



REPUBLIC OF KENYA

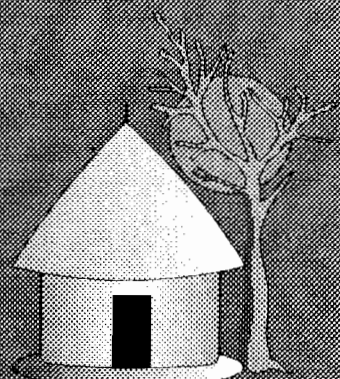
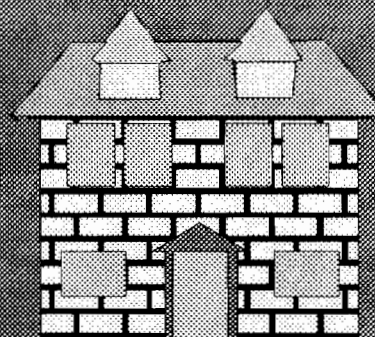
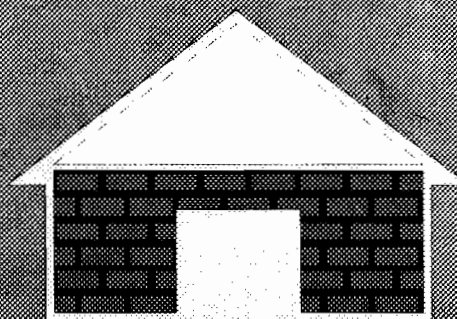
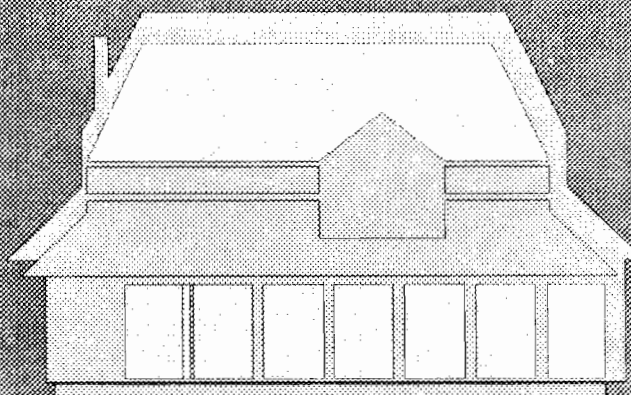
KENYA POPULATION CENSUS 1989

ANALYTICAL REPORT VOLUME X

HOUSING

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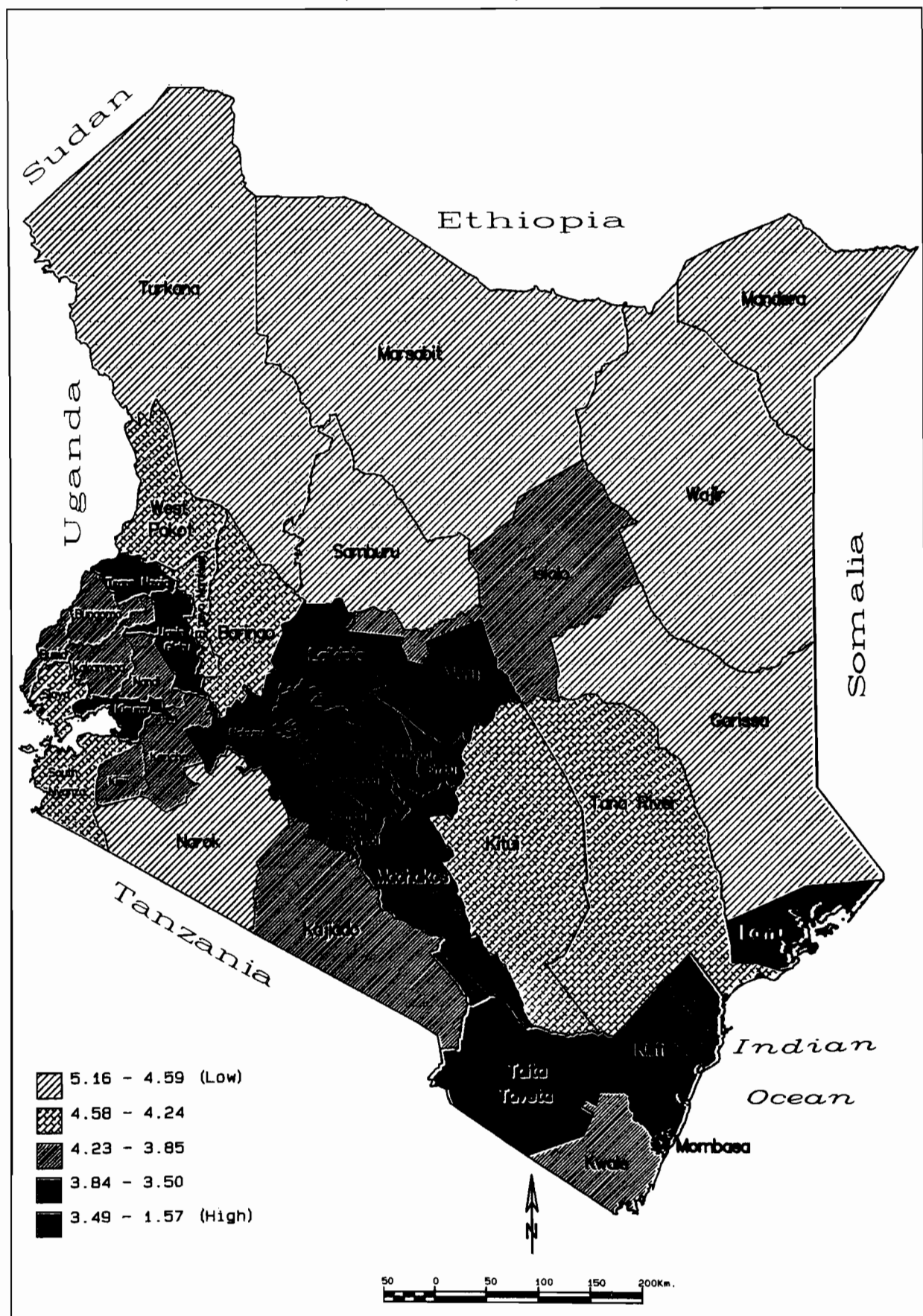


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1989**

**ANALYTICAL REPORT:
VOLUME X**

HOUSING

KENYA: HOUSING QUALITY - 1989



Map Production: DRSRS/CBS

1989 Population Census

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Foreword

The 1989 Population and Housing Census was carried out on a de facto basis with the midnight of 24/25 August as the reference date under the provisions of the Statistical Act (Cap. 112) of the Laws of Kenya and as per Legal Notice No. 466 of 4 November, 1988.

The census was taken to determine: the size, composition and distribution of the population; the levels and trends of fertility, mortality, migration and urbanisation; and to obtain information on housing, education, and employment.

The analytical work involved collaborative efforts of both local and external experts, a number of institutions and the Central Bureau of Statistics (CBS). The recruitment of the professional experts was done on a competitive basis, ensuring that in addition, such experts had adequate knowledge and involvement in the Kenyan demographic scene.

The production of the tabulations for the analyses was preceded by a rigorous programme of validation and editing to ensure internal consistency and to minimise errors. The analysis was therefore carried out on cleaned data files, and the population projections, in particular, are based on the census figures adjusted for errors of coverage. Should there be any discrepancies between the basic data in Volumes I and II and the cleaned data in the new volumes, the latter are preferred.

This volume presents analysis of data on housing conditions and amenities collected during the 1989 population census. The Census findings revealed among others that urban areas had better housing conditions and amenities compared to rural areas with significant regional variations. Female headed households who accounted for over 35 per cent during the 1989 Census continue to lag behind compared to their male counter parts with regard to quality housing and accessibility to social amenities. Future housing policies need to address the problem of housing condition in the rural areas, and to be responsive to female headed households' special needs.

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Acknowledgement

The 1989 Population and Housing Census was the fifth census after those of 1948, 1962, 1969, and 1979. The census collected more information that was comprehensively analysed than any previous censuses.

The 1989 census was a strenuous and costly exercise which was accomplished through concerted efforts of many organisations, institutions, government ministries and individuals who assisted in a variety of ways in preparing, collecting, compiling, processing, analysing and publishing the census results. The Office of the Vice President and Ministry of Planning and National Development and in particular, the Central Bureau of Statistics (CBS), wish to thank all of them and pay special tribute to the late Director of Statistics, Mr. P.P. Kallaa.

Further, the Ministry wishes to thank UNFPA, UNDP, CIDA, ODA, UNDTCD, UNECA and the Government of Netherlands for their material, financial and technical support at all stages of preparing and conducting the census. Special commendation go to UNFPA and ODA for providing further support for the detailed analysis of the 1989 census. In particular, the Ministry wishes to acknowledge contributions from the authors, technical support staff and professionals who individually and collectively gave comments and advice in the process of writing the various volumes.

EXECUTIVE SUMMARY

It has always been the desire of the Government of Kenya to improve the housing and living conditions of its people. This has been exemplified through a number of housing development initiatives which have been undertaken since independence. These initiatives include site and service schemes, slum upgrading, rental schemes, tenant purchase schemes and the rural housing loan scheme. In 1989 when the census exercise was carried out, issues on housing characteristics and social amenities were addressed for the first time.

A number of findings emerged from the analysis. In the first place, it was evident that female headed households were quite significant as they accounted for over 35 per cent of the total. It was also found that the median household size for Kenya was 4 persons with certain districts registering 5.2 persons. Household heads were generally found to be young with a median age of 36.5 years. It was further found out that the majority of households (71.2 per cent) had at least one child under 15 years. There were however marked variations between districts.

On the question of housing stock by tenure, the analysis revealed that, 54.1 per cent of the households were owner occupiers while 45.9 per cent were renters. The analysis further showed that public sector housing accounted for only 4.6 per cent of the total housing stock. In terms of average household occupancy rates, the national figure was 4.9 persons while rural and urban areas 5.3 and 3.5 persons respectively.

As per quality of housing in terms of construction materials for roofs, the dominant roofing material was iron sheets (51.5 per cent) followed by grass/makuti (40.2 per cent). As far as walls were concerned mud/wood was the most occurring type (56.8 per cent). Analysis on floors indicated that earth finished floors were the majority in the country (69.7 per cent).

In terms of durability of construction materials, roofs registered the highest proportion (51.9 per cent) followed by floors (27.1 per cent) and walls (21.1 per cent).

Further analysis on housing quality by sex of head of household showed that in almost all districts, male headed households had better houses than their female counterparts. At the national level, it was evident that 55 per cent of male headed households had durable roofs compared to 48.7 per cent for female headed households. For walls, the analysis showed that 20.3 per cent of the male headed households had durable walls compared to 17.6 per cent for female headed households. With respect to floors, 28.9 per cent of male headed households had durable floors compared to 24.6 per cent of females.

In terms of housing by social amenities (water, sewage disposal, cooking fuel and type of lighting), the analysis revealed that stream/river was the main water source for the country's households because it was used by 39.8 per cent of the population. Piped water was used by 31.9 per cent of the households. Analysis of type of sewage disposal showed that pit latrines were the most commonly used in the country since 68.5 per cent of the households used the facility followed by the bush (20.1 per cent). The analysis further showed that firewood was the most dominant cooking fuel in the country. It was used by 73 per cent of all the households in the country. With respect to the type of lighting, it was found that 81.3 per cent of the households used paraffin lamps.

It was also found that the country registered significantly poor house rank quality indices especially in the rural areas. At the national level, a 3.60 house rank quality index was registered as opposed to 1.00 which would be the ideal index.

The situation as portrayed in this volume calls for all actors to re-examine their approaches so as to come up with more appropriate interventions that will address the root causes of housing problems.

CHAPTER 1: INTRODUCTION

1.1 Background

Throughout man's history, the need for shelter against the natural climatic elements has been one of the basic needs of human survival. The lives of family groups have rotated around the central focus of shelter. With the passage of time, the range for housing options has widened and the means of assessing its relative qualities has represented an increasingly perplexing task. (Duncan, 1971).

By comparison with demographic characteristics, housing assessment is complicated by social, economic and political overtones. The desirable characteristics of a house mean different things to different people. Certainly the presence of certain basic facilities such as a bathroom and a wholesome internal water supply might be sought by all, but the immediate surroundings of a house and its location can be almost as important. These attributes are much more difficult to quantify and compare. While some families have no need for a garden, others highly value them. Some wish to live closer to a town centre for the convenience. Others, in apparently the same socio-economic category do not mind a journey to work if they can live in more open surroundings. Moreover, people's social customs and traditions affect their priorities in housing.

The fact that different nations hold housing in different esteems makes the adoption of standards for international comparison very difficult. The rigours of climate in higher latitudes make intolerable the flimsy structures which may serve as dwellings in warmer climates.

It is now generally agreed that meaningful standards can be developed only at the national or local level. It is left to countries themselves to establish and define the standards used to differentiate acceptable and unacceptable living conditions.

1.2 An Overview of Housing Standards in Kenya

In Kenya, the quality of housing in the urban areas is defined by the Building Code and the Public Health Act which specify the building standards needed to be observed. In fact, the building by-laws and planning regulations are considered to be a pre-requisite to safe and healthy built environment. The Building code has the following specifications, which in part illustrate the above argument:

Siting and Space About Buildings:

1. By-law 17 (1) states that a domestic building shall be so sited as to leave an open space immediately in front thereof which extends along the whole width of the front of the building and is not less than 6 metres measured at right angles.
2. By-law 19 indicates that any building which contains more than one dwelling should be designed to have an internal courtyard or open space, free from obstruction of not less than 32.5 square metres and having no dimension less than 4.5 metres.
3. By-law 24 stipulates that all new buildings shall be so sited on a plot as to ensure hygienic and sanitary conditions and to avoid as far as possible any nuisance or annoyance to the owners or occupiers of neighbouring plots.

Building Materials

1. By-laws 32 (1) indicates that no person shall use or permit or cause to be used in the erection of a building any material which is not -
 - (a) Of a suitable nature and quality for the purpose for which it is used;
 - (b) adequately mixed or prepared;
 - (c) applied, used or fitted in a proper manner so as adequately to perform the functions for which it is designed.

Walls

1. By-law 52 provides that all walls built of stone, bricks or blocks shall be hard, durable and suitable for the purpose for which they are used.
2. By-law 65 notes that every external wall of a domestic building shall adequately resist the penetration of rain.
3. By-law 66 indicates that no wall shall permit the passage of moisture from the ground to the inner surface of any building or any part thereof.
4. By-law 72 (b) provides that every external wall of a small house (dwelling house of a capacity of less than 560 cubic metres, but does not include a flat) shall have a resistance to internal fire of half an hour.
5. By-law 77 Stipulates that the external wall of any building other than a small house, shall, unless otherwise provided for in these By-laws, be non-combustible throughout and have a fire resistance of two hours.
6. The code also provides for various thicknesses of walls ranging from 215 millimetres to 762 millimetres depending on height and length.

Roofs

1. By-Law 94 (1) provides that a roof shall be so covered as to afford adequate protection against the spread of fire into the building.

