

**CHAPTER 1**  
**INTRODUCTION**

## CHAPTER 1 INTRODUCTION

### 1.1 Background

One of the important features of post independence development in Kenya is the massive expansion of the road network to approximately 197,000 kilometers. However, inadequate maintenance over the last 30 years has resulted in about 40% of this road network being “lost”, which in turn has produced higher vehicle operating costs and longer travel times for road users that are having a negative effect on the national economy. In addition, traffic demand has been increasing very rapidly over the past decade, which is putting even a greater strain on road maintenance services.

In response to the above, the Government of Kenya (GoK) became an active participant in the Road Maintenance Initiative (RMI), with the Roads 2000 Program representing the principal implementation strategy for road maintenance in Kenya. RMI is an African-wide program supported by the World Bank and a number of other Donors. RMI originated from an acknowledgement that road maintenance was in a state of crisis in the Sub-Sahara region, and that action was required in terms of policy at senior government level if this situation was to be reversed. The GoK now accepts the basic premise that attention must now turn from constructing new roads to maintaining existing roads. Hence, the GoK has decided to implement a policy to develop an appropriate system of road maintenance. The Kenyan Ministry of Roads and Public Works (MORPW) has identified new strategic plans for the road sector, and the GoK has requested the Government of Japan (GoJ) for technical cooperation for their implementation.

In response to a request from the GoK, the GoJ has decided to implement one of the projects, i.e., “The Study on Road Maintenance System Under the Framework of the Kenya Roads Boards” (hereinafter referred to as the Study), in accordance with the relevant laws and regulations in force in Japan and Kenya. Accordingly, the Japan International Cooperation Agency (JICA), the official agency responsible for the implementation of the technical cooperation programs of Japan, will undertake the Study, in close cooperation with the authorities concerned in Kenya. The scope of work for the Study has been agreed to and was signed by both sides, Japan and Kenya, on July 28, 2000.

## 1.2 Objective

The objective of the Study is to develop and enhance the road maintenance management capabilities of the public and private sector under the new Kenya Roads Board (KRB), which is an autonomous body managing a road fund to finance the necessary works/services for roads to be carried out by road administration agencies.

## 1.3 Study Area

The Study area covers both the classified and unclassified road network of the whole of Kenya.

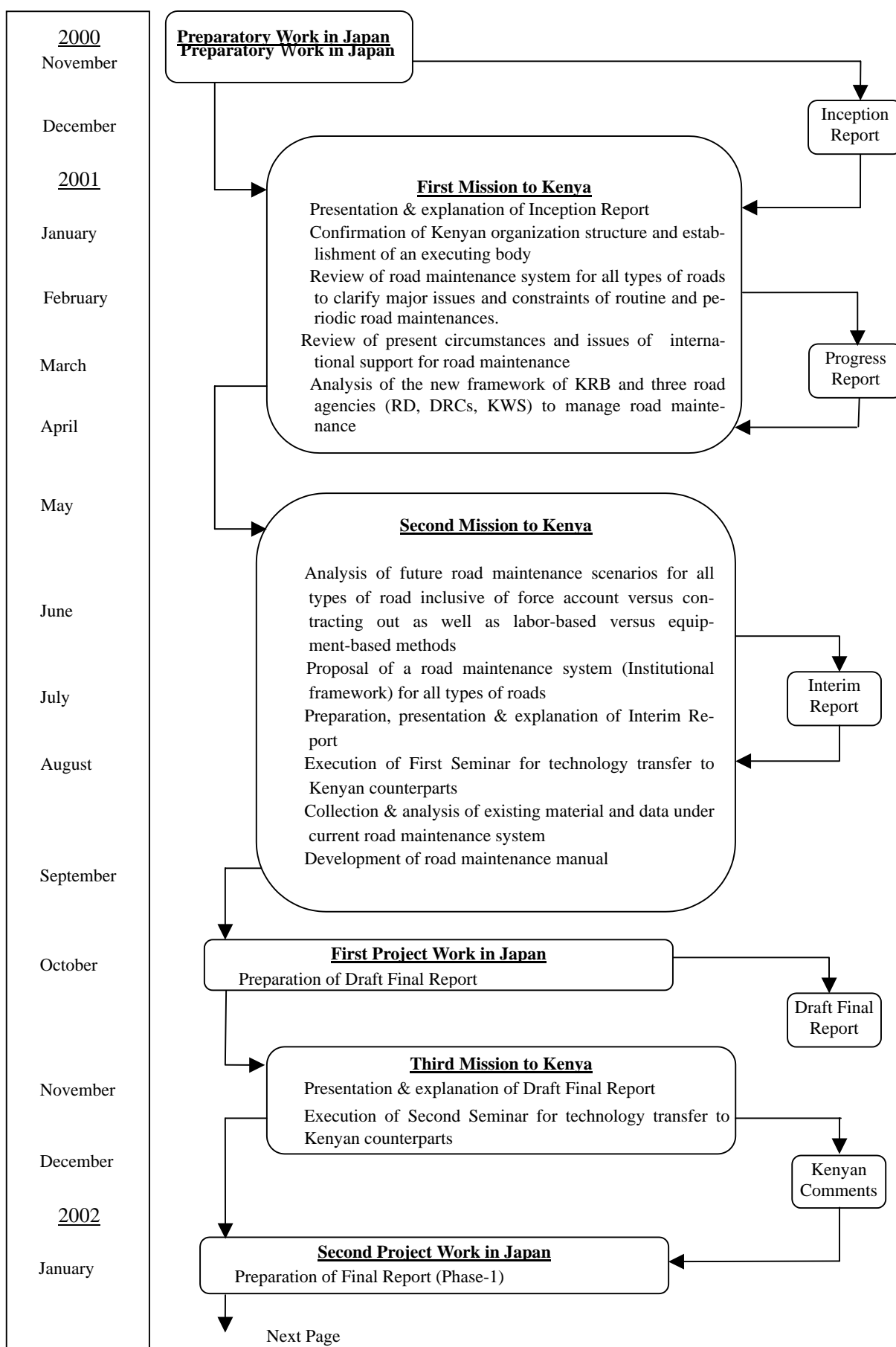
## 1.4 Scope of the Study

In order to achieve the Study's objective mentioned in 1.2 for the Study area, the scope of the Study will cover the following items:

- 1) **Review of road maintenance system for all types of roads to clarify major issues and constraints of routine and periodic road maintenance**
  - (1) Legal and institutional setups for road maintenance
  - (2) Funds for road maintenance
  - (3) Performance of road maintenance work
  - (4) Road maintenance capacity by force account
  - (5) Involvement of the private sector in road maintenance
  - (6) International cooperation in road maintenance
  
- 2) **Analysis of the new KRB and road agencies framework (Roads Department (RD), District Road Committees (DRCs) and Kenya Wildlife Services (KWS) to manage road maintenance)**
  - (1) Mandate and responsibilities of KRB and road agencies
  - (2) Institutional setup and organization of KRB and road agencies
  - (3) Funds available to KRB and road agencies
  - (4) Relationship of KRB and road agencies with MORPW, local authorities, etc.
  
- 3) **Analysis of future maintenance scenarios for all road types, including force account versus contracting out as well as labor-based versus equipment-based methods**
  - (1) Future traffic trends by road classification

- (2) Future funds available for road maintenance
  - (3) Comparison of force account and contracting out for road maintenance work by road classification
  - (4) Comparison of labor-based and equipment-based methods for road maintenance work by classification
  - (5) Plausible future road maintenance scenarios
- 
- 4) Proposal of a rational and efficient road maintenance management system for all types of roads under the framework of KRB, via the clarification of major issues and constraints of routine and periodic road maintenance**
    - (1) General framework for road maintenance system
    - (2) KRB and road maintenance management
    - (3) Road agencies and road maintenance management
    - (4) MORPW, local authorities, etc.
- 
- 5) Development of a program for road maintenance training and capacity building program to increase private sector involvement in road maintenance**
    - (1) Labor-base technology
    - (2) Equipment-based technology
    - (3) Road maintenance training plan
    - (4) Private sector capacity building
    - (5) KRB's Secretariat capacity building
- 
- 6) Assistance with the strengthening of the planning, management, and monitoring capabilities of road implementation agencies engaged in routine and periodic road maintenance works with an emphasis on contracting out.**
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- 7) Development of maintenance manuals for capacity building of road maintenance**
    - (1) Inspection Manual for Routine and Urgent Maintenance
    - (2) Evaluation Manual for Routine, Periodic and Urgent Maintenance
    - (3) Execution Manual for Routine, Periodic and Urgent Maintenance

As for the work of the Study, it is divided into missions to Kenya together with work carried out in Japan. The workflow of the Study is as shown in Figure 1.4.1 on the following two pages.



