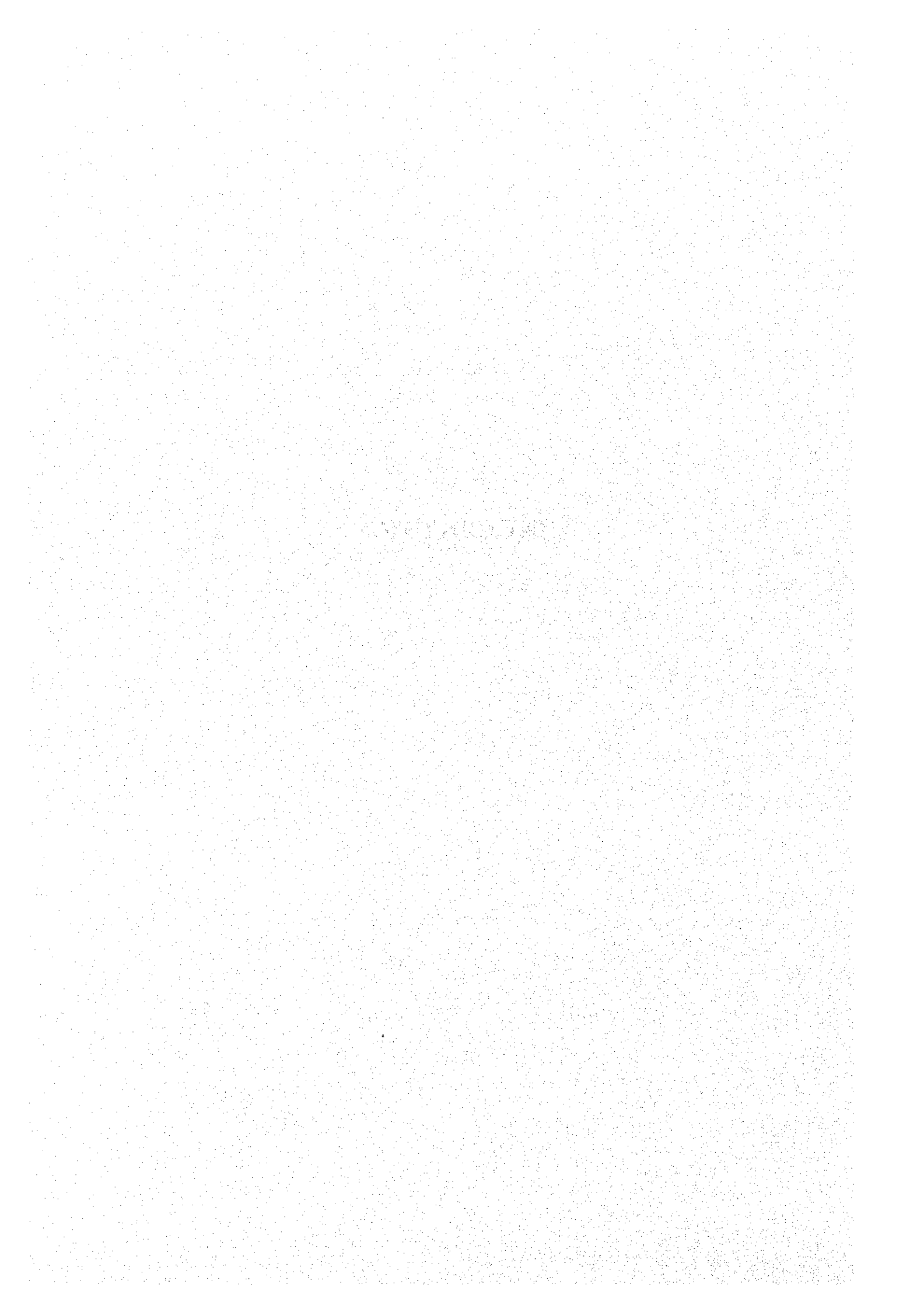


## **CHAPTER I.**

### **INTRODUCTION**



## CHAPTER I. INTRODUCTION

### 1.1 Background of the Study

The agricultural sector in the Republic of Kenya contributes about 25 percent of GDP in 1994 and occupies 70 percent of the working population. Some 85 percent of the population live in rural areas, and produces agricultural products. Especially horticultural production for export, such as cut flowers and vegetables have grown rapidly in recent years, and contributes 12 percent of total exports in the country. The amount of export of horticultural crops has increased in the last ten years, and it has become the third highest exporting commodities following to the traditional tea and coffee. The smallholder farmers in the Study Area grow both for exporting and domestic consumption. Representative exporting vegetables in value are : French beans, okra , tomatoes etc., and vegetables for domestic consumption are : carrots, Irish potatoes, cabbage, kale, banana etc. These horticultural products have a tendency to fluctuate in price, but they are promising to earn relatively high profit. The cut flowers are mainly planted on private large-scale farms.

There are more than 2.5 million small-scale farmers in Kenya, who occupy 60 percent of agricultural land and about 75 percent of gross agricultural production in value. However, the average farm size of the small-scale farmers is below two hectares, of which, 75 percent have below average farm size. More than 55 percent of small-scale farm households are cultivated mainly by women. Since farmlands are inherited among family members, they have an inclination to become smaller. Under these conditions, small-scale farms must be developed by introducing i) intensive farming, and ii) crop diversification to get higher agricultural incomes.

The foothills of Mt. Kenya, the Study Area, are blessed with water sources for irrigation with an annual average precipitation ranging from about 800 to 1,400 mm. It is one of the areas most suitable for smallholder irrigation in Kenya, in which more than 70 percent is classified as arid or semi-arid zones. Since the area is located about 150 km from Nairobi, capital of Kenya, the Study Area is also blessed with good marketing conditions.

The Government of Kenya has been introducing large-scale irrigation systems on public land, and smallholder irrigation systems to small-scale farmers. Initial costs of the smallholder irrigation are low, and maintenance costs also relatively cheap, and it could be managed by an appropriately organized farmers' group. Therefore, horticultural development, which has high potential in the Area, can be promoted through the following:

- i) Introduction of small irrigation system,
- ii) Improving management of sustainable horticultural farming.
- iii) Organization of small farmers group,
- iv) Construction of rural infrastructure such as farm roads, marketing facilities etc., and accompanying operation and maintenance,
- v) Improvement of agricultural extension and credit services, and
- vi) Improving access to information on marketing and various other information sources.

In view of such circumstances, the Government of the Republic of Kenya requested the Study on Community-Based Smallholder Irrigation Development Project for Promotion of Horticultural Production in the Foothills of Mt. Kenya to the Government of Japan in June, 1996.

## 1.2 Objectives and Scope of the Study

### 1.2.1 Objectives of the Study

The objectives of the Study are as follows:

- To formulate a Master Plan for promoting horticultural development. The Master Plan is formulated based on farmers' participation and introduction of a smallholder irrigation system, and comprised of construction of rural infrastructure, and its operation and maintenance, improvement of agricultural extension and credit services and establishment of organization for operation and maintenance works. The implementation schedule of these project components will be clarified taking into consideration the capability of the implementing agency of the Kenya Government and farmers.
- To select the priority area that concentrates on smallholder irrigation through the Master Plan Study. Such priority areas shall be establish it as a Model Area to draw up a development plan.
- To transfer technology and knowledge on various aspects of the Study to the counterpart personnel of the Government of Kenya through survey works and training in Japan.

### 1.2.2 Scope of the Study

The Study was carried out in the following three phases:

#### Phase-I Study (Formulation of Basic Development Plan)

- Preparation work : Preparation of Inception Report
- Phase-I field work : Delineation of Basic Irrigated Horticultural Development Plan (Master Plan)
- Phase-I home office work : Formulation of Master Plan  
: Delineation of preliminary PDM  
: Preparation of Interim Report

#### Phase-II Study (Explanation of Interim Report to GOK)

- Phase-II field work : Explanation of Interim Report to GOK  
: Selection of Model Areas  
: Review and discussion of delineated PDM

#### Phase-III Study (Formulation of Irrigated Horticultural Development Plan)

- Phase-III field work : Delineation of Irrigated Horticultural Development Plan for Model Areas  
: Holding of seminars
- Phase-III home office work : Formulation of Irrigated Horticultural Development Plan for the Model Areas
- Explanation of Draft Final Report : Explanation and Discussion of the Draft Final Report
- Submit of the Final Report : Submit of the Final Report

- **Explanation of Draft Final Report** : **Explanation and Discussion of the Draft Final Report**
- **Submit of the Final Report** : **Submit of the Final Report**

## **CHAPTER II.**

### **MAJOR ACTIVITIES IN EACH PHASE'S WORK**

## CHAPTER II. MAJOR ACTIVITIES IN EACH PHASE'S WORK

The Study on Community-Based Smallholder Irrigation Project for Promotion of Horticultural Production in the Foothills of Mt. Kenya has been undertaken in the three phases, and major activities in each stage are mentioned below;

### 2.1 Phase-I Study

#### 1) Preparatory Work (July 26, '97 - Aug.4, '97)

Prior to the commencement of the Study, the data and information available in Japan were collected and examined, and the Inception Report involving plan of operation and survey method for the whole Study was prepared.

#### 2) Phase-I Field Work (Aug.5, '97 - Nov. 17, '97)

- Explanation and discussion of the Inception Report  
The Inception Report prepared during the preparatory work was explained to the Government of Kenya (GOK), and the contents and the plan of operation for the Study was agreed between the GOK and Study Team.
- Technology transfer plan by sector  
Technology transfer plan for the counterparts assigned to work with the Study Team was prepared by sector based on the discussion with the GOK.
- Collection of general information related to socio-economic and natural conditions  
General information related to socio-economic and natural conditions was collected to reconfirm the necessity and significance of this Study; that is, condition of regional and rural development in the Republic of Kenya, positioning of the Study in the agriculture of the country, and the national development plan, and constraint on the rural development.
- Review of related plan and on-going project  
There was a need to study and review related plan and on-going project. Review clarified the study items to be confirmed in the Study through data collection and analysis on those existing plan and projects. Particularly, projects planned or implemented by the other donors were deeply studied and its results were used practically in the Study.
- Collection and analyses of data/information for Basic Irrigated Horticultural Development Plan (M/P)  
This Study was basically based on participation of farmers. Therefore, sectoral survey was carried out taking into consideration this concept.
- Implementation of following items of contract-based field works employing the local consultants;
  - Socio-economic survey
  - Participatory rural appraisal (PRA) survey
  - District profile up-date survey
  - Horticultural marketing survey

- Identification of problems and constraints in and around Study Area  
Through the field works, data collection and contract-base field works mentioned in the above, the current encountered problems and constraints on horticultural production, marketing, rural community, etc. were studied and identified.
- Preparation of Progress Report (I)  
The Progress Report (I) summarizing the activities during Phase-I field works, study results involving identification of current problems and constraints, delineation of basic development plan, etc. was prepared, and explained to the GOK at the end of the field survey in the Phase-I field work. The result and technology items transferred to the counterpart personnel by sector in the period were described in the Progress Report (I).

### 3) Phase-I Home Office Work (Nov. 18, '97 - Jan. 16, '98)

- Establishment of Basic Horticultural Development Plan (M/P)  
Master Plan for irrigated horticultural development plan was formulated after analyzing the results of Phase-I field work and clarifying the content of horticultural development and development potentiality. The major development plans are listed below;
  - Community and farmers' organization plan
  - Land use plan
  - Horticultural development plan
  - Agricultural support service plan
  - Marketing plan
  - Water resources and Irrigation and drainage plan
  - Agricultural and rural infrastructure plan
  - Road development plan
  - Environmental conservation plan
  - Layout of major facilities
  - Project implementation plan
  - Operation & maintenance plan for project facilities
  - Recommendations
- Delineation of Preliminary Project Design Matrix (PDM)  
Preliminary project design matrix (PDM) for Master Plan was formulated by the Study Team, in parallel with those works of stakeholder analysis, problem analysis and objective analysis.
- Preliminary selection of Model Areas  
Considering regional characteristics, agricultural productivity, willingness of the beneficiaries, acreage, irrigation system, access to markets and urgency etc. as the criteria, three Model Areas were preliminarily selected.
- Preparation of Interim Report  
The Interim Report, especially emphasizing the formulation of basic development plan for irrigated horticultural development plan was prepared at the termination of Phase-I study.



## 2.2 Phase-II Study

### 1) Phase-II Field Work (Mar. 17, '98 - Apr. 15, '98)

- Explanation of Interim Report to GOK  
Interim Report was explained to MOALD and related government agencies such as Ministry of Land Reclamation, Regional and Water Development (MLRRWD), Ministry of Environment and Natural Resources (MENR), Ministry of Public Works and Housing (MPWH), etc.
- Final selection of Model Areas  
Re-examination of representative Model Areas, which have been preliminarily selected in the courses of Phase-I home office work was made on the basis of database analysis using the results of district profile survey, after paying due consideration for present hard and software problems encountered in the existing smallholder irrigation schemes (SIS), and following four Model Areas were finally selected through discussion on its procedures and criteria, field works and evaluation of nine candidates of Model Areas.
  - Rupingazi Ngerwe Irrigation Scheme (Type-B)
  - Ngomano/Nyangati Water Furrow Project (Type-C)
  - Nkunjumo Water Project (Type-D)
  - Ruungu/Karocho Irrigation Project (Type-E)

In addition to the study on the Model Area selection, the proposed irrigation schemes of 463 was classified into similar clusters considering the characteristics of the Model Areas.

- Implementation of workshop seminars  
Central level of workshop seminar with the participation of related GOK officers from central, provincial and district offices, NGOs, financial agencies such as related bank was held, and reviewed the preliminary PDM formulated mentioned in the above. Furthermore, project site level of workshop seminar was held at Ngomano/Nyangati Water Furrow Project with participation of the related beneficiary farmers.
- Preparation works for contract-based field works to be conducted during Phase-III field work  
Necessary information was collected for carrying out contract-based field works such as preparation of topographic and route survey map for the Model Areas and implementation of environmental impact assessment (EIA), which will be conducted during the Phase-III Study.
- Preparation of Progress Report (II)  
At the termination of phase-II field work, Progress Report (II) summarizing Study Team activities and study results of Model Areas selection, etc. was prepared.

## 2.3 Phase-III Study

### 1) Phase-III Field Work (June 11, '98 - Aug. 21, '98)

- Detailed explanation and discussion on the Interim Report  
The Interim Report was furthermore explained to GOK, and survey methods and procedures of the Phase-III study were agreed between the both sides of GOK and Study Team

- Data collection and field works for Model Areas  
Based on the survey method and procedures agreed as mentioned above, collection of data and information and field survey for the selected four Model Areas were carried out to prepare detailed horticultural development plan. Especially, rural community and farm economic survey were undertaken by the Study Team for the selected sampled farmers of about 150 farm households.
- Implementation of contract-based field works employing the local consultants  
Following two kinds of contract-based field works were carried out employing local consultants;
  - Topographic, longitudinal and cross sectional survey, and
  - Environmental impact assessment (EIA) survey.
- Implementation of workshop seminars  
Study Team held a seminar on PDM at Nairobi to discuss and reflect beneficiaries' intention to the Master Plan and at four Model Areas, in order to promote their participation, and PDM on the proposed irrigated horticultural development were formulated.
- Delineation of development plan for Model Areas  
Development plan for irrigated horticultural development at each Model Area was formulated covering the following subjects;
  - Community and farmers' organization plan
  - Land use plan
  - Horticultural development plan
  - Agricultural supporting service plan
  - Marketing plan
  - Water resources and irrigation and drainage plan
  - Agriculture & rural infrastructure plan
  - Road development plan
  - Environmental conservation plan
  - Layout of major facilities
  - Project implementation plan
  - Operation and maintenance plan for project facilities
  - Cost estimation
  - Benefit estimation, project evaluation, and farm budget analysis,
  - Alternative study on farm credit conditions
  - Recommendations

## 2) Phase-III Home Office Work (Aug. 22, '98 - Dec. 11, '98)

- Preparation of Development Plan for the Model Areas  
After analyzing all the results of Phase-I, Phase-II and phase-III surveys, and the detailed and appropriate development plan for irrigated horticultural development for the Model Areas was formulated.
- Project evaluation and recommendation  
The above development plan was evaluated from economical, financial, and social environmental point of views, and necessary recommendations for the project intervention implementation were discussed.

- Preparation of Draft Final Report  
Draft Final Report involved all the study results were prepared at the termination of the Study.
  
- Explanation and discussion of the Draft Final Report, and preparation of Final Report  
When the Phase-III home office work was completed, Draft Final Report was explained to and discussed with GOK. After obtaining the comments on the Report from GOK, the Final Report will be prepared in considering some correction and modification based on comments to be given by GOK.