A roof shall be deemed to satisfy the above requirements if it is covered with one or more of the following materials:-

- (a) Natural slates, or slabs of stone
- (b) Tiles or slabs of burnt clay or concrete
- (c) Slates, tiles or sheets of asbestos cement
- (d) Corrugated sheets of galvanized steel, or of other not less suitable materials, of an approved thickness.
- (e) Metal sheeting covered on both inner and outer surface with bituminous materials, or a similar approved weather - resisting protective covering
- (f) Glass tiles or sheets, or glass bricks or blocks in concrete on metal frames
- (g) Lead, copper, zinc or aluminium, of an approved thickness
- (h) Asphalt mastic with sanded or gravelled finish containing not less than 83 per cent of mineral matter and laid not less than 18 millimetres thick on a suitable base;
- (i) Organic based roofing felt laid directly on a base of non-combustible material; not less than 13 millimetres thick and
- (j) Organic based roofing felt covered with non-combustible materials, not less than 13 millimetres thick, or with bituminous macadam composed of fine gravel or stone chippings with not greater than 7 per cent of bituminous material.

It should, however, be noted that the code has since been revised to focus on performance as opposed to type of materials.

2. By-law 96 provides that the roof of a building shall be weatherproof.

Floors

1. By-law 98 indicates that every domestic building shall adequately resist the passage of moisture from the ground. For a floor to satisfy this requirement, it should be such that its structure or its finish is impervious to moisture or has a damp proof layer.

Refuse Disposal

1. By-law 139 (1) provides that every domestic building shall be provided with approved means of refuse disposal.

Water Supply

1. By-law 143 (1) states that plans of a building shall show that an approved supply of wholesome water sufficient for the purpose to which the building is to be put will be provided.

Drainage

By-law 168 provides that unless the council otherwise agrees, plans of every house must show satisfactory provision for the drainage of the building.

There is no separate legislation to govern the standards of housing in the rural areas. What is, however, expected is that a house in a rural setting should be such that it guarantees shelter, comfort, security and privacy of the occupants.

1.3 Overview of the Housing Policy for Kenya

The main objective of the Government of Kenya has been the provision of decent housing to its population in both urban and rural areas. Decent housing refers to shelter, the contiguous facilities it provides and the entire system of supportive and facilitative infrastructure and services available within the living environment of the households. Its provision to every Kenyan family has been the long term objective of the government. This is because it has been realized that good housing improves health, reflects status in the community and is an investment which commonly increases value over time and can also be improved incrementally.

In recognition of the importance of housing, the government in 1964 invited a United Nations Mission to investigate the short and long term housing needs in Kenya and to make recommendations on policies, strategies and programmes which were to be pursued within the country's socio-economic setting.

The 1964 UN Mission report was later extensively used in preparing Sessional paper No. 5 of 1966/67 on Housing. As per the time of the 1989 Housing and Population Census, this was still the official Housing policy for Kenya. The policy was to serve as a guide to all parties involved in housing development. It addressed urban and rural housing, finance for housing, administration of the housing sector, housing programmes to be pursued, and research and education. This policy has since been revised and as at the time of the analysis, it was in draft form.

1.4 Constraints to Housing Development

Although as a result of the 1966/67 Housing Policy major advances have been witnessed in the country's housing sector, several constraints in housing development have been identified. These are:

- i) **Finance:** It has not been possible over the years to provide adequate finance in order to cater for the shelter needs of all Kenyans. During the first five years of independence, the role of the government was to encourage the private sector to play an increasing part in building more houses and in assisting local authorities through the National Housing Corporation to enlarge their public housing programmes; and the Local Government Loans Authority to finance associated offside infrastructure. To stimulate the private sector, the government in collaboration with the Commonwealth Development Corporation (CDC) established the Housing Finance Company of Kenya Limited (HFCK) at the beginning of 1966. The main objective of HFCK was to make loan funds available to people wishing to acquire their own homes in the main urban centres. This was followed by the mushrooming of a number of building societies some of which have since collapsed. Although an elaborate financial system has developed in Kenya since independence, the housing finance sector has not been able to adequately respond to housing needs of the various categories of Kenyans in both urban and rural areas.

For instance, mortgage lending by licensed financial institutions presently goes to middle and high income households and is concentrated almost exclusively to home owners in urban areas. Low income earners are in most cases unable to qualify for housing loans due to the stringent terms of lending which include high qualifying incomes, interest rates and short-term repayment periods which make monthly repayments unaffordable. The primary constraint in the rural areas is the lack of an overall loan lending system other than for short-term loans which are not suitable for housing investment. The Building Societies Act is also a further constraint to housing development for low income earners because it is not sensitive to their housing finance needs.

- ii) **Land:** The demand for land over the years has been so high that prices have skyrocketed. From the available records, it is noted that public land reserves are fast dwindling and are almost exhausted in the main urban areas. Most of the available land is not planned and has no basic infrastructure, and this is one of the main impediments to increasing housing stock. Insecurity of tenure has adversely affected the quantity of housing stock and its quality.
- iii) **Building Materials:** Building materials constitute the single largest input in construction and account for about 70 per cent of the total cost. The high cost of building materials has limited the quantity and quality of housing produced in the country.

- iv) **Building by-laws and Planning Regulations:** The current building by-laws and planning regulations have tended to favour high income earners who are a minority, by specifying very high standards. The Grade II by-laws, which were meant to be friendly to low income earners have not been adopted by many local authorities.
- v) **Enabling Legislation:** The provision of housing in Kenya is not governed by one comprehensive Act of Parliament. It is regulated by various Acts of Parliament and delegated legislations, the most important of which are the Local Government Act, Public Health Act, Building Societies Act, Town Planning Act and Housing by-laws formulated by various local authorities. In the process of planning, designing and implementing housing projects, delays are experienced because of the need to refer to the various Acts and delegated legislations relevant to finance for housing. One of the constraints relates to the conditions set out in the Banking Act and other rules and regulations issued by the Central Bank and Treasury. In Particular, these do not give incentives to banks and financial institutions to invest in housing.

1.5 Past Housing Surveys

There is a general feeling that the performance of the housing sector over the years has not been satisfactory notwithstanding the fact that, in principle, the housing policy seems to be quite elaborate.

The following are some of the housing surveys which have been conducted to assess the sector's performance:

1. In 1975 the then Ministry of Housing and Social Services conducted a postal questionnaire survey on Housing in 22 towns in the country for both public and semi-public sectors. The survey gave an estimated 76,933 public and semi-public dwelling units. Average number of persons per unit was estimated as 4.4.

It was however impossible to compile the data to an accuracy of 100 per cent due to the fact that no reliable housing records were kept. It was therefore recommended that the best way to get reliable data would be the inclusion of a housing component during the 1979 census.

2. At the end of 1978, the then Ministry of Housing and Social Services commissioned a survey on Kenya's Urban Housing needs and demand for the period 1978 to the year 2000. The study analyzed the housing needs and demand for each of the 105 centres that would have been urban between 1980 up to the year 2000. A questionnaire was sent to the various authorities concerned but the required information did not come out clearly. However, the following observations and recommendations were made:

- i) There was no record of the total existing housing stock in the country. It was therefore recommended that the Ministry in charge of Housing should work out a methodology and statistical machinery of establishing the existing housing stock.

- ii) That there seemed to be no reliable record of total house production in the country.
 - iii) That there seemed to be no communication between the Ministry in charge of housing and local authorities. For instance, it appeared that housing policy was formulated from the top without referring to the local authorities.
- 3. Data collected in 1979 by the Central Bureau of Statistics through the rent survey estimated the total number of dwelling units in the urban areas (both private and public to be 360,000 units with a total of 1.6 million occupants.
- 4. The Housing and Building Research Institute (formerly known as the Housing Research and Development Unit) of the University of Nairobi has been involved in several housing surveys and researches. These include:
 - (a) Site and service schemes, Analysis and Report by P. Houlberg, N.O. Jorgensen, and R. Steele. This was an analysis of 12 existing and planned site and service schemes in Kenya that was requested for by the National Housing Corporation (NHC) in order to develop recommendations for the planning and operation of the large number of new schemes programmed for the development period 1970-74.
 - (b) National Housing Corporations Rental Schemes by Kamau which surveyed and analyzed a series of schemes designed by the corporation.
 - (c) Housing by-laws in the Kenya Building Code by J. Eygelaar. The study aimed at simplifying systematic presentation of all clauses relevant to the planning, design and erection of houses as a first step towards an illustrated explanatory manual.
- 5. The most comprehensive housing survey ever conducted in Kenya was the 1983 Urban Housing Survey which covered a wider range of housing related issues than all the previous attempts. It was launched in the early part of 1983 and covered 32 urban centres sampled from the whole country. The survey had the following objectives:
 - i) To provide information on characteristics of urban housing stock in terms of quantity, quality and value.
 - ii) To improve the existing data regarding the demand for and supply of housing to facilitate the preparation for future housing projection and programmes.
 - iii) To make estimates on affordability and willingness of people to pay for these houses and services and hence measure the actual demand.

Relationship of Housing to Urban Households per Town

Table 1.1

Town	Number of Units	Population	Household size	Number of Households
Nairobi	40,710	775,078	4.3	180,251
Mombasa	8,142	338,935	4.5	75,319
Kisumu	3,670	87,407	4.5	19,424
Nakuru	8,045	62,827	4.5	13,962
Eldoret	3,676	29,768	4.5	6,615
Nyeri	1,144	15,650	5.5	2,845
Karatina	153	3,656	5.0	731
Malindi	172	15,608	4.5	3,468
Thika	2,497	35,374	4.5	7,861
Embu	635	7,816	4.5	1,737
Machakos	507	9,473	4.5	2,105
Meru	372	8,124	4.5	1,805
Kisii	552	9,124	5.0	1,825
Kiambu	370	3,720	5.0	744
Kericho	582	14,718	4.5	3,271
Nanyuki	1,127	14,708	4.5	3,268
Muranga	574	7,128	4.5	1,584
Kitale	1,552	16,887	4.5	3,753
Nyahururu	538	11,409	4.5	2,535
Webuye	835	4,392	5.0	878
Bungoma	322	6,792	4.5	1,509
Kakamega	758	10,675	4.5	2,372
Total	76,933	1,489,269	4.4	337,862

Source: Ministry of Housing and Social Services publication on the Housing Stock in the major towns of Kenya, 1977.

- iv) To determine the percentage contribution of each unit to the overall cost of housing.

The survey collected information on the following variables among others:

- (a) **Structures:**
 - i) Building and Scheme type.
 - ii) Type of Construction materials for walls, floors and roofs.
 - iii) Age and number of residential units.
 - iv) Distance to public amenities.
 - (v) Income for owners, source of funds, acquisition of land and structure.

(b) **Housing Units:**

- i) Number of rooms, ownership, amount of rent.
- ii) Water supply, bathing, cooking, lighting, toilet and telephone facilities.
- iii) Type of garbage disposal

(c) **Households:**

- i) Demographic characteristics
- ii) Education level of household head
- iii) Income and expenditure characteristics
- iv) Time and travel cost to places of work
- v) Willingness to pay
- vi) Past and future plans of movement between different units.

The 1983 Urban Housing Survey revealed that there were 167,665 structures in the 32 urban centres. In that survey, a structure was defined as permanent if its outer walls were constructed of such materials as stones, blocks, concrete or bricks. The semi-permanent/temporary comprised any other construction not having wall materials considered to be permanent. The analysis presented in Table 1.2 below show that of the total estimated number of structures, 98,129 or 58.5 per cent were classified as permanent with the rest being classified semi-permanent or temporary.

In terms of occupancy status presented in Table 1.3 below, renters dominated the Kenya urban housing market, accounting for 66 per cent of units while owner occupiers accounted for only 20 per cent. The category "other" which was interpreted to mean units given out by employers, relatives, friends, etc constituted about 14 per cent of the market. In Nairobi, Mombasa, Kisumu, Nakuru and Eldoret rented units accounted for more than 60 per cent.

In terms of quality of structures by construction materials, a wall was considered to be permanent and durable if it was made of such materials as stones, blocks, concrete or bricks. A floor was deemed non-durable if it was made of earth, or timber, otherwise it was considered to be durable. On the same note, a roof was considered non-durable if it was made of tin, thatched with grass or plant leaves, otherwise it was declared durable. On the basis of this classification 76.6 per cent, 69.6 per cent and 90.1 per cent of the floors, walls and roofs respectively were classified as durable. Analysis of Building materials by town is presented in Table 1.4.

Number and Percent Distribution of Structures by Status of Permanency
Table 1.2

Town	Permanent		Semi-Permanent/Temporary		Total
	Number	Per cent	Number	Per cent	Number
Nairobi	33,452	66.7	16,692	33.3	50,144
Mombasa	8,430	30.9	18,888	69.1	27,318
Kisumu	5,305	35.9	9,470	64.1	14,775
Nakuru	9,330	87.2	1,365	12.8	10,695
Eldoret	4,006	71.6	1,586	28.4	5,592
Malindi	477	15.3	2,632	84.7	3,109
Embu	2,446	88.8	310	11.2	2,756
Meru	2,300	96.4	87	3.6	2,387
Machakos	1,907	90.5	199	9.5	2,106
Athi River	1,090	81.3	250	18.7	1,340
Garissa	2,050	100.0	-	0.0	2,050
Nyeri	3,792	95.5	180	4.5	3,972
Karatina	503	82.3	108	17.7	611
Thika	3,616	67.1	1,774	32.9	5,390
Muranga	623	58.6	440	41.4	1,063
Nanyuki	1,664	65.7	870	34.3	2,534
Nyahururu	1,262	77.9	357	22.1	1,619
Lamu	570	36.5	993	63.5	1,563
Naivasha	1,332	83.8	257	16.2	1,589
Kabarnet	746	98.5	11	1.5	757
Voi	464	27.2	1,586	28.4	5,592
Kitale	2,863	87.2	420	12.8	3,283
Kapenguria	368	57.9	267	42.1	635
Kericho	2,831	80.9	668	19.1	3,499
Kilifi	202	15.6	1,092	84.4	1,294
Homa Bay	506	38.3	817	61.7	1,323
Kisii	1,510	74.6	514	25.4	2,024
Kakamega	2,165	47.0	2,440	52.9	4,605
Siaya	597	69.9	256	30.0	853
Bungoma	566	15.5	3,074	84.5	3,640
Webuye	752	47.2	843	52.8	1,595
Busia	404	21.9	1,436	78.0	1,840
Total	98,129	58.5	69,536	41.5	167,665

Source: Urban Housing Survey, 1983, Basic Report

The analysis also touched on water and toilet facilities because of the realization that the supply of water and the availability of toilet facilities are vital services in all urban centres. The 1983 urban housing survey results showed that, of the estimated units in the urban areas, 85.3 per cent had water inside or within 100 metres while the remaining 14.7 per cent had sources of water beyond 100 metres. The distribution of toilet facilities was such that pit latrines accounted for 42.06 per cent followed by communal flush, private flush and other with the respective percentages of 28.49, 21.82 and 7.63.

The type of lighting to households was also analyzed. Three types of lighting facilities covered in the survey were electricity, paraffin lamp and "other". The group "other" included some renewable sources of energy such as biogas. Out of the estimated number of dwelling units, 44.1 per cent used electricity for lighting and 54.7 per cent used paraffin lamps with the remainder using other types of lighting. See Table 1.5.

