

Mutiso

KENYA:
Poverty and Technology Profile

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CONTENTS

	BASIC DATA	1
1.	RESOURCE BASE	
	1.1 Ecological Setting	2
	1.2 Population	10
	1.3 State of the Environment	14
	1.4 Education	16
2.	POLITICAL CONTEXT	
	2.1 Domestic Scene	19
	2.2 Political Philosophy and Practice	21
	2.3 Regional Co-operation	21
3.	ECONOMIC DEVELOPMENT	
	3.1 Economic Performance	24
	3.2 Agriculture	24
	3.3 Formal Industry	31
	3.4 Informal Sector	34
4.	EQUITY CONSIDERATIONS	
	4.1 Land tenure	37
	4.2 Gender Relations	39
	4.3 Income Distribution	44
	4.4 Access to Energy	52
	4.5 Health and Nutrition	55
	4.6 Housing	59
5.	POLICY INNOVATIONS	
	5.1 Decentralized Development Strategy	60
	5.2 Technology Policy	62
6.	THE WAY AHEAD	
	6.1 Technology and the Poor	63
	6.2 Decentralized Development	64
	6.3 <i>Jua Kali</i>	64
	6.4 Popular Organizations	65
	CONCLUSION	68
	REFERENCES	69

LIST OF TABLES

1.	Kenya's Ecological Zones	9
2.	Rainfall Distribution	9
3.	Pesticides Used in Kenya	9
4.	Projected Population Growth	11
5.	Contraceptive Prevalence by Method (Per Cent)	11
6.	Attendance at Family Planning Clinics	13
7.	Enrolment in Teachers' Training Colleges	17
8.	Secondary School Enrolment by Province	17
9.	Primary School Enrolment	18
10.	GNP Per Capita in Kenya	25
11.	GDP at Factor Cost	25
12.	Imports of Principal Articles	26
13.	Industrial Analysis of Exports	27
14.	Key Economic Indicators	28
15.	Livestock Population in Kenya	28
16.	Imports of Agricultural Equipment	30
17.	Sources of Growth in the Manufacturing Sector	32
18.	Industrial Output, Imports and Exports	32
19.	Import Ratios in Supply for Manufactured Goods	33
20.	Strikes and Man-Days Lost	33
21.	Composition of Informal Sector Employment	35
22.	Informal Employment by Sector	35
23.	Schedules for Foreign Exchange Allocation	36
24.	Wage Employment by Sex and Income	40
25.	Land Registration in Kenya	42
26.	Previous Estimates of Poverty in Kenya	43
27.	Wage Employment by Industry and Income Groups	45
28.	The Household Income	46
29.	Characteristic of Smallholder Households	47
30.	Wage Employment by Industry	48
31.	Wage Employment by Sector	49
32.	Wage Employment by Sector and Income Groups	50
33.	Earnings by Sector	50
34.	Average Retail Prices	51
35.	Woodfuel Supply/Demand Balance	53
36.	Energy Needs	53
37.	Health Institutions and Hospital Beds	56
38.	Registered Medical Personnel	56
39.	Per Capita Availability of Selected Food Items	58
40.	Per Capita Nutrient Availability	58
41.	Smallholder Households Below the Poverty Line	58

LIST OF FIGURES

1.	Kenya and its Neighbours	3
2.	Mean Annual Rainfall	4
3.	Climatic Regions of Kenya	5
4.	Drainage Areas of Kenya	6
5.	Geological Map	7
6.	Physiographic Map	8

BASIC DATA

LOCATION:	Between latitudes 4° 21' N and 4° 28' S and between longitudes 34° and 42° E. The country borders with Uganda, Ethiopia, Sudan, Tanzania, Somalia and the Indian Ocean.
LAND AREA:	582,644 square kilometres (including inland waters)
POPULATION:	About 24 million
MAJOR TOWNS:	Nairobi (Population 1.2 million), Mombasa (500,000), Kisumu (300,000)
CLIMATE :	Tropical on the coast, semi-temperature or temperate inland. The weather in Nairobi hottest in February 13-28°C, coldest in July (11-23°C) driest in August (24 mm), wettest in April (266 mm).
LANGUAGES:	English, Kiswahili, local languages
MEASURES:	Metric system
CURRENCY:	Kenyan shilling (KSh) = KSh.20 = Kenyan pound (K£). Average exchange rate 1988, KSh.17.0 = US\$1.0
TIME:	Three (3) hours ahead of GMT
PUBLIC HOLIDAYS:	January 1, May 1, June 1, October 20, December 12, 25, 26, Good Friday, Easter Monday, Id el Fitr.

INTRODUCTION

This study has attempted to outline the policy issues related to poverty and technological development in Kenya. The country is currently at a critical point where technological options are required to guarantee long-term economic sustainability given the high population growth rate and limited availability of arable land. It is notable that Kenya has already started introducing policies which indicate that the leadership is recognizing the role of science and technology in development. However, these policies are still disjointed and are not influenced by any overall explicit guidelines.

Given the policy directions that the country is taking, the possibilities for the development and application of intermediate technologies have increased considerably. The only remaining hope for the poor to improve their living conditions is to provide a suitable environment in which they can undertake innovative activities and meet their own basic needs. This study has attempted to examine the current trends in the country with specific emphasis on technology policy issues.

1. RESOURCE BASE

1.1 Ecological Setting

Kenya's ecological setting is major factor in the distribution of population and economic activity. Understanding of the relationship between the ecological base and economic activity illuminates some of the key technological issues in the country. Kenya is characterized by a wide range of ecological zones. The country's climatic conditions, temperature and rainfall patterns vary greatly. These variations are closely related to changes in altitude.

Kenya is divided into six eco-climatic zones based on the interaction between climate, soil and topography which are reflected in the characteristics of vegetation types which are used as indicators (Table 1). Kenya, although known for its agricultural produce, is not endowed with ample fertile land. Only about 17.5 per cent of the country is classified as medium or high agricultural potential. The potentiality classification is based on average annual rainfall.