## **CHAPTER III.**

### **BACKGROUND OF THE PROJECT**

## CHAPTER III. BACKGROUND OF THE PROJECT

### 3.1 Overview of the Country

#### 3.1.1 General Features of the Country

##### 1) Location of the Country

Kenya is located in the eastern part of Africa, in the equatorial region facing the Indian Ocean. The country has highlands with an elevation of 1,200 to 2,800 m in the center of the country. Kenya is bordered by Tanzania in the South, by Uganda in the West, Ethiopia in the North and Somalia in the East, respectively.

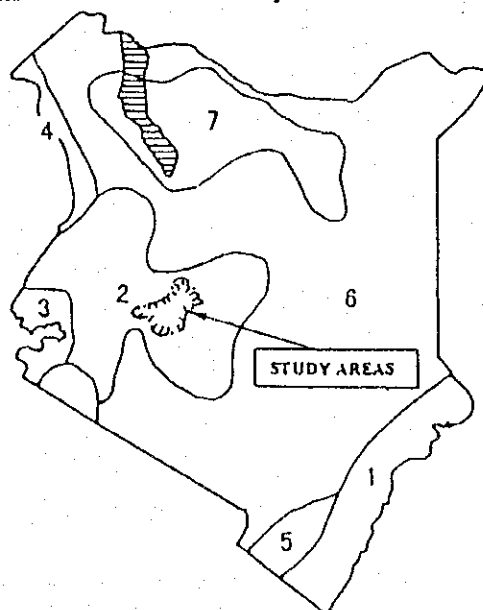
##### 2) Climate

Kenya presents great variation in climate and vegetation affecting the types of crops and animal husbandry produced in various parts of the country.

Rainfall in Kenya is relatively low and unreliable in nature. Apart from Kenya highlands, Lake Victoria (No. 3 on the map mentioned below) and the coastal strip (No.1 on the map), the majority of the country can be classified as semi-arid or arid.

Kenya has two rainy seasons, March to May and November to December, with intervening dry season. Two main wind systems also affect the climate. The dry north-east trade winds and the tropical south-east trade winds which bring heavy rain in April. Higher rainfall in western Kenya is a result of south-westerly passing over Lake Victoria.

1. Coastal equatorial
2. Highlands modified equatorial
3. Lake Victoria basin equatorial
4. North-west border modified equatorial
5. Narok and Taita Kwale tropical
6. Eastern Kenya semi desert
7. Central Northern Kenya desert



The Study Area is located in No.2 area on the map.

##### 3) Population

Between 1969 and 1989, Kenya's population almost doubled. The total 1994 population of 26,423,560 is divided into 49.3 percent male and 50.7 percent female, and 15.6 percent for urban and 84.4 percent for rural population. Population density per sq.km is 37 persons. Pressure of population on land has been increasing because of limited cultivable areas and a high annual population increase of 3.42 percent.

The population of urban areas has been intensified by a 6.5 percent annual migration rate from rural to urban areas.

#### 4) Major Languages Used and Religion

The official languages are Swahili and English. Other than these, there are about 50 languages which are spoken in the various tribes in the country. Some 66 percent of the population is Christian, dividing into 38 percent Protestant and 28 percent Catholic. Other than these, Islam and traditional religions exist at six percent and 26 percent, respectively.

#### 5) Major Pattern of Livelihood

Although there are 42 ethnic group in Kenya, each single tribe generally lives in a specific areas, not with other tribes. Each tribe has its own life style, tradition and behavior. Some type of committee called "Council of Elders" composed of older persons works to solve conflicts, if they occur. In the rural areas, role of female is very important not only in farming practices but also in house keeping, water fetching, child care and procurement of fuel woods etc. Recently, males have a tendency to leave the villages to get additional incomes. Heavy work such as cultivation using draft cattle is mainly done by males. However, due to small farm size, plowing work is usually done manually by both males and females. Transportation of farm produces to collecting point is also done by the males.

Usually, people eat meal two times a day, and Ugari made from maize flour is the staple, which accounts for huge areas of the cultivable areas in the country. Fuel wood and charcoal are generally used for cooking and heating.

In the arid and semi-arid zones, people's living standards are maintained by living a nomadic life, raising cattle, goats and sheep. Grazing cattle is done by males, while goats and sheep are tended by female.

#### 6) Land Area

Kenya's total land is 582,646 sq.km. Out of this only 9.2 million ha is classified as of high and medium potential. However, two-fifths of those area is uncultivated because of soil and land form constraints. Only 3,826,000 ha is under cultivation, which is equivalent to only 6.6 percent of the total area of the country. Arid and semi-arid lands constitute four-fifths of the total land area of Kenya, in which nomadic pastoralism has been predominant.

#### 7) Major Land Use Pattern and General Description of Agro-Ecological Zoning

Land use category is composed of a) national parks, b) national forest, c) cultivated land, d) grazing land, e) bush and others and f) others. Only 6.6 percent of national land is for farming. In the dry lands, accounting for about 39 percent of the country's land, nomadic pastoralism is predominant.

There is a difference in land use between smallholders and large holders. The former generally has a small farm size of less than 20 ha and mainly produces primary foods of maize and beans, for home consumption depending on annually fluctuating rainfalls, while large holders produce almost for market, and

maize, wheat, and sugarcane for domestic consumption under the mechanized conditions.

Since the irrigated area is very small, accounting for 82,000 ha or 2.14 percent of the cultivable area, farm practice has been entirely depending on rainfall. Land preparation starts from January to March. Horticultural production is dominated by small scale farmers who number about 2.7 million or 98 percent of the total farm households. Following indicate the general characteristics of Agro-Ecological Zone around Study Area.

**Tropical Alpine Zone** : The Tropical Alpine Zone is found on the peak of Mt. Kenya, consisting of rocks and glaciers. It ranges between 2,130 to 2,400 m above mean sea level. No major agricultural activities is practiced but important national parks are found in this zone.

**Upper Highland Zone** : This is the forest zone and is therefore important as the catchment basin. The upper parts of this zone are steep and should therefore be retained as forest reserves or parks for wildlife conservation. The predominant pasture is Kikuyu grass, which is suitable for dairy cows. Pyrethrum and wheat are planted in this zone.

**Lower Highland Zone** : This zone is situated above the upper midland zone and lies between 1,200 to 2,300 m above mean sea level. This zone is classified as the tea and dairy farming zone and borders the forest reserves. The pasture is essentially Kikuyu grass which is suitable for dairy farming.

**Upper Midland Zone** : The zone is situated between 1,220 to 1,800 m above mean sea level. The coffee zone is on the upper reaches. Tea is also planted. This zone forms the core agricultural activities of the country. Other than the two (2) leading cash crops of tea and coffee, livestock keeping and food crop farming are also practiced.

#### 8) Area under Forest and Deforestation the Trend

The total forest area as of 1995 is 19,200 sq.km, accounting for 3.3 percent of the national land and consisting of 56 percent of the government land and 44 percent of the trust land. Of which, however, forest area for timber production in 1995 was only 1.68 million ha, showing a declining trend. Total area of forest plantation (afforestation) in 1995 was 155,000 ha, a decline of 13,900 ha compared with 1990.

#### 9) Major Natural Resources being Exploited

Kenya is not blessed in natural resources. Soda ash, produced around Lake Magadi, and fluorspar, salt and lime are the major mineral resources. Soda ash, in particular, accounts for 75 percent of the total value of all minerals of Kenya. The value of mineral products declined by 17 percent in 1995 compared with 1994.

Resources of self-sufficiency of energy in the country are limited to hydroelectric and terrestrial power generation. Crude oils have been imported to meet increasing demand and fluctuation of oil price affects social economy and its growth.

## 10) Transport and Communication Network

Kenya has an extensive road network of 88,000 km, of which 8,300 km (9.4%) are paved, while the rests are earth or gravel roads. Minor or feeder roads link farms and are used as marketing roads for agricultural crops. Half of the freight transportation is carried on main roads linking with neighboring countries. Road transport has accelerated steadily over the last six (6) years especially after liberalization in 1994, sharing the highest in value in the transportation sector. In the local areas, minibuses, Matatu, supplement buses for carrying passengers.

Air transport value is higher although its contribution is lower. Air freight is very important for the import and export of horticultural crops. Railways serve the country with 2,085 km of running line, employing 20,000 workers. However, transport by railway and water have gradually lost their share.

Telecommunications have become significant. This sector is being privatized.

## 11) National and Local Administration

Kenya became the republic of Kenya on December 12, 1964. At present the government is composed of 25 ministries.

Administratively Kenya consists of eight (8) provinces including Nairobi, in 60 districts. District is divided into division, location, sub-location and village. Provincial commissioners and district commissioners are appointed by the central government. These administrations work for social services, coordination of regional development promoted by the government, etc. The local authorities such as county councils, municipal councils, town councils and urban councils maintain rural roads, collect of taxes, administer market centers, etc. District Development Committees (DDC), under the district commissioner (DC) are district-level committees, which operate in planning and coordinating of implementation of district specific development projects and programs which originate from sub-location levels.

### 3.1.2 National Economy

#### 1) Gross Domestic Product

The first decade after independence from the United Kingdom, in 1963, Kenya showed high economic growth at 6.5 to 6.8 percent per year. However, economic growth slowed because of the rise in oil prices, recession of world economy and domestic drought in 1976, 1977, 1980 and 1984 and so on. Since 1988, structural reform has been implemented based on the agreement between the Kenyan government and the IMF, and IDA. In 1993, the government reached a new agreement with the IMF and IDA on a program of action. This resulted in an improvement of the macro-economy, and GDP grew at three (3) percent in 1994. Since 1995, the Kenya economy recorded a positive growth in GDP of 4.8 percent in 1995 and 4.6 percent in 1996 pointing towards recovery (refer to Table 3.2-1). Per capita GDP 1996 is estimated at 309 US\$ (refer to Table 3.2-2).

Because of its relatively large contribution to GDP, when the agricultural sector performs poorly owing to drought etc., it affects the national economy in food crop production, supplying raw materials to agri-based industries, employment, earning foreign exchange and so on.



As for GDP, contribution by the agricultural sector of 25 percent in 1996 is still top in the industrial sectors, though it shows declining trend compared to 32.5 percent in 1985.

## 2) Balance of Trade and Balance of Payments

The annual balance of trade shows an annual deficit which has been increasing. Exports have grown, however imports have also grown at higher rate than exports, resulting in a trade deficit. The major imported items are industrial machinery, iron and steel, accounting for 36 percent of the total imports. Tea and coffee accounted for 34 percent of the total exports in 1994 (refer to Table 3.2-8).

The balance of payment in current account improved from a deficit of 1,031 million K £ in 1995 to a deficit of 211 million K £ in 1996. On the other hand, the capital account shows a surplus of 1,682 million K £ in 1996 as compared to a surplus of 637 million K £ in 1995. As a result of improvement of overall balance of payment in 1996, the country's foreign exchange reserves went up by US\$ 1,304 million.

## 3) National Budgetary Balance

Over the five (5) years from 1991/92, budgetary balance shows a deficit apart from a surplus of 217 million K £ 1994/95. A steady increase in revenue and expenditure over five (5) years is visible with a substantial rise in both current revenue and current expenditure after 1992/93. Following a decline, current expenditure rose in 1995/96 due to more money being allocated to goods and services.

## 4) Inflation and Commodity Prices Indices

Kenya's rate of inflation rose sharply in 1993 due to the devaluation of the Kenyan Shilling, excessive growth in money supply from early 1992 to early 1993 and drought. In 1995 inflation declined to single-digit. But the rate rose from 1.6 percent in 1995 to 9.0 percent in 1996. The upward trend of inflation is considered mainly due to;

- The rise in price of oil and non-oil imported inputs leading to high production and distribution costs, and
- Increase in food prices caused by widespread drought in 1996.

### 3.1.3 National Social Status

#### 1) Sex-Wise Population Growth Rate and Other Demographic Statistics

Between 1969 and 1989, for which population census are available, Kenya's population almost doubled and population grew by an annual data rate of 3.42 percent from 1979 to 1989. Population is divided into 49.3 percent male and 50.4 percent female, with 14.9 percent is urban and 85.1 percent is rural, based on 1989 statistics. Population density is averaged at 37 persons per sq.km. Number of households and average family size in 1994 are estimated at 5.05 million and 5.20, respectively according to the Welfare Monitoring Survey II, 1996. Based on the same statistics, 46.5 percent of household heads work in the agricultural sector, which is higher in the rural areas at 57.9 percent.

## 2) Sex-Wise Social Indices

Literacy rate in 1994 shows that the rate of 76.6 percent for male is higher than the 44.7 percent for female. In the rural areas, this rate varies at 71.6 percent for male and 39 percent for female, respectively.

Life expectancy of males and females also varies at 57 years for male and 60 years for female; 58 years on an average.

Sex of household head is composed of 75.5 percent male and 24.5 percent female respectively, and the 26.2 percent of female household heads in the rural areas is a higher ratio than the 18.2 percent in urban areas.

## 3) Human Development Index by UNDP

The UNDP's "Human Development Report" of 1997 reports on some indices, that is, life expectancy, adult literacy rate, daily calorie intake per capita, school enrolment, etc. and ranks nations according to a Human Development Index for the 175 countries of the world. According to this report, Kenya is ranked at 134<sup>th</sup> of 175, thereby classified as a "Low Human Development Country" similarly to the other African countries.

## 4) Poverty Indices

Some 39 percent of the population and 31.3 percent of households live below the poverty line in Kenya. The poverty line is basically calculated in terms of money to purchase foods to meet necessary calorie intake (2,250 calories) per day per adult plus minimum allowance for non-food consumption. Thus, poverty line in the rural area is estimated at 703 Ksh per month per capita, equivalent to 8,440 Ksh per year, while 875 Ksh per capita per month in urban areas, equivalent to 10,500 Ksh per year as well.

Poverty is caused by a lack of resources, drought etc. and causes illiteracy, lack of access to safe water, basic education, minimum health facilities and shelter. Poverty alleviation is one of the major social constraints to be solved in Kenya.

## 5) Consumption Indices per Capita

The staple food of Kenya is maize. Annual per capita consumption of maize is 97.1 kg in urban areas and 125.6 kg in rural areas, respectively. The total demand for maize and vegetables in the country are estimated about 3.23 million ton and 636,000 tons per year. Yearly vegetable consumption varies in rural and urban areas, 36.9 kg per capita in urban, while 20.4 kg in rural areas.

### Food Consumption per Capita

Crops	Urban (Kg/capita/year)	Rural (Kg/capita/year)	Country Total (1,000 ton)
Maize	97.1	125.6	3,232
Millet/ Sorghum	0	19.8	429
Wheat	24.7	10.0	347
Rice	13.1	1.4	99
Root Crops	14.8	26.4	650
Beans	13.8	14.2	80
Sugar	20.6	10.4	660
Milk	88.6	72.1	2,451
Beef	11.9	6.8	210
Oils	6.5	1.7	71
Vegetables	36.9	20.4	636
Fish	1.9	1.7	47

Source: National Development Plan, 1994-1996

#### 6) Income Disparity Indices

Monthly household income and expenditure are studied in the Welfare Monitoring Survey II 1996. There exist large differences in income between rural and urban areas, thus, 14,295 Ksh in urban, while 8,508 Ksh in rural area which is equivalent to 60 percent of urban. Household expenditure in urban area is higher than that of rural areas. Food share in total expenditure in rural area accounts for 73.7 percent, while 60.3 percent in urban areas.

### 3.2 Agricultural Sector of the Country

#### 1) Sectoral Contribution to GDP

The agricultural sector in Kenya is still a major engine for economic growth and will remain so in the future. Importance of this sector can be shown by some indicators such as; a) contribution of 25 percent to GDP in 1996, b) earning over 60 percent of foreign currency, c) provision of employment opportunities to over 70 percent of the total population, and d) provision of raw materials for agri-based industries which account for about 70 percent of all industries. Because of its large contribution to economy, when the agricultural sector is affected by severe drought, the national economy is always affected.

In the agricultural sector, the importance of small-scale farmers must be noted because of their contribution to the economy despite small holding of farms. There are about 2.7 million small farmers, of which 80 percent are estimated as having less than two (2) ha. Despite the small farm size, small farmers produce over 75 percent of total agricultural production, 70 percent of maize, 65 percent of coffee, 50 percent of tea, 80 percent of milk and 70 percent of beef and other meat, and all pyrethrum, cotton, and other food crops.

#### 2) Production Statistics of Agricultural Sector

As Kenya's agriculture mainly depends on rainfed farming, climate plays critical role in crop

production. Actually, production of major crops has fluctuated every year. Once drought occurs as in 1980 and 1994, production would have been severely reduced. Recently, maize production has fluctuated from 17.6 million bags to 32.2 million bags, while coffee 77,800 ton to 120,600 ton and tea from 143,300 ton to 244,500 ton, respectively. These imply the importance of favorable weather and the necessity of irrigation development for sustainable crop production.

Some 920,000 head to 1.1 million head of cattle have been slaughtered annually producing 194 million K£ to 303 million K£ in value. Milk production has fluctuated from 220,000 tons to 392,000 tons.