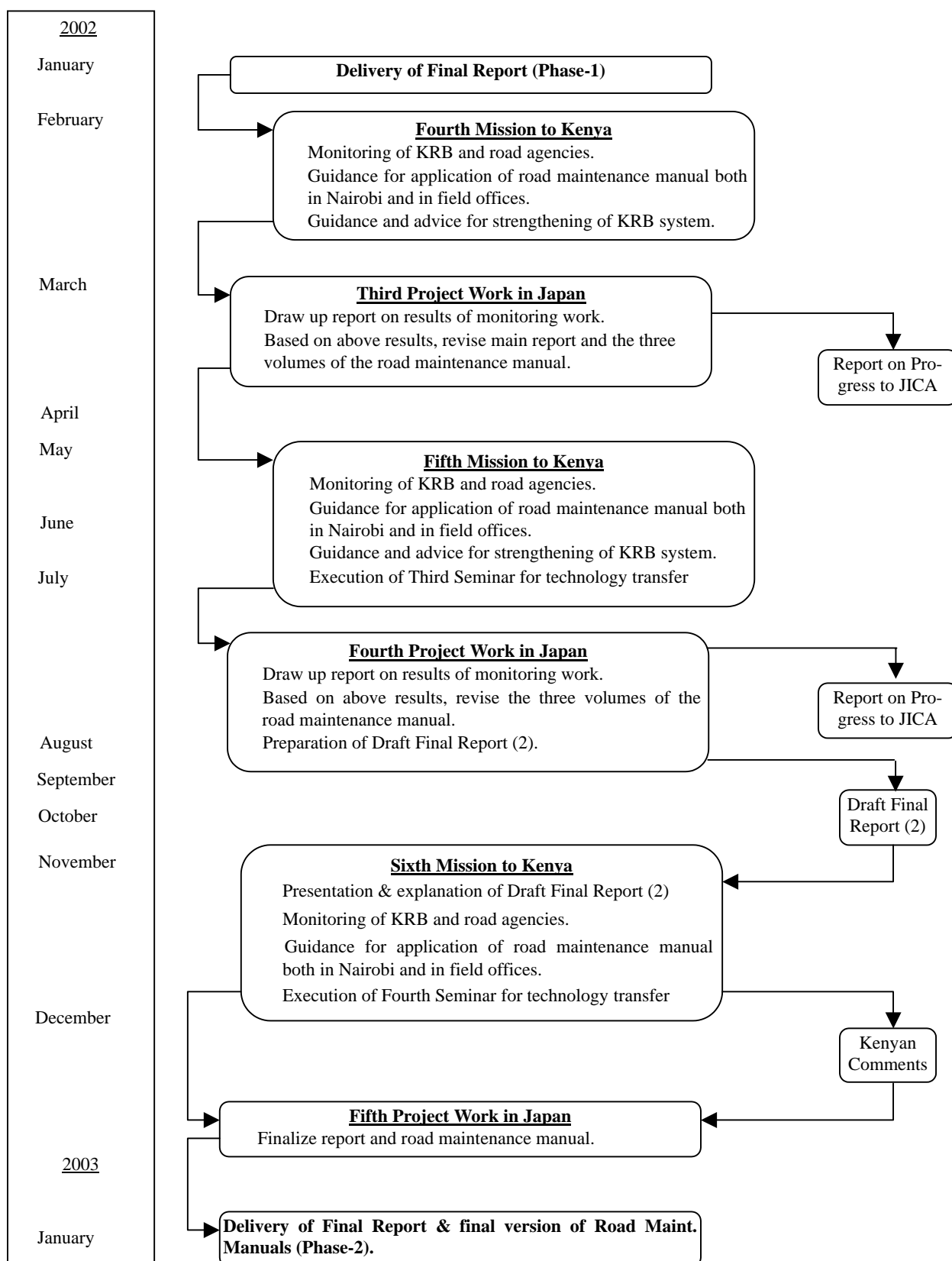
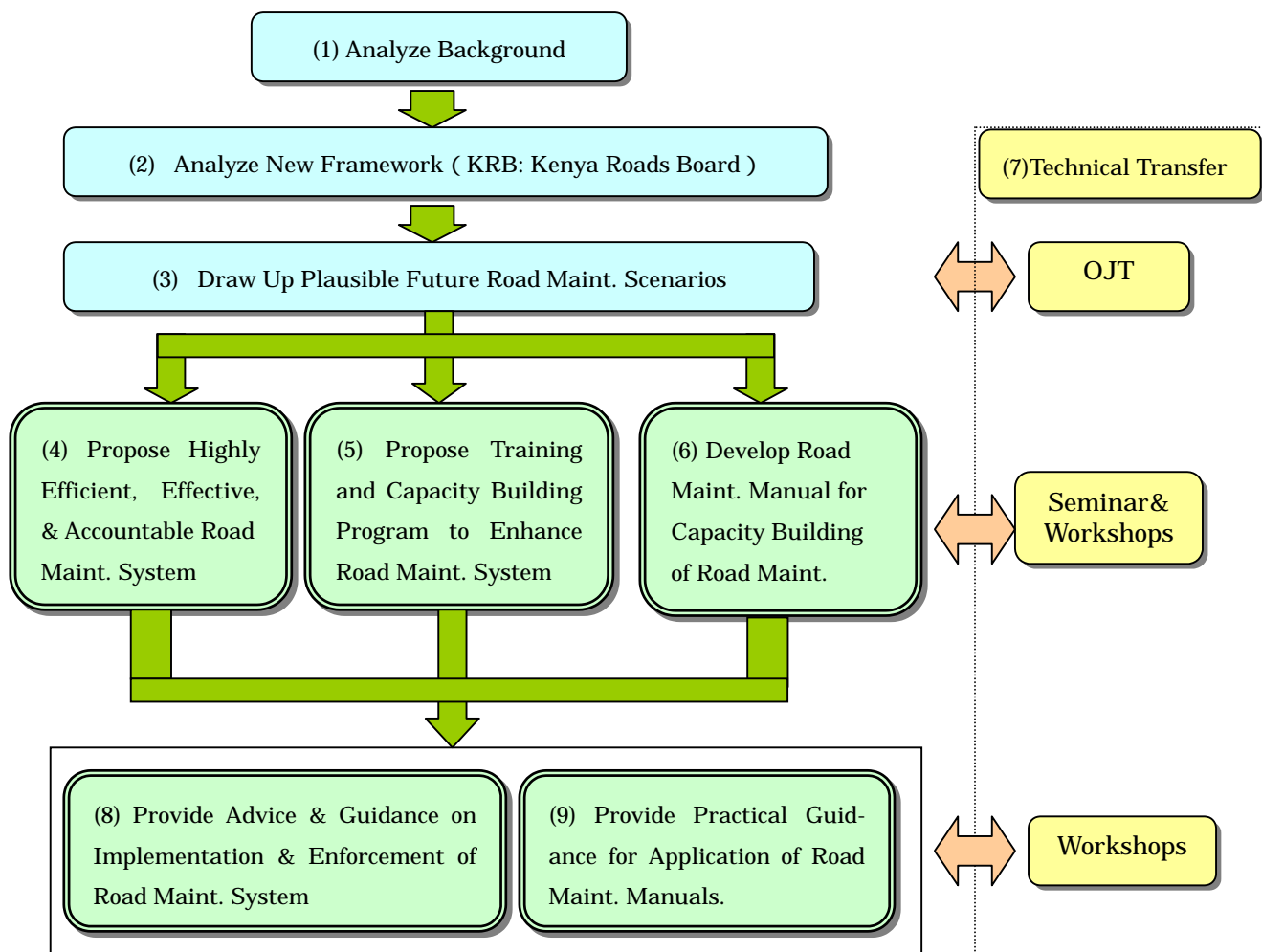


Fig. 1.4.1 Study Flow

## 1.5 Study Approach

The Study is executed in accordance with the scope of work described in the previous section. The major focus of the Study is to analyze future road maintenance scenarios and to propose a rational and efficient road maintenance management system, to draw up a training program to promote the capabilities of both the public and private sector that will encompass personnel from management to the laborer in the field, and to draw up manuals for road maintenance for the capacity building of road maintenance. This process is as shown in Figure 1.5.1 below.



**Figure 1.5.1 Study Approach**

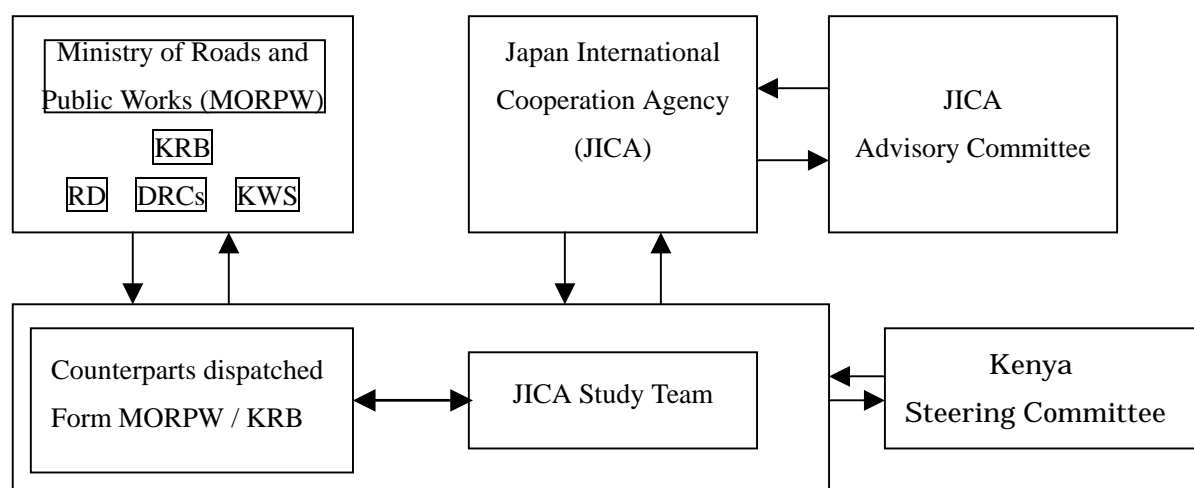
Itemization of the above process approach can be described as follows:

- 1) To analyze the background as to why the present road maintenance system does not function well.
- 2) To analyze the new framework of KRB and the road agencies including the funds available.
- 3) To draw up plausible future road maintenance scenarios.

- 4) To propose a road maintenance management system with high efficiency, effectiveness and accountability.
- 5) To propose a road maintenance training and capacity building program to enhance the road maintenance management system.
- 6) To develop road maintenance manuals for capacity building of road maintenance
- 7) To take into account the transfer of technology during the Study.
- 8) To provide advice and guidance on the implementation and enforcement of the road maintenance system.
- 9) To provide practical guidance for application of the road maintenance manuals.

## 1.6 Study Organization

The Study is being carried out jointly with MORPW and the Study Team, with guidance to be provided by a JICA advisory committee. The relationship between these institutions is as shown in Figure 1.61 below.



**Figure 1.6.1 Study Organization**

MORPW is acting as the counterpart agency to the Study Team and also as a coordinating body for the smooth implementation of the Study, in relation to other governmental and non-governmental organizations.



## 1.7 Report Submission

The Study Team prepares and submits the reports listed below in English to the Government of Kenya.

**1) Inception Report (IC/R)**

Twenty (20) copies in English. This report is to be submitted at the commencement of the Study and is to describe the overall approach and implementation program of the Study.

**2) Progress Report (P/R)**

Twenty (20) copies in English. This report is to be submitted by the middle of March 2001, and it contains the results of the reviews and analysis of data and information collected regarding the present conditions and problems to be solved.

**3) Interim Report (IT/R)**

Thirty (30) copies in English. This report is to be submitted by the end of July 2001, and it contains the analysis of future road maintenance scenarios and a proposal for a road maintenance system.