Figure 1: Kenya and its Neighbours

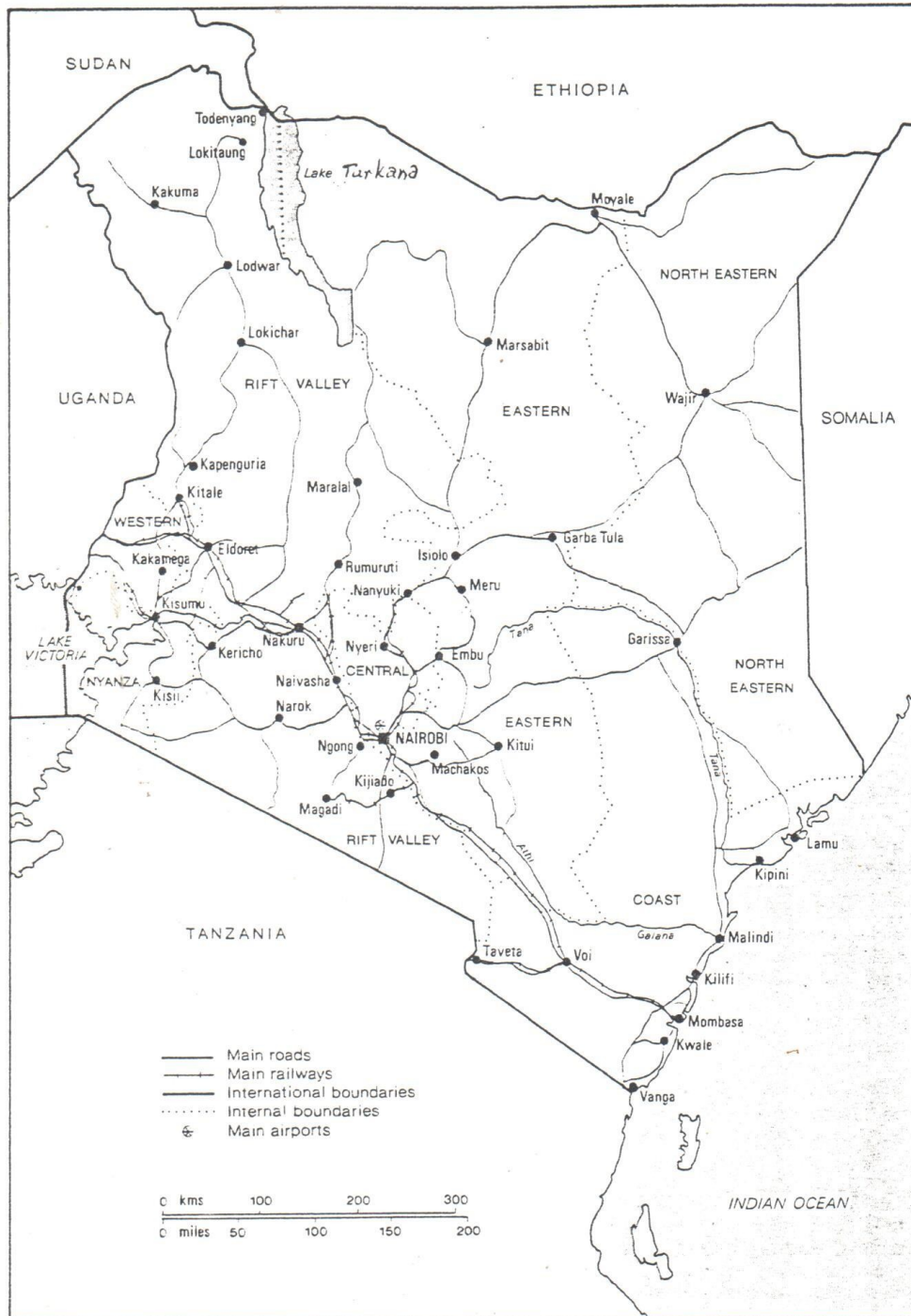


Figure 2: *Mean Annual Rainfall (in inches)*

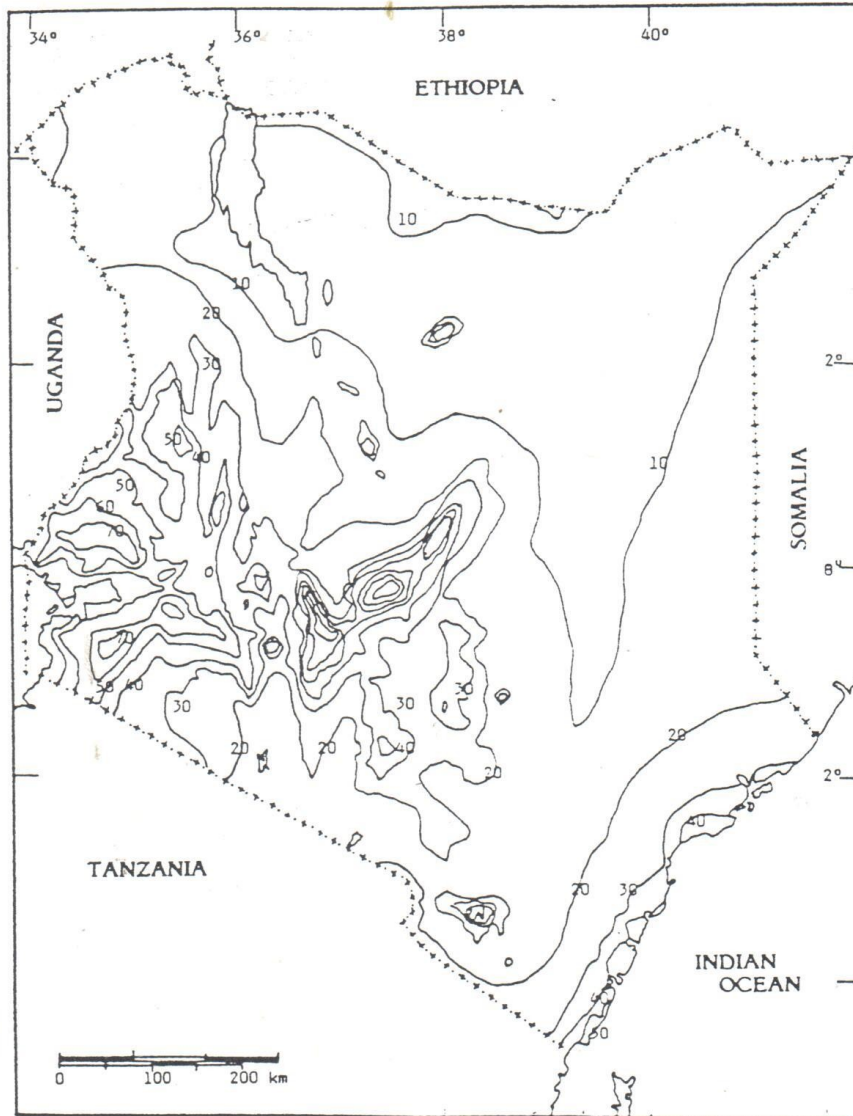


Figure 3: Climatic Regions of Kenya

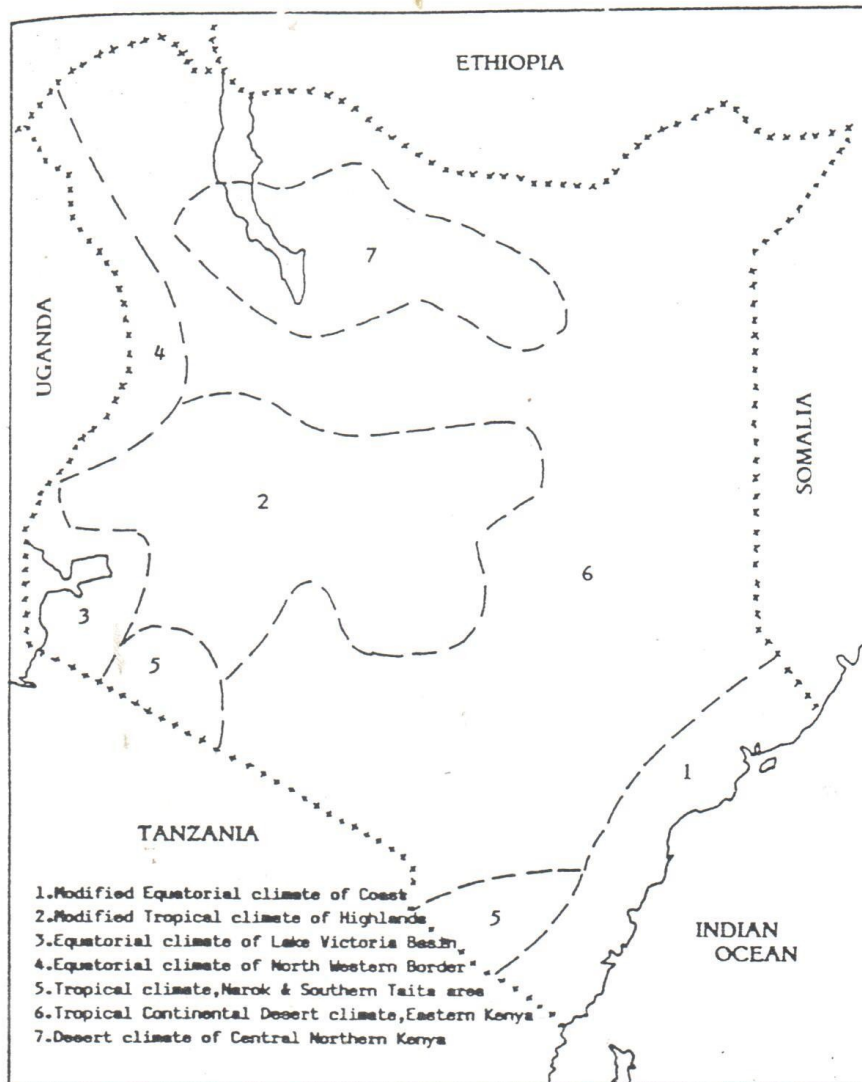


Figure 4: Drainage Areas of Kenya

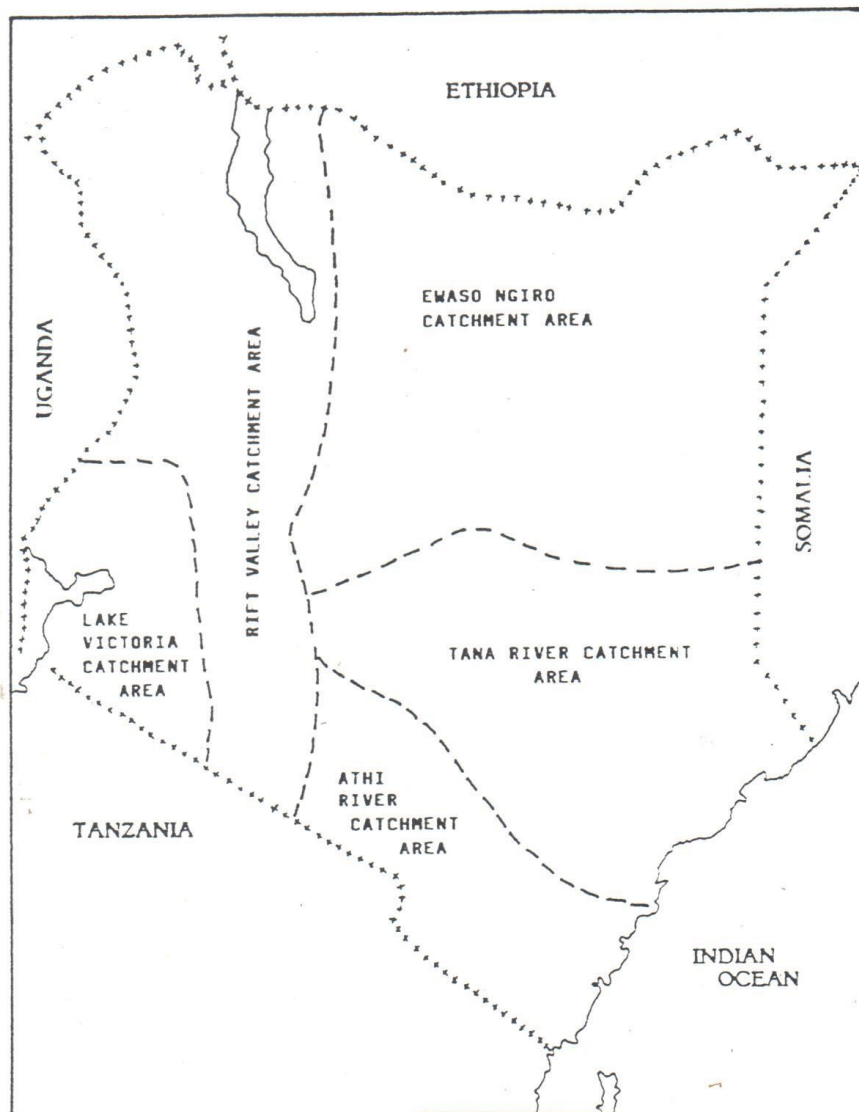


Figure 5: Geological Map

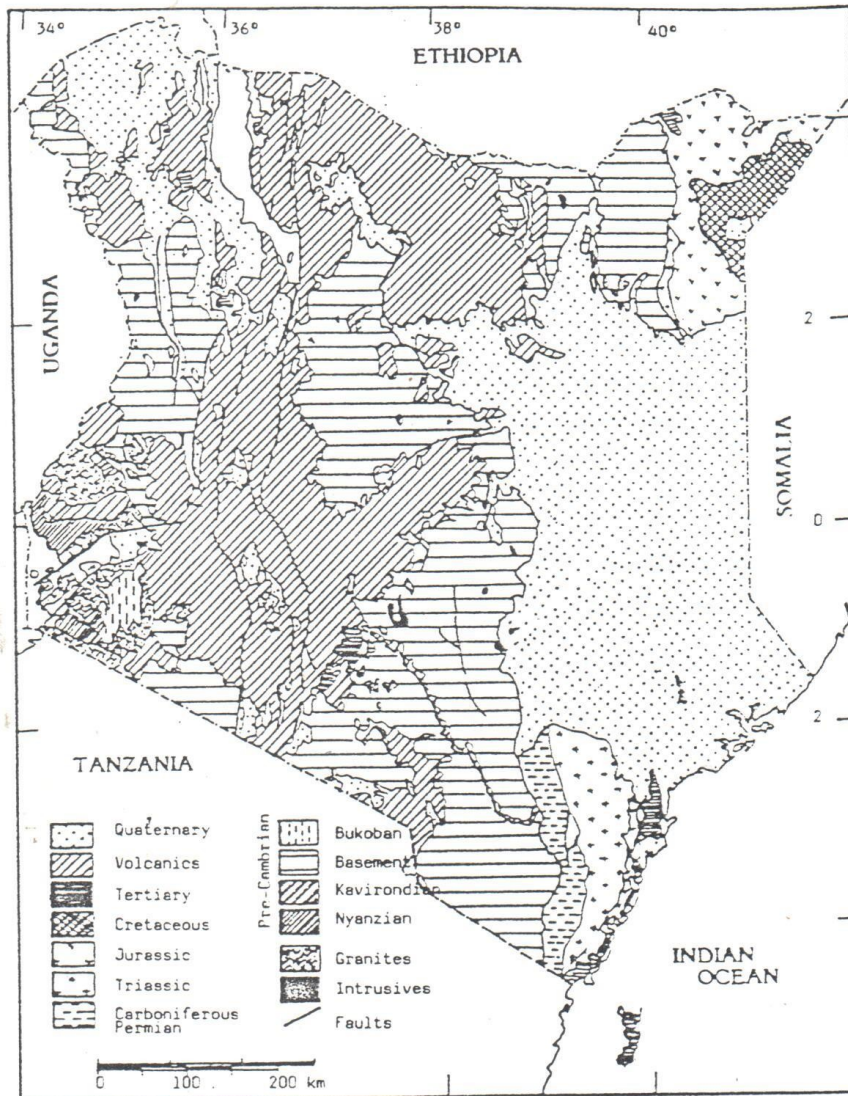
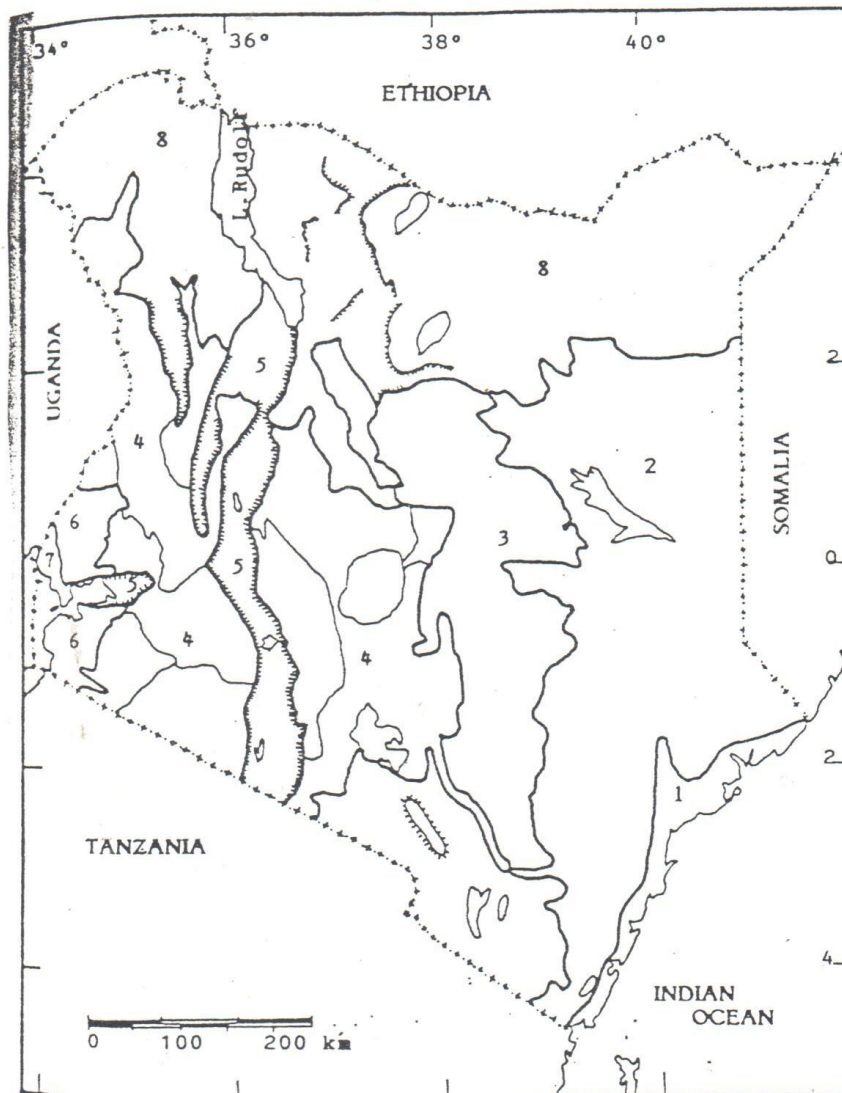


Figure 6: *Physiographic Map*



Physiographic Regions of Kenya

- | | |
|--------------------------|----------------------------|
| 1. The Coastal Plain | 2. The Duruma-Wajir Belt |
| 3. The Low Foreland Belt | 4. The Kenya Highlands |
| 5. The Kenya Rift Valley | 6. The Nyanza Lowlands |
| 7. The Nyanza Plateau | 8. The Northern Plainlands |

Table 1: Kenya's Ecological Zones

Zone	Area (Sq. km)	% of Total Land
I	5,960	1
II	51,230	9
III	51,230	9
IV	51,230	9
V	296,020	52
VI	113,849	20
Total	569,249	100

Source: Ministry of Agriculture, Nairobi.

Table 2: Rainfall Distribution

Rainfall (mm)	Area (Sq. km.)	% of Total Area	Accumulated Percentage
Under 255	157,600	27.0	27.0
255-510	209,000	35.9	62.9
510-760	105,800	18.1	81.0
760-1015	48,700	8.4	89.4
1270-1525	19,400	3.3	97.6
1525-1780	9,600	1.6	99.2
1780-2030	3,900	0.7	99.9
Over 2030	500	0.1	100.0

Source: Ministry of Agriculture, Nairobi.

Table 3: Pesticides Used in Kenya

	Annual Average Pesticide Quantity (Tonnes)
Fungicides	3,610
Insecticides	876
Herbicides	656
Fumigants	472
Acaricides	67
Nematocides	27
Biological Insecticides	24
Soil Sterilants	18
Rodenticides	12
Hormones	10
Insect Attractants	1
Seed Dressing	1

Source: National Agricultural Laboratories, Nairobi.

The distribution of the eco-climatic zones is closely related to the rainfall patterns. Kenya's eco-climatic zone I is the smallest, covering slightly less than 1.0 per cent of the country. This zone is of low agricultural potential and its land-uses are limited to tourism and water catchment protection. The zone covers very high altitudes above the forest line and is mainly barren except for scattered pockets of Afro-alpine moorland and grassland.

Zone II, which is found at altitudes above 2,100 metros represents 9.0 per cent of the country and is crucial economic importance. This zone covers the area with the highest agricultural potential in Kenya and supports most of the indigenous and plantation forests. In addition, the zone is also used for livestock production and cotton yields are high at lower altitudes.

The medium agricultural potential of the country falls in Zone III. Most of Kenya's large-scale mixed farms fall in this zone and the region also supports hybrid maize, wheat and barley. Small-scale farmers in this region grow maize, cotton, peanuts, pulses and oilseeds. The medium agricultural land at the coast is used for growing cashewnuts and coconuts.

Zone IV is relatively dry with marginal agricultural potential where subsistence agriculture and livestock keeping are dominant among small-scale farmers. This is also the region that supports from of the country's wildlife resources. The rest of the wildlife is concentrated in Zone V which is arid and received up to 500 mm of rainfall a year. Zone VI is situated in Northern Kenya and is dominated by pastoralists who respond to the delicate ecological setting by moving their livestock to areas with water and vegetation.

1.2 Population

Kenya's population has been rising rapidly and is currently estimated at 22 million of which about 15 per cent in the urban areas. ^(Table 4) The population in 1979 was relatively youthful, with about 50 per cent being under 15 years. In 1948 the population was put at 5.4 million and rose to 8.6 million in 1962. It rose to 10.9 million in 1969 and stood at 15.3 million in 1979. Kenya has the highest population growth rate in the world. Before 1962 the annual growth rate was 3.0 per cent. It rose to 3.3 per cent between 1962 and 1969 and reached 3.8 in 1979. Current estimates range from 3.9 per cent to 4.1 per cent.

Table 4: *Projected Population Growth*

Year	Case A	Case B	Case C
1980	16,667	16,667	16,667
1981	17,342	17,342	17,342
1982	18,035	18,047	18,044
1983	18,748	18,784	18,775
1984	19,482	19,555	19,536
1985	20,241	20,365	20,333
1986	21,021	21,212	21,163
1987	21,826	22,100	22,030
1988	22,657	23,030	22,936
1989	23,513	24,009	23,883
1990	24,397	25,034	24,872
1991	25,308	26,109	25,905
1992	26,247	27,236	26,985
1993	27,214	28,418	28,113
1994	28,211	29,657	29,292
1995	29,237	30,956	30,522
1996	30,292	32,315	31,806
1997	31,375	33,738	33,144
1998	32,487	35,226	34,538
1999	34,792	36,782	35,991
2000	34,792	38,409	37,505

Case A: Assuming fertility decrease to 5.5 by end of the century and a decrease in mortality.

Case B: Assuming constant fertility but decrease in mortality.

Case C: Assuming that both fertility and mortality rates will remain constant.

Projections A and B assume that by the end of the century, the life expectation at birth will have increased to 58.8 years for males and 61.5 years for females and infant mortality rates would have dropped to 60 per 1000 live births.

Source: UNEP, Kenya: *National State of the Environment*.

Table 5: *Contraceptive Prevalence by Method (Per Cent)*

Method	Per Cent Using
Pill	2.9
Condom	0.2
Female Scientific	0.1
Injection	0.4
Male sterilization	0.0
Female sterilization	1.9
IUD	2.5
Rhythm	3.8
Douche	0.0
Withdrawal	0.4
Abstinence	2.6
Other	0.1

Source: Central Bureau of Statistics, *Contraceptive Prevalence Survey 1984*.

The high growth rate is accounted for by changes in fertility and mortality. Migration has played a negligible role in the population trends. The fertility level increased from 6.5 births per woman in the early 1950s to about 8.1 in the early 1980s. This high fertility rate has maintained the birth rate at high levels, between 50 and 55 per 1000 over the last three decades.

In the meantime, the death rate has been steadily declining due to improved health care and sanitation. The death rate decreased from 20 per 1000 in 1962 to 12 per 1000 in the mid-1980s. The country's infant mortality rate declined from 119 per 1000 live births in 1969 to 83 in 1977 and 81 in 1983. Life expectancy at birth has risen from 49 years in 1969 to 54 years in 1979 and 57 years in 1983.

Kenya's high population growth rate has been a major source of policy concern, especially in view of the limited arable land and urban unemployment. The "population problem" is being manifested in high dependency ratio, unemployment, unplanned parenthood and growing demand of public services such as education, health, nutrition and shelter. These problems have been compounded by the pressure on the Kenyan economy to reduce public sector spending.

Most of the activities in family planning have in the last two decades conducted by non-governmental organizations (NGOs), especially the Family Planning Association of Kenya. In 1967 the government launched the National Family Planning Programme which was voluntary and respected traditional values.

This programme did not achieve much and the government launched a five-year Family Planning Programme in 1975 which aimed at reducing the population growth rate from 3.3 per cent per year to 3.0 per cent per year. This reduction was not achieved and instead the population growth rate increased.

In 1982 the government set up the National Council for Population and Development to formulate population policies and co-ordinate population activities in the country. The aim of the Council was to reduce the population growth rate to 3.3 per cent per year by 1988 through the recruitment of 1.5 million acceptors of family planning methods. It is doubtful whether the target has been achieved (Tables 5 and 6).

The factors which contribute to Kenya's high growth rate are relatively well understood. What have not been adequately studied are the main reasons why the

Table 6: Attendance at Family Planning Clinics, 1975-1984

ATTENDANCE AT FAMILY PLANNING CLINICS, 1975-1984

Year	First Visits	Percentage Increase	Re-Visits	Percentage Increase
1975	53,472	3.9	244,244	3.3
1976	61,227	14.5	271,532	11.2
1977	67,978	11.0	849,839	212.9
1978	74,715	9.9	302,799	—
1979	64,806	—	308,257	1.8
1980	65,411	0.9	350,358	13.7
1981	58,697	—	296,900	—
1982	64,941	10.6	344,365	15.9
1983	63,400	10.2	354,437	2.9
1984	84,456	18.7	380,134	7.3

ATTENDANCE AT FAMILY PLANNING CLINICS BY PROVINCE, 1981-1982

Province	First Visits		Re-Visits		Acceptors	
	1981	1982	1981	1982	1981	1982
Nairobi	18,233	21,055	98,104	113,016	17,804	20,540
Coast	4,291	6,371	24,688	33,037	4,255	6,351
North Eastern	174	233	413	774	166	233
Eastern	7,093	7,457	42,463	53,677	6,979	7,418
Central	15,698	15,106	77,797	83,804	15,469	14,952
Rift Valley	6,351	7,207	28,207	32,853	6,334	7,160
Nyanza	3,418	3,594	12,338	12,883	3,366	3,565
Western	3,439	3,625	12,890	13,336	3,414	3,604
Province not Stated	—	293	—	985	—	293
Total	58,697	64,941	296,900	344,365	57,787	64,116

ATTENDANCES AT FAMILY PLANNING CLINICS BY PROVINCE, 1983-1984

Province	First Visits		Re-Visits		Acceptors	
	1984	1985	1984	1985	1984	1985
Nairobi	19,791	21,178	115,929	58,998	19,514	20,670
Coast	4,411	5,953	21,839	29,094	4,432	5,953
North Eastern	283	605	799	1,446	285	605
Eastern	14,253	30,201	68,953	59,289	14,268	30,044
Central	20,547	12,869	94,809	63,956	20,527	12,739
Rift Valley	10,751	9,375	36,444	27,785	10,692	9,313
Nyanza	5,878	7,829	16,707	23,231	5,884	7,766
Western	5,438	7,634	15,037	19,752	5,452	7,590
Province Not Stated	3,104	—	9,617	—	3,048	—
Total	84,456	95,644	380,134	283,551	84,102	94,681

Source: Health Information System (MOH).

diffusion of family planning technology has been so slow. Various factors socio-cultural have been identified but they have not been located in a historical perspective.

For example, the Kikuyu of central Kenya have in the last 100 years gone through through major population declines as a result of epidemics, famines, wars and displacement. Family planning measures are being applied to a culture that is already tuned to population recovery.¹

Recent surveys have shown that the majority of Kenyan women, 81 per cent, are aware of at least one contraceptive method, especially the pill. The obstacle to the use of contraceptives is largely the attitudes of men. Only about 49 per cent of married women currently not using contraceptives have husbands who approve their use.

Given the fact that the population is not likely to stabilize in the near future, the thinking in Kenya is starting to shift towards treating it as a resource and not simply a problem that can be solved using technical fixes. By the turn of the century there will nearly 35 million Kenyans with a workforce of 14 million people.

According to government estimates, the average GDP will have to grow by 5.6 per cent a year to accommodate the population.² But this high growth rate can only be achieved through increased application of science and technology to development. However, the government has yet to formulate explicit science and technology policies. It is just a matter of time before such policies are formulated.