### 3) Contribution to Employment

Rural population in Kenya constitutes 85.1 percent of the total population and these people are working for agricultural sector directly or indirectly. Actually about 70 percent of the total population is employed in the agricultural sector. For wage employment, there are 1.5 million employees in the whole industry, of which 280 thousand are employed in the agricultural sector, equivalent to 18.7 percent of the total employees in 1994. Some 120 thousand are working in coffee and tea plantations.

### 4) Major Modes of Crop and Livestock Production by Farm Type

#### a) Smallholdings

Out of an estimated 2,756,438 farm households in Kenya, 98 percent or 2,700,000 farm less than 12 ha and are thus defined as smallholders. These smaller farms are concentrated in the higher rainfall areas of Central and Eastern Province, around Mount Kenya and in the Central Rift valley. Together this farm sector produces more than 70 percent of the agricultural GDP, i.e. more than 114 billion Ksh. worth of output annually. The majority of the farmland in Kenya is operated as a smallholding and at least 40 percent of these units are managed by women. The labor supply on smallholdings comes predominately from the family and mechanisation is uncommon, nevertheless 85 percent of agricultural employment is in the smallholder sector. Most smallholdings have some degree of commercial orientation, depending on their distance from markets, labor availability, access to capital etc., balanced with the subsistence production of food crops for home consumption. Smallholders are estimated to account for over 60 percent of the marketed output in Kenya.

#### b) Medium-sized Irrigated Horticultural Specialists

In recent years horticulture has become an important industry in Kenya. More than 1.1 million tons of vegetables and 1.8 million tons of fruits are consumed locally each year. Exports of horticultural products to Europe are one of the major sources of foreign exchange, flowers, French beans and Asian vegetables being the most important crops. Although the smallholder sector is a major producer of French beans, snow peas, and Asian vegetables, there is a growing trend among exporters towards nucleus production farms, where quality can be controlled and output guaranteed. Many of the flower crops require large capital investments and specialized technology, and so are unsuited to smallholders. A number of these specialist farms are located in the Rift valley around Naivasha, the drier areas of Meru, and Nyeri district, and along the rivers in Mbeere. They produce irrigated horticultural crops for export, using technology combined with intensive labor.

#### c) Large-scale Commercial Farming

Of the 56,438 farms larger than 12 ha in Kenya, only approximately 800-1,000 are true large scale

farms of 500-1,000 ha. The farms are capital intensive, mechanized, and use only limited amounts of labor. These large farms are mainly mixed farms growing crops such as maize in the Rift Valley, wheat in Timau and Njoro, occasionally coffee, and ranching both dairy cattle and beef. Nandi, Uasin-Gishu, Trans-Nzoia and Kericho district all have large scale farms. Nakuru has a number of dairy farms and Laikipia also has large scale open grazing cattle farms. The major crops grown on large farms in 1993 were wheat (94,000 ha), maize (66,000 ha) sisal (45,800 ha) coffee (43,900 ha), tea (23,200 ha) sugarcane (22,600 ha) and wattle (18,700 ha). This type of farm is not common in the study area, but is found in Timau and Kyeni West divisions producing wheat, barley and sheep. There are also occasional large coffee estates in Meru and Nyeri districts.

#### d) State-run Irrigation Schemes

The total irrigated area in Kenya is 82,000 ha, approximately a third of this, 29,000 ha is in small scale schemes. Large scale state run schemes are found at Mwea, Tana River, Ahero, Perkerra, Bunyala, West Kano, and Bura, with a total of about 7,784 plottolders and 8,637 cropped hectares in 1993. The main crops grown are rice, vegetables, sugar-cane and seed cotton. The largest of these schemes is found in the study area in Kirinyaga district, this is the 5,800 ha. Mwea rice scheme run by the National Irrigation Board (NIB). This is a tenant scheme with central control of the water, planting and harvesting schedules.

#### Agricultural Land Use in Kenya

Crop Type	Area (ha)	Total Area (%)
Food	2,866,000	77.61
Industrial	611,000	16.54
Vegetables	91,000	2.46
Fruits	124,000	3.36
Flowers	1,000	0.03
Total	3,693,000	100.00

Source; IFAD Report

#### e) Meat and Milk Production

Sixty percent of Kenya's land is arid, and in these dry areas five (5) percent of the population live as nomadic herders of zebu cattle. Livestock are also found associated with cropping throughout the country. There are two main types of commercial livestock production systems; range grazing in the drier areas (500-750 mm rainfall), and intensive production of forage, such as Napier grass, combined with grazing in the higher altitude, wetter areas, often on smallholdings. In 1990, out of a total production of 1.8 million liters of milk, nine (9) percent came from pastoralists, 80 percent from smallholders and 11 percent from large producers. The large farm producers, in 1993, had 221,400 dairy cattle and 321,200 beef cattle on their ranches. Commercial sheep are kept for meat and wool, in the higher altitude areas, such as Kijabe, Molo, and Timau. In 1993, 443,200 sheep were reported from the large farm sector. Goats are kept throughout the country, especially in the drier areas. Chicken and pigs are kept both intensively in large numbers and also extensively in smaller groups on smallholdings.

#### 5) Agro-Trade Statistics

Tea and coffee earns a large amount of foreign exchange, accounting for 34 percent of the total exports in 1996, while horticultural exports show an increasing trend in recent years, increased from 184.8

million K.£ in 1991 to 681 million K.£ in 1996. Kenya exports tropical vegetables, fruits and flower to the European countries, accounting for 12 percent of total exports in 1996. However, annual earnings are considerably affected by foreign exchange rates. Horticultural produce from Kenya is destined to the United Kingdom, Germany, France, Netherlands and Italy etc. but this varies from product to product. There are about 200 exporters in the country, dealing with horticultural products but the top 10 exporters share almost 90 percent of the total. The major exporting horticultural products are French bean, Okra, Snowpeas, Karella (bitter gourd), fruits such as Avocado and cutflowers.

Other than exports of agricultural exports, Kenya imports agricultural commodities such as wheat, rice, fertilizers and agricultural machinery. Particularly, wheat imports show an increasing trend in the recent year.

#### 6) Production and Trade Statistics of Agricultural Inputs

At present there is one fertilizer manufacturing plant with a capacity of 40,000 ton per year but it produces only 10,000 ton per year of single super phosphate. Other fertilizers are imported from US, Gulf States, Europe, the Middle East and other parts of Asia. Over the past ten (10) years, fertilizer and agri-chemicals imports have ranged from 143,900 to 310,000 tons, while the estimated consumption is about 237,000 ton to 253,000 ton per year. About 40 percent of the total imports of these inputs is donor-aid basis. The main types of fertilizer imported are DAP, CAN and compound fertilizer composed of 25-5-5 in NPK nutrient.

The pesticide industry consists mainly of formulating and re-packing pesticide materials. The only raw material available domestically is Pyrethrum extracted from Pyrethrum flowers.

For seed production and distribution, the Kenya Agricultural Research Institute (KARI) and Kenya Seed Company, have made major contributions in producing seed of most food crops, pasture and fodder crops and vegetables. Some vegetable seed are also imported, mainly from EU countries.

#### 7) Agricultural Credit Statistics

Cooperative Bank of Kenya (CBK) and Agricultural Finance Corporation (AFC) are the major institutional credit agencies. AFC and CBK have 40 and 27 branch offices at the district level at present, respectively. CBK finances to individual member/farmers through cooperative society. Since 1995 CBK started to undertake financing functions of SISDO program through the agreement with SISDO.

Number of approved loan by AFC during 1994 to 1995 records 3,929, while 17.8 million Kenyan Pound, but amount of loan released shows declining trend since 1987.

CBK provides four types of credit, that is, production loans for providing farm inputs, and short, medium and long term credit.

#### 8) Cooperative Society

There are some types of cooperative societies for agricultural activities according to crops, that is, coffee, sugarcane, pyrethrum, cotton, dairy, multipurpose, farm purchase, fishery and others. Other than these societies, non-agricultural societies also exist. The number of agricultural cooperative societies in 1996 was

3,270, which had increased from 2,509 in 1992. The coffee cooperative society is the largest in number and accounts for about 60 percent of the total value sold through all types of cooperative society.

It is considered that a large number of farmers recently sell products to traders and exporters individually, not through these cooperatives. Contract farming is practiced between farmers and exporters and all the produce is sold to exporters in this case.

Table 3.2-1 Macro Economic Indicators

	1992	1993	1994	1995	1996
1. GDP at Current Prices(million K&S)	13,224	16,681	20,036	22,785	25,896
2. GDP at Constant Prices(million K&S)	4,332	4,343	4,474	4,692	4,907
3. Annual Growth of GDP(%)	0.5	0.2	3.0	4.8	4.6
4. GDP per Capita(K&S)	452	546	632	698	773
5. Contribution of Agricultural Sector to GDP(%)	26.2	25.1	25.0	25.0	25.0
5.1 Growth Rate of Agricultural Sector(%)	-3.7	-4.1	2.8	4.8	-0.1
6. Gross National Product at Current Prices(million K&S)	10,434	12,182	14,798	18,589	22,216
7. Trade Balance(million K&S)					
7.1 Exports	1,742	3,678	4,282	4,866	5,910
7.2 Imports	2,955	5,056	5,754	7,758	8,424
7.3 Balance	-1,213	-1,378	-1,472	-2,892	-2,514
8. Exports of Fresh Horticultural Products					
8.1 Volume(1,000 ton)	62.3	62.4	65.2	71.1	84.8
8.2 Value(million K&S)	125.8	233.6	246.8	320.0	385.0
8.3 Major Exporting Destination Countries of the Horticultural crops	UK, France, Germany, Netherlands, Belgium, Italy, Others				
9. Major Exporting Commodities	Tea, Coffee, Horticultural crops, Petroleum Products				
10. Major Importing Commodities	Machinery and Transport Equipment, Minerals & Fuels, Chemicals, Food and Animals				
11. Exchange Rate of US\$	32.2	58.0	56.1	51.4	58.0
12. Balance of Payment(million K&S)	-157	288	291	-1,031	-211

Sources: Economic Survey 1996

Statistical Abstract 1995

Kenya Factbook 1997/98



Table 3.2-2

## Socioeconomic Indicators

		Kenya		
1. Total Land Area(sq.km)		582,846		
2. Cultivable Area(ha)		3,828,000		
3. Ratio of Cultivable Area(%)		6.57		
4. Irrigated Area(1998)(ha)		82,000		
5. Ratio of Irrigated Area to Cultivable Areas (%)		2.14		
6. No. of Provinces		8(Including Nairobi)		
7. No. of Districts		60		
8. Forest Areas(sq.km)		19,200		
9. Afforestation Accumulated(ha)		155,500		
10. Per Capita GDP(1996)		308US\$		
11. Contribution to GDP by Agricultural Sector(1996)		25.0%		
12. Contribution to Exports by Horticultural Crops in Value(1996)		12.0%		
13. Population			Rural	Urban
13.1 Population in 1994	26,423,560	22,292,892(84.4)	4,130,668(15.6)	
13.2 Male population	13,023,979	10,927,688(83.9)	2,096,291(16.1)	
13.3 Female Population	13,399,581	11,365,203(84.8)	2,034,378(15.2)	
14. Population Density(person/sq.km)	37			
15. Annual Increase of Population(%)	3.42			
16. Population Working in Agricultural Sector(1994)(%)	70.7		85.0	
17. No. of Households(1,000)-1994	5,048	4,012	1,036	
18. Average Family Size(1994)	5.20	5.60	4.00	
19. Sex of Household Head(1994)				
19.1 Male Head(%)	75.5	73.8	81.8	
19.2 Female Head(%)	24.5	26.2	18.2	
20. Ratio of Landless Households(1994)(%)	25.8			
21. No. of Farm Households	2,756,438			
of which, Smallholders	2,700,000			
Large Holders	56,438			
22. Average Farm Size(ha/farm household)	2.5			
23. Definition of the Smallholders	holding less than 20ha			
Medium Holders	holding 20 to 50ha			
Large Holders	holding above 50ha			
24. Highest Education Level of Household Head(1994)				
24.1 Pre-school/Primary(%)	40.1	41.6	34.0	
24.2 Secondary(%)	22.8	17.6	43.0	
24.3 Secondary+(%)	4.2	2.4	11.1	
24.4 None(%)	31.1	36.7	9.2	
24.5 Not Stated(%)	1.8	1.6	2.7	
25. Occupation of Household Head(1994)				
25.1 Unpaid Family Worker(%)	5.9	6.7	3.7	
25.2 Agriculture(%)	46.5	57.9	2.4	
25.3 Skilled Worker(%)	20.4	14.4	43.9	
25.4 Unskilled Worker(%)	18.1	13.3	28.7	
25.5 Business Person(%)	10.7	7.7	22.4	
26. Monthly Household Income and Expenditure(1994)				
26.1 Monthly Household Income(Ksh)	9,696	8,508	14,295	
26.2 Monthly Household Expenditure(Ksh)	7,393	6,365	11,373	
26.3 Food Share in Total expenditure(%)	71.0	73.7	60.3	
27. Poverty Line(1994)				
27.1 Ksh/month/capita	-	703	875	
27.2 Ksh/year/capita	-	8,440	10,500	
28. Poverty Incidence(%)		46.8	29.2	
29. Literacy Rate(1994)				
29.1 Male(%)	76.6	71.6	94.2	
29.2 Female(%)	44.7	39.0	76.4	
30. Access to Safe Water(%)—1994	44.9	32.5	93.3	
31. Access to Sanitation(%)—1994	80.4	75.9	97.6	
32. Education				
32.1 Primary School Enrolment(1,000)(1996)	5,598			
32.2 Secondary Enrolment(1,000)	658			
32.3 Post Secondary Enrolment(1,000)	86			
33. Life expectancy				
33.1 Male	57.0			
33.2 Female	60			
33.3 Total	58			
34. Per Capita Consumption of Maize per Year(kg/capita)		125.6	97.1	
35. Per Capita Consumption of Vegetables per Year(kg/capita)		20.4	38.9	

Sources: Statistical Abstract 1995

District Development Plans 1997-2001

Welfare Monitoring Survey II 1998

Population Dynamics of Kenya 1996

District Annual Reports 1996

Economic Survey 1997

Table 3.2-3

## Gross Domestic Product

	1982 Constant Prices								
	1988	1989	1990	1991	1992	1993	1994*	1995*	1996**
<b>A. NON-MONETARY ECONOMY</b>									
Forestry	29.5	30.5	31.4	32.2	33.0	33.9	34.5	35.6	36.1
Fishing	1.5	1.5	1.5	1.4	1.3	1.2	1.3	1.3	1.4
Buildings and Construction	68.2	71.5	72.9	74.4	75.5	76.4	77.9	78.9	79.9
Water Collection	22.6	23.4	24.1	24.9	25.3	25.5	26.6	27.7	28.1
Ownership of Dwellings	92.9	96.4	99.7	101.7	102.3	110.4	114.2	119.6	124.6
Total of Non-Monetary Economy	214.8	223.4	229.6	234.5	237.4	247.4	254.4	263.1	270.2
<b>B. MONETARY ECONOMY</b>									
<b>1. Enterprises and Non-Profit Institutions</b>									
Agriculture	1,109.3	1,152.5	1,192.0	1,178.9	1,134.8	1,088.5	1,119.3	1,173.3	1,225.4
Forestry	36.5	40.6	42.7	46.2	48.2	53.1	57.8	60.8	65.0
Fishing	12.3	12.8	13.4	13.1	12.2	12.8	13.1	13.7	14.2
Mining and Quarrying	10.2	10.6	11.3	12.0	11.0	11.2	11.4	11.7	12.0
Manufacturing	502.8	532.5	560.3	581.6	588.8	599.2	610.6	634.4	657.7
Building and Construction	121.7	131.4	134.3	129.3	122.2	111.6	113.1	117.4	121.5
Electricity and Water	36.5	39.5	43.7	46.0	45.1	45.5	46.5	47.3	48.7
Trade, Restaurants, Hotels	436.3	455.5	466.0	472.1	478.9	479.6	508.8	552.5	596.7
Transport, Storage & Communications	234.0	241.1	249.7	59.1	263.6	265.7	273.7	285.2	296.6
Finance, Insurance, Real Estate and Business Services	291.3	313.1	333.2	353.5	377.9	405.2	429.9	459.5	492.2
Ownership of Dwellings	212.2	220.6	229.4	235.3	239.0	239.5	243.1	255.7	270.3
Other services	119.7	127.9	135.9	141.1	144.5	145.7	149.4	158.8	168.4
Less: Imputed Bank Service Charges	-121.8	-129.1	-134.0	-138.6	-142.0	-156.3	-169.2	-180.2	-191.3
Sub-Total	3,000.8	3,149.0	3,277.8	3,329.6	3,324.1	3,301.0	3,407.5	3,590.0	3,772.2
<b>2. PRIVATE HOUSEHOLDS (DOMESTIC SERVICES)</b>									
	55.3	62.4	70.5	78.3	85.3	94.8	102.5	113.9	124.8
<b>3. Producers of Government Services</b>									
Public Administration	-	-	-	-	-	-	-	-	-
Defense	-	-	-	-	-	-	-	-	-
Education	-	-	-	-	-	-	-	-	-
Health	-	-	-	-	-	-	-	-	-
Agricultural services	-	-	-	-	-	-	-	-	-
Other Services	-	-	-	-	-	-	-	-	-
Sub-Total	586.2	618.4	645.7	669.1	685.4	699.8	710.3	723.1	734.7
Total of Monetary Economy	3,642.2	3,829.8	3,994.0	4,077.0	4,094.8	4,095.4	4,220.2	4,427.1	4,636.7
Grand Total (Monetary + Non-Monetary economy)	3,857.0	4,053.1	4,223.6	4,311.5	4,332.2	4,342.8	4,474.6	4,690.1	4,906.9
Estimated Population (million)					25.24	26.00	26.76	27.52	28.27
GDP per Capita (K€)	172.27	189.04	190.63	188.31	171.64	167.03	167.21	170.43	173.57

