15%. Tea exported in 1979 peaked at 94,000 tonnes, and then levelled off to 75,000 tonnes in 1980.

3) The value of petroleum products was stable at 13–15% of exports during 1965–1972. With the emergence of the oil shock this jumped to 27.2% in 1975, but fell to 16–20% during the succeeding years 1977–1979. In the 1980s it has again shown a high level of 30%. While the quantity of exported petroleum products decreased from 1973 to a low of 1,212 million litres in 1979, since 1980 the trend has been an increasing one.

4) Sisal and pyrethrum each were 2 to 5% of market value during 1965–1975, then followed a long-term decrease trend to a 1–2% range during 1977–1981. In terms of export volume, pyrethrum flower and extract has shown a long-term decreasing trend, 3,000 tonnes in 1972 and just 300 tonnes in 1980. The quantity of sisal fibre remained at the same level of 20–40 thousand tonnes during the years 1972 to 1980 except for 1974 when a volume of 72 thousand tonnes was exported.

5) Though meat, meat preparations and maize all maintained a constant few percent figure of total exports during 1972–1976, meat products have been below 1% since 1978, and maize has become an almost negligible commodity in recent years. Meat and meat preparations decreased in quantity from 11 thousand tonnes in 1972 to 1,000 tonnes in 1980. The volume of maize was highest at 277 thousand tonnes in 1973; this item has shown particular instability as indicated by 323,000 tonnes of imports in 1980 and 77,000 tonnes of exports in 1971.

6) The export volume of fruits and vegetables remained stable and has gradually increased from 4% during 1965–1972 to 6% during 1979–1981. 1980–1981 statistics indicate export volume to be in the range from 1,000 to 2,000 tonnes.

7) Cement has accounted for 2–3% of total domestic exports over the years 1963 to 1981. In terms of volume, the figure has been stable at between 450,000 tonnes and 668,000 tonnes since 1965, with two boom years of 1977, 662,000 tonnes, and 1981, 668,000 tonnes.

8) Soda ash at 1% of exports has had no remarkable increase since 1965. Volume has remained level at 100–200 thousand tonnes from 1972–1981.

Conclusion:

The domestic export value in real terms has been rather modest, showing a growth rate of 2.1% p.a. for the years 1972–1980, while GDP at market prices has registered a 4.6% growth rate for the same period. Thus, the elasticity of export value over GDP is estimated to be 0.976. Other national parameters are a 0.3 for exports with respect to GDP and a 0.14 marginal export trend.

Table 2-1-1 Domestic Exports
Principal Commodities, 1972–1980
– Percent of Total Value –

Percent

Commodity	1972	1973	1974	1975	1976	1977	1978	1979	1980
Coffee, unroasted	20.1	22.2	18.2	16.4	29.3	42.5	33.7	28.7	22.2
Tea	13.4	10.5	9.2	10.7	10.0	14.9	17.1	16.3	11.9
Petroleum products	12.4	10.0	18.0	22.6	17.9	15.1	16.3	17.7	31.1
Sisal fibre and tow	1.7	3.0	8.0	3.4	1.3	0.8	1.1	1.2	1.8
Meat and meat preparations	4.2	2.4	2.2	2.4	2.6	1.6	0.7	0.7	0.3
Pyrethrum extract and flowers	3.7	2.3	2.7	2.2	2.2	1.3	1.3	1.5	1.9
Hides, skins and furskins, undressed	3.1	3.2	2.1	2.5	2.7	1.7	2.7	3.6	2.0
Cement, building	2.2	1.7	2.1	2.8	2.5	1.8	2.4	2.2	2.1
Wattle bark and extract	1.4	0.8	0.7	0.8	0.9	0.4	0.4	0.5	0.4
Sodium carbonate	1.6	1.8	1.3	1.1	1.0	0.6	1.0	1.4	1.6
Pineapples, tinned	0.7	0.9	0.7	1.7	2.2	2.2	2.6	2.4	1.8
Cotton, raw	1.0	0.9	0.5	0.4	0.4	0.1	0.4	0.2	0.5
Wool, raw	0.3	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.2
Cashew nuts	0.9	0.4	0.8	0.5	0.3	--	--	--	0.3
Beans, peas and lentils	1.4	0.8	0.8	1.1	0.5	0.6	0.6	0.4	0.3
Oil seeds, oilnuts and oil kernels	0.2	0.3	0.2	0.3	0.3	0.3	0.4	0.5	0.3
Scrap metal	0.4	0.4	0.4	0.2	0.2	0.1	0.1	0.1	0.1
Butter and ghee	1.0	0.7	0.4	0.2	0.2	0.1	0.3	0.2	--
Maize, unmilled	0.4	4.0	1.2	2.4	1.8	0.1	0.2	1.4	--
Other	29.9	33.2	30.2	27.9	23.5	15.6	18.5	20.8	21.2
T O T A L	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Annual Trade Reports, 1972 – 1980: Customs and Excise Department.

2.2 Economic Growth Forecast

2.2.1 I-S Analysis

Domestic saving serves as the funds for investment. However, excess investment over saving, as in Kenya, is funded through net capital inflow from abroad and changes in the amount of overseas credit. Here, the past trend of capital investment, saving and foreign long-term capital flow is reviewed within the framework of I-S (Investment – Saving) gap analysis. Based on the outcome of the gap analysis in time series, equilibrium growth is inferred using the Harrod-Domar model.

The I-S (Investment – Savings) gap is analysed by employing the following ordinary macro identity:

$$I = S + R - \Delta CR$$

or alternatively,

$$I = S - CB$$

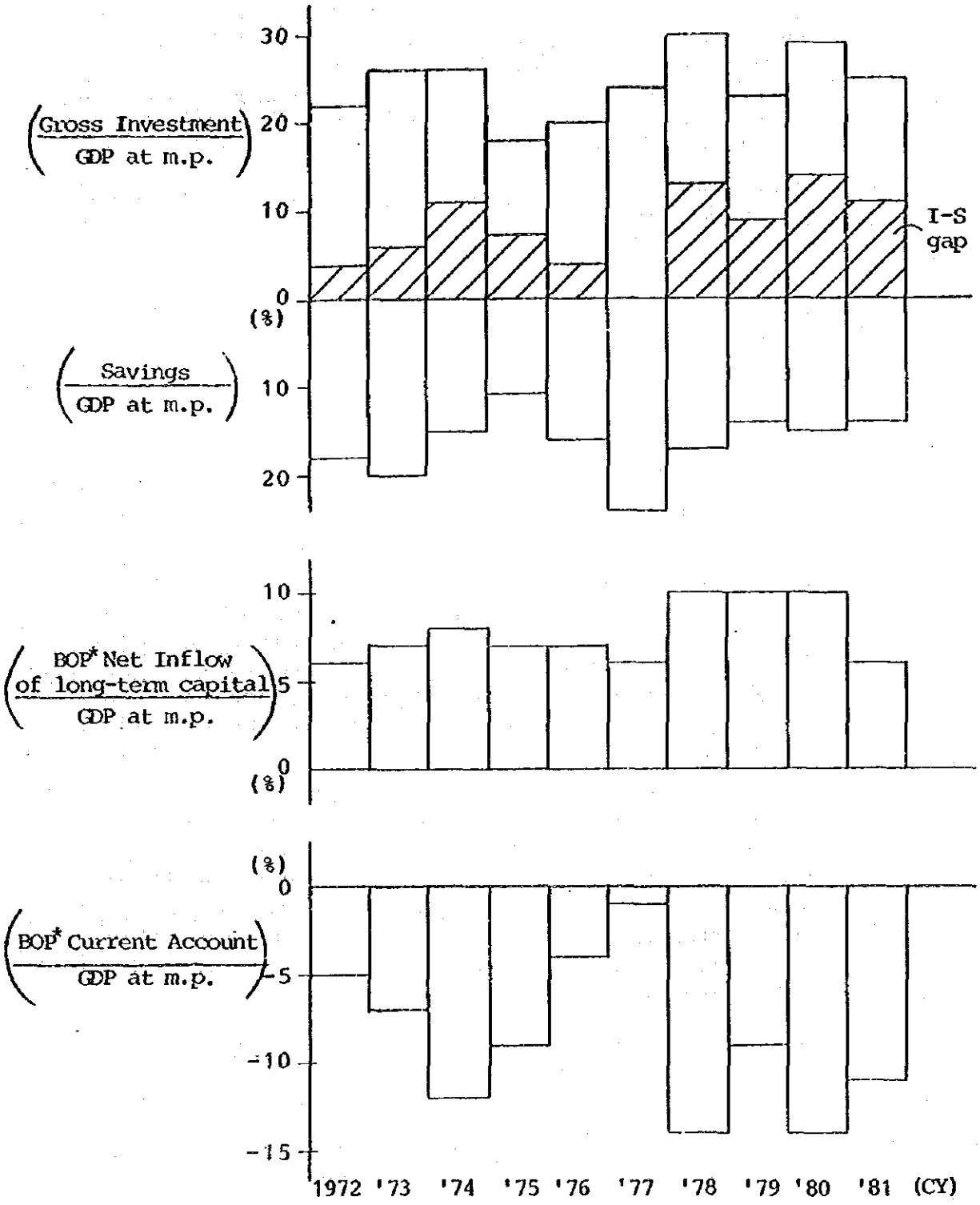
where:
- S: Saving,
- R: Net capital transfer from abroad,
- I: Investment,
- ΔCR: Increase in overseas credit,
- CB: Current balance or surplus of the nation on current transactions.

The saving and investment terms employed here are in gross terms as Kenyan National Accounts do not give estimates on capital depreciation. Figure 6 shows the annual flow of gross investment, saving, net inflow of long-term capital and the current account in the balance of payments over the period 1972–1981. All figures are shown as the ratio of current annual GDP at market price (m.p.).

As shown, the average ratio of gross saving to GDP at m.p. is 0.15–0.16 for the years 1972–1980. However, the yearly figures vary from 0.11 to 0.24, while the ratio of gross investment, the counterpart to the domestic saving, lies between 0.18 and 0.29. Consequently, the magnitude of the I-S (Investment – Saving) gap as reflected in the current account deficit of the balance of payments ranges from 1% to 14% of GDP at m.p. The annual net capital inflow, realized as ex-post adjustment flow term, was between 0.060 and 0.098 relative to GDP at m.p.

Fig. 2-2-1 Trend in Savings and Investment

Figure



Note: * BOP : Balance of Payments
Source: Economic Survey, 1982

2.2.2 Growth Model

Assuming that the effective demand created by capital investment equilibriates with the increase in production capacity created by capital investment, the Harrod-Domar growth equation is formulated as follows:

$$g^*k = s - e - r$$

where:
- g: Output growth rate,
- s: Gross saving ratio relative to gross output,
- k: Incremental capital output ratio,
- e: Surplus of exports over imports,
- r: Net factor income from abroad plus net current transfer from abroad. However, this term does not include long-term capital transfer from abroad.

The following assumptions are employed to project national economic growth.

(1) Capital output ratio (k) is assumed to be in the range of 3 to 6 over the planning period 1981–2000. With higher capital utilisation at high economic growth periods, k almost reached 3.0, while it will exceed 10 when the economy is sluggish, hence low capital utilisation. Past figures for k have varied widely from 3 to 20 between 1972–1980.

(2) The gross savings per GDP is assumed to be positively correlated with per capita income growth. a cross-sectional analysis of gross saving ratio versus per capita GDP in 8 African countries was conducted and the following relationship obtained.

$$\text{Gross Savings Ratio} = 0.002536 \times (\text{per capita GDP at 1981 constant price})^{0.6838}$$

This is shown in Figure 7. The adoption of the above formula for economic growth projection implies that only the excess annual economic growth rate over annual population growth rate will contribute to enhanced savings.

(3) Population growth outlook

The gross population growth rate is assumed to be 3.6–4.0% p.a. over the planning horizon. The following growth scenario is employed.

Scenario: Decline in mortality and fertility toward the year 2000 with an average annual growth rate of 3.74%.