1.3 State of the Environment

The rising population and changing patterns of consumption are starting to put pressure on the resource base. The effects of such pressure are reflected in the state of the environment.³ These changes affect different social groups in varied ways. One of the areas that is raising environmental concern is land degradation and soil loss. This is important since agriculture remains the main source of economic growth. Moreover, land degradation and soil loss have implication for other sectors of the economy such as energy and fisheries.

1. Juma and Karanja, *Land and Population in Central Kenya*.

2. Republic of Kenya, *Economic Management for Renewed Growth*.

3. UNEP, *Kenya: National State of the Environment Report*.

Some parts of the country, especially Machakos, Kitui, Kisii, Kakamega, Nyeri, Murang'a, Kirinyaga, Kiambu and parts of the Coast have reached their inner limits of productivity and further output will have to rely on increased technological inputs. These changes in land productivity are compounded by soil erosion, which is prevalent in most arid and semi-arid areas.

High agricultural potential areas are also experiencing soil loss. For example, some parts of Central Province have recorded losses of 20 tonnes per hectare per year. Recent estimates have shown that soil loss in the high agricultural potential areas loss about 2.5 cm of their top soil in 15 years. This rate is much higher than the rate at which soil is formed naturally. Gully erosion is common in the high and medium agricultural potential areas of Bungoma, Central, Eastern and Nyanza Provinces.

These concerns led to the formation of the Special Presidential Commission for Soil Conservation and Afforestation which has initiated a number of projects in various parts of the country. Numerous community groups and international organizations are involved in soil conservation programmes. However, the task is enormous considering the fact that nearly 80 per cent of the country is affected by various degrees of desertification.

Future development strategies and technological innovation will have to take into consideration the imperatives for long-term natural resource sustainability. Technologies that contribute to resource conservation will need to be developed. So far the picture of the state of the environment in Kenya is still fragmented and there is an urgent need to undertake national surveys to determine the baseline for genetic and other resources which are currently being degraded or lost.

Other environmental concerns relate to industrial pollution and the use of agricultural chemicals. Not much is known of the state of industrial pollution in Kenya although the government has in recent years shut down a number of firms polluting the environment. The few companies that have been found releasing pollutants into the environment have invoked economic arguments against installing anti-pollution devices. They argue that such installation would raise their production costs.

Since environmental pollution control was not a requirement in the early stages on the design of Kenya's investment strategies, industrialists have often ignored the need to curb their release of pollutants. In some cases, the pollutants have been released into water streams used by the poor as their main source of water. Because of limited

knowledge and political power by the poor, the effects of the pollutants on their lives and ecosystems have gone unnoticed.

Likewise, the environmental and health implications of agricultural chemicals have not been adequately documented. So far, the country uses up to 62 insecticides, 76 herbicides and 40 fungicides (Table 3). Some of these have either been banned or their use has been restricted in the industrialized countries. There is growing concern over the use of pesticides in Kenya but the absence of case studies on the effects of the chemicals has made it difficult to argue for policy change.

Public health requirements for the handling and use of agricultural chemicals are not usually followed and farm workers in various parts of the country are exposed of dangerous levels of pesticides and herbicides. This is partly because of ignorance and partly because of the lack of enforcement mechanisms. The law is outmoded and the recent technical knowledge on the risks of some of the chemicals has not been used to make the necessary amendments.

A few cases of occupational hazards and exposure to dangerous chemicals have appeared in court by the unions have not been effective in taking up the matter as a national issue. As a result, the workers, especially the very poor who are usually hired as casual labour and have limited legal claims, knowledge and access to information of the risks posed by the chemicals they handle.

1.4 Education

Kenya spends most of its public expenditure on education, accounting to over 35 per cent of the recurrent expenditure and 66 per cent of the government's expenditure on social services. Most of the funds allocated to education, some 55 per cent, is spent on primary education. The number of educational institutions has increased considerably in the last few years. In 1983, the number stood at 14,218 and rose to over 15,830 in 1986. Most of this increase was accounted for by primary schools (Table 9).

The growth in the number of primary schools, however, does not reflect the rise in the number of classes, which grew by 9.0 per cent over the 1985-1986 period. This growth in the number of schools and pupils in the country has placed excessive pressure on the supply of school equipment as well as classrooms. This is another area

Table 7: Enrolment in Teachers' Training Colleges, 1983-1985

	Academic Year	Number								
		1983			1984			1985		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Secondary School Teachers*—										
SI/Dip.	1st	774	406	1,180	899	489	1,388	874	432	1,306
	2nd	610	380	990	808	383	1,191	822	481	1,303
	3rd	159	32	191	174	36	210	161	31	192
Total		1,543	818	2,361	1,881	908	2,789	1,857	944	2,801
Primary School Teachers—	1st	3,589	2,340	5,929	4,017	2,682	6,699	3,750	2,499	6,249
	2nd	3,204	2,163	5,367	3,366	2,492	5,858	3,808	2,663	6,471
Total		6,793	4,503	11,296	7,383	5,174	12,557	7,558	5,162	12,720
Special Education					37	30	67	37	30	67
Total		8,336	5,321	13,657	9,301	6,112	15,413	9,452	6,136	15,588

Source: Ministry of Education.

*Enrolment in all Diploma Colleges.

Table 8: Secondary School Enrolment by Province, 1982-1985

	ENROLMENTS '000				FORM 1 ENROLMENT AS PERCENTAGE OF PREVIOUS YEAR'S STANDARD 7			
	1982*	1983*	1984*	1985*	1982	1983*	1984*	1985
Nairobi	34.4	38.5	31.7	25.3	73.7	80.2	64.4	—
Coast	29.2	28.6	26.9	21.0	36.4	37.6	33.6	—
North Eastern	1.4	1.5	1.3	1.2	46.8	47.5	35.2	—
Eastern	70.1	84.4	89.6	64.4	31.0	33.0	34.9	—
Central	98.8	119.5	124.8	92.5	37.3	38.5	47.0	—
Rift Valley	64.3	68.6	80.8	75.4	28.8	29.9	33.4	—
Nyanza	83.0	86.9	80.8	67.8	35.1	37.5	48.2	—
Western	56.8	65.7	75.0	54.4	34.7	43.3	45.6	—
Total	438.4	493.7	510.9	402.0	35.0	38.9	39.1	—

Source: Ministry of Education.

*Provisional.

Table 9: Primary School Enrolment, 1981-1985

	Number				
	1981*	1982**	1983**	1984**	1985**
Central Province					
Kiambu	186,984	187,165	191,719	191,814	224,815
Kirinyaga	83,742	84,846	89,806	89,893	97,104
Murang'a	198,573	202,986	213,117	219,381	236,405
Nyandarua	70,878	72,453	75,467	79,080	84,818
Nyeri	158,862	161,910	164,053	163,362	176,631
Thika Municipality	—	5,876	7,096	6,842	8,537
Total	699,039	715,236	741,258	750,373	828,310
Coast Province					
Kilifi	81,550	82,584	91,308	94,016	102,803
Kwale	52,299	56,466	60,008	662,227	59,601
Lamu	8,585	9,438	9,835	10,453	10,946
Mombasa Municipality	44,199	46,419	48,938	49,556	55,733
Taita/Taveta	43,309	45,534	47,359	48,274	52,072
Tana River	12,490	14,447	15,726	17,341	19,048
Total	242,432	254,888	273,174	281,867	300,203
Eastern Province					
Embu	76,135	79,746	80,382	81,736	87,724
Isiolo	6,143	7,308	7,511	7,342	9,008
Kitui	133,452	143,816	145,630	148,283	153,112
Marsabit	6,575	7,739	8,410	9,071	10,958
Machakos	316,030	317,178	343,077	243,758	352,743
Meru	209,807	213,171	222,892	222,561	233,712
Total	748,142	768,958	807,902	812,751	847,257
Nairobi	102,266	105,549	107,706	110,902	123,573
North-Eastern Province					
Garissa	3,892	4,987	5,516	5,660	7,318
Mandera	4,165	4,615	5,240	5,861	6,761
Wajir	4,052	4,495	4,700	5,284	5,853
Total	12,109	14,097	15,456	16,284	19,932
Nyanza Province					
Kisii	257,321	269,512	267,050	269,860	285,099
Kisumu	140,439	126,393	134,221	128,933	132,878
Kisumu Municipality	—	23,782	25,123	26,449	26,928
South Nyanza	230,135	243,555	248,387	249,390	269,049
Siaya	149,518	150,768	160,981	158,435	193,636
Total	777,413	814,010	835,762	833,067	907,590
Rift Valley					
Baringo	54,393	58,005	63,525	66,497	65,701
Nakuru	146,353	129,795	138,118	152,992	156,900
Nakuru Municipality	—	20,415	21,785	22,547	24,693
Kericho	192,934	192,389	204,019	200,134	220,666
Laikipia	35,230	37,972	41,057	40,933	44,219
Narok	33,158	36,271	38,755	42,571	49,484
Kajiado	26,661	28,164	31,088	31,006	31,126
Samburu	9,051	5,751	11,089	11,774	12,806
Keiyo Marakwet	47,331	51,675	51,681	53,261	61,165
Nandi	86,413	87,835	93,796	98,348	105,566
Trans Nzoia	69,401	71,743	87,491	88,394	87,070
Uasin Gishu	81,428	77,217	83,333	84,957	90,901
West Pokot	30,063	31,963	33,166	32,587	33,263
Turkana	14,065	17,687	19,028	19,168	21,072
Eldoret Municipality	—	8,413	8,814	9,320	11,587
Kitale Municipality	—	4,130	4,723	4,735	5,391
Total	826,481	859,425	931,468	959,224	1,021,610
Western Province					
Bungoma	167,739	174,560	184,145	184,865	196,613
Busia	86,404	88,350	91,406	93,012	95,588
Kakamega	319,137	325,072	335,545	337,366	361,738
Total	573,280	587,982	611,096	615,243	653,939
Total	3,981,162	4,120,145	4,323,822	4,380,232	4,702,414

Source: Ministry of Education.

*For 1981, Enrolment figures for Municipalities were incorporated in the respective districts.

**Provisional.

that could benefit from intermediate technologies for school equipment and construction. Since the school syllabi emphasize the use of local material for teaching aid, education could provide a suitable environment for local innovation.

This has already been started through the introduction of the 8-4-4 system which stresses technical subjects. However, there is still a need to stimulate the production of teaching aid and other facilities of the rural schools, which are the most affected by the lack of supplies. The introduction of the 8-4-4 system is likely to have implications for the capital goods industry as well since the teaching of the technical subjects will require the use of various tools for carpentry, masonry and others. So far many of the tools used in these trades are imported while they could be produced locally.

It is notable that the decision to introduce the 8-4-4 system was largely in response to the need to alleviate rural poverty. This makes education a significant resource in dealing with the country's long-term problems. The restructuring of the education system has also been accompanied by the increase of the number of universities in the country. In addition to Nairobi and Kenyatta Universities, the government has also established Moi University which will deal mainly with the sciences. Egerton University has also been established to deal with agricultural subjects.

2. POLITICAL CONTEXT

2.1 *Domestic Scene*

Kenya achieved its independence from Britain in 1963 following a long period of constitutional reform. Efforts to liberate sections of the country through armed struggle were defeated in the mid-1950s and the colonial administration initiated a number of constitutional measures which was the country become independent while at the same time retaining the main economic institutions that had been introduced over the colonial period.

This smooth transitional process has been over the years a source of both growth and income inequality in the country. The structural continuity has contributed to a measure of political stability in the country while creating conditions for the

2.2 *Political Philosophy and Practice*

Kenya's political philosophy was first outlined in 1965 in a landmark sessional paper as African socialism. This philosophy was based on the notion of collective responsibility, which is implied by the use of the word "socialism". This political philosophy was used as the basis for the country's economic planning.

Over the formative years of Kenya's identity, the theme of self-help, as manifested in the *harambee* spirit, was well cultivated. The spirit of *harambee* (or pulling together) became the galvanizing metaphor on which political activity and economic effort were built. This collective ethos gave the population a sense of identity and a measure of unity which compensated for the ethnic divisions that prevailed in the country.

More recently, President Moi has been expounding the populist philosophy of *nyaoism*, which extends the *harambee* spirit and builds on the principles of love, peace and unity. The philosophy was originally a series of statements emphasizing continuity during the transitional phase from Kenyatta to Moi. Over time, the principles have come to reflect a blend between Christian ethics, democratic principles and whatever that is left of the Kenyatta era.⁴

Under the banner of *nyayoism*, President Moi has gradually imparted on the country his style of leadership. His response to various problems has been swift and at time he has personally been involved in a wide range of matters ranging from economic management to foreign affairs. He also maintained a fluid political terrain which has kept the politicians and top civil servants on the watch for changes and adaptations in the system.

2.3 *Regional Co-operation*

Kenya for a long time been a major source of economic activity and industrial output in the Eastern African region. This was demonstrated by its dominance in the East African Community (EAC) which comprised of Kenya, Uganda and Tanzania and was built on the institutional arrangement that prevailed during the colonial period.

4. See Moi, *Kenya African Nationalism*, for a more detailed exposition of the thinking.

The EAC worked on a regulated common market supported by the East African Development Bank. The fiscal and monetary policies were harmonized and there was a joint tax service. However, the countries had separate currency arrangements, and a decentralized system of national services organized on an agency and corporate system.

This dominance became a major source of resentment as countries such as Tanzania felt that the country was being used as a base by foreign firms to exploit the region. Some Kenya policy-makers, on the other hand, felt that they were subsidizing the other economies. This period was also marked by the rise of a number of powerful businessmen in Kenya who preferred to see themselves run specific enterprises rather than leave them in the hands of the EAC.

The functioning of the EAC was further weakened by the rise of Idi Amin to power in Uganda. These problems contributed to the collapse of the EAC in 1977. Ironically, after years of accounting, it was found out that Kenya and Tanzania owed Uganda money as a result of the EAC breakup.

Following the collapse of the EAC the Kenya-Tanzania border remained closed by Kenya continued to trade with Uganda. This trade was not steady largely because of political unrest in Uganda. In the early 1980s, Kenya made efforts to develop markets in countries such as Rwanda, Burundi, Zambia and the Sudan.

However, the high cost of Kenyan products could not compete favourably in these markets. These markets also shrunk considerably over the period due to foreign exchange constraints. Furthermore, Kenya manufacturers faced major transportation problems in sending goods to these countries.

The need for regional economic integration has forced the the Eastern and Southern African countries to set up the Preferential Trade Area (PTA) which was initiated through the Economic Commission for Africa (ECA) and became operational in 1984. The PTA comprises of Burundi, Comoros, Djibouti, Ethiopia, Kenya, Lesotho, Malawi, Mauritius, Rwanda, Somalia, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.

The PTA provides tariff reductions of 10-70 per cent on selected commodities and has clearing house based at the Reserve Bank of Zimbabwe to settle intra-regional

payments on a multilateral basis. The PTA also has some 12 protocols dealing with a wide range of co-operative agreements.

The PTA emphasizes the trading of good produced by local entrepreneurs or by firms with at least 51 per cent equity participation by nationals, member states or governments. This has recently led to the old question of Kenya being used by foreign firms to take advantage of the PTA provisions.

However, Kenya has in recent years build a relatively large indigenous industrial sector which can benefit from the PTA arrangements. In order to accommodate countries such as Kenya, the PTA has provided a grace period of five years under which firms with 41-50 per cent local ownership will get 60 per cent PTA tariff reduction and those with 30-40 per cent will get 30 per cent reduction.

In recent years Kenya has made attempts to promote peace in the region. A peace agreement has been reached between Kenya and Somalia, ending a long period of suspicion and occassional hostilities. The situation on the Kenya-Uganda border has not been peaceful in recent years and both countries have remained suspicious other each other's intentions. The tension led to the exchange of fire between Kenyan and Ugandan forces in 1987.

Despite these problems, Kenya has maintained peace with its neighbours and relations with Tanzania have been improving steadily. Given the rising capacity to export manufactured goods, Kenya needs the neighbouring markets. Good relations with these countries are therefore important.

The 1988 announcement that Kenya had struck oil may change the geopolitics of the region. Since the resource is located in the northern part of the countries, more effort will be put into maintaining peaceful relations with Somalia and Ethiopia. The basis for this activity has already been established and Kenya is consolidating its position as a significant country in the region.

In 1986 President Moi was personally involved in the setting up of the Inter-Governmental Authority on Drought and Development (IGAAD) which for the first time brought together Djibouti, Ethiopia, Somalia, Kenya, Sudan and Uganda. IGAAD's main objective is to strengthen the capacity of the member countries to meet their food needs. Kenya, one of the main food-surplus countries in the region, is

expected to play a key role in providing emergency supplied to the member country. The capacity to do so will provide the country with geopolitical leverage in the region.

3. ECONOMIC DEVELOPMENT

3.1 *Economic Performance*

Kenya's economic performance and management has been one of the best in Africa despite major sources of instability such as the worsening terms of trade (Table 6). In the 1960s Kenya had one of the highest economic growth rates in Africa. This was partly because of the increasing performance of smallholder agriculture which increasing the buying capacity of a large section of the population. The growing incomes also helped stimulate domestic demand which was met through local output under the import substitution strategy.

In the early 1980s Kenya was one of the first countries in the world to accept the International Monetary Fund (IMF) conditionality. The country started cutting back on investment, which dropped from 28 per cent of GDP in 1981 to 22 per cent in 1985^(Tables 10 and 11). By 1981 the budget deficit was 9.5 per cent of GDP and the government started reducing its participation in investment project as a way of reducing public expenditure. By 1985, the budget deficit had been reduced to 4.4 per cent of GDP.

Over the 1981-1985 period, the ratio of the current account deficit to GDP was cut back from 11 per cent to 3.5 per cent. It should be noted that economic fortunes in Kenya were adversely affected by the 1984 drought which forced the country to import grain. On the whole, the Kenyan economy has been well-managed despite pressures from the international scene.

