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MINISTRY OF WATER DEVELOPMENT

THE STUDY

ON

THE NATIONAL WATER MASTER PLAN

国際協力事業団

24174

SECTORAL REPORT
(A)

SOCIO-ECONOMY

JULY 1992

JAPAN INTERNATIONAL COOPERATION AGENCY

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PREFACE

Interpretation of Report

The original objective of this NWMP Study is to propose a nationwide framework for orderly planning and development of water resources in the country. The Study also deals with the formulation of individual development schemes. However, it should be noted that the plans formulated in this Study remain at a national level and do not provide complete details at local level. Further details should be examined in subsequent studies on each river basin, district, and project basis which are separately recommended in this Study.

Administrative Division of Districts

In this Study, the original 41 districts were considered and various statistical data, particularly socio-economic information, were collected for these districts. During the progress of the Study, six districts were detached from the original ones and established as new districts. In the report, the data on these new districts are grouped together with the corresponding original districts as shown below.

	Original Districts	New Districts	Data included in:
1.	Machakos	Makueni	Machakos/Makueni
2.	Kisii	Nyamira	Kisii/Nyamira
3.	Kakamega	Vihiga	Kakamega/Vihiga
4.	Meru	Tharaka-Nithi	Meru/Tharaka-Nithi
5.	Kericho	Bomet	Kericho/Bomet
6.	South Nyanza	Migori	South Nyanza/Migori

(Note: The last three Districts were established very recently.
The report refers only to the names of the original 41 districts.)

The administrative boundary map used in this Study is the latest complete map set covering the whole country (41 Districts, 233 Divisions and 976 Locations), prepared in 1986 by the Survey of Kenya, Ministry of Land, Housing and Physical Planning.

Data and Information

The data and information contained in the report represent those collected in the 1990-1991 period from various documents and reports made available mostly from central government offices in Nairobi and/or those analyzed in this Study based on the collected data. Some of them may be different from those kept in files at some agencies and regional offices. Such discrepancies if any should be collated and adjusted as required in further detailed studies of the relevant development projects.

Development Cost

The cost and benefit estimate was based on the 1991 price level, and expressed in US$ equivalent according to the exchange rate of US$1 = KShs25.2 prevailing at that time. The same exchange rate was used in calculating the development cost in K£/KShs currency.

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- Population issues are based on the 1979 population census because no information in terms of population was available by the time "Economic Survey 1991" was published in June, 1991.

- 41 District structure is used in this current study in the case of discussing District distribution issues because of data availability of socio-economic information.

- Administrative boundary map is as of 1986, which was presented by Survey of Kenya, Ministry of Land and Housing and which was the latest available, complete map set covering the whole country.

A1. INTRODUCTION

In this master plan, the socioeconomic study aims at presenting two aspects for the other planning sectors: 1) present socioeconomic structure in the sectors concerned with water resources development; and 2) future socioeconomic framework in the same sectors.

These two aspects are not only essential for planning basic information but also fundamental for estimating water requirement by domestic, municipal, industrial, and agricultural water users. In this context, Chapter A2 gives the present socioeconomic conditions in relation to water resource development. Chapter A3 describes the active development plans over the various levels and fields related to the water sector. Chapter A4 shows the population projection by "Location" up to the target year 2010, which is one of the most fundamental piece of information for water demand projection. Chapters A5 to A7 present the projection of economic sectors, GDP in Chapter A5, agricultural production in Chapter A6, and industrial production in Chapter A7. Finally, Chapter A8 discusses constraints of public finance for water resource development.

In May 1991, "Economic Survey 1991" (Ref.A.08) presented the provisional results of the 1989 population census. The results provided the total population by District and by urban centre. They were 9% below the projected national population and 16% below the projected urban population in Chapter A4. Thus, on the basis of the provisional results, the population projection was revised through the discussions in the Steering Committee and the Technical Sub-Committee. This projection is described in Part II, Chapter A9. Along with the revision of the population projection, some other issues related to population had to be reviewed based on the new projection. These results were discussed in Chapter A10.

Incidentally, it may be effective as an introduction of this socioeconomic study to depict the implication of this study and the water demand estimation. Figure A1.1 illustrates a procedure of the estimation in this current study. As seen in the figure, the following data or projection activities are covered in the socioeconomic study.

1) Demand of domestic water

   a) Population distribution by urban/rural area and by "Location" of administrative unit
   c) Projected Population by urban/rural and by "Location"
   d) Classification of household income
   e) Unit consumption rates of domestic water

2) Demand of municipal water

   a) Inventory of service centres
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e) Unit consumption rate of type of manufacturing industry

A2. PRESENT CONDITIONS OF SOCIO-ECONOMY

2.1 Geographical Features

Kenya is located in a tropical zone which lies between latitude 5.20° north and 4.40° south and between longitude 33.50° east and 41.45° east. The longest distance from east to west in Kenya is about 850 km. The longest distance from north to south is about 1,100 km. The total area of the country is about 592,000 km^2. Of the total area, 580,000 km^2 or 98.1% is dry land and the rest is water, i.e., lakes and rivers.

Of the total dry land area, 103 thousand km^2 or 18% is reserved area (hereinafter, called as unlivable area) for uses such as national parks and game reserves, and subject to no land use change even in the future. 478 thousand km^2 or 82% of the total is habitable areas (hereinafter, called as livable area) where the people carry out their daily activities.

Table A2.1 shows Provincial and District breakdown of the aforesaid categories. The largest District in terms of land area is Marsabit District, accounting for 13% of the total. In terms of livable area, Turkana District is the largest and Nairobi is the smallest. Nairobi also functions as a Province. Besides, it is the capital city of Kenya, and officially it is taken as an extra-provincial District.

2.2 Administrative Units

(1) Central government

The national administrative units are organized as follows in administrative order: 1) Province; 2) District; 3) Division; 4) Location; and 5) Sub-location. According to the latest available information which can identify not only names of administrative units but also locations of respective units on administrative boundary maps, the national administrative structure in Kenya in 1986 consisted of: 1) 8 Provinces; 2) 41 Districts; 3) 233 Divisions; and 4) 976 Locations. Figure A2.1 shows the distribution of these categorized areas in the country. In the near future when the preparation of the 1989 census reports and maps will be completed, the latest information of administrative units and their distribution map will be released. Table A2.2 shows the available inventory of administrative units. Although the inventory of administrative units of the 1989 census is included in the table, the boundary maps were not published by the time of writing of this report, so the aforesaid 1986 boundary maps and information must be used in this current study.

At present, the following three Districts are created as independent Districts: Makueni derived from Machakos in Eastern Province; Nyamira from Kisii in Nyanza Province; and Vihiga from Kakamega in Western Province. In fact, these three Districts have been functioning and their headquarters are active on administrative works. In this study, however, the above mentioned 41-District structure will be maintained, because all the socioeconomic data has been organized

on the basis of 41 Districts. These new names of the three Districts were put down with the original District names as follows: Machakos/Makueni, Kisii/Nyamira and Kakamega/Vihiga.

(2) Local government

Apart from the national government, there are many autonomous local governments in the country. They are established by "The Local Government Act (Chapter 265)" (Ref.A.30) of the Kenyan Laws and classified into five local authorities. In November 1990, 116 local authorities were functioning and distributed as follows: 1) one City Commission, Nairobi only; 2) 19 Municipal Councils; 3) 22 Town Councils; 4) 34 Urban Councils; and 5) 40 County Councils. Table A2.3 shows the District distribution of local authorities. Table A2.4 lists the existing local authorities as of November 1990.

In rural areas, a county council is established in every District as a basic autonomous organization. In an area having some urban agglomeration, another local authority is possibly established aside from the county council, which is expected to serve the inhabitants with neighborly urban services such as social, water supply, and sewerage services. It is established as a Municipal, Town, or Urban council in accordance with scale of urban agglomeration. Therefore, its territory is deemed to form a kind of urban centre.

2.3 Population

(1) District distribution

Population distribution is one of the most basic piece of information required to formulate a water resource development plan. At present, the latest available and reliable information regarding present population and its distribution in the country is the 1979 census, because the 1989 census is still not available until the end of the year 1991. Thus, the current water master plan must be formulated on the basis of this latest available census data, as discussed in the Steering Committee.

According to the 1979 census, the national population was 15,327 thousand in the first census report. Its distribution by District is shown in Table A2.5. Afterwards, this total population was adjusted to 16,141 thousand in the census analysis report, because of under-enumeration. However, since its distribution was not published in the report, the distribution must be surmised through the first report. In the report "Population Projections for Kenya 1980-2000" (Ref.A.14), the 1980 population distribution by district is estimated on the basis of the adjusted population of respective Districts. The table shows the estimated population of respective Districts in 1980. Thus, these district populations will be applied to the future population projection as the base population. Incidentally, population distribution by location is put in the Appendix D.2 of Sectoral report "D".

The Districts having a population of more than one million in 1980 were Kakamega, Machakos, and Kisii. Nairobi District had 896.8 thousand, the fifth largest District in the 41 Districts in 1980. In terms of population density, on the other hand, Mombasa was the most densely inhabited District with 1,739 persons/km^2. Nairobi was the second, having a density of 1,311 persons/km^2. The third was Kisii District, having a density of 459 persons/km^2, one-third of Nairobi's density.

The Districts which recorded the highest population growth rate, more than 7% per annum on average for 11 years between the 1969 census and 1980, were Trans Nzoia, Laikipia, and Garissa, as shown in Table A2.6. Five Districts grew at more than 6% per annum during the same period; West Pokot, Lamu, Marsabit, Tana River, and Nakuru. Most of them are located in the ASAL areas. Nairobi recorded an average population growth rate of 5.3% per annum, which was the 11th largest in the 41 Districts. On the contrary, Turkana and Elgeyo Marakwet, recorded negative growth during the same period. The reason for this is considered to be out-migration to economically advanced or newly settled Districts such as Nairobi, Mombasa, Nakuru, and Uasin Gishu which attained fairly positive net-migration of more than 100 thousand people during the the two censuses of 1969 and 1979, as shown in Table A2.6. The national average growth rate was 3.9% per annum.

(2) Basin distribution

Population distribution by major river basin is tabulated in Table A2.7. The population distribution by river basin area is estimated on the basis of the "Location" distribution. The basin distribution is made by what is called the "ratio method". The estimation procedure is as follows:

1)　Rural population is entirely distributed by the "ratio method". If a "Location" area is divided by sub-basin boundaries, "Location" population is allotted in proportion to the area rates of respective parts which are divided by basin boundaries. In any cases of "Location" area and basin area, unlivable areas are excluded in the estimation.

2)　Urban population is allotted in a sub-basin where its urban area is located, as long as the urban area is small and included in the sub-basin area. However, if the urban area extends over more than two sub-basins, its urban population is also estimated by the same ratio method as used in the rural population distribution.

3)　Sub-basin population is estimated as the aggregate of both rural and urban populations allotted into its sub-basin through the above procedure. Finally, the population distribution by major river basin was aggregated as shown in Table A2.7.

(3) Urban population

An urban centre has been defined as settlements with 2,000 persons or more, since the 1948 census. The 1979 census showed that there were 91 urban centres and that their total population was 2,315 thousand, as shown in Table A2.8. It accounted for 14.3% of the total census population of 16,141 thousand.

It is difficult to figure out the population growth of urban centres, because boundaries shown on the census maps are not always clear and even without boundary changes the physical area of an urban centre is not always the same from one census to the next. Thus, there was no definite estimation of urban population growth in the "1979 Census Report of Urban Population" (Ref.A.13). However, the report described this situation as follows: "In making a decision on the urban centre's rate of population growth, it is to be assumed that the rate will be higher than the rate of population growth for the whole district and lower than the rate of population growth for the total urban population taken as the standard." In other words, most of urban centres excluding some major rapid growing centres grew at the rate between the District population growth and the total urban population growth.

(4) Family size

The natural average family size in the 1979 census was 5.2 persons, as shown in Table A2.6. Of District averages, the largest was 6.4 persons of Bungoma. The Districts having more than 6 family members on average were West Pokot, Kisii, and South Nyanza as well as Bungoma. The smallest size was 4.1 persons of Nairobi and Mombasa. Besides Nairobi and Mombasa Districts, the following three Districts recorded less than 4.5 family members on average: Isiolo, Laikipia, and Elgeyo Marakwet.

(5) Migration

In the 1979 census, lifetime migrants were figured out as immigrants into and out-migrants out of each District. The summary of these migrants is presented in Table A2.6. In the table, the net-migrant indicates the difference of in-migrants and out-migrants at the time of 1979 census.

2.4 Labour Force and Employment

The conventional approach to age structural characteristics of a changing population are usually expressed in terms of functional age-groups as follows: 0-4 years referred to as pre-school age group; 5-14 years as primary school age-group; 15-59 years as the active or working age-group; and 60 and above years as old age-group. According to the 1984 data, only two countries in Africa, namely Kenya and Botswana, had the proportions of their children (0-14 years) constituting approximately 50% of their total national population. This means that Kenya is a young country in terms of population constitution.