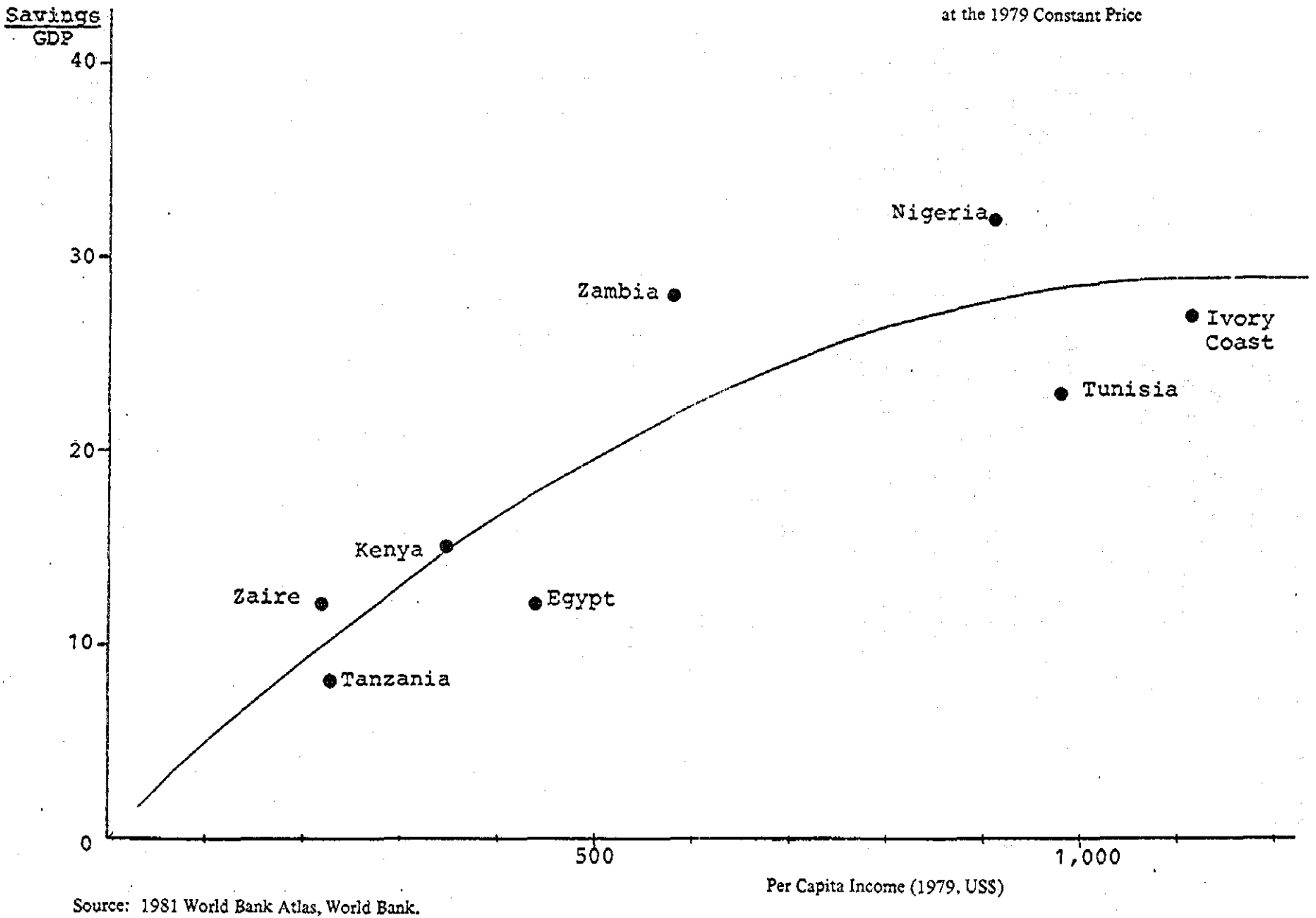
(4) The term r, net factor income from abroad plus net current transfer from abroad

For Kenya, this term essentially consists of grants (net inflow) and net factor income from abroad (net outflow), resulting in a net outflow which ranged from –4.8% of GDP at m.p. to –1.6% of GDP at m.p. over the years 1972–1980. Input of r to the model is the figure –2%–4% for the planning horizon.

The national economic growth is projected with the above propositions and the following figures for the base year 1981.

GDP at m.p.	3,023 K£ million
Population	1,730 thousand (1,667 thousand in 1980)
Export-Import Gap	10% of GDP at m.p.
Gross Savings Ratio	0.15

Fig. 2-2-2 Savings Ratio and Income Level



Source: 1981 World Bank Atlas, World Bank.

2.2.3 Projection of Major Economic Indicators

Kenyan economic growth is projected for the planned two terms

short-term: CY 1983–1988
long-term: CY 1989–2000

The projection of economic indicators has been established using the following bases:

(1) It would be appropriate to project capital productivity to increase 10–30%, hence the ICOR was assumed to be 4.0–5.5 over the planning horizon 1983–2000. Progressive industrial development will include higher inter- and intra-industry multiplier effects, which will be reflected as progressively lower ICOR with industrial development. Relatively lower ICOR 5.5 in the short-term and higher ICOR of 5.0 in the long-term was input to the model.

(2) The per capita GDP growth rate in 1980–1990 is projected to be in the range 0.9–1.0%. Figures are given for all oil-importing developing African countries, and it was assumed the above figures would also apply for Kenya.

(3) The annual rates for population growth employed are 3.7% in the short-term and 3.5% in the long-term.

(4) An export growth rate of 4% p.a. and an import growth rate of 4% p.a. are used.

Projected economic growth is shown in Table 2-2-2.

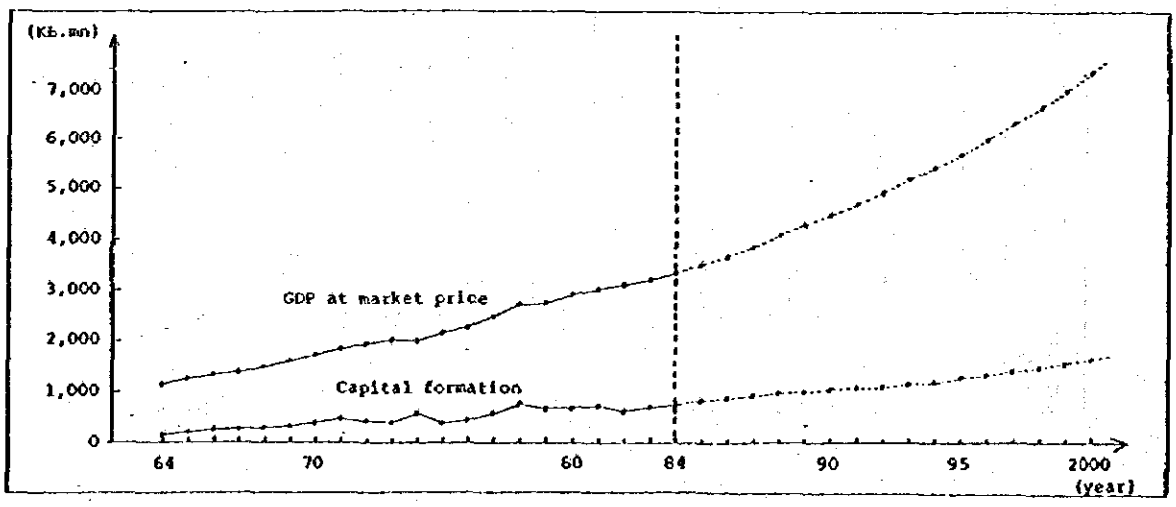
Table 2-2-1 Growth Peujections

Scena-rio	Socio-Economic Indicators		Short-Term CY 1983 - CY 1988	Long-Term CY 1989 - CY 2000
	GDP at m.p. (at the constant price of 1981) (K£ million)		3,207 → 4,039	4,237 → 7,212
	Annual Average Growth Rate (percent)		4.7%	5.0%
	Gross Saving Ratio		0.165	0.170 → 0.191
	Population (ten thousand)		1,864 → 2,240	2,323 → 3,400
	Per capita GDP (in 1979 constant US$)		381 → 399	404 → 470
	Per capita GDP Growth Rate (percent)		0.9%	1.0%
	Exogenous Parameters	Population Growth Rate	3.74	3.52
		Incremental Capital Output Ratio	5.5	5.0
		Export Growth Rate	4	4
		Import Growth Rate	4	4

Table 2-2-2 Projection of Kenyan Economy

(UNit: K£ million, in 1981 constant price)

Calendar Year	GDP at m.p.	GDP at Factor Cost	Distribution by Sectors			Capital Formation	Source of Investment	
			Agri-culture	Manufac-turing	Other Sectors		Domestic Savings	Foreign Funds
	Kb million							
1981	3,039	2,597	792	342	1,463	858.8	511.9	346.9
1984	3,355	2,886	899	396	1,591	739.0	494.5	244.5
1985	3,508	3,018	937	416	1,665	813.4	520.0	293.4
1986	3,683	3,169	978	436	1,755	883.9	547.8	336.1
1987	3,864	3,335	1,020	458	1,857	939.2	577.8	361.4
1988	4,095	3,523	1,063	481	1,979	1,003.3	610.9	392.4
1989	4,296	3,695	1,101	510	2,084	1,034.0	645.8	388.2
1990	4,506	3,876	1,141	540	2,195	1,063.8	682.5	381.3
1991	4,727	4,067	1,182	573	2,312	1,095.1	721.9	373.2
1992	4,959	4,266	1,225	607	2,434	1,127.0	763.9	363.1
1993	5,201	4,475	1,269	644	2,562	1,181.9	808.7	373.2
1994	5,457	4,695	1,306	682	2,707	1,215.4	856.6	358.8
1995	5,729	4,929	1,344	723	2,862	1,301.0	907.5	393.5
1996	6,015	5,175	1,383	767	3,025	1,366.1	962.4	403.7
1997	6,316	5,435	1,423	813	3,199	1,434.3	1,020.1	414.2
1998	6,632	5,706	1,464	861	3,381	1,506.0	1,081.6	424.4
1999	6,963	5,991	1,506	913	3,572	1,581.2	1,146.8	434.4
2000	7,312	6,291	1,550	968	3,773	1,660.2	1,215.9	444.3



3. Regional Development and Production

3.1 Agriculture

3.1.1 Trend of Agricultural Production

Agriculture accounted for 33.3% of Kenya's total GDP for 1981 (on a 1976 constant price basis), the largest portion of the economy; thus this is the most important sector in the country. Agricultural production attained a high growth rate of 10.2%, in 1977 when the nation enjoyed the coffee boom. But drought in 1979 and 1980 caused the real growth rate of agricultural output to be negative figures: −0.8% in 1979 and −1.3% in 1980. There was a recovery in 1981, when the growth rate of agricultural production was 6.2%, a level higher than the country's total GDP, 4.8%. Agriculture is still a driving force in the growth of the Kenyan economy.

The main farm products are maize, wheat, coffee, tea, sugarcane, sisal, pyrethrum and cotton. The combined output of these eight items accounted for 71% of the country's total agricultural production in 1981 (on a nominal price basis, Source: Statistical Abstract, 1981).