Source: Statistical Abstract 1995 (1988-1989)  
Economic Survey 1997 (1992-1996)

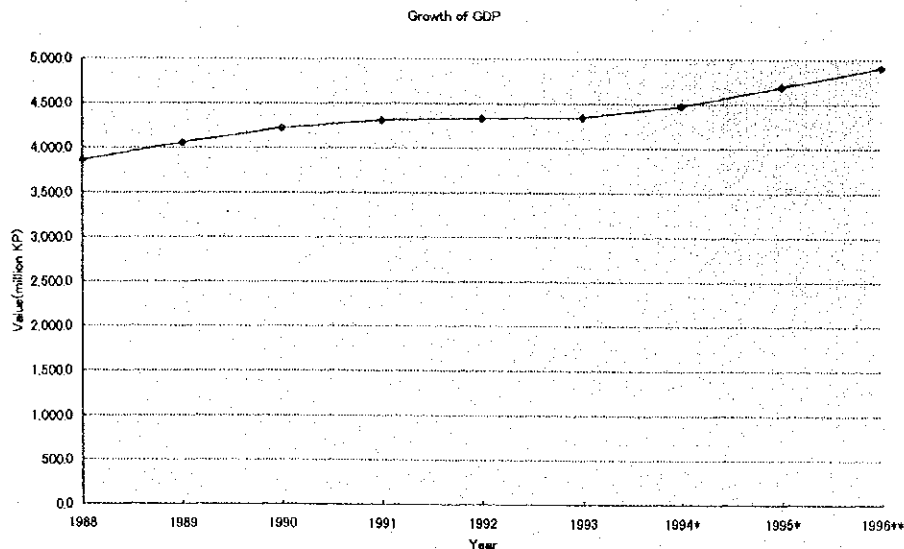


Table 3.2-4

## Growth of Gross Domestic Product

	Current Prices						Constant (1982) Prices						(unit: %)
	1990-91	1991-92	1992-93	1993-94*	1994-95*	1995-96**	1990-91	1991-92	1992-93	1993-94*	1994-95*	1995-96**	1992-1996***
	<b>NON-MONETARY ECONOMY</b>												
Forestry	8.3	5.7	7.2	6.2	-0.7	3.6	2.6	2.7	2.6	1.7	3.2	1.6	2.3
Fishing	9	4.3	21.9	15.8	5.4	9.2	-6.7	-8.7	-4.8	4.1	4.0	8.4	2.8
Buildings and Construction	2.1	6.4	1.7	1.7	12.3	3.2	2	1.4	1.2	2.0	1.3	1.3	1.5
Water Collection	6.3	11.5	6.2	6.5	6.2	6.3	3	1.8	0.7	4.1	4.2	1.6	2.6
Ownership of Dwellings	12.1	3.9	7.5	9.8	8.1	10.9	2	0.6	7.8	3.5	4.7	4.2	5.1
Total Non-Monetary Economy	8.7	5.5	6.2	7.4	7.4	7.9	2.1	1.2	4.2	2.8	3.4	2.7	3.3
<b>MONETARY ECONOMY</b>													
<b>1. Enterprises and Non-Profit Institutions</b>													
Agriculture	4.6	14.7	67.6	27.0	9.2	7.9	-1.1	-3.7	-4.1	2.8	4.8	4.4	1.9
Forestry	22	28.6	19.7	13.3	6.9	10.0	8.4	4.2	10.3	8.8	5.1	7.0	7.8
Fishing	15	20.5	19.3	16.9	-1.7	10.4	-2.2	-6.9	2.9	4.0	4.1	4.0	3.8
Mining and Quarrying	22.1	8	16.3	1.3	1.5	2.4	6.4	-8.0	2.0	1.6	2.7	2.5	2.2
Manufacturing	18.2	5.4	15.4	27.3	7.6	17.3	3.8	1.2	1.8	1.9	3.9	3.7	2.8
Building and Construction	26.6	13.2	13.0	13.4	7.6	10.0	-3.7	-5.5	-8.7	1.3	3.8	3.5	-0.2
Electricity and Water	16	6.9	26.5	29.3	16.5	8.8	5.2	-1.9	0.9	2.2	1.6	3.1	1.9
Trade, Restaurants, Hotels	19.6	33.9	26.6	25.0	24.9	28.0	1.3	1.5	0.1	6.1	8.8	8.0	5.7
Transport, Storage and Communications	14	33.3	9.2	27.3	20.0	13.1	3.7	1.7	0.8	3.0	4.2	4.0	3.1
Finance, Insurance, Real Estate and Business Services	26	25	29.3	44.2	13.9	15.3	6.1	6.9	7.2	6.1	6.9	7.1	6.8
Ownership of Dwellings	13.8	5.5	8.9	6.7	6.4	15.0	2.6	1.6	0.2	1.5	5.2	5.7	3.1
Other Services	16.2	26.2	29.6	21.0	20.0	18.0	3.8	2.4	0.8	2.6	6.3	6.0	3.9
Less Imputed Bank service charges				12.8	37.9	15.4				10.1	8.2	8.2	7.7
Sub-Total	14	15.3	26.3	21.9	12.4	14.8	1.6	-0.2	-0.7	3.2	5.4	5.2	3.3
2. Private households (Domestic Services)	16.6	16.7	16.8	16.9	17.1	15.0	11	8.9	10.9	8.3	11.2	9.6	10.0
<b>3. Producers of Government Services</b>													
Public Administration	19.8	16.7	28.5	14.4	3.8	5.1							
Defense	-5.4	4.1	9.3	3.9	17.3	29.0							
Education	21.6	18.3	11.4	8.3	40.7	11.1							
Health	9.9	16.1	25.4	-2.4	16.8	10.3							
Agricultural services	-9.3	3.6	29.3	13.3	6.9	16.2							
Other Services	-4.3	10.5	40.4	-8.1	7.3	3.4							
Sub-Total	14.6	15.8	20.5	7.1	22.8	9.4	3.6	2.4	2.1	1.5	1.8	1.6	1.8
Total Monetary Economy	14.2	15.4	25.2	19.6	13.8	14.0	2.1	0.4	0.0	3.0	4.9	4.7	3.2
<b>TOTAL NON-MONETARY ECONOMY AND MONETARY ECONOMY</b>	13.9	15	24.4	19.2	13.6	13.9	2.1	0.5	0.2	3.0	4.8	4.6	3.2
<b>GROSS DOMESTIC PRODUCT PER CAPITA</b>	10.2	11.2	20.8	15.8	10.5	10.8	-1.2	-2.8	-2.7	0.1	1.9	1.8	0.3

Revised.  
 \* Provisional.  
 \*\* Cumulative.  
 Source: Statistical Abstract 1995(1990-1992)  
 Economic Survey 1997(1992-1996)

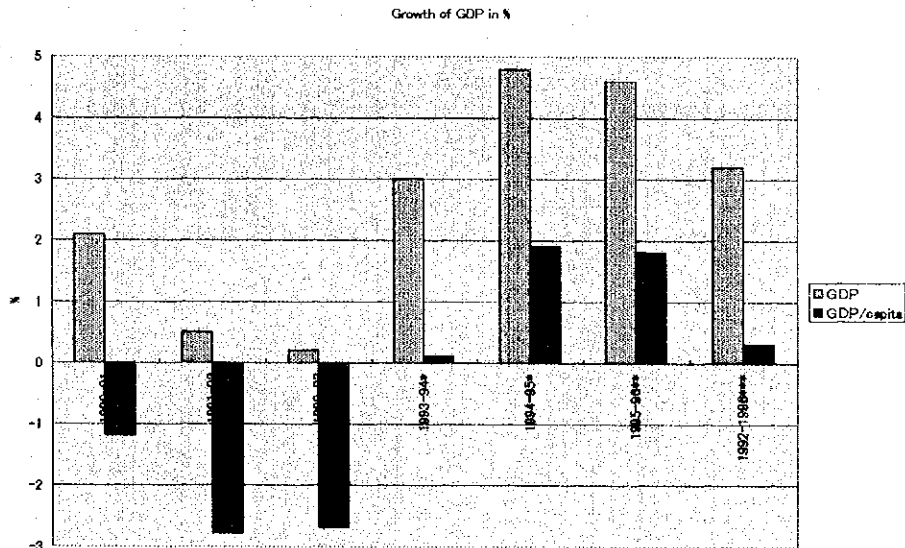


Table 3-2-5

## Sectoral Share of GDP at 1982 Constant Prices

	1988	1989	1990	1991	1992	1993	1994*	1995*	1996**
(Unit:%)									
<b>A. NON-MONETARY ECONOMY</b>									
Forestry	0.8	0.8	0.7	0.7	0.8	0.8	0.8	0.8	0.7
Fishing	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Buildings and Construction	1.8	1.8	1.7	1.7	1.7	1.8	1.7	1.7	1.6
Water Collection	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Ownership of Dwellings	2.4	2.4	2.4	2.4	2.4	2.5	2.6	2.5	2.5
<b>TOTAL NON-MONETARY ECONOMY</b>	<b>5.6</b>	<b>5.5</b>	<b>5.4</b>	<b>5.4</b>	<b>5.5</b>	<b>5.7</b>	<b>5.7</b>	<b>5.6</b>	<b>5.5</b>
<b>B. MONETARY ECONOMY</b>									
<b>1. Enterprises and Non-Profit Institutions</b>									
Agriculture	28.8	28.4	28.2	27.3	26.2	25.1	25.0	25.0	25.0
Forestry	1.0	1.0	1.0	1.1	1.1	1.2	1.3	1.3	1.3
Fishing	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Mining and Quarrying	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2
Manufacturing	13	13.1	13.3	13.5	13.6	13.8	13.6	13.5	13.4
Building and Construction	3.2	3.2	3.2	3.0	2.8	2.6	2.5	2.5	2.5
Electricity and Water	1.0	1.0	1.0	1.1	1.0	1.0	1.0	1.0	1.0
Trade, Restaurants, Hotels	11.30	11.20	11.00	10.90	11.1	11.0	11.4	11.8	12.2
Transport, Storage and Communications	6.1	5.9	5.9	6.0	6.1	6.1	6.1	6.1	6.0
Finance, Insurance, Real Estate and Business Services	7.6	7.7	7.9	8.2	8.7	9.3	9.6	9.8	10.0
Ownership of Dwellings	5.5	5.5	5.4	5.5	5.5	5.5	5.4	5.5	5.5
Other Services	3.1	3.2	3.2	3.3	3.3	3.4	3.3	3.4	3.4
Less: Imputed Bank Service Charges	-3.2	-3.2	-3.2	-3.2	-3.3	-3.6	-3.8	-3.8	-3.9
<b>Sub-Total</b>	<b>77.8</b>	<b>77.8</b>	<b>77.5</b>	<b>77.3</b>	<b>76.7</b>	<b>76.0</b>	<b>76.1</b>	<b>76.5</b>	<b>77.0</b>
<b>2. Private households (Domestic Services)</b>	<b>1.4</b>	<b>1.5</b>	<b>1.7</b>	<b>1.8</b>	<b>2.0</b>	<b>2.2</b>	<b>2.3</b>	<b>2.4</b>	<b>2.5</b>
<b>3. Producers of Government Services</b>									
Public Administration	-	-	-	-	-	-	-	-	-
Defense	-	-	-	-	-	-	-	-	-
Education	-	-	-	-	-	-	-	-	-
Health	-	-	-	-	-	-	-	-	-
Agricultural services	-	-	-	-	-	-	-	-	-
Other Services	-	-	-	-	-	-	-	-	-
<b>Sub-Total</b>	<b>15.2</b>	<b>15.3</b>	<b>15.3</b>	<b>15.5</b>	<b>15.8</b>	<b>16.1</b>	<b>15.9</b>	<b>15.4</b>	<b>15.0</b>
<b>Total Monetary Economy</b>	<b>94.4</b>	<b>94.5</b>	<b>94.6</b>	<b>94.6</b>	<b>94.5</b>	<b>94.3</b>	<b>94.3</b>	<b>94.4</b>	<b>94.5</b>
<b>Total Monetary &amp; Non-Monetary Economy</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

\* Revised.

\*\* Provisional.

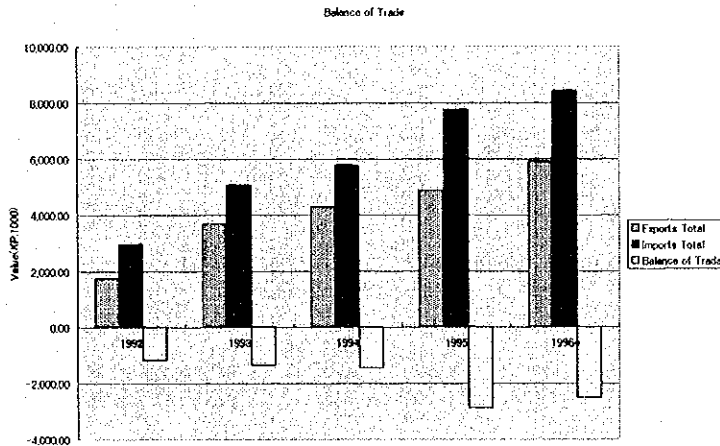
**Table 3.2-6 Balance of Trade**

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
(unit:1,000K.Pound)											
<b>Exports</b>											
Domestic	957,970	753,413	917,719	999,842	1,232,360	1,611,179	1,708,085	3,625,207	4,170,724	4,656,190	5,696,300
Re-Exports	28,878	36,452	34,161	19,901	11,650	18,288	34,183	53,040	111,408	210,760	213,700
<b>Total</b>	<b>986,848</b>	<b>789,865</b>	<b>951,880</b>	<b>1,019,743</b>	<b>1,244,010</b>	<b>1,629,467</b>	<b>1,742,268</b>	<b>3,678,247</b>	<b>4,282,132</b>	<b>4,866,950</b>	<b>5,910,000</b>
<b>Imports</b>											
Commercial	1,276,026	1,346,326	1,654,324	2,097,267	2,397,548	2,500,911	2,828,853	4,845,061	5,556,159	7,495,490	8,144,220
Government	61,867	84,555	110,821	141,704	148,082	145,002	126,010	211,358	197,829	262,930	280,090
<b>Total</b>	<b>1,337,893</b>	<b>1,430,881</b>	<b>1,765,145</b>	<b>2,238,971</b>	<b>2,545,630</b>	<b>2,645,913</b>	<b>2,954,863</b>	<b>5,056,419</b>	<b>5,753,988</b>	<b>7,758,420</b>	<b>8,424,310</b>
<b>Balance</b>	<b>-351,045</b>	<b>-641,016</b>	<b>-813,265</b>	<b>-1,219,228</b>	<b>-1,301,620</b>	<b>-1,016,446</b>	<b>-1,212,595</b>	<b>-1,378,172</b>	<b>-1,471,856</b>	<b>-2,891,470</b>	<b>-2,514,310</b>

Source:Statistic Abstract 1995

Note:Domestic exports:These are defined as Kenya produce and manufactures exported to other countries.

Re-exports:These consists of imported goods re-exported in the same form to other countries.