3.2 *Agriculture*

Agriculture is the most dominant economic sector in Kenya, accounting for nearly 70 per cent of the national employment and one third of GDP. The growth of this sector over the last decade has been impressive, at an average annual rate of 3.5 per cent. Despite this rate, the growth has fallen short of the rate of the population growth rate, which is estimated at nearly 4.0 per cent per year.

Table 10: *GNP Per Capita in Kenya*

Year	US\$	KShs
1963	103.8	726.60
1964	109.68	767.80
1965	107.68	753.80
1966	120.65	844.60
1967	122.71	859.40
1968	130.31	912.20
1969	133.00	931.00
1970	144.14	1009.00
1971	150.85	1056.00
1972	166.08	1162.00
1973	179.20	1254.40
1974	211.48	1480.40
1975	239.11	1673.80
1976	279.25	1954.80
1977	348.62	2440.40
1978	264.80	2648.00
1979	291.74	2917.40
1980	293.90	2939.00
1981	326.04	3260.40
1982	269.00	3480.80
1983	314.23	3770.80
1984	310.00	4340.00

Exchange rates used: 1963-1977, 1US\$ = 7.0 Kshs
1978-1981, 1US\$ = 10.0 Kshs
1982-1983, 1US\$ = 12.0 Kshs
1984 1US\$ = 14.0 Kshs

Source: Central Bureau of Statistics, Nairobi.

Table 11: *GDP at Factor Cost, 1964-1985 (K£ million)*

Year	Current Prices	Constant Prices	% Annual Growth
1964	330.1	1072.8	--
1965	328.4	1078.4	0.5
1966	382.1	1236.0	14.6
1967	405.8	1289.3	4.3
1968	442.9	1388.7	7.7
1969	476.3	1477.8	6.4
1970	518.9	1576.6	6.7
1971	570.1	1665.3	5.6
1972	688.8	1937.8	16.4
1973	789.5	2021.3	4.3
1974	936.5	2027.9	0.3
1975	1054.4	2079.4	2.5
1976	1274.2	2171.7	4.4
1977	1635.0	2360.9	8.7
1978	1780.0	2516.0	6.6
1979	1974.9	2623.3	4.3
1980	2235.4	2710.6	3.3
1981	2582.1	2860.1	5.5
1982	2944.6	2944.6	3.0
1983	3316.6	3035.0	3.1
1984	3654.5	3063.4	0.9
1985	4126.2	3189.8	4.4

Source: Central Bureau of Statistics, Nairobi.

Table 12: Imports of Principal Articles, 1977-1985

K£'000									
Article	1977	1978	1979	1980	1981	1982	1983	1984	1985
Food and Live Animals									
Milk, dry	244	67	417	5,199	5,860	1,968	2,654	5,973	2,595
Fish and fish preparations	341	364	311	277	132	101	133	84	119
Wheat, unmilled	1,969	5,899	2,441	4,996	4,468	13,912	9,289	20,806	19,066
Maize, unmilled	9	19	8	25,080	5,820	11,693	—	54,053	13,545
Rice	—	2	46	235	1,240	2,726	10,037	52	99
Malt	446	173	—	—	—	—	2	—	—
Fruit and vegetables	1,102	1,375	1,173	2,572	1,234	1,128	1,124	2,161	3,725
Sugar refined, beet and cane	3,988	4,551	1,387	439	548	498	541	373	5,717
Sugar confectionery	10	23	23	14	6	1	28	22	10
Chocolate and cocoa products	52	40	16	20	4	7	11	41	82
Tea	1,454	3,811	5,991	3,490	5,281	4,228	5,392	4,541	13,573
All other foods	3,375	5,081	3,308	5,162	5,576	4,042	8,941	6,826	6,543
Total	12,990	21,405	14,121	47,484	30,169	40,304	38,152	95,932	65,074
Beverages and tobacco									
Wines, cider and beer	571	1,140	4,185	1,126	934	970	938	722	1,026
Distilled alcoholic beverages	1,255	1,566	995	1,684	778	1,318	825	597	1,412
Tobacco, unmanufactured	1,505	4,356	2,288	320	647	294	9	91	109
All other beverages and tobacco	535	416	361	717	293	256	349	449	321
Total	3,866	7,478	7,829	3,847	2,652	2,838	2,121	1,859	2,868
Crude Materials, inedible—except fuels									
Rubber, crude	2,603	2,200	3,149	2,747	3,556	3,683	5,441	6,496	4,920
Jute, including jute cuttings and waste	1,381	1,400	845	1,601	1,762	1,333	2,152	2,321	4,981
Synthetic fibres	3,241	3,545	4,007	5,254	7,694	7,340	7,684	11,745	13,354
All other crude materials	9,504	7,050	4,533	5,602	5,906	4,824	11,051	9,370	7,895
Total	16,729	14,195	12,532	15,404	18,918	17,180	26,328	29,932	31,158
Mineral fuels, lubricants and related materials									
Coal and coke	911	1,262	885	1,281	2,671	2,826	2,630	3,715	3,957
Crude petroleum	100,158	92,338	120,085	281,720	312,767	299,806	275,241	292,420	349,273
Aviation spirit	754	807	2,097	1,370	1,143	5,614	1,865	2,981	2,092
Motor spirit	1,899	4,193	3,240	3,292	529	4,052	9,524	1,073	2,594
Kerosene, illuminating oil, jet fuel	5,540	10,116	6,507	7,405	9,166	2,583	18,737	5,227	3,187
Gas oil, diesel oil and other fuel oils	77	1,302	7,988	15,968	4,552	9,869	14,973	11,831	4,662
Lubricating oils and greases	6,928	6,844	5,760	10,158	12,838	6,733	8,158	14,080	14,878
Petroleum asphalt and bitumen	50	15	16	417	953	23	4	2	1
All other mineral fuels, etc.	1,937	2,043	1,317	3,527	3,385	3,007	2,401	4,490	3,605
Total	118,254	118,920	147,895	325,138	348,006	334,513	333,533	335,819	384,249
Animal and vegetable oils and fats									
Animal oils and fats	1,956	4,165	2,904	5,049	4,616	3,045	1,773	3,924	4,942
Vegetable oils and fats	10,853	11,541	12,654	16,973	18,944	22,659	43,735	31,240	42,241
Oils and fats, processed, and waxes	1,071	410	264	558	644	510	426	567	635
Total	13,881	16,116	15,822	22,580	24,204	26,214	45,934	35,731	47,818
Chemicals									
Chemical elements and compounds	11,551	11,254	15,430	18,983	19,672	19,689	26,503	27,523	34,856
Pigments, paints, varnishes, etc.	1,070	998	1,231	1,492	1,081	1,444	1,630	2,556	2,617
Medicinal and pharmaceutical products	10,175	13,187	11,230	15,898	17,693	18,361	19,616	19,960	23,315
Perfumery, cosmetics, dentifrices etc.	391	463	399	580	292	294	310	515	431
Soaps, cleansing and polishing preparations	754	589	898	1,502	442	564	854	734	1,073
Manufactured fertilizers—total	9,473	10,012	5,344	15,843	24,074	15,605	25,087	13,893	52,011
Nitrogenous	5,119	4,545	2,866	6,253	6,008	7,341	11,857	6,255	16,414
Phosphatic	1,929	1,039	956	3,060	4,356	3,855	1,979	290	1,756
Other	2,425	4,428	1,522	6,530	13,710	4,409	11,251	7,348	33,841
Synthetic plastic materials	9,394	10,835	16,723	20,740	17,595	19,651	21,812	33,011	37,403
Insecticides, fungicides, disinfectants, etc.	9,762	9,922	9,169	10,823	9,012	8,965	17,894	17,036	18,520
All other chemicals	11,087	11,962	11,774	15,934	13,152	13,053	12,943	17,858	16,906
Total	63,657	69,222	72,198	101,795	103,013	97,626	126,649	133,086	187,130

Table 13: Industrial Analysis of Exports*, 1977-1985

K£'000										
	1977	1978	1979	1980	1981	1982	1983	1984	1985	
Agriculture	299,227	209,303	203,351	198,995	207,290	262,427	352,269	436,440	457,397	
Forestry	1,964	2,302	1,793	1,396	2,033	2,019	2,854	1,974	1,082	
Hunting	627	669	326	732	251	302	188	656	604	
Fishing	464	452	960	323	1,099	1,208	1,318	802	1,065	
Total	302,282	212,727	206,430	201,445	210,673	265,956	356,629	439,872	460,148	
Crude petroleum and natural gas	—	—	—	—	4	—	—	—	—	
Other mining and quarrying	2,781	2,745	2,406	11,677	20,157	12,693	12,899	14,697	17,670	
Total	2,781	2,745	2,406	11,677	20,161	12,693	12,899	14,697	17,670	
Food, beverages and tobacco	35,178	30,315	39,042	40,882	51,841	40,779	47,421	54,767	60,578	
Textiles and clothing	2,345	2,772	2,600	3,667	3,178	2,519	3,090	16,350	21,565	
Leather and footwear	2,484	2,713	4,643	5,078	2,659	2,105	1,723	2,560	2,722	
Wood, cork and furniture	2,707	2,631	2,877	3,692	3,229	3,774	3,366	3,348	3,539	
Paper and printing	5,568	4,248	6,149	7,794	4,116	6,087	5,880	5,905	5,339	
Animal and vegetable oils and fats	520	617	462	509	565	237	1,638	3,481	2,434	
Chemicals and rubber	20,908	18,323	23,830	24,945	23,983	27,912	28,978	32,566	37,170	
Petroleum and coal products	84,007	69,728	77,411	162,882	164,310	149,523	129,271	142,817	119,523	
Building materials, pottery and glass	9,978	10,181	9,604	11,242	15,665	21,298	25,717	20,335	17,731	
Basic metal industries	1,723	2,264	2,502	2,838	2,667	3,681	2,941	4,888	8,881	
Metal manufacture	4,717	5,041	3,268	4,738	4,316	3,731	5,157	5,005	6,438	
Machinery	2,237	1,947	1,538	2,142	1,374	1,359	2,020	2,426	2,845	
Transport equipment	685	842	649	1,634	2,662	1,523	1,235	746	625	
Miscellaneous manufacturing	2,133	2,833	2,105	2,455	2,419	2,548	5,099	5,083	7,959	
Total	175,190	154,455	176,680	274,498	282,984	267,076	263,536	300,073	297,999	
Water and electricity	—	28	—	—	—	—	—	—	—	
Other services	5	10	17	25	45	12	12	170	191	
Total	5	38	17	25	45	12	12	170	191	
Total	480,259	369,965	385,534	487,644	513,863	545,737	633,078	754,813	776,009	

Source: Central Bureau of Statistics.

*Includes Domestic Exports but excludes re-exports.

Table 14: Key Economic Indicators, 1981-1985

	1981	1983	1985
<i>Growth Rates (%)</i>			
Gross Domestic Product (GDP)	6.0	3.2	4.4
(Agriculture)	6.0	4.5	3.5
(Industry)	4.4	2.3	5.0
Gross National Income (GNY)	-1.6	1.3	0.2
GNY Per Capita	-5.4	-2.6	-3.6
Money Supply	13.3	4.9	6.7
Domestic Credit	24.2	0.1	13.0
Consumer Price Index (CPI)	12.6	14.5	10.7
<i>Percentage of GDP (%)</i>			
Consumption	80.6	79.9	80.6
Gross Domestic Investment	28.4	21.1	21.8
Gross National Savings	17.3	18.9	14.8
Budget Deficit (FY)	9.5	3.1	4.4
Current Account Deficit	11.1	2.3	3.5
<i>Other Ratios</i>			
Reserves as Weeks of Imports	6.4	13.9	12.9
Debt Service Ratio (%)	17.9	26.4	32.1

Source: The World Bank, Washington, DC.

Table 15: Livestock Population in Kenya ('000 Head)

Type	Annual Average (1964-1972)	Annual Average (1973-1981)	1984	1985
All Cattle	8,634	10,158	9,722	11,500
Dairy	565	1,163	2,040	-
All Sheep	4,001	5,545	6,419	7,000
Wool Sheep	556	646	551	-
Goats	5,451	6,974	6,854	8,000
Pigs	45	64	85	-
Poultry	10,563	14,584	15,372	19,000
Camels	1,265	638	-	600
Donkeys	163	183	-	300
Rabbits	-	70	145	-

Source: Ministry of Agriculture and Livestock Development, Nairobi.

The sector is currently dominated by smallholders, who hold 20 hectares or less of land. At this figure, smallholders account for nearly 75 per cent of the total agricultural output, 55 per cent of the marketed yield, over 60 per cent of the land devoted to arable agriculture, some 85 per cent of total agricultural employment and nearly 70 per cent of the total employment in the country.

By 1980, smallholders were producing nearly 60 per cent of the marketed coffee and beef, half of the marketed milk, 45 per cent of the marketed maize and sugarcane, 35 per cent of the marketed tea and nearly all of the marketed cotton, pyrethrum, pulses, tobacco and rice. This output is derived from relatively small holdings averaging 2.0 hectares with over 50 per cent of the smallholders owning less than one hectare, and 75 per cent under two hectares of land. There are about 1.7 million smallholdings in Kenya.

The prevalence of smallholder agriculture in Kenya offers opportunities for the diffusion of intermediate technologies. Recent experience has shown that smallholders tend to adopt new technologies relatively faster than their large-scale counterparts whose technological flexibility is limited by the ownership of large-scale machinery than cannot be scrapped easily. Smallholders, on the other hand, tend to start off with limited technological commitments and are therefore more likely to adopt intermediate innovations.

Furthermore, these possibilities are backed by the fact that smallholders do not have much option in adopting large-scale machinery unless if they are operating collectively. Since the trends in agricultural output in Kenya are towards smallholders, there are opportunities for increased use of intermediate technologies, especially as the capacity of the local population to innovate increases with time.

Recent studies have shown that hand tools are the main technology for land preparation, accounting 84 per cent of the 3.1 million acres cultivated in Kenya. These tools are simple and include *pangas* (machetes), *jembes* (hoes) and fork *jembes*. The rest is accounted for by ox power (12 per cent) and tractors (3.5 per cent).⁵ There seems to be a big technological gap between the hand tools, which are used by the majority of smallholders, and the tractors used in large farms. Intermediate innovations may fill this gap.

5. Oluoch-Kosura, W. (1983), *An Economic Analysis of Farm Mechanization*.

Table 16: *Imports of Agricultural Equipment*

Year	Mechanized Equipment	Tractors		Hand Tools	
	Value K£'000	Quantity Units	Value K£'000	Quantity Units	Value K£'000
1974	—	818	1,361	—	129
1975	6,336	1,388	3,129	445	132
1976	7,057	1,271	4,098	772	222
1977	16,602	2,753	10,280	618	439
1978	18,575	2,657	11,335	575	433
1979	7,568	771	3,111	812	627
1980	1,872	5,678	6,883	852	585
1981	4,170	1,242	7,089	599	603
1982	4,612	791	5,699	139	239
1983	2,175	971	3,805	139	125

Source: Central Bureau of Statistics, Nairobi

The agricultural sector will continue to be a potential source of technological innovations. This is partly because the current development strategy aims at facilitating agro-industrial processing. Such a strategy will require that rural innovations be based on the need to add value to currently produced raw materials.

3.3 *Formal Industry*

Kenya's industrial sector is one of the largest in Sub-Saharan Africa. By the mid-1980s, the sector had nearly 560 medium-sized and large-scale, 720 small-scale and 1600 micro enterprises with a labour force of 159,000 people. The first decade of economic growth was marked by the rapid expansion of the industrial sector, especially as a result of increases in agricultural activity and growth of income.

Over the period the country adopted an import substitution strategy which aimed at raising industrial output, reducing balance of payments pressures, increasing the participation of indigenous Kenyans in the economy and boosting high income employment. This strategy was supported by increased government participation in industry, subsidized interest rates and an overvalued exchange rate that reduced the importation of capital and intermediate goods.

This strategy helped in creating a nascent indigenous industry. Following the 1973-4 oil crisis, the industrial sector started having problems. The situation was worsened by the collapse of the East African Community in 1977 which had provided a large market for Kenyan products.

The import substitution strategy was relatively successful in terms of reducing imports which, as a share of domestic supply declined from 36.4 per cent in 1980 to 19.3 per cent in 1985. Over the same period, exports as a share of gross output declined from 18.9 per cent to 7.5 per cent (Tables 15, 16, 17, 18 and 19).

Kenya's import policy is aimed largely at managing foreign exchange and protecting the local industry. Import control and foreign exchange management are done by the Central Bank and the Import Management Committee which consists of representatives from the Ministries of Finance and Planning, Commerce and Industry and the Central Bank.

Table 17: Sources of Growth in the Manufacturing Sector, 1976-1983
(Percentage)

Subsector	Export ¹ Expansion	Import ¹ Substitution	Domestic Demand Expansion
<i>Expanding Sectors</i>			
Beverage and tobacco	4.04	11.70	84.27
Textiles	-2.79	71.09	31.70
Clothing	0.09	58.80	41.11
Leather products & footwear	-75.29	82.43	92.87
Wood and cork	-9.56	11.65	97.90
Paper and paper products	-19.28	43.92	75.36
Printing and publishing	-1.34	28.67	72.67
Industrial chemicals	-7.14	75.33	31.82
Petroleum & other chemicals	-12.98	28.72	84.26
Rubber products	-1.31	39.51	61.80
Plastic products	1.05	47.23	51.72
Pottery and glass products	-26.08	100.02	25.87
Non-metallic mineral products	19.57	12.20	68.23
Metal products	-0.70	79.33	21.37
Electrical machinery	-2.15	55.86	46.29
Transport equipment	-0.13	80.27	19.86
TOTAL	-4.84	64.04	40.80
<i>Contracting Sectors</i>			
Furniture and Fixtures	-13.45	0.66	-87.21
Nonelectrical machinery	-23.23	241.14	-317.91
Miscellaneous manufactures	-0.75	23.46	-122.71

1. Manufactured exports and imports are defined to include processed foods, processed industrial supplies, processed fuels, machinery and equipment, transport equipment and consumer goods.