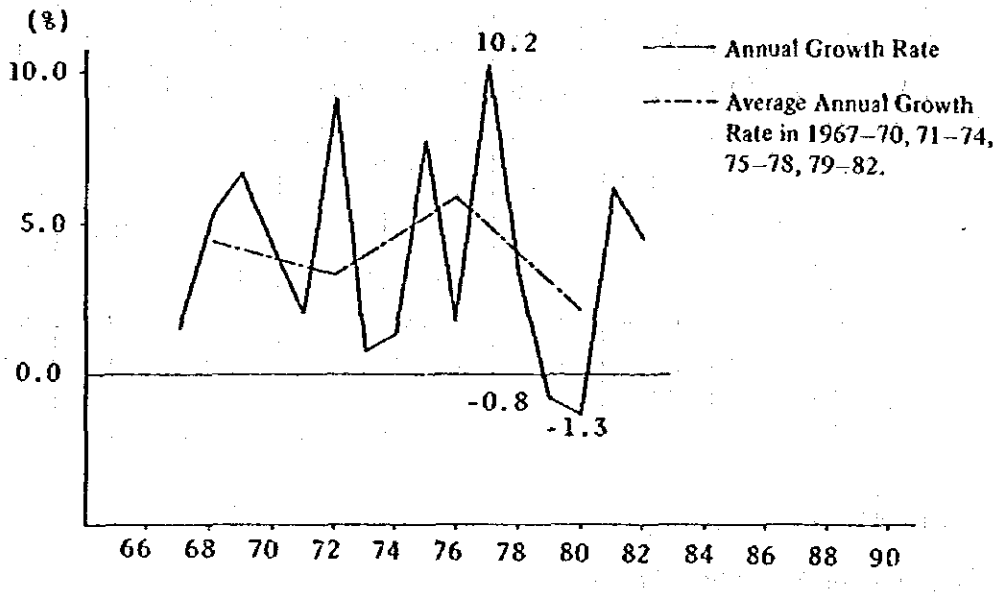


Fig. 3-1-1 Annual Growth Rate of G.D.P. in Agricultural Sector

3.1.2 Production of Principal Crops

As noted, Kenya's principal farm products are maize, wheat, coffee, tea, sugarcane, sisal, cotton and pyrethrum. Of these, coffee, tea, sisal and pyrethrum are for export, maize and wheat are main feed products and sugarcane and cotton are used as industrial raw materials.

Table 3-1-1 shows the output of main crops. Maize production enjoyed a favorable growth until 1977, but the drought in 1979 and 1980 reduced it greatly; the output of 1,604,000 tons in 1979 was below the level of 1975.

This caused a maize shortage in Kenya and foreign maize was imported in great quantity. The years 1981 and 1982, however, witnessed a recovery of maize production.

The production of wheat has shown a small gradual increase, but since 1979 has remained at a level of 200,000 tonnes without significant change. A favorable increase in output was observed for tea, coffee and seed cotton until 1977 or 1978, but no substantial growth has occurred in recent years. Coffee production suffered a decline in 1978 and 1979 after reaching a peak during the coffee boom of 1977; it began to increase in 1980 but has not recovered the 1977 level. The greatest production increase has been achieved by sugarcane with 2.3 times greater output during the six years from 1975 to 1981.

Table 3-1-1 Agricultural Production of Principal Crosp

('000t)

	1970	1975	1976	1977	1978	1979	1980	1981	1982*
Maize**	1,181	1,688	1,748	2,080	1,740	1,604	1,768	2,585	2,372
Wheat**	177	146	187	170	166	201	205	192	200
Rice	28.5	33.2	39.3	41.4	35.8	37.5	36.4	41.2	44.4
Sugarcane	1,451	1,654	1,653	1,888	2,349	3,148	3,972	3,822	4,042
Sugar	125	160	167	181	252	296	383	368	-
Pyrethrum	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2
Seed cotton	14.0	16.1	15.8	16.3	27.2	27.6	38.1	25.5	24.5
Sisal	43.9	43.6	33.6	32.2	31.5	36.5	46.9	41.3	51.8
Tea	41.1	56.7	62.0	86.3	93.4	99.3	89.9	90.9	92.7
Coffee	58.3	66.2	80.3	97.1	84.3	75.1	91.3	90.7	94.6

Source: "Statistical Abstract, 1978 and 1982", CBS
Note: * : Tentative
** : Data of MOA

3.1.3 Projection of Agricultural Production

Only 17% of the country's soil has a high or medium potential for cultivation. In the Central and Eastern Provinces, most arable land is already being utilised as farmland, and the remainder which is suitable for agriculture is used as pasture and for other purposes. Thus, future increase in agricultural production in this country depends greatly upon improved land productivity, advanced farming techniques and the use of semi-arid and arid land.

Table 3-1-2 shows a projection of farm production in 1988 and 2000 considering both restrictions on land productivity and acreage of cultivated land. A substantial increase is expected in the output of coffee and tea, while estimated growth in wheat production is not large. The output of seed cotton is anticipated to rise greatly. The future production of sugarcane is estimated on a smaller level as land suitable for this crop is also suited for

maize, to which it is supposed priority will be given since this is the principal food for the people of Kenya.

Table 3-1-2 Projection of Agricultural Production

('000t)

Agricultural Products	1981**	Average Annual Growth Rate	1988	Average Annual Growth Rate	2000
Maize	2,241*	4.0%	2,935	3.3%	4,350
Wheat	199*	2.2%	238	2.3%	313
Sugarcane	3,670	1.6%	4,100	1.5%	4,905
Seed cotton	30	8.0%	53	3.3%	99
Coffee	87	4.6%	120	1.9%	150
Tea	91	3.7%	117	3.2%	170
Sisal	46	2.8%	56	2.8%	78
Other	3,620	4.1%	4,801	3.5%	7,234
Total	9,984	3.2%	12,420	2.8%	17,299

Note: * : Average Production during 1980–1982.
** : Source: Data of Ministry of Agriculture

3.1.4 Agricultural Development Programmes

Potential farmland is concentrated along the basin of the Tana River and the Athi River, in the Kerio Valley and around Lake Victoria. Table 3-1-3 is a summary of the irrigation potential and proposed development projects in these regions. Development of the Bura area has already been started, while the project in the lower Tana area will be inaugurated before long.

Table 3-1-3 Irrigation Potential Area and Proposed Implementation Schedule

Area		Irrigation Scale (ha)	Proposed Implementation Schedule
Athi River Basin	Kibwezi	13,200	Phase I 87/88~90/91 Phase II 91/92~93/94
	Taita/Taveta	3,780	84/85~91/92
	Muka/Kukuu	500	n.a.
	Sabaki	15,000	as irrigation potential area
Tana River Basin	Thanantu Valley	6,500	Phase I 82/83~91/92 Phase II n.a.
	Rubingazi	3,600	82/83~91/92
	Bura West	6,700 6,000	Phase I Phase II
	Lower Tana	10,000 6,800	Phase 82/83~92/93 Phase II n.a.
Kerio Valley	Baringo	2,391	as irrigation potential area
	Elgeyo Marakwet	2,750	"
	West Pokot	2,485	"
	Turkana	11,510	"
Victoria Lake Basin	Nzoia	65,000	"
	Yala	15,000	"
	Sondu/Kiriu/Kibos	60,000	"
	Kuja/Migori	25,000	"
	Mara	20,000	"
	Other	15,000	"

Source: "Forward Planning 1982 – 1992", T&ARDA
"General Development Plan for the Kerio Valley Basin", KVDA.
"Five Year Development Plan 1983–1988", LBDA

3.2 Mining

3.2.1 *Present State of Mineral Production*

Kenya's principal mineral products are soda ash and fluorspar. As Table 3-2-1 shows, the output of soda ash was roughly 157,800 tons in 1981, while that of fluorspar was 90,100 tons; these two products accounted for 75% of the nation's total mineral production that year. Almost all soda ash produced is exported, although a portion is consumed at glass works in the country. Virtually all of the fluorspar is sold to other countries.

Table 3-2-1 Quantity and Value of Mineral Production, 1978–1982

Tonnes

Mineral	1978	1979	1980	1981	1982[1]
Soda Ash	-	-	203,768	157,870	161,310
Fluorspar	-	-	93,378	90,099	88,726
Salt	-	-	48,796	27,796	26,823
Limestone Products[2]	-	-	37,658	33,063	26,646[3]
Other	-	-	35,394	20,052	4,475[3]
Total	-	-	418,994	328,880	(307,980)

Note: 1) Tentative
2) Excluding limestone used as input into cement product.
3) Partial data reflecting production of reporting establishments only.
Source: "Economic Survey 1983", CBS

3.2.2 Projection of Mineral Production

Soda ash is produced by the Magadi Soda Company whose production capacity stands at 200,000 tonnes per year at present. Programs are under way to expand the international market for soda ash through improvement in its quality, and the production of this mineral will increase in the future. By 1985 it is planned to boost the production capacity to 300,000 tonnes per annum.

There will no substantial production increase in fluorspar for some time to come. But fluorspar mines are being developed and the output of this product is expected to show major growth after 1990.

Based on these assumptions, Table 3-2-2 shows the estimated production of soda ash and fluorspar in the future.

Table 3-2-2 Projection of Principal Mineral Production

('000t)

	1981	1988	1993	2000
Soda Ash	158	360	440	600
Fluorspar	91	116	210	290

3.3 Manufacturing Industries

3.3.1 Present State

As Table 3-3-1 shows, Kenya's GDP growth in manufacturing industries attained a peak annual average rate of 10.3% between 1970 and 1974. Since that, however, the growth figure has declined gradually: 6.7% during 1974 and 1978 and 5.1% during 1978 and 1982.

Table 3-3-1 Average Annual Growth Rate of GDP in Manufacturing Sector

(%)

	GDP Total	GDP in Manufacturing Sector
1966-1970	6.4	8.3
1970-1974	5.7	10.3
1974-1978	5.6	6.7
1978-1982	4.0	5.1

Source: 'Statistical Abstract", CBS

Table 3-3-2 lists the gross products of the manufacturing sector by type of industry. When we divide this sector roughly into industries utilising domestic resources and those using imported resources or intermediate products, the former account for 62% of the total gross products of the manufacturing sector. The food industry accounts for the major portion, but recently the textile sector has shown substantial growth. In the latter type of manufacturing industries, petroleum products, electrical equipment, transport equipment and metal products are the principal ones. Of these, the gross products of electrical equipment and metal products suffered a negative growth from 1978 to 1981.

Table 3-3-2 Manufacturing Products and Growth

Industry	Quantity Index of Manufacturing Production 1976=100				Average Annual Growth Rate(%) 1978-1981	Gross Product 1981 (K£ 000)
	1978	1979	1980	1981		
Food Manufacturing *	106.0	110.5	110.7	115.8	2.99	73,835
Beverages and Tobacco *	128.9	131.6	135.1	146.4	4.33	36,363
Textiles *	140.3	152.5	175.0	213.0	14.93	26,948
Clothing *	205.4	234.2	218.3	258.5	7.97	9,408
Leather and Footwear *	115.0	100.4	94.6	89.3	-8.09	7,095
Wood and Cork Products *	121.2	130.1	135.0	121.5	0.08	7,652
Furniture and Fixtures *	94.0	58.0	54.2	56.0	-15.86	4,019
Paper and Paper Products *	144.9	156.2	188.5	195.1	10.42	16,844
Printing and Publishing *	157.2	214.7	240.0	222.7	12.31	17,643
Basic Industrial Chemicals	127.1	147.2	174.6	198.0	15.92	10,804
Petroleum and Other Chemicals	128.6	136.5	161.5	167.6	9.23	25,082
Rubber Products	123.0	182.7	192.5	206.6	18.87	9,502
Plastic Products	179.0	196.7	207.7	225.4	7.99	5,198
Clay and Glass Products *	239.2	246.9	289.9	233.4	-0.81	1,646
Non-Metallic Minerals *	112.6	115.5	124.4	125.9	3.79	8,414
Metal Products	123.6	134.9	129.4	107.3	-4.60	23,906
Non-Electrical Machinery	100.0	97.4	123.8	135.9	10.77	2,137
Electrical Equipment	159.5	152.5	157.8	145.3	-3.06	24,757
Transport Equipment	574.7	642.6	658.6	794.9	11.42	24,585
Miscellaneous Manufactured Products	98.2	124.4	137.6	108.2	3.29	3,009
Total Manufacturing	130.5	140.4	147.7	155.1	5.93	339,120

* Industries utilising domestic resources
Source: "Statistical Abstract, 1982", CBS

Table 3-3-3 Quantity of Principal Manufactured Products

tonnes

	Unit	1979	1980	1981
Meat and Dairy Product	1000t	258.6	200.6	278.2
Canned Vegetables, Fish Oils and Fats	"	128.1	117.7	115.8
Grain Mill Products	"	437.1	560.1	631.0
Sugar and Confectionary products	"	392.9	513.8	497.3
(Sugar)	"	(295.9)	(383.4)	(367.6)
Miscellaneous Foods	"	219.0	183.0	226.8
Beverages and Tobacco	"	455.9	456.0	497.7
(Beer)	"	(212.7)	(232.4)	(248.3)
(Mineral Water)	"	(181.4)	(149.6)	(171.8)
Textiles (Fabrics)	1000m^2	63,450	64,764	80,077
Clothing	1000doz	789	765	883
Leather Products and Footwear	t	56	116	115
	1000m^2	5,056	5,599	4,365
	1000No.	121	112	161
	1000PA	1,877	1,602	1,693
Wood and Cork Products	1000m^3	530	496	398
Paper and Paper Products	1000t	81.5	84.7	80.2
Rubber Products	1000 No	7,617	6,646	8,774
Plastic Products	t	6,998	7,204	7,979
	1000 No	877	594	312
	1000 PA	1,009	1,316	1,532
Non-Metallic Mineral Products (Cement)	1000t	1,147.7	1,279.9	1,280.3
Metal Products	1000t	168.5	188.0	165.8
	1000 No	226	518	459
Electrical Machinery	1000 No	13,938	15,262	14,668

Source: Central Bureau of Statistics

3.3.2 Projection of Industrial Production

The major goal of future industrial measures in Kenya is expansion in domestic production and reduction in imported products. One important theme is to develop industries using domestic resources: industries such as paper, textile and cement have great potential in the years ahead. On the other hand, those industries utilising overseas resources or intermediate products are not expected to show substantial growth for the time being due to, among other factors, import restrictions. But as Kenya's foreign reserve situation improves, these sectors will make great progress.