**4) Draft Final Report (DF/R)**

Thirty (30) copies in English. This report is to be submitted by the beginning of November 2001, and it contains all the study results. Written comments on the Draft Final Report from the Government of Kenya is to be submitted to JICA within one (1) month of the submission of the report.

**5) Final Report (Phase-1)**

Sixty (60) copies of the Final Report (Phase-1) and its Executive Summary in English. This report and its summary are to be submitted in January 2002, and it takes into consideration the comments of the Kenyan side concerning the Draft Final Report and it to be submitted one month after the receipt of the written comments on the Draft Final Report from Kenya.

**6) Road Maintenance Manual (Phase-1)**

Five Hundred (500) copies in English. Phase-1 of this manual is to be submitted with Final Report (Phase 1), and it consists of the three volumes of inspection, evaluation and execution.

**7) Draft Final Report (2)**

Thirty (30) copies in English. This report is to be submitted in November 2002, and it will contain all study results, including results from monitoring of the KRB system in 2002. Written comments on Draft Final Report (2) from the Government of Kenya is to be submitted to JICA within one (1) month of the submission of the report.

**8) Final Report**

Sixty (60) copies of the Final Report and its Executive Summary in English. This report and its summary are to be delivered to Kenya in January 2003, and it takes into consideration the comments of the Kenyan side concerning Draft Final Report (2) and it to be submitted one month after the receipt of the written comments on Draft Final Report (2) from Kenya.

**9) Road Maintenance Manual (Phase-2)**

Five Hundred (500) copies in English. Phase 2 of the manual is to be submitted with the Final Report, and it consists of the three volumes of inspection, evaluation and execution. In addition, it will take into consideration the comments of the Kenyan side concerning Phase 1 of the manual.

## **CHAPTER 2**

### **GENERAL APPRECIATION**

## CHAPTER 2 GENERAL APPRECIATION

### 2.1 Land and Climate

Kenya consists of undulating plains that gradually rise from the sea to the highlands in the interior that are about 1,500m above sea level. There are also plateaus 2,500m to 3,000m above sea level, as well as isolated extinct volcanoes. The two highest points in Kenya are Mt. Kenya (5,199m) and Mt. Elgon (4,310m). The country is bisected by the Great Rift Valley, which runs north and south. It is bounded on both sides by escarpments with altitudes ranging between 600m and 900m. The bottom of the Rift Valley has several lakes, extinct volcanoes and hot springs.

Although the equator bisects Kenya, the above physical features give rise to a wide range of conditions, with a temperate environment existing in the highlands (i.e., 1,500m above sea level) and a rather cold environment existing at approximately 2,750m and above sea level that inhibits agriculture. Generally, temperatures in the country may be estimated roughly by deducting 1.7° Celsius for every 300m rise above sea level. The mean temperature in Kenya is approximately 26° Celsius.

The extensive plains below 1,200m above sea level are mostly arid and semi-arid, and rainfall is heaviest on the coast, in the western regions around Lake Victoria, and in the highlands. The Lake region and the highlands to the west of the Rift Valley have one distinct long rainy season (March to May). Highlands to the east of the Rift Valley and most of the Rift Valley region, however, have two distinct rainy seasons; namely, the long rains (March to May) and the short rains (September to October). Despite these distinct rainy seasons, Kenya occasionally experiences severe droughts.

The amount of arable land, national park land, forests, and lakes is shown in Table 2.1.1

**Table 2.1.1 Arable Land, National Park Land, & Lakes in Kenya**

Item	Area, Height, Length
1. Total Arable Land	52,047,000 ha.
2. National Park Land	27,198 km <sup>2</sup>
3. Forest Land	1,693,000 ha.
4. Main Lakes	10,749 km <sup>2</sup>

Source: Statistical Abstract, Central Bureau of Statistics, Kenyan Ministry of Finance & Planning, 1999.

The most important use of arable land is agricultural. Agricultural land is categorized as follows:

- High Potential Areas (HPA) with an annual rainfall 857.5mm or more.
- Medium Potential Areas (MPA) those with an annual rainfall ranging between 735mm and 875.5mm
- Low Potential Area (LPA) those with an annual rainfall of 612.5mm or less.

The amounts of high, medium, and low potential land in terms of agriculture are shown in Table 2.1.2. As this table indicates, Western, Nyanza, and Central Province are the most fertile provinces in Kenya, respectively, with more than 90% of the agricultural land having high potential. On the other hand, North Eastern, Eastern, and Coast Province are the least fertile, respectively, in that 5% or less of the agricultural land possesses high agricultural potential. Of the agricultural land in Kenya as a whole, only 13% possesses high potential.

**Table 2.1.2 Categories of Agricultural Land in Kenya ('000 hectares)**

Province	High Potential	Medium Potential	Low Potential	Total	Percentage of High Potential Land
Central	909	15	41	965	94%
Coast	373	796	5,663	6,832	5%
Eastern	503	2,189	11,453	14,145	4%
Nairobi	16	-	38	54	30%
North Eastern	-	-	12,690	12,690	0%
Nyanza	1,218	34	-	1,252	97%
Rift Valley	3,025	123	12,220	15,368	20%
Western	741	-	-	741	100%
Total	6,785	3,157	42,105	52,047	13%

Source: Based on Statistical Abstract, Central Bureau of Statistics, Ministry of Finance & Planning, 1999.

## 2.2 Socio-economic Characteristics

### 2.2.1 Administrative Units

The Republic of Kenya, which is nearly divided into two equal halves by the equator, occupies a total area of 582,646 km<sup>2</sup>. Of this, about 98% (or 571,416 km<sup>2</sup>) consists of land while the remaining 2% (or 11,230 km<sup>2</sup>) consists of water. The country, which borders Sudan, Ethiopia and Somalia to the north, Uganda to the west, Tanzania to the south, and the Indian Ocean to the east, is comprised of 8 provinces, which are in turn composed of 70 districts at present. The total number of districts in Kenya has changed over time, from 41 districts in 1989 to 69 in 1999 and then to 70 in 2000. The provinces and the change in the number of districts for each province for the years 1989 and 2000 are described in Table 2.2.1. Current administration boundaries in

leading province, district and constituency are listed Annex 1.

**Table 2.2.1 Kenya's Provinces and Districts for 1989 and 2000**

Province	No. of Districts	
	1989	2000
Nairobi	1	1
Central	5	7
Coast	6	7
Eastern	6	13
North Eastern	3	4
Nyanza	4	12
Rift Valley	13	18
Western	3	8
<b>Total</b>	41	70

Source: Based on Statistical Abstract, Central Bureau of Statistics, Kenya Ministry of Finance & Planning, 1999.

As Table 2.2.1 indicates, most of the new districts were created in Nyanza Province, where the number trebled from 4 to 12 districts, and in the Eastern and Western Provinces, where the number of districts more than doubled from 6 to 13 and from 3 to 8 districts, respectively. A map indicating the locations of Kenya's 8 provinces is shown in Figure 2.2.1. The largest province, or Rift Valley Province, extends from the border of the Sudan in the north to Tanzania in the south. As the name indicates, there are sudden changes in the landscape, with the land dropping into valleys up to 300 meters in depth. The second largest province, or North Eastern Province, extends from the Somali border in the north to the Coast Province in the south. A large portion of this province is arid or semiarid, and rain is very rare and the lifestyle of the people nomadic. This environment has resulted in this area being one of the least populated in Kenya. Then, there are the two provinces in the west of the country that face out onto Lake Victoria (i.e., Nyanza Province and Western Province). Around the lake, the largest activity is fishing, while inland the fertile soil sustains some of Kenya's most densely populated rural areas. Nyanza Province contains the country's third largest city, or Kisumu with a population of about 500,000. On the opposite side of the country is Coast Province, which contains Kenya's second largest city the port of Mombassa with a population of 665,000 that faces out onto the Indian Ocean. To the east of Coast Province is Eastern Province. This is the probably the most diversified province in Kenya, which consists of desert on its border with Ethiopia and expansive grasslands in the southern part of the province where the Masaai graze their animals. Finally, in the center of Kenya, is the Central Province and Nairobi Province. The former is a fertile highland area where

coffee, tea, maize, etc. are grown on large estate farms. The latter is both the financial and political center of the country with a population of 2,137,000.

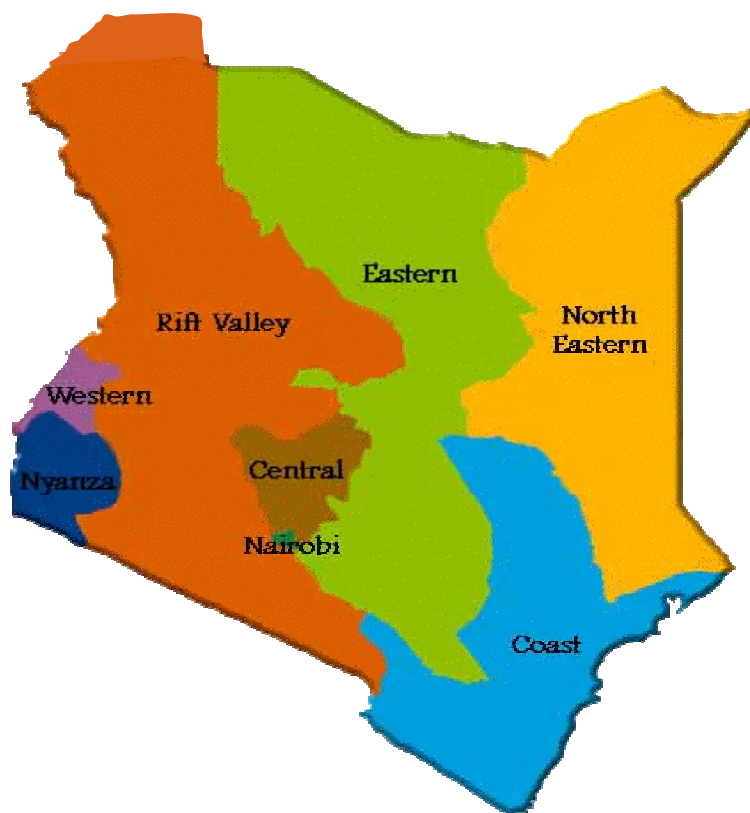


Figure 2.2.1 Provinces of Kenya

The land area for each of Kenya’s provinces are shown in Table 2.2.2. Further, the land area for each districts that make up those provinces are attached in Appendix. 2.2.1.