**Table 3.2-7 Price Indices of Foreign Trade**

	(1982 = 100)				
	1992	1993	1994	1995	1996
<b>Exports:</b>					
Food and live animals	240	475	534	558	530
Beverages and tobacco	327	737	401	390	632
Crude materials, inedible	260	465	561	510	625
Mineral fuels	207	276	297	310	383
Animal and vegetable oils and fats	325	344	727	316	229
Chemicals	264	516	491	480	529
Manufactured goods	265	458	497	600	677
Machinery and transport equipment	404	436	204	222	496
Miscellaneous manufactured articles	431	527	488	644	514
All Exports	244	438	450	489	519
Non-oil Exports	254	483	486	530	549
<b>Imports:</b>					
Food and live animals	331	551	369	487	408
Beverages and tobacco	456	821	677	636	828
Crude materials, inedible	300	480	472	472	488
Mineral fuels	211	309	257	273	358
Animal and vegetable oils and fats	327	527	571	743	728
Chemicals	444	776	743	603	637
Manufactured goods	371	613	634	669	573
Machinery and transport equipment	341	569	589	629	767
Miscellaneous manufactured articles	318	565	492	641	676
All Imports	307	486	445	513	560
Non-oil Imports	359	594	536	550	577

Source:Economic Survey 1997

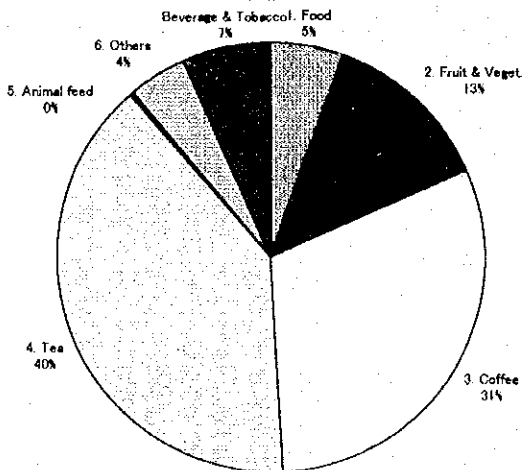
Table 3.2-8

Export of Principal Commodities

	1986	1987	1988	1989	1990	1991	1992	1993	1994
	(unit:1,000 K.pound)								
<b>1. Food, Beverage &amp; Tobacco</b>									
Live animals, mainly for food	2,595	1,801	1,523	3,808	2,803	1,931	2,792	6,719	3,758
Meat and meat preparations	1,589	216	186	1,273	5,583	4,270	2,097	5,598	5,335
Tinned meat and preparations	1,429	25	13	1,013	0	0	0	0	0
Bacon	17	27	7	11	5	25	7	183	740
Others	143	164	166	249	5,578	4,245	2,090	5,415	4,595
Milk and cream	444	994	1,983	1,555	607	328	956	5,833	4,644
Butter and ghee	627	518	337	618	672	82	186	297	189
Eggs	51	57	47	40	46	57	124	236	374
Fish and preparations	2,509	5,637	8,938	14,600	30,824	37,965	42,105	86,393	95,309
Maize unmilled	14,663	19,459	21,668	15,566	20,667	4,804	757	304	849
Meal and flour of wheat	11	15	10	18	10	19	357	603	700
<b>Fruit and vegetables Total</b>	<b>66,148</b>	<b>77,134</b>	<b>94,784</b>	<b>90,968</b>	<b>128,027</b>	<b>143,825</b>	<b>158,133</b>	<b>269,580</b>	<b>277,002</b>
Cashew nuts	320	225	801	1,160	243	7,319	738	428	5,339
Pineapples tinned	24,204	25,768	25,071	37,066	43,400	56,683	56,919	96,758	84,723
Beans, peas and lentiles	6,744	13,410	12,019	1,707	14,367	6,642	958	1,348	1,642
Others	34,880	37,731	56,893	51,035	70,017	73,181	99,518	171,046	185,298
Coffee not roasted	388,486	194,569	244,547	203,813	220,996	218,428	206,339	551,510	652,897
Tea	172,789	163,366	185,263	271,899	314,505	381,630	474,908	933,659	844,069
Feeding stuffs for animals	1,095	644	619	1,122	751	3,349	2,011	2,701	3,283
Others	3,920	4,120	5,250	6,420	28,021	12,653	19,468	40,710	93,260
Beverage and tobacco	9,809	6,423	5,724	7,158	13,562	16,849	35,286	103,692	143,294
Sub-total	666,325	475,169	571,065	620,131	772,657	830,460	947,616	2,013,433	2,130,298
<b>2. Basic Materials, Mineral Fuels and Lubricant:</b>	<b>170,032</b>	<b>170,880</b>	<b>212,612</b>	<b>213,571</b>	<b>253,979</b>	<b>392,534</b>	<b>397,523</b>	<b>654,791</b>	<b>696,803</b>
<b>3. Manufactured Goods</b>	<b>114,284</b>	<b>108,967</b>	<b>136,015</b>	<b>169,292</b>	<b>207,351</b>	<b>359,028</b>	<b>429,472</b>	<b>919,298</b>	<b>1,345,939</b>
<b>4. Miscellaneous</b>	<b>10,904</b>	<b>600</b>	<b>202</b>	<b>79</b>	<b>360</b>	<b>31,128</b>	<b>30,514</b>	<b>43,282</b>	<b>3,019</b>
<b>Grand Total(domestic exports)</b>	<b>957,971</b>	<b>753,413</b>	<b>917,719</b>	<b>999,842</b>	<b>1,232,360</b>	<b>1,533,831</b>	<b>1,708,085</b>	<b>3,625,206</b>	<b>4,170,724</b>
Re-exports	28,878	36,452	34,161	19,901	11,650	18,288	34,183	53,040	111,408
<b>Total Exports</b>	<b>986,848</b>	<b>789,865</b>	<b>951,880</b>	<b>1,019,743</b>	<b>1,244,010</b>	<b>1,629,467</b>	<b>1,742,268</b>	<b>3,678,247</b>	<b>4,282,132</b>

Source:Statistic Abstract 1995

Composition of Food, Beverage & Tobacco Exports(1994)



Composition of Major Exporting Commodity Group(1994)

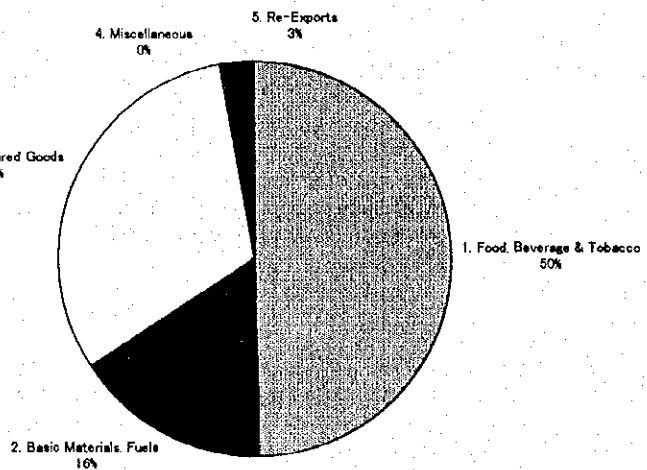
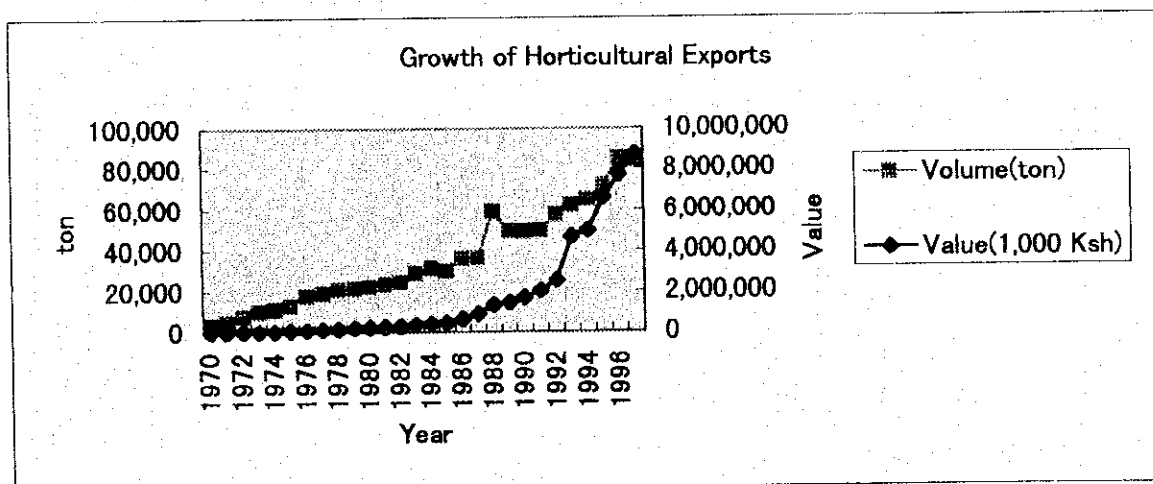


Table 3.2-9

**Export of Horticultural Crops**  
(Cut Flowers, Vegetables and Fruits)

	FOB	
	Volume(ton)	Value(1,000 Ksh)
1970	3,224	6,842
1971	5,123	10,872
1972	7,856	16,672
1973	10,158	29,571
1974	11,335	33,850
1975	13,115	83,274
1976	17,963	102,341
1977	18,844	128,716
1978	21,007	159,757
1979	21,376	194,737
1980	22,266	227,060
1981	23,352	251,601
1982	24,596	272,678
1983	28,850	350,573
1984	31,298	415,860
1985	30,001	469,272
1986	36,211	630,367
1987	36,557	900,087
1988	59,119	1,327,930
1989	49,503	1,440,047
1990	49,147	1,678,576
1991	49,848	2,011,235
1992	57,363	2,516,501
1993	62,128	4,672,715
1994	65,175	4,971,811
1995	71,758	6,582,520
1996	84,823	7,701,948
1997	84,190	8,733,647

Source.HCDA



**Table 3.2-10 Exports of Fresh Fruits, Vegetables and Cutflowers**

	(unit:%)					
	1990	1991	1992	1993	1994	1995
United Kingdom	34.8	33.9	29.3	28.9	30.0	29.0
French	18.6	19.8	22.3	16.7	16.1	16.0
Netherlands	19.2	21.8	25.2	28.3	28.9	33.0
Germany	11.8	12.9	9.1	10.4	10.2	8.0
Belgium	6.8	3.6	3.8	2.7	2.9	
Italy	0.4	0.6	0.4	0.1	0.2	
Switzerland	1.9	1.9	2.1	4.0	2.1	
Saudi Arabia	1.6	0.8	1.2	1.0	0.7	
Other Countries	4.9	4.7	6.6	7.9	8.9	14.0
<b>Total</b>	<b>95.1</b>	<b>95.3</b>	<b>93.4</b>	<b>92.1</b>	<b>91.1</b>	<b>86.0</b>

Source: HCDA

**Table 3.2-11 Fresh Horticultural Exports by Products**

	(ton)		
	1995	1996	1996/1995
French & Bobby Beans	15,380	15,562	101
Asian Vegetables	5,517	5,336	97
Snow & Snap Peas	2,630	3,904	148
Runner Beans	1,819	2,179	120
Okra	1,898	2,049	108
Cutflowers	29,374	35,212	120
Avocado	8,859	10,429	118
Mangoes	2,274	4,245	187
Passion Fruit	901	982	109
Others	2,104	4,927	234

Source: HCDA

**Figure 3.2-1 Main Import Countries for Kenya's Horticulture Crops**

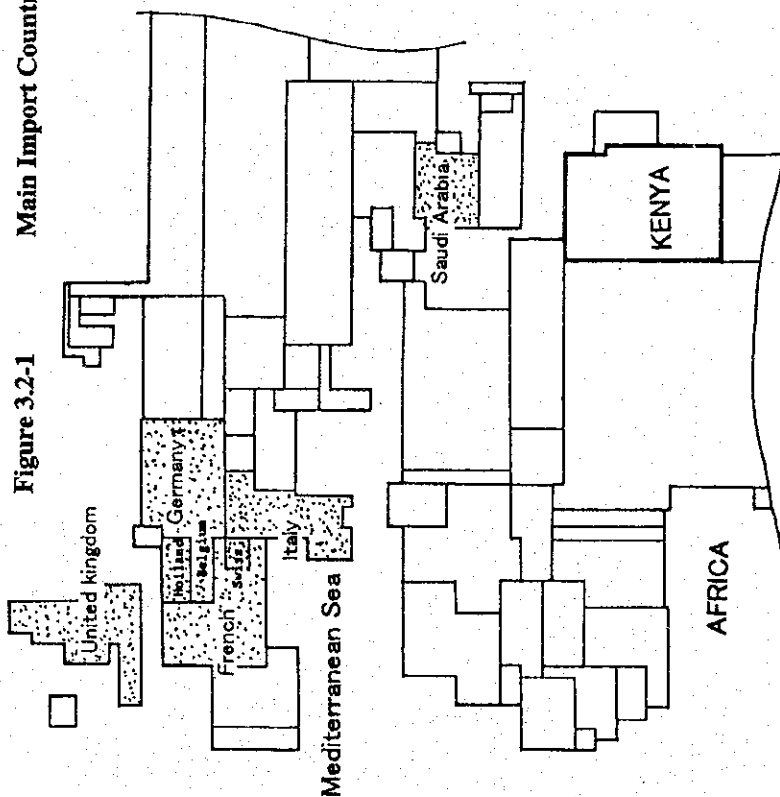




Figure 3.2-2 Comparison of Food Intake between Urban and Rural Areas in Kenya (kg/capita/year)

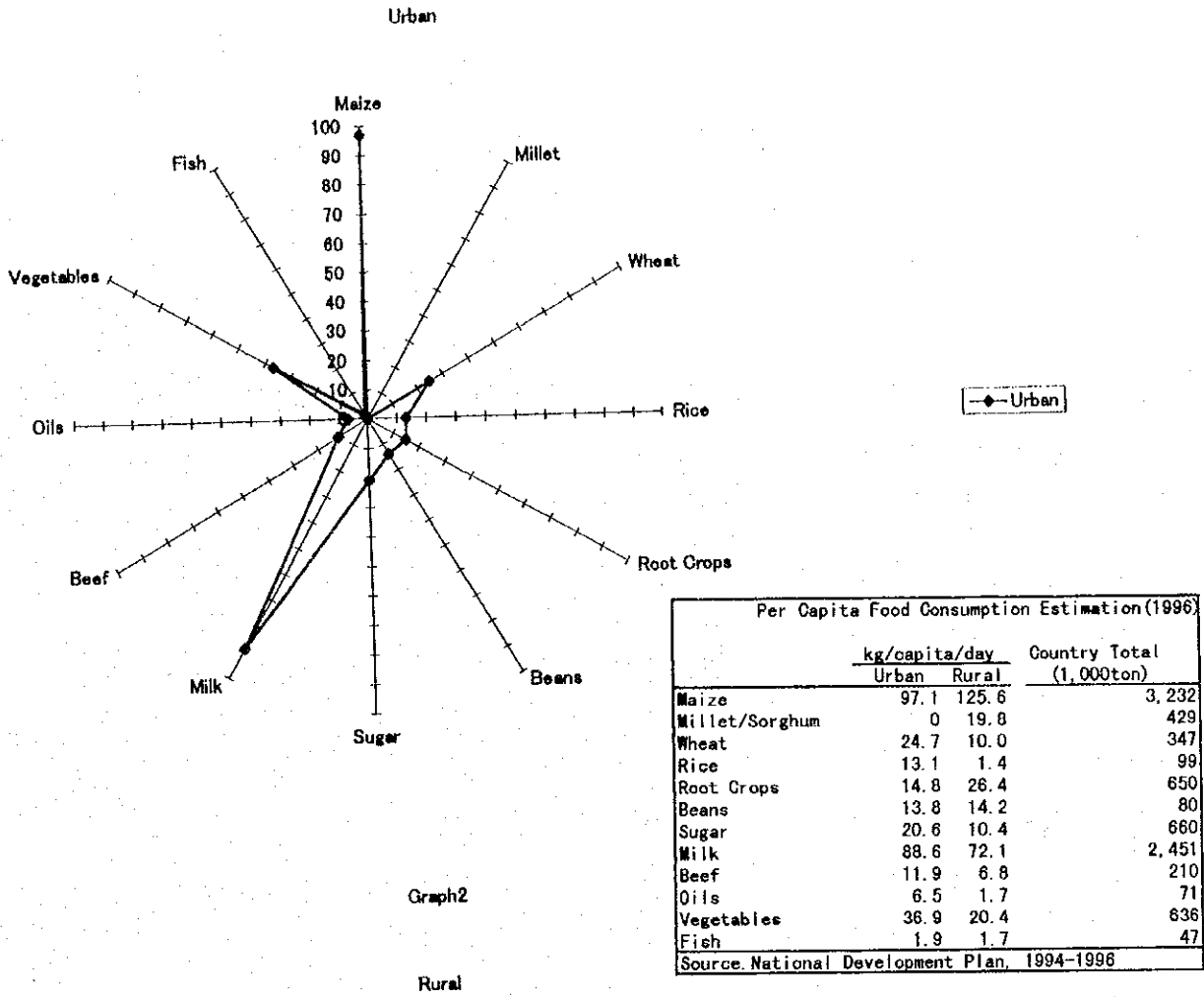
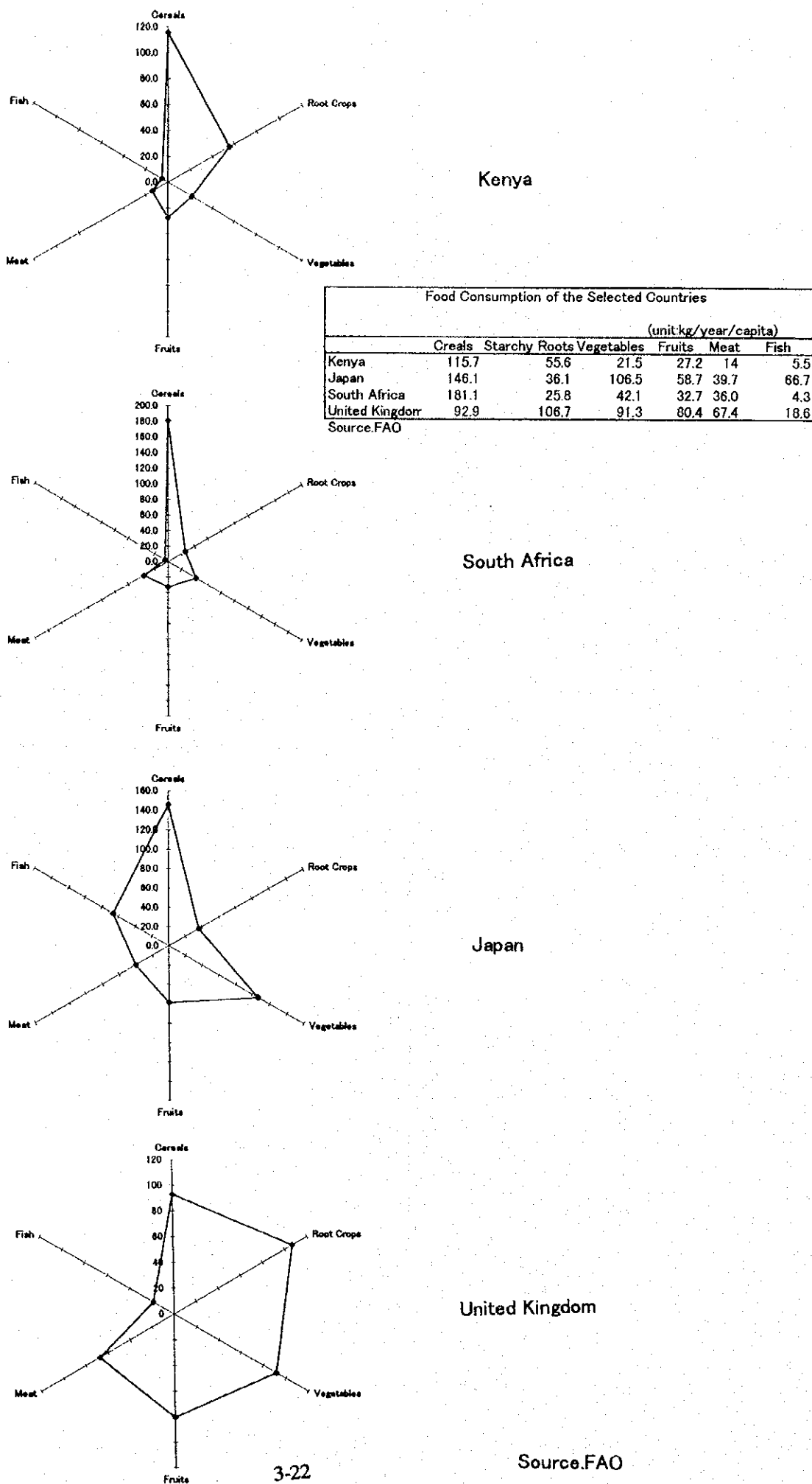