The following two new industries will be established in the future:

(1) Fertiliser plant: with 1985 as the target year, a fertiliser plant having a capacity of 200,000 tonnes per year is planned in the Mombasa area.

(2) Steel plant: A steel plant is also planned in the Mombasa area and, according to the program, will start partial operation in 1990 and by 2000 will put out 835,000 tonnes per year.

Including the above, projected gross products of the manufacturing sector by industrial categories are as shown in Table 3-3-4.

Table 3-3-4 Projection of Manufacturing Sector Production

	1981 (K£000)	Average Annual Growth Rate	1988 (K£000)	Average Annual Growth Rate	1993 (K£000)	Average Annual Growth Rate	2000 (K£000)
Food Beverages	110,198	4.3%	147,967	3.6%	176,589	2.9%	215,710
Textiles Clay and Glass Non Metallic Material	37,008	5.0%	52,074	6.0%	69,687	6.0%	104,783
Paper	16,844	10.0%	32,824	5.0%	41,893	5.0%	58,948
Clothing Wood Furniture	21,079	4.2%	28,114	4.9%	35,711	5.0%	50,249
Fertilizer*	-	-	4,650	3.6%	5,549	2.9%	6,778
Steel*	-	-	-	-	15,000	-	30,000
Petroleum	25,082	2.2%	29,209	2.6%	33,209	3.0%	40,843
Other	128,909	3.5%	163,575	7.5%	235,822	8.4%	415,106
Total	339,120	4.4%	458,413	6.0%	613,460	6.0%	922,417

*: Estimated Gross Products

4. Tourism

4.1 Review of Tourism

4.1.1 Visitors

Tourism provides an important means for foreign exchange income. The number of external passengers handled at Nairobi and Mombasa airports was 484 thousand in 1980, as compared with 263 thousand in 1972. This amounts to an average annual growth rate of 7.9% over the period (see Table 4-1-1).

Table 4-1-1 Tourism in Kenya, 1972–1981

	1972	1980	1981	Annual Growth Rate p.a.
External Traffic Handled at Nairobi and Mombasa Airports (millions)	263.2	484.3	-	7.9%
Passenger kilometers carried by Kenya Airways (millions)	-	1,018.4	968.4	-
Tourist Expenditures (K£ million)	27.3	82.5	90.0	16.1%
Hotel Bends Occupied ('000 bednights)	2,490 (1,718)	4,717 (3,420)	4,691 (3,433)	8.3% (8.9)

Source: Statistical Abstract

Tourist expenditures increased from 27.3 K£ million in 1972 to 82.5 K£ million in 1980. Foreign exchange earned from tourism amounts to 3% of GDP, equivalent to 32% of the oil import payments.

About 95% of the visitors arrive by air, as shown in Table 4-1-2, making air transport very important for tourism.

Table 4-1-2 Tourism and Air Transport

Year	Arrivals by Air (persons)	Total Arrivals (persons)	Hotel Rooms and Beds		
			Rooms Available ('000 nights)	Beds Available ('000 nights)	Stay (days)
1969	248,241	419,714	1,804 (61)	3,252 (50)	8.5
1970	288,417	472,550	2,120 (61)	3,882 (49)	8.8
1971	340,913	532,086	2,275 (64)	4,215 (52)	9.3
1972	366,318	551,545	2,675 (60)	4,980 (50)	11.1
1973	383,532	499,649	3,123 (58)	5,855 (48)	11.4
1974	379,680	485,660	3,439 (57)	6,414 (46)	11.6
1975	413,700	511,380	3,505 (59)	6,584 (49)	12.9
1976	440,360	552,790	3,707 (62)	6,983 (51)	12.5
1977	371,690	415,560	3,758 (65)	7,028 (35)	14.5
1978	366,450	423,340	3,964 (64)	7,358 (54)	14.2
1979	392,750	435,230	4,346 (63)	8,075 (54)	15.6
1980	411,069	433,672	4,418 (66)	8,325 (57)	15.7
1981	386,540	408,340	4,467 (65)	8,526 (55)	15.0

( ): occupancy (%)
Source: Statistical Abstract -- 1982

The number of hotel rooms available and occupied has increased with the increased number of foreign tourists. Hotel beds occupied increased from 2,490 thousand bednights in 1972 to 4,691 thousand bednights in 1981 with the average annual rate of 8.9%.

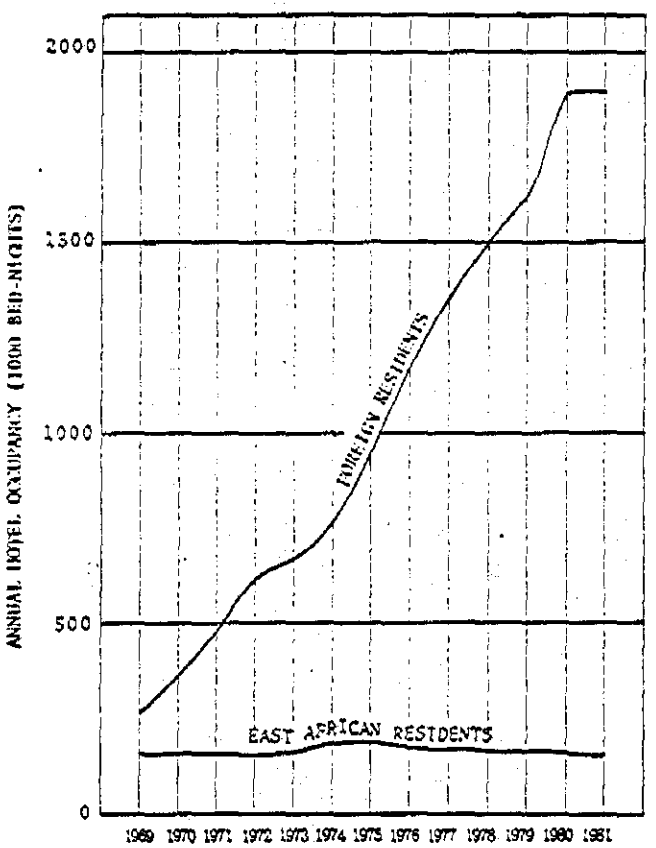
Hotel beds occupied by area are shown in Table 4-1-3; the rapid growth of those occupied along the coastal beach area is notable. Of the total bednights occupied, foreign visitors accounted for 73% which is completely in pace with the increase in the number of passengers handled at Nairobi and Mombasa airports.

Hotel capacity along the coasted beach area increased by 27% from 1978 to 1980, as shown in Table 4-1-4, beds occupied in those hotels have shown a remarkable increase in foreign gvests. (see Fig. 4-4-1).

Table 4-1-3 Hotel Beds Occupied by Area, 1971–1981, 000 Bednights

	1971	1979	1980	1981	Annual Growth Rate (1971-80) (%)
Nairobi High class	430.5	611.0	609.8	586.9	3.94
Other	557.7	884.2	904.3	896.0	5.52
Coastal-Beach	627.6	1809.6	2055.3	2637.1	14.09
Other	187.8	305.4	345.4	344.3	7.00
Coast-Hinterland	81.4	120.5	134.9	131.3	5.77
Masailand	86.1	161.8	193.5	193.3	9.41
Central	165.3	287.0	318.4	343.8	7.55
Other	56.1	158.6	155.6	162.3	12.00
Total	2192.5	4338.1	4717.3	4691.0	8.89
Foreigners	1431.9	3055.1	3420.3	3443.4	10.15
E.A. Residents	760.6	1283.0	1297.0	1247.6	6.11
Total Beds Available	4215.3	8043.5	8324.9	8525.5	7.85
Occupancy rate (%)	52.0	53.9	56.7	55.0	-

Fig. 4-1-1 Coast Beach Hotel Beds Occupied by Foreign Residents and East African Residents and East African Residents 1969–1981



Source: Control Bureau of Statistics
"Statistical Abstract Table 36"

Table 4-1-4 Kenya Coast Hotel Capacities (beds)

Area	1978	1980	Change (%)
Malindi Group			
Malindi	875	1,239	
Watamu	598	598	
Lamu	180	180	
Sub-Total	1,653	2,018	+22%
Mombasa Group			
Kilifi	88	168	
Mombasa North Coast	3,301	4,291	
Mombasa South Coast	1,604	1,959	
Sub-Total	4,993	6,418	+29%
Total	6,646	8,435	+27%

Source: Central Bureau of Statistics

Foreign visitors by country of residence in 1981 were 352 thousand from Europe, 40 thousand from North America, and 25 thousand from Asia, as shown in Table 4-1-5. Of the total 352 thousand visitors in 1981, 61% were Europeans.

Table 4-1-5 Visitors to Kenya 1971--1979 ('000s)