Table 2.2.2 Land Area for the Provinces of Kenya

Province	Land Area* (km <sup>2</sup> )
Nairobi	696
Central	13,220
Rift Valley	182,538
Eastern	153,472
North Eastern	130,472
Nyanza	12,546
Western	8,263
Coast	82,816
<b>Total</b>	<b>584,023</b>

Source: Based in part on the Statistical Abstract, Central Bureau of Statistics, Ministry of Finance & Planning, 1999.

\*: Includes water surface area.

## 2.2.2 Population

Table 2.2.3 summarizes the population distribution and inter-censal growth rates in Kenya by province for the census years of 1979, 1989, and 1999. The table indicates that Kenya's population grew from 15.3 million in 1979 to 21.4 million in 1989, or an average annual growth rate of 3.4%. For the period of 1989 to 1999, this high growth rate decreased to 2.9% per annum, resulting in a total population of 28.7 million in 1999. Rift Valley, the largest province in Kenya, also has the largest number of people in the country, with a population of nearly 7.0 million, followed by the Eastern (4.6 million.), Nyanza (4.4 million), Central (3.7 million) and Coast (2.5 million) provinces. The least populous province is North Eastern Province, which had a population of 961,000 in 1999.

Table 2.2.3 also indicates that population growth rate in all of the provinces, except for North Eastern, Nairobi and Coast provinces, had declined. In the case of North Eastern Province, much of the increase was due to the influx of refugees from neighboring countries. As for Nairobi, the continued urbanization of Kenya's population has much to do with the increase in its population growth rate, while Coast Province's growth rate remained exactly the same. Given this, the percentage of Kenya's total population by province, as shown in Table 2.2.4, has changed over the period from 1979 to 1999. That is, the provinces of Rift Valley, Nairobi, and North Eastern recorded significant increases in the proportion of Kenya's population that they account for, with Rift Valley increasing from 21.1% to 24.4%, Nairobi from 5.4% to 7.5%, and North Eastern from 2.4 to 3.4% during the 1979 to 1999 period. All of the other provinces, except for Coast Province (which remained stable), experienced significant decreases in their shares of Kenya's total population. That is, Central Province went from 15.3% to 13.0%, Nyanza from 17.3% to 15.3%, Eastern from 17.7% to 16.1%, and Western Province from 12.0% to 11.7% during the 1979 to 1999 period.

**Table 2.2.3 Population Distribution & Growth Rates by Province for 1979, 1989 & 1999**

Province	Population Size ('000)			Inter-censal Growth Rate %	
	1979	1989	1999	1979 – 1989	1989 – 1999
Nairobi	828	1,325	2,143	4.7	4.8
Central	2,346	3,111	3,724	2.8	1.8
Coast	1,343	1,826	2,487	3.1	3.1
Eastern	2,720	3,769	4,632	3.3	2.1
North Eastern	374	371	962	-0.1	9.5
Nyanza	2,644	3,507	4,392	2.8	2.3
Rift Valley	3,240	4,918	6,987	4.2	3.5
Western	1,833	2,622	3,359	3.6	2.5
<b>Total</b>	<b>15,327</b>	<b>21,449</b>	<b>28,687</b>	<b>3.4</b>	<b>2.9</b>

Source: Economic Survey 2000, Bureau of Central Statistics, Kenya, Ministry of Finance & Planning, 2000.

Population and Housing Census, Bureau of Central Statistics, Kenya, Ministry of Finance & Planning, 1999.



**Table 2.2.4 Percentage of Total Population by Province for 1979, 1989 & 1999**

Province	Percentage Distribution		
	1979	1989	1999
Nairobi	5.4	6.2	7.5
Central	15.3	14.5	13.0
Coast	8.8	8.5	8.7
Eastern	17.7	17.6	16.1
North Eastern	2.4	1.7	3.4
Nyanza	17.3	16.4	15.3
Rift Valley	21.1	22.9	24.4
Western	12.0	12.2	11.7
<b>Total</b>	<b>100.00</b>	<b>100.0</b>	<b>100.0</b>

Sources: Economic Survey 2000, Bureau of Central Statistics, Kenya, Ministry of Finance & Planning, 2000.  
Population and Housing Census, Bureau of Central Statistics, Kenya, Ministry of Finance & Planning, 1999.

A summary of Kenya's population and population density for the provinces is described in Table 2.2.5. Further their respective district is described in Appendix 2.2.2.

**Table 2.2.5 Population & Population Density by Province for 1999**

Province	Population	Population Density (person/km <sup>2</sup> )
Nairobi	2,137,000	3,079
Central	3,724,159	282
Rift Valley	6,987,036	38
Eastern	4,631,779	30
North Eastern	962,143	8
Nyanza	4,397,000	350
Western	3,358,776	406
Coast	2,487,264	30
<b>Total</b>	<b>28,686,607</b>	<b>50</b>

Sources: Economic Survey 2000, Bureau of Central Statistics, Kenya Ministry of Finance & Planning, 2000.  
Statistical Abstract, Bureau of Central Statistics, Kenya, Ministry of Finance & Planning, 1998 and 1994.  
Population and Housing Census, Vol. II. Bureau of Central Statistics, Kenya, Ministry of Finance & Planning, 1999

Notes:

- 1) The land area for each province and district refers to the land area (excluding water) as of 31 December 1997. Each census year shows a different land area for nearly each province and district.
- 2) Population data for the new districts during the censuses of 1979 and 1989 are included in the population of the old districts.

As the Table 2.2.5 and Appendix 2.2.2 indicate, the two areas that are by far the most densely populated are Nairobi and Mombassa, having 3,079 persons/km<sup>2</sup> and 2,896 persons/km<sup>2</sup>, respectively. All the other districts have less than 800 persons/km<sup>2</sup>. The most densely populated provinces, excluding Nairobi, are in order: Western, Nyanza, Central, Rift, Coast, Eastern, and North Eastern.

Kenya has a rather high urbanization rate. Table 2.2.6 shows the changes in urban population for the years of 1979, 1989, and 1999. In 1999 urban population stood at 9,997,000 persons, out of a

total population of 28,687,000, as compared to 2,306,000 persons out of a total population of 15,327,000 in 1979. Therefore, in the 20 years from 1979 to 1999, urban population increased more than four-fold and the number of people living in urban areas has risen from approximately 15% to 35%. Much of this urbanization is taking place in smaller municipalities, townships, and urban centers, and these changes are putting significant pressure on the government's capacity to provide basic urban social services such as water, electricity, housing, transport, and education.

**Table 2.2.6 Changes in Kenya's Urban & Rural Populations for 1979, 1989, and 1999**

Item	Year	1979	1989	1999
Total population		15,327,000	21,444,000	28,687,000
Total urban population		2,306,000	3,877,000	9,997,000
Total rural population		13,021,000	17,567,000	18,690,000
Total urban pop. as % of total population		15.0	18.1	34.8
Total rural pop. as % of total population		85.0	81.9	65.2

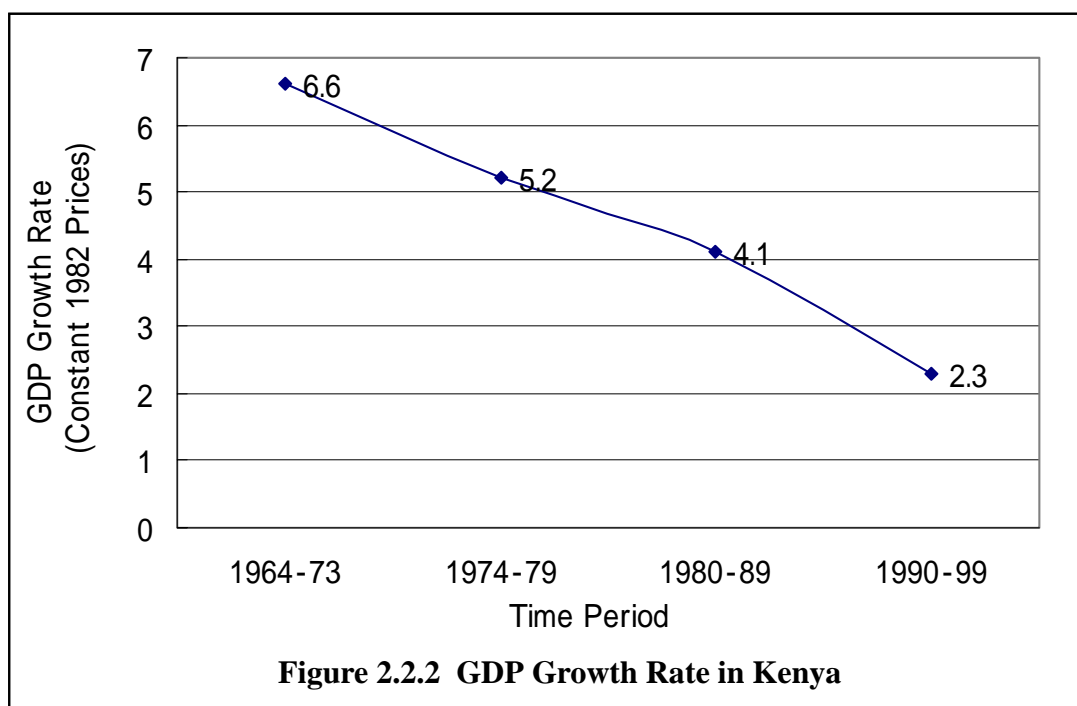
Source: Population and Housing Census, Vols. I & II, Bureau of Central Statistics, Kenya, Ministry of Finance & Planning, 1999  
 Statistical Abstract, Bureau of Central Statistics, Kenya Ministry of Finance & Planning, 1998.

### 2.2.3 Economy

#### (1) Gross Domestic Product

Economic growth is an important goal of the Kenyan Government in its goal to reduce poverty. Unfortunately, economic growth as measured by Gross Domestic Product (GDP), has been slowing down over the past three decades and a half (see Figure 2.2.2).