Source: World Bank, Washington, DC.

Table 18: Industrial Output, Imports and Exports (Million K\$)

Year	Gross Output	Output Minus Export	Output Plus Export	Import as % of Domestic Supply	Import as % Domestic Supply	Domestic Supply
1972	281.2	63.8	174.0	390.4	44.3	22.6
1980	1,360.1	257.4	630.3	1,733.0	36.4	18.9
1981	1,710.0	269.4	587.7	2,028.3	29.0	15.8
1982	2,054.1	252.7	556.1	2,357.5	23.6	12.3
1983	2,425.6	253.2	595.2	2,767.6	24.5	10.4
1984	2,956.7	274.9	700.4	3,382.2	20.7	9.3
1985	3,535.6	263.8	782.3	4,054.1	19.3	7.5

1. Manufactured exports and imports are defined to include processed foods, processed industrial supplies, processed fuels, machinery and equipment, transport equipment and consumer goods.

Source: Central Bureau of Statistics, Nairobi.

Table 19: *Import Ratios in Supply for Manufactured Goods, 1976-1983*
(Percentage)

Subsector	1976	1983
Beverage and tobacco	4.4	1.8
Textiles	33.1	13.3
Clothing	22.7	1.4
Leather products & footwear	13.6	5.8
Wood and cork products	6.1	4.3
Paper and paper products	19.8	13.7
Printing and publishing	13.7	14.9
Industrial chemicals	68.4	63.5
Petroleum & other chemicals	28.6	33.9
Rubber products	27.0	9.7
Plastic products	29.4	7.3
Pottery and glass products	44.2	32.1
Non-metallic mineral products	6.6	4.9
Metal products	39.7	17.8
Electrical machinery	47.2	37.2
Transport equipment	59.4	31.4
Furniture and Fixtures	1.9	3.3
Nonelectrical machinery	88.5	89.6
Miscellaneous manufactures	32.1	16.3

Source: World Bank, Washington, DC.

Table 20: *Strikes and Man-Days Lost, 1963-1985*

Year	Strikes	Man-days Lost
1963	230	235.0
1964	221	167.8
1965	200	345.9
1966	155	144.3
1967	138	109.1
1974	71	92.4
1975	26	8.8
1976	44	26.2
1977	45	9.2
1978	46	20.3
1979	54	33.1
1980	81	32.5
1981	74	40.3
1982	100	26.7
1985	61	14.6

Source: World Bank, Washington, DC.

The allocation of foreign exchange is done through projecting the balance of payments and differential between the expected demand for import and finance available is covered by restricting imports through licensing. The licensing is done through schedules which define the priorities in foreign exchange allocation (Table 23).

Tariffs are used in Kenya as a way of protecting sections of the industry. The unweighted average tariff is about 40 per cent for all goods, with a standard deviation of 22.0 per cent. The range extends from zero to 110 per cent for most goods although some goods are subject to higher charges. Items such as buses, alcoholic beverages and clothing are subjects to rates over 100 per cent. The rates are maintained at cascading levels between capital, intermediate and consumer goods.

This system is aimed at facilitating the importation of machinery for industrial production while at the same time protecting locally-produced consumer goods. Most of the duty in Kenya is collected from imported inputs. Most of the items are lumped together under broad categories and there is little consideration for the relative importance of parts of machinery or different types of inputs in industrial output.

For example, people importing whole machinery will pay less duty than those importing the inputs or raw materials for the local manufacture of similar equipment. This may in the long run inhibit local machinery production. Indeed, there is a tendency to import finished goods instead of producing them locally. This is true even in sectors where the capacity to produce certain goods exists.

3.4 Informal Sector

The so-called informal sector, composed of small-scale artisan known popularly as *jua kali* artisans, (~~hot sun~~ artisans) has become a major target for policy statements. The government has realized that the sector a major employer and source of economic growth in the country. Recent policy reforms have allowed for incentives, especially financial support, to be granted to the informal sector.

It is notable that the sector is more resilient than the formal sector which is more easily affected by changes in the macroeconomic policy. For example, in the post-1981 period which saw the rate of protection for local industries decline, the informal sector continued to grow while output in the large-scale sector was reduced by almost 50 per cent (Tables 21 and 22).

Table 21: *Composition of Informal Sector Employment, 1978-1985 (%)*

		Manufacturing	Repair and Services	Wholesale Trade	Catering
Nairobi	1978	13	16	53	17
	1982	16	14	52	16
	1985	18	16	54	10
Mombasa	1978	28	8	63	2
	1982	11	10	58	2
	1985	7	8	70	9
Kakamega	1978	13	11	55	19
	1982	13	14	46	24
	1985	19	17	55	7
Embu	1978	10	17	52	19
	1982	21	17	53	7
	1985	18	17	61	3
Kitale	1978	12	17	60	9
	1982	21	17	50	10
	1985	20	19	53	5
Rural trading centres	1978	15	13	57	15
	1982	16	8	53	22
	1985	17	9	54	20

Source: Central Bureau of Statistics, Nairobi.

Table 22: *Informal Employment by Sector, 1974-1985 ('000)*

	1974	1981	1982	1983	1984	1985
<i>Employees ('000)</i>						
Manufacturing	10.9	25.9	27.3	29.6	32.1	37.3
Repair services	8.6	11.6	12.3	12.8	15.0	17.7
Other services	3.6	6.6	7.4	7.7	9.6	11.7
Trade	50.6	85.6	94.3	101.3	109.9	121.8
Catering	1.3	26.0	28.0	28.6	27.6	25.8
Construction and transport	1.2	2.2	2.9	2.8	3.5	3.8
<i>Percentage</i>						
Manufacturing	14.3	16.4	15.9	16.2	16.2	17.1
Repair services	11.3	7.3	7.1	7.0	7.6	8.1
Other services	4.7	4.2	4.3	4.2	4.9	5.4
Trade	66.4	54.2	56.0	55.4	55.6	55.8
Catering	1.7	16.5	16.3	15.6	14.0	11.8
Construction and transport	1.6	1.4	1.7	1.5	1.8	1.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Central Bureau of Statistics, Nairobi.

Table 23: *Schedules for Foreign Exchange Allocation*

Schedule	Description
1A	Covers raw materials, spare parts, agricultural imports and educational material. In principle, applications are approved automatically and demand is controlled by tariff rates.
1B	Similar goods as those in 1A but of lower priority are covered herein. Imports in this schedule are governed by a global allocation of foreign exchange.
2AO	Non-luxury goods not competing against local production and imports are governed as in 1B.
2AS	Items such as food, oil, fertilizer which require approval of the relevant Ministry before licenses are issued.
2B	Goods competing against local production, luxury items and those concerned to public health and safety. This is the most restrictive category.

Schedule 2AO was abolished in 1984 and included with the Schedules 1A and 1B items.

Source: Central Bureau of Statistics, Nairobi.

4. EQUITY CONSIDERATIONS

4.1 *Land Tenure*

The scarcity of arable land in Kenya under conditions of monetary agriculture has made land ownership a critical socio-economic and political issue. The history of colonization in Kenya is largely an account of events surrounding land distribution. The struggle for freedom in the 1940s and 1950s was mainly an attempt by the indigenous population to gain access to their land. One of the major steps to allow indigenous people to have access to land was presented in the Swynnerton Plan of 1954.

The plan provided for the granting of individual land deeds. This, together with marketing measures, was aimed at stimulating the production of cash crops. The plan helped to strengthen the richer Africans who owned land in the reserves. Although the plan envisaged to complete land consolidation in 20 years, the work had not been completed in 1962, a year before Kenya achieved independence. By then, 300,000 farms had been consolidated and enclosed, covering nearly 1.0 million hectares. (Table 25).

After 1963, the government facilitated, with the help of Britain, the transfer of land in the former "White Highlands" to Africans through settlement schemes. Much of the prime farmland in the Rift Valley was transferred into the hands of a small number of Africans, while the rest of the former European farms were subdivided among squatters and small peasant farmers. This transfer that further strengthened the African middle-class.

The amount of land owned by smallholders in Kenya has been increasing rapidly in Kenya. This has resulted from a programme of land distribution in the so-called White Highlands, the allocation of titles to land that was previously reserved for grazing, and general land sub-division. Being a scarce resource in Kenya, land has become a subject for speculation and large sections of the arable land are current not in production.

Since independence Kenya has not been able to review the prevailing land policy although the government has recently indicated that a high-level commission will be appointed to review the land tenure laws and practices and make recommendations

for legislative reform. The land tenure laws are based on the British laws and do not adequately reflect the land-use practices prevailing in the country.

For example, in areas with high diversity in soil types, the traditional farming systems have evolved measures which guarantee access to the different types so that the diversity required to maintain food security is maintained. But the current laws which are associated with land consolidation tend to undermine this requirement.

The laws assume that the land is uniform and carries the same agricultural potential. In parts of western Kenya, farmers are trying to reconcile the need for diversity their agricultural activities with the legal requirements for land ownership.

The proposed land review commission will focus mainly on ways of bringing the currently underutilized land under the plough. Its elements will include taxation and other measures that will provide incentives to use land more productively. So far there are no incentives and large chunks of land are held for speculation. Some of the people who own large pieces of land do not have the skills nor the financial capacity to turn the land to agricultural use.

The commission will also outline regulations governing land subdivision depending on the size of economically viable units in various agro-ecological zones. In addition, the commission will also suggest laws which will protect and encourage holders of large farms to lease them to those who are able to farm them more productively. Such measures will take a long time to implement since the country has enshrined land rights in the constitution.

The technological implications of the current land policy have not been adequately studied. One would expect that the rise in the number of smallholders and the growing subdivision of the land increases the potential for using small-scale technologies. This of course depends on whether the smallholders are farming individually or collectively through co-operatives. Under collective farming, the farmers can still use large machinery.

However, with individual farming, the use of tractors by the very poor is reduced and other forms of innovation would need to be applied to raise productivity. It has indeed been shown that smallholder agriculture is relatively more productive per unit area than large-scale farming. This has been attributed to higher human labour

input. The high labour input has also been accompanied by intensive use of on-site knowledge which accounts for part of the higher productivity.

Kenya has one of the oldest land registration record in Africa and experiences in land land tenure from the country are therefore important, especially in the various ways they affect innovation. The World Bank is currently carrying out a study to examine the relationship between land tenure and agricultural productivity.

It would be of interest to extend that analysis to include technological innovation. Already, attempts at agroforestry innovations have in some parts of the country been hampered by the prevailing land tenure patterns. Farmers who do not have rights over land are not likely to invest in trees which are likely to take a longer time to realize any benefits.

4.2 Gender Relations

One of the major aspects of inequality in Kenya is related to gender relations. Because of cultural and historical factors, the position of women in relation to property has deteriorated in recent years. It is notable that this is an issue that has received little attention. There are any significant studies which show how the position of women has changed in recent years.

Moreover, evidence on the role of women in pre-colonial days are scanty and most of the information available assumes that the position of women during the colonial days was similar to that of the pre-colonial times. The use of the notion of "traditional societies" does not examine the major changes that have affected the relative position of women in various societies.

Women still constitute the bulk of the agricultural labour force in Kenya and are crucial actors in the national economy. An estimated 60 per cent of the workforce in cash crop production is accounted for by women.⁶ Most of the subsistence agriculture is under the control of women, who also are the repositories of knowledge on traditional agriculture (Table 24).

6. Republic of Kenya, *Women in Kenya*.

Table 24: Distribution of Wage Employment by Sex and Income Groups*, 1981-1985

		1981			1982			Number
		Male	Female	Total	Male	Female	Total	
Sh.								
Under 215 ..	..	16,856	6,013	22,869	15,348	6,257	21,605	
215- 399 ..	..	105,601	30,979	136,580	105,554	33,599	139,153	
400- 699 ..	..	169,717	26,708	196,425	146,199	25,550	171,749	
700- 999 ..	..	142,022	31,696	173,718	143,705	28,765	172,470	
1,000-1,499 ..	..	114,111	24,309	138,420	121,400	25,835	147,235	
1,500-1,999 ..	..	63,084	14,339	77,423	68,344	16,560	84,904	
2,000-2,999 ..	..	43,822	9,008	52,830	48,412	11,636	60,048	
3,000 and over ..	..	57,034	8,030	65,064	64,045	9,889	73,934	
Total ..	..	712,247	151,082	863,329	713,007	158,091	871,098	

Table 226 (b)

		1983			1984			1985			Number
		Male	Female	Total	Male	Female	Total	Male	Female	Total	
Sh.											
Under 215 ..	..	11,848	3,210	15,058	8,440	3,483	11,923	7,061	1,952	9,103	
215- 399 ..	..	66,020	16,689	82,709	57,335	16,987	74,322	35,207	9,947	45,154	
400- 699 ..	..	127,864	28,326	156,190	158,394	32,468	190,862	162,464	43,049	205,513	
700- 999 ..	..	148,721	29,075	177,796	158,281	32,009	190,290	184,245	35,591	219,836	
1,000-1,499 ..	..	149,274	35,310	184,584	155,700	38,075	193,775	159,875	40,722	200,597	
1,500-1,999 ..	..	74,945	22,097	97,042	94,271	23,176	117,447	95,913	27,211	123,124	
2,000-2,999 ..	..	66,076	17,529	83,605	73,126	18,500	91,626	81,338	21,530	102,868	
3,000 and over ..	..	86,124	15,655	101,779	89,849	16,880	106,729	99,956	25,297	125,253	
Total ..	..	730,872	167,891	898,763	795,396	181,578	976,974	826,059	205,299	1,031,358	

Source: Central Bureau of Statistics.

*Excluding casual employees, unpaid family workers and unpaid directors.

In addition, it is notable that some 40 per cent of Kenya's households are headed by women. Despite their important positions in national development, their rights are still limited. There are two main sources of institutional inequality.

First, the modern law that Kenya uses does not adequately reflect the economic position of women in the country. Second, the traditional law applied in most communities discriminates against women. This problem is compounded by the fact that on matters which cannot be settled by the common law, the courts tend to resort to traditional law.

Kenyan women are more active in community initiatives than men. This is reflected in their participation in community groups and other endeavours. They are also more active in the electoral process. It is estimated that 60 per cent of the electorate is accounted for by women. This participation, however, is not matched by political leadership. The number of women in Parliament has remained low compared to the role played by women in local and national development.

It is important to note that Kenyan women are not a homogeneous group. The distribution of responsibilities and rights varies from community to community. What is clear, however, is that the position of women is subordinate to men, especially in view of the fact that men tend to control the basis resources for production such as land.

Attempts to improve the situation using legislative means have not been successful. In 1979, a proposed Marriage Bill to change the situation was thrown out of Parliament. This Bill was based on western models and did not adequately reflect that socio-cultural imperatives prevailing in the country.

Although women are a major source of productivity in the Kenyan economies, most of the design of technology does not take into consideration their interests and knowledge. Additionally, innovations produced by women are not usually taken seriously nor are they acknowledged. Moreover, the educational system tends to discourage women from going to technical schools and therefore the mythology that women are less innovative than men is perpetuated.

In most parts of the country, for example, women are responsible for the conservation of local genetic resources. By doing so, they guarantee the future supply of food and other products for the community. Yet the techniques that the women use to conserve such resources have not adequately been studied.

Table 25: Land Registration in Kenya ('000 Hectares)

	Total Registered Land		Total Up to	Smallholder Registration by 1982	Smallholder share of total by 1982
	Up to 1962	Up to 1970			
Western	—	323.7	707.0	572.4	81.0
Nyanza	—	173.4	755.7	666.7	88.2
Central	280.7	394.4	416.4	514.5	99.8
Rift Valley	42.8	580.1	3,722.5	577.9	15.5
Eastern	89.8	270.2	451.2	398.8	88.4
Coast	—	7.7	348.7	140.9	40.4
All Provinces	413.4	1,749.5	6,401.5	2,772.2	43.3

Source: Central Bureau of Statistics, Nairobi.

Table 26: Previous Estimates of Poverty in Kenya

Study	Data source	Coverage	Estimation procedure and methodology	Proportion poor or malnourished
1. FAO (1977)	Food Balance Sheets (1972-74)	National	Average per capita calorie consumption was determined from food balance sheets amounting to 2,137 cal. in 1972-74. Income distribution data were used to construct a Beta-distribution of calorie consumption. It was assumed that people with calorie intake less than 1.2 times the Basic Metabolic Rate were undernourished.	30 per cent of population undernourished
2. Crawford and Thorbecke (1978)	Integrated Rural Survey I (1977) (IRS-I undertaken in 1974-75)	Smallholders who in Kenya constituted 70 per cent of population in 1974	Determination of minimum food diet and expenditures yielding recommended daily allowance (RDA) of 2,250 cal. per adult. Confrontation of food poverty line at household level with actual value of food consumption from IRS-I. Estimates of food-poor households at provincial and national level. No adjustment for differences in household size and composition. No adjustment for differences in food prices among provinces.	35.8 per cent of households below food poverty line
3. Collier and Lal (1980)	Integrated Rural Survey I (1977) (IRS-I undertaken in 1974-75)	Smallholders	Determination of food poverty line at household level based on Crawford-Thorbecke above (i.e., consistent with food poverty line calculated in 2). Confrontation of household poverty line with actual household (total) expenditures from IRS-I. Estimates of poverty at provincial and national level. No adjustment for differences in household size and composition. No adjustment for differences in food prices among provinces.	34.2 per cent of household below poverty line
4. Vandemoortele and van der Hoeven (1982)	Integrated Rural Survey I (1977) (IRS-I undertaken in 1974-75) Nairobi Household Budget Survey (1974)	Smallholders and urban (Nairobi) population	Computation of food expenditure per person as function of total expenditures separately for two groups, smallholders and urban households. Adoption of Crawford-Thorbecke food poverty line. Confrontation of total poverty line at household level with actual total household consumption from IRS-I and Nairobi survey, respectively. No adjustment for differences in household size and composition. No adjustment for differences in food prices among provinces.	33.1 per cent of smallholder households and 15.3 per cent of urban households below poverty line
5. Crawford and Thorbecke (1980)	Integrated Rural Survey I (1977) (IRS-I undertaken in 1974-75)	Smallholders	Determination of minimum food diet and expenditures yielding RDA of 2,250 cal. per adult (i.e., food poverty line). Confrontation of food poverty line at household level with actual household food consumption from IRS-I adjusting for size and composition of each household in sample and provincial food price differences. Estimates of food-poor households at provincial and national level.	25 per cent of households below food poverty line

Source: Greer and Thorbecke, *Food Poverty in Kenya*.