In the near future, those young generation will enter the labour market as new job-seekers. Table A2.9 shows that in 1986, the total population of productive working age was estimated to be about 9.6 million or 46% of the total population. Out of this working age population 8.2 million or 85% was estimated to participate in labour markets as a labour force. Out of this labour force, those productively employed in 1986 represented a total of 7.1 million. Then, 1.1 million people or 12.8% of the total labour force (so called as unemployment rate, here) was enumerated as the unemployed and underemployed as residual in the table. Within the present employment structure, youth unemployment will increase and have more critical proportions in the near future.

Besides youth unemployment, women unemployment is another dimension of the employment problems. The majority of Kenyan women in rural areas are economically active mainly in agricultural production. They have had consistently low rates of participation in the modern sector. This is mainly because they have been held back by long standing socio-cultural barriers, arising from past disadvantages such as low educational attainment. To make women labour force participate effectively in the labour market, the role of women might be made to be clear in the labour market.

In 1985, 1,174 thousand people engaged in the modern sector work force as shown in Table A2.9. Of the total, 574 thousand or 49% were in public sectors such as government, parastatal bodies, and public servicing organizations. The rest, 600 thousand or 51%, was engaged in the private sector such as incorporated companies, co-operatives, and other private entities. In terms of industrial type, the total work force in 1985 was distributed as shown in Table A2.10. 241 thousand or 21% of the total was in the agricultural sector. 213 thousand or 18% was in the industrial sector. The rest, 720 thousand or 61%, was in the service sector.

Table A2.11 shows the distribution of wage employees by firm scale. Of the total employees of 986 thousand in 1988, 808 thousand or 82% were engaged in medium and large scale establishments, every one of which employed more than 50 workers. The average number for large scale establishments was 251 persons. On the other hand, small-scale industries employing less than 50 persons was enumerated as 19.7 thousand or 86% of the total number of firms in the table. 178 thousand or 18% of the total employment was in this sector.

2.5 Economic Sector Profile

(1) Agricultural sector

The agricultural (crop production) sector produced a total output of K£2,382 million in 1989, as shown in Table A2.12. Its value added attained at K£2,088 million and accounted for 28.5% of GDP. In the same year, the amount of labour force engaged in the agricultural sector was estimated at around 260 thousand under wage employment in the modern sector and at a fair rate of about 6 million in rural employment. Thus, more than 60% of the total labour force of 9.5 million in 1989

was engaged in the agricultural sector. The exports of agricultural products have accounted for more than 60% of the total exports up to now.

The major crops in Kenya are: (a) maize, wheat, rice, millet/sorghum, beans/pulses, potatoes for food crops; (b) coffee, tea, sisal, sugar-cane, seed cotton, and pyrethrum for cash crops; and (c) in these day, horticultural crops being expected as contributors of foreign currency earnings. As seen in Table A2.13, the largest share in monetary terms among marketed food crops was by maize, the staple food of Kenya. It accounted for around K£70 million in 1989, almost 1.7 times wheat production. In 1989, coffee and tea were produced to the same level in terms of monetary marketed production, and accounted for K£244 million and K£245 million, respectively.

It is reported that the food security of milk and meat products was attained to a self-sufficient level at present. According to Table A2.13, cattle and calves production increased from 614 thousand heads in 1984 to 752 thousand heads in 1989 or 1.2 times in 5 years. In 1984, a large number of cattle were said to have been slaughtered because of serious drought. But, the livestock production in 1989 would be recovered since such a drought damage.

The self-sufficiency of food is one of the most important government policies. The country, therefore, will have to increase crop production in accordance with population growth in the future. Table A2.14 shows annual food balance in the country between 1979 and 1981, compiled by Food and Agriculture Organization of the United Nations (FAO). The table also shows the per capita consumption by food commodity. The annual per capita consumption of major commodities is: 104 kg of maize; 16 kg of wheat; 3 kg of rice; 13 kg of meat and offal; and 59 kg of milk. The per capita consumption figures of maize and wheat are comparatively close to the above ones. However, that of beef is larger than the above, and that of milk is much smaller the above.

On the other hands, the Ministry of Agriculture (MOA) provides per capita consumption units to estimate food production necessary in the future, as shown in Table A2.15. These units are established in consideration of diet difference between urban and rural people. These consumption units do not seem to be greatly different from the above FAO's consumption units.

(2) Industrial sector

The industrial sub-sectors, (a) mining and quarrying, (b) manufacturing, (c) construction and (d) electricity and water supply, grew at average rates of 7.5%, 5.6%, 4.2%, and 8.1% per annum, respectively, during the recent five years from 1984 to 1989. These rates, except the construction sub-sector, exceeded the GDP average growth rate of 5.1% during the same period. In particular, manufacturing is the leading sub-sector in the industrial sector, which has grown at almost 6% per annum for four years as shown in Table A2.21.

In the manufacturing sub-sector, the food production section occupies the biggest share. In 1988, it accounted for K£2.59 billion or 42% of the total manufacturing production as shown in Table A2.16 and for K£321 million or 40% of the total manufacturing value added as shown in Table A2.17. Following the food industry, the chemical industry accounted for K£1.73 billion or 28% of the total production and K£132 million or 17% of the total value added.

In domestic exports, petroleum products occupied the largest share among industrial products. In 1989, they accounted for K£102 million or 10% of the total export value, which followed after tea and coffee. Besides petroleum products, (a) processed food and beverages and (b) processed industrial supplies are expected to be important foreign exchange earners, but their shares are still small among the total exports.

Table A2.18 shows an inventory of manufacturing establishments and their employees classified by employment group in 1987. According to the table, the machinery industrial type accounted for the largest share (443 establishments or 23%) in terms of the number of establishments, but the food industrial type had the biggest share (50.5 thousand or 30%) in terms of the number of employees. Regarding average number of employees per establishment, however, the non-metal products industrial type recorded the highest, 225 workers. The average number for all manufacturing types was 88 workers per establishment.

(3) Service sector

The service sector includes the following various major services: (a) trading and catering, (b) transport and communication, (c) finance, real estate, and business, and (d) government services. These sub-sectors accounted for K£829 million or 11% of GDP in 1989, K£486 million or 7%, K£577 million or 8%, and K£1,078 million or 15%, respectively, as shown in Table A2.20.

As mentioned in Section 2.5(1), Kenya's export earnings have depended heavily on agricultural products, mainly coffee and tea. Before 1986, earnings from coffee exceeded earnings from tourism. Since 1987, however, tourism has been Kenya's foremost source of foreign currency earnings. Total receipts from tourism are shown in Table A2.19, which gives growth over time in foreign currency earnings from tourism.

The table also shows international visitors by nationality. As shown in the table, Germany, United Kingdom, and United States are the top three countries in terms of the number of foreign visitors into Kenya. Following them, many visitors from Uganda and Tanzania came into Kenya in 1989. The average expenditure per visitor was KShs.12,143 in 1989.

2.6 GDP and GRDP

(1) Gross domestic product (GDP)

The national economy has performed relatively well in recent years. In 1989, the economic growth was 5.5% in real terms, which exceeded that (5.2%) in 1988. Sectoral contributions of various components of GDP are given in Table A2.20. The leading sector in the national economy was still agriculture which accounted for around 30% of GDP. Next to agriculture, (a) manufacturing and (b) trade, restaurants, and hotels contribute to the national economy, accounting for approximately 12% and 11%, respectively. Besides these private sectors, government services contribute about 15% to GDP.

The national economy in the latter half of 1980's has grown more prosperously than that in the first half. In fact, though the real growth rate of GDP during 1979 to 1984 was 3.9% per annum on average, that during 1984 to 1989 was 5.5% as shown in Table A2.21. After serious damage by drought in 1984, favorable conditions up to 1988 have pushed up the national economy: a) good weather for agricultural production and price increase of coffee in the world market, b) auspicious industrial growth supported by agricultural growth, decline of oil prices, and effects of open market policy. In 1989, however, the coffee price dropped sharply, so the growth of agricultural sector declined to 3.9%. The manufacturing sector accomplished almost the same growth (5.9%) as that (6.0%) of the previous year. The growth of GDP per capita reached an average of 2.0% per annum in the latter half of 1980's, contrasting from negative growth of -1.3% per annum on average in the first half.

(2) Gross fixed capital formation (GFCF)

GFCF is given in Table A2.22 at current prices and in Table A2.23 at 1982 constant prices. The manufacturing sector accounted for around K£250 million or 15% of the total capital formation in 1989, which was succeeded by the government services sector (20%) and the transport, storage, and communication sector (20%). Its annual growth recorded a negative rate of -3.5% in 1989. For the last five years (1984-1989), average growth reached 11% per annum. The electricity and water supply sector accounted for K£125 million or 7.3% of total capital formation in 1989. Of K£125 million, K£116 million or 93% was invested by the public sector. Its capital formation has recovered at a fairly high rate after the recession of the 1984 drought, but it has only reached to no more than the same investment level in 1984.

(3) Gross regional domestic product (GRDP)

GRDP by District is not available from existing statistical data. However, GRDP is essential information to evaluate the water supply projects proposed in this current

master plan study. Hence, GRDP by District in 1989 is estimated from the following assumptions and procedure:

1) The respective GRDPs of 41 Districts aggregate to a GDP of K£7,730 million at factor cost in 1989, as shown in Table A2.20.

2) District share of GDP is assumed to be in proportion to the District distribution of wage earnings which is available in Ref.B15. Table A2.24 shows the District distribution of wage earnings by industrial type in 1985, which corresponds to wage employment by District in Table A2.10.

3) It is basically assumed that the labour productivity and the rate of wages to value added in each economic sector are the same as the national averages.

4) To reform some distortion in the above assumptions, the District distribution of the major economic sectors such as agricultural sector (accounting for 30% of GDP in 1989) and manufacturing sector (12%) are replaced by individual research results. The production of the agricultural sector is discussed in the Agricultural Sector report. The production of the manufacturing sector is described in Chapter A7 of this study.

The GRDPs in 1989 estimated on the basis of the above assumptions are enumerated in Table A2.25. Among 41 Districts, GRDP of Nairobi has the biggest share of GDP, namely, K£2,224 million or 30% of GDP. Following Nairobi, South Nyanza attains the second biggest share of GDP, which accounts for K£650 million or 8.9% of GDP. This relatively large share comes from agricultural and forest. On the other hand, the Districts of Tana River and Mandera occupy the smallest shares (about 11% each) in GDP.

Per Capita GRDPs of respective Districts are furthermore divided into urban and rural sectors. In the rural sector's value added, the following economic sectors are included: (1) agriculture, (2) mining and quarrying, (3) some portions of wholesale, retail trade and catering services, which are estimated by "ratio method" of rural/urban population, (4) the same rate of social, personal and public services as the above (3) and (5) non-monetary sector. The rest is included in the urban sectors. The urban and rural populations estimated in 1989 are given in Table A2.26. Finally, GRDPs and per capita GRDPs of respective Districts are enumerated as shown in Table A2.26 and Figure A2.2. Nairobi attained the largest GRDP per capita of K£1,578. Kitui District's was the smallest among the 41 Districts, amounting to K£58 in terms of the average of urban and rural sectors.

(4) Inter-industrial relationship

The latest input-output table was prepared in October 1979, which was based on the reference year 1976 (Ref.A.05). No input-output tables were officially published

afterwards. The MOPND, however, has prepared some tables as inner material. The latest series of tables refer to 1986.

The input-output table was tabulated as non-competitive import type. In the table, the domestic production part indicates the inter-industrial intermediate relation of the national domestic market. The table would be useful to measure economic effects of project investment in the national economy. Table A2.27 shows the domestic market portion, quoted from the original reference, "Input/Output Tables for Kenya, 1986" (Ref.A.06).

Once one unit of public investment in a construction sector (sector 11 in the table) is inputted in the national market, approximately 56.2% of intermediate goods and services would be procured from the domestic market, according to Table A2.28. The table indicates a coefficient of input from the domestic production sectors, which is compiled through Table A2.27. Of the total domestic procurement of 56.2%, 17.7% is from the manufacturing sector of chemical and petroleum products, and 13.7% is from the manufacturing sector of basic metal and machinery. The rest 44%, constitutes the procurement (8.4%) from imports and value added (35.4%).

On the basis of Table A2.28, Leontief inverse matrix is calculated as shown in Table A2.29. This matrix indicates induced effects of investment. Supposing one unit is invested in the national market in the construction sector, 2.18 units of investment effects would be induced in the national economy. Those comprise one unit for the construction sector as direct effect and 1.18 units through the other economic sectors as indirect effect. Thus, these components show direct and indirect positive economic effects on respective production sectors. On the contrary, if the relative sectors do not reserve production power to support the new investment, it would be feared that the investment simply raises prices of construction materials.