After independence, GDP was growing at 6.6% per annum until 1973. Since then, annual real GDP growth rates have been steadily declining, from an average of 5.2% per annum during the period of 1974 - 1979 to 4.1% during the decade of 1980 - 1989 to 2.3% during the period of 1990 - 1999.



Source: National Development Plan, Ministry of Finance & Planning, 1997-2001

As for a closer look at the recent state of the economy, the macroeconomic indicators for the 1990s are shown in Table 2.2.7.

**Table 2.2.7 Macroeconomic Indicators for 1991-1998**

	1991	1992	1993	1994	1995	1996	1997	1998
GDP Growth Rate (%)	2.1	0.5	0.2	3.0	4.8	4.6	2.4	1.8
GDP per Capital (K£) 1982 prices	188.0	183.0	178.0	167.0	170.0	174.0	173.0	172.0
Inflation Rate (% change in CPI)	19.6	27.3	46.0	28.8	1.6	9.0	11.2	6.6
Trade Balance (K£ million)	-1094	-1213	-1378	-1472	289	-2514	-3511	3830
Overall Balance of payments (K£ million)	-143.3	-433.0	1284.1	264.8	-368.9	1155.3	336.2	228.7
Overall Fiscal Deficit (K£ million)	-206.5	-467.7	-1006.8	164.4	-198.5	-220.2	386.5	-261.7
Agriculture growth rate (%)	-1.1	-3.7	-4.1	2.8	4.8	4.4	1.2	1.5
Manufacturing growth (%)	3.8	1.2	1.8	1.9	3.9	3.7	1.9	1.4
Government services as % of GDP	3.6	2.4	2.1	1.6	1.8	1.6	1.1	0.8
Domestic Saving as % of GDP								
Population growth rate (%)	18.2	16.0	19.3	23.6	16.6	18.1	12.5	11.1
Population size (million)	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.4
Wage employment ('000)	22.7	23.4	24.0	24.8	25.2	26.3	27.1	27.9
	1442	1462	1475	1505	1557	1619	1647	1665

Source: Economic Survey 2000, Central Bureau of Statistics, Kenya Ministry of Finance and Planning, 2000.

As the above table indicates, annual average GDP growth rates have dropped precipitously over the past couple of years, hitting a low of 1.8% in the most recent year of 1998. GDP growth rates

during the 1990s, except for 1994 to 1996, are below the annual population growth rates. Consequently, per capita GDP has been steadily declining at an annual average rate of 0.2% during this period, resulting in a rapid increase in poverty among Kenyans.

The major factors that have adversely affected economic growth over the last 5 years include weak macroeconomic policies, slow implementation of structural reforms and other government policies, and poor governance. Excessive government borrowing on the domestic market has also continued to crowd out the private sector from the credit market, as well as leading to an accumulation of short-term domestic debt that creates inflationary pressures resulting in high real lending rates that inhibit investment. Finally, declining per capita incomes have produced low saving rates and hence low investment rates, and poor infrastructure has raised the costs of doing business in all sectors of the economy.

## **(2) Production of Goods & Services**

Table 2.2.8 shows the total amount of principal crops marketed during the period 1994-1999. The data mainly reflects crops delivered to marketing boards, millers and factories and does not necessarily include sales to local marketing and trading centers. It should be noted that following the liberalization of trade, purchases of rice, wheat, cotton and sugar cane are no longer handled by marketing boards. As the table indicates, the production and hence sales of principal agricultural commodities have been fluctuating, mostly downwards, during the period 1994-99. Factors contributing to such fluctuations include weather conditions in Kenya and domestic macroeconomic instability.

In the case of wheat, the country imported over 75% of its total domestic requirements during the period of 1994-1999. The drastic fall in output between 1998 and 1999 was due to an invasion of armyworms and to poor producer prices. Although sugar cane production has been stable, less than 50% of the total cultivated area was harvested during the period and crop yield has been declining steadily from 90.8 tons/ha in 1996 to only 78.4 tons/ha in 1999. Factors contributing to this include mismanagement of sugar factories and irregular or untimely payments to farmers. Cotton production has continued to be very low compared to the quantities produced during the 1970s and 1980s due to weaknesses in the management of co-operatives that purchase most of the crop. The bulk of cotton used in the Kenyan textile industry is therefore currently imported from Tanzania, Uganda, and Sudan.

**Table 2.2.8 Principal Crops Marketed during 1994-1999 ('000 tons)**

Crop \ Year	1994	1995	1996	1997	1998	1999*
Maize	316.0	401.0	295.5	204.6	218.0	223.5
Wheat	105.2	125.5	130.0	124.2	176.7	52.9
Rice Paddy	13.5	14.6	15.9	14.4	117.7	24.3
Pyrethrum extract	0.2	0.1	0.1	0.1	0.1	0.1
Sugar cane (mn.tons)	3.3	3.8	3.9	4.3	4.6	4.4
Seed Cotton	1.8	0.2	0.5	0.5	0.5	0.2
Coffee	81.5	95.8	103.2	68.0	51.3	64.3
Sisal	34.0	27.8	28.1	20.1	19.9	21.9
Tea	209.4	244.5	257.2	220.7	294.3	248.8

Sources: Economic Survey 2000, Central Bureau of Statistics, Kenya Ministry of Finance & Planning, 2000.

Statistical Abstract, Central Bureau of Statistics, Kenya Ministry of Finance & Planning, 1999.

\* Provisional

As for the production trends in excisable goods such as sugar, beer and soap, which most probably reflect the basic trends in industrial production, Table 2.2.9 shows the production of those goods for selected years between 1989 and 1997.

**Table 2.2.9 Production of Excisable Commodities in Selected Years, 1989-1997**

Commodity	Unit	1989	1991	1993	1995	1997
Sugar	Tons	431,000	426,500	385,000	384,000	401,000
Cigarettes & Cigars	Mn. sticks	6,661	6,473	7,266	7,932	8,898
Tobacco	Kg.	2,032	1,892	1,02	1,010	1,228
Matches	Mn. Containers	2,962	2,766	2,831	-	138
Beer	'000 liters	315,402	314,005	349,200	347,000	270,396
Mineral waters	"	169,753	144,530	132,359	122,320	130,908
Paints	"	7,499	7,909	4,760	7,233	7,624
Spirits	"	1,274	1,688	2,259	2,722	8,933
Fabrics	'000 Sq. M.	70,700	60,904	101,642	33,842	39,490
Soap	Tons	41,768	38,771	39,976	82,685	76,967
Biscuits	Tons	2,729	3,773	2,289	5,041	5,067
Distempers	'000 liters	348	89	700	34	61

Source: Statistical Abstract, Central Bureau of Statistics, Kenya Ministry of Finance & Planning, 1998

\*Provisional

- = No production.

As in the case of agricultural products, the production of manufactured excisable goods have shown a general downward or static production trend in most sectors. On the other hand, major increases were recorded in the production of cigarettes (from 6,661 to 8,898 million sticks), spirits (from 1,274 to 8,933 thousand liters), and biscuits (from 2,729 to 5,067 tons) over the 1989 to 1997 period. Major downward fluctuations in production were experienced in the production of tobacco (from 2,032 to 1,228 kg.), beer (from 315,402 to 270,396 thousand liters), mineral water (from 169,753 to 13,908 thousand liters), and fabrics (from 70.7 to 39.5 million m<sup>2</sup>) over the same period. The production of matches particularly experienced a large drop in

production from 2,962 in 1989 to 138 million containers in 1997 due to liberalization of imports. The increased production in biscuits apparently reflects increasing poverty, especially in the major urban areas. Many of these products are exported to neighboring countries; namely, Uganda, Tanzania, Rwanda, Burundi, Zaire, Sudan, and Ethiopia.

In addition to the above, Kenya produced an annual average of 1.5 million tons of cement during the period of 1994 to 1999. The quantity of cement produced, however, has been declining steadily from 1.6 million tons in 1996 to only 1.3 million tons in 1999. Over 70% of the total production is for the domestic market, while the rest is exported mainly to the Indian Ocean Islands and the Gulf Region, as well as to Tanzania and Uganda. Most cement is transported via railway. Table 2.2.10 shows the production of minerals in Kenya between 1995 and 1999.

**Table 2.2.10 Quantity and Value of Mineral Production for 1995 - 1999 (tons)**

<b>Minerals</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999*</b>
Soda Ash	218,450	223,000	257,640	242,910	245,680
Fluorspar	74,230	83,000	68,700	60,854	93,602
Salt	73,484	41,000	6,280	21,742	44,886
Limestone Products	29,574	31,935	32,668	32,000	32,000
Crushed refined Soda	362,000	375,000	392,000	370,000	335,230
Other	9,017	10,276	10,934	9,823	10,682
<b>Total</b>	<b>766,755</b>	<b>764,211</b>	<b>768,222</b>	<b>737,329</b>	<b>762,080</b>

Source: Economic Survey 2000, Central Bureau of Statistics, Kenya Ministry of Finance & Planning, 2000.

\*Provisional

The total quantity of mineral production has been fluctuating downwards from 766,755 tons in 1995 to 762,080 in 1999. Soda ash and fluorspars are Kenya's most important minerals, accounting for 53.7% and 19%, respectively, of the total value of output in 1999. Soda ash and fluorspar are transported mainly by railway. Other minerals are partly transported by road and partly by railway, depending on their location.

In Table 2.2.11, details of the quantities of Kenya's exports are shown. However, such data for imports are unfortunately not available. In Kenya, the value of imports is normally much higher than the value of exports. The bulk of Kenya's exports are transported by road, while some are transported by railway and ship. In terms of volume, the most important export items in 1999 were cement (283,374 tons), tea (245,710 tons), soda ash (213,374 tons), horticulture (200,624 tons), coffee (71,581 tons), and essential oils (36,380 tons).