Given the dominant position of women in economic production, any policies or initiatives which aim at raising productivity in sectors such as agriculture must take into consideration the demands of women. This is crucial for the diffusion of new technologies. The fact that social relations affect the design and articulation of technology makes it necessary to consider the role of women seriously and ensure that their interests are reflected in the design and introduction of new technologies.

But to be able to do this, there is a need to look into the position of women and undertake the required institutional and legal reforms that will reflect the current status of women and their contribution to the economy. It is not clear how this will be achieved although the rise of women's organizations in the country may be consolidated into a lobby for women's rights.

4.3 Income Distribution

Kenya has relatively high income inequalities, which is reflected in the patterns of access to basic resources. Since agriculture is the main economic activity in the country, the patterns of land ownership are closely related to income inequality. The situation in Kenya is compounded by the fact that arable land is a small proportion of the country and all the major crops are produced in this region.

Recent statistics on income distribution are not available. However, the result of various surveys and projections from previous studies indicate that income distribution is getting worse and a large number of people are getting dispossessed, especially of land. The most vulnerable groups in Kenya are pastoralists, women, unskilled urban wage earners, members of the informal sector, landless people and poor smallholders. These groups are affected by a wide range of factors which vary from region and time.

(Tables 26, 28 and 29)

Food has recently been used as an indicator of poverty. It has been estimated that nearly 75 per cent of the total expenditure of the smallholders is devoted to the purchase of food. Since food is the most basic resource, high expenditure on this item in relation to other needs reflects the degree of deprivation suffered by the rural communities.

In 1977 it was estimated that 24 per cent of the rural children aged 1-4 were physically stunted as a result of deficient nutrition. This figure rose to nearly 28 per cent

Table 27: Distribution of Wage Employment by Industry and Income Groups, 1981-1985

	Number									
	Under 215	215- 399	400- 699	700- 999	1,000- 1,499	1,500- 1,999	2,000- 2,999	3,000- 5,999	6,000- and Over	Total
	Sh.	Sh.	Sh.	Sh.	Sh.	Sh.	Sh.	Sh.	Sh.	
Agriculture and Forestry	5,177	28,334	83,254	25,048	8,455	5,192	4,076	3,452	1,709	164,697
Agriculture and hunting	—	701	3,823	12,772	1,397	603	403	180	28	19,907
Forestry and logging	—	7	8	8	2	3	—	2	—	30
Fishing	—	—	—	—	—	—	—	—	—	—
Total	5,177	29,042	87,085	37,828	9,854	5,798	4,479	3,634	1,737	184,634
Mining and Quarrying	—	—	—	—	—	—	—	—	—	—
Metal ore mining	—	224	791	679	333	74	73	85	10	2,269
Other mining	—	—	—	—	—	—	—	—	—	—
Total	—	224	791	679	333	74	73	85	10	2,269
Manufacturing	333	3,750	9,366	7,121	4,953	4,034	4,235	3,909	1,542	39,243
Manufacture of food, beverage and tobacco	25	1,033	4,623	10,105	9,714	2,485	916	550	487	29,938
Textiles, wearing apparel and leather industries ..	—	172	2,415	3,220	1,396	553	301	259	395	8,711
Manufacture of wood and wood products including furniture	—	11	456	1,837	1,641	1,176	1,109	967	620	7,817
Manufacture of paper and paper products, printing and publishing	—	10	71	574	1,821	2,418	1,424	1,941	2,259	12,757
Manufacture of chemicals, petroleum, rubber and plastic products	—	—	669	400	1,244	745	1,046	906	433	5,443
Manufacture of non-metallic mineral products except products of petroleum	—	—	293	288	571	217	95	149	86	1,699
Basic metal industries	—	—	—	—	—	—	—	—	—	—
Manufacture of fabricated metal products, machinery and equipment	39	2	326	4,416	8,575	6,873	3,531	1,406	1,504	26,672
Other manufacturing industries	—	—	106	390	269	72	91	100	61	1,089
Total	407	5,039	18,828	29,598	30,781	17,579	13,265	10,505	7,367	133,369
Electricity and Water	—	—	—	1,497	1,923	688	406	652	230	5,496
Electric light and power	—	—	352	3,596	2,121	2,498	1,499	1,386	134	11,586
Water works and supply	—	—	—	—	—	—	—	—	—	—
Total	—	—	352	5,193	4,044	3,186	1,905	2,038	364	17,082
Construction	—	145	98	535	744	398	226	191	263	2,600
Special trade contractors	480	522	3,364	8,053	7,424	5,274	3,872	2,684	1,287	32,960
General trade contractors	—	—	—	—	—	—	—	—	—	—
Total	480	667	3,462	5,888	8,168	5,672	4,098	2,875	1,550	35,560
Trade, Restaurants and Hotels	—	2	325	976	2,290	2,312	1,377	1,576	739	9,597
Joint wholesale and retail trade	—	890	3,147	5,155	4,058	2,426	2,370	2,520	1,988	22,564
Wholesale trade	—	—	1,851	3,256	3,088	1,680	2,280	1,987	749	14,901
Retail trade	8	70	2,479	5,803	6,983	3,832	4,706	2,075	932	26,888
Restaurants and hotels	—	—	—	—	—	—	—	—	—	—
Total	8	962	7,802	15,210	16,419	10,250	10,733	8,158	4,408	73,950
Transport and Communications	—	9	2,592	9,164	10,363	7,934	6,403	5,792	3,233	45,490
Transport and storage	—	—	26	206	2,205	2,078	1,860	1,375	243	7,993
Communications	—	—	—	—	—	—	—	—	—	—
Total	—	9	2,618	9,370	12,568	10,012	8,263	7,167	3,476	53,483
Finance, Insurance, Real Estate and Business Services	—	—	29	1,385	1,945	2,211	4,169	5,754	2,478	17,971
Financial institutions	1	2	21	6	751	376	1,456	1,430	766	5,379
Insurance	326	470	3,294	6,009	4,275	1,518	1,886	3,333	3,113	24,224
Real estate and business services	—	—	—	—	—	—	—	—	—	—
Total	327	472	3,344	7,470	6,971	4,605	7,511	10,517	6,357	47,574
Community, Social and Personal Services	805	36	13,707	32,798	33,312	21,468	21,005	12,956	12,151	148,238
Public administration and defence	1,303	1,429	31,582	58,969	71,986	40,317	27,778	20,040	6,505	259,909
Social and related community services	—	110	590	1,068	788	332	243	251	300	3,682
Recreation and cultural services	—	—	—	—	—	—	—	—	—	—
Personal and household services	506	7,164	35,202	12,838	5,234	3,766	3,397	2,016	593	70,716
International and other extra-territorial bodies ..	—	—	87	35	49	22	36	61	53	343
Activities not adequately defined	—	—	63	192	90	43	82	31	48	549
Total	2,614	8,739	81,231	105,900	111,459	65,948	52,541	35,355	19,650	483,437
Total	9,013	45,154	205,513	219,836	200,597	123,124	103,868	80,334	44,919	1,031,358

Source: Central Bureau of Statistics.

*Excludes Casual employees, unpaid family workers and unpaid directors.

Table 28: Household Income from Each Source Broken Down by Province and Farm Size per Adult Equivalent

Province and land- holding per adult equivalent (ha)	Household income per adult equivalent ^a (K.Sh./year)	Percentage of income from:			Wages	Transfers ^b	Crafts ^c
		Farm operating surplus					
		Consumption of own production	Sales of crops and animal products	Total			
Central							
0.00-0.25	1 381	32.2	30.3	62.4	20.6	12.5	4.4
0.26-1.00	969	27.9	24.1	52.0	31.1	10.6	6.3
More than 1.00	1 395	33.1	32.5	65.6	17.8	12.9	3.6
	2 149	37.5	35.2	72.7	9.3	14.7	3.3
Coast							
0.00-0.25	927	22.5	14.9	37.4	22.6	25.3	14.8
0.26-1.00	727	22.9	14.4	37.2	19.6	18.1	18.1
More than 1.00	1 111	25.4	13.9	39.3	24.9	24.2	11.7
	1 101	13.6	19.3	32.9	8.4	46.4	12.3
Eastern							
0.00-0.25	1 007	17.3	45.8	63.1	14.6	11.1	11.3
0.26-1.00	767	15.1	43.0	58.1	20.1	9.2	12.6
More than 1.00	1 107	20.7	44.3	65.0	10.8	12.1	12.1
	1 366	12.4	58.6	71.0	11.1	12.9	4.9
Nyanza							
0.00-0.25	1 007	38.2	28.9	67.1	10.5	7.8	14.5
0.26-1.00	921	42.3	29.3	71.6	8.1	6.1	14.2
More than 1.00	1 001	33.9	30.6	64.5	12.4	9.6	13.4
	1 346	35.2	21.3	60.5	12.2	7.6	19.8
Rift Valley							
0.00-0.25	1 551	33.6	42.1	75.7	10.6	6.0	7.7
0.26-1.00	899	37.3	36.6	73.8	14.0	6.1	6.1
More than 1.00	1 484	25.5	51.3	76.8	9.5	6.0	7.7
	2 943	48.2	28.1	76.3	7.0	5.9	10.7
Western							
0.00-0.25	689	23.3	33.6	56.9	18.2	18.1	6.8
0.26-1.00	517	18.2	31.0	49.1	20.5	21.8	8.6
More than 1.00	734	27.9	36.3	64.2	12.7	16.8	6.3
	1 065	26.4	34.2	60.6	25.6	10.7	3.4
All smallholders							
0.00-0.25	1 058	28.5	34.0	62.5	15.6	12.1	9.8
0.26-1.00	802	27.5	31.4	58.9	18.5	11.5	11.2
More than 1.00	1 116	29.0	35.7	64.6	13.7	12.5	9.1
	1 589	29.7	35.9	65.6	13.3	12.8	8.3

^a To reduce the great number of negative income-earning households reported in Central Bureau of Statistics (1977) (due mainly to livestock valuation changes) household income was re-estimated by calculating farm operating surplus as the value of crops and livestock harvested during the year less crop input costs and ignoring transport costs and business expenses which had been deducted from trade and crafts. The result should be taken as an over-estimate somewhat. The income of households for which the data are accurate but to increase greatly the accuracy for households which have under-reported income or exaggerated expenses to avoid repaying loans or which were in the areas experiencing a mild drought during the survey year. Many reported business and transportation costs were as much for personal as for business purposes. The errors in estimation and reporting of the components of household income by the respondent are likely to overwhelm the relatively small errors inherent in this algorithm.

^b Includes remittances, loans and gifts.

^c Trade and craft income, not deducting business and transportation costs.

^a To reduce the great number of negative income-earning households reported in Central Bureau of Statistics (1977) (due mainly to livestock valuation changes) household income was re-estimated by calculating farm operating surplus as the value of crops and livestock harvested during the year less crop input costs and ignoring transport costs and business expenses which had been deducted from trade and crafts. The result should be to over-estimate somewhat the income of households for which the data are accurate but to increase greatly the accuracy for households which have under-reported income or exaggerated expenses to avoid repaying loans or which were in the areas experiencing a mild drought during the survey year. Many reported business and transportation costs were as much for personal as for business purposes. The errors in estimation and reporting of the components of household income by the respondent are likely to overwhelm the relatively small errors inherent in this algorithm.

^b Includes remittances, loans and gifts.

^c Trade and craft income, not deducting business and transportation costs.

Source: Greer and Thorbecke, *Food Poverty in Kenya*.

Table 29: Characteristics of Smallholder Households

	No. of sample households	No. of members	Total landholding (ha)	Landholding per adult equivalent (ha)	Percentage of households growing maize ^a	Percentage of crop sold ^b	Percentage of maize production sold ^c	Farm operating surplus equivalent ^d	Food consumption per adult equivalent	Total consumption per adult equivalent
All smallholders	1 650	7.0	2.3	0.58	71	31	16	675	570	774
Poverty status^e										
Poor	688	8.1	2.1	0.42	72	29	13	304	271	359
Non-poor	962	6.1	2.5	0.69	71	32	18	927	763	1 070
Formal education^f										
None	1 166	6.6	2.2	0.59	75	30	17	554	546	727
1-4 years	289	7.9	2.7	0.56	67	34	14	709	583	817
More than 4 years	195	7.8	2.4	0.55	53	33	13	747	689	987
Land per adult equivalent^g										
0.00-0.25 ha	636	8.2	0.8	0.13	73	27	13	480	430	568
0.26-1.00 ha	746	6.9	2.6	0.52	72	34	18	721	589	796
More than 1.00 ha	258	4.2	5.5	1.88	53	34	18	1 069	856	1 216
Employment of head^h										
No job	1 322	6.7	2.3	0.60	74	31	16	680	565	766
Farm worker	46	8.8	2.1	0.62	67	24	10	721	546	750
Non-farm worker	282	8.4	2.4	0.45	60	30	17	661	595	814
Sex and marital status of headⁱ										
Married male	1 138	7.8	2.5	0.48	70	33	17	580	529	713
Unmarried male	117	3.9	2.1	1.19	79	25	11	848	747	1 156
Female	395	5.4	2.0	0.67	72	28	13	508	634	836
Size of household										
1 member	80	1.0	1.8	1.79	85	28	11	1 162	1 220	1 892
2-5 members	548	3.7	2.0	0.72	75	30	17	691	620	795
6 or more members	1 022	9.2	2.5	0.41	68	32	16	530	492	675

^a For the 1,497 households growing maize, the percentage growing 80 per cent or more traditional, non-hybrid maize varieties. Most households grew either hybrid or traditional varieties; few raised both. The value of crop sales as a percentage of crop production, both in value-added terms. Excludes 102 households with no or inconsistent crop-production data. The value of maize sales as a percentage of maize production, both in value-added terms. Excludes 229 households not growing maize or with negative value added. ^b Calculated differently from Central Bureau of Statistics (1977) to decrease the number of households with negative farm operating surpluses. Recalculated as the value of crop and livestock production less purchased inputs (excluding hired labour) used for crops. Data on livestock production costs were not available. ^c Based on the provincial food poverty lines. ^d Years of formal education of the more educated of the head or his wife. (In over 90 per cent of the households the head was the more educated.) ^e Household landholding in hectares per adult equivalent. Excludes ten households whose landholding was recorded as zero. ^f The primary occupation of the household head. Many heads with regular full-time employment might consider their main occupation as smallholder and thus be categorised as "no job". ^g "Farm worker" includes both farm operators and farm labourers. "Non-farm worker" contains all others including a few with urban jobs. ^h Male heads are classified as married or unmarried solely on the basis of whether or not a wife currently lives with them. Some of the female-headed households also include wives, probably indicating a polygamous household with a deceased or absent husband. ⁱ Classifications with ten or fewer households. The results for these rows should be used cautiously as their confidence intervals are likely to be quite large, especially for columns with many excluded households.

Source: Greer and Thorbecke, *Food Poverty in Kenya*.

Table 30: Wage Employment by Industry

	1981	1982	1983	1984	1985
<i>Private Sector</i>	540	540	565	578	600
Agriculture and forestry	174	167	177	181	186
Mining and quarrying	1	2	2	3	3
Manufacturing	117	116	117	120	124
Electricity and water	-	-	-	-	-
Construction	33	32	31	27	26
Trade, restaurants & hotels	68	69	75	79	84
Transport & communication	19	20	21	20	21
Finance & business services	31	35	36	38	40
Community & social services	98	99	106	110	117
<i>Public sector</i>	484	506	528	542	575
Agriculture and forestry	62	56	54	54	55
Mining and quarrying	1	1	1	2	2
Manufacturing	30	31	32	33	35
Electricity and water	10	14	17	17	18
Construction	29	28	29	22	24
Trade, restaurants & hotels	5	6	6	6	6
Transport & communication	36	33	34	34	35
Finance & business services	8	9	10	12	13
Community & social services	303	328	346	362	387
<i>Public and Private Sector</i>	1,024	1,046	1,093	1,120	1,174
Agriculture and forestry	236	223	231	235	241
Mining and quarrying	2	3	3	5	5
Manufacturing	147	147	149	153	159
Electricity and water	10	14	17	17	18
Construction	62	60	60	49	50
Trade, restaurants & hotels	73	75	81	85	90
Transport & communication	55	53	55	54	56
Finance & business services	106	44	46	50	53
Community & social services	401	427	452	471	504

-- below 500 employees

Source: Central Bureau of Statistics, Nairobi.