Figure 3.2-3

Comparison of Food Intake between Kenya and Selected Countries (kg/capita/year)



### **3.3 Agricultural Administration and Services**

#### **3.3.1 Organization Structure of MOALD and Its Function**

##### **1) Organization Structure of MOALD**

Administrative structure of the Republic of Kenya consists of 25 related government agencies such as Ministries, Department, Commissions, etc. under the Office of the President, as shown in Figure 3.3-1. The Ministry of Agriculture and Livestock Development (MOALD) (refer to Figure 3.3-2), which is the counterpart ministry of this Study, is divided into eight Divisions under the jurisdiction of Director of Agriculture at the central level. On the other hand at the regional level Provincial Agricultural Offices, District Agricultural Offices and Divisional Agricultural offices have been established, and agricultural administration is managed through the office concerned.

##### **2) Major Function of MOALD**

The overall function of the MOALD is to enhance crop production, marketing and processing, land use and development, soil conservation, survey and control of crop pests through;

- The formulation and implementation of appropriate agriculture, and marketing policies, including regulatory services,
- The provision of the farming community with education and extension measures that promote crop and livestock production, soil and water conservation, efficient land-use and crop livestock disease surveillance, control and treatment,
- The coordination and provision of credit, and other agro-chemicals such as fertilizer, pesticides and herbicides,
- The control of crop pests at both pre-harvest and post-harvest stages as well as providing grain storage facilities, and
- The formulation and implementation of projects that will contribute to overall sectoral development.

However, the institutional framework of government administration is being improved, and MOALD is also being restructured to improve its effectiveness under the Agricultural Sector Reform Program, of which details will be described in paragraph of 3.4 "Government Reform Program and Their Process".

#### **3.3.2 Related Government Agencies to the Study and Its Local Branches**

Direct government agency related to carrying out the Study on Community-Based Smallholder Irrigation Development Project for Promotion of Horticultural Production in the Foothills of Mount Kenya is the Irrigation and Drainage Branch (IDB) under Land Development Division (LLD) at central level, and following nine Provincial and District Agricultural Offices;

- Provincial Agricultural Office in Central Province,
- Provincial Agricultural Office in Eastern Province
- District Agricultural Office in Nyeri District,
- District Agricultural Office in Kirinyaga District,

Figure 3.3-1 Organization Chart of the Kenya Government

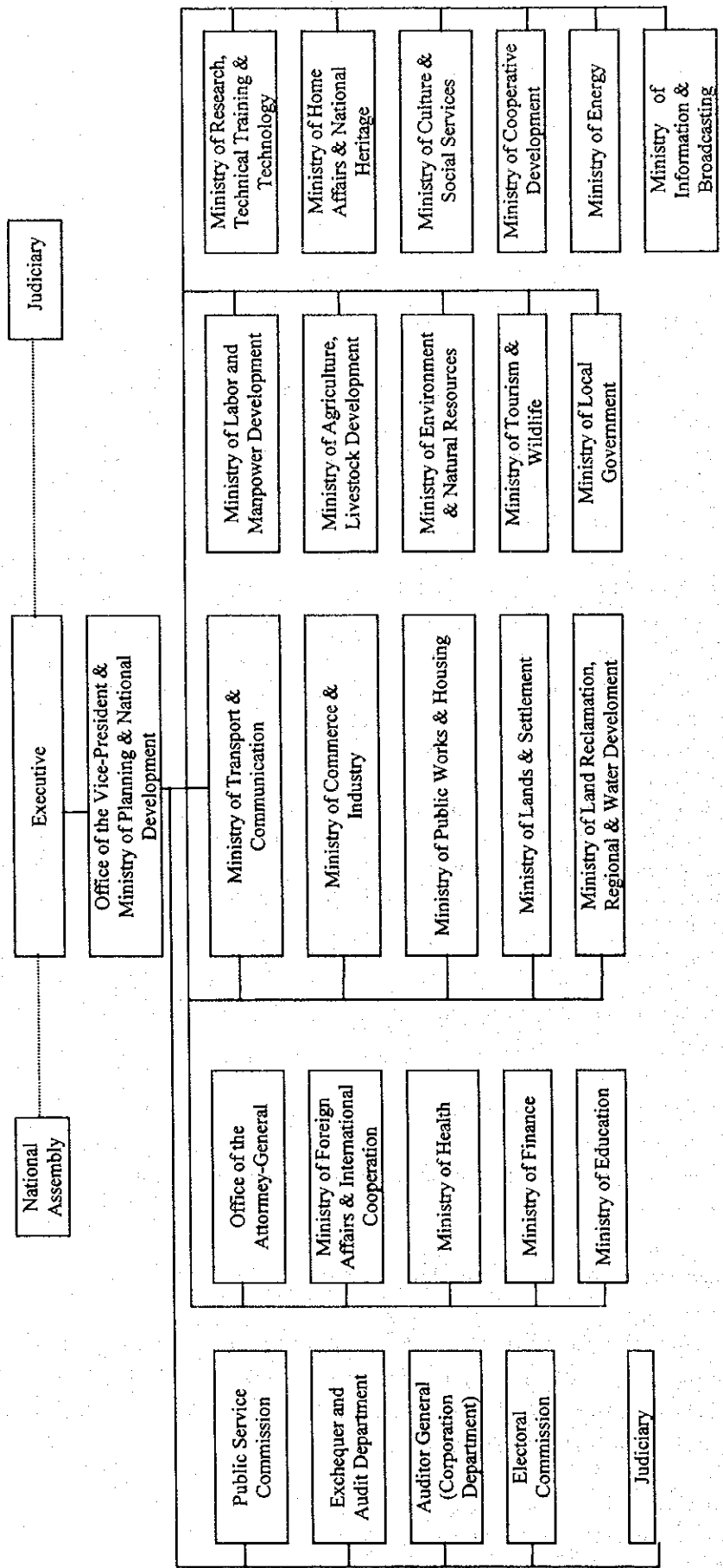
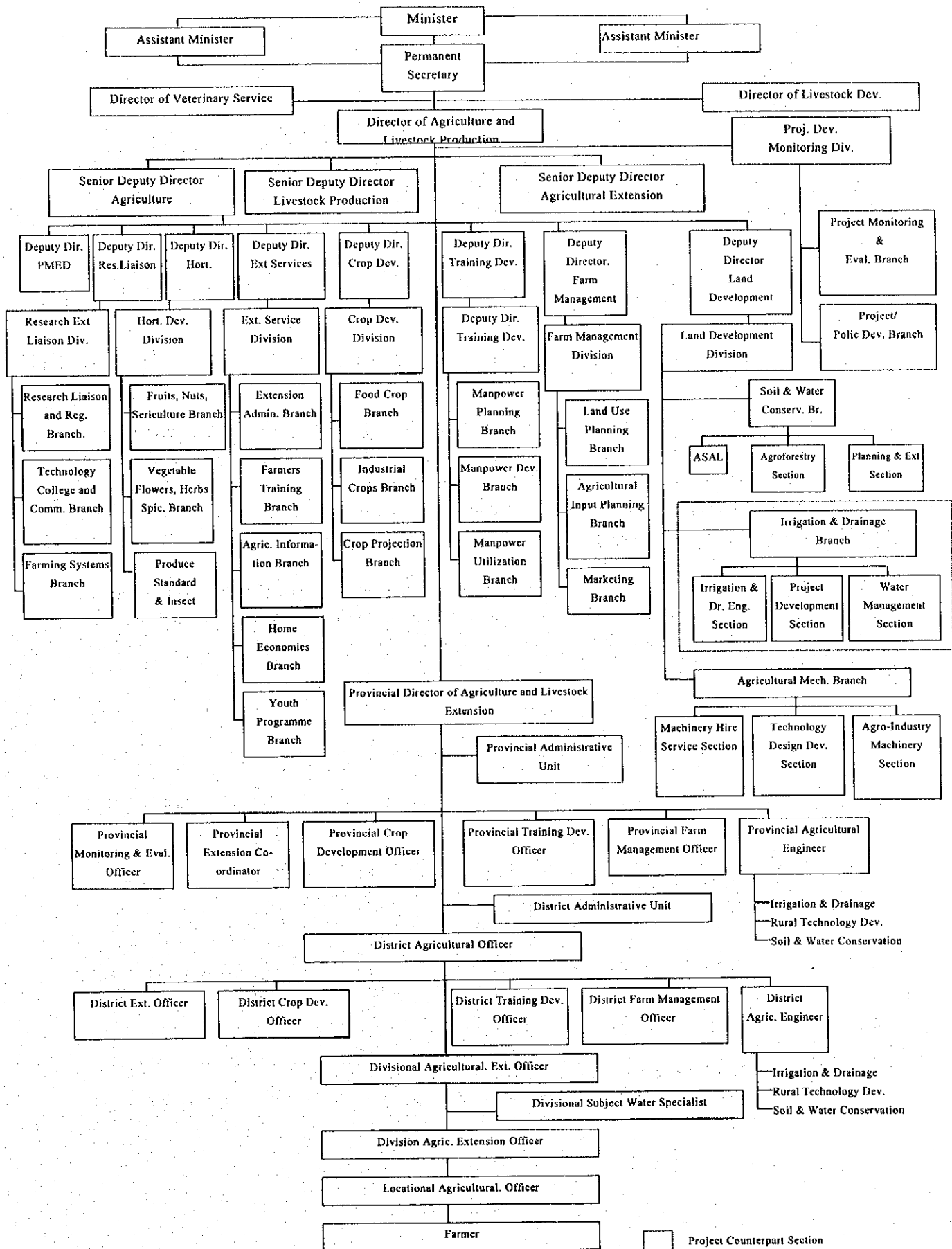


Figure 3.3-2

Organization Chart of Ministry of Agriculture and Livestock Development



- District Agricultural Office in Embu District,
- District Agricultural Office in Mbeere District,
- District Agricultural Office in Tharaka Nithi District,
- District Agricultural Office in Meru District,
- District Agricultural Office in Nyambere District,

Under the Irrigation and Drainage Branch (IDB) at central level, Provincial Irrigation Units (PIU) at seven provinces and District Irrigation Units (DIU) in most districts are established to provide technical and extension services as shown in Figure 3.3-3.

### 3.3.3 Budget Status and Personnel

#### 1) Budget Status and Its Change

##### a) MOALD Budgets

According to the MOALD annual budget for the last three years (1994/95-1996/97), consisting of recurrent and development expenditures, its amount has increased from 213 million Kenyan Pounds in 1994/95 to 341 million Kenyan Pounds in 1996/97, as shown below. Out of these annual budgets, about 47 percent has been utilized for development expenditure on average. The rest is recurrent expenditure with 150 million Kenyan Pounds, equivalent to 53 percent of the total budget.

The rate of annual budget allocated for irrigation development works is very low with about one percent of the total budget, which amounts to 3.1 million Kenyan Pounds. However, of the budget for irrigation development, about 47 percent is occupied by the fund obtained through aid assistance by the related donors.

#### Annual Budget of MOALD and Irrigation Development

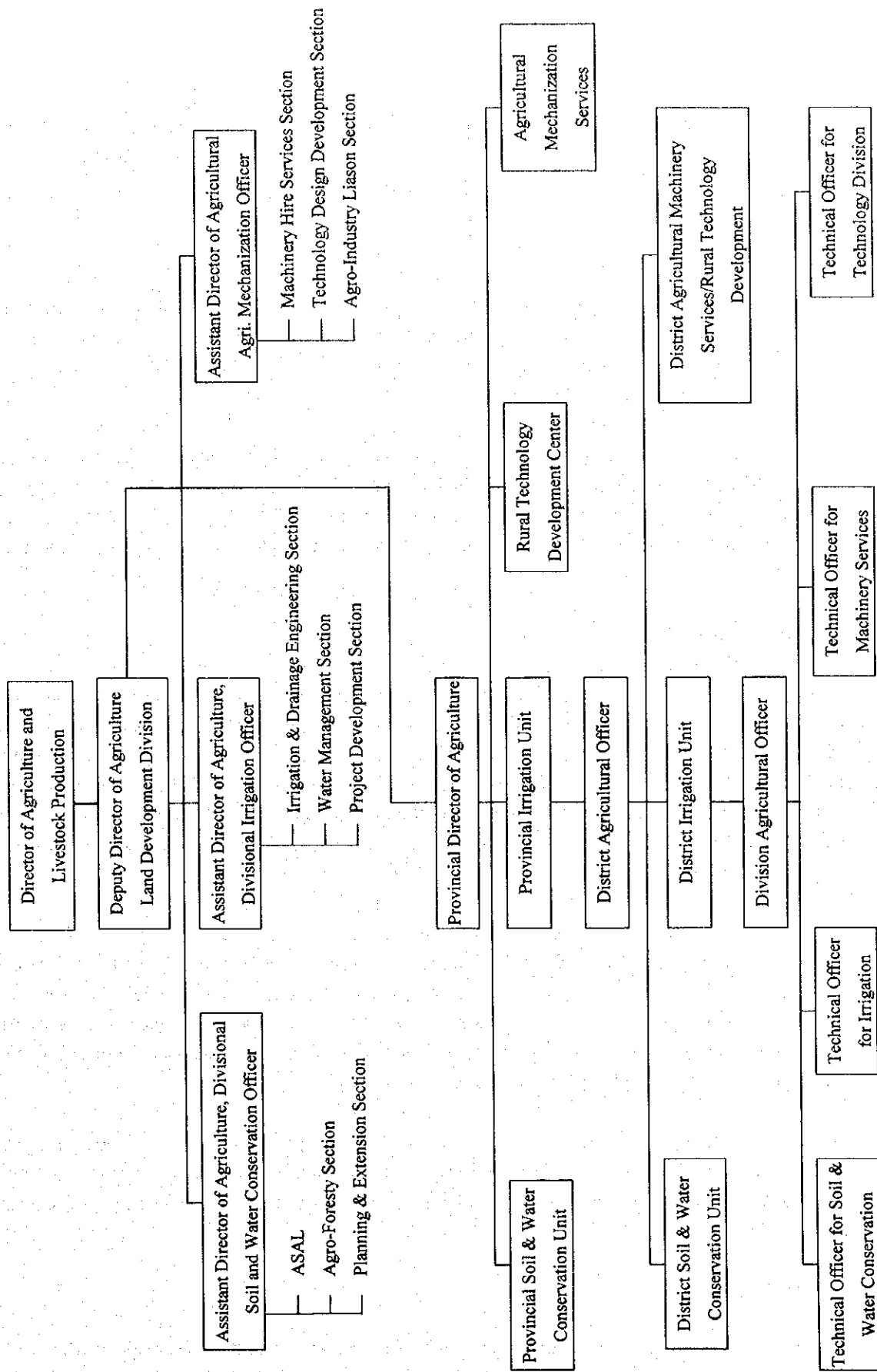
(unit : '000 K. Pound)

Year	MOALD			Irrigation Development		
	Recurrent Expenditure	Development Expenditure	Total	Recurrent Expenditure	Development Expenditure	Total
1994/95	124,536	88,575	213,113	640	3,208	3,848
	(5,859)	(35,783)	(41,462)	(0)	(3,108)	(3,108)
1995/96	155,076	136,561	291,637	765	2,113	2,878
	(5,809)	(44,905)	(50,714)	(0)	(1,250)	(1,250)
1996/97	170,840	170,016	340,856	824	1,755	2,579
	(6,456)	(79,786)	(86,242)	(35)	(0)	(35)
Ave.	150,151	131,718	281,869	743	2,359	3,102
	(6,041)	(53,491)	(59,532)	(12)	(1,453)	(1,465)

Source ; Ministry of Finance, Program review and Forward Budget, 1994/95-1997/98.