Percentage Distribution of Occupancy Status by Town

Table 1.3

Town	Owner occupied	Rented	Other
Nairobi	29.13	65.57	5.30
Mombasa	28.95	64.10	6.95
Kisumu	10.42	84.59	4.98
Nakuru	11.58	67.05	21.37
Eldoret	4.08	88.05	7.87
Malindi	26.58	62.66	10.78
Embu	3.17	48.41	48.41
Meru	43.75	53.68	2.57
Machakos	48.58	18.79	32.62
Athi River	2.13	65.87	31.75
Garissa	36.64	35.88	27.48
Nyeri	24.84	31.85	43.31
Karatina	4.92	52.46	42.62
Thika	5.32	58.51	36.17
Muranga	19.74	48.68	37.58
Nanyuki	31.02	65.28	3.70
Nyahururu	1.74	51.16	47.09
Lamu	11.58	67.05	21.37
Naivasha	9.66	83.45	6.90
Kabarnet	7.87	50.56	41.57
Voi	4.08	88.05	7.87
Kitale	6.54	89.54	3.92
Kapenguria	7.46	74.63	17.91
Kericho	0.54	78.17	21.29
Kilifi	10.42	84.59	4.98
Homa Bay	23.88	56.72	19.40
Kisii	23.75	76.25	
Siaya	7.58	89.39	3.03
Kakamega	17.78	80.95	1.27
Bungoma	17.65	76.47	5.88
Webuye	13.94	76.97	9.09
Busia	11.95	83.65	4.40
Average	20.29	66.06	13.65

Source: Urban Housing Survey, 1983, Basic Report

Analysis of Building Materials by Town

Table 1.4

Province/ Town	Floors		walls		Roofs	
	Durable	Non-Durable	Durable	Non-Durable	Durable	Non-Durable
Nairobi	73.2	26.8	71.2	28.8	96.4	3.6
Mombasa	74.7	25.3	71.1	28.9	72.4	27.6
Kilifi	65.4	34.6	65.4	34.6	50.9	49.1
Malindi	86.5	13.5	80.0	20.0	59.0	41.0
Voi	80.2	19.8	55.2	44.8	95.3	4.7
Lamu	77.2	22.8	69.0	31.0	54.3	45.7
Coast	75.2	24.8	71.0	29.0	71.1	28.9
Embu	99.2	0.8	82.5	17.5	100.0	-
Machakos	74.1	25.9	74.0	26.0	97.9	2.1
A/River	91.5	8.5	77.3	22.7	99.0	1.0
Meru	53.0	47.0	18.6	81.4	95.2	4.8
Eastern	75.2	24.8	59.1	40.9	97.6	2.4
Garissa	80.8	19.2	74.3	25.7	77.7	22.3
N/Eastern	80.8	19.2	74.3	25.7	77.7	22.3
Nyeri	78.9	21.1	54.6	45.4	99.2	0.8
Karatina	72.9	27.1	60.6	39.4	100.0	-
Thika	97.1	2.9	95.3	4.7	95.6	4.4
Muranga	78.1	21.9	75.8	24.2	98.6	1.4
Nyahururu	70.5	29.5	45.9	54.1	97.7	2.3
Central	84.8	16.0	74.4	25.6	97.5	2.5
Nakuru	81.1	18.9	74.8	25.2	99.8	0.2
Naivasha	81.5	18.5	54.1	45.9	100.0	-
Eldoret	67.3	32.7	56.8	43.2	99.9	0.1
Kitale	71.0	29.0	67.9	32.1	97.1	2.9
Kericho	68.6	31.4	67.5	32.5	100.0	-
Kabarnet	98.0	2.0	41.4	58.6	100.0	-
Kapenguria	95.2	4.8	49.6	50.4	92.8	7.2
Nanyuki	35.6	64.4	34.9	65.1	88.4	11.6
R/Valley	74.2	25.8	64.9	35.1	98.7	1.3
Kisumu	90.0	10.0	84.3	15.7	97.6	2.4
Kisii	69.6	30.4	55.3	44.7	99.0	1.0
Siaya	92.1	7.9	78.8	21.2	89.6	10.4
Homa Bay	88.0	12.0	38.2	61.8	90.5	9.5
Nyanza	86.9	13.1	74.3	25.7	96.4	3.6
Kakamega	79.7	20.3	73.9	26.1	97.2	2.8
Webuye	76.8	23.2	80.4	19.6	94.0	6.0
Bungoma	72.8	27.2	64.4	35.6	98.6	1.4
Busia	71.9	28.1	72.1	27.9	84.7	15.3
Western	75.2	24.8	71.4	28.6	94.5	5.5
Total	76.6	23.4	69.6	30.4	90.1	9.9

Source: Urban Housing Survey 1983, Basic Report.

Percentage Distribution of Type of Lighting by Town
Table 1.5

Town	Electricity	Paraffin Lamps	Other
Nairobi	51.31	48.37	0.32
Mombasa	57.31	37.59	5.10
Kilifi	29.79	76.21	-
Lamu	58.14	41.86	-
Voi	43.24	56.76	-
Malindi	53.46	46.54	-
Embu	78.57	21.43	-
Meru	25.72	73.91	0.36
Machakos	12.41	87.59	-
Athi River	35.00	65.00	-
Garissa	18.94	81.06	-
Nyeri	45.34	54.66	-
Karatina	29.03	70.79	-
Thika	57.30	42.70	-
Muranga	53.29	46.71	-
Nanyuki	23.26	76.74	-
Nyahururu	29.48	69.36	1.16
Nakuru	69.16	30.52	0.32
Naivasha	36.24	63.76	-
Kabarnet	28.09	71.91	-
Eldoret	33.14	66.86	-
Kitale	34.44	64.57	0.99
Kapenguria	-	100.00	-
Kericho	12.13	87.87	-
Kisumu	46.10	53.30	0.60
Homa Bay	19.12	80.88	-
Kisii	35.00	65.00	-
Siaya	34.85	60.61	4.55
Kakamega	49.37	50.63	-
Bungoma	13.02	86.98	-
Webuye	43.79	56.21	-
Busia	19.50	80.50	-
Average	44.05	54.72	1.23

Source: Urban Housing Survey 1983, Basic Report.

As has been witnessed, most of the surveys have been restricted to urban areas with nothing much done for rural areas. This situation was a major constraint in monitoring the sector so as to respond adequately to evolving challenges.

1.6 The 1989 Population Census

Housing has both economic and social benefits in the economy. Its location relative to employment centres and community facilities is vital. As an economic entity, housing is considered a profitable investment yielding a flow of income and as a social facility, housing, when provided with adequate services such as water, sewerage, electricity and related services contributes to security and good health. Because of these roles and the inadequacy of past housing surveys to provide reliable and comprehensive information for planning and management, it was found necessary to include questions pertaining to housing conditions and amenities during the 1989 population and housing census. Conducting housing censuses is a relatively new development especially in Africa, Asia and Latin America. It should, however,

be noted that to obtain a clear description or measurement of housing conditions in the country, it is necessary to know the number of housing units existing as of a certain time, their structural characteristics, conditions of tenure and occupancy, and facilities; and housing programmes in general, which are designed to provide and maintain a sufficient number of permanent dwellings to meet basic housing requirements of adequate shelter, privacy and sanitation.

Housing questions (See appendix I) included in the census questionnaire were centred on the following topics:

1. Status of tenure of the main residential structures
2. Construction materials of the main residential structures by roof, wall and floor
3. Main source of water available to households
4. Main type of sewage disposal used by households
5. Main cooking fuel used by households
6. Main type of lighting accessible to households.

These topics capture the crucial housing characteristics which are used to develop relevant statistical indicators through quantitative and qualitative analysis as contained in this volume. The topics, though not exhaustive, fall within those recommended by the United Nations for investigation in housing censuses. These are:

1. **Basic Items:**

- Location
- Class of housing unit
- Number of occupants
- Number of households
- Water supply
- Type of dwelling
- Number of rooms
- Toilet facilities
- Occupancy
- Tenure

2. **Installations:**

- Cooking
- Bathing
- Electricity
- Gas
- Heating
- Cottage industry

3. **Household Conveniences:**

- Telephone
- Refrigerator
- Radio receiver
- Television
- Washing machine
- Vacuum cleaner

4. **Characteristics of building:**

- Type of building
- Year of Construction
- Materials of Construction
- State of repair
- Floor space
- Out-door spaces

5. **Occupancy:**

- Rent paid
- Capacity of occupation

6. **Ownership:**

- Owner
- Economic activity of owner

7. **Others:**

- Rent for land if rented separately
- Kind of lighting
- Sewing machine
- Number of floors in building
- Number of housing units in building
- Length of Occupancy of present household
- Tenure of previous housing unit
- Sewage disposal
- Access to housing unit
- Electric iron
- Water heater
- Garage
- Automobile
- Air Conditioner

Source: General Principles for Housing Census, United Nations Publications, Sales No. 58-XVII.8, 1965.

The beneficiaries of this information on housing are all the actors in the housing development process especially the Central Government, Local Authorities, producers, consumers and finance institutions. The information has relevance to each of these groups for planning and re-orientation so that focus is appropriately targeted. The data helps the users to understand the housing situation in the country. It is on the basis of findings from this information that weak and strong points in the housing process are identified, isolated and addressed.

In order that governments may make the right decision in the formulation of housing policies, it is essential that they have at their disposal, together with all other pertinent information, a thorough analysis of the existing housing situation, and, in particular, the estimated dwelling shortages and tentative future housing requirements. On the basis of this type of analysis, long-term programmes for housing and ancillary construction could be drawn up to provide for a steady and balanced improvement of housing standards and be realistic and suitable from the economic, social and technical point of view.

1.7 Evaluation of Data

Data used for the analysis on housing quality and availability of social amenities to households was obtained from responses to questions put to household heads during the census. Whereas the results presented in this volume are valid, it was noted that not all households responded to the relevant questions. The analysis is therefore based on the households which provided housing information.

1.8 Methodology

The field of housing has very few analytical techniques and models to compute the various desired indices. In view of this fact, basic cross tabulations, direct and indirect methods were deployed in analyzing the housing and social amenities data. Simple statistical tools were also used to derive some of the indices which appear in this volume.

1.9 Organization of the Volume

This volume is organized into eight chapters. The first one presents a general background of the housing sector including some information on past housing surveys. Chapter two deals with key household characteristics while chapter three handles housing stock by tenure. Chapter four deals with housing quality by construction materials while chapter five targets housing quality by social amenities. Chapter six consolidates the various housing attributes into summary indices while chapter seven gives an assessment of Kenya's housing policy. Chapter eight focusses on summary and recommendations.

1.10 Definitions

The definitions used in this volume are contained in Appendix V

CHAPTER 2: HOUSEHOLD CHARACTERISTICS

2.1 Background

Housing is for people and in order for a housing conditions analysis to be complete, key household characteristics must be understood. During the 1989 census, the household was taken as the basic unit of enumeration. This chapter presents analysis on the following key household characteristics:

- o Household heads by sex
- o Households by size
- o Households by age of head
- o Households by children under 15 years

2.2 Household Heads by Sex

The analysis presented in Table 2.1 revealed that female headed households were quite significant both at the national, provincial and district levels. At the national level, 35.2 per cent of the households were headed by females with the largest concentration (29.8 per cent) being in the rural areas. At the provincial level, Nyanza province had the highest percentage of female headed households (42.6 per cent) followed by Eastern (39 per cent), Western (38.2 per cent), Central (37.8 per cent) and Rift Valley (33.4 per cent). Nairobi had the least (19.5 per cent) of female headed household. At the district level, the districts with the highest percentage of female headed households were Samburu (52 per cent) and Siaya (51.8 per cent).

2.3 Households by Size

The analysis showed that households in the country had various sizes ranging from one person to twelve plus persons, with the one person households generally being the majority. Further analysis as shown by Table 2.2 indicated a variety of median household sizes in the country. The median figures do not include the twelve plus person households.

The median household size is supposed to be a measure of overcrowding in a house if dimensions are given. The 1989 census did not capture information on dimensions of houses. However, even without the dimensions, Table 2.2 gives a general picture of where most households clustered in terms of number of persons. It is generally clear from the table that whereas the national median household size was 4 persons, there were significant deviations from this. For example, Nairobi recorded 2.1 persons. At the provincial level, North Eastern and Western provinces recorded the highest household sizes (4.5 persons) followed by Eastern (4.4 persons) and Nyanza (4.1 persons). At the district level, the highest household sizes were recorded in Kilifi (5.2 persons), Machakos (5.2 persons), Kitui (5.1 persons), Kisii (5.1 persons) and Bungoma (4.9 persons). Appendix II presents more details on number of households by sizes and sex of the head of household.

Percentage Distribution of Households by Sex of Head and District, 1989

Table 2.1:

District/ Province	Male			Female		
	Urban	Rural	Total	Urban	Rural	Total
Kenya	75.8	61.6	64.8	24.2	38.4	35.2
Nairobi	80.5	-	80.5	19.5	-	19.5
Kiambu	71.8	63.7	65.1	28.2	36.3	34.9
Kirinyaga	68.1	66.8	66.9	31.9	33.2	33.1
Muranga	61.5	57.2	57.4	39.0	42.8	42.6
Nyandarua	65.8	61.6	62.1	34.2	38.4	37.9
Nyeri	77.3	58.7	59.5	22.7	41.3	40.5
Central	68.0	61.5	62.2	32.0	38.5	37.8
Kilifi	75.6	72.6	73.2	24.4	27.4	26.8
Kwale	76.9	68.7	68.8	23.1	31.3	31.2
Lamu	74.0	71.9	72.4	26.0	28.1	27.6
Mombasa	76.9	-	76.9	23.1	-	23.1
Taita Taveta	71.3	60.6	62.5	28.7	39.4	37.5
Tana River	70.3	70.5	70.5	29.7	29.5	29.5
Coast	75.2	68.7	70.7	24.8	31.3	29.3
Embu	70.7	66.1	66.6	29.3	33.9	33.4
Isiolo	62.7	56.1	58.3	37.3	43.9	41.7
Kitui	70.0	54.5	55.1	30.0	45.5	44.9
Machakos	71.4	57.2	58.3	28.6	42.8	41.7
Marsabit	60.1	57.1	57.6	39.9	42.9	42.4
Meru	71.2	70.4	70.4	28.8	29.6	29.6
Eastern	65.2	60.3	61.0	34.8	39.7	39.0
Garissa	67.0	68.0	67.7	33.0	32.0	32.3
Mandera	57.9	65.9	63.8	42.1	34.1	36.2
Wajir	60.1	68.5	66.7	39.9	31.5	33.3
North Easter	70.0	58.3	69.0	30.0	41.7	31.0
Kisii	67.9	61.2	61.6	32.1	38.8	38.4
Kisumu	74.1	56.0	62.4	25.9	44.0	37.6
Siaya	65.8	47.5	48.2	34.2	52.5	51.8
S. Nyanza	68.3	55.9	56.7	31.7	44.1	43.3
Nyanza	73.0	55.1	57.4	27.0	44.9	42.6
Baringo	70.6	64.1	64.9	29.4	35.9	35.1
E/Marakwet	75.0	67.4	67.6	25.0	32.6	32.4
Kajiado	70.1	57.4	60.2	29.9	42.6	39.8
Kericho	79.0	70.0	70.6	21.0	30.0	29.4
Laikipia	68.6	59.8	61.3	31.4	40.2	38.7
Nakuru	74.7	64.1	67.6	25.3	35.9	32.4
Nandi	74.4	73.0	73.1	25.6	27.0	26.9
Narok	71.4	60.0	60.7	28.6	40.0	39.3
Samburu	72.1	46.4	48.0	27.9	53.6	52.0
T/ Nzoia	74.1	69.4	70.3	25.9	30.6	29.7
Turkana	73.9	54.4	55.2	26.1	45.6	44.8
Uasin Gishu	78.5	69.4	72.9	21.5	30.6	27.1
West Pokot	77.3	61.7	62.3	22.7	38.3	37.7
Rift Valley	73.7	65.1	66.6	26.3	34.9	33.4
Bungoma	73.1	68.5	69.0	26.9	31.5	31.0
Busia	70.8	57.4	57.8	29.2	42.6	42.2
Kakamega	70.6	57.9	58.5	29.4	42.1	41.5
Western	69.2	61.2	61.8	30.8	38.8	38.2