2.7 Infrastructure

(1) Physical infrastructure

(A) Transportation

Road Transport

In Kenya, the road network comprises two groups: "Classified roads" and "Special purpose roads" including rural access roads. The total length of classified roads in the country is 74,547 km, which consists of 59,176 km of "Classified roads" and 15,371 km of "Special purpose roads", as shown in Table A2.30. The actual length is more than those, because the table does not state any roads in Nairobi.

Classified Roads are furthermore categorized into five classes as follows: 3,187 km of Class A (International trunk roads); 3,427 km of Class B (National trunk roads); 8,079 km of Class C (Primary roads); 12,128 km of Class D (Secondary roads); and 28,954 km of Class E (Minor roads). In addition, 3,401 km is installed as "not identified" in "Classified roads" as shown in the table.

Railway network

A railway system is being operated and maintained by Kenya Railway Corporation (KRC). The railway network is composed of three parts of public lines: (a) Mombasa-Malaba line via Nairobi, Nakuru and Eldoret as the main line, of which 1,083 km was open for traffic in 1989; (b) Nakuru West-Kisumu line as principal line, 346 km; and (c) Kitale and Yala-Butere lines as minor and branch lines, 490 km. Besides public lines, 836 km of private lines and sidings was open for traffic in 1989.

Inland waterway transport

Kenya is favored with a lake shore on its Western boarder and a seaboard on the Indian Ocean. At present, KRC is operating the service for passengers and goods on Lake Victoria. The Lake also plays a role of connecting fishermen's homes, their working places, and markets for their products. In the lake transport service, 3 passenger boats, 2 tugboats, 10 lighters and 10 other crafts are in operation for passengers and goods. There are no other regular services of inland waterway transport in rivers and lakes.

Airway transport

Kenya has two international airports namely Jomo Kenyatta International Airport in Nairobi and Moi International Airport in Mombasa. Besides them, Wilson Airport in Nairobi is mainly used by small chartered airplanes both for international and domestic flights. For domestic flights, Kisumu, Garissa and Malindi Airports are having facilities for aircraft and passengers. Moreover, there are several airstrips for domestic flights in every District in the country.

(B)   Water supply and sanitation

Water supply

In this section, the present conditions of water supply and sanitation systems are discussed in both urban and rural areas. Table A2.31 shows an inventory of water supply systems by service centre and by managing authority, analyzed through the socioeconomic survey by JICA study team in March 1991. Among 1,783 service centres in the country, 999 centres or 56% were covered by piped water supply system, distributing as follows: 102 urban

centres; 139 rural centres; 279 market centres; and 479 local centres. There were 89 communal water point systems or 5% of the total.

Of all service centres, 579 centres or 32% are maintained by MOWD. 499 centres or 86% of the above centres are covered by the piped system. NWCPC covers 188 centres or 11% of the total centres, of which 184 centres or 98% are covered by the piped system. Local Authorities maintain 164 centres or 9%, of which 157 centres or 96% are covered by the piped system. On the other hand, communities cover 339 centres or 19% of the total centres. However, they maintain not piped systems or communal water point systems (24 centres and 21 centres respectively) but other simple systems.

Sewerage System

There are 377 service centres or 21% of the total centres in the country, which install sewerage systems in centre areas, as shown in Table A2.32. Of the total, 287 systems or 76% are operated by local authorities. MOWD maintains only 6 sewerage systems. Other service centres (about 80% of the total) do not have any sewerage services even in urbanized areas.

Refuse collection

Table A2.33 shows an inventory of refuse collection services by District in the country. According to the table, 704 service centres or 40% of the total centres have some services in their territories. Most of them (607 centres or 86%) are managed by local authorities.

The original and raw data of the above water supply and sanitation systems are basically derived from the results of "Socioeconomic Survey" which was done by the JICA Study Team from January to March, 1991. The raw materials are attached in the "Data Books".

(C) Electrification

A Rural Electrification Programme was established in 1973. It was a government policy to promote the extension of electricity services into rural area. To promote the program, the following agencies were involved as responsible bodies: (a) MOE for administration and policy promotion; (b) KPLC for implementation and operation; (c) Rural Electrification Technical Committee for management; and (d) DDCs for identification and bringing up for electrification. In early 1980's, all District headquarters were covered with electricity through this program.

In 1990, 246 thousand customers were covered by the KPLC service systems in the country. Of the total customers, 240 thousand or 98% were domestic or small non-domestic customers. The domestic users were enumerated at

about 200 thousand. The total number of households was estimated at 4.7 million for 24,396 thousand population in the same year. An electrification rate, therefore, was figured out as 4.3% in the country.

(2) Social infrastructure

(A) Educational Facilities

A categorized inventory of educational institutions in 1990 is shown in Table A2.34, which was compiled through the latest infrastructure inventory of MOPND. According to the table, the number of primary schools was 13.2 thousand. Enrollment in primary schools was 146,492 in the same year. Teachers were 146 thousand. National average enrollment, therefore, was 352 pupils per school and 32 pupils per teacher. The average number of enrollment in primary schools was estimated at about 190 primary school pupils per 1,000 population.

There were 2,416 secondary schools in the country in the same year. Enrollment was 430 thousand and these were 23 thousand teachers. Therefore, average enrollment was 178 pupils per school and 19 pupils per teacher. Average enrollment of secondary pupils was estimated at 18 pupils per 1,000 population.

There were 682 training and vocational institutes in total. Enrollment was 61 thousand and the number of staff in institutions was 5,109. Average enrollment was 90 students per institute and 12 students per staff. Average enrollment of institutes was 2.5 students per 1,000 population.

(B) Medical Facilities

The number of hospitals, health centres, dispensaries and other facilities by District is given in Table A2.35. The table also shows the inventory of hospital beds, nurses, and doctors. One hospital has to cover 180 thousand people on average. One facility of any medical type has to cover about 14 thousand people. Only one bed is available per 1,000 people on average in the country, which is quite small as compared to WHO's recommended level of five beds per 1,000 people.

Table A2.36 shows the average annual number of out-patient morbidity of infectious diseases in relation to water supplies between 1985 and 1989. Incidentally, the diseases were chosen on the basis of the classification listed in "Water, Wastes and Health in Hot Climates" (Ref.A.30). According to the table, the Districts which had the largest number of out-patients of infectious diseases related to water supplies were: (a) Kilifi where 92 thousand suffered from these diseases; and (b) Machakos/Makueni, 90 thousand; and (c) Kakamega, 86 thousand. About 8% of the total out-patients in the country

was suffering from these infectious diseases. The most widespread disease among them was diarrhoeal disease. In 1989, one in 25 people suffered from it.

2.8 Service Centre

Regarding urban type in general, there are three kinds of categories in Kenya. The respective types are used in different situations accordingly. Their definition and the relationship among them are summarized as follows:

1) Urban centre: this is defined as settlements with 2,000 persons or more. In 1979 census, 91 urban centres existed in the country, with a total population of 2,315,696 as shown in Table A2.8.

2) Urban area managed by municipal, town or urban council: as mentioned in the Section 2.2, this belongs to a kind of political categorization. People who live in this area with a certain urban agglomeration can establish a local authority. Although a criterion of urban agglomeration to establish a local authority is not clarified, it might be a standard for an area to form an urban centre mentioned above.

3) Service centre: this is originally classified for planning purposes. Depending on the degree of urban agglomeration, an area is classified into a certain level of urban hierarchy, and a certain level of infrastructure is provided for the area. Therefore, each service centre is expected to install some urban facilities and infrastructure suitable for urban agglomeration. In the third "National Development Plan 1974-1978" (Ref.A.03), the service center "policy" was adopted for urban development. In the latest "District Development Plan 1989-1993" (Ref.A.04) as well, this system is reflected for capture of urbanization in the District. Service centres are classified into the following five levels:

   a) Local centre: this is the lowest level of service which serves the local needs of people within walking distance of the centre. The centre itself scarcely has any permanent residential population but serves a catchment area of approximately 5,000 people.

   b) Market centre: this provides minimum facilities for people to enjoy social lives, which includes primary school, health centre, public water supply, sub-post office, telephone facility, local bus service and other social, commercial and local administrative services. The centre has a residential population of less than 2,000 and a catchment area of approximately 15,000 people.

   c) Rural centre: this plays a role of improving the standard of amenity in the rural areas, which provides secondary school, health centre with maternity facilities, better shopping facilities, bigger markets, piped water supply, electricity, sewerage disposal system, telephone services, postal and banking

facilities. It is used as a place of local barazas, promoting lectures on better farming, family planning, health and nutrition guidance, etc. The centre has a residential population of 2,000-10,000 inhabitants and a catchment area of approximately 40,000-50,000 people.

d) Urban centre: this is the highest level in service centres, and functions as a centre not only for present needs but also for increasing needs and development of the whole national economy. It includes a full range of services; secondary school, fully equipped hospital, specialized facilities as focal points of commercial, industrial, administrative, recreational, and social cervices, and physical infrastructures such as treated piped water supply, piped sewerage system, disposal plant, electricity, telephone services, and total facilities. The centre has a residential population in excess of 5,000 and a rural hinterland of approximately 100,000-150,000 people.

e) Growth centre (Principal town): this is pointed out as a town for growth functions rather than for the service functions. It aims at accelerating the development of a selected and limited number of existing towns in development potential areas. It also aims at creating opportunities for commercial and industrial developers to activate potential development in a few smaller towns in addition to Nairobi and Mombasa. In the report of "Human Settlement in Kenya (Ref.A.26)", the following centres are selected as growth centres: Nakuru, Kisumu, Thika, Eldoret, Kitale, Malindi, Kericho, Nyeri, Machakos, Kakamega, Kisii, Meru, and Embu.

"District Development Plans 1989-1993" (Ref.A.04) of 40 Districts gives an inventory of service centres. Every plan, however, does not give their inventories completely. Therefore, to accomplish the exhaustive inventory in the country, the following two references were used for filling-up lacking information: 1) National 5-year Development Plan 1974-1978 (Ref.A.03); and 2) Human Settlement in Kenya (Ref.A.26). Besides these references, the Socioeconomic Survey results gave the latest information of service centres, which was done by the JICA Study Team during January to March, 1991. Table A2.37 shows the inventory of the service centres, which is compiled through the aforesaid references. In the table, designated growth centres are included as urban centres. The total number of service centres is 1,758 and classified as follows : 15 growth centres; 89 urban centres; 176 rural centres; 475 market centres; and 1,003 local centres.

2.9 Household Income and Expenditure

No official reports of household budget survey have been published yet so far, though the following two surveys were conducted by CBS: (a) Rural household budget survey, 1982-1983; and (b) Urban household budget survey, 1983-1984. Some analytical results were found here and there as quotation from these surveys. Thus, it is difficult to recognize present conditions of the household economy in the country.

Table A2.38 is a part of analytical results from "Urban Household Budget Survey" by CBS. It was conceded to be used in the current master plan study, in pursuance of the official request by MOWD. Data in the table is based on the price level in 1983, so value itself is not eloquent of household economy at present. However, relative relationship such as balance between income and expenditure and composition of expenditure items is conceived through this table. In particular, water expenditure, which is a part of a regular expenditure, accounted for 0.8% to 2.3% of the total household income.

In the "Socioeconomic Survey" by the JICA Study Team, unit prices of typical residential houses were surveyed through District offices. The houses are generally classified in to three types according to construction materials: (a) permanent type, which is constructed mainly by permanent materials such as concrete, stone or bricks; (b) semi-permanent type, built by mainly wood; and (c) thatch type. Table A2.39 shows the unit prices of respective types by District. Average unit prices in the country were as follows: (a) KShs.430 thousand for permanent type, with 81 m^2 floor area on average; (b) KShs.140 thousand for semi-permanent type, 53 m^2; and (c) KShs.27 thousand for thatch type, 28 m^2.

2.10 External Trade

Major commodities for exports comprise food and beverages, petroleum products, basic materials for industrial supplies, and some products of light industry. In particular, exports of Kenya rely on coffee and tea which accounted for K£475 million or 48% of the total exports in 1989, as shown in Table A2.40. Following these products, petroleum products accounted for K£101 million or 10% of the total, though raw materials depended on imports completely. Basic materials for manufacturing and construction such as pyrethrum and cement occupies more than K£220 million in total or 20% of the total export. The total export amount aggregated to K£1.00 billion in 1989.

Regarding country of destination for exports, European countries, especially United Kingdom and Germany (former West Germany), occupied the largest share in the Kenyan exports, accounting for K£503 million or 50% of the total exports in 1989, as shown in Table A2.41. Following them, Asian countries such as Pakistan and Japan, African countries such as Uganda, Tanzania, Sudan and Rwanda, and U.S.A. have major positions in Kenyan exports.

Principal articles for imports consist of (a) machinery and transport equipment, which accounted for 39% of the total import, (b) mineral fuels including crude petroleum, 16%, (c) chemicals such as fertilizers, medical products and plastic materials, 16%, and (d) raw materials for industrial supplies, 16%, as shown in Table A2.42. Countries of origin were as follows in order of import values in 1989: (a) United Kingdom, which accounted for K£351 million or 16% of the total, (b) Japan, K£246 million or 11%, (c) Germany, K£199 million or 9%, as shown in Table A2.43. The total import value aggregated to K£2.24 billion in 1989.