**Table 2.2.11 Quantities of Principal Exports for 1995-1999**

Commodity	Unit	1995	1996	1997	1998	1999
Coffee	Tons	88,519	116,731	70,066	51,578	71,581
Tea	"	217,937	262,146	199,224	263,771	245,710
Petroleum Products	Mn. Ltrs	446	567	587	792	765
Pyrethrum Products	Tons	215	717	441	216	623
Meat Products	"	1,068	1,175	1,252	1,275	1,217
Sisal	"	25,188	21,672	19,154	17,650	16,830
Hides & Skins	"	2,218	2,301	2,564	2,118	7,302
Soda Ash	"	205,676	197,021	213,190	214,470	213,374
Fluorspar	"	64,434	37,764	72,300	45,618	83,707
Cement	"	501,014	662,036	690,392	417,239	283,717
Maize (raw)	"	154,291	221,478	263,653	9,126	30,487
Horticulture	"	228,576	304,461	192,629	232,217	200,624
Butter & Ghee	"	175	1,594	221	161	72
Cotton (raw)	"	962	..	81	87	54
Wool	"	347	295	432	174	596
Animal Feeds	"	11,008	2,116	694	726	845
Fish & Fish Preparations	"	15,511	18,769	17,438	14,332	15,951
Live animals for Food	'000	379	639	671	2,025	1,593
Meals & Flours of Wheat	Tons	52,444	36,577	29,992	43,865	21,288
Animal & Vegetable Oils	"	34,172	30,794	40,120	40,751	31,340
Tobacco & Tobacco mfrs.	"	6,582	13,364	8,520	6,993	6,706
Beer made from Malt	'000 Ltrs	47,284	36,790	24,902	23,486	7,978
Footwear	'000 Pairs	78,908	21,557	28,158	28,296	30,113
Margarine & Shortening	Tons	4,523	9,500	13,040	18,746	16,531
Leather	"	5,676	5,414	5,864	4,602	3,899
Paper & Paperboard	"	9,429	7,567	8,692	11,340	14,074
Textile Yarn	"	4,597	6,160	1,990	1,123	1,361
Insecticides & Fungicides	"	2,144	3,696	3,122	2,938	2,156
Essential Oils	"	43,038	44,461	41,043	43,800	36,380

Source: Economic Survey, Central Bureau of Statistics, Kenya Ministry of Finance & Planning, 2000.

.. Negligible

### (3) Employment

Official data on total employment in Kenya includes three major categories of employment: wage employment, self-employment, and unpaid family workers and the informal sector. Detailed analysis of employment data by the government, however, is undertaken only for wage employment.

Table 2.2.12 shows the total number of persons employed for selected years during the 1979 to 1999 period for the different categories of employment.

**Table 2.2.12 Employment for Selected Years during 1979 to 1999 ('000)**

<b>Type of Employment \ Year</b>	<b>1979</b>	<b>1984</b>	<b>1989</b>	<b>1994</b>	<b>1999*</b>
• Wage Employees	972.3	1,119.7	1,368.4	1,505.5	1,673.6
• Self-employed and unpaid family workers	630.0	32.4	44.3	58.3	65.1
• Informal Sector	121.6	233.4	383.5	1,792.4	3,738.8
<b>Total</b>	<b>1,156.9</b>	<b>1,385.4</b>	<b>1,796.2</b>	<b>3,356.2</b>	<b>5,477.5</b>

Source: Economic Survey (various issues), Central Bureau of Statistics, Kenya Ministry of Finance & Planning.

\* Provisional

While overall employment has been increasing during the 20-year period shown in the above table, the number of persons engaged in the informal sector has increased more than thirty-fold. This reflects the economy's inability to absorb wage employees. More significantly, whereas in 1979 wage employees were 972,300 compared to only 121,600 persons in the informal sector, by 1999 the number of persons engaged in the informal sector was more than twice the number of wage employees. Given that about 500,000 Kenyans join the labor market every year, this inability of the economy to generate sufficient wage employment constitutes a serious structural problem; particularly, since most persons in the informal sector are under-employed. Table 2.2.13 indicates wage employment by province between 1994 and 1999. Nairobi has the largest share of the country's total wage employment, accounting for 25.1% of total wage employment in 1999. Rift Valley was second in 1999 with 22.4% of total wage employment. The North Eastern and Nyanza provinces account for the lowest share of wage employment, or 15,400 persons (0.9% of total) and 110,400 persons (6.6%), respectively, in 1999. This table also shows that the level of annual provincial employment is almost static, reflecting the static or deteriorating employment situation. Assuming that the labor force of Kenya is comprised of persons aged 15 to 55 years, excluding economically inactive persons, students and trainees, the unemployment rate is probably somewhere between 32% to 40%.

**Table 2.2.13 Wage Employment by Province for 1995 – 1999 ('000)**

<b>Province</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>
Nairobi	400.1	410.9	414.9	418.2	420.8
Coast	194.5	201.3	203.6	205.4	206.6
North Eastern	14.3	14.8	15.1	15.4	15.4
Eastern	132.4	136.1	137.9	139.1	139.6
Central	219.9	230.1	235.2	238.5	239.5
Rift Valley	338.4	357.6	367.0	371.8	374.3
Nyanza	153.8	160.7	164.4	166.4	167.0
Western	103.6	107.3	109.3	110.1	110.4
<b>Total</b>	<b>1,557.0</b>	<b>1,618.8</b>	<b>1,647.4</b>	<b>1,664.9</b>	<b>1,673.6</b>

Source: Economic Survey, Central Bureau of Statistics, Kenya Ministry of Finance & Planning, 1999 & 2000.

Table 2.2.14 shows wage employment by industry and sector for the period of 1995-1999. The



table shows that whereas private sector wage employment has been growing steadily from 867,000 employees in 1995 to 990,300 employees in 1999, the number of public sector wage employees has been steadily declining since 1995, from 700,900 persons in 1996 to 683,300 persons in 1999. The decline in wage employment in the public sector is due mainly to the government's implementation of structural reform policies, resulting in retrenchment that have led to considerable staff reductions.

**Table 2.2.14 Wage Employment by Industry and Sector for 1995-1999 ("000)**

	1995	1996	1997	1998	1999
<b>Private Sector</b>					
Agriculture & Forestry	226.8	236.6	240.6	245.2	249.6
Mining & quarrying	4.0	4.1	4.3	4.3	4.5
Manufacturing	165.5	172.3	177.1	180.8	184.0
Electricity & Water	1.3	1.3	1.4	1.5	2.7
Building & construction	47.1	49.6	51.6	51.9	52.2
Wholesale & retail trade (restaurants & hotels)	127.9	136.2	141.7	144.3	147.3
Transport & communications	38.1	41.4	43.1	43.1	43.7
Finance, insurance, real estate & business services	59.7	62.6	65.4	66.8	68.1
Community, social & personal services	196.6	213.8	221.6	229.3	239.4
<b>Total Private Sector</b>	<b>867.0</b>	<b>917.9</b>	<b>946.8</b>	<b>967.2</b>	<b>990.3</b>
<b>Public Sectors</b>					
Agriculture & forestry	67.2	66.4	65.0	63.6	61.7
Mining & quarrying	0.7	0.7	0.7	0.7	0.7
Manufacturing	39.3	38.2	37.4	36.1	35.6
Electricity & water	21.6	22.0	22.0	21.7	21.2
Building & construction	29.3	29.2	28.3	27.4	26.5
Wholesale & retail trade (restaurants & hotels)	7.0	7.0	6.5	6.4	6.3
Transport & communications	41.0	44.8	42.7	41.9	40.1
Finance, insurance, real estate & business services	18.3	18.4	17.8	17.2	16.4
Community, social & personal services	465.6	474.2	480.2	482.7	474.8
<b>Total Public Sector</b>	<b>690.0</b>	<b>700.9</b>	<b>700.6</b>	<b>697.7</b>	<b>683.3</b>

Source: Economic Survey 2000, Central Bureau of Statistics, Kenya Ministry of Finance & Planning, 2000.

A comparison of private and public sector average wage earnings per employee during the period 1995-1999 is shown in Table 2.2.15. The average earnings of both sectors increased from K£3,409 in 1995 to K£6,997 in 1999. However, private sector wage earnings have been higher than that of the public sector. In both sectors, services (including finance, insurance, real estate and business services), transport and communications, and the trade, restaurants and hotels, in that order, have had the highest wage earnings per employee. In the public sector, wage earnings per employee were higher in parastatal bodies and the local government than in the Central Government and the Teachers Service Commission.

**Table 2.2.15 Average Wage Earnings per Employee, 1995-1999**

	1995	1996	1997	1998	1999
<b><u>Private Sector</u></b>					
Agriculture & forestry	1,448.8	1,781.3	2,132.5	2,546.8	2,964.6
Mining & quarrying	2,331.9	2,728.1	3,121.8	3,559.3	4,016.0
Manufacturing	3,845.4	4,712.4	5,697.8	6,789.5	7,901.7
Electricity & water	4,027.9	4,970.4	6,334.1	8,068.7	9,923.5
Building & construction	3,268.8	4,042.0	4,842.3	5,821.8	6,811.7
Trade, restaurants & hotels	5,169.8	6,354.1	7,668.8	9,198.3	10,767.0
Transport & communications	5,745.1	6,988.1	7,569.2	9,849.9	11,371.4
Finance, insurance, real estate & business services	7,204.0	8,671.0	10,290.3	12,073.9	13,888.1
Community, social & personal services	3,104.5	3,788.5	4,645.0	5,677.3	6,776.2
<b>Total Private Sector</b>	<b>3,522.6</b>	<b>4,313.4</b>	<b>5,185.1</b>	<b>6,246.7</b>	<b>7,304.3</b>
<b><u>Public Sector</u></b>					
Agriculture & forestry	4,291.1	2,390.1	2,997.1	3,686.3	4,284.6
Mining & quarrying	97.2	4,285.5	5,195.6	6,166.8	6,983.5
Manufacturing	4,464.1	3,689.9	5,660.9	6,632.9	7,473.9
Electricity & water	3,613.4	5,736.4	7,145.0	8,581.9	9,839.6
Building & construction	5,108.3	3,569.4	4,353.4	5,082.8	5,656.9
Trade, restaurants & hotels	1,030.2	5,077.9	6,264.8	7,438.0	8,425.7
Transport & communications	5,738.5	5,320.7	6,428.4	9,202.8	11,859.5
Finance, insurance, real estate & business services	4,341.9	10,166.7	14,078.5	18,183.5	21,664.5
Community, social & personal services	3,073.0	3,650.4	4,264.1	5,182.1	5,683.4
<b>Total Public Sector</b>	<b>3,273.1</b>	<b>3,888.1</b>	<b>4,716.2</b>	<b>5,806.0</b>	<b>6,551.6</b>
<b>Total Private &amp; Public Sector</b>	<b>3,409.0</b>	<b>4,129.2</b>	<b>4,985.6</b>	<b>6,062.0</b>	<b>6,997.0</b>
<b><u>Memorandum Items in Public Sector</u></b>					
Central Government	3,476.0	4,016.5	4,750.5	5,800.7	6,311.2
Teachers Service Commission	2,523.1	3,129.2	3,793.2	4,908.4	5,350.2
Parastatal Bodies	3,800.7	4,449.1	5,261.3	6,287.3	7,437.9
Majority Control by the Public Sector	4,411.5	5,505.6	6,818.7	8,305.2	9,800.1
Local Government	3,263.8	4,344.2	5,294.8	6,406.7	7,700.9
<b>Total Public Sector</b>	<b>3,273.1</b>	<b>3,881.1</b>	<b>4,716.2</b>	<b>5,806.0</b>	<b>6,551.6</b>

Source: Economic Survey, Central Bureau of Statistics, Kenya Ministry of Finance & Planning, 1999 & 2000.