Median Household Sizes by District, 1989

Table 2.2:

District/Province	Persons
Kenya	4.0
Nairobi	2.1
Kiambu	4.0
Kirinyaga	3.3
Muranga	4.4
Nyandarua	4.1
Nyeri	4.3
Central	4.0
Kilifi	5.2
Kwale	4.6
Lamu	3.9
Mombasa	2.2
Taita Taveta	3.8
Tana River	4.3
Coast	4.0
Embu	4.4
Isiolo	3.5
Kitui	5.1
Machakos	5.2
Marsabit	3.5
Meru	4.6
Eastern	4.4
Garissa	4.4
Mandera	4.4
Wajir	4.6
North Eastern	4.5
Kisii	5.1
Kisumu	3.5
Siaya	3.6
S. Nyanza	4.2
Nyanza	4.1
Baringo	3.9
E/Marakwet	3.8
Kajiado	3.6
Kericho	4.4
Laikipia	3.8
Nakuru	3.4
Nandi	4.7
Narok	4.2
Samburu	3.7
Trans Nzoia	4.5
Turkana	4.0
Uasin Gishu	3.8
West Pokot	3.7
Rift Valley	3.9
Bungoma	4.9
Busia	4.2
Kakamega	4.4
Western	4.5

2.4 Households by Age of Household Head

The analysis revealed that most household heads in the country were youthful. It was evident that most of them were in their thirties. Table 2.3 shows the median age for household heads at the time of the census. The figures exclude the less than 15 category, the 65 plus category and the not reported.

Median Age for Household Head by District, 1989

Table 2.3

District/Province	Age
Kenya	36.5
Nairobi	32.1
Kiambu	34.0
Kirinyaga	36.7
Muranga	38.5
Nyandarua	36.2
Nyeri	37.5
Central	36.6
Kilifi	38.5
Kwale	38.4
Lamu	37.1
Mombasa	32.6
Taita Taveta	38.4
Tana River	36.1
Coast	36.9
Embu	37.3
Isiolo	35.7
Kitui	40.8
Machakos	38.7
Marsabit	38.3
Meru	37.4
Eastern	38.0
Garissa	37.0
Mandera	37.2
Wajir	38.5
North Eastern	37.7
Kisii	36.3
Kisumu	37.0
Siaya	41.7
South Nyanza	38.4
Nyanza	38.4
Baringo	36.1
E/Marakwet	36.8
Kajiado	33.0
Kericho	36.0
Laikipia	36.0
Nakuru	33.7
Nandi	37.3
Narok	33.9
Samburu	37.1
Trans Nzoia	36.0
Turkana	37.7
Uasin Gishu	38.8
West Pokot	35.4
Rift Valley	36.0
Bungoma	36.3
Busia	37.7
Kakamega	37.7
Western	37.2

The table confirms that there are some variations within regions on the issue of median age for household heads with Siaya recording the highest age (41.7 per cent) followed by Kitui (40.8 per cent).

2.5 Households with Children Under 15 Years

The analysis on households with children under 15 years presented in Table 2.4 showed that a majority of households in the country had at least one child under 15 years.

**Percentage of Households with One or More Children Under
15 Years by District, 1989**

Table 2.4

District/Province	Percentage
Kenya	71.2
Nairobi	42.9
Kiambu	62.7
Kirinyaga	72.0
Muranga	71.7
Nyandarua	74.0
Nyeri	67.7
Central	69.6
Kilifi	75.1
Kwale	75.4
Lamu	66.9
Mombasa	46.8
Taita Taveta	66.8
Tana River	76.6
Coast	67.9
Embu	74.5
Isiolo	72.3
Kitui	81.0
Machakos	79.5
Marsabit	76.1
Meru	80.1
Eastern	77.3
Garissa	77.7
Mandera	82.2
Wajir	83.6
North Eastern	81.2
Kisii	84.7
Kisumu	66.8
Siaya	69.9
South Nyanza	77.5
Nyanza	74.7
Baringo	72.5
E/Marakwet	71.6
Kajiado	72.0
Kericho	76.2
Laikipia	69.1
Nakuru	64.4
Nandi	77.1
Narok	80.9
Samburu	79.6
Trans Nzoia	76.1
Turkana	81.9
Uasin Gishu	67.5
West Pokot	77.1
Rift Valley	74.3
Bungoma	82.8
Busia	78.3
Kakamega	79.2
Western	80.1

Apart from Nairobi and Mombasa, the rest of the areas showed that households with at least one child under 15 years accounted for well over sixty per cent of the total number of households. Analysis by province showed that, North Eastern and Western had the highest

concentration of households with children under 15 years with 81.2 and 80.1 per cent respectively. At the district level, Kisii showed the highest concentration of households with children under 15 years (84.7 per cent) while Nairobi showed the least (42.9 per cent).

CHAPTER 3: HOUSING STOCK BY TENURE

3.1 Background

As has been mentioned elsewhere in this volume, countries always strive to ascertain their housing stock because of economic, social and welfare considerations. The 1989 census required household heads to state the tenure of their residences. This chapter gives highlights of the following:

- o Occupancy status of households
- o Public housing stock, and
- o Average household occupancy rate

3.2 Households by Tenure

The analysis revealed that most of the houses in the country were owner occupied. This was particularly true in the rural areas as opposed to urban areas where rental accommodation was dominant. Table 3.1 summarizes the tenure status of households as at the time of the census.

The table shows that owner occupancy at the national level stood at 73.0 per cent compared to a rental occupancy rate of 27.0 per cent. At the provincial level, the highest owner occupancy rates were recorded in North Eastern (88.5 per cent), Eastern (85.6 per cent) Nyanza (84.8 per cent) and Western (88.5 per cent). The lowest owner occupancy rate was recorded in Nairobi 13.4 per cent. District analysis generally showed high owner occupancy rates except for Nairobi (13.4 per cent) and Mombasa (23.1 per cent). Other details on this subject are contained in Appendix III.

Data on housing tenure by sex of head of household presented in Table 3.2 shows a higher owner occupation rate for female headed households than their male counterparts. The table further shows that male headed households were the majority in the rental housing sector.

3.3 Public Housing Stock

The analysis revealed that public sector involvement in the housing sector in the country was not very significant as evidenced in Table 3.3. Public housing stock was derived by summing up all housing which belonged to the government, local authority or parastatal as detailed in Appendix III.

The picture which emerges from the table is that the public sector accounted for a negligible proportion (4.6 per cent) of housing in the country and that it is only in Nairobi and Mombasa that it accounted for over ten per cent of the total number of housing. This means that private initiatives have been dominant in housing development in the country.

Percentage Distribution of Households by Tenure and District, 1989

Table 3.1

District/ Province	Owner Occupation			Rental Accommodation		
	Rural	Urban	Total	Rural	Urban	Total
Kenya	88.0	20.2	73.0	12.0	79.8	27.0
Nairobi	-	13.4	13.4	-	86.6	86.6
Kiambu	68.7	12.6	59.0	31.3	87.4	41.0
Kirinyaga	89.7	25.0	85.0	10.3	75.0	15.0
Muranga	89.6	26.7	86.8	10.4	73.3	13.2
Nyandarua	83.4	15.6	75.9	16.6	84.4	24.1
Nyeri	87.8	17.9	79.9	12.2	82.1	20.1
Central	84.2	17.1	77.2	15.8	82.9	22.8
Kilifi	90.6	33.8	78.7	9.4	66.2	21.3
Kwale	88.4	30.8	87.7	11.6	69.2	12.3
Lamu	88.3	52.4	79.3	11.7	47.6	20.7
Mombasa	-	31.7	23.1	-	68.3	76.9
Taita Taveta	85.4	33.0	76.0	14.6	67.0	24.0
Tana River	81.1	44.8	74.5	18.9	55.2	25.5
Coast	86.7	36.3	69.9	13.3	63.7	30.1
Embu	92.1	22.4	84.0	7.9	77.6	16.0
Isiolo	93.1	35.9	71.8	6.9	64.1	28.2
Kitui	96.0	14.3	92.6	4.0	85.7	7.4
Machakos	94.7	21.9	87.1	5.3	78.1	12.9
Marsabit	94.8	52.1	87.6	5.2	47.9	12.4
Meru	93.4	34.6	90.3	6.6	65.4	9.7
Eastern	94.2	34.3	85.6	5.8	65.7	14.4
Garissa	93.9	40.8	78.4	6.1	59.2	21.6
Mandera	97.7	80.2	93.1	2.3	19.8	6.9
Wajir	98.1	79.4	94.0	1.9	20.6	6.0
North Eastern	96.6	65.0	88.5	3.4	35.0	11.5
Kisii	92.9	59.6	91.3	7.1	40.4	8.7
Kisumu	87.5	78.0	66.2	12.5	22.0	33.8
Siaya	94.1	42.9	92.7	5.9	57.1	7.3
South Nyanza	92.9	35.0	88.9	7.1	65.0	11.1
Nyanza	92.2	31.7	84.8	7.8	68.3	15.2
Baringo	92.2	30.5	84.9	7.8	69.5	15.1
E/Marakwet	91.1	66.7	89.8	8.9	33.3	10.2
Kajiado	80.4	32.3	69.5	19.6	67.7	30.5
Kericho	77.3	9.5	73.0	22.7	90.5	27.0
Laikipia	77.7	16.1	67.6	22.3	83.9	32.4
Nakuru	67.4	11.4	48.7	32.6	88.6	51.3
Nandi	79.0	25.0	76.6	21.0	75.0	23.4
Narok	88.6	21.5	84.2	11.4	78.5	15.8
Samburu	93.4	50.0	86.8	6.6	50.0	13.2
Trans Nzoia	78.1	31.4	67.5	21.9	68.6	32.5
Turkana	92.3	62.7	88.3	7.7	37.3	11.7
Uasin Gishu	81.4	15.4	56.1	18.6	84.6	43.9
West Pokot	89.3	45.5	87.4	10.7	54.5	12.6
Rift Valley	84.3	26.1	75.4	15.7	73.9	24.6
Bungoma	93.7	24.1	86.2	6.3	75.9	13.8
Busia	94.4	23.4	88.9	5.6	76.6	11.1
Kakamega	93.7	40.0	90.5	6.3	60.0	9.5
Western	93.7	25.0	88.5	6.3	75.0	11.5

**Percentage Distribution of Tenure of Housing by Sex of Head of Household
and District, 1989**

Table 3.2

District/Province	Owner Occupation		Rental Accommodation	
	Male	Female	Male	Female
Kenya	67.9	82.1	32.1	17.9
Nairobi	12.6	16.8	87.4	83.2
Kiambu	54.6	66.9	45.4	33.1
Kirinyaga	84.7	85.6	15.3	14.4
Muranga	84.4	90.0	15.6	10.0
Nyandarua	73.3	80.0	26.7	20.0
Nyeri	76.7	84.3	23.3	15.7
Central	71.9	80.6	28.1	19.4
Kilifi	77.0	83.8	23.0	16.2
Kwale	85.4	92.7	14.6	7.3
Lamu	75.7	88.6	24.3	11.4
Mombasa	21.8	27.2	78.2	72.8
Taita Taveta	69.7	86.7	30.3	13.3
Tana River	72.4	79.7	27.6	20.3
Coast	57.1	69.8	42.9	30.2
Embu	83.1	85.4	16.9	14.6
Isiolo	65.6	80.4	34.4	19.6
Kitui	90.7	95.1	9.3	4.9
Machakos	83.5	65.6	16.5	34.4
Marsabit	84.8	91.3	15.2	8.7
Meru	90.2	90.6	9.8	9.4
Eastern	86.6	91.3	13.4	8.7
Garissa	76.7	81.6	23.3	18.4
Mandera	91.9	95.2	8.1	4.8
Wajir	92.8	96.3	7.2	3.7
North Eastern	86.9	91.2	13.1	8.8
Kisii	89.7	93.8	10.3	6.2
Kisumu	57.2	81.1	42.8	18.9
Siaya	89.6	95.5	10.4	4.5
South Nyanza	86.2	92.5	13.8	7.5
Nyanza	81.2	91.4	18.8	8.6
Baringo	82.3	89.8	17.7	10.2
Elgeyo Marakwet	87.6	94.0	12.4	6.0
Kajiado	63.0	79.5	37.0	20.5
Kericho	67.8	85.4	32.2	14.6
Laikipia	61.4	77.4	38.6	22.6
Nakuru	43.3	60.3	56.7	39.7
Nandi	73.3	85.7	26.7	14.3
Narok	81.3	88.6	18.7	11.4
Samburu	80.6	92.5	19.4	7.5
Trans-Nzoia	64.5	74.8	35.5	25.2
Turkana	85.0	92.4	15.0	7.6
Uasin Gishu	52.3	68.1	47.7	31.9
West Pokot	84.0	93.0	16.0	7.0
Rift Valley	64.1	78.3	35.9	21.7
Bungoma	85.1	88.5	14.9	11.5
Busia	87.5	90.7	12.5	9.3
Kakamega	88.2	93.8	11.8	6.2
Western	87.2	92.2	12.8	7.8

Percentage of Public Housing Stock by District, 1989

Table 3.3

District/Province	Percentage
Kenya	4.6
Nairobi	15.8
Kiambu	4.4
Kirinyaga	2.9
Muranga	1.8
Nyandarua	4.4
Nyeri	3.6
Central	3.4
Kilifi	2.6
Kwale	2.1
Lamu	5.4
Mombasa	10.3
Taita Taveta	4.6
Tana River	7.5
Coast	5.4
Embu	2.9
Isiolo	6.8
Kitui	1.3
Machakos	2.1
Marsabit	3.3
Meru	1.4
Eastern	3.0
Garissa	5.3
Mandera	2.5
Wajir	3.2
North Eastern	3.7
Kisii	1.5
Kisumu	6.4
Siaya	1.0
South Nyanza	1.9
Nyanza	2.7
Baringo	3.8
E/Marakwet	3.7
Kajiado	4.6
Kericho	2.5
Laikipia	5.9
Nakuru	9.6
Nandi	2.3
Narok	2.4
Samburu	3.5
Trans Nzoia	8.8
Turkana	3.2
Uasin Gishu	7.7
West Pokot	2.5
Rift Valley	3.8
Bungoma	1.6
Busia	1.6
Kakamega	2.4
Western	1.9

3.4 Average Household Occupancy Rates

The analysis revealed that average household occupancy rates ranged from 3 persons to 7.2 persons with high rates being registered in rural areas. Table 3.4 shows the various average household occupancy rates.