Table 31: Wage Employment by Sector, 1981-1984

						Number 000's
Sector						
						1981 1982 1983 1984 1985
Private						
Minority Shareholding by the Public Sector						42.7 42.5 41.9 42.3 42.1
<i>Incorporated Companies</i>						
Local public						46.6 46.6 48.8 49.2 50.1
Local private						188.8 189.0 204.3 204.8 202.1
Foreign public						46.8 46.8 52.5 53.9 56.1
Foreign private						35.2 35.2 51.7 48.7 51.0
Co-operatives						30.1 30.3 30.0 30.9 31.0
Other Private Sector						150.0 150.0 136.3 148.4 167.4
Total						540.2 540.4 565.5 578.2 599.8
Public						
Central Government						214.5 216.7 226.4 231.1 252.0
TSC						110.9 119.0 124.1 132.2 90.4
Parastatal Bodies*						87.4 95.7 97.6 95.4 35.6
Majority Control by the Public Sector						31.6 32.9 34.5 35.1 45.6
Local Government						39.7 41.3 45.2 47.7 151.0
Others**						— — — — —
Total						484.1 505.6 527.8 541.5 574.6
Total						1,024.3 1,046.0 1,093.3 1,119.7 1,174.4

Source: Central Bureau of Statistics.

*Includes Teachers Service Commission, Kenya Railways Corporation, Kenya Ports Authority, Kenya Posts and Telecommunications Corporation, Kenya Airways Ltd., etc.

**E.A. Development Bank and E.A. Examinations Council.

Table 32: Distribution of Wage Employment* by Sector and Income Groups, 1981-1985

		Under 215 Sh.	215- 399 Sh.	400- 699 Sh.	700- 999 Sh.	1,000- 1,499 Sh.	1,500- 1,999 Sh.	2,000- 2,999 Sh.	3,000 and over Sh.	Number
1981—										
	Central Government ..	—	—	—	20,655	55,862	38,720	29,674	34,411	179,322
	Other Public Sector ..	1,804	16,009	79,574	75,447	47,037	20,365	11,589	12,206	264,031
	Private Sector ..	21,065	120,571	116,851	77,616	35,521	18,338	11,567	18,447	419,976
	Total ..	22,869	136,580	196,425	173,718	138,420	77,423	52,830	65,064	863,329
1982—										
	Central Government ..	—	—	—	17,812	58,321	41,518	35,572	40,827	194,050
	Other Public Sector ..	1,832	16,289	51,851	84,098	49,615	17,841	11,330	13,739	246,595
	Private Sector ..	19,775	122,864	119,898	70,560	39,299	25,545	13,146	19,368	430,453
	Total ..	21,607	139,153	171,749	172,470	147,235	84,904	60,048	73,934	871,098
1983—										
	Central Government ..	—	—	—	18,608	58,733	44,532	37,409	47,355	206,637
	Other Public Sector ..	1,080	5,633	42,531	76,659	63,310	24,866	18,927	19,091	254,097
	Private Sector ..	13,978	77,076	115,659	82,529	60,341	27,644	27,269	35,333	438,029
	Total ..	15,058	82,709	156,190	177,796	184,585	97,042	83,605	101,779	898,763
1984—										
	Central Government ..	—	—	12,575	48,875	44,723	35,508	29,673	39,170	210,524
	Other Public Sector ..	891	71,322	26,292	69,744	70,868	35,453	26,198	23,244	260,012
	Private Sector ..	11,032	67,000	151,995	71,671	76,184	46,486	35,755	44,315	506,438
	Total ..	11,923	74,322	190,862	190,290	193,775	117,447	91,626	106,729	976,974
1985—										
	Central Government ..	—	—	4,559	42,993	70,256	25,288	47,896	31,167	225,659
	Other Public Sector ..	1,030	3,301	44,819	80,777	56,370	47,333	19,991	26,285	229,906
	Private Sector ..	7,983	41,853	156,135	86,066	73,971	50,003	34,981	63,801	515,793
	Total ..	9,013	45,154	205,513	219,836	200,597	123,124	102,868	125,253	1,031,358

Source: Central Bureau of Statistics.

*Excluding casual employees unpaid family workers and unpaid directors.

Table 33: Earnings by Sector, 1981-1985

Sector	1981	1982	1983	1984	1985
Private					
Minority Shareholding by the Public Sector ..	39.1	43.8	49.9	56.8	60.0
Incorporated Companies					
Local Public ..	42.3	43.9	44.6	44.7	46.4
Local Private ..	141.0	146.3	166.7	179.9	206.7
Foreign Public ..	35.9	34.8	41.8	45.5	59.7
Foreign Private ..	30.8	35.0	43.5	45.9	52.1
Co-operatives ..	11.4	14.3	14.9	16.5	17.5
Other ..	71.3	77.8	83.3	118.1	132.6
Total ..	371.8	395.9	444.7	507.3	575.0
Public					
Central Government ..	193.3	207.7	227.3	236.7	270.6
TSC ..	79.8	94.3	103.6	120.7	139.9
Parastatal Bodies* ..	89.3	97.3	107.1	124.3	146.0
Majority Control by the Public Sector					
Local Government ..	26.3	29.3	32.8	42.2	46.8
Other** ..	28.2	35.9	42.7	43.6	—
Total ..	416.9	457.2	513.5	567.5	645.8
Total ..	788.7	853.0	958.2	1,174.8	1,220.8

Source: Central Bureau of Statistics.

*Includes Teachers Service Commission, Kenya Railways Corporation, Kenya Ports Authority, Kenya Posts and Telecommunications Corporation, Kenya Airways Ltd., etc.

**E.A. Development Bank and E.A. Examinations Council.

Table 34: Average Retail Prices of Certain Consumer Goods Included in the Cost of Living Index, Nairobi 1975-1985

	Unit	1979	1980	1981	1982	1983	1984	1985
		Sh. cts.	Sh. cts.	Sh. cts.	Sh. cts.	Sh. cts.	Sh. cts.	Sh. cts.
Bread, white	1 kg. loaf	1 55	1 81	2 07	2 31	2 57	2 90	3 31
Butter	1 kg.	8 47	10 30	12 48	13 14	14 32	14 71	16 95
Coffee—Kenna	1 kg.	53 70	60 56	61 19	79 02	83 96	98 78	100 65
Tea Brooke Bond, Green Label	1 kg.	7 29	7 44	8 44	12 15	13 97	14 25	14 25
Sugar	1 kg.	4 50	4 50	4 84	5 75	6 30	6 90	7 20
Milk—Green Tetrapack	1 litre	1 30	1 38	1 63	1 95	2 13	2 45	2 75
Beef, Sirloin High Grade	1 kg.	19 73	25 46	25 49	32 88	39 45	46 71	46 41
Mutton, Leg "A" Grade	"	20 71	23 74	23 88	26 96	45 51	49 50	49 42
Potatoes	"	3 09	2 27	2 75	2 56	3 38	4 09	4 41
Cabbages	"	2 88	2 31	2 61	2 54	4 11	4 97	5 19
Eggs 1st Grade	1 dozen	8 02	10 71	11 58	11 98	13 78	15 80	16 83
Beer, East Africa (excluding bottle)	1 bottle	4 08	4 40	4 79	6 00	6 88	7 43	7 70
Cigarettes—Embassy	pkt. of 20	5 87	6 50	6 79	7 83	9 00	9 58	10 88
Paraffin	4 gal. tin	32 00	41 86	53 61	69 27	71 29	77 52	79 89
Petrol	1 litre	3 48	4 73	6 30	7 30	7 76	7 98	8 13
Sheets 62" x 90"	1 pair	93 33	95 00	104 93	169 72	175 00	175 00	175 42
Towels 30" x 60"	each	48 83	65 00	62 29	65 00	68 33	75 00	87 50
Dry Cleaning Charges:								
Gent's Suit, two pieces	1 suit	14 54	16 00	20 22	27 36	32 22	39 83	41 02
Ladies Costume†	each	14 50	16 50	21 25	30 00	40 83	29 75	30 54
Refrigerators:								
Kelvinator 77F***	each	4,216 67	5,154 17	6,338 33	8,500 00	12,000 00	12,000 00	12,000 00
Maize Flour (Posho), unsifted	1 kg.	1 46	1 65	1 65	1 92	2 30	2 78	4 11
Maize Grain	"	1 25	2 19	4 17	4 10	4 19	4 91	6 21
Wheat Flour	"	2 88	3 12	3 45	4 21	4 51	5 13	5 86
Rice, Local grade two	"	4 48	4 29	5 72	7 56	8 17	6 35	7 20
Beans mixed	"	3 59	4 99	7 57	7 58	7 15	8 11	13 15
Lake Fish, Tilapia	1 kg.*	14 65	15 92	21 75	34 99	31 97	42 33	42 23
Beef, Low Grade	1 kg.	10 52	13 00	13 22	15 60	18 44	18 70	21 00
Kimbo	250 gm.	3 36	3 50	3 57	4 35	4 77	5 23	5 35
Cigarettes—Sportsman	pkt. of 20	4 29	4 68	5 21	6 29	7 00	7 58	8 58
Printed Cotton	1 metre	22 67	24 00	24 00	29 17	39 50	39 58	40 47
Paraffin	1 litre	— 88	1 15	1 46	1 90	1 95	2 13	2 19
Charcoal	32 kg.	24 74	28 00	37 15	53 03	56 00	56 00	60 00
Matches**	1 box	— 22	— 25	34	— 40	— 44	— 50	— 50

Source: Central Bureau of Statistics.

*Before 1976 the unit was each.

**From 1972 onwards steamship matches.

***From 1975 onwards "Ignis".

†From 1975 onwards Ladies Dress.

in 1982. This average, however, conceals the dramatic increases in the various provinces. The change for Western Province, for example, was 16 per cent to 28 per cent over the 1977-1982 period.

Data from the 1970s showed that nearly 40 per cent of the smallholder households consumed less than their recommended daily calorie allowance. Food poverty was highest in Eastern, Nyanza and Western Provinces. The data also revealed that households headed by women were more likely to allocate their income to the provision of food than male-headed households.

Income differentials in Kenya are higher than most of the other developing countries. At the lowest level workers earn nearly KSh.700 per month while chief executives of finance and insurance companies earn nearly KSh.23,000. The ratio between the earning of a messenger and his chief executive is 40:1 without fringe benefits and 80:1 with fringe benefits. The ratios for chief executives of large manufacturing firms are 112:1 and 150:1 respectively.⁷

(Tables 30, 31, 32, 33 and 34).

While the income of the rural people remains dependent on the market for their commodities, the urban workers have experienced decline in real wages by 21 per cent over the 1982-1985 period. Trade union activities have been relatively low in recent years with wage increases being determined by the government without pressure from the workers. The government has also made it illegal for workers to go on strike and as a result the number of hours lost due to industrial actions has declined considerably (Table 26).

4.4 Access to Energy

The income disparities in the country are related to the patterns of access to energy and its consumption. While the rural people rely predominantly on fuelwood as their main source of energy, the urban population uses a higher degree of energy mix ranging from electric power to woodfuel. The variations in energy sources is also related to degree of technical complexity in the conversion technologies as well as the capital investment on the supply side.

This is partially matched on the demand side by the uneven distribution of end-uses in which the very poor tend to rely on direct combustion of biomass while the

7. Price Waterhouse and Associates, *Executive Salaries*.

Table 35: Woodfuel Supply/Demand Balance, 1982-2000
(Millions of Tonnes)

	1982	1985	1990	1995	2000
Demand	20.0	24.5	30.3	38.6	47.1
Supply	20.0	19.2	20.5	26.6	16.5
Supply from yield	13.8	12.6	20.5	26.6	16.5
Supply from stock	6.5	6.6	9.8	12.0	30.6

Source: Ministry of Energy and Regional Development, Nairobi

Table 36: Energy Needs, 1985-2000 ('000 tonnes, except electricity)

	1985	2000	Growth Rate 1985-2000 (% per year)
Fuelwood	14,972	23,480	3.0
Wood for Charcoal	8,754	17,513	4.7
Commercial Wood	1,077	2,588	6.0
Biomass	1,112	2,177	4.5
Petroleum	2,080	3,821	4.1
Coal/Coke	97	180	4.2
Electricity (kilowatt hours)	2,480	6,077	6.2
Electricity (capacity - megawatts)	586	991	3.6

Source: Republic of Kenya, *Economic Management*.

high-income group use energy types such as electricity. This pattern of energy supply and demand has implications for other sectors of the economy. For example, the demand for charcoal for the urban population has led to extensive tree felling in areas closer to the centres of consumption (Table 35 and 36).

In 1983, the total primary energy supply in Kenya amounted to 7.4 million tonnes of oil equivalent (some 310.8 giga joules). The final demand, however, energy consumption equalled 5.1 million tonnes of coal equivalent. The remaining 2.0 million tonnes of coal equivalent was accounted for by energy conversion, transmission, distribution processes and export.

Woodfuel and charcoal are the main sources of energy in Kenya, accounting for 63 per cent and 10 per cent of the national supply. Petroleum accounts for another 24 per cent, electricity 3.0 per cent, coal 1.0 per cent and ethanol 0.07 per cent.

Most of the energy produced in Kenya is consumed at the household level, accounting for nearly 59 per cent of the total. Industrial activities take 16 per cent, transportation claims 11 per cent, agriculture 10 per cent and commerce 4.0 per cent.

Woodfuel is the most dominant resource in the country. Nearly 14.6 million tonnes of wood were consumed in 1983 and the projected demand for 1990 is 18 million tonnes. Of this amount, rural households consumed 10.7 million tonnes or 74 per cent. Another 2.1 million tonnes was utilized by the rural informal industry and the commercial sector accounted for 1.3 million tonnes.

Woodfuel is largely consumed "on-site", with its transport radius being about 74 kilometres. This means that trade in the resource is limited to the localities where it is harvested. One of the traditional technological responses to this problem has been the production of charcoal which can be transported long distances because it is less bulky, easier to package, lighter and contains more energy per unit weight.

Because the use of charcoal requires additional investment in conversion technology, the very poor tend to use wood instead. This trend also implies that any efforts to improve the availability of energy to the rural poor must involve the planting of trees in their localities.

Kenya has introduced a number of policy measures which increase the amount of energy required as well as change the mix. The District Focus strategy, for example,

aims at increase rural manufacturing. Currently, most of the rural industrial activities rely on wood as the main source of energy. The ability to improve the living conditions of the rural people will partly depend on the ability of the country to harness adequate energy for rural development.

Increased energy use in the rural areas will also require new innovations. Following the United Nations Conference on New and Renewable Sources of Energy in 1981 in Nairobi, the country received large sums of money and other resources to support energy research projects. The funding is starting to dwindle although the country needs more energy research activities at the moment. The country will have to rely on its own research to provide technological solutions to some of the energy problems. Indeed, the government is setting up Energy Research Laboratories (ERL) to meet this challenge.

4.5 *Health and Nutrition*

Since independence, the government has invested large sums of money in health services and over 2,000 health institutions have been set up in the country (Table). As a result, the death rate and infant mortality have been dropping and life expectancy increased over the years. Over the 1965-1983 period infant mortality fell from 124 to 81 per 1000 live births while the death rate of children aged 1-4 fell from 25 to 14 per thousand. Over the same period, the life expectancy at birth rose from 48 to 55 years for males and from 51 to 59 for females.

The government has recently placed more emphasis on primary health care with services being extended in 25 districts. Despite this, the urban people still have more access to medical care. While the national average for hospital beds in 1986 was 148 per 100,000 people, Nairobi dominated the scene with 480 beds per 100,000 people. The number of doctors in Kenya stood at 2,980 in 1986, more than 14 per 100,000. There are only 441 dentists in the country, or 2.08 dentists for every 100,000 people (Tables 37 and 38).

The current distribution of health services, which emphasizes the urban population, and the efforts to introduce primary health care, opens up opportunities for the application of intermediate technologies for the improvement of rural health. Such technologies could range from low-cost methods of sanitation, water provision and basic health care. Some of the medical equipment currently imported could be fabricated

Table 37: *Health Institutions and Hospital Beds and Cots by Province, 1986*

Province	HEALTH INSTITUTIONS				HOSPITAL BEDS AND COTS	
	Hospitals	Health Centres	Health sub-centres and Dispensaries	Total	No. of Beds and Cots	No. per 100,000 Population
Nairobi ..	30	15	136	181	5,690	465
Coast ..	24	30	158	212	3,065	168
Eastern ..	39	35	207	281	4,457	120
North-Eastern ..	3	6	32	41	414	78
Central ..	40	45	225	310	4,848	153
Rift Valley ..	55	61	450	556	6,004	133
Nyanza ..	41	47	152	240	4,234	113
Western ..	17	37	64	118	2,644	108
TOTAL 1986	249	276	1,424	1,949	31,356	148
TOTAL 1985	243	267	1,173	1,683	30,936	153

Table 38: *Registered Medical Personnel, 1984-1986*

Type of Personnel	Numbers					
	1984	1985	1986		IN TRAINING	
				No. per 100,000 Population	1985-86	1986-87
Doctors ..	2,752	2,842	2,980	14.08	634	792
Dentists ..	331	384	441	2.08	62	78
Pharmacists ..	131	231	333	1.57	118	117
Pharmaceutical Technologists ..	427	459	493	2.32	113	147
Registered Nurses	9,165	9,377	9,627	45.48	1,142	1,163
Enrolled Nurses	10,650	11,248	12,452	58.84	5,617	6,242
Clinical Officers	2,001	2,107	2,224	10.51	436	440
Public Health Officers ..	390	420	450	2.13	90	121
Public Health Technicians ..	1,390	1,608	1,826	8.63	438	640

in the country. Although the potential for their production exists, no policy-oriented studies have been conducted to determine which of the equipment could be sourced locally.

The medical sector could play a key role in the production of precision equipment in the country. However, the practice has been to call for tenders from suppliers who import the equipment. If the government had a policy of public procurement from local manufacturers, significant innovations could result from the medical sector and be applied widely in the rural areas. So far there are very limited incentives for the production of technologies that could be used widely in the rural areas.