Figures in parentheses show the budget obtained by Appropriate in Aid (AiA), including donor's grant and loan, and payment by farmers for Government.

**Figure 3.3-3 Organization Chart of Land Development Division and Irrigation and Drainage Branch**



## b) IDB Budget

In order to analyze the allocated budgets to the Irrigation and Drainage Branch (IDB) from MOALD, more detail data from 1993/94 to 1997/98 for recurrent budgets and 1992/93 to 1997/98 for development budgets, respectively are collected. Subsequent deals with analyzed results.

### (1) Recurrent Budgets

The recurrent budgets are classified into small items as shown in Table 3.3-1. Out of these items, the allowable budgets to be directly managed by IDB are items of 100-260, and other items of 0-80, which are mainly consisted of personal expenses and their related allowances are directly paid to the government staff by Ministry of Finance.

Total recurrent budgets for IDB, which covers IDB headquarters and seven provincial irrigation units (PIUs) and 53 district irrigation units (DIUs), increased from 558 thousand Kenyan Pound in 1993/94 to 925 thousand Kenyan Pound in 1997/98, equivalent to about 1.7 times of 1993/94 budgets. However, dominant budgets, about 72 percent of the total recurrent budgets are occupied by the personal and their related expenses.

### (2) Development Budgets

According to the collected budget data from 1992/93 to 1997/1998, IDB development budgets decreased broadly from 4,029 thousand Kenyan Pound in 1994/1995 to 1,220 thousand Kenyan Pound in 1997/98, as indicated in Table 3.3-2. Especially, at the year of 1995/95 donor funds from Netherlands, Federal Republic of Germany (FRD), European Development Fund (EDF)/ European Economic Commission (EEC), Danish International Development Agency (DANIDA), etc. have been sharply decreased as indicated in Figure 3.3-6. Furthermore, at the year of 1997/98 budgets, most of these donor funds were not expected at all.

And, 1,220 thousand Kenyan Pound of development budgets were allocated to IDB in the year of 1997/98. Out of this amounts, civil work budgets to be used mainly for canal construction occupy 1,140 thousand Kenyan Pound, equivalent to 93 percent of the total budgets. This 1997/98 budgets are mostly expended by Government of Kenya. However, due to the broad reduction of other necessary expenses, which will be needed to implement the project, irrigation and drainage works under IDB are slow down and not progressive, even though civil work budget are secured.

According the information obtained from IDB, annual progress of irrigation and drainage projects is reported to be about 60-70 ha/year only in the whole country. Under the situation, irrigation and drainage works under IDB need more financial assistance by donors to implement the projects smoothly and effectively.

## 2) Personnel of MOALD

Authorized numbers of government staff (technicians) in the MOALD are about 10,900, of which about 90 percent are composed of Assistant Agricultural Officer (AAO), Agriculture Assistant (AA) and Junior Agricultural Assistant (JAA), as shown below. On the other hand, total numbers of government



staff (technician) in IDB inclusive of those of the Provincial and District Irrigation Units are 175 (refer to Table 6.5-2), and this number is deemed to be extremely low compared with the Ministry's total technical staff, which number about 10,900, as mentioned below.

Technical Staff for Department of Agriculture (as per 1997)

(unit : person)

Designation	Job Grade	Authorized Establishment	In Post	Vacant	Over
1. SDDA	Q	2	2	0	
2. DDA	P	11	10	1	
3. ADA	N	44	40	4	
4. SAO	M	232	191	41	
5. AO I/II	L/R	1,353	1,407		54
6. CAAO	L	15	4	11	
7. SAAO	K	40	28	12	
8. AAO I	J	150	142	8	
9. AAO II/III	G/H	2,677	1,580	1,097	
10. AA III/I	F/G	4,227	3,490	737	
11. JAA	C/D/E/F	2,130	1,822	308	
Total		10,881	8,716	2,219	54

Source ; MOALD

Table 3.3-1

## Change of Recurrent Budget of IDB (1993/94-1997/98)

(unit : K.Pound)

Item	93/94 Printed	94/95 Printed	95/96 Estimates	96/97 Printed Estimates	97/98 Estimates
0 Personal Emoluments	300,263	319,597	361,547	390,476	456,693
50 House Allowances	100,156	124,064	132,873	138,188	143,716
63 Hardship Allowance	-	2,869	5,461	5,680	5,908
65 Medical Allowance	-	33,859	51,120	53,165	65,034
80 Passage and Leave Expenses	3,893	4,661	4,700	5,170	6,000
100 Transport Operating Expenses	54,000	73,600	120,000	95,000	100,000
110 Travelling and Accommodation Expenses	39,600	57,400	80,000	65,000	70,000
151 Purchase of Farm Inputs	4,320	5,616	6,632	8,030	8,000
172 Purchase of Uniforms and Clothing	4,860	5,832	6,415	7,500	8,000
174 Purchase of Stationery	2,250	2,700	8,100	8,910	10,000
190 Miscellaneous Other Charges	14,400	12,280	6,404	10,250	11,000
194 Training Expenses	5,850	8,775	10,775	13,855	16,000
250 Maintenance of Machinery and Equipment	12,600	8,600	11,384	11,355	14,500
260 Maintenance of Building and Stations	15,750	8,900	10,150	11,385	10,000
<b>Total</b>	<b>557,942</b>	<b>668,753</b>	<b>815,581</b>	<b>823,964</b>	<b>924,851</b>

Source : Ministry of Finance, Estimates of Recurrent and Development Expenditures

Figure 3.3-4

## Change of Recurrent Budget of IDB (1993/94-1997/98)

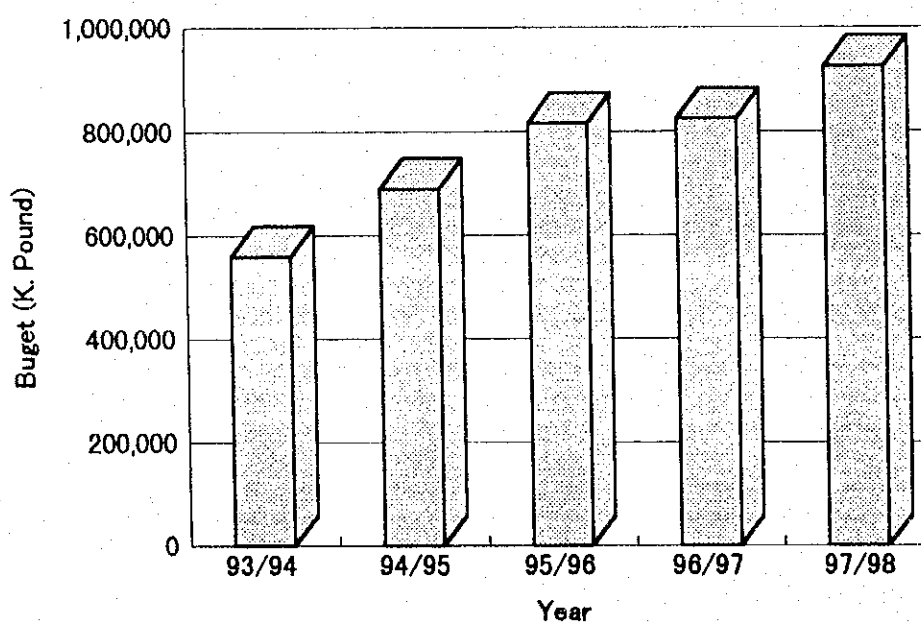


Table 3.3-2

## Change of Development Budget of IDB (1992/93-1997/98)

(unit : K. Pound)

	Development Budget	1992/93 Approved Estimates	1993/94 Approved Estimates	Approved estimates 1994/95	Printed 1995/96	Approved 1996/97	Estimates 1997/98	Total
100	Transport Operating Expenses	192,100	148,000	232,695	123,700	175,200	30,000	901,695
110	Travelling and Accommodation Expenses	117,200	100,000	145,740	78,541	96,500	18,000	553,981
121	Telephone Expenses	0	0	0	0	0	1,000	1,000
153	Fungicides, Insecticides and Sprays	8,000	8,000	0	0	0	0	16,000
154	Farm Inputs	3,500	4,000	0	0	0	0	7,500
170	Purchase of Office Equipment	17,000	5,000	0	0	0	0	22,000
174	Purchase of Stationery	20,000	25,000	50,219	8,500	8,496	2,000	114,215
184	Contracted Professional Services	922,000	938,400	1,532,400	2,000	60,000	0	3,454,800
190	Miscellaneous Other Charges	195,700	225,500	227,911	21,575	14,821	500	686,007
194	Training Expenses	183,000	280,000	314,400	209,500	224,000	5,000	1,195,900
210	Purchase of Additional Vehicles	280,000	132,850	20,000	108,000	108,000	0	648,850
212	Purchase of Bicycles and Motor Cycles	57,000	45,000	55,400	10,815	20,169	0	188,184
220	Purchase of Plant and Equipment	167,000	145,000	97,420	10,149	30,138	10,000	459,707
221	Purchase of Office Equipment	17,000	5,000	0	0	0	0	22,000
250	Maintenance of Plant, Machinery and Equipm	52,500	55,500	46,262	8,769	12,361	8,000	183,392
260	Maintenance of Buildings and Stations	38,000	38,000	20,415	2,500	5,250	6,000	108,165
295	Minor Alterations and Maintenance Works	2,100	3,000	0	0	0	0	5,100
340	Grants to Private Organizations	455,750	428,000	740,800	0	0	0	1,624,550
400	Construction of Buildings - Non Residential	112,000	122,000	10,000	0	0	0	244,000
401	Civil Works-Irrigation Canals	607,000	1,362,305	535,567	1,531,359	673,638	1,140,000	5,849,869
	Total	3,446,850	4,048,555	4,029,229	2,113,208	1,428,573	1,220,500	16,286,915

Source : Ministry of Finance, Estimates of recurrent and Development Expenditures

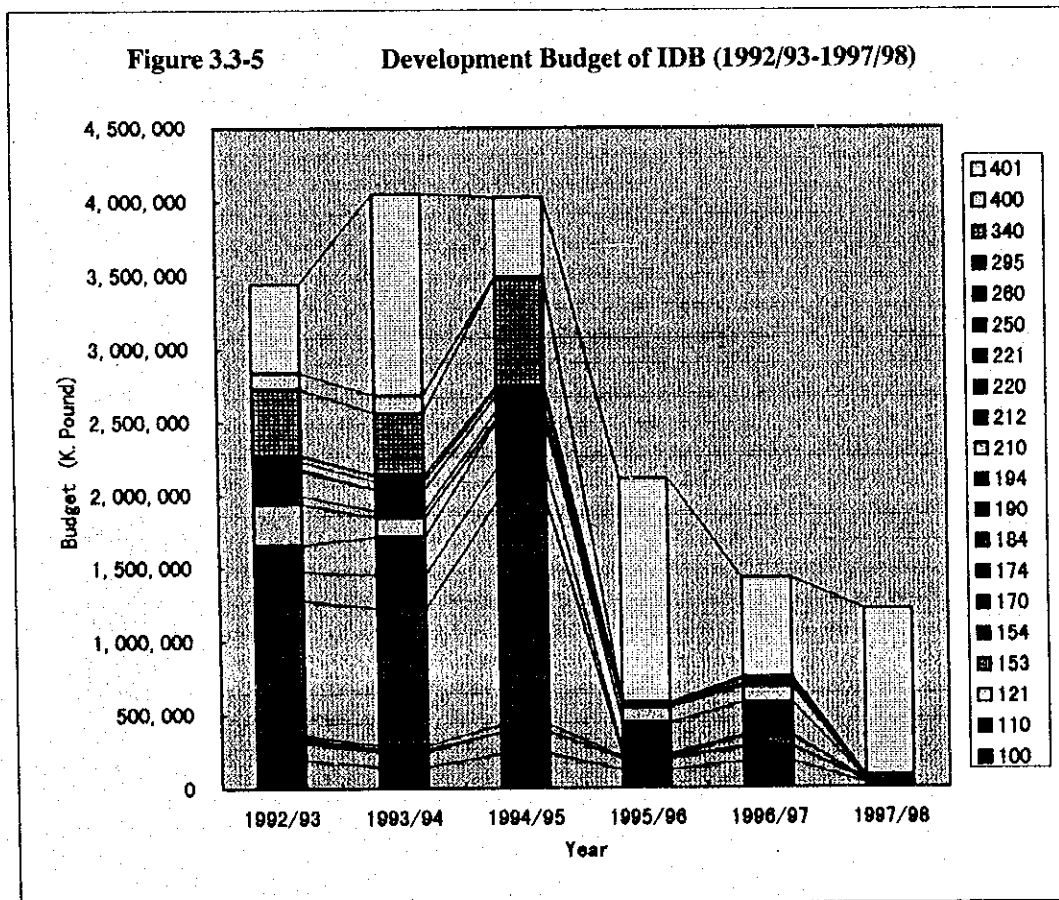
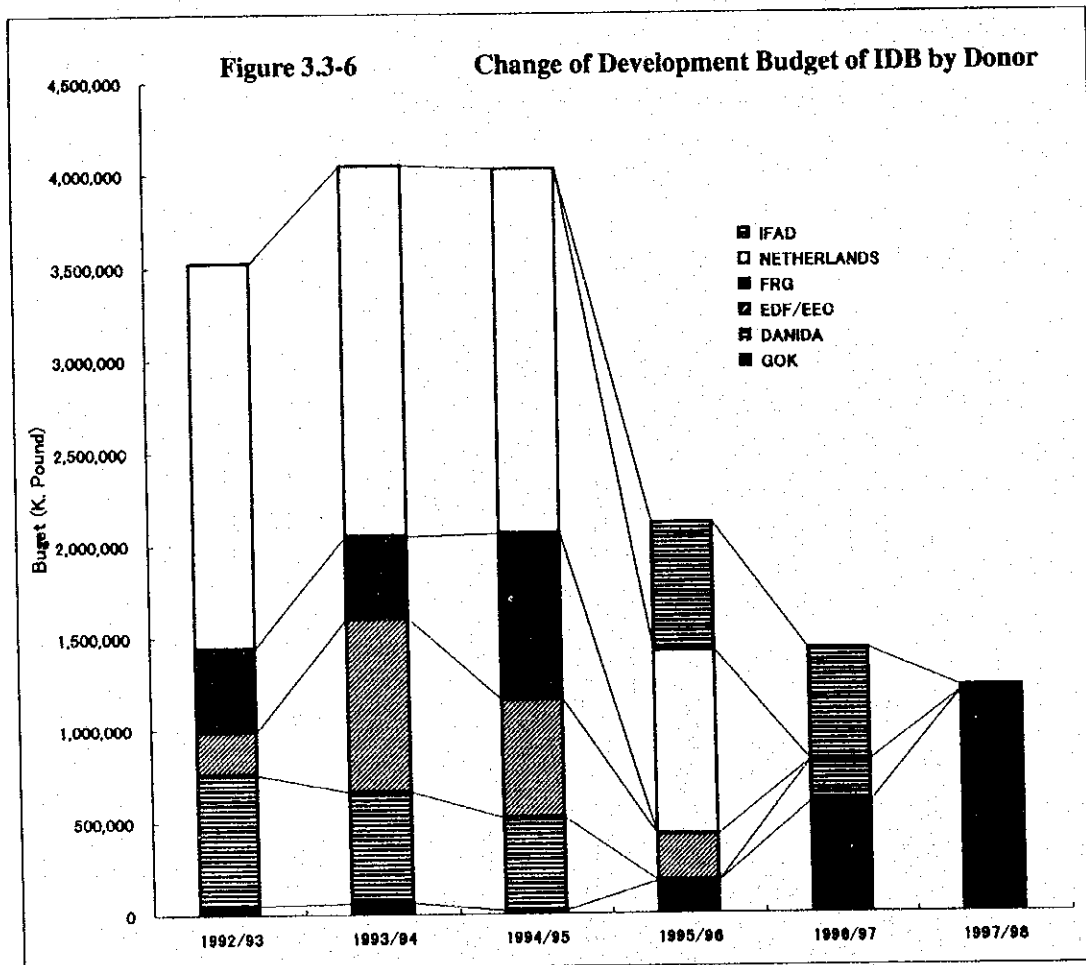


Table 3.3-3

Change of Development Budget IDB assisted by Donors (1992/93-1997/98)

(unit : K. Pound)

	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98
GOK	49,600	80,000	18,250	173,275	597,750	1,197,000
DANIDA	705,000	600,000	499,420	0	224,185	0
EDF/EEC	238,250	938,555	842,379	250,058	0	0
FRG	450,000	450,000	900,000	0	0	0
NETHERLANDS	2,083,750	2,000,000	1,989,180	1,000,000	0	0
IFAD	0	0	0	689,875	608,638	23,500
Total	3,524,600	4,048,555	4,029,229	2,113,208	1,428,573	1,220,500



### 3.3.4 Functions of Other Related Government Bodies

Aside from the Ministry of Agriculture and Livestock Development (MOALD), the following Ministries and agencies will be related to the Study.