Average Occupancy Rates of Households by District, 1989

Table 3.4

District/Province	Rural	Urban	Total
Kenya	5.3	3.5	4.9
Nairobi	-	3.3	3.3
Kiambu	4.5	3.0	4.3
Kirinyaga	5.1	2.8	4.9
Nyandarua	5.4	3.1	5.2
Nyeri	4.8	2.9	4.6
Central	4.9	3.0	4.8
Kilifi	7.2	3.7	6.5
Kwale	5.6	3.7	5.6
Lamu	5.2	4.1	4.9
Mombasa	-	3.6	3.6
Taita TaveTA	4.9	4.9	4.7
Tana River	5.5	4.3	5.3
Coast	5.7	4.1	5.1
Embu	5.5	3.2	5.2
Isiolo	5.9	3.0	4.3
Kitui	4.0	3.8	3.9
Machakos	6.1	3.4	5.9
Marsabit	4.4	4.4	4.4
Meru	5.4	3.4	5.3
Eastern	5.2	3.5	5.1
Garissa	5.5	4.4	5.2
Mandera	5.2	5.3	5.2
Wajir	5.5	5.0	5.4
North Eastern	5.4	4.9	5.3
Kisii	5.8	4.6	5.7
Kisumu	4.7	3.9	4.4
Siaya	4.5	3.9	4.4
South Nyanza	5.1	4.1	5.1
Nyanza	5.0	4.0	4.9
Baringo	4.9	3.4	4.7
E/Marakwet	4.6	3.4	4.6
Kajiado	4.8	3.5	4.5
Kericho	5.4	3.3	5.2
Laikipia	5.1	3.0	4.7
Nakuru	4.9	3.4	4.4
Nandi	5.5	3.7	5.4
Narok	5.1	3.3	5.0
Samburu	4.5	4.0	4.4
Trans-Nzoia	5.7	3.9	5.4
Turkana	5.0	4.3	4.9
Uasin Gishu	5.7	3.4	4.8
West Pokot	4.6	3.8	4.5
Rift Valley	5.1	3.6	4.8
Bungoma	6.0	4.0	5.8
Busia	5.2	4.0	5.1
Kakamega	5.3	3.8	5.2
Western	5.5	3.9	5.4

The average household occupancy rate is a measure of overcrowding in a house. The table above generally shows a higher average for rural households, a situation which should not cause concern given that apart from the main house, several other houses exist in a rural homestead. The figures which may be worrying are the occupancy rate in the urban areas where the majority of households live in single rooms. This means that a figure of over three persons in a household in urban areas, especially in informal settlements, may be a measure of overcrowding and hence, poor quality housing.

CHAPTER 4: HOUSING QUALITY BY CONSTRUCTION MATERIALS

4.1 Background

The three basic elements of houses are roofs, walls and floors. These elements can be of good or poor quality depending on the materials used, standards adopted and such other factors as climate, culture and socio-economic considerations. This chapter analyses each of these elements by materials used, durability and sex of head.

4.2 Housing Quality by Roofing Material

The functional requirements of a roof are stability, strength, exclusion of wind and rain, durability, fire resistance and thermal comfort. The enumerator's questionnaire had the following options for describing roofs of houses: iron sheets, tiles, concrete, asbestos sheets, grass/makuti and other. In this analysis, a durable roof was any roof covered by the aforementioned materials except grass/makuti and other. Data on quality of roofing material presented in Table 4.1 showed that at the national level, the majority of house were covered by iron sheets (51.5 per cent) followed by grass/makuti (40.2 per cent).

At the provincial level, the analysis revealed that 69.7 per cent of the houses in Nairobi were covered with iron sheets, with grass/makuti accounting for only 0.2 per cent of the houses. In the rest of the provinces, the following proportions represented houses covered with iron sheets: Central (84.7 per cent), Coast Eastern (48.1 per cent), Nyanza (39.8 per cent), Rift Valley (36.9 per cent), Western (33.1 per cent), Coast (29.3 per cent) and North Eastern (12.4 per cent). This showed that Central Province had the largest concentration of houses covered with iron sheets, while North Eastern Province had the least concentration. With respect to grass/makuti, the analysis showed that this type of roofing was dominant in North Eastern Province (82.9 per cent), Western (64.8 per cent), Coast (61.8 per cent) and Nyanza (57.4 per cent).

At the district level, Kiambu District registered the highest proportion of houses covered with iron sheets (90.3) with the lowest proportions being recorded in the following districts: Mandera (8.2 per cent), Wajir (9.7 per cent) and Turkana (9.7 per cent). The highest concentration of grass/makuti covered houses were recorded in the following districts: Mandera (89.6 per cent), Wajir (88.6 per cent), Kwale (83.0 per cent) and Kilifi (80.4 per cent).

On the basis of roofing materials used in houses, it was possible to compute roof durability factors at various levels as follows :-

Percentage Distribution of Housing Quality by Type of Roofing Materials and District, 1989

Table 4.1

District/Province	Iron Sheets			Grass/Makuti			Others		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Kenya	45.8	71.3	51.5	49.0	9.4	40.2	5.2	18.3	8.3
Nairobi	-	69.7	69.7	-	0.2	0.2	-	30.1	30.1
Kiambu	90.6	89.0	90.3	2.4	0.0	2.0	7.0	11.0	7.7
Kirinyaga	86.6	93.0	87.1	11.0	1.4	10.3	2.4	5.6	2.6
Muranga	86.9	81.8	86.9	6.9	0.0	6.9	6.2	12.2	6.2
Nyandarua	69.0	84.9	70.9	26.8	5.9	24.3	4.2	9.2	4.8
Nyeri	87.5	83.9	87.1	8.6	0.9	7.7	3.9	15.2	5.2
Central	84.1	89.9	84.7	11.2	2.0	10.3	4.7	8.1	5.0
Kilifi	8.9	37.6	14.8	87.3	53.7	80.4	3.8	8.7	4.8
Kwale	13.7	25.0	13.8	83.3	58.3	83.0	3.0	16.7	3.2
Lamu	17.7	28.8	20.5	76.7	43.6	68.4	5.6	27.6	11.1
Mombasa	0.0	49.3	49.3	-	31.2	31.2	-	19.5	19.5
Taita Taveta	59.1	73.3	61.6	36.8	17.0	33.3	4.1	9.7	5.1
Tana River	17.5	44.3	22.4	79.9	48.6	74.2	2.6	7.1	3.4
Coast	21.9	45.3	29.3	74.3	34.8	61.8	3.8	19.9	8.9
Embu	67.4	84.1	69.4	30.7	4.2	27.5	1.9	11.7	3.1
Isiolo	15.0	82.6	38.0	65.2	12.9	47.4	19.8	4.5	14.6
Kitui	38.5	42.7	40.7	59.1	2.4	56.8	2.4	4.9	2.5
Machakos	52.5	89.4	56.0	44.9	2.1	40.9	2.6	8.5	3.1
Marsabit	10.2	76.9	21.5	47.7	10.7	41.4	42.1	12.4	37.1
Meru	61.0	87.0	62.4	36.9	3.7	35.1	2.1	9.3	2.5
Eastern	42.5	83.8	48.1	46.6	8.8	41.5	10.9	7.4	10.4
Garissa	4.2	52.1	19.2	83.5	38.4	70.5	12.3	5.5	10.3
Mandera	1.1	28.5	8.2	97.2	68.1	89.6	1.7	3.4	2.2
Wajir	2.4	35.8	9.7	95.9	62.4	88.6	1.7	1.8	1.7
North Eastern	2.6	41.2	12.4	92.3	55.3	82.9	5.1	3.5	4.7
Kisii	46.6	81.8	48.5	51.1	12.7	49.0	2.3	5.5	2.5
Kisumu	39.0	79.0	53.1	58.3	10.8	41.6	2.7	10.2	5.3
Siaya	27.2	81.1	29.2	68.7	71.3	69.2	1.5	5.4	1.6
South Nyanza	24.9	77.8	28.2	73.4	12.7	69.6	1.7	9.5	2.2
Nyanza	34.0	79.5	39.8	64.0	11.8	57.4	2.0	8.7	2.8
Baringo	20.7	78.8	27.6	77.3	12.7	69.7	2.0	8.5	2.7
Elgeyo Marakwet	19.8	82.6	21.2	77.8	8.7	76.2	2.4	8.7	2.6
Kajiado	35.5	84.4	46.5	22.3	0.9	17.5	42.2	14.7	36.0
Kericho	43.2	85.5	45.8	52.3	3.2	49.3	4.5	11.3	4.9
Laikipia	58.1	83.9	62.4	35.9	4.2	30.6	6.0	11.9	7.0
Nakuru	62.2	85.0	69.6	32.5	1.2	22.3	5.3	13.8	8.1
Nandi	46.4	79.5	47.9	50.6	11.4	48.9	3.0	9.1	3.2
Narok	17.0	90.3	21.5	61.8	6.5	58.4	21.2	3.2	20.1
Samburu	5.5	60.1	13.9	26.1	18.3	24.9	68.4	21.6	61.2
Trans-Nzoia	33.3	74.5	41.2	64.4	11.5	54.2	2.3	14.0	4.6
Turkana	4.1	45.6	9.7	83.2	50.0	78.7	12.7	4.4	11.6
Uasin Gishu	38.2	82.8	55.1	58.1	3.4	37.4	3.7	13.8	7.5
West Pokot	12.2	87.7	17.1	72.5	7.7	68.3	15.3	4.6	14.6
Rift Valley	29.6	78.1	36.9	56.1	9.3	49.0	14.3	12.6	14.1
Bungoma	33.1	89.8	39.2	65.1	6.5	58.8	1.8	3.7	2.0
Busia	13.0	65.9	17.8	86.6	13.2	79.9	0.4	20.9	2.3
Kakamega	40.2	80.0	42.2	58.0	8.0	55.5	1.8	12.0	2.3
Western	28.9	79.5	33.1	69.8	9.6	64.8	1.3	10.9	2.1

$$RDF = \frac{IS + T + C + AS}{N} \times 100$$

Where

RDF = Roof Durability Factor
 IS = Houses with iron sheets roofs
 T = Houses with tile roofs
 C = Houses with concrete roofs
 AS = Houses with asbestos sheets roofs
 N = Total number of houses

This information is contained in Table 4.2 below:

The above table gives a 51.9 per cent roof durability factor at the national level. At the provincial level, the analysis revealed that Nairobi had the highest roof durability factor (98.1 per cent). The figure from the 1983 Urban Housing Survey was 96.4 per cent - followed by Central (88.1 per cent). The rest of the provinces, especially North Eastern and Coast province, registered low durability factors because of the dominance of Makuti/grass which are considered to be non-durable materials.

The district analysis showed high roof durability factors for all the districts in Central Province with the lowest recorded in Mandera (8.9 per cent), Wajir (9.9 per cent) and Turkana (10.7 per cent). Mombasa District showed a 68.2 per cent roof durability factor compared to 72.4 per cent from the 1983 Urban Housing survey.

4.3 Housing Quality by Roof Durability and Sex of Head of Household

The analysis generally revealed that households headed by females had poorer roofs than their male counterparts with respect to durability. This information can be derived from Table 4.3.

The table shows that at the national level, 55.0 per cent of the male headed households had durable roofs compared to 48.7 per cent for females. The same pattern is repeated at the provincial and district levels where in general terms male headed households had better roofs than their female counterparts.

Roof Durability Factor of Houses by District, 1989

Table 4.2

District/Province	Percent		
	Rural	Urban	Total
Kenya	48.1	89.2	51.9
Nairobi	-	98.1	98.1
Kiambu	96.4	98.9	96.9
Kirinyaga	88.5	97.2	89.1
Muranga	89.7	100.0	90.1
Nyandarua	71.5	93.3	74.1
Nyeri	89.6	96.4	90.4
Central	87.1	98.1	88.1
Kilifi	11.5	46.4	18.8
Kwale	16.0	46.2	16.4
Lamu	22.8	56.0	31.1
Mombasa	-	68.2	68.2
Taita Taveta	62.1	82.3	65.8
Tana River	18.5	49.5	24.1
Coast	25.9	63.4	36.8
Embu	68.8	94.0	71.7
Isiolo	17.3	85.1	40.0
Kitui	40.1	97.5	42.4
Machakos	54.4	93.9	58.3
Marsabit	11.0	78.6	22.3
Meru	62.4	96.2	64.2
Eastern	43.9	87.4	49.2
Garissa	5.1	58.4	20.6
Mandera	1.4	30.3	8.9
Wajir	2.6	36.7	9.9
North Eastern	2.8	48.5	16.4
Kisii	48.3	87.5	50.5
Kisumu	41.0	88.4	57.7
Siaya	28.4	84.2	30.5
South Nyanza	26.0	88.9	29.9
Nyanza	35.5	88.9	41.5
Baringo	21.9	84.9	29.4
Elgeyo Marakwet	21.1	95.8	22.9
Kajiado	37.8	93.8	50.3
Kericho	47.0	95.2	49.9
Laikipia	60.6	92.9	66.1
Nakuru	65.7	96.7	76.0
Nandi	47.9	86.0	49.5
Narok	18.4	92.1	23.0
Samburu	6.6	62.9	15.1
Trans-Nzoia	34.9	87.0	45.0
Turkana	4.7	48.5	10.7
Uasin Gishu	40.3	95.5	61.4
West Pokot	13.5	92.3	18.6
Rift Valley	32.1	77.2	38.8
Bungoma	34.3	94.4	40.8
Busia	14.1	84.2	19.4
Kakamega	41.5	90.2	44.0
Western	29.9	91.0	34.9

Roof Durability Factor by Sex of Head of Household and District, 1989

Table 4.3

District/Province	Male	Female	Total
Kenya	55.0	48.7	51.9
Nairobi	98.1	97.9	98.1
Kiambu	97.1	96.7	96.9
Kirinyaga	89.4	88.5	89.1
Muranga	89.7	90.6	90.1
Nyandarua	75.1	72.4	74.1
Nyeri	90.8	89.6	90.4
Central	88.4	87.6	88.1
Kilifi	19.6	16.7	18.8
Kwale	17.0	15.0	16.4
Lamu	32.6	27.2	31.1
Mombasa	68.5	67.1	68.2
Taita Taveta	64.7	67.6	65.8
Tana River	26.4	18.6	24.1
Coast	38.1	35.4	36.8
Embu	73.6	67.9	71.7
Isiolo	44.7	33.5	40.0
Kitui	42.6	42.1	42.4
Machakos	59.2	57.1	58.3
Marsabit	24.3	19.6	22.3
Meru	65.9	60.1	64.2
Eastern	51.7	46.7	49.2
Garissa	21.6	18.6	20.6
Mandera	9.4	8.0	8.9
Wajir	10.2	9.6	9.9
North Eastern	20.6	12.1	16.4
Kisii	51.2	49.4	50.5
Kisumu	50.0	50.3	57.7
Siaya	31.5	29.5	30.5
South Nyanza	31.0	28.4	29.9
Nyanza	43.6	39.4	41.5
Baringo	32.0	24.5	29.4
Elgeyo Marakwet	24.9	18.8	22.9
Kajiado	58.4	38.1	50.3
Kericho	53.8	40.5	49.9
Laikipia	68.0	63.1	66.1
Nakuru	77.4	73.1	76.0
Nandi	50.3	47.2	49.5
Narok	25.7	18.8	23.0
Samburu	20.8	9.8	15.1
Trans-Nzoia	45.4	44.1	45.0
Turkana	13.7	6.9	10.7
Uasin Gishu	63.4	55.5	61.4
West Pokot	21.8	13.2	18.6
Rift Valley	42.7	34.9	38.8
Bungoma	40.1	42.4	40.8
Busia	20.1	18.4	19.4
Kakamega	43.2	45.2	44.0
Western	34.5	35.3	34.9

4.4 Housing Quality by Walling Materials

Table 4.4 presents data on housing quality by walling material and district. The analysis showed that mud/wood was the dominant walling material in the country with other materials not being very significant although there were marked regional variations.