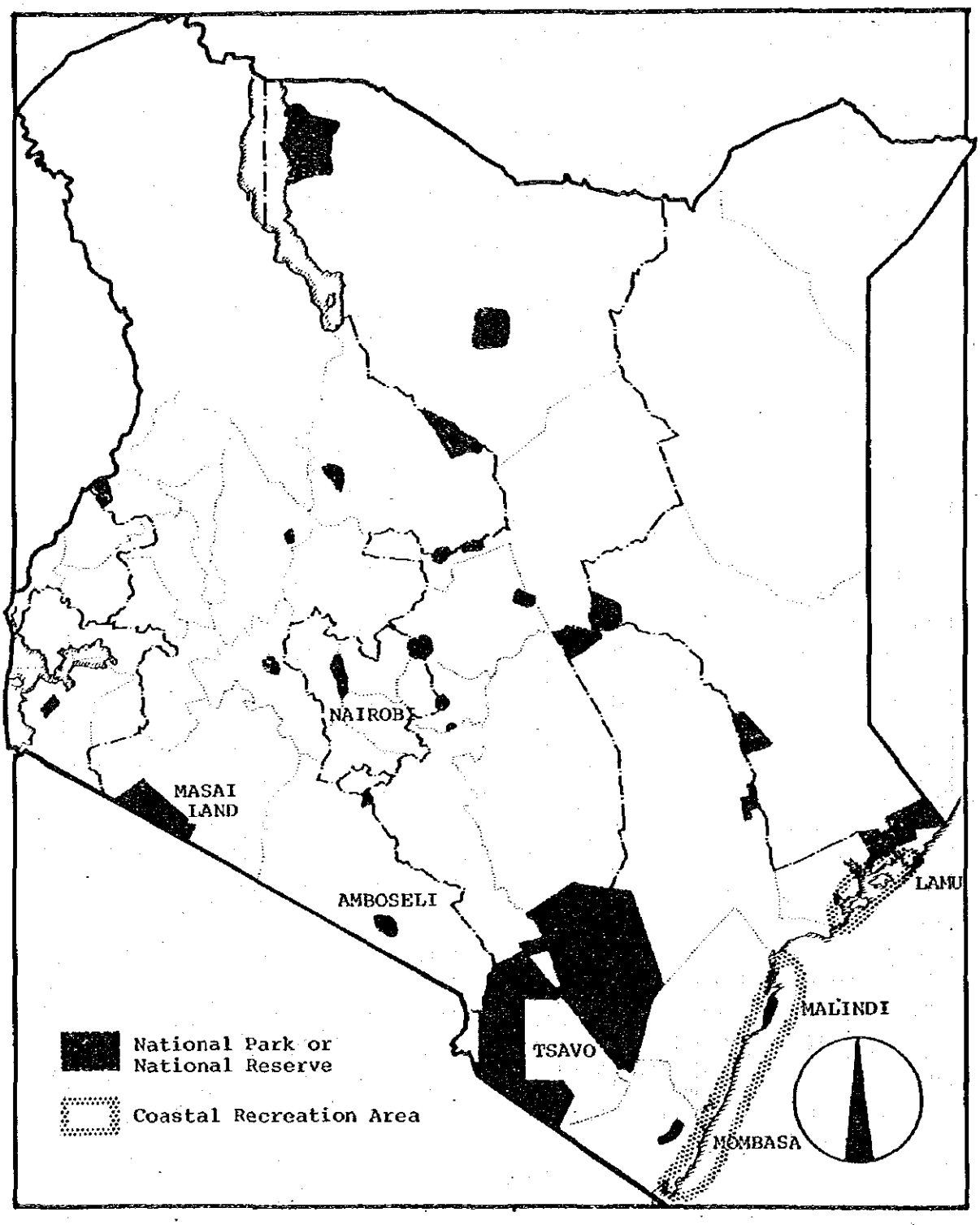
Country of Residence	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Europe											
-United Kingdom	31.9	34.4	40.3	36.5	39.2	40.8	41.0	48.1	49.4	49.9	44.3
-West Germany	25.1	33.4	33.5	29.7	34.2	39.9	50.0	56.0	62.0	76.2	74.3
-Italy	9.9	12.0	15.0	15.7	15.5	17.5	20.8	18.1	18.0	21.6	21.9
-France	6.2	9.6	10.4	8.8	10.0	15.5	14.4	15.7	16.0	15.6	15.0
-Switzerland	10.6	14.7	16.0	17.5	17.5	19.2	24.7	25.0	24.8	27.3	26.4
-Other Europe	19.0	21.4	24.0	26.4	25.5	33.9	40.7	36.4	32.4	36.6	31.6
-Total	103.7	125.5	139.2	134.7	142.9	166.3	191.5	200.3	202.5	227.2	213.5
North America											
-USA	32.2	39.0	38.5	32.5	32.1	32.5	28.3	25.9	31.0	30.8	34.4
-Canada	3.1	3.7	4.0	3.4	3.9	3.7	4.7	4.6	4.9	5.0	5.4
-Total	35.3	42.7	42.5	36.0	36.0	36.2	33.5	31.5	35.9	35.8	39.8
Asia											
-India	9.1	7.4	6.0				7.0	6.3	6.6	6.9	6.2
-Japan	2.5	3.3	3.3				4.2	4.6	4.1	4.3	5.0
-Israel	2.5	2.4	1.9				1.2	2.1	3.0	3.1	2.3
-Other Asia	5.0	5.1	5.9				8.3	12.0	12.0	12.8	11.9
-Total	19.2	18.8	17.6	17.1	20.0	21.7	21.2	25.5	25.7	27.1	25.4
Other (Inter-continental)											
-Australia/New Zealand	4.0	4.3	4.0				3.9	3.5	3.5	4.4	2.3
-All others	2.2	1.8	1.3				1.9	2.2	2.8	3.5	9.8
-Total	6.2	6.1	5.8	6.3	6.5	7.0	5.8	5.7	6.3	7.9	12.2
Subtotal (Intercontinental)	164.4	193.1	205.1	194.1	205.4	231.7	252.1	263.0	270.5	298.0	290.9
East Africa											
-Uganda	47.0	33.5	19.2	23.1	23.5	22.7	9.5	3.5	14.3	10.4	5.6
-Tanzania	58.5	85.1	77.0	61.5	57.4	68.6	26.2	15.0	9.3	3.5	6.4
-Total	115.5	118.6	96.2	84.5	80.9	91.3	35.7	23.5	24.7	13.9	12.0
Other Africa											
-Zambia	7.7	9.4	10.7	11.5	9.8	8.4	10.0	8.7	9.1	7.6	5.6
-Other (Africa)	18.2	23.6	25.7	25.5	27.5	28.5	31.6	38.3	43.0	43.1	43.8
-Total	25.9	33.0	36.4	37.0	37.3	36.9	41.5	47.0	52.1	50.7	49.4
Subtotal (Africa)	141.4	151.6	132.6	121.6	118.2	128.2	77.3	70.5	76.8	64.6	61.4
Total Visitors	305.8	344.7	337.1	315.7	323.6	359.9	329.4	333.6	347.3	362.6	352.3

Source: Tourism Market Report 1980.

4.1.2 Resources

Most of the important tourism resources and coastal recreational areas are located in the coastal zone (see Figure 4-1-2). Therefore this area is recognised as one of potential tourism development.

Figure 4-1-2 Tourism Areas



Nairobi National Park has had the highest number of visitors among the national parks, however, the growth rate is not high (see Table 4-1-6).

Among other frequently visited national parks, Meru, Simba Hills and Tsavo-West had a high visitor growth rate. A relatively high increase was also observed in Masai-Mara and Amboseli National Parks.

Table 4-1-6 Visitors to National Parks (1971–1981)

	1971	1979	1980	1981	Annual Growth Rate (1971-1981)
Aberdare	39,681	44,892	39,551	43,923	0
Lake Nakuru	59,059	72,399	88,720	91,707	4.63
Marine	26,677	48,705	38,019	47,135	4.01
Meru	5,514	25,867	22,443	23,413	16.88
Mt. Elgon	1,398	3,134	3,557	2,907	10.33
Mt. Kenya	5,152	8,260	7,358	8,369	4.03
Nairobi	177,869	108,308	124,554	147,801	-3.88
Simba Hills	8,248	14,000	15,809	16,265	7.49
Tsavo East	47,042	55,081	60,589	62,588	2.85
Tsavo West	71,181	97,832	117,832	113,755	5.76
Subtotal	441,822	478,478	518,432	557,832	1.79
Amboseli	-	80,905	82,128	93,477	-
Kisite Mpunguni	-	2,378	3,911	4,761	-
Marsabit	-	2,701	2,740	2,217	-
Saiwa Swamp	-	1,350	1,352	1,983	-
Total	-	565,812	608,563	660,301	-

Source: Statistical Abstract

4.1.3 Promotion

The overseas activities for tourism promotion are now conducted by two different organisations -- the Ministry of Tourism and Kenya Airways. However, these two organisations do not now have a close working relationship and an effective tourism promotion structure which coordinates their roles should be established, taking into consideration the management strategies of Kenya Airways.

4.2 Forecast of Tourism Activities

4.2.1 Forecast of Visitors to Kenya

Tourists to Kenya are projected to increase at the annual growth rates shown in Table 4-2-1, taking the regional forecast of world economy by OECD and other related reports into consideration.

Table 4-2-1 Visitors to Kenya (Annual Growth Rate)

(%)

	1981-1985	1985-1990	1990-1995	1995-2000
Europe	4.5	4.5	5.0	5.0
North America	4.5	4.5	5.0	5.0
Asia	7.0	7.0	6.0	6.0
Other	10.0	10.0	8.0	2.0
(subtotal)	5.0	5.0	5.3	5.3
Africa	7.0	7.0	6.0	6.0
Total	5.3	5.4	5.4	5.5

Note: Based on the "Nairobi Airport Traffic Pavement 1981-1996"

On this growth rate, foreign tourists are estimated to be 565 thousand in 1990 and 961 thousand in 2000.

Table 4-2-2 Projected Visitors

('000)

Area of Residence	1981	1985	1990	1995	2000
Europe	213.5	254.6	317.2	404.8	516.7
North America	39.8	47.5	59.2	75.6	96.4
Asia	25.4	33.3	46.7	52.5	83.6
Other	12.2	17.9	28.8	42.3	62.2
(Subtotal)	290.0	353.3	451.9	585.2	758.9
Africa	61.4	80.5	112.9	151.1	202.2
Total	352.3	433.8	564.8	736.3	961.1

4.2.2 Forecast of Visitors to Malindi Area

It is very difficult to accurately forecast tourist numbers to the Malindi Area since there is little available data. Thus, in this study, previously projected figures are used (Table 4-2-3).

Visitors to the Malindi Area are projected to increase from 43 thousand in 1981 to 104 thousand in 2000.

By 1990 one charter flight per week by wide body jet aircraft may be sufficient to handle the more than 60 thousand foreign visitors.

Table 4-2-3 Forecast of Tourists to Malindi Area

Year	Foreign Visitors Europe/N. America	Foreign Tourists	
		Beach	Malindi Area
1981	253,300	136,000[1)]	43,100[2)]
1985	302,100	169,481	51,398[2)]
1990	376,400	211,204	64,051[2)]
1995	480,400	269,555	81,747[2)]
2000	613,100	344,028	104,332[2)]

Note: 1) Estimated by Bed Occupancy and Average Stay per Person
2) Malindi Airport Feasibility Study

PART IV. FORECAST OF TRANSPORT DEMAND

1 . Outline

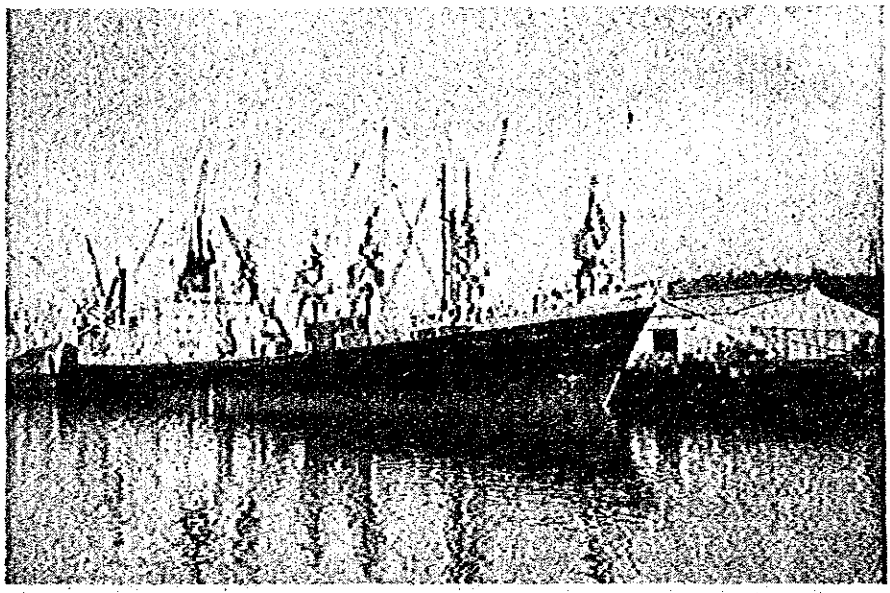
2 . Macroscopic Traffic Demand Forecast

3 . Land Traffic

4 . Oil Transport

5 . Ports and Maritime Transport

6 . Air Traffic



1. Outline

1.1 Objective

To objective of the transport demand forecast is to make a coordinated prediction for future transport needs in each transport mode and also to clarify transport facilities and services necessary for the future.

The transport demand herein refers to the years 1988 and 2000.

1.2 Framework

The framework for the forecast procedure is as indicated in Figure 1-1-1. The procedure consists of three steps.

(Step 1) Preliminary Review:

Along with the survey of present transport demand, the demand trends based on future socio-economic framework in Part III are reviewed.

(Step 2) Macro Transport Demand Forecast:

Considering Kenya as a single zone, overall quantity of traffic flow in all directions with other areas is studied, including domestic, overseas, and landlocked nations' transport flow.

(Step 3) Micro Transport Demand Forecast:

Dividing the country into several zones, (1) generated traffic flow level, (2) traffic distribution, (3) modal distribution, and (4) sectional traffic level are estimated.