Since re-export recorded K£19.9 million in 1989, the total export including the domestic export of K£1.00 billion aggregated to K£1.02 billion. As a result, the balance of trade

deficit was K£1.22 billion. This was about 50% more than the deficit in the previous year (K£0.81 billion in 1988).

Table A2.44 shows foreign exchange rates in Kenya shilling, US dollar and Japanese yen, at the end of respective periods. The project costs and benefits would be estimated on the basis of this price level at February 1991. Thus, the exchange rates at that time were KShs.25.2 per US$ and Japanese.Yen5.24 per KSh.

2.11 Consumer Price

Inflation rate, as measured by the middle income index of Nairobi consumer indices, recorded 12.9% in 1990. These indices are shown in Table A2.45. According to the information brought by the time this study report was finalized, in the same year the inflation rate abruptly jumped to 15.8%. It further increased to 19.6% in 1991. These increases were caused by the adverse effects of the following backgrounds: (a) the Gulf Crisis, (b) the depreciation of the Kenya shillings, (c) the introduction of the value added tax (VAT) on various commodities, and (d) decontrol of prices. As a result, real average earnings declined by 8.3%.

Consumer price indices for the three urban centres of Mombasa, Kisumu and Nakuru were set out in the same table. Inflation rates were 15.6%, 13.5%, and 13.8% in 1990, respectively.

Cost indices regarding construction activities are also shown in the same table. In 1989, an inflation rate for overall construction was 9.8%, which was somewhat smaller than the inflation rate of Nairobi consumer prices. An inflation rate for labour, however, was 11.5%, slightly lower than that of consumer prices.

2.12 Public Finance for Development

(1) Development expenditure by ministry

In the fiscal year 1989/90, public expenditure by the central government was approximately K£3.5 billion, corresponding to 48% of GDP in 1989. This percentage has steadily expanded from 37% in 1985/86 to 48% for recent five years, as seen in Table A2.46, in spite of the curtailment efforts by the government. Of the total expenditure, development expenditure accounted for around a quarter, of which more than half was procured through appropriations-in-aid by foreign countries in recent two years particularly.

Two-thirds of the total expenditure was disbursed for current expenditure such as labour costs, interest payments and transfers to agencies concerned. About one-sixth of the total was distributed for capital expenditure, of which 90% was invested by the central government directly as gross fixed capital formation.

The development expenditure by MOWD accounted for between 6% and 10% of the total development expenditure. Though it occupied about 7.5% of the total in 1989/90, its trend has been declining in spite of the fact that water development projects are expected to be implemented as much as possible. Although the expenditure for development projects related to water was not always on the declining tendency as shown in the table, the expenditure distributed for MOWD seems to have a decreasing inclination to other Ministries. These details of Ministry's expenditure are discussed in Chapter A8.

As reference for budgeting, Table A2.47 shows budgetary records of the national government account in Japan since 1979. The table clarifies the national accounts for water resource development by the central government. Most of these budgets were disbursed to the public agencies or entities concerned to the projects as subsidies. The total amount of the budgets to the total national accounts recorded between 1.03% and 1.47% in the national general account and between 0.60% and 0.80% in the treasury investment and loan.

(2) Development expenditure by sector

The development expenditure by sector related to water resources in analyzed in the same manner mentioned in the previous section. Table A2.48 shows the details of approved estimates for sectors which are originally distributed for ministries and authorities concerned in the national budgets between the fiscal years 1986/87 and 1990/91.

In MOWD, most of the development budgets are used for water resources development and supply schemes as shown in the table. In other agencies concerned, more than 50% of the total development budget is used for hydropower development through MOE, KVDA and TARDA. About 15% of the total is disbursed for irrigation development through MOA, KVDA, TARDA, LBDA, ENDA, NIB and Bura Irrigation Scheme. On the other hand, 0.3% is distributed for flood control and river improvement works through TARDA and LBDA. Water schemes for livestock have got a negligible small amount of the budget for the same period.

A3. ECONOMIC DEVELOPMENT PLANS

3.1 National Development Plans

National economic development policy is proposed in the following two papers: a) Sessional Paper No.1 of 1986 on Economic Management for Renewed Growth (Ref.A.01); and b) National Development Plan for the Period 1989 to 1993 (Ref.A.02). The former Plan covers the growth projection of the national economy over 15 years up to the year 2000. Table A3.1 shows the national targets in various social and economic sectors concerning to the current study, which is mainly quoted from the Plan. The economic framework in this current study is basically formulated on the basis of these national targets.

The latter Plan is positioned as the first five-year development plan of the former long-range Plan, despite the sixth five-year development plan since the independence. The first and second years of the Plan has already passed, and its economic performance has provisionally published in Economic Survey 1991 (Ref.A.08). According to this survey report, the national economy seems to attain the expected economic growth marginally, as seen in Table A2.21. The Plan proposes the following strategies for the plan period in the economic sectors related to the Study:

1) Agricultural sector

   a) To achieve internal self-sufficiency of food

   b) To maintain adequate levels of strategic reserves : sufficient to carry the country for at least six months in the worst of times

   c) To generate additional supplies for export

   d) To work out a long-term irrigation development strategy : expanded to 45,550 ha, of which 3,680 ha will be developed during the plan period.

   e) To promote the arid and semi-arid lands (ASAL) development

2) Industrial sector

   a) Industrialization for export promotion of both consumer and intermediate goods through the following measures:

   Export Processing Zones (EPZ), where various physical, communication and service facilities and customs offices are installed for the coming entrepreneurs, which will be located in near Nairobi and Mombasa

Manufacturing-Under-Bond, which offers exporters potential for simplifying the steps of obtaining imported inputs and moving products to export markets

The Green Channel Scheme, which foster dispatch in the handling and processing of the relevant documents to facilitate timely delivery of export orders

Preferential Trade Area (PTA), in which Kenya joined to provide additional incentives and opportunities for exporters

b) Promotion of the development of core industries having linkages between industry and the agricultural, transport and communication sectors

c) Development of small-scale and jua kali (cottage industry) enterprises to expand rural markets and to create employment in local towns

3.2 Regional Development Plans

At present, there are three Ministries leading regional development projects through different approaches:

1) Ministry of Planning and National Development (MOPND), of which Rural Development Department proposed "District Development Plans 1983-1993" (Ref.A.04);

2) Ministry of Reclamation and Development of Arid, Semi Arid and Wasteland (MORDASAW), under which the Arid and Semi-Arid Lands (ASAL) development has been implemented since 1979; and

3) Ministry of Regional Development (MORD), of which six regional development authorities will provide regional development plans within specific areas overlapping administrative boundaries.

"District Development Plan 1989-1993" (Ref.A.04) was approved by respective District Development Committees and edited by the Rural Planning Department of MOPND. The Plans are based on the national policy of "District Focus Strategy" in the Sessional Paper (Ref.A.01) and proposes the District's socioeconomic conditions and priority of projects. The Plan covers 40 Districts by individual report and does not include the capital city of Nairobi.

The ASAL development has been implemented for cultivators and pastralists in the ASAL who make up a major portion of the rural poor since the beginning (1979) of the fourth five-year National Development Plan. The ASAL covers 27 Districts in the entire 41 Districts in the country. Of the ASAL Districts, 14 Districts have been implemented as ASAL Development Program in cooperation with foreign donor countries or international organizations.

The resources within specific areas, identified as potential development regions, should be mobilized to speed up the overall development of such areas. As these areas overlap Provincial and District administrative boundaries, the government decided to set up three regional development authorities, (1) the Lake Basin Development Authority (LBDA), (2) Kerio Valley Development Authority (KVDA) and (3) Tana and Athi River development Authority (TARDA). These three authorities provide respective regional development plans. Besides them, three more regional development authorities have been organized in the same regional development policy. They are: (1) the Ewaso Nyiro North Development Authority, (2) the Ewaso Nyiro South Development Authority and (3) the Coast Development Authority.

3.3 Urban Development Plans

Urban development or redevelopment is basically implemented by the local authority. A basic strategy for urban development is proposed by the central government, Physical Planning Department of MOLH. It is presented in "Human Settlement in Kenya, 1978" (Ref.A.26). Along this strategy, Physical Planning Department has provided some urban development plans for municipalities. The JICA Study Team has collected the following three urban development plans:

a) Mombasa Draft Physical Development Plan, April 1971
b) Meru Structure Plan 1985-2015, April 1987
c) Kisumu Structure Plan 1983-2013, March 1989

In the Sessional Paper (Ref.A.01), the government devised a strategy for balanced development of urban and rural areas. The main items are: (a) to avoid the excessive concentration of population in the largest cities; (b) to promote growth of secondary towns and smaller urban settlements through the development of agriculture; (c) to foster productive linkages between agriculture and other sectors of the economy, between rural areas and service centres.

3.4 Industrial Development Plans

Industrial sector is expected to grow at an average growth rate of 7.2% per annum during the long range planning period to the year 2000, as seen in Table A3.1. The overall development policy is proposed in the Plan. The more incarnate physical projects regarding industrial development are proposed in "District Development Profile Studies, 1986, UNDP and Ministry of Industry" (Ref.A.31 and A.32).

The "Profile" covers modern small-scale and informal sectors of manufacturing establishments in the country, where the small-scale is also defined as an establishment employing less than fifty workers. The Terminal Report (Ref.A.31) of the "Profile" enumerated that there were 16,474 establishments belonging to the aforesaid sectors in the country excluding four Districts (Nairobi, Uasin Gishu, Elgeyo Marakwet and Nandi) in 1985, which are distributing as shown in Table A3.2.

A4. POPULATION PROJECTION

4.1 Basic Data and Assumption

As explained in Chapter A2, the latest available and reliable source regarding present population and its distribution in the country is the 1979 census, because the 1989 census results will not be available by the end of 1991. Thus, the current water master plan must be formulated on the basis of the 1979 census information.

The report of "Population Projections for Kenya 1980-2000" (Ref.A.14) by CBS officially presents the future population up to the year 2000. The report projects the following three scenarios for population: Scenario 1 that both fertility and mortality decline; Scenario 2 that fertility remains constant, but mortality continues to decline; and Scenario 3 that both fertility and mortality remain constant. As the result, the projected populations in 2000 are estimated as 34,792 thousand, 38,409 thousand and 37,505 thousand, respectively.

For the purposes of this socioeconomic study, Scenario 1 has been used since this has been officially applied in both "Sessional Paper No.1 of 1986 on Economic Management for Renewed Growth" (Ref.A.01) and "District Development Plans 1989-1993" (Ref.A.04). Beyond 2000, the total population up to the year 2010 is projected through a quadratic regression method on the basis of the above projection.

Population distribution by administrative unit is a prerequisite to consider a water balance of demand and supply in the National Water Master Plan. The population distribution by District is based on the District populations in 1980 and 1990 which are estimated in the reports of "Population Projections for Kenya" (Ref.A.14) and the respective volumes of "District Development Plan, 1989-1993" (Ref.A.04). Furthermore, taking account of the difference in water requirement between urban and rural areas, the distribution of urban and rural populations is also required as the most fundamental information.

4.2 Projection Procedure and Methodology

(1) Projection by administrative area

The distribution of population in the future is estimated by the following procedure. Figure A4.1 illustrates this procedure.

1) The total population of the country is estimated using the data and assumptions mentioned in the previous section.

2) The total populations of the respective Districts are estimated in consideration of both population growth between 1980 and 1990, and the balance of district distributions in the total national population.

3) The total urban population in the years 1990, 2000 and 2010 is estimated using the following urbanization model which is proposed in "Human Settlement in Kenya" (Ref.A.26). The total figure of urban population in 2000 is also checked with the Sessional Paper No.1 of 1986 (Ref.A.01).

$$P_u = \frac{P_t \cdot Y_u}{G \cdot Y_r + Y_u}$$

Where P_u = Urban population in a given year
P_t = Total national population
Y_u = That portion of the GDP produced in the urban sector
Y_r = That portion of the GDP produced in the rural sector
G = Gradient or ratio between urban product per capita and rural product per capita

In 1979, "G" stood at approximately 11.4, according to the results of calculations based on the statistical data, as shown in Table A4.1. The government policy states that the disparity between urban and rural standards of living must be reduced in the future. The solution to "G" in the year 2000 is worked out to be 6.0 which is calculated to harmonize to the projection of urban population (approximately nine million) of "Projection A" in the Sessional Paper (Ref.A.01) and which also satisfies the policy with an improvement on the ratio of product between urban and rural areas.

4) Urban areas and towns have been to be classified into the following three ranked groups: Group 1, comprising populations in urban centres which are enumerated in the 1979 census report (Ref.A.13); Group 2, consisting of Local Authorities, which are established by the Local Government Act (Ref.A.30) as of 1990; and Group 3, which is made up of population within Rural Centres. These three Groups are tabulated for respective Districts in Table A4.2.