Percentage Distribution of Housing by Type of Walling Materials and District, 1989
Table 4.4

Province/District	Mud/Wood			Brick/Block			Wood only			Other		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Kenya	67.0	21.8	56.8	9.4	20.9	12.0	9.8	9.0	9.5	13.8	48.3	21.7
Nairobi	-	16.7	16.7	-	18.0	18.0	-	10.4	10.4	-	54.9	54.9
Kiambu	22.0	7.5	19.4	6.0	10.9	6.9	38.2	15.5	34.3	33.8	62.1	39.4
Kirinyaga	49.2	9.6	46.3	9.4	5.5	9.1	28.9	23.3	28.5	12.5	61.6	16.1
Muranga	69.7	26.2	67.9	7.8	4.8	7.7	5.6	2.4	5.5	16.9	72.6	18.9
Nyandarua	58.4	10.8	52.7	2.0	3.3	2.2	29.3	35.8	30.1	10.3	50.1	15.0
Nyeri	46.2	9.0	42.1	2.2	6.3	2.7	39.5	31.5	38.6	12.1	53.2	16.6
Central	49.8	10.6	45.7	5.6	6.7	5.7	27.8	24.0	27.4	17.0	58.7	21.2
Kilifi	77.6	39.0	69.5	4.7	25.2	9.0	0.4	0.5	0.4	17.3	35.3	21.1
Kwale	72.7	46.1	71.9	7.5	23.1	7.7	0.5	0.0	0.5	19.3	30.8	19.9
Lamu	64.2	30.5	55.8	6.4	36.1	13.8	0.5	0.0	0.4	28.9	33.4	30.0
Mombasa	-	28.8	28.8	-	22.0	22.0	-	0.5	0.5	-	48.7	48.7
Taita Taveta	72.0	41.6	66.2	19.0	34.7	21.9	0.7	0.1	0.7	8.3	23.6	11.2
Tana River	42.9	42.6	42.8	2.3	12.6	4.2	0.6	2.2	0.9	54.5	42.6	52.1
Coast	65.9	33.2	55.9	7.9	24.8	13.1	0.6	0.6	0.6	25.6	41.4	30.4
Embu	73.9	19.5	67.5	5.2	5.9	5.3	11.2	1.6	11.3	9.7	73.0	15.9
Isiolo	26.7	19.1	24.3	2.6	13.5	6.3	3.9	37.8	15.5	66.8	29.1	53.9
Kitui	47.5	5.1	45.9	46.1	84.6	47.6	2.2	0.0	2.1	4.2	10.3	4.4
Machakos	46.1	10.4	42.7	44.4	40.6	44.0	0.7	2.1	0.8	8.8	46.9	12.5
Marsabit	34.7	43.1	36.1	1.0	12.0	2.8	3.6	3.6	3.6	60.7	41.3	57.5
Meru	64.2	11.5	61.5	3.0	5.8	3.1	24.7	42.3	25.6	8.1	40.4	9.8
Eastern	50.1	22.1	46.3	18.2	18.4	18.2	8.0	21.3	9.8	23.7	38.2	25.7
Garissa	4.8	27.4	11.4	1.4	19.2	14.6	0.7	0.3	0.6	23.8	53.1	73.4
Mandera	1.3	8.8	3.3	0.3	13.4	3.7	0.8	0.7	1.1	97.6	77.1	91.9
Wajir	4.2	1.8	3.7	0.4	8.2	2.2	3.7	1.8	3.3	91.7	88.2	90.8
North Eastern	3.5	14.0	6.2	0.7	8.5	6.8	1.7	1.2	1.6	94.1	76.3	85.4
Kisii	87.6	40.0	85.0	5.9	36.4	7.6	0.3	1.8	0.4	6.2	21.8	7.0
Kisumu	79.2	33.0	63.0	7.7	27.3	14.6	0.5	0.6	0.5	12.6	39.1	21.9
Siaya	84.9	21.2	82.8	4.9	51.5	6.4	0.2	0.0	0.2	10.0	27.3	10.6
South Nyanza	86.5	30.6	83.0	3.6	24.2	4.9	0.3	0.0	0.3	9.6	45.2	11.8
Nyanza	84.9	33.1	78.5	5.4	29.4	8.4	0.3	0.8	0.4	9.4	36.7	12.7
Baringo	74.5	28.2	69.1	1.0	10.3	2.1	18.6	42.7	21.4	5.9	18.8	7.4
E/Marakwet	78.0	12.0	76.4	2.6	28.0	3.2	10.3	40.0	11.0	9.1	20.0	9.4
Kajiado	38.8	13.4	33.1	3.6	12.0	5.5	12.2	20.5	14.1	45.4	54.1	47.3
Kericho	71.6	9.7	67.8	14.1	32.3	15.1	6.0	25.8	7.2	8.4	32.2	9.9
Laikipia	53.4	20.0	47.7	2.5	4.7	2.9	36.6	36.8	36.6	7.5	38.5	12.8
Nakuru	59.5	15.4	44.9	4.8	8.8	6.1	20.8	14.2	18.6	14.9	61.6	30.4
Nandi	75.2	39.0	73.7	14.3	24.4	14.7	1.7	5.0	1.8	8.8	31.6	9.8
Narok	77.7	17.7	74.0	1.3	21.0	2.5	10.3	11.3	10.4	10.7	50.0	13.1
Samburu	60.7	56.6	60.1	1.6	9.2	2.8	2.6	4.6	2.9	35.1	29.6	34.2
Trans Nzoia	85.6	45.8	78.0	6.2	30.2	10.8	1.5	1.6	1.5	6.7	22.4	9.7
Turkana	11.9	24.3	13.6	1.4	23.5	4.4	28.5	5.1	25.3	58.2	47.1	56.7
Uasin Gishu	77.4	35.7	61.5	6.0	38.1	18.2	8.1	6.8	7.6	8.5	19.4	12.7
West Pokot	83.3	43.8	80.8	1.4	25.0	2.9	10.0	0.0	8.3	5.3	31.2	8.0
Rift Valley	65.7	28.5	60.1	4.7	20.0	7.0	12.5	14.6	12.8	17.0	36.9	20.1
Bungoma	88.0	37.6	82.5	5.7	38.5	9.3	0.4	0.9	0.5	5.9	23.0	7.7
Busia	88.8	29.9	84.3	4.6	50.6	8.1	0.2	1.3	0.3	6.4	18.2	7.3
Kakamega	87.7	32.2	85.1	6.7	51.0	9.0	0.3	0.0	0.3	5.3	11.8	5.6
Western	88.2	35.4	84.0	5.6	45.6	8.8	0.3	1.3	0.4	5.9	17.7	6.4

The table further shows that, 56.8 per cent of the houses in the country had mud/wood houses with brick/block accounting for only 12 per cent of all the houses. At the provincial level, the proportions of houses with mud/wood walls were as follows: Western (84 per cent), Nyanza

(78.5 per cent), Rift Valley (60.1 per cent), Coast (55.9 per cent), Eastern (46.3 per cent), Central (45.7 per cent), Nairobi (16.7 per cent) and North Eastern (6.2 per cent).

The analysis further revealed that the following districts showed the highest concentrations of houses with mud/wood walls: Kakamega (85.1 per cent), Kisii (85 per cent), Busia (84.3 per cent), South Nyanza (83 per cent), Siaya (82.8 per cent), Bungoma (82.2) and West Pokot (80.8 per cent).

In general, the analysis registered a low occurrence of houses with permanent materials in the country.

In this analysis, a wall was deemed durable if it was made of stone, brick or block. The wall durability factors were calculated as follows:-

$$WDF = \frac{ST + BR + BL}{N} \times 100$$

Where

WDF = Wall Durability Factor

ST = Houses with stone walls

BR = Houses with brick walls

BL = Houses with block walls

N = Total number of houses

Table 4.5 shows the wall durability situation in Kenya during the 1989 population census.

The table shows that the country recorded very low wall durability factors except for Nairobi and Machakos which had 56.1 and 51.8 per cent, respectively. The 56.1 per cent for Nairobi was lower than the 71.2 per cent from the 1983 Urban Housing Survey.

4.5 Substandard Housing

Using the low wall durability factors presented in the above section, it was possible to compute substandard housing in urban areas based on the type of walling material. Substandard housing in this analysis refers to any house in urban areas which did not have stone, brick or block as its walling material. Table 4.6 shows the level of substandard housing in urban areas.

Wall Durability Factor of Houses by District, 1989

Table 4.5

District/Province	Rural	Urban	Total
Kenya	13.7	47.1	21.1
Nairobi	-	56.1	56.1
Kiambu	27.1	69.0	34.4
Kirinyaga	17.9	56.9	20.7
Muranga	20.1	68.3	22.1
Nyandarua	7.8	50.0	12.9
Nyeri	10.9	55.4	15.9
Central	16.7	60.2	21.1
Kilifi	6.2	33.0	11.8
Kwale	13.0	30.8	13.2
Lamu	13.5	44.8	21.3
Mombasa	-	34.6	34.6
Taita Taveta	20.3	40.3	23.9
Tana River	2.8	13.7	4.8
Coast	13.4	34.3	18.3
Embu	9.0	39.7	13.2
Isiolo	1.5	24.5	10.2
Kitui	46.6	87.5	48.2
Machakos	49.7	71.4	51.8
Marsabit	1.2	14.3	3.4
Meru	7.3	42.3	9.1
Eastern	20.8	34.8	22.7
Garissa	1.4	53.6	16.3
Mandera	0.7	21.8	6.2
Wajir	1.2	33.0	9.6
North Eastern	1.0	41.4	4.8
Kisii	6.8	39.3	8.6
Kisumu	8.6	31.0	16.5
Siaya	5.2	50.0	6.9
South Nyanza	4.7	31.7	6.4
Nyanza	6.2	34.1	9.6
Baringo	2.3	17.6	4.1
Elgeyo Marakwet	7.4	41.7	8.2
Kajiado	8.5	44.0	16.5
Kericho	17.4	51.6	19.6
Laikipia	5.1	34.9	10.1
Nakuru	12.7	39.8	21.7
Nandi	15.4	25.6	15.8
Narok	2.3	58.7	5.9
Samburu	1.8	9.3	2.9
Trans-Nzoia	6.8	31.1	11.5
Turkana	1.4	25.0	4.6
Uasin Gishu	7.1	41.4	20.2
West Pokot	1.6	26.2	3.2
Rift Valley	7.0	31.0	11.1
Bungoma	7.0	42.6	10.8
Busia	5.4	52.6	9.0
Kakamega	7.2	52.9	9.5
Western	6.5	48.7	9.8

Sub-Standard Housing in Urban Areas by District, 1989

Table 4.6

District/Province	Percentage
Kenya	52.9
Nairobi	43.9
Kiambu	31.0
Kirinyaga	43.1
Muranga	31.7
Nyandarua	50.0
Nyeri	44.6
Central	39.8
Kilifi	67.0
Kwale	69.2
Lamu	55.2
Mombasa	65.4
Taita Taveta	59.7
Tana River	86.3
Coast	65.7
Embu	60.3
Isiolo	75.5
Kitui	28.6
Machakos	12.5
Marsabit	85.7
Meru	57.7
Eastern	65.2
Garissa	46.4
Mandera	78.2
Wajir	67.0
North Eastern	58.6
Kisii	60.7
Kisumu	69.0
Siaya	50.0
South Nyanza	68.3
Nyanza	65.9
Baringo	82.4
Elgeyo Marakwet	58.3
Kajiado	56.0
Kericho	48.4
Laikipia	65.1
Nakuru	60.2
Nandi	74.4
Narok	41.3
Samburu	90.7
Trans Nzoia	68.9
Turkana	75.0
Uasin Gishu	58.6
West Pokot	73.8
Rift Valley	69.0
Bungoma	57.4
Busia	47.4
Kakamega	47.1
Western	51.3

The level of substandard housing in some urban areas is quite significant with the largest concentration being recorded in Samburu (90.7 per cent), Tana River (86.3 per cent), Marsabit (85.7 per cent) and Baringo (82.4 per cent).

4.6 Housing by Wall Durability and Sex of Head

According to the analysis on wall durability factor by sex presented in Table 4.7, female headed households had a lower proportion of durable walls than their male counterparts.

Wall Durability Factor by Sex of Head of Household and District, 1989

Table 4.7

District/Province	Male	Female	Total
Kenya	20.3	17.6	20.1
Nairobi	55.2	60.0	56.1
Kiambu	37.0	29.6	34.4
Kirinyaga	21.5	19.1	20.7
Muranga	23.8	19.8	22.1
Nyandarua	13.9	11.3	12.9
Nyeri	18.0	12.9	15.9
Central	22.8	18.5	21.1
Kilifi	12.7	3.4	11.8
Kwale	14.7	9.9	13.2
Lamu	23.2	16.4	21.3
Mombasa	34.7	34.2	34.6
Taita Taveta	27.1	18.5	23.9
Tana River	5.2	3.7	4.8
Coast	19.6	14.4	18.3
Embu	13.8	12.0	13.2
Isiolo	12.7	6.7	10.2
Kitui	48.2	48.2	48.2
Machakos	52.2	51.1	51.8
Marsabit	4.5	1.9	3.4
Meru	9.4	8.4	9.1
Eastern	24.4	22.0	22.7
Garissa	17.3	14.2	16.3
Mandera	6.6	5.3	6.2
Wajir	8.2	6.5	9.6
Nyanza	11.7	6.5	9.6
Kisii	10.4	5.7	8.6
Kisumu	19.8	10.9	16.5
Siaya	8.9	4.9	6.9
South Nyanza	7.6	4.6	6.4
North Eastern	5.2	3.7	4.8
Baringo	4.8	2.9	4.1
Elgeyo Marakwet	8.6	7.1	8.2
Kajiado	20.6	10.3	16.5
Kericho	23.8	9.5	19.6
Laikipia	11.3	8.2	10.1
Nakuru	23.6	17.6	21.7
Nandi	18.3	8.9	15.8
Narok	7.1	4.1	5.9
Samburu	5.0	1.0	2.9
Trans-Nzoia	12.4	9.4	11.5
Turkana	6.2	2.7	4.6
Uasin Gishu	21.4	16.9	20.2
West Pokot	3.7	2.4	3.2
Rift Valley	12.8	7.8	11.1
Bungoma	11.3	9.7	10.8
Busia	10.2	7.4	9.0
Kakamega	11.1	7.2	9.5
Western	10.9	8.1	9.8

4.7 Housing Quality by Floor Finishes

The analysis revealed further that earth was the main floor finish for most houses in the country. This information is shown on Table 4.8.