#### (4) Poverty

Although Kenya's population growth rate has declined from an annual average of 3.4% during the period 1979 - 1989 to the current 2.9%, the number of Kenyans living in poverty has increased in the 1990s. That is, the proportion of Kenyans in both rural and urban areas living in poverty line has increased from 44.78% in 1992 to 52.32% in 1997 (see Table 2.2.16), a result of the worsening economic situation, rising total population, and declining income per capita. Also, note that overall poverty is slightly worse in the rural areas (52.93%) as compared to the urban areas (49.20%).

**Table 2.2.16 Changes in Overall Poverty by Rural and Urban Areas**

	1992 WMS I	1994 WMS II	1997 WMS III
<b>Total Rural (%)</b>	47.89	46.75	52.93
<b>Total Urban (%)</b>	29.29	28.95	49.20
<b>Total Kenya (%)</b>	44.78	40.25	52.32

Source: Economic Survey 2000, Central Bureau of Statistics, Kenya Ministry of Finance & Planning, 2000.

Note: North Eastern Province excluded.

Table 2.2.17 shows the overall absolute rural and urban poverty rates by province and urban area for 1997. As the table indicates, rural absolute poverty is greatest in the Nyanza (62.9%) and Coast provinces (62.2%), and is lowest in Central Province at 31.4%. All of the other provinces have rural absolute poverty rates greater than 50%. As for urban absolute poverty, Nakuru has the lowest rate at 41.1%, while Nairobi has an absolute poverty rate of 51.2%, which is slightly higher than the average urban absolute poverty rate of 50.1%.

**Table 2.2.17 Overall Absolute Poverty by Province, District, & Urban Area for 1997**

Province/District	Total Population	Population Below Absolute Poverty Line	% of Population Below Absolute Poverty Line
Central (Rural)	3,591,926	1,126,826	31.4
Coast (Rural)	1,420,975	883,667	62.2
Eastern (Rural)	3,915,177	2,280,334	58.2
Nyanza (Rural)	4,259,215	2,678,518	62.9
Rift Valley (Rural)	5,365,744	2,691,909	50.2
Western (Rural)	2,931,551	1,739,131	59.3
<b>Total Rural</b>	<b>21,484,588</b>	<b>11,400,385</b>	<b>53.1</b>
<b>Total Urban</b>	<b>3,978,750</b>	<b>1,993,902</b>	<b>50.1</b>
Nairobi	1,875,927	959,973	51.2
Kisumu	219,486	140,407	64.0
Nakuru	276,816	113,674	41.1
Other Towns (Combined)	1,055,332	562,446	53.3
<b>Nation</b>	<b>25,463,338</b>	<b>13,394,287</b>	<b>52.6</b>

Source: Economic Survey 2000, Central Bureau of Statistics, Kenya Ministry of Finance & Planning, 2000.

Note: North Eastern Province (Garissa, Wajir, Mandera) and the Isiolo, Marsabit, Turkana and Samburu districts were excluded from the above.

## 2.3 Transportation

### 2.3.1 Introduction

There are four major modes of transportation in Kenya for passengers and bulk freight: rail, road, maritime, and air. Of these modes, the most important in terms of volume is road transport, with the most important land transport corridor being the route between Nairobi and Mombasa and then the corridor that runs from Nairobi to the west of the country towards Uganda and into the interior of Africa. Below, the current situation for each of these modes of transportation is briefly described.

### 2.3.2 Land Transport

#### (1) Rail Transport

As Table 2.3.1 indicates, the railway network in Kenya has changed very little over the past decade, with operating length increasing from 2733 km in 1989 to 2778 km in 1998, or a mere increase of 45 km. In the case of public lines, there has been virtually no change in the current operating length of 1919 km. As for private lines/sidings, there have been slight increases and decreases and the current length is now 859 km.

**Table 2.3.1 Lines Open for Traffic on the Kenya Railways during 1989-1998 (km)**

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>Public Lines</b>										
Main Lines	1083	1083	1083	1083	1083	1083	1083	1083	1083	1083
Principal Lines	345	346	346	346	346	346	346	346	346	346
Minor & branch Lines	490	490	490	490	490	490	490	490	490	490
<b>Total</b>	1918	1919	1919	1919	1919	1919	1919	1919	1919	1919
<b>Private Lines &amp; Siding</b>	815	839	821	821	821	851	859	821	821	859
<b>Total</b>	2733	2758	2740	2740	2740	2770	2778	2740	2740	2778

Source: Statistical Abstract, Central Bureau of Statistics, Kenyan Ministry of Finance & Planning, 1999.

On the other hand, as Table 2.3.2 indicates, the recent performance of the railway has been excellent. For example, 2200 tons of freight was transported in 1999 as compared to 1688 tons in 1998, or an increase of 30.3%. As a result of this, revenue and revenue per ton-km increased by 48.0% and 10.2%, respectively, to K£233.4 million and 313 cents. These figures are the highest of the period shown in the table. However, it should be noted that the share of rail transport for carrying freight to/from Mombasa harbor is only 26.0%.

As for passenger traffic, the number of journeys increased to 4700 in 1999 from 2843 in 1998, or an increase of 65.3%, which was mainly due to the Nairobi urban commuter train. As a result of this, revenue and revenue per passenger-km increased by 7.5% and 51.8%, respectively, to K£14.4 million and 94.1 cents.

**Table 2.3.2 Railway Traffic Data for 1995 - 1999**

Type of Traffic	Unit	1995	1996	1997	1998	1999*
<b>Freight:</b>						
Tons	'000	2090.1	1826.5	1620.6	1688.0	2200.0
Ton-km	million	1456.1	1218.8	1068.2	1111.0	1491.6
Revenue	K£ million	171.3	156.7	123.9	157.7	233.4
Revenue per ton-km	Cents	235.3	257.1	232.0	283.9	313.0
<b>Passenger:</b>						
Journeys	'000	1624.1	2379.0	1981.0	2843.0	4700.0
Passenger-km	million	363.0	371.0	393.0	432.0	306.2
Revenue	K£ million	14.5	14.9	14.6	13.4	14.4
Revenue per pass-km	cents	79.9	80.3	74.3	62.0	94.1

Source: Economic Survey 2000, Central Bureau of Statistics, Kenyan Ministry of Finance & Planning, 2000.

\*Provisional.

## (2) Road Transport

### 1) Road Network

The road network is divided into a classified and unclassified network. The classified network, which carries the vast majority of Kenya's road traffic, is approximately 63,942 km in length and the unclassified network 94,161km in length. Table 2.3.3 shows a breakdown of the classified network by purpose and type of road.

**Table 2.3.3 Kilometers of Road by Type and Classification**

Road Class	Type of Road**	1993	1994	1995	1996	1997	1998
A: International Trunk Rd	Bitumen	2667.1	2697.2	2653.0	2653.0	2653.0	2653.0
	Earth/Gravel	1023.8	959.9	957.9	957.9	957.9	957.9
B: National Trunk Rd	Bitumen	1403.3	1403.3	1304.0	1304.0	1304.0	1304.0
	Earth/Gravel	1344.8	1344.8	1366.5	1366.5	1366.5	1366.5
C: Primary Rd	Bitumen	2500.9	2590.0	2561.7	2561.7	2561.7	2561.7
	Earth/Gravel	5452.5	5568.4	5468.9	5468.9	5468.9	5468.9
D: Secondary Rd	Bitumen	1163.5	1187.0	1183.3	1183.8	1183.8	1183.8
	Earth/Gravel	10058.4	10905.6	10155.0	10155.0	10155.0	10155.0
E: Minor Rd	Bitumen	667.1	712.7	749.3	749.3	749.3	749.3
	Earth/Gravel	25956.5	25993.6	26321.5	26321.5	26321.5	26321.5
F: Special Purpose Rd *	Bitumen	213.5	213.5	219.5	219.5	219.5	219.9
	Earth/Gravel	10872.9	10905.2	11000.4	11000.4	11000.4	11000.4
Total	Bitumen	8615.4	8803.7	8671.3	8671.3	8671.3	8671.7
	Earth/Gravel	54708.9	55675.5	55270.2	55270.2	55270.2	55270.2

Source: Statistical Abstract, Central Bureau of Statistics, Kenyan Ministry of Finance & Planning, 1999.

\*: Provisional

\*\* : Bitumen Roads: Include government access, township, and municipal roads.

Earth/Gravel Roads: Include township, settlement, strategic, tourist, sugar, tea, wheat, and Special Rural Development Program roads.

As the above table indicates, there has been almost no change in the size of either the paved or unpaved classified road network. This is also the case for the unclassified network as well. Note that the classified paved road network accounts only for 13.6% of the total classified network and about 5.1% of the entire road network (i.e., unclassified and classified roads).

## 2) Road Traffic

The amount of traffic generated on a road network is affected by a number of variables. One of the most important of these variables is the number of motor vehicles owned. Table 2.3.4 shows the number of motor vehicles with current licenses, which is assumed here to be the closest measurement of vehicle ownership. As this table indicates, the growth in annual vehicle ownership between 1979 and 1999 was approximately 4.2%.