5) It is assumed that the growth rates of urban population will be successively lower in Groups 1, 2 and 3 as follows.

Group 1 : 2.0 times the District increase rate
Group 2 : 1.5 times
Group 3 : 1.2 times

In cases where the growth rate of the District is negative, such as Turkana, the growth rate of its urban areas is assumed to be the same as that of the District having the smallest positive growth rate among all the Districts.

6) In 1979, the urban populations in the Group 1 only were counted as urban population. In 1990, those in Group 2 are added to those in Group 1, because the areas in Group 2 are authorized by the Ministry of Local Government as urban territories of municipal, town or urban authorities. In 2000 and beyond, those in Group 3 are added to both urban populations of Groups 1 and 2, since it is assumed that rural centres will grow to urban centre status by the year 2000.

7) A population between both territories of urban centre and "Location" is arranged in consideration of urban growth. If an urban population exceeds "Location" population or if population density in an urban area exceeds 100 persons per hectare in the future, an urbanized area or a territory of urban centre will be expanded in accordance with the past growth trend and/or along trunk roads linking major towns.

8) Rural population in a District is estimated as the difference between urban population and total population of the District. However, in case the rural population drastically decreases because of rapid urbanization, the declining rate of the rural population is adjusted to a maximum of 3% per annum.

(2) Projection by river basin area

The population distribution by drainage area is estimated on the basis of the "Location" distribution. This distribution is made by what is called the "ratio method" mentioned in Section 2.3 (2). Then, the projected populations by drainage area in respective years to 2010 are also estimated in the same procedure as that of administrative distribution mentioned above.

4.3 Projected Population

(1) Population by administrative units

Table A4.3 shows the District populations projected from the procedure mentioned in the previous section. The national population is summarized as follows:

(Unit : thousand,%)

Area	1979(Census)		1990		2000		2010	
	No.	%	No.	%	No.	%	No.	%
Urban	2,316	15	4,778	20	9,098	26	15,965	33
Rural	13,011	85	19,618	80	25,697	74	31,851	67
Total	15,327	100	24,396	100	34,795	100	47,816	100

The World Bank report of "Human Resources: Improving Quality and Access, October 1990" (Ref.A.17) provides three scenarios for population sizes during the period 1989-2010. According to the report, projected populations in 2010 are as follows: 49.7 million under the slow scenario of smallest fertility declines observed; 45.3 million under the moderate scenario; and 40.5 million under the rapid scenario. The projected population in the above table is almost midway between the low and moderate scenarios.

"Economic Survey 1991 (Ref.A.08)" announced the 1989 population census provisional results. According to the results, the total population in 1989 was 21,397 thousand. This is about 9% below the projected population. The intercensal growth rate was 3.4% per annum as an average for ten years. This issue will be discussed in Part II of this report.

(2) Population by basin area

The basin populations in the five major river basins in the country are enumerated in Table A4.4. In the table, "islands" mean the areas which do not belong to river basins such as Lamu island in the Indian Ocean and Rusinga island in Lake Victoria. The basin boundaries are illustrated in "Hydrological Study Report".

(3) Urban population

In the 1979 census, urban population was enumerated as seen in Table A2.8. In the future, urban areas will extend not only to suburban areas around present urban areas but also to newly organized urbanized areas. Thus, urban population is projected to be classified into three ranked groups, as mentioned in Section 4.2. The projection methodology to estimate urban population was also mentioned in the same Section. Table A4.5 shows the projected urban population by town between 1990 and 2010. The total urban population is estimated as 9,098 thousand in 2000 and 15,964 thousand. There are enumerated 264 towns in the country as shown in the table. However, if the definition of urban centre, (settlement with 2,000 persons and more) is applied to the enumerated towns in the table, only 149 towns are counted as urban centres in 2010. In that case, the total urban population is estimated as 15,857 thousand in 2010 or 0.7% less than the originally estimated urban population.

4.4 Labour Force

In accordance with a drop in the total fertility rate, the working age population will increase in the future. On the other hand, in pursuance of economic growth, labour participation rate will go down because of attendance in higher education. As a result, the Sessional Paper (Ref.A.012) estimates that labour force in 2000 will be 13.4 million. Furthermore, supposing the economy creates jobs at 3.4% per annum which almost equals the historical level of employment growth, the unemployment rate might reach 20.3%. If this trend continues to the target year 2010, the total labour force would be 19.7 million and the

unemployed population would reach to 4.1 million, representing 20.8% of the total labour force.

In order to prevent the unemployment rate from rising over that period, the Sessional Paper proposes sufficient acceleration of employment growth to reduce the unemployment rate from 20.4% to 10.0% of labour force. As a result, labour productivity growth would reduce from 2.2% per annum in the historical trend down to 1.4% per annum. In other words, even if labour productivity goes down more than the historical level, it would take high priority to increase employment opportunity. In any case, to achieve this employment level, jobs will have to be created at historically rapid rates: from 3.8% a year to 4.5% a year or more in the modern wage and informal sectors, urban and rural. In the same manner, Kenyan economy would have to keep the high investment rate of around a quarter of GDP in order to maintain this historical growth.

A5. GDP PROJECTION

5.1 Basic Data and Projection Methodology

(1) GDP

Projection of GDP is fundamentally based on the target growth of the long-range national economic development plan, which is stated in the Sessional Paper (Ref.A.012). In the Paper, the economic development policy and strategies are proposed over all economic sectors up to the target year 2000. The target growth of the national economy is summarized in Table A3.1.

Beyond the year 2000, however, the Paper does not refer to national economic growth. As regards this issue, the Long-Range Planning Unit in MOPND provides a projection program, for official use only. According to the core model solution of this program, the economic growth (GDP) is assumed to be around 4% per annum between 2000 and 2010, if the present economic development policy is renewed continuously. In this current study, the GDP growth rate beyond 2000 is also assumed to be 4% per annum in conformity with this projection of the core model solution in light of economic successiveness.

(2) GRDP

GRDP by District is not mentioned in any development plans at all. Hence, GRDP by District to the target year is estimated in almost the same way mentioned in Section 2.6 as follows.

1) The respective GRDPs of 41 Districts aggregate to the GDP projected in the above methodology. The respective value added of economic sectors in Districts also aggregates to the total value added of the national totals in the corresponding economic sectors which is projected in the above projection methodology.

2) GDP is divided into urban and rural sectors. In the rural sector, the following economic sectors are included: (a) agriculture, (b) mining and quarrying, (c) some portion of wholesale, retail trade and catering services, which are estimated by "ratio method" of rural/urban population, (d) the same portion of social, personal and public services as the above (c) and (e) non-monetary sector. The rest is included in the urban sectors. The above portions in (c) and (d) are estimated in consideration of "G(Gradient)" in Table A4.1. The sector of social, personal and public services is assumed at 57% of the "Others" in monetary economy, which is derived from the result of 1989 estimation. The total value added of rural sector is shown in Table A5.1.

3) Agricultural production in the future is estimated through a regression method on the basis of agricultural production data of respective Districts between 1985 and 1989. The agricultural production by District is discussed in "Sectoral Report E. Agriculture and Irrigation". Other economic sectors by District in the rural sector are estimated by a "ratio method" based on the 1989 economic structure.

4) The total value added of urban sector is a difference of GDP and the above value added of the rural sectors. The value added of urban economic sectors by District is assumed to be in proportion of the value added of manufacturing sector. The value added of the manufacturing sector in the future is projected in Chapter A7.

5) GRDP per capita by urban and rural sectors and by District is estimated as a quotient of the above value added divided by projected population.

5.2 Projected GDP and GRDP

(1) GDP

GDP in the years 2000 and 2010 are projected to aggregate K£13.8 billion and K£20.4 billion at 1989 constant prices, respectively. The agriculture sector will remain the leading economic activity in the country. The government policy, however, will promote the modern wage and informal sectors to absorb the coming young labour force in the future, so the agricultural share in the national economy will decrease from 29% in 1989 to 27% in 2000 and to 25% in 2010. On the other hand, the manufacturing sector is expected to grow from 12% in 1989 to 14% in 2000 and to 15% in 2010. The details of respective sectors are shown in Table A5.1.

Per capita GDP in 2000 and 2010 is estimated to be K£396 (equivalent to US$367) and K£426 (US$395), respectively. Since it was K£312 (US$289) in 1989, it will have grown by nearly 27% by 2000 and by almost 37% up in 2010.

(2) GRDP

The GRDPs during 1990 to 2010 is estimated by the above method. The GRDPs by urban/rural sector of the national total are estimated in Table A5.2. The GRDPs by District are enumerated in Table A5.3. Among 41 Districts, GRDP of Nairobi occupies the biggest share of GDP, namely K£4.8 billion or 35% of GDP in 2000 and K£7.3 billion or 36% in 2010, at 1989 constant prices. On the other hand, Tana River District occupies the smallest share of GDP. The urban and rural populations in 1989 as estimated are given in Table A4.3. Finally, GRDPs per capita of respective Districts are enumerated as shown in Table A5.4. Nairobi attained the largest GRDP per capita of K£2,006(equivalent to US$1,860) in 2010. Wajir District's was the smallest among 41 Districts, amounting to K£57 (US$53)

in 2010 in terms of the average of urban and rural sectors. The economic disparity between urban and rural sectors will reduce in the future, as seen in the table. On the other hand, the disparity among Districts may increase without the more active promotion in developing Districts, although the estimation methodology is difficult and includes a lot of assumptions.

A6. DEMAND PROJECTION OF AGRICULTURAL PRODUCTS

6.1 Basic Data and Assumption

National agricultural development policy proposed in the Sessional Paper (Ref.A.01) suggests the following goals and targets in agricultural activity:

a) To provide food security and to achieve internal self-sufficiency;
b) To generate farm family incomes that will grow by at least 5% a year;
c) To absorb new farm workers at the rate of over 3% a year with rising productivity;
d) To supply export crops sufficient for a 150% increase in agricultural export earnings by 2000; and
e) To stimulate the growth of productive off-farm activities in the rural areas.

Thus, food security for the people is given the first priority from among these five goals. Hence, in this section, the future demand of agricultural major products is estimated to be the framework for the current projects up to the target year 2010.

(1) Basic data

The MOA is the leading agency for agricultural production in the country. In this context, demand projection of agricultural products is presented as a part of its works. Table A2.15 shows the per capita consumption rates of food commodities by the Crop Development Division of MOA. According to the table, diet of urban people is different from that of rural people. Urban people seem to have a growing tendency toward Europeanization in diet. This difference is reflected in the per capita consumption rates in the table, as summarized in the followings:

| Major Food Commodity | Per Capita Consumption (kg/year) | | | | |
| | Unit Rate in Urban/Rural | | National Average | | |
	Urban	Rural	1990	2000	2010
Maize	97.1	125.6	120.0	118.1	116.1
Wheat	24.7	10.0	12.9	13.9	14.9
Beef	11.9	6.8	7.8	8.1	8.5
Milk	88.6	72.1	75.3	76.4	77.6

The National Development Plans (Sessional Paper No.1 and Five-Year Development Plan) propose the national targets of agricultural products. Table A6.1 shows the total demand and per capita consumption of major food commodities in the respective plans. The estimation in the Sessional Paper (Ref.A.01) seems to be somewhat larger than the above figures. The Sessional Paper shows greater consumption of major food commodities because people are now consuming a wider range of products. The Five-Year National Development Plan (Ref.A.02) shows more conservatism than the above, except regarding milk. The National Food Policy (Ref.A.28) seems to be slightly larger than the above.

Thus, the above figures provide a fairly conservative estimation as compared with the national development targets.

As mentioned in Section 2.5(1) and Table A2.14, FAO gives a food balance in Kenya. The table presents per capita consumption rates regarding major food commodities.

Consequently, since the per capita consumption figures by MOA are the most modest among data available and more comprehensive than other sources, they are used to estimated food demand in the future in this current study. As regards cash crops, the projection trend of Sessional Paper (Ref.A.01) is used to estimate the production targets in this current study.

(2) Diet

As seen in Table A2.15, the per capita consumption rates of wheat, beef and rice by urban people is expected to increase around 2.5 times in beef, 1.75 times in wheat and 9.4 times in rice more than those by rural people. On the other hand, consumption of maize, millet, sorghum and other root crops by urban dwellers is fairly smaller than that by rural dwellers. Thus, the diet of urban people could be said to be europeanized. The decisive factor of this trend is per capita income. The per capita income of urban people is higher than that in rural people, and the per capita consumption for former groups is expected to rise at the same rate as the per capita income.

Per capita GDP in 2010 is expected to grow from K£312 in 1989 to K£426 in 2010 an increase of 37% than that in 1989 as a national average. Although the disparity between urban and rural standards of living is reduced through the government policy of the district focus strategy, the difference would still exist between the two. This trend might imply that the food preference of the people is changing in the country as a whole .