Percentage Distribution of Households by Type of Floor Finish and District, 1989
Table 4.8

District/Province	Cement			Earth			Other		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Kenya	15.8	67.4	27.4	82.1	26.8	69.7	2.1	1.3	2.9
Nairobi	-	68.6	68.6	-	22.4	22.4	-	9.0	9.0
Kiambu	43.1	74.0	48.8	55.4	17.8	48.6	1.5	8.2	2.6
Kirinyaga	20.0	73.6	23.9	78.0	25.0	74.2	2.0	1.4	1.9
Muranga	17.8	73.2	20.1	80.2	26.8	78.0	2.0	0.0	1.9
Nyandarua	14.0	64.5	20.1	82.7	32.2	76.6	3.3	3.3	3.3
Nyeri	19.3	65.2	24.4	77.9	30.4	72.6	2.8	4.4	3.0
Central	22.4	69.2	27.4	75.4	25.2	70.0	2.2	5.6	2.6
Kilifi	10.9	61.1	21.3	87.4	37.0	76.9	1.7	1.9	1.8
Kwale	16.7	69.2	17.4	81.4	30.8	80.7	1.9	0.0	1.9
Lamu	17.5	81.7	33.5	79.2	17.1	63.6	3.3	1.2	2.9
Mombasa	-	70.8	70.8	-	26.0	26.0	-	3.2	3.2
Taita Taveta	19.0	57.8	26.0	78.8	40.6	71.9	2.2	1.6	2.1
Tana River	6.1	42.7	12.6	91.7	55.1	85.2	2.2	2.2	2.2
Coast	14.1	67.2	30.3	83.6	30.5	67.4	2.3	2.3	2.3
Embu	13.1	75.2	20.4	84.8	23.1	77.6	2.1	1.7	2.0
Isiolo	6.0	54.3	22.2	90.5	43.0	74.6	3.5	2.7	3.2
Kitui	16.6	87.5	19.4	81.7	12.5	78.9	1.7	0.0	1.7
Machakos	27.0	83.2	32.3	71.6	15.8	66.3	1.4	1.0	1.4
Marsabit	2.6	43.8	9.6	92.9	54.4	86.4	4.5	1.8	4.0
Meru	17.2	69.8	20.0	80.7	26.4	77.8	2.1	3.2	2.2
Eastern	14.3	61.5	20.7	83.2	37.0	77.0	2.5	1.5	2.3
Garissa	2.3	55.7	17.9	96.3	43.0	80.8	1.4	1.3	1.3
Mandera	0.5	2.2	6.3	98.6	75.9	92.7	0.9	21.9	1.0
Wajir	1.1	27.3	6.9	98.2	71.8	92.4	0.7	0.9	0.7
North Eastern	1.3	37.3	10.7	98.1	61.9	88.7	0.6	0.8	0.6
Kisii	9.5	57.1	12.2	88.2	41.1	85.6	2.3	1.8	2.2
Kisumu	16.4	67.6	34.3	81.6	30.7	63.8	2.0	1.7	1.9
Siaya	13.7	64.3	15.8	85.3	21.4	82.6	1.0	14.3	1.6
South Nyanza	10.4	69.3	14.1	89.9	27.4	84.2	1.7	3.3	1.7
Nyanza	12.2	67.5	19.2	86.0	30.9	79.1	1.8	1.6	1.7
Baringo	7.9	50.4	13.0	89.8	37.0	83.5	2.3	12.6	3.5
Elgeyo Marakwe	9.6	76.0	11.3	88.2	20.0	86.5	2.2	4.0	2.2
Kajiado	17.3	65.9	28.3	79.8	31.0	68.8	2.9	3.1	2.9
Kericho	22.8	80.3	26.3	75.6	18.0	72.1	1.6	1.7	1.6
Laikipia	12.2	58.2	20.1	84.5	38.2	76.6	3.3	3.6	3.3
Nakuru	18.7	72.6	36.6	78.1	23.5	60.0	3.2	3.9	3.4
Nandi	23.3	59.5	24.8	75.3	38.1	73.7	1.4	2.4	1.5
Narok	4.6	71.4	8.8	93.1	25.4	88.8	2.3	3.2	2.4
Samburu	4.2	42.5	10.1	92.9	55.6	87.2	2.9	1.9	2.7
Trans-Nzoia	10.2	53.4	18.5	87.7	44.0	79.3	2.1	2.6	2.2
Turkana	3.3	43.7	8.8	93.9	54.8	88.6	2.8	1.5	2.6
Uasin Gishu	14.1	62.3	32.5	82.8	34.3	64.3	3.1	3.4	3.2
West Pokot	12.2	87.7	17.1	72.5	7.7	68.3	15.3	4.6	14.6
Rift Valley	11.9	60.9	19.3	85.6	35.8	78.1	2.5	3.3	2.6
Bungoma	8.6	66.4	15.0	89.8	30.9	83.3	1.6	2.7	1.7
Busia	8.1	69.7	12.8	90.7	28.9	86.0	1.2	1.4	1.2
Kakamega	9.9	66.0	12.7	88.3	34.0	85.6	1.8	0.0	1.7
Western	8.9	67.1	13.5	89.6	30.4	84.9	1.5	2.5	1.6

At the national level, the analysis showed that the dominant floor finish for most of the houses was earth (69.7 per cent) followed by cement (27.4 per cent). Analysis at the provincial level showed the following proportions for houses with earth finished floors: North Eastern (88.7 per cent), Western (84.9 per cent), Nyanza (79.1 per cent), Rift Valley (78.1 per cent), Eastern

(77 per cent), Coast (67.4 per cent) and Nairobi (22.4 per cent). It is only Nairobi Province which had most floors (68.6 per cent) finished with cement.

At the district level, the analysis revealed a high concentration of houses with earth finished floors except for Nairobi and Mombasa which largely had cement screed finished floors.

In terms of floor durability, a general low durability factor was registered at all levels with very few exceptions.

Floor durability factors were computed as follows :-

$$FDF = \frac{CT + T}{N} \times 100$$

Where

FDF = Floor Durability Factor

CT = Houses with cement screed floors

T = Houses with tiled floors

N = Total number of houses

This information is shown on Table 4.9 below.

It is clear from the analysis that apart from Nairobi and Mombasa, the rest of the districts had very low floor durability factors. The floor durability factor for Nairobi was 74.3 per cent (compared to 73.2 per cent from the 1983 Urban Housing Survey) while the figure for Mombasa was 72.8 per cent (compared to 74.7 per cent from the 1983 Urban Housing Survey).

Floor Durability Factor of Houses by District, 1989

Table 4.9

District/Province	Rural	Urban	Total
Kenya	16.4	70.8	27.1
Nairobi	-	74.4	74.3
Kiambu	43.2	79.9	49.6
Kirinyaga	20.4	73.6	24.1
Muranga	18.1	73.2	20.5
Nyandarua	14.4	65.0	20.5
Nyeri	19.7	67.9	25.1
Central	22.7	72.8	28.0
Kilifi	11.3	61.7	21.8
Kwale	17.7	69.2	18.4
Lamu	19.5	81.6	34.9
Mombasa	-	72.8	72.8
Taita Taveta	20.0	58.6	27.2
Tana River	6.8	42.3	13.3
Coast	18.2	68.3	33.5
Embu	13.6	75.9	20.8
Isiolo	6.9	55.5	19.9
Kitui	17.1	87.5	19.9
Machakos	27.4	80.6	32.5
Marsabit	3.2	44.1	10.1
Meru	17.7	71.2	20.5
Eastern	14.9	61.5	21.2
Garissa	2.5	56.0	17.1
Mandera	0.7	23.0	6.3
Wajir	1.2	27.5	6.9
North Eastern	1.4	41.4	10.1
Kisii	10.1	58.9	13.1
Kisumu	17.0	68.2	34.9
Siaya	14.0	73.7	16.3
South Nyanza	10.6	71.4	14.4
Nyanza	12.6	69.0	19.7
Baringo	8.2	51.3	13.5
Elgeyo Marakwet	10.0	79.2	11.6
Kajiado	17.5	66.7	28.8
Kericho	23.0	80.6	26.6
Laikipia	12.8	60.4	20.9
Nakuru	19.2	73.8	37.7
Nandi	23.6	60.5	25.3
Narok	4.8	71.4	9.1
Samburu	4.4	43.7	10.4
Trans-Nzoia	10.5	54.4	18.9
Turkana	3.5	44.1	9.0
Uasin Gishu	14.4	63.1	33.1
West Pokot	8.6	69.2	12.6
Rift Valley	12.5	54.4	19.8
Bungoma	9.1	67.6	15.4
Busia	8.2	69.7	13.0
Kakamega	10.4	64.7	13.2
Western	9.2	67.9	13.9

4.8 Housing by Floor Durability and Sex of Head of Household

As was the case with the analysis on roof and wall durability by sex of head where it was found that female headed households were disadvantaged, this section also subscribes to a similar scenario. As Table 4.10 shows, female headed households generally had lower floor durability

factors compared to their male counterparts except for Nairobi where females had better floored houses than the males.

Floor Durability Factor by Sex of Head of Household and District, 1989

Table 4.10

Province/District	Male	Female	Total
Kenya	28.9	24.6	27.1
Nairobi	74.1	75.0	74.3
Kiambu	53.3	42.7	49.6
Kirinyaga	25.0	21.7	24.1
Muranga	22.8	17.4	20.5
Nyandarua	22.2	18.0	20.5
Nyeri	27.7	22.0	25.1
Central	30.2	24.4	28.0
Kilifi	23.0	18.7	21.8
Kwale	20.6	16.0	18.4
Lamu	36.4	30.9	34.9
Mombasa	73.0	72.3	72.8
Taita Taveta	31.2	20.5	27.2
Tana River	15.2	8.8	13.3
Coast	33.2	27.9	33.5
Embu	21.8	18.6	20.8
Isiolo	21.5	18.0	19.9
Kitui	21.5	18.0	19.9
Machakos	34.8	32.5	32.5
Marsabit	12.3	7.1	10.1
Meru	21.3	18.6	20.5
Eastern	23.3	18.6	21.2
Garissa	19.4	15.5	17.1
Mandera	6.9	5.2	6.3
Wajir	7.7	5.4	6.9
North Eastern	11.3	8.7	10.1
Kisii	14.9	9.9	13.1
Kisumu	41.8	23.5	34.9
Siaya	18.8	13.9	16.3
South Nyanza	16.2	12.0	14.4
Nyanza	22.9	14.8	19.7
Baringo	15.2	10.3	13.5
Elgeyo Marakwet	13.0	8.7	11.6
Kajiado	35.0	19.3	28.8
Kericho	31.3	15.3	26.6
Laikipia	23.8	16.3	20.9
Nakuru	41.2	29.2	37.3
Nandi	27.8	18.5	25.3
Narok	11.0	6.1	9.1
Samburu	17.1	3.9	10.4
Trans-Nzoia	20.0	16.2	18.9
Turkana	12.0	5.4	9.0
Uasin Gishu	35.4	26.8	33.1
West Pokot	15.4	7.9	12.6
Rift Valley	22.9	14.1	19.8
Bungoma	16.1	13.9	15.4
Busia	14.2	11.4	13.0
Kakamega	10.4	15.2	13.2
Western	13.6	13.5	13.9

CHAPTER 5: HOUSING QUALITY BY SOCIAL AMENITIES

5.1 Background

As has been mentioned elsewhere in this volume, a house is not complete without such basic infrastructure and services as water, sewage disposal, cooking fuel and lighting. These services make a house habitable and contribute to the general welfare of occupants. In order to understand how well the living environment was equipped with these facilities, the 1989 census addressed these issues. This chapter gives highlights of households by main source of water, sewage disposal, cooking fuel and lighting.

5.2 Households by Main Source of Water

Water is a basic need that no human being can do without. It is vital for drinking, cooking, washing and bathing. It also contributes significantly to people's health. Table 5.1 shows the main sources of water available to households during the 1989 census.

Analysis of households by the main water source showed that at the national level, stream/river was the main source (39.8 per cent) followed by piped (31.9 per cent) and well (13.6 per cent). At the provincial level, the data showed that piped water was the main source in Nairobi (96.3 per cent) with the proportions for other provinces being 44.7, 35.1, 22.4, 21.2, 15.1, 14.6 and 13.3 per cent for Coast, Central, Eastern, Rift Valley, North Eastern, Western and Nyanza, respectively. In terms of the dominant water sources, the analysis showed that piped water was dominant in Coast Province, stream/river in Central, Eastern, Nyanza, Rift Valley and Western while wells were dominant in North Eastern Province.

5.3 Households by Main Source of Water and Sex of Head

Table 5.2 reveals how households in Kenya were distributed by main source of water and sex of head. The analysis showed that both male and female headed households had limited access to piped water. In terms of distribution between males and females at the national level, the analysis showed that 36.3 per cent of the male headed households had piped water as their main source of water compared to 24.1 per cent for female headed households. At the provincial level, the analysis showed that Nairobi province had the highest access to piped water for both sexes although male headed households overall were better placed with Nyanza Province having the least access to piped water. In each case, male headed households were better placed than female headed households. Analysis at the district level showed that Nairobi district led in the number of households who had access to piped water. District level analysis confirmed that male headed households were better placed in terms of accessibility to piped water than female headed ones.