**Table 2.3.4 Motor Vehicles with Current Licenses for Selected Years during 1979 - 1999**

<b>Type of Vehicle \ Year</b>	<b>1979</b>	<b>1980</b>	<b>1985</b>	<b>1990</b>	<b>1995</b>	<b>1999*</b>
Motor Cars	110,431	113,629	126,188	157,696	172,770	233,743
Utilities, panel vans, pick-ups, etc.	52,249	55,524	69,441	88,300	100,947	132,883
Lorries, trucks & heavy vans	23,115	23,594	26,186	32,583	32,570	43,186
Buses & mini buses	4,985	5,075	8,217	13,206	29,753	37,632
Motor & auto cycles	16,573	15,343	18,987	23,447	32,479	43,292
Other motor vehicles	16,313	16,703	19,415	23,843	21,512	27,146
Trailers	10,360	10,567	11,784	14,157	10,486	13,606
<b>Total</b>	<b>234,026</b>	<b>240,435</b>	<b>280,218</b>	<b>353,232</b>	<b>400,517</b>	<b>531,488</b>

Source: Statistical Abstract, Central Bureau of Statistics, Kenyan Ministry of Finance & Planning, Various Issues.

\*: Provisional

An example of the amount of traffic that is actually generated by the above levels of motor vehicle ownership is shown in Figure 2.3.1. This figure shows the results of a 1995 traffic counting survey. The survey was carried out over a 12-hour period (7am to 7pm) for 27 strategic points. The results indicate that the largest traffic flow was around the Nairobi area with about 6500 vehicles (both directions). In the Mombasa area, the largest vehicle count was about 4000. The average 12-hour traffic flow for these 27 points was 1933 vehicles.

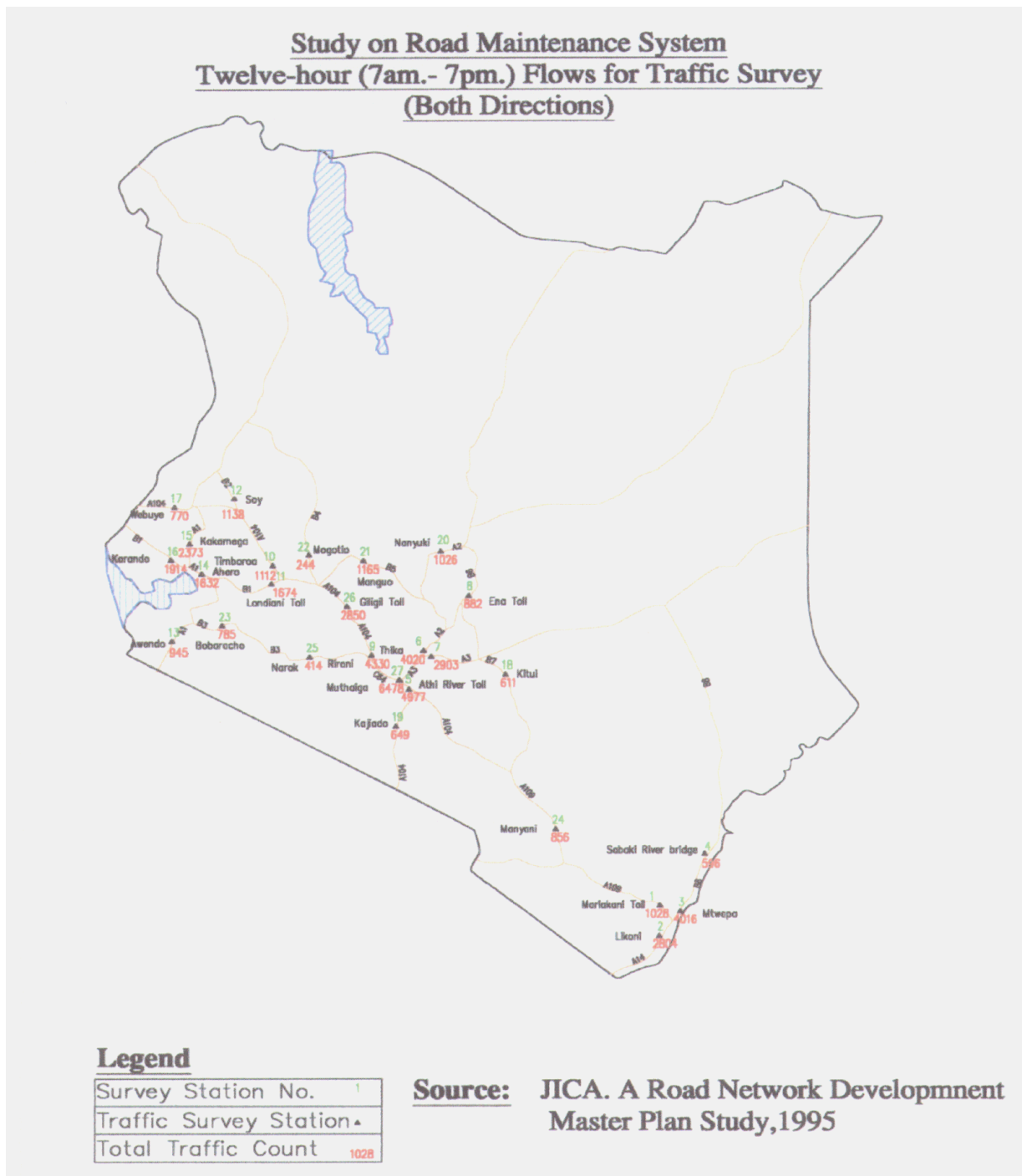


Figure 2.3.1 Bi-directional 12-Hour Traffic Flows (7am – 7pm)



### 2.3.3 Maritime Transport

As for shipping, the number of passengers using maritime transport decreased a large 36.4% in 1993, and it has been experiencing slight increases and decreases ever since. In 1998, the total number of passengers using maritime transport was 13,991, or down by 6.8% as compared to 1997 (see Table 2.3.5).

As for freight, there was a decrease in 1999 from 1998 in both the amount of goods exported and imported, dropping respectively by 3.9% and 3.0% to approximately 1.6 million tons and 6.4 million tons. This decrease is due to a lack of using existing capacity, and the Kenya Ports Authority is trying to market the port of Mombasa to East and Central Africa.

**Table 2.3.5 Shipping Traffic Handled at Mombasa (1991-1998)**

	1991	1992	1993	1994	1995	1996	1997	1998	1999*
<b>Passengers</b>									
Embarked	12511	12028	8800	9991	5043	6120	7105	6780	-
Landed	18273	15779	8894	9022	5391	6780	7911	7211	-
Total	30784	27807	17694	19013	10434	12900	15016	13991	-
<b>Cargo ('000 tons)</b>									
<b>Exports</b>									
Dry Cargo	1483	1692	2088	1446	1733	2103	1647	1,755	1607
Petrol and Oils (in bulk)	310	390	685	212	184	273	183	162	236
Total	1793	2082	2773	1658	1917	2305	1830	1917	1843
<b>Imports</b>									
Dry Cargo	2087	2828	2773	3930	3370	3422	5096	4242	3667
Petrol and Oils (in bulk)	3228	2981	2371	2680	2642	2780	1516	2400	2774
Total	5315	5809	5144	6610	6012	6202	6612	6642	6441
Transshipments	41	100	72	61	55	116	184	190	-
Total	7149	7991	7989	8329	7984	8623	8370	8749	-

Sources: Statistical Abstract, Central Bureau of Statistics, Kenyan Ministry of Finance & Planning, 1999.

Economic Survey 2000, Central Bureau of Statistics, Kenyan Ministry of Finance & Planning, 2000.

\* Provisional

### 2.3.4 Air Transport

There are two international airports in Kenya: Jomo Kenyatta International Airport in Nairobi and Moi International Airport in Mombasa. The amount of traffic handled at these facilities are shown in Table 2.3.6. As this table indicates, there were significant increases in the total number

of passengers and freight passing through Nairobi in 1998 as compared to 1997. In the case of passenger traffic, the number of riders that used Nairobi airport increased by 12.7%, while freight increased

As for Moi International Airport, the increase in the total number of passengers between 1998 and 1997 was a small 1.1%. On the other hand, in the case of freight, the increase between 1998 and 1997 was a large 11.6%.

**Table 2.3.6 Commercial Aircraft Traffic Handled at Main Airports (1990-1998)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998*
<b>Nairobi</b>									
Passengers ('000)									
Landed	786.5	788.0	818.7	788.2	818.7	788.2	794.3	834.3	942.1
Embarked	786.0	769.9	828.3	801.2	828.3	801.2	828.4	855.1	950.0
In Transit	289.7	314.4	339.9	358.8	339.9	358.8	346.2	257.8	301.8
Total	1862.2	1872.3	1986.9	1948.2	1986.9	1948.2	1968.9	1947.2	2193.9
<b>Freight (tons)</b>									
Landed	16656.0	18771.7	23505.9	22826.9	23505.9	22826.9	23979.8	24070.5	28118.0
Loaded	44665.3	45021.5	59341.9	48395.6	59341.9	48395.6	3971.1	40764.6	51713.1
Total	61321	63793.2	82847.8	71222.5	82847	7122.5	63700.9	64835.1	79831.1
<b>Mombasa</b>									
Passengers ('000)									
Landed	323.6	346.3	368.7	364.5	368.7	364.5	342.9	425.3	426.9
Embarked	356.8	363.2	386.1	375.8	386.1	375.8	356.6	419.9	420.2
In Transit+	19.0	20.1	30.9	23.7	30.9	23.7	49.6	42.7	50.7
Total	699.4	729.6	785.7	764.0	785.7	764.0	8600.8	887.9	897.8
<b>Freight (tons)</b>									
Landed	524.6	466.6	707.3	761.1	707.3	761.1	826.6	1829.5	2001.2
Loaded	811.1	697.7	652.5	634.4	652.5	634.4	933.4	1535.4	1754.3
Total	1335.7	1164.3	1359.8	1395.5	1359.8	1395.5	1760.0	3364.9	3755.5

Source: Statistical Abstract, Central Bureau of Statistics, Kenyan Ministry of Finance & Planning, 1999.

Note: (1) + Transit passengers counted once as from 1970.

(2) Total air traffic includes both domestic and international passenger traffic.

(3) "Domestic traffic" refers to passengers traveling within Kenyan borders.

(4) "International traffic" refers to passengers traveling from/to outside Kenyan borders.

\* Provisional