In Part IV, a macro forecast will be described in Chapter 2. A micro forecast will be explained in Chapter 3 and later for the following modes of transportation:

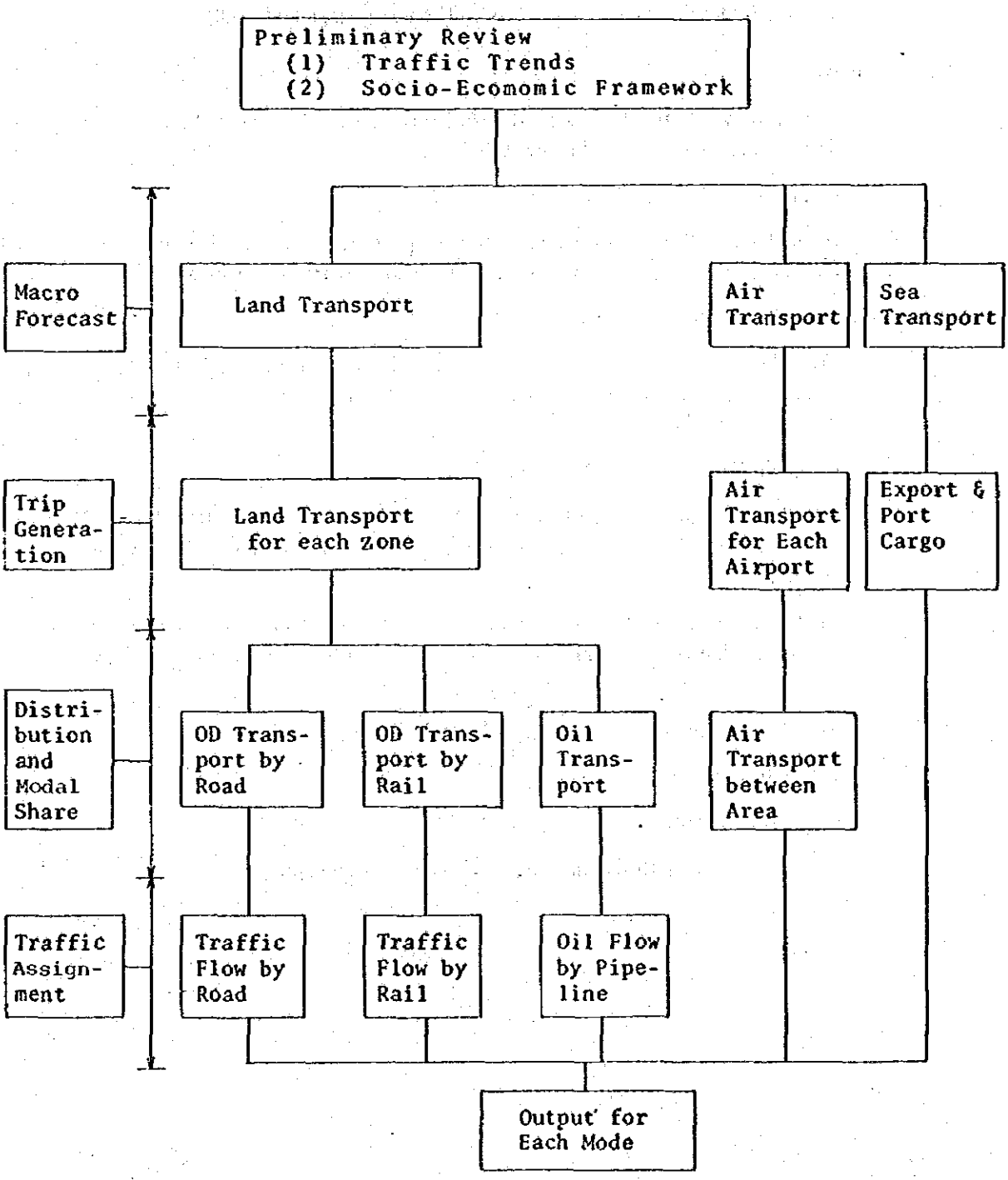
a) Land transport – railway, roads, and pipeline

b) Oil transport – pipeline

c) Port/Maritime – quantity handled by commodity

d) Air – international and domestic passenger transport

Fig. 1-1-1 Framework of Transport Demand Forecast



1.3 Scope

1.3.1 Target Years

1988 and 2000.

1.3.2 Zoning

In compliance with Kenya's district zonings, the country is divided into 41 zones, as indicated in Figure 1-1-2 and Table 1-1-1.

1.3.3 Commodity Classification

Nine commodity categories are used in the forecast of freight transported by land.

1. Maize
2. Wheat
3. Coffee
4. Tea
5. Cement
6. Sugar
7. Soda
8. Petroleum
9. Others

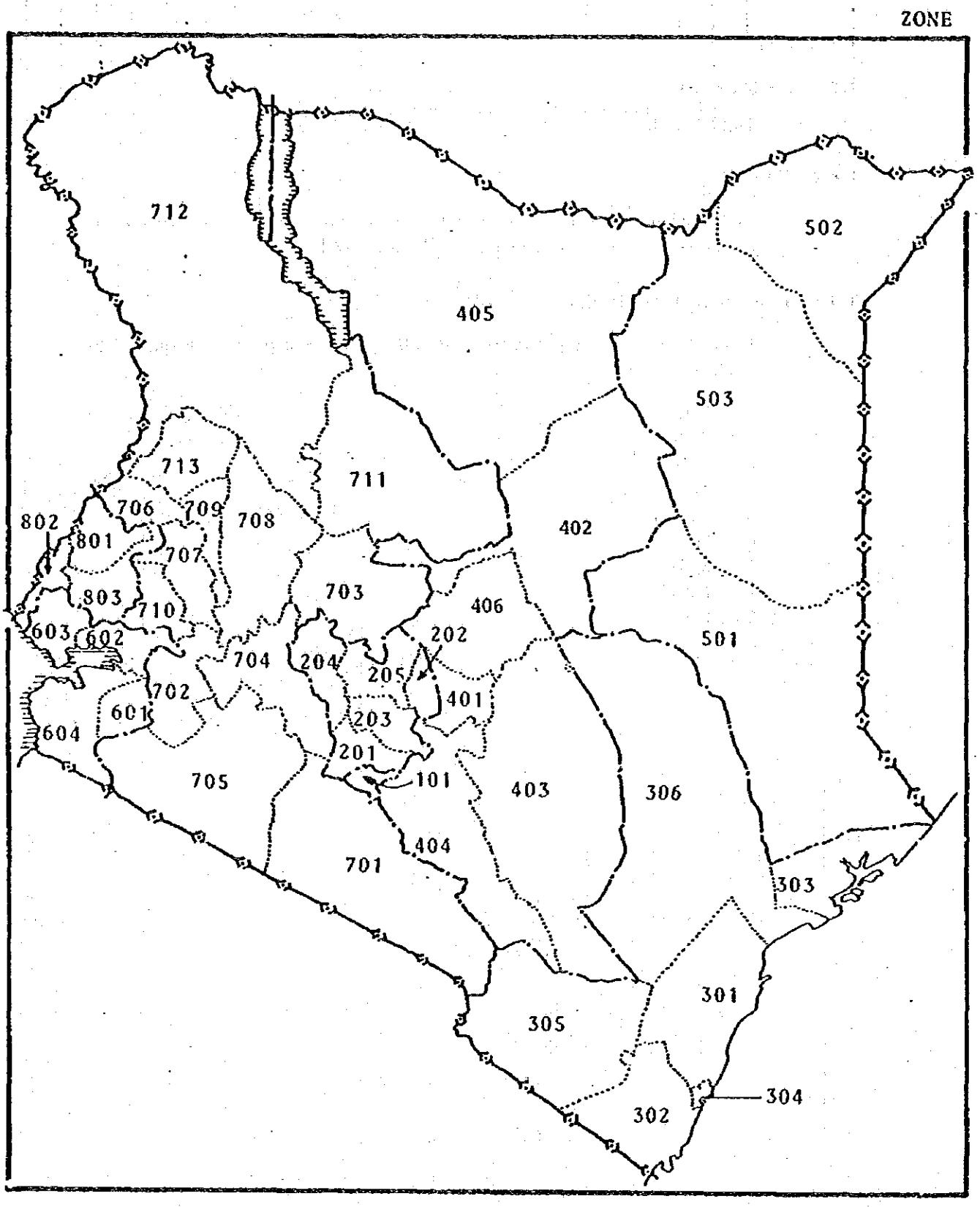


Fig. 1-1-2 Zoning: District by Code

Table 1-1-1 Population, Area and Density by Province and District, 1979

PROVINCE		DISTRICT		Population	Land Area Sq. Km	DENSITY PERSON/Sq.km
CODE	NAME	CODE	NAME			
1	NAIROBI	101	NAIROBI	827,775	684	1,210
	TOTAL			827,775	684	1,210
2	CENTRAL	201	KIAMBU	686,290	2,448	280
		202	KIRINYAGA	291,431	1,437	202
		203	MURANG'A	648,333	2,476	261
		204	NYANDARUA	233,302	3,528	66
		205	NYERI	486.477	3,284	148
	TOTAL			2,345,833	13,173	178
3	COAST	301	KILIFI	430,986	12,414	34
		302	KWALE	288,363	8,257	34
		303	LAMU	42,299	6,506	6
		304	MOMBASA	341,148	210	1,622
		305	TAITA/TAVETA	147,597	16,959	8
		306	TANA RIVER	92,410	38,694	2
	TOTAL			1,342,794	83,040	16
4	EASTERN	401	EMBU	263,173	2,714	96
		402	ISIOLO	43,478	25,605	1
		403	KITUI	464,283	29,388	15
		404	MACHAKOS	1,022,522	14,178	72
		405	MARSABIT	96,216	73,952	1
		406	MERU	830,179	9,922	83
	TOTAL			2,719,851	155,759	17

(CONTINUED)

PROVINCE		DISTRICT		Population	Land Area Sq. km	DENSITY Person/Sq.km
CODE	NAME	CODE	NAME			
5	NORTH EASTERN	501	GARISSA	128,867	43,931	2
		502	MANDERA	105,601	26,470	3
		503	WAJIR	139,319	56,501	2
	TOTAL			373,787	126,902	2
6	NYANZA	601	KISII	869,512	2,196	395
		602	KISUMU	811,958	2,093	388
		603	SIAYA	474,516	2,522	188
		604	SOUTH NYANZA	817,601	5,714	143
	TOTAL			2,973,587	12,526	237
7	RIFT VALLEY	701	KAJIADO	149,005	19,605	7
		702	KERICHO	633,348	3,931	161
		703	LAIKIPIA	134,534	9,718	13
		704	NAKURU	522,709	5,769	90
		705	NAROK	710,306	16,115	13
		706	TRANS-NZOIA	259,503	2,078	124
		707	UASIN-GISHU	300,766	3,378	89
		708	BARINGO	203,792	9,885	20
		709	ELGEYO MARAKWET	148,868	2,279	65
		710	NANDI	299,319	2,745	109
		711	SAMBURU	76,908	17,521	4
		712	TURKANA	142,702	61,768	2
		715	WEST POKOT	158,652	9,090	17
	TOTAL			3,240,402	163,884	19

(CONTINUED)

PROVINCE		DISTRICT		Population	AREA Sq. Km	DENSITY Person/Sq.km
CODE	NAME	CODE	NAME			
8	WESTERN	801	BUNGOMA	503,935	3,074	163
		802	BUSIA	297,841	1,626	183
		803	KAKAMEGA	1,030,887	3,495	294
	TOTAL			1,822,663	8,196	223
TOTAL IN KENYA				15,656,692	564,162	28

Source: Statistical Abstract, 1981

Comment: Population of Nyanza Province has been modified according to indications provided by the ministry of economic planning and development and further analysis by the study team

2. Macroscopic Traffic Demand Forecast

2.1 Structure of Freight Traffic Demand

Freight transport in Kenya may be roughly divided into three types.