6.2   Projected Demand

Food demand is calculated as a product of the per capita consumption and the projected population. Table A6.2 shows   food demand in 1990, 2000, and 2010. Production of the four major food commodities and/or food imports are expected to achieve the following targets for food security in 1990, 2000 and 2010:

(Unit : 1000mt)

Food Commodity	1990	2000	2010
Maize	2,928	4,111	5,551
Wheat	314	482	713
Beef	190	283	407
Milk	1,838	2,659	3,711

Estimates of production of cash crops in the future are based on the projection of the Sessional Paper (Ref.A.01) through interpolation or extrapolation method. The target production in the year 2010 is shown in the table and summarized as follows: 603 thousand metric tons of coffee, and 366 thousand tones of tea.

A7. DEVELOPMENT OF MANUFACTURING INDUSTRIAL SECTOR

7.1 Basic Data and Assumption

(1) Classification of manufacturing industry

Unit water demand of industrial water by manufacturing establishments differs among industrial types. Thus, it is prerequisite to identify both the regional distribution of manufacturing establishments and the type of industrial activities in order to estimate the water requirement by the manufacturing sector. The manufacturing industrial types adopted in this study are taken in each activity group at the 2-digit International Standard Industrial Classification (ISIC) level. These types are classified as follows, which are broken down as shown in Table A7.4:

Classification Code	Manufacturing Activity
31	Food, beverages and tobacco
32	Textile, wearing apparel and leather
33	Wood and wood products, including furniture
34	Paper products, printing and publishing
35	Chemical, petroleum, rubber and plastic products
36	Non-metallic mineral products, except products of petroleum
37	Basic metal industries
38	Fabricated metal products, machinery and equipments
39	Other industries

(2) Distribution of manufacturing establishments

Through the data collection works, it is confirmed that the following information regarding industrial establishments and its distribution exists in the agencies concerned.

1) "Directory of Industries 1986 Edition, June 1988, Central Bureau of Statistics (CBS) (Ref.A.34)": This directory covers 1,980 manufacturing establishments employing more than five workers and existing as of 1986.

2) Registration records of industrial establishments by CBS: These registration records are provided and always renewed as rolling records through the Statistical Act (Chapter 112, commenced in July 1961, revised in 1982) (Ref.A.36). These records are stored on a master disk of a computer in CBS. The information was presented to the Study Team is as of 1988. Although it includes 3,120 manufacturing establishments in total, only 1,849 establishments are reported once the scale of establishments is limited to those employing more than five workers.

3) Registration records of industrial establishments by the Ministry of Industry : This registration system was started in 1988 by the Registration Act (Chapter 118, commenced in October 1988 and revised in 1989) (Ref.A.37). According to the registrar, around 1,500 establishments are already registered through this system. The Study Team has collected some information on distribution of factories and water consumption at the Provincial level. More detailed data is not available, because the information is security classified.

4) "District Development Profile Studies Project, 1986, MOI and UNDP" (Ref.A.32): The reports were prepared to establish District Plans for development of the local small-scale industry sector. This study should have covered all 40 Districts except Nairobi. However, seven District reports were not available as of the end of February. Furthermore, the respective reports do not present the distribution of manufacturing establishments by "Location".

5) "Directory of Industries 1987, Kenya Industrial Research and Development Institute (KIRDI) (Ref.A.35)": The directory was compiled using the results obtained from "National Districts Industrial Survey" carried out between August 1986 and July 1987. This research was conducted on the basis of the CBS's Directory report (Ref.A.33). It covers 2,527 manufacturing establishments employing more than five workers.

In consideration of the above situation, the fifth source (Ref.A.35) is used for analysis since it contains the latest and most comprehensive industrial distribution data among those available. This distribution data will be applied as indices to the future industrial distribution as well, since the industrialization is considered to be attracted to the areas of industrial agglomeration so long as a sweeping reform of industrial development will not be implemented such as Exporting Processing Zones (EPZs).

Tables A7.1 to A7.3 show the results of distribution analysis by District. 1,206 establishments or 47.8% of the total (2,527) are located in Nairobi. In declining order of importance, the following Districts are enumerated as major industrialized ones: a) 258 establishments or 10.2% of the total in Mombasa; b) 164 or 6.5% in Nakuru; c) 126 or 4.9% in Kiambu; and d) 96 or 3.8% in Kisumu. The major industrial types are: 1) Food, beverage, and tobacco, accounting for 678 establishments or 26.8% of the total; 2) Wood, wooden products, and paper related, 442 or 17.5%; and 3) Textile industry, 398 or 15.7%. These three types account for 60% of the total establishments.

(3) Present production and value added by manufacturing industry

According to "Statistical Abstract 1990" (Ref.A.24), the latest industrial production and value added in 1988 are given as K£6,103 thousand and K£798 thousand respectively, as shown in Table A7.4. The table also gives both production and

value added shares by industrial type. The biggest share of more than 40% is contributed by the food, beverages and tobacco industry, which also has the largest number of establishments as mentioned in the above paragraph. It is also anticipated that this agro-based industry will continue to lead the manufacturing industry in the national economy in the future.

(4) Trend of Industrialization

In 1960's, the existing pattern of industry in the country bore the characteristics of the colonized economy inherited from the pre-independence era. Major industries were intensively developed in Nairobi, Mombasa and other big towns. Since 1970, however, the concentration in Nairobi and Mombasa have been slackening in the amount of new industry. There were few large industries in the smaller towns and rural areas, while small enterprises became more common in the smaller towns. In the 1980's, the older established towns like Kisumu, Thika, Nakuru, Kericho and Eldoret, seem to have been a reasonably well established industrial base. Besides, some of the emerging centres such as Nyeri, Machakos, Meru, Homa Bay, and Kakamega have also become recognized manufacturing centres.

The present distribution of industry is caused by the following influences: (a) historical, geological, and ecological conditions including those of raw materials; (b) personnel interaction with government policy-makers, and capital, managerial and industrial skills; (c) infrastructural facilities such as transportation, energy, water and communication; and (d) industrial linkage with supporting industry such as insurance, commerce, services and spare parts suppliers.

There has not existed in Kenya a coherent official policy on industrial location except EPZ development programmes, although attempts of industrial decentralization have been made at various stages in the development process. Moreover, in the Sessional Paper No.1 of 1986 the government addresses to promote to develop into more industrialized societies as incomes increase, although the government does not presents the concrete industrialization programmes regarding regional development and relocation of manufacturing industries. Thus, for the time being, the present trend of industrialization is considered to continue in the future in this current study.

7.2 Projection Methodology

One of the major purposes for making projection of growth and structure of the manufacturing industry is to provide basic information for estimating water demand by this economic sector. For the sake of this purpose, value added of manufacturing establishments is the most appropriate parameter for estimation, because it is directly connected to GDP in the country. Thus, the GDP projection itself is reflected on the estimation of water requirement by the manufacturing sector.

Regional distribution of value added by manufacturing establishments is assessed by the following method. Figure A7.1 illustrates its procedure including estimation of water requirement by this sector.

1) Present distribution of manufacturing establishments by industrial type is indicated and typified by the analytical results of the source (Ref.A.35) mentioned in the previous section.

2) Value added by manufacturing type in a "Location" is calculated as a product of (a) the number of units of manufacturing establishment by industrial type and (b) value added per unit by industrial type. The aggregate figure of the products of respective types is the total value added in the "Location". As a result, the present regional distribution of value added is figured out under present conditions as of 1988.

3) Contribution of manufacturing sector is estimated in the national economic growth projection in Table A5.1. To accomplish this economic growth in the country, value added per unit by manufacturing type has been calculated to produce a target figure that respective manufacturers are expected to achieve. Table A7.5 shows value added per unit of industrial type up to the year 2010.

4) Regional Distribution of value added by manufacturing type in the future is estimated in the same way as used in 2) above.

7.3   Projected Output

The total value added of the manufacturing sector in 2000 and 2010 is projected to be KShs.38 billion and KShs.62 billion at 1988 constant prices, respectively. District distribution of the projected value added by the sector is shown in Table A7.6. Among the Districts, Nairobi attains the highest value added of KShs.18 billion in 2000 and KShs.29 billion in 2010. The top five Districts regarding value added attainment are Nairobi, Mombasa, Nakuru, Kiambu and Kisumu, which account for KShs.44 billion in 2010 or 71% of the national total.

A8. PUBLIC EXPENDITURE FOR DEVELOPMENT

8.1 Constraints of Public Finance

Inadequate public finance is one of the most serious constraints for project implementation in developing countries. In formulation of projects in the current study, this is also considered to play a serious role. Investment ceiling of public finance for projects is laid out by the government policy. In this context, the policy is the most important decisive factor for project formulation, which is declared in the development plans and is usually piled on top of the accumulation of the past capital formation.

8.2 Financial Ceiling for Development

A principle case of public development expenditure will be estimated in the following procedure:

1) The total expenditure by the central government is estimated in proportion to GDP. Its rate is expected to be 44%. The development expenditure accounts for a quarter of the total expenditure.

2) Capital expenditure is assumed to be 52% of the development expenditure.

3) 20% of the development expenditure will be spent for projects related to water development, 37% of which will be disbursed by Ministry of Water Development.

4) Expenditure for water development is distributed in accordance with the past trend of sector distribution (1) rate shown in Table A2.48.

Table A8.1 shows the trend projection of public expenditure estimated based on the above assumptions. The public expenditure for development projects related to water schemes is expected to amount to K£476 million in the fiscal year 2010 at 1989 constant prices. Its total amount cumulated from 1992 to 2010 will be K£6.8 billion, equivalent to US$6.3 billion at 1989 prices.

The table shows the budgetary distribution by ministry. The accumulated amount of US$2.6 billion by the year 2000 will be disbursed as follows: US$0.9 billion through MOWD and US$1.7 billion through other ministries and agencies concerned. In the same manner, the amount of US$6.3 billion by 2010 will be disbursed: US$2.3 billion through MOWD and US$4.0 billion through others.

The table also shows the distribution by sector related water resources development. By the year 200, the budget for water supply sector will aggregate to US$1.1 billion. That for other sectors is estimated as follows: US$1.1 billion for hydropower, US$0.25 billion for irrigation, US$91 million for sewerage and US6 million for flood control/river improvement. In the same way, the budgets by 2010 are in order of amount: US$2.9

billion for hydropower, US$2.6 billion for water supply, US$0.6 billion for irrigation, US$0.2 billion for sewerage and US$14 million for flood control/river improvement.

Part II

- Population issues are revised on the basis of the
  provisional results of the 1989 population census,
  which was released in "Economic Survey 1991".

- 41 District structure is still kept in this current study in
  the case of discussing District distribution issues
  because of data availability of socio-economic
  information.

- Administrative boundary map is as of 1986, because
  the 1989 census map and final results will not be
  available by the end of this year 1991.

A9. POPULATION PROJECTION CONSIDERING PROVISIONAL RESULTS OF 1989 CENSUS

9.1 Provisional Results of 1989 Population Census

In "Economic Survey 1991" (Ref.A.08), the provisional results of the 1989 population census were published in May 1991. They include (a) the national total population with District distribution and (b) the urban population by urban centre. They indicate a national population size of 21.4 million and an urban population size of 3.7 million at the census time of August 1989. Their average growth rates were 3.4% per annum for the total population and 4.9% for the urban population. These figures are larger than the populations projected in Chapter A4, as follows:

Item	Provisional Results			Projected Population		
	Total	Urban	Rural	Total	Urban	Rural
Population (Million)	21.4	3.7	17.7	23.5	4.5	19.0
Growth Rate between '79/'89 (%)	3.4	4.9	3.2	3.8	6.8	3.2

The national population is about 9% below the projected population of 23.5 million, as seen in the above table. Regarding this difference, the Survey states as a major reason that the total fertility rate has declined from 7.9 children per woman aged 49 years and above in 1979 to 6.7 children in 1989.

The urban population is about 18% below the projected population of 6.8 million. This difference obviously influences the water demand by domestic sector in the future. Thus, the population projection has to be reviewed taking these provisional results into consideration. Although the final results of the 1989 census will be published by the end of 1991, it would be too late for this current master plan study. Therefore, these provisional results are adopted as basic information for the review of the projection.

(1) Trend of district distribution

Table A9.1 shows the intercensal comparison of the 1979 census with the 1989 census provisional results. The Districts which appear to have appreciably gained more than 4% per annum on average are: Nairobi, Nyandarua, Isiolo, Kajiado, Nakuru, Narok, Trans Nzoia, and Samburu. The major losing Districts, the growth rate of which are less than the national average growth rate of 3.4% per annum, are Districts in Central Province (excluding Nyandarua); Districts in Coast Province (excluding Kilifi); District in Eastern Province (excluding Isiolo); all Districts in Northeastern Province; Districts in Nyanza Province (excluding Kisumu); Kericho and Turkana in Rift Valley Province; and Kakamega/Vihiga in Western Province. In particular, the Districts of Garissa and Wajir have lost a lot of

populations and grown at negative rates as seen in Table A9.1, because of pastoral migration.