Inequalities of income and access productive resources as well as services in closely related to the patterns of nutrition in the country. It is estimated that over 30 per cent of Kenya's population is exposed to nutritional deficiency. Most of these are children and pregnant mothers. Over the years, there have been improvements in the availability of some major food items such as maize, rice, mutton, beef, eggs, sugar, fats and oils, and potatoes. However, the availability of items such as milk, wheat and pulses has fluctuated (Table 39).

Despite these fluctuations, the average nutritional intakes were above the recommended levels. The aggregations, however, conceal the nutritional deficiencies among the very poor. According to the Second Nutritional Survey carried out by the Central Bureau of Statistics, 5.0 per cent of the children sampled in Kenya suffered from severe stunting. In addition, 42 per cent of the rural children showed signs of chronic, but subclinical malnutrition (Tables 40 and 41).

Nutrition levels vary according to income, market influence, land distribution and other factors. One of the most interesting findings in recent years was the prevalence of malnutrition in some areas that have high income levels due to cash crop production. In these areas, most of the land was taken away for intensive cash crop production and part of the income is devoted to processed foods.

So far not much effort has been devoted to the study of the nutritional contributions of indigenous crops, especially vegetables and fruits. These crops are still marginal and are not even entered in government statistics. Studies on the nutritions are largely based on the consumption of established commercial crops despite the fact that

Table 39: Per Capita Availability of Selected Food Items
(Kilogrammes per Year, Period Average)

Food Item	1965-70	1971-75	1976-80
Milk	74.8	56.0	62.5
Beef	--	12.5	13.5
Mutton	--	--	2.5
Pork	--	0.5	0.3
Eggs	1.4	1.4	1.6
Poultry	--	--	1.9
Fish	3.1	2.5	2.8
Maize	95.1	97.4	100.1
Wheat	17.0	15.7	13.6
Rice	1.3	1.9	2.0
Pulses	25.9	22.6	17.2
Sugar	12.2	15.9	19.1
Fats/Oils	4.2	6.4	7.3
Potatoes	19.2	27.0	24.8
Cassava	59.8	53.3	49.9
Sorghum/Millet	8.0	6.7	5.6

Source: Republic of Kenya, *Development Plan, 1984-1988*.

Table 40: Per Capita Nutrient Availability, 1965-1981

	1965-70	2,412	62.9
	1971-75	2,453	62.6
	1976-80	2,385	64.6
	1981-81	2,428	72.6
Average	1965-81	2,428	64.8

Source: Republic of Kenya, *Development Plan, 1984-1988*.

Table 41: Percentage of Smallholder Households Below the Poverty Food Line by Province

	No of Households Below Food Poverty Line ('000s)	% of Poor Households in Province	% of All Poor Households in Province
Central	61	18	16.2
Coast	34	48	9.0
Eastern	71	20	18.9
Nyanza	85	22	22.6
Rift Valley	17	19	4.5
Western	109	43	29.0
All smallholders	376	25	100.0

Source: Crawford and Thorbecke, *Employment*.

some of the indigenous crops are now being sold on the local markets in the rural areas and even on some of the major urban markets.

The improvement of the nutritional levels of the rural and urban people will require changes in the current policies towards crop development. Additional resources will be required to facilitate the generation of scientific and technological knowledge on the traditional crops used on the rural areas. The programmes will also have to take into account the need to conserve some of the resources for current and future use.

It is notable that the rural poor are also the same people who rely on indigenous vegetables and fruits. Any efforts to improve the nutritional levels of the country will therefore depend on the capacity of the poor to participate in conservation programmes as well as in the efforts to increase the utilization of such resources. On the whole, the poor must be able to participate in programmes aimed at improving their conditions. They already control some of the genetic material needs to do so.

This route presupposes policies which emphasize the use of local resources and not necessarily relying on market forces. Current policies seem to favour the use of pricing and other marketing mechanisms to increase the availability of food items. Such policies would tend to favour the established crops and narrow the range of available sources of food.

For example, such policies would discriminate against the introduction of new grains into the food budget and conventional staples such as maize would be available in different forms. Unlike wheat, maize flour has not so far resulted in a diverse range of products. Recent efforts in Kenya have resulted in the introduction of sorghum and millet flour on the market. The research and development work for some of the products was done by the Kenya Industrial Research and Development Institute (KIRDI), a government department.

4.6 Housing

The nature of housing in Kenya is closely related to income and access to basic amenities. The housing situation is affected by various factors. In some parts of the country, especially western Kenya, housing patterns are starting to change as a result of the declining availability of natural construction and roofing material. The varieties of trees and grass traditionally used for construction and roofing are declining and the

people have switched to iron sheets. But because of the relatively high cost of iron sheets, the quality of houses occupied by the poor in the rural areas is declining.

The situation in the urban areas is even worse as most of the poor live in sub-standard buildings. It is estimated that nearly 70 per cent of the people in Nairobi live in slum or slum-like dwellings. Not much research has been done on looking for alternative construction technology although institutions such as the Intermediate Technology Development Group (ITDG) have done some work on this subject. It is notable that the Kenyan President has recently announced that the funds being collected to university research will go into supporting work on alternative construction technology and materials.

The absence of research in this field is compounded by the fact that existing policies and regulations discriminate against the introduction of competing construction technologies. This is done large through the maintenance of high standard which can only be met by established construction firms. The provision of adequate housing in the country will take more than just research; it will require an expetensive review of the current policies governing construction.

5. POLICY INNOVATIONS

5.1 *Decentralized Development Policy*

One of the most significant changes in the Kenyan policy regime is the shift away from centralized development planning towards decentralized economic planning strategies. This currently done under the District Focus for Rural Development, a strategy that has been in the making for the last 17 years.

The limitations of centralized planning were recognized in the late 1970s and the early attempts to introduce decentralized planning were reflected in the 1974-78 Development Plan. Subsequent efforts were made in the 1979-83 Development Plan but not much was achieved. It was not until 1982 that the government came out with a clear statement on District Focus planning.

In 1983 the government produced the *District Focus for Rural Development*, popularly known as the Blue Book which contains the key aspects of the strategy.

Since then other policy documents and the 1985 *Programme Review and Forward Budget* have presented the strategy into a wider context of economic development.

There three main objectives of the strategy. The first one is to ensure that rural development priorities are set in accordance with the specific features of the district. The second is integrate and co-ordinate the implementation of projects undertaken by various governmental, non-governmental and self-help groups. The third is to promote regional development as a way of rationalized the rural-urban distribution of economic activity.

In order to achieve these objectives, the government will make efforts to strengthen the capacity to plan, evaluate and implement projects at the district level. The government will also increase the authority of districts to procure and finance local projects. This will be a significant move because currently the government controls finance although the planning process has been decentralized.

In order to increase economic activity in the rural areas, the government plans to increase off-farm rural activities, small-scale manufacturing and trading firms by allocating most of the scarce resources to basic infrastructure and services. In order to avoid spreading itself out too thinly, the government plans to concentrate its resources to Rural Trade and Production Centres which have the potential to succeed.

The District Focus strategy is implemented through a District Development Committee which is served by a District Executive Committee which serves as the secretariat. The DDC is composed of all the district heads of all the major ministerial department, elected officials and private members. The DDC operates through a number of sub-committee which include the District Land Control Board, the District Joint Loans Board, the District Education Board and, Arid and Semi-Arid Lands (ASAL) Programme Steering Committee.

The District Focus strategy falls under the Office of the President and the Ministry of Planning and National Development is responsible for national planning with the Treasury ensuring that the financial administration of the strategy runs well. The strategy has so far increased the power of the District Commissioner whose jurisdiction now covers the government officials of various ministries working at district level.

5.2 *Technology Policy*

Kenya does not have an explicit science and technology policy although the existing policies on international trade, foreign investment and import requirements have influence on the development of the technology on the country. So far there have been no efforts to review any of these policies in relation to their effects on technological development in the country. Those policies which favour the importation of turn-key plants may at times have long-term negative effects on the development of intermediate technologies.

In recent years, the government has clearly demonstrated its realization that technological development is vital in meeting the long-term development goals of the country. One of the factors that have forced the country to think seriously about technology has been the high populations growth rate of the country and related growth in the labour force.

One of the possible sources of income has been recognized to be self-employment. In this respect, the government has reformed the educational system to reflect the long-term technological requirements of the country. The new system, called 8-4-4, is designed to enable the student to leave primary school with the capacity to generate employment by using certain skills acquired over the school period.

The government has also recently established the Ministry of Research, Science and Technology which demonstrates the seriousness that is currently attached to technological development. The ministry is currently being strengthened and given more responsibilities to co-ordinate research in the country. In addition, the President established the Universities' Research Fund as well as measures to review the terms of service of researchers in the country.

It is notable that the President himself undertook to collect funds for the universities, a move that is unprecedented in Africa. It is hoped that ways will be found to ensure that the Fund is replenished regularly, possibly through taxation of direct contributions. All these development indicate the growing realization of the role of science and technology in development and it is a matter of time before an explicit policy is formulated.

In addition to overall policy guidance, the government needs to carefully review the current legislation and practices to identify areas which require urgent measures. For

example, Kenya has a dependent patent system that requires inventors to apply for property rights in the United Kingdom before registering their inventions in Kenya. This law does not encourage local inventions and innovations, especially in the informal sector, are often kept secret thereby reducing their potential contribution to economic growth.

6. THE WAY AHEAD

6.1 *Technology and the Poor*

The poor in Kenya are currently rising in number and the government is looking for ways of averting social problems in the long-run. The majority of the people are increasingly finding it difficult to have access to land, water, energy, capital, health facilities and adequate education despite the expansion of government facilities. These facilities cannot keep up with the growth of human numbers as well as rising aspirations and demand for modern facilities.

One of the ways of dealing with these long-term problems is to create an environment that would enable the population to be innovative. So far the government has admitted in numerous documents and policy statements that the needs of the rural people, especially the poor, will have to be increasing met through off-farm activities. These activities will have to be technology-intensive.

The types of technologies adopted in the rural and urban areas will need to reflect the social conditions prevailing in these areas. Previous attempt to equate technology with large-scale machinery have resulted in massive losses of foreign exchange and numerous factories are either operating well below capacity or have been shut down. The future seems to lie in the diversification of the economic base through the use intermediate technologies that can be generated or fabricated locally.

There are specific areas of technological intervention that have not been given specific attention in relation to their role in economic development. One of them is transport. So far, economic evolution in Kenya has been accompanied by large jumps from human power to the automobile without the development of intermediate technologies. On the other hand, economic activities are increasing cumulatively without experiencing similar leaps.

As a result, a large share of the goods transported in the rural areas are too large to be transported on the heads and too small to justify automobile use. Moreover, in many parts of the country the poor cannot increase their economic activities because of the transport bottleneck. This situation could be improved through the introduction of diverse intermediate transport technology. Currently, the country does not fabricate bicycles although the capacity to do so exists.

As a result, bicycles are only available to the rural rich who can then move their goods to further markets, a factor that increase inequality in the localities. Other areas that could benefit from intermediate technology is the transport of agricultural produce such as sugarcane to nearby factories. So far, most of the transport is done by lorry and tractor owners who do not even live in the areas. If part of this was replaced by animal draught power which could help retain some of the capital in the area of operation.

6.2 Decentralized Development

The pressure to decentralize the development process in Kenya is increasing. Not only is this going to be realized through the government's own plans to empower the districts, but decentralization is also going to result from the increased involvement of local community groups in economic activities. Although it is not clear what technological implications the process will have, it is likely that the trend will force the country to examine the role of decentralized and small-scale technologies.

In addition to the district focus and the role of community groups, the government is also promoting the lake and river basin development authorities. These authorities are based on drainage and local resources for development. If strengthened, they will form another forum at which to undertake decentralized development activities. Resource-based development strategies will also have their technological imperatives and the local requirements lead to different innovations.

6.3 Jua Kali

The *jua kali* artisans represent a large pool of skills and innovative activities. Although the government has recently initiated a number of schemes aimed at supporting the sector, such efforts fall too short of the needs to support the sector. In the first place, very little is known about the sector. The schemes introduced by the

government deal largely with finance, which is indeed a major constraint. However, other requirement such as raw material supply and market share have not been adequately reviewed.

This sector needs to be adequately studied to understand its main sources of innovation and the factors which influence its development. There is a need to integrate the sector the rest of the economy so that viable linkages are established between the two. The current policy reforms being introduced to support the sector need to reflect the need for integration, especially with locally-owned firms in the formal sector.

6.4 Popular Organizations

Community organizations, voluntary groups and non-governmental organizations (NGOs), church groups and other popular organizations play a significant role in development in Kenya. In addition, there are numerous networks in the rural areas which do not even have formal names and contribute extensively to local development efforts. Many of these organizations are constantly searching for solutions to local problems. They tend to be knowledge-intensive and are therefore vital agents in the diffusion of technology.

In recent years Kenyan popular organizations have grown both in number and strength. There are about 400 registered NGOs in Kenya. Most of the groups do have project that have technological components. The fact that most of these groups deal directly with the poor makes them more suitable for diffusing intermediate technologies. Recent changes in the policy regime in Kenya have also enhanced the positions of these organizations.

The District Focus strategy, for example, allows for NGO participation on various committees. This could ensure that the interests of the very poor are reflected in the design of various projects. Currently, the government is working on a policy to rationalize the operation of NGOs since they represent a legal anomaly. They are registered either under the Companies Act or the Societies Act, neither of which provides adequate measures for the operation of most NGOs.

As the country moves towards an intensive technology-based development path, the role of NGOs will become more technical and some of the groups will have to increase their scientific and technical competence. Already, there are national NGOs

which are involved in the training of local groups and it is a matter of time before some of these groups start setting up research laboratories and other facilities for research and development.

The recent decision by the Ministry of Research, Science and Technology to set up research centres in the districts will also create a suitable environment for the promotion of NGO research. This, however, will depend on whether the Ministry will allow the local community to influence the direction of research at the centres.

There are numerous international, regional, national and local NGOs operating in Kenya. The effectiveness of these groups varies considerably. Indeed, not all the national, regional and international organizations are involved at the grassroots. Those that work with the people tend to have technical problems although most of their resources are devoted to raising public awareness on some of the most urgent problems facing the communities.

So far there is no adequate way of classifying NGOs. Indeed, these organizations do come with the negative definition partly because they do not fall in any specific categories. The fact that they are adaptive institutions responding or anticipating social problems and searching for ways of making the necessary adjustments makes them fluid and difficult to classify using rigid criteria. Moreover, since their contributions are in the form of adaptive knowledge, their effectiveness cannot be readily measured in quantitative terms.

Among the key international NGOs based in Nairobi is the Environment Liaison Centre (ELC) which has the mandate to support, assist and encourage NGOs working on environment and development. The ELC was established at the United Nations Conference on the Human Environment at Stockholm and has been operating in Nairobi since 1975. Most of its operations have been devoted to the dissemination of information although more recently the organization has been able to provide small grants to NGOs.

The ELC, however, has not been able to develop programmes that would enable them to work directly with NGOs at the local level. If this potential were realized, the ELC would become a vital institutions in the promotion of the development of alternative or intermediate technologies to meet the needs of the local populations.

More recently, the ELC has promoted the formation of the African NGOs Environment Network (ANEN) which was registered in Kenya in December 1987 but has been in operation since 1986. ANEN has the mandate to co-ordinate African NGOs in various environmental fields, especially desertification control. The organization has not so far been able design any innovative projects, partly because of the lack of staff.

Most of ANEN's funding comes from the United Nations Environment Programme (UNEP). ANEN has both the goodwill and potential to play a significant role in promoting technologies to combat desertification. But to achieve this, the organization will have to work directly with the people and not by proxy.

One of the NGOs that has been most successful in reaching the local people and providing technical support has been the Kenya Energy NGOs Association (KENGO). The organization was formed in 1982 following the United Nations Conference on New and Renewable Sources of Energy in Nairobi in 1981. KENGO has over the years been able to introduce energy efficient cookstoves and promote agroforestry efforts in various parts of the country.

The success of the organization lies in the fact that they have made efforts to ensure that the needs of the local people are reflected in the design their technical assistance programmes. With its experience in the field of energy, KENGO could utilize the outreach so far developed and move into other areas of technological development. So far the history of KENGO have not been adequately documented and so it is not easy to learn from their experiences.

One of the largest NGOs in the country is the Maendeleo ya Wanawake (Women's Development) which comprises of most of the women's groups in the country. MYW has over the years undertaken work that involved the introduction of intermediate technologies and provides a useful network through which new innovations can be developed and promoted. Recently, MYW has been co-opted by the ruling party KANU. It is not clear how this will affect its effectiveness, especially its ability to attract non-partisan funding, support and collaboration.

There are NGOs such as Undugu Society which are involved in technical training. Undugu Society is expected to play a major role in Kenya in the promotion of technological development given its current scope and orientation. Other major organizations in Kenya which are involved with technological projects include the National Christian Council of Kenya (NCCCK) and the African Medical Research

Foundation (AMREF). This sampling does not adequately represent the extent of NGO activities in Kenya.

One of the main problems facing the poor has been limited access to information on their legal rights. This is particularly important because the poor have in many cases lost some of their basic resources such as land as a result of entering deals which eventually dispossessed them. Organizations such as the Public Law Institute (PLI) were set up to provide free legal aid to the very poor. Although PLI does not deal directly with technology, many of the cases they deal with have technological implications.

There are new types of NGOs being set up in Kenya which have an explicit research agenda covering both technical issues and public policy questions. One of these is the recently established African Centre for Technology Studies (ACTS) whose work is to specifically promote the application of science and technology to development.

CONCLUSION

Kenya is currently facing major problems resulting from the high population growth rate as well as declining availability of arable land. The number of people below the poverty level is rising and the country is already considering various ways in which the future labour force could be employed. Already various policy reforms have been introduced which indicate that the country recognizes the role of science and technology in long-term economic development. However, these concerns need to be located in clear strategies for technological development which take into consideration the needs of the poor.

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