(1) Domestic freight for transport within the country

(2) Import/export freight within the country

(3) Import/export freight passing through Kenya into landlocked countries

This freight flow can be summarised as in Figure 2-1-1. The macro forecast is made according to these freight flow classifications.

From \ To		Kenya	Foreign Countries		Total
			Landlocked Countries	Overseas Countries	
Kenya		Domestic Transport	Exports A	Exports B	Exports + Domestic Transport
Foreign Countries	Landlocked Countries	Imports A	———	Transit Exports	Transport coming into Kenya through the national boundary
	Overseas Countries	Imports B	Transit Import	----	Imports through ports
Total		Imports + Domestic transport	Transport going out from Kenya through the national boundary	Exports through ports	Total

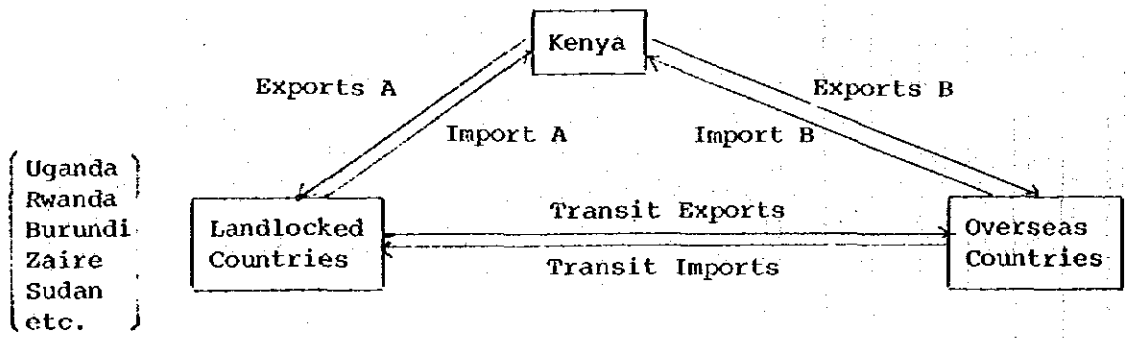
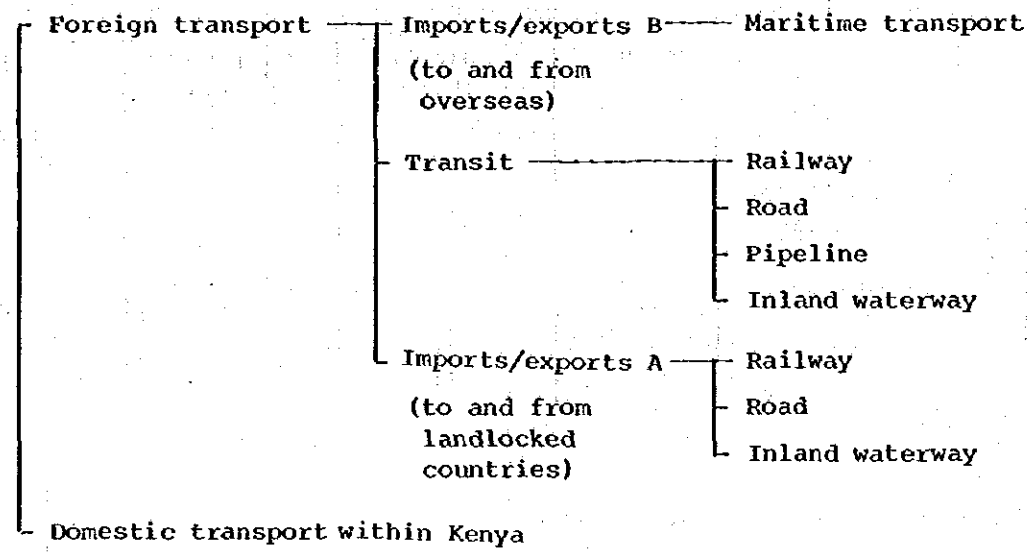


Fig. 2-1-1 The Structure of Freight Flow

Each type of freight flow corresponds to the following modes of transport.



2.2 Present Freight Traffic

Source materials related to the present freight flow are the quantity of freight handled at harbours (K.P.A. material), import and export freight quantity (M.D.F material), quantity of transport of rail freight (K.R material), and the results of the automobile OD survey that we conducted. If these data are sorted according to the freight classification as illustrated in Figure 2-1-1, the present freight flow can be assumed to be as in Table 2-2-1. The following features are included:

(1) Freight originating from Kenya and going through the boundary section between Kenya and the landlocked countries amounts to 584,000 tonnes, greatly exceeding the 190,000 tonnes coming in from landlocked countries.

(2) 30% of the freight to landlocked countries which passes through the common boundary section is transit imports, while most of that coming into Kenya from the landlocked countries is transit exports.

(3) Of Kenya's exported freight, 15% goes to its neighbours, while 85% is sent overseas. In contrast, almost 100% of its imports come from overseas countries and those from the landlocked countries are minimal.

Table 2-2-1 Present Freight Flow (1981)

('000t)

From \ To		Kenya	Foreign Countries		Total
			Landlocked Countries	Overseas Countries	
Kenya		13,410	410	2,299	16,119
Foreign Countries	Landlocked Countries	10	—	180	190
	Overseas Countries	4,506	174	—	4,680
Total		17,926	584	2,479	20,989

2.3 Forecast of Freight Traffic Demand

2.3.1 Method of Forecast

Forecast procedure is as indicated in Figure 2-3-1. Prediction is made for domestic freight quantity, Kenya's import/export freight quantity, and transit freight quantity, all of which compose the freight flow in the country. These are, in turn, examined according to commodity concerned.

Domestic freight quantity – quantity is predicted based on the growth rate of future agricultural, mining, and industrial production in Kenya (according to commodity).

Kenya's import/export freight quantity – future production and consumption levels for the principal commodities are estimated, and the excess and/or lack are calculated as import/export freight quantity. For other commodities, the future growth rate of domestic production was utilised for the prediction.

Transit freight quantity – future agricultural, mining, and industrial production growth in Uganda, Rwanda, Burundi, Sudan, and Zaire was evaluated for the forecast of transit import/export freight.

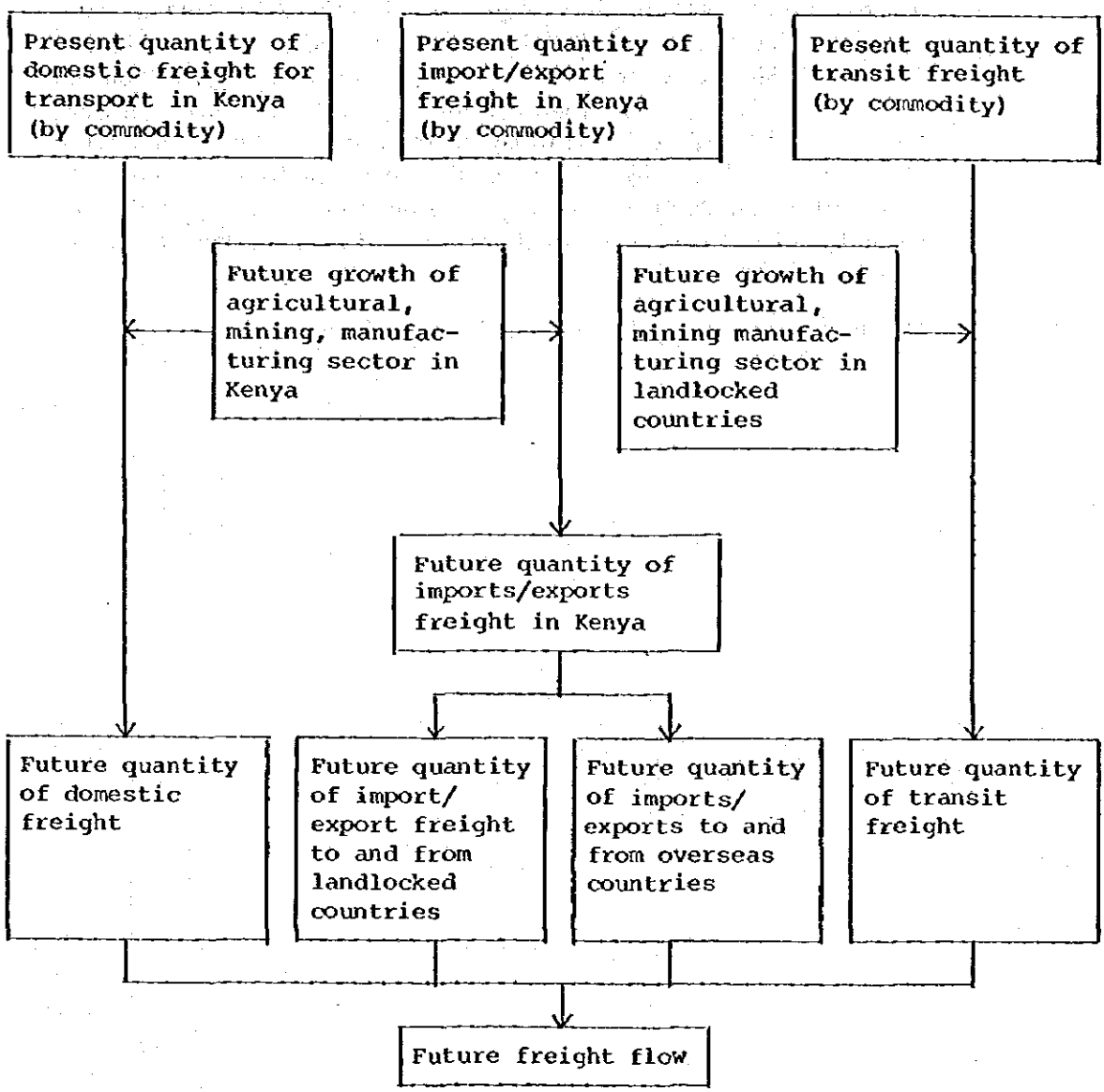


Fig. 2-3-1 Projector Procedure of Future Freight Flow

2.3.2 Forecast Results

The forecast results for freight flow are shown in Table 2-3-1. Total freight is expected to increase from 20,989 thousand tonnes today to 26,566 thousand tonnes in 1988 (average annual growth rate, 3.4%) and to 45,455 thousand tons in 2000 (average annual growth rate, 4.6%). By type of freight flow, transit export is expected to grow considerably at 7.1% during the 1981 – 1988 period, followed by a 4.1% growth in domestic freight quantity. Between 1988 and 2000, Kenya's imports from abroad are expected to increase by 5.1%. The second highest growth can be seen in domestic freight quantity at 4.7%.

Details of these results will be discussed in later chapters.

Table 2-3-1 Forecasted Results of Macroscopic Freight Flow

('000 tonnes)

From / To / Year	Kenya			Landlocked Countries		Overseas		Total
	Kenya	Landlocked Countries	Overseas	Kenya	Overseas	Kenya	Landlocked Countries	
1981	13,410	410	2,299	10	180	4,506	174	20,989
1988	17,742	496	2,813	-	290	5,025	200	26,566
2000	30,635	762	4,181	-	470	9,094	313	45,455
Average Annual Growth Rate % (1981-1988)	4.1	2.8	2.9	-	7.1	1.6	2.0	3.4
Average Annual Growth Rate % (1988-2000)	4.7	3.6	3.4	-	4.1	5.1	3.8	4.6

3. Land Traffic

3.1 Review of Land Traffic

3.1.1 *Macroscopic Trend*

Freight transported by rail, road, and pipeline amounted to 11,016,000 tonnes in 1978, of which 893,000 tonnes were transit freight. The annual growth rate of domestic freight was 5.3% during the 1971–1978 period. However, the reduction of transit freight caused the overall rate to be 2.8%.

Road transport has shown the greatest growth rate of the three modes mentioned. Rail transport has seen a 3.6% rise in domestic freight but, due to the decline in transit transport, the overall quantity handled is about the same.

Value of output for road, rail, and pipeline is approximately at a 3:2:1 ratio.

For tonne/km for rail transport and vehicles/km for automobiles, growth rates during 1976–1981 have been 0.56% and 4.6% per year, respectively.

If international transit transport is omitted, the demand for freight transport may expand at the same steady pace as the GDP over the long term.