(2) Trend of urbanization

Table A9.2 shows the urban population by status of urban centre in the censuses of 1979 and 1989. The total District urban population is summarized in Table A9.1. The Districts which appear to have appreciably gained more than 10% per annum on average are: Siaya, Nandi, Murang'a, Taita Taveta, and South Nyanza.

Characteristics of the urbanization process in Kenya are analyzed by studying population and employment changes in some of the major urban centres. Table A9.3 shows the major centres having more than 10 thousand people at the 1979 or 1989 census. Although this data is not conclusive because of the distortion due to the boundary extension of some centres, it shows that about half of the total urban population at the 1989 census was located in Nairobi and Mombasa with 36% in Nairobi alone, as shown Table A9.3. Besides these two cities, the following cities had a large increment (more than 50 thousand) of urban population between the two censuses: Nakuru, Eldoret, and Nyeri.

Some towns in the table have grown at a high rate of more than 15% per annum, such as Ruiru (21%) in Kiambu District, Taveta (19%) in Taita Taveta District, Maragwa (16%) in Murang'a District, and Siaya (15%) in Siaya District. On the other hand, the following six towns in the table have grown slowly at a less than half of average urban growth rate (4.9%): Nyeri, Embu, Kisumu, Nyahururu, Marsabit, and Nyamira. In particular, Mandera has decreased at 6.2% per annum during the two censuses.

The causes of the trend towards centralization of urban activities are partly historical and partly economic. There is a tendency for human activities to agglomerate to take advantage of scale economies. Scale economies mean that savings in operation costs are made possible by concentrating activities at the same location. In addition, the causes of rural-urban migration are mainly based on two factors: the gap between urban and rural incomes and the probability of finding a job. Thus, migration into towns would be accelerated as long as job opportunities are created in urban areas.

Migration takes place on account of the following "pull" factors exerted by towns: better paid jobs, and better social and cultural facilities. Even if this "pull" is not the main force influencing migration to towns, it is expected that this population movement will continue due to the following "push" factors in overpopulated rural areas: unemployment and under-employment and landlessness amongst rural dwellers. From this point of view, the proceeding investment for urban infrastructure in important towns would be necessary for attaining favorable economic growth and sound urbanization.

9.2 Assumptions and Methodology of Projection

(1) Available data as of September 1991

   1) District distribution of the 1989 census population. The final figure of the national total population will be revised to around 22 million from the provisional figure of 21,397 thousand.

   2) Urban population by town in the 1989 census year. The urban populations by urban center are reported to be 3,736 thousand in the "Economic Survey 1991". However, they are tabulated on the basis not of the definition of conventional urban centre but of the agglomerated market area as a trading centre. In the final report, the urban population will be enumerated in accordance with the definition of urban centre. Thus, the urban population may be considerably revised from the provisional figures.

(2) Criteria for new population projection

   1) The national population is assumed to be 22.7 million in 1990. Because, the total population will be finally counted up to nearly 22 million from the provisional figure of 21,397 thousand after an arrangement of under-enumeration. Furthermore, an annual increase in population is expected at a rate of 3.4% to 1990.

   2) The growth trend of total population beyond 1990 up to the target year 2010 is assumed to correspond to the original scenario which is adopted in Chapter A4, but the growth rates of respective years in the future are reduced taking into account the new declined intercensal growth rate which corresponds to 85% of the original projected growth rate. Therefore, the projected populations and average annual growth rates of the above respective scenarios are summarized as follows: 30.7 million and 3.1% per annum in 2000; and 40.3 million and 2.8% per annum in 2010.

   3) Population distribution of respective Districts is based on the 1989 census.

   4) The respective District populations are assumed to grow at corresponding intercensal rates between 1979 and 1989 in principle. The Districts, rural population of which declined during the two census such as Garissa and Wajir in the Northeastern Province, are assumed to grow at the same rate as Mandera District. However, if the sum of District populations exceeds the national total population, the District populations would be rearranged and redistributed in accordance with the estimated population distribution so that the sum is equal to the national total population.

   5) The urban population of 3,736 thousand in total in the 1989 census, which was published in the provisional results, was not enumerated by the

conventional definition of urban centre. Therefore, the urban population will be revised in the final report. The urban population in 1990 is assumed at around 3.9 million from applying the intercensal growth rates of respective urban centres.

6)   Between the two censuses, the growth rate of urban population (4.9% per annum) seems to be slower than expected in the Sessional Paper (Ref.A.01) which predicted growth at between 7.1% and 8.0%. However, urbanization must be accelerated so that the urban sectors can absorb the coming young labour force in the near future. Thus, urban population would be expected to grow at least 7.1% per annum, the lower scenario of urban population in the Sessional Paper. Therefore, the projected populations and average annual growth rates of this scenario is summarized as follows: 7.9 million and 7.1% per annum in 2000; and 12.7 million and 4.9% per annum in 2010. The growth rates beyond 2000 are successively reduced to correspond to the government policy of rectifying of the disparity between urban and rural standards of living.

7)   Six new urban centres registered in Table A9.2 are added to the original ones in Group 2, Korr in Marsabit District, Nyabikaya in South Nyanza District, Lolgorian and North Enkare in Narok District, Chaptais in Bungoma District, and Mwalie in Bungoma.

8)   Five urban centres which do not appear in the provisional results are still counted as urban centres, since they were enumerated in the 1979 census. They are: Oldonyonyiro in Isiolo District; Elwak and Rhamu in Mandera District; Buna in Wajir District; and Nairangi Enkare (North Enkare) in Narok District.

9)   Seven urban centres which were classified in Group 1 are ranked down to Group 2, because their growth has been low or negative between the two censuses. They are: Sololo and Moyale in Marsabit District; Mudogashe in Garissa District; Mandera, Elwak and Rhamu in Wajir District; and Bute in Wajir District.

10)   The growth rates of respective urban centres are intensified to attain the expected growth of urban population in the future. They have to be changed from the original rates to the following new rates which are also successively lower in Groups 1, 2, and 3:

Urban Group	New Rate[*]	Original Rate[*]
Group 1	2.5	2.0
Group 2	2.0	1.5
Group 3	1.5	1.2

Remark: * Times the District growth rate

11) Regarding an administrative boundary map of "Location", the original map is used for estimation of population distribution by "Location", because both the 1989 census map and the census population by "Location" are not available at present.

12) Other assumptions such as rural population growth are the same as in the original scenario.

9.3 Projected Population

(1) Population by administrative area

Table A9.4 shows the District populations projected by the procedures mentioned in the previous section. Figure A9.1 illustrates the projected population density by District in 1990. The projected national population is summarized below:

(Unit : thousand,%)

Area	1989 (Census)		1990		2000		2010	
	No.	%	No.	%	No.	%	No.	%
Urban	3,736	17	3,965	17	7,933	26	12,698	32
Rural	17,661	83	18,784	83	22,779	74	27,607	68
Total	21,397	100	22,749	100	30,712	100	40,305	100

(3) Urban population

In the 1989 census, urban population was enumerated as seen in Table A9.2. Urban areas will extend not only to suburban areas around present urban areas but also to newly organized urbanized areas. Thus, urban population is projected to be classified into three ranked groups, as mentioned in the previous Section. The projection methodology to estimate urban population was also mentioned in the same Section. Table A9.5 shows the projected urban population by town between 1990 and 2010. The total urban population is estimated as 7,933 thousand in 2000 and 12,698 thousand in 2010. There are 278 towns enumerated in the country as shown in the table. However, if the definition of urban centre, settlement with 2,000 persons and more, is applied to the enumerated towns in the table, only 171 towns are counted as urban centres in 2010. In that case, the total urban population is estimated as 12,594 thousand in 2010 or 0.8% less than originally estimated.

A10. SOCIO-ECONOMIC INDICES RELATED TO POPULATION PROJECTION

10.1 GRDP Per Capita

The GRDPs during 1990 to 2010 are projected in Section 5.2. The GRDPs by District are enumerated in Table A5.3. Based on these GRDPs and the newly projected population in Chapter A9, per capita GRDPs of respective Districts are enumerated in Table A10.1. Nairobi attained the largest GRDP per capita of K£2,103 (equivalent to US$1,950) in 2010. Kitui District was the smallest among 41 Districts, amounted to K£72 (US$67) in 2010 in terms of the average of urban and rural sectors.

10.2 Agricultural Products

Food demand is calculated as the product of per capita consumption and projected population, as mentioned in Section 7.4. Table A10.2 shows food demand in 1990, 2000, and 2010 based on the newly projected population. Production of the four major food commodities and/or food imports are expected to achieve the following targets for food security in 1990, 2000, and 2010:

(Unit : 1000mt)

Food Commodity	1990	2000	2010
Maize	2,744	3,631	4,700
Wheat	386	424	590
Beef	175	249	339
Milk	1,709	2,345	3,116

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A.33   CBS, Census of Industrial production 1977

A.34   CBS, Directory of Industries 1986 Edition, June 1988

A.35   KIRDI, Directory of Industries 1987, 1988

A.36   GOK, The Statistics Act, Chapter 112, 1982

A.37   GOK, The Industrial Registration Act, Chapter 118, 1989

A.38   IMF, International Financial Statistics, July 1991

TABLES

Table A2.1   Land Area by District

(Unit : sq.km.)

Code	District	Land Area			Water Area	Total Area	Percentage Distribu- tion (%)
		Livable	Unlivable	Total			
110	Nairobi	589	95	684	0	684	0.12
210	Kiambu	2,012	436	2,448	3	2,451	0.41
220	Kirinyaga	1,042	395	1,437	0	1,437	0.24
230	Murang'a	2,091	385	2,476	0	2,476	0.42
240	Nyandarua	2,352	1,176	3,528	0	3,528	0.60
250	Nyeri	1,497	1,787	3,284	0	3,284	0.55
310	Kilifi	9,697	2,717	12,414	109	12,523	2.11
320	Kwale	7,300	957	8,257	65	8,322	1.41
330	Lamu	3,469	3,037	6,506	308	6,814	1.15
340	Mombasa	198	12	210	65	275	0.05
350	Taita Taveta	5,381	11,578	16,959	16	16,975	2.87
360	Tana River	28,545	10,149	38,694	0	38,694	6.53
410	Embu	2,345	369	2,714	0	2,714	0.46
420	Isiolo	21,934	3,671	25,605	0	25,605	4.32
430	Kitui	19,446	9,943	29,389	0	29,389	4.96
440	Machakos/Makueni	12,066	2,112	14,178	5	14,183	2.39
450	Marsabit	61,609	12,343	73,952	4,126	78,078	13.18
460	Meru	6,680	3,242	9,922	0	9,922	1.68
510	Garissa	38,828	5,103	43,931	0	43,931	7.42
520	Mandera	25,700	770	26,470	0	26,470	4.47
530	Wajir	55,382	1,119	56,501	0	56,501	9.54
610	Kisii/Nyamira	2,196	0	2,196	0	2,196	0.37
620	Kisumu	1,890	203	2,093	567	2,660	0.45
630	Siaya	2,383	140	2,523	1,005	3,528	0.60
640	South Nyanza	5,203	511	5,714	2,064	7,778	1.31
710	Kajiado	17,919	3,044	20,963	142	21,105	3.56
720	Kericho	3,785	1,105	4,890	0	4,890	0.83
730	Laikipia	8,225	1,493	9,718	0	9,718	1.64
740	Nakuru	4,429	2,595	7,024	176	7,200	1.22
750	Narok	13,837	4,676	18,513	0	18,513	3.13
760	Trans Nzoia	1,883	585	2,468	0	2,468	0.42
770	Uasin Gishu	2,958	826	3,784	0	3,784	0.64
810	Baringo	8,629	1,998	10,627	163	10,790	1.82
820	Elgeyo Marakwet	1,263	1,459	2,722	0	2,722	0.46
830	Nandi	2,199	546	2,745	0	2,745	0.46
840	Samburu	15,677	5,132	20,809	0	20,809	3.51
850	Turkana	62,193	5,212	67,405	2,279	69,684	11.77
860	West Pokot	8,367	689	9,056	0	9,056	1.53
910	Bungoma	2,496	578	3,074	0	3,074	0.52
920	Busia	1,433	196	1,629	137	1,766	0.30
930	Kakamega/Vihiga	3,122	398	3,520	0	3,520	0.59
100	Nairobi	589	95	684	0	684	0.12
200	Central	8,994	4,179	13,173	3	13,176	2.22
300	Coast	54,590	28,450	83,040	563	83,603	14.12
400	Eastern	124,080	31,680	155,760	4,131	159,891	27.00
500	North-Eastern	119,910	6,992	126,902	0	126,902	21.43
600	Nyanza	11,672	854	12,526	3,636	16,162	2.73
700	Rift Valley	151,364	29,360	180,724	2,760	183,484	30.98
900	Western	7,051	1,172	8,223	137	8,360	1.41
	Kenya	478,250	102,782	581,032	11,230	592,262	100.00

Source : A.23 and GIS of JICA Study Team
Remark : Unlivable areas mean national parks, reserve areas, etc.