- Ministry of Land Reclamation, Regional and Water Development (MLRRWD)
- Ministry of Public Works and Housing (MPWH)
- Ministry of Environment and Natural Resources (MENR)
- Ministry of Cooperative Development (MOCD)
- Kenya Agricultural Research Institute (KARI)
- Ministry of Planning and National Development (MOPND)
- Ministry of Health (MOH)
- Ministry of Culture and Social Services (MOCSS)
- Ministry of Local Government (MOLG)
- Horticultural Crops Development Authority (HCDA)

Major activities of these related Ministries will be discussed below;

#### Ministry of Land Reclamation, Regional and Water Development (MLRRWD)

- Planning, assessment, conservation and protection of water resources,
- Administration of the Water Act such as water development and supplies, control of water catchment areas, water quality and pollution control
- Assessing the potential of marginal areas
- Development and Coordination of implementation of suitable integrated development programs in arid and semi-arid land (ASAL), and
- Administration of the Regional Development Authorities, National Irrigation Board, Tukana Integrated Development Program and Bura Irrigation and Settlement Scheme.

#### Ministry of Public Works and Housing (MPWH)

- Planning, design, construction and maintenance of public roads and building,
- Provision of essential services such as material research and testing, mechanical and transport operation, staff training for roads building sectors, electric services, inventory of government property, and supply of common user items to Government Ministries, and
- Supporting services for operations of the Ministry in the roads and building sector.

#### Ministry of Environment and Natural Resources (MNER)

- Coordination in the planning, development and management of all environmental activities including production and marketing of forest products,
- Development of forestry policy and services,
- Afforestation of ASAL and watershed management,
- Geological survey and research to acquire and compile geoscience database and the development of mineral resources within the framework of a sustainable environment, and
- Coordination and implementation of National Environmental Action Plan (NEAP) and IGADD matters

### Ministry of Planning and National Development (MOPND)

- All aspects of national development planning, evaluating economic issues, gathering, analyzing and disseminating statistical information,
- National manpower planning, and
- Matters pertaining to population planning and development, resources survey and management and matters pertaining to the preferential trade area and regional cooperation.

### Ministry of Cooperative Development (MOCD)

- Registration and auditing of cooperatives, and promotion of cooperative activities in marketing and storage of inputs and produce,
- Domestic mobilization of savings and provision of credit facilities,
- Development of small-scale and jua kali enterprises, fishing marketing, housing,
- Supervision and coordination of cooperatives,
- Dispute arbitration of orderly dissolution of cooperatives under liquidation, and
- Provision of education and business skills to the cooperative movement.

### Kenya Agricultural Research Institute (KARI)

KARI is a national organization with the mandate for conducting agricultural research in Kenya with a view to improving productivity and sustainability of existing agricultural condition systems under different agro-ecological and socio-economic conditions. Towards this end, KARI undertakes the following activities;

- Diagnoses and analyses agricultural production constraints
- Plans and designs short and long-term research programs
- Conduct on-station as well as on-farm experiments
- Evaluates results of on-station and on-farm experiments
- Compiles recommendation and disseminate them to interested stakeholders (extension staff, farmers, others)
- Assesses adoption and impact of agricultural recommendations

The above activities are carried out through a network of 25 research stations located in different parts of the country. Within the Study Area, KARI is represented by Embu Regional Research Station near Embu town, which has an out-station at Mwea some 15 km away.

### Ministry of Health (MOH)

- Preventive and curative health services and rural health services
- Public/environmental health and family planning
- Food and food handling
- Health research, training and education,
- Overall sanitary services, maternity services, and medical supply services
- Control of dangerous drugs and offensive trades,
- Quarantine administration, registration of doctors, nurses and midwives, and
- Registration of health professional association, medical boards, nursing council, clinical officers council.

### Ministry of Culture and Social Services (MOCSS)

- Promotion of social welfare and culture such as community development, sports, Kenya Cultural Center, National Library services, vocational rehabilitation of the disabled person, Women's Bureau, Kenya Association of Youth Organizations and adult education

### Ministry of Local Government (MOLG)

- Undertaking Local Government Policy,
- Approval of all by-laws to all local Authorities, and
- Administration of the Local Government Provident Fund and training of all Local Government personnel.

### Horticultural Crops Development Authority (HCDA)

- Dissemination of market information and export statistics to investors, exporters and producers for planning purposes,
- Organizing groups of small-scale growers for production and marketing purposes of export crops,
- Advising growers on the use of certified planting materials and assisting them to identify both local and export market outlets for their produce,
- Monitoring prices and foreign exchange remittance into Kenya in collaboration with Central Bank of Kenya Limited,
- Training farmers on the proper use of inputs, particularly pesticides to adhere to the Maximum Residue Levels (MRLs)
- Advising producers and exporters on appropriate post-harvest handling techniques,
- Registering fruit tree nurseries, training nursery managers, carrying out inspection of the planting materials for certification before release for sale,
- Licensing horticultural exports,
- In collaboration with other government institutions, local and international agencies, e.g., Fresh Produce Exporters Association of Kenya (FPEAK), Export Promotion Council (EPC), Kenya Bureau of Standards (KBS), Kenya External Trade Authority (KETA), Kenya Agricultural Research Institute (KARI), Natural Resources Institute (NRI), Kenya Export Development Support (KEDS) Project, Japan External Trade Organization (JETRO), International Trade Center (ITC), etc. HCDA will assist in training, research, promotion and creating awareness among producers and exporters in understanding and adhering to international regulations on quality requirements, Maximum Residue Level (MRLs), packing and environment implications.
- Providing grant procedure loans for horticultural production whenever financing sources are secured.

### **3.3.5 Major Agricultural Law and Acts**

The national agricultural sector is governed by the Agricultural Act Cap. 318 (Revised 1980). This is a statute that encompasses provisions for a wide range of agricultural practices. Among others, the act provides for setting of guaranteed prices and marketing arrangements, establishment of agricultural committees and boards, guidelines and rules for preservation, utilisation and development of agricultural land.

The Agricultural Act is augmented by other acts which address specific agricultural issues. Such acts include:

- Irrigation Act. Cap. 347 that provides for large scale centralized irrigation development and management,
- The Water Act Cap. 372 which provides a legal framework for custody, allocation and utilisation of national water resources,
- Horticultural Crops Development Authority Act whose main objective is to promote development and marketing of horticultural crops in the country,
- Agricultural Finance Corporation Act Cap. 323 which was established with the aim of providing development and farm in-put loans to farmers, and
- Science and Technology (Amendment) Act which provided for establishment of Kenya Agricultural Research Institute (KARI) with the mandate for conducting applied research for crops grown in the country with the exception of coffee and tea.

With the on-going economic structural adjustment, the Agricultural Act is being overhauled so as to bring it in line with realities of a liberalized economy. It is also anticipated that the guidelines for "smallholder Irrigation Development and Management" will be incorporated into the revised Act.

### **3.4 Government Reform Programs and Their Process**

#### **3.4.1 Structural Adjustment Programs and Public Sector Reform Program**

##### **1) Structural Adjustment Programs**

Structural Adjustment Programs (SAPs) were first introduced in the management of Kenyan economy during the 1980/81 fiscal year. They did not, however, become an important part of economic management. Therefore, they have been integrated as policy tools for economic management. The adoption of SAPs was aimed at restoring efficiency in all sectors of the economy and consequently increasing the rate of economic growth.

The implementation of SAPs has involved the following main subject areas;

- Liberalization of price and marketing systems,
- Financial sector policy reform,
- International trade regulation reform,
- Government budget rationalization,
- Divestiture and privatization,
- Parastatals reform, and
- Civil service reform

These elements have so far been implemented in various degrees. Some of major reforms undertaken by the Government to date include; price decontrols, foreign trade liberalization, decontrol of domestic marketing of agricultural commodities, consumer and producer prices, and decontrol of interest rates and foreign exchange rates including repealing the Exchange Control Act.

##### **2) Public Sector Reform Program (PSRP)**

To facilitate the realization of rapid and sustained industrial development during the next five



(PSRP) to enhance the level and efficiency of public administration and to increase private investment, incomes and job creation. These will include the following main subject areas;

- Sustenance of macro-economic stability by strengthening monetary and public sector financial management, and reforming fiscal discipline,
- Improvement of the efficiency of the public sector by accelerating and streamlining reform in the civil services and public enterprises,
- Improvement of efficiency and effectiveness of public sector investment, including the delivery of infrastructure services through improved efficiency and better management,
- Enhancement of external and domestic competitiveness of the economy through further liberalization of markets,
- Addressing the social aspects of development particularly through targeted poverty interventions and increased access of the poor to social services, and
- Curbing corruption, re-training and re-orienting both the professional and administrative staff in the civil services on their expected roles as facilitators and not inhibitors of the development process.

#### **3.4.2 Agricultural Sector Reform Program and Its Present Status**

Since 1985, Kenya has never experienced sustained agricultural crop growth, except for the period from 1985 to 1990. But, for the first time since independence, the agriculture sector recorded negative growth rates for three consecutive years in 1991 to 1993.

In 1995 a comprehensive "Agricultural Sector Review" was undertaken by MOALD&M, which identified various constraints as follows:

- i) Inadequate rural infrastructure
- ii) High dependence of rainfed production
- iii) Inadequate integration/coordination of major players
- iv) Inadequate input sector
- v) Inadequate credit
- vi) Low research priority
- vii) Low investment in agriculture
- viii) Low agricultural budgetary allocation
- ix) Limited land resources base
- x) Predominance of smallholders
- xi) Limited source of rural income
- xii) Food insecurity

Based on the comprehensive review of "Agricultural Sector Review" mentioned above, Concept Paper to introduce the sector investment program in terms of agriculture so called as "Agricultural Sector Investment Program (ASIP)" was formulated in August 1996, and the specified strategy proposals for revitalizing the sector program are enunciated in the "Agricultural Sector Development Strategy" document formulated in July 1996.

And, in October 1997, joint donor mission consisting of representative from the European Commission (EC), German Technical Cooperation Agency (GTZ), the British Department for International

Development (DFID), the Danish Agency for International Agency (DANIDA), the Netherlands Government, the Food and Agriculture Organization (FAO), the World Bank and the International Fund for Agricultural Development (IFAD), evaluated the ongoing preparation of the proposed ASIP.

According to the Eighth National Development Plan (1997-2001), the following is stated; The ongoing agricultural sector reform programs, mostly geared towards creating a liberalized agricultural sector, require consolidation through appropriate policy packages that recognize the interdependencies, especially among the non-agricultural support services.

These services include access roads, electricity, telecommunications, market centers, and credit facilities. The private sector, in collaboration with relevant Government departments, will implement their strategies. This will lead to increased investment, strong linkages between production and marketing in the sector, provision of reliable infrastructural facilities and services, and accessibility to finance and credit.

Increased investment in the agricultural sector together with provision of strong linkages among the various actors will be realized through the implementation of the ASIP. The ASIP's main aim is to enhance sustainable development in the sector through a more integrated and holistic approach. Involving all of the stakeholders in the agricultural process will require institutionalizing linkages among them and systematic coordination with other sectors that must provide essential agricultural inputs and services, such as energy, access roads, and water.

The smallholder farmers, who are the primary stakeholders in agriculture will benefit through programs relating to land tenure, infrastructure and credit that are specified in the ASIP. Farmers' associations and organization are expected to play a greater role in facilitating dialogue among farmers, policymakers and other key stakeholders, such as processors and marketers. The ASIP will be primarily implemented through the MOALD and has been specifically designed to both incorporate and maintain the participation of stakeholders.

### **3.4.3 Future Direction of Agricultural Sector**

The Ministry of Agriculture's new structure was approved by cabinet in March 1997. Under the new structure, the vision of the Ministry is to facilitate the production of sufficient food and other commodities in an ecologically sustainable way with specific goals of poverty alleviation and employment creation. Emphasis is put on effectively facilitating the private sector initiatives.

The future role of the Ministry of Agriculture will be aimed at providing public services by structurally operationalising a set of ten core functions, which have been identified and agreed upon during the restructuring process. These functions form the basis for inclusion of activities in Public Investment Program (PIP) and the Forward Budget. The ten core functions, which cut a cross crop and livestock production and veterinary and other services are as follows;

- i) General administration and planning sector coordination,
- ii) Promotion of agriculture and livestock private sector development,
- iii) Development and protection of the natural resource base for agriculture and livestock,
- iv) Facilitation and supply of appropriate agricultural and livestock extension services and

- extension-research liaison,
- v) Information management for the agriculture and livestock sector,
  - vi) Regulatory management of agriculture and livestock inputs, produce and products,
  - vii) Crop and livestock diseases and pest control,
  - viii) Formulation and monitoring of policy and appropriate legislation,
  - ix) Monitoring and management of food security, and
  - x) Contribution of agriculture and livestock research priority setting

### **3.5 Donors Activities in the Agricultural and Related Sectors**

The following related development plan and projects in the Study Area have been undertaken with an assistance of different donors concerned ;

#### **Ministry of Agriculture and Livestock Development (MOALD)**

- Small Scale Irrigation Development Project (SSID), 1977-1990, IDB-Netherlands
- Smallholder Irrigation and Drainage Project (SIDP), 1991-1994, IDB-Netherlands
- District Profile Survey, Feb. 1994, DIU-AED, MOALD
- Eastern Province Horticulture and Traditional Food Crops Project (EPHTCP), 1996-2000, Feb. 1994, MOALD-IFAD
- Agricultural Sector Investment Program (ASIP)
- Pumpfed Irrigation Project, May 1997 MOALD-Belgium
- National Agricultural Extension Project, Nov. 1990, World Bank
- Smallholder Irrigation Program through SISDO, MOALD-KfW (suspended)
- Integration of Three Crops into Farming System Project, GTZ

#### **Ministry of Land Reclamation, Regional and Water Development (MLRRWD)**

- Meru District Water Development Study (1993-2013), MOWD-June 1991, Two-Institute of Applied Geoscience Delft, the Netherlands
- The Study on the National Water Master Plan, July 1992, MOWD-JICA
- The Study on the Water Supply for Seven Towns in Eastern Province in the Republic of Kenya (Draft), July 1997, MLRRWD-JICA

#### **Ministry of Public Works and Housing (MPWH)**

- Rural Access Roads Program (RARP), 1974-1985, KOG
- Minor Road Program (MRP), 1986- , SIDA (Central Province), EU (Eastern Province)
- Roads 2000, 1997-2001, SIDA (Central Province), EU (Eastern Province)

#### **Ministry of Environment and Natural Resources (MENR)**

- Kenya Forestry Master Plan, 1994, MENR-EU

#### **Horticultural Crops Development Authority (HCDA)**

- Horticultural Produce Handling Facilities Project, Feb. 1995-1999, HCDA-OECF