Table 3-1-1 Freight Transport and Modal Share

('000t)

	1971	1978	1980	Annual Growth Rate 1971-1978 (%)
Carried by				
Railway	4,246 (2,918)	3,942 (3,745)	4,467	-1.1 3.6
Road	4,857 (4,146)	6,200 (5,544)		3.5 4.2
Pipeline	0	834 (834)	1,200	-
Subtotal	9,103 (7,064)	11,016 (10,123)	-	2.8 5.3
Handled at				
Mombasa Harbour	5,571	6,067	7,506	1.2
Nairobi & Mombasa Airports	20.2	57.9	57.0	16.2
Subtotal	5,591.2	6,124.9	7,563.0	1.3

Notes: ( ) shows domestic freight demand.
These estimates are based on the Report "Study on the Road User Changes and Axle Load Limits" by DANIDA, 1981.

Table 3-1-2 Growth of Freight Transport by Railway and Road

	1976	1981	Annual Growth Rate 1976-1981 (%)
Value of Output by (1980 constant price)			
Railway (K£'000)	37,411	35,137*	-1.2
Road (")	73,691	89,547*	4.0
Pipeline (")	-	16,768*	-
Demand			
Railway (million tonnes/km)	2,179	2,241*	0.56
Road (million veh/km)	2,056	2,577	4.6
GDP (K£ million)	1,790.8	2,336.1*	5.5

* tentative

3.1.2 Present Road Traffic

According to the nationwide road transport census of March 1983 conducted for our survey, more than half of the 25,000 vehicles on the road are freight carriers. Passenger transport is done by buses, matatsu, and passenger cars. The quantity (persons/car) of bus and matatu is remarkably high, each serving a transport demand double that of a passenger car. Freight transport is done by large- and medium-sized freight vehicles, and the portion of total freight traffic volume by heavy vehicles is large.

Table 3-1-3 Summary of Road Transport in 1983

Type of Vehicle	Vehicles Used	Traffic Volume	Load/Veh.
Passenger:	(veh/day)	(passengers/day)	(passengers/veh)
Passenger Car	6,635	17,850	2.69
Matatsu	3,946	45,675	11.58
Bus	1,405	43,786	31.16
Subtotal:	11,986	107,311	8.95
Freight:	(veh/day)	(tons/year)	(tons/veh)
Small	7,016	1,086,782	0.42
Medium	4,879	6,254,811	3.51
Large	1,244	4,688,016	10.32
Subotal:1:	13,139	12,029,609	2.51
Total	25,125	-	-

Source: OD Traffic Survey (March, 1983)

In Kenya, transport quantity is concentrated on the route from Mombasa via Nairobi to the corridor leading to the boundary with Uganda. The three modes of road, rail, and pipeline handle freight transport in these regions. Another important flow passes the corridor west on Mt. Kenya from Nairobi via Thika and Nyeri to Nanyuki.

These corridors function to support activities important for the domestic economy, as well as serving as an international transport route into the land-locked countries via Kenya.

The present road traffic volume is shown in Figure 3-1-1, and average daily traffic (vehicles/day) is shown in Figure 3-1-2.

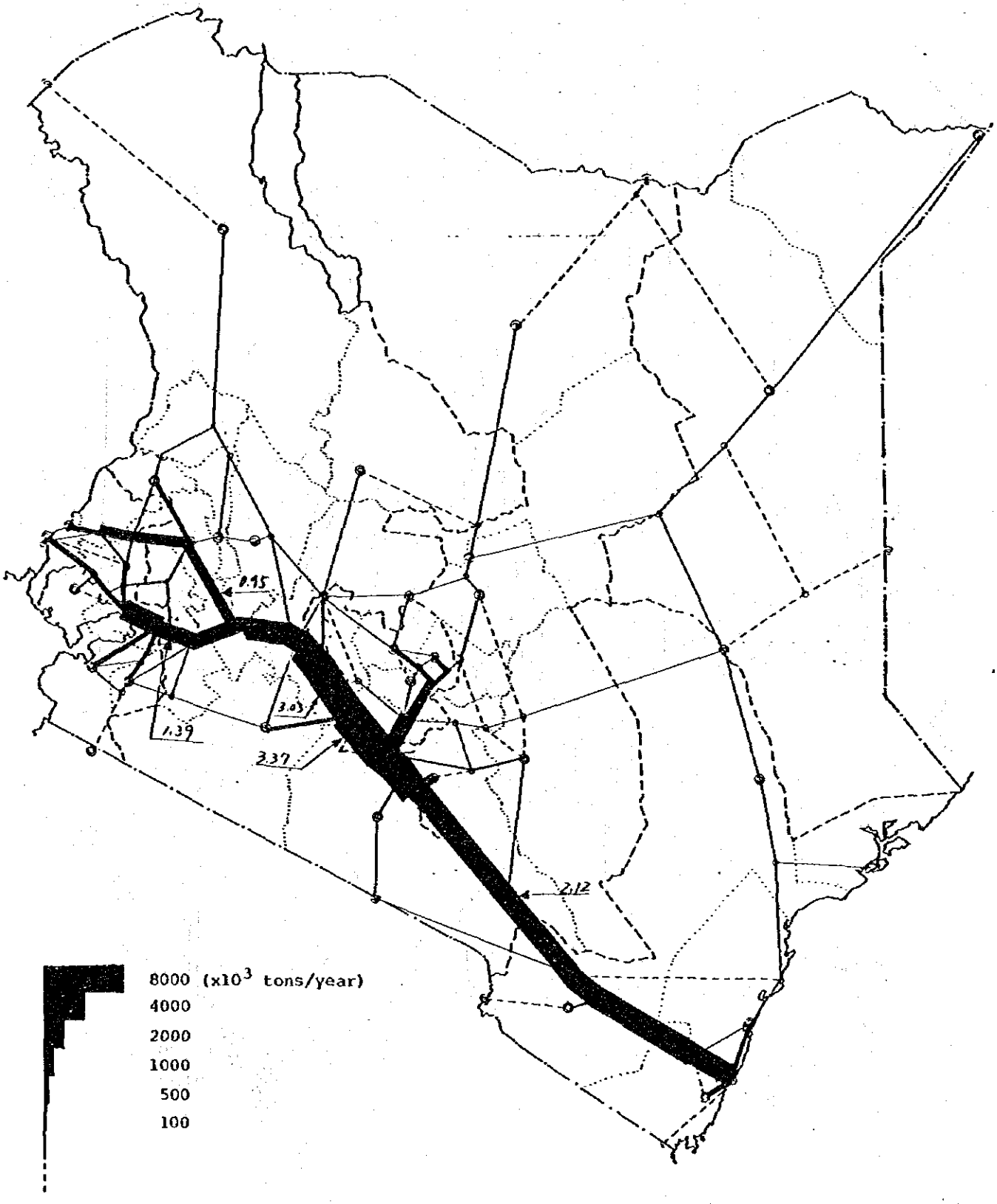


Fig. 3-1-1 Freight Traffic Volume on Roads (1983)

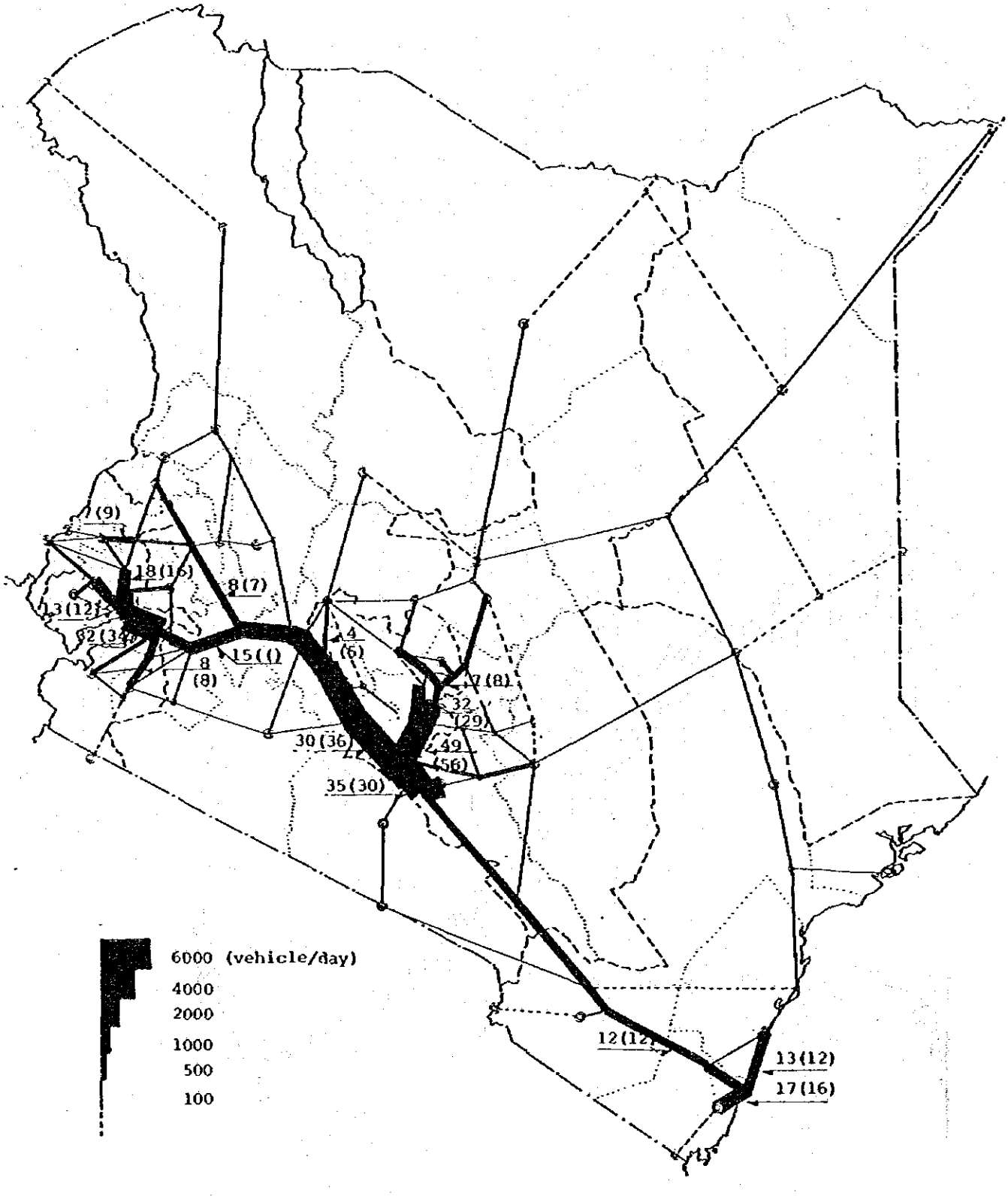


Fig. 3-1-2 Annual Average Daily Traffic, Vehicles day in 1983.

3.1.3 Present Railway Traffic

The transport demand for Kenya Railway is as follows:

	1979	1980	1981	1982
Freight ('000 tonnes)	3,853	4,464	4,438	4,473
(million tonnes/km)	1,998	2,281	2,245	2,307
Revenue (K£ million)	24.50	29.74	36.91	40.48
Passengers ('000)	1,832	2,401	2,356	2,279
Revenue (K£ million)	2.10	3.10	4.4	5.0

The features of rail transport are:

(1) Freight transport is of greater importance than passenger transport. (Revenue is proportionally 8 to 1)

(2) Average freight transport distance is more than 500 km, longer than for passengers which averages 300 km.

(3) Freight transport on the upward slope route from Mombasa to Nairobi is 1,260 thousand tonnes per year but is only 810 thousand tonnes in the opposite direction.

(4) The largest freight flow route is between Mombasa and Nairobi, followed by that between Mombasa and Nakuru.

(5) The route with the greatest passenger flow is Nairobi-Nakuru-Kisumu.

3.2 Land Transport Forecast

3.2.1 Traffic Generation

The projection for generated transport quantity is as in Table 3-2-1, derived from macro forecast results.

Growth of total transport quantity is projected to be 2.33 times that at present (annual rate of 4.8%) from 1982 to 2000.