Table A2.2   Inventory of Administrative Units   (Unit : Nos)

Code District	1990 *1			1986 *2		1979 *3		
	Division	Location	Sub-Loc.	Division	Location	Division	Location	Sub-Loc.
110 Nairobi	8	29	63	8	27	5	5	41
210 Kiambu	7	29	142	7	29	6	25	152
220 Kirinyaga	4	17	77	3	12	3	10	77
230 Murang'a	6	31	145	5	26	5	25	131
240 Nyandarua	6	22	64	5	21	4	13	47
250 Nyeri	9	30	148	7	28	6	21	161
310 Kilifi	5	35	117	4	32	4	28	128
320 Kwale	4	25	70	4	26	4	21	62
330 Lamu	5	9	24	5	12	5	7	31
340 Mombasa	4	12	25	4	11	4	18	37
350 Taita Taveta	5	16	55	4	12	3	9	42
360 Tana River	4	17	43	4	17	3	16	18
410 Embu	5	20	75	3	19	3	10	78
420 Isiolo	4	11	27	3	10	3	4	21
430 Kitui	5	36	161	6	32	5	27	153
440 Machakos/Makueni	11	43	232	10	42	7	29	221
450 Marsabit	6	16	40	6	15	5	8	38
460 Meru	12	51	148	9	41	6	27	142
510 Garissa	9	26	41	9	21	8	8	21
520 Mandera	6	15	31	6	14	6	22	22
530 Wajir	6	23	45	7	19	6	6	21
610 Kisii/Nyamira	12	40	128	7	27	5	18	86
620 Kisumu	6	29	114	6	19	5	14	95
630 Siaya	6	31	152	5	28	4	18	131
640 South Nyanza	9	64	205	9	51	8	34	165
710 Kajiado	4	20	53	4	18	3	14	31
720 Kericho	7	33	112	7	28	4	14	86
730 Laikipia	4	21	43	4	21	4	9	20
740 Nakuru	9	34	63	9	28	5	14	46
750 Narok	5	28	66	5	28	3	16	49
760 Trans Nzoia	3	16	28	3	17	3	4	19
770 Uasin Gishu	4	25	62	4	23	3	6	27
810 Baringo	8	43	117	7	37	4	20	128
820 Elgeyo Marakwet	5	26	115	5	25	3	11	91
830 Nandi	5	26	101	5	23	4	9	69
840 Samburu	4	21	69	3	20	3	13	73
850 Turkana	7	29	54	5	20	5	20	39
860 West Pokot	5	22	63	5	20	4	16	48
910 Bungoma	8	25	74	7	19	5	14	72
920 Busia	6	15	64	4	16	4	9	51
930 Kakamega/Vihiga	13	41	213	10	42	9	22	181
100 Nairobi	8	29	63	8	27	5	5	41
200 Central	32	129	576	27	116	24	94	568
300 Coast	27	114	334	25	110	23	99	318
400 Eastern	43	177	683	37	159	29	105	653
500 North-Eastern	21	64	117	22	54	20	36	64
600 Nyanza	33	164	599	27	125	22	84	477
700 Rift Valley	70	344	946	66	308	48	166	726
900 Western	27	81	351	21	77	18	45	304
Kenya	261	1,102	3,669	233	976	189	634	3,151

Source : *1 Final output statistics as at census on August 24, 1989
  *2 A.04 and Administrative Boundary Maps by MOLH. Sub-location data were not availale.
  *3 A.11

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Table A2.3   Inventory of Local Authorities by Type: 1990

Code	Distirct	City Commission	Municipal Council	Town Council	Urban Council	County Council
110	Nairobi	1	-	-	-	-
210	Kiambu	-	2	4	-	1
220	Kirinyaga	-	1	-	-	1
230	Murang'a	-	1	-	4	1
240	Nyandarua	-	-	1	-	1
250	Nyeri	-	1	2	-	1
310	Kilifi	-	1	1	1	1
320	Kwale	-	-	-	-	1
330	Lamu	-	-	-	-	1
340	Mombasa	-	1	-	-	-
350	Taita Taveta	-	1	-	-	1
360	Tana River	-	-	-	-	1
410	Embu	-	1	1	-	1
420	Isiolo	-	-	-	-	1
430	Kitui	-	1	-	-	1
440	Machakos/Makueni	-	1	1	2	1
450	Marsabit	-	-	-	-	1
460	Meru	-	1	2	-	1
510	Garissa	-	-	1	-	1
520	Mandera	-	-	-	-	1
530	Wajir	-	-	-	-	1
610	Kisii/Nyamira	-	1	1	2	1
620	Kisumu	-	1	-	1	1
630	Siaya	-	-	1	3	1
640	South Nyanza	-	1	2	2	1
710	Kajiado	-	-	-	1	1
720	Kericho	-	1	-	2	1
730	Laikipia	-	2	-	-	1
740	Nakuru	-	1	1	1	1
750	Narok	-	-	1	-	1
760	Trans Nzoia	-	1	-	-	1
770	Uasin Gishu	-	1	-	-	1
810	Baringo	-	1	1	-	1
820	Elgeyo Marakwet	-	-	1	-	1
830	Nandi	-	1	-	1	1
840	Samburu	-	-	1	-	1
850	Turkana	-	-	-	-	1
860	West Pokot	-	-	-	1	1
910	Bungoma	-	2	1	2	1
920	Busia	-	1	-	-	1
930	Kakamega/Vihiga	-	2	1	1	1
100	Nairobi	1	-	-	-	-
200	Central	-	5	7	4	5
300	Coast	-	3	1	1	5
400	Eastern	-	4	4	2	6
500	North-Eastern	-	-	1	-	3
600	Nyanza	-	3	4	8	4
700	Rift Valley	-	8	5	6	13
900	Western	-	5	2	3	3
	Kenya	1	28	24	24	39

Source : MOLG

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District		Local Authority			Location *2	
Code	Name	L.A. Code	Local Authority Name	Type of Authority *1	Code	Location Name
110	Nairobi	1101	Nairobi	NC	110	Nairobi
210	Kiambu	2119	Kiambu	MC	211.4	Kiambu Municipality
		2108	Thika	MC	214.4	Thika Municipality
		21111	Kikuyu	TC	216.6	Kikuyu
		2130	Limuru	TC	213.1	Limuru
		2160	Ruiru	TC	214.1	Ruiru
		2133	Karuri	TC	211.1	Kiambaa
		2180	Kiambu	CC		
220	Kirinyaga	2242	Kerugoya/Kutus	MC	223.1	Ngariama
		2238	Kirinyaga	CC		
230	Murang'a	2322	Murang'a	MC	234.6	Murang'a Old Town
		2346	Kangema	UC	233.4	Iyego
		2351	Maragwa	UC	232.7	Maragwa Ridge
		2353	Kandara	UC	231.4	Muruka
		2354	Makuyu	UC	235.1	Makuyu
		2381	Murang'a	CC		
240	Nyandarua	24106	Ol Kalou	TC	241.3	Ol Kalou
		2432	Nyandarua	CC		
250	Nyeri	2558	Nyeri	MC	257.0	Nyeri Municipality
		2525	Karatina	TC	254.3	Kirimukuyu
		2545	Othaya	TC	256.4	Mahiga
		2582	Nyeri	CC		
310	Kilifi	3111	Malindi	MC	314.4	Malindi Town
		31103	Kilifi	TC	313.2	Tezo
		31116	Mariakani	UC	311.3	Mariakani
		3193	Kilifi	CC		
320	Kwale	3294	Kwale	CC		
330	Lamu	3371	Lamu	CC		
340	Mombasa	3402	Mombasa	MC	340	Mombasa
350	Taita Taveta	3540	Voi	MC	352.4	Voi
		3595	Taita/Taveta	CC		
360	Tana River	3696	Tana River	CC		
410	Embu	4123	Embu	MC	413.7	Embu Municipality
		4120	Runyenjes	TC	411.8	Kacaari South
		4183	Embu	CC		
420	Isiolo	4247	Isiolo	CC		
430	Kitui	4341	Kitui	MC	431.4	Changwithya
		4386	Kitui	CC		
440	Machakos/Makueni	4416	Machakos	MC	441.1	Muvuti
		44108	Mtito Andei	UC	449.4	Mtito Andei
		4418	Tala/Kangundo	UC	445.1	Kangundo
		4429	Mavoko	TC	442.3	Settlement Area
		4485	Masaku	CC		
450	Marsabit	4570	Marsabit	CC		
460	Meru	4613	Meru	MC	461.4	Ntima
		4635	Chuka	TC	464.3	Karingani
		4636	Maua	TC	467.2	Maua
		4684	Meru	CC		

(To be continued)

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(Continuation)

District		Local Authority			Location *2	
Code	Name	L.A. Code	Local Authority Name	Type of Authority *1	Code	Location Name
510	Garissa	5143	Garissa	TC	519.2	Korakora
		5199	Garissa	CC		
520	Mandera	5297	Mandera	CC		
530	Wajir	5398	Wajir	CC		
610	Kisii/Nyamira	6114	Kisii	MC	615.0	Kisii Municipality
		6144	Keroka	UC	611.5	Kitutu East
		6156	Nyamira	TC	612.2	East Mugirango
		6168	Ogembo	UC	617.5	Kionyo
		6172	Gusii	CC		
620	Kisumu	6205	Kisumu	MC	622.2	Central Kisumu
		62114	Ahero	UC	623.2	South East Kano
		6277	Kisumu	CC		
630	Siaya	6309	Siaya	TC	634.1	East Alego
		63101	Bondo	UC	632.4	West Sakuwa
		6310	Ukwala	UC	635.4	North Ugenya
		6366	Yala	UC	633.2	East Gem
		6387	Siaya	CC		
640	South Nyanza	6427	Homa Bay	MC	641.1	Kanyada West
		6467	Migori	TC	644.3	Suna East
		64104	Oyugis	TC	647.4	Central Kasipul
		64115	Kendu-Bay	UC	648.1	Central Karachuonyo
		6461	Kehancha	UC	646.3	Bukira East
		6478	South Nyanza	CC		
710	Kajiado	7149	Kajiado	UC	713.1	Ildamat
		7173	Olkejuado	CC		
720	Kericho	7207	Kericho	MC	725.5	Kericho Township
		72107	Londiani	UC	727.1	Londiani
		72109	Sotik	UC	723.1	Kepletudo
		7279	Kipsigis	CC		
730	Laikipia	7359	Nyahururu	MC	733.9	Nyahururu Township
		7357	Nanyuki	MC	731.5	Nanyuki
		7331	Laikipia	CC		
740	Nakuru	7403	Nakuru	MC	749.0	Nakuru Municipality
		7421	Naivasha	TC	744.1	Naivasha
		74102	Molo	UC	747.5	Molo South
		7434	Nakuru	CC		
750	Narok	7550	Narok	TC	751.4	Enabelbel
		7574	Narok	CC		
760	Trans Nzoia	7606	Kitale	MC	762.3	Kitale
		7662	Nzoia	CC		
770	Uasin Gishu	7704	Eldoret	MC	772.5	Eldoret Municipality
		7737	Wareng	CC		
810	Baringo	8126	Kabarnet	MC	812.5	Kabarnet Mosop
		81110	Eldama Ravine	TC	814.5	Eldama Ravine
		8190	Baringo	CC		

(To be continued)

(Conclusion)

District		Local Authority				
					Location *2	
Code	Name	L.A. Code	Local Authority Name	Type of Authority *1	Code	Location Name
820	Elgeyo Marakwet	82105	Iten	TC	822.4	Kiptuilong
		8289	Keiyo Marakwet	CC		
830	Nandi	8352	Kapsabet	MC	832.2	Chemundu
		83100	Nandi Hills	UC	831.2	Chebarus
		8388	Nandi	CC		
840	Samburu	8491	Samburu	CC		
		8424	Maralal	TC	841.4	Maralal Urban
850	Turkana	8569	Turkana	CC		
860	West Pokot	8655	Kapenguria	UC	861.1	Kapenguria
		8692	Pokot	CC		
910	Bungoma	9117	Bungoma	MC	912.4	Kandunyi
		9128	Webuye	MC	914.2	Webuye
		91112	Kimilili	TC	913.1	Kimilili
		9163	Kapsakwony	UC	917.0	Elgon
		9113	Sirisia	UC	911.3	Sirisia
		9175	Bungoma	CC		
920	Busia	9212	Busia	MC	922.3	West Bukhayo
		9239	Busia	CC		
930	Kakamega/Vihiga	9315	Kakamega	MC	935.4	Kakamega Municipality
		9364	Mumias	TC	93A.4	Central Wanga
		9376	Kakamega	CC		
		9448	Vihiga	MC	932.5	Central Maragoli
		9465	Luanda	UC	931.3	West Bunyore

Source : MOLG

Remark : *1 The following show the abbreviations used above:
        HC: City Commission   MC: Municipal Council
        TU: Town Council   UC:Urban Council   CC: County Coucil
     *2 "Location" points out a Location where the Council is located.
       Refer to the administrative boundary map.
     *3 Inventory of local authorities is counted as of Novemeber 1990.