Percentage Distribution of Households by Main Source of Water and District, 1989

Table 5.1

District/ Province	Stream/River			Piped			Well			Other		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Kenya	49.7	5.4	39.8	16.6	84.8	31.9	16.4	4.0	13.6	17.3	5.8	14.7
Nairobi	-	0.2	0.2	-	96.3	96.3	-	0.2	0.2	-	3.3	3.3
Kiambu	34.0	1.2	28.3	37.2	74.6	43.7	9.9	7.9	9.5	18.9	16.7	18.5
Kirinyaga	58.5	24.3	56.1	30.0	74.3	33.1	7.7	1.4	7.3	3.8	0.0	3.5
Muranga	64.3	9.8	62.1	20.7	82.9	23.3	8.4	2.4	8.2	6.6	4.9	6.4
Nyandarua	38.0	7.6	34.4	23.8	81.4	30.6	14.3	8.5	13.6	23.9	2.5	21.4
Nyeri	50.6	10.7	46.1	39.5	86.6	44.8	3.4	0.0	3.0	6.5	2.7	6.1
Central	49.6	8.7	45.4	30.0	79.6	35.1	8.7	4.8	8.3	11.7	6.9	11.2
Kilifi	12.0	3.4	10.2	51.8	89.4	60.0	14.0	2.4	11.6	22.2	4.8	18.2
Kwale	20.0	7.7	19.7	25.7	61.1	26.5	14.4	7.7	14.3	39.9	23.5	39.5
Lamu	8.7	0.4	6.6	4.9	67.1	20.6	40.6	25.8	36.9	45.8	6.7	35.9
Mombasa	-	2.1	2.1	-	92.3	92.3	-	1.1	1.1	-	4.5	4.5
T/Taveta	52.0	3.9	43.3	32.0	90.6	42.6	4.1	1.7	3.7	11.9	3.8	10.4
Tana River	50.6	27.3	46.3	18.0	66.1	26.8	18.0	2.7	15.2	13.4	3.9	11.7
Coast	28.5	4.9	22.3	26.7	85.6	44.7	17.9	4.9	13.9	26.9	4.6	19.1
Embu	48.8	1.2	44.4	26.5	84.5	33.2	17.3	1.7	15.5	7.4	2.6	6.9
Isiolo	44.2	2.5	30.8	13.5	79.1	34.6	19.0	8.4	15.6	23.3	10.0	19.0
Kitui	67.0	57.5	66.6	2.4	17.5	3.0	16.9	2.5	16.3	13.7	22.5	14.1
Machakos	43.2	11.6	40.2	8.5	71.6	14.5	30.3	7.4	28.1	18.0	9.4	17.2
Marsabit	10.0	0.4	7.9	0.8	58.8	13.6	60.2	31.7	53.9	29.0	9.1	24.6
Meru	52.8	12.2	50.8	32.9	85.7	35.5	7.6	2.0	7.3	7.6	0.1	6.4
Eastern	45.5	7.1	40.1	14.4	70.9	22.4	24.4	12.8	22.8	15.7	9.8	14.7
Garissa	23.8	2.4	17.6	6.2	89.3	30.4	10.9	0.0	7.7	59.1	8.3	44.3
Mandera	18.0	35.1	22.2	1.6	41.6	12.1	15.3	11.8	14.4	65.1	11.5	51.3
Wajir	0.1	0.5	0.2	2.2	5.5	2.9	42.3	83.4	51.2	55.4	10.6	44.2
North Eastern	13.6	12.8	13.4	3.2	49.4	15.1	23.4	28.1	24.5	59.2	9.7	47.0
Kisii	87.2	47.2	85.0	2.7	50.9	5.4	5.8	1.8	5.6	4.3	0.1	4.0
Kisumu	54.0	10.2	38.5	14.9	79.9	37.4	9.9	2.0	7.1	22.0	7.9	17.0
Siaya	47.1	13.9	45.9	3.4	77.8	6.1	8.7	0.0	8.4	40.8	8.3	39.6
S/Nyanza	52.3	24.2	50.6	1.3	50.0	4.3	15.5	0.8	15.0	30.9	25.0	30.1
Nyanza	60.5	16.7	55.0	4.7	73.0	13.3	9.8	2.4	8.9	25.0	7.9	22.8
Baringo	72.0	38.1	68.0	8.2	52.5	13.4	5.3	2.5	5.0	14.5	6.9	13.6
E/ Marakwet	74.9	8.3	73.3	8.1	87.5	10.0	10.8	4.2	10.6	6.2	0.0	6.1
Kajiado	30.0	3.1	23.9	23.8	83.2	37.2	20.0	1.3	15.8	26.2	12.4	23.1
Kericho	56.5	3.3	53.3	23.9	95.1	28.2	5.3	0.0	5.0	14.3	1.6	13.5
Laikipia	40.2	9.4	35.0	11.2	87.6	24.2	15.8	0.0	13.1	32.8	3.0	27.7
Nakuru	39.8	6.6	28.8	31.7	88.6	50.6	6.3	3.0	4.3	22.2	1.8	16.3
Nandi	69.1	36.6	67.8	15.3	63.4	17.3	10.1	0.0	9.7	5.5	0.0	5.2
Narok	71.1	9.7	67.3	2.0	83.9	7.1	7.2	0.0	6.8	19.7	6.4	18.8
Samburu	32.9	9.2	29.3	6.0	53.3	13.2	40.8	23.7	38.2	20.3	13.8	19.3
Trans/Nzoia	50.6	8.8	42.6	8.0	69.3	19.8	27.1	15.6	24.9	14.3	6.3	12.7
Turkana	15.0	8.9	14.2	7.2	70.4	15.7	44.7	5.2	39.4	33.1	15.5	30.7
Uasin Gishu	30.7	3.9	20.5	7.6	55.6	25.9	47.8	34.0	42.6	13.9	6.5	11.0
West Pok	72.9	14.1	69.1	8.5	85.9	13.5	12.2	0.0	11.4	6.4	0.0	6.0
Rift Valley	48.7	33.8	45.6	12.9	53.1	21.2	19.9	7.7	17.4	18.5	5.4	15.8
Bungoma	30.0	3.7	27.2	16.1	87.0	23.8	39.0	4.6	35.3	14.9	4.7	13.7
Busia	33.4	22.4	32.6	4.4	64.5	9.0	32.9	9.2	31.1	29.3	4.1	27.3
Kakamega	48.8	9.8	46.8	8.1	68.6	11.2	32.6	11.8	31.5	10.5	9.8	10.5
Western	37.6	11.5	35.6	9.4	75.6	14.6	34.7	7.7	32.6	18.3	5.2	17.2

Main Source of Water by Sex of Head Household and District, 1989

Table 5.2

District/ Province	Stream/River			Piped			Well			Other		
	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total
Kenya	37.4	44.2	39.8	36.3	24.1	31.9	12.7	15.3	13.6	13.6	15.9	14.7
Nairobi	0.2	0.5	0.2	96.1	95.9	96.3	0.3	0.5	0.2	3.4	3.1	3.3
Kiambu	26.5	31.4	28.3	45.1	41.4	43.7	9.7	9.1	9.5	18.7	18.1	18.5
Kirinyaga	55.5	57.1	56.1	34.1	31.4	33.1	6.9	8.2	7.3	3.5	3.3	3.5
Muranga	60.5	64.3	62.1	25.0	20.6	23.3	8.0	8.4	8.2	6.5	6.7	6.4
Nyandarua	32.8	37.0	34.4	32.5	27.8	30.6	13.3	13.8	13.6	21.4	21.4	21.4
Nyeri	44.6	48.0	46.1	46.0	43.1	44.8	3.0	3.2	3.0	6.4	5.7	6.1
Central	43.0	49.2	45.4	36.1	33.7	35.1	8.2	8.7	8.3	12.7	8.4	11.2
Kilifi	10.6	9.7	10.2	58.8	62.5	60.0	11.7	11.2	11.6	18.9	16.6	18.2
Kwale	19.0	21.0	19.7	28.0	23.9	26.5	14.6	13.5	14.3	38.4	41.6	39.5
Lamu	6.6	6.5	6.6	22.1	16.4	20.6	37.4	36.4	36.9	33.9	40.7	35.9
Mombasa	2.1	2.2	2.1	92.4	91.8	92.3	1.2	0.9	1.1	4.3	5.1	4.5
T/Taveta	39.8	48.8	43.3	44.2	39.7	42.6	4.2	2.9	3.7	11.8	8.6	10.4
Tana River	46.0	47.1	46.3	27.4	25.4	26.8	14.8	16.3	15.2	11.8	11.2	11.7
Coast	19.9	24.7	22.3	46.2	41.4	44.7	14.1	12.7	13.9	19.8	21.2	19.1
Embu	43.8	45.5	44.4	34.5	30.2	33.2	14.9	16.8	15.5	6.8	7.5	6.9
Isiolo	29.8	32.0	30.8	37.0	31.3	34.6	14.7	17.1	15.6	18.5	19.6	19.0
Kitui	66.8	66.3	66.6	3.4	2.5	3.0	15.0	17.9	16.3	14.8	13.3	14.1
Machakos	38.8	42.2	40.2	16.5	11.5	14.5	27.1	29.5	28.1	17.6	16.8	17.2
Marsabit	8.2	7.7	7.9	14.6	12.2	13.6	54.2	53.1	53.9	23.0	27.0	24.6
Meru	50.6	51.4	50.8	35.9	34.5	35.5	7.1	7.8	7.3	6.4	6.3	6.4
Eastern	39.5	41.1	40.1	24.3	19.4	22.4	21.2	25.1	22.8	15.0	14.4	14.7
Garissa	18.0	16.4	17.6	29.8	31.9	30.4	7.8	7.1	7.7	44.4	43.9	44.3
Mandera	21.2	24.2	22.2	11.2	13.5	12.1	12.4	14.3	14.4	53.4	48.0	51.3
Wajir	0.2	0.3	0.2	3.0	2.9	3.0	49.5	55.0	51.2	47.3	41.7	45.7
Nyanza	54.4	56.0	55.0	17.1	8.5	13.3	8.7	9.4	8.9	20.4	26.1	22.8
Kisii	83.9	86.7	85.0	6.3	3.9	5.4	5.5	5.7	5.6	4.3	3.7	4.0
Kisumu	34.2	46.0	38.5	44.2	25.9	37.4	6.2	8.6	7.1	15.4	19.5	17.0
Siaya	44.4	47.3	45.9	7.7	4.6	6.1	7.7	8.9	8.4	40.2	39.2	39.7
S/Nyanza	50.4	51.0	50.6	5.5	2.8	4.3	15.0	14.8	15.0	29.1	31.4	30.1
N/Eastern	13.1	13.7	13.4	14.9	15.8	15.1	23.9	25.1	24.5	48.1	45.4	47.0
Kajiado	23.8	24.1	23.9	41.4	30.9	37.2	13.6	19.1	15.8	21.2	25.9	23.1
Kericho	50.4	60.2	53.3	32.6	17.0	28.2	4.7	5.8	5.0	12.3	17.0	13.5
Laikipia	33.8	36.7	35.0	27.6	18.9	24.2	12.2	14.5	13.1	26.4	29.9	27.7
Nakuru	26.2	34.3	28.8	54.7	42.0	50.6	3.8	5.3	4.3	15.3	18.4	16.3
Nandi	65.7	72.9	67.8	20.0	10.4	17.3	9.3	11.2	9.7	5.0	5.5	5.2
Narok	65.9	69.2	67.3	8.7	5.1	7.1	6.6	7.1	6.8	18.8	18.6	18.8
Baringo	67.0	69.8	68.0	14.9	10.8	13.4	4.9	5.1	5.0	13.2	14.3	13.6
E/Marakwet	72.3	75.3	73.3	11.1	7.7	10.0	10.4	10.5	10.6	6.1	6.5	6.1
Samburu	28.3	31.0	29.3	16.7	10.0	13.2	37.1	38.5	38.2	17.9	20.5	19.3
T/Nzoia	42.4	43.1	42.6	20.6	18.8	19.8	23.6	27.3	24.9	13.2	12.3	12.7
Turkana	14.3	14.1	14.2	17.0	14.1	15.7	38.4	40.6	39.4	30.3	31.2	30.7
U/Gishu	19.5	24.4	20.5	27.4	20.7	25.9	42.1	43.5	42.6	11.0	11.4	11.0
West Pokot	68.1	71.1	69.1	16.1	9.3	13.5	10.1	13.3	11.4	5.7	16.3	6.0
Rift Valley	43.5	49.7	45.6	22.1	16.8	21.2	15.6	24.3	17.4	18.8	9.2	15.8
Bungoma	27.5	26.5	27.0	24.2	22.6	23.8	34.5	36.5	35.3	13.8	14.4	13.7
Busia	32.0	33.4	32.6	10.0	7.6	9.0	32.0	29.9	31.1	26.0	29.1	27.3
Kakamega	46.3	47.7	46.8	12.6	8.9	11.2	30.1	33.5	31.5	11.0	9.9	10.5
Western	35.1	36.6	35.6	15.6	13.0	14.6	32.4	33.0	32.6	16.9	17.8	17.2

5.4 Households by Type of Sewage Disposal

A house is not complete without an acceptable mode of sewage disposal, for lack of it may lead to outbreak of serious diseases like diarrhoea and typhoid. Table 5.3 shows the percentage distribution of households by main type of sewage disposal in the country at the time of the 1989 census.

Percentage Distribution of Household by Main Type of Sewage Disposal and District, 1989
Table 5.3

District/ Province	Main Sewer			Pit Latrine			Bush			Other		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Kenya	0.4	28.7	6.7	71.8	57.0	68.5	24.8	3.6	20.1	3.0	10.7	4.7
Nairobi	-	50.3	50.3	-	39.4	39.4	-	2.1	2.1	-	8.2	8.2
Kiambu	1.2	44.5	8.7	92.9	46.2	84.8	0.8	0.6	0.8	5.1	8.7	5.7
Kirinyaga	0.3	7.0	0.8	96.2	66.2	94.1	0.4	0.0	0.4	3.1	26.8	4.7
Muranga	0.4	11.9	0.9	95.3	76.2	94.5	1.0	0.0	1.0	3.3	11.9	3.6
Nyandarua	0.3	31.7	4.1	96.0	60.0	91.7	0.7	0.0	0.6	3.0	8.3	3.6
Nyeri	0.6	31.0	95.8	85.0	51.3	90.8	0.4	0.0	0.4	3.2	17.7	4.8
Central	0.6	30.8	3.7	95.3	55.8	91.2	0.7	0.0	0.6	3.4	13.4	4.5
Kilifi	0.4	1.9	0.7	41.3	70.3	47.4	55.1	7.7	45.2	3.2	17.7	4.8
Kwale	0.6	0.0	0.6	35.2	69.2	35.6	59.0	7.7	58.3	5.2	23.1	5.5
Lamu	0.3	0.4	0.3	63.6	89.2	70.0	24.4	2.0	18.8	11.7	8.4	10.9
Mombasa	-	10.0	10.0	-	68.6	68.6	-	4.4	4.4	-	17.0	17.0
T/Taveta	0.4	5.6	1.3	78.9	73.9	78.0	16.6	3.3	14.2	4.1	17.2	6.5
Tana River	0.2	9.8	2.0	25.2	55.7	30.8	71.2	30.6	63.8	3.4	3.9	3.4
Coast	0.4	7.2	2.5	48.1	71.2	55.2	46.1	6.9	34.1	5.4	14.7	8.2
Embu	0.3	13.7	1.9	86.7	64.1	84.1	9.7	2.6	8.9	3.2	19.6	5.1
Isiolo	0.6	10.7	4.0	20.5	70.2	37.2	75.3	11.9	54.0	3.6	7.2	4.8
Kitui	0.1	0.0	0.1	37.5	87.2	39.4	60.1	2.6	57.9	2.3	10.2	2.6
Machakos	0.3	20.8	2.3	77.0	67.7	76.1	20.0	3.1	18.4	2.7	8.4	3.2
Marsabit	0.0	0.6	0.1	17.7	79.9	28.2	80.3	15.4	69.3	2.0	4.1	2.4
Meru	0.2	7.5	0.6	85.8	75.5	85.3	11.0	1.9	10.5	3.0	15.1	3.6
Eastern	0.2	10.3	1.5	55.6	77.8	58.4	41.5	9.5	36.5	2.7	2.4	3.6
Garissa	0.0	9.6	2.8	6.9	75.3	25.9	91.7	11.7	68.4	1.4	3.2	2.9
Mandera	0.1	0.0	0.1	6.1	67.4	22.1	93.2	27.6	76.1	0.6	5.0	1.7
Wajir	0.0	0.5	0.1	6.8	7.3	6.9	92.6	51.1	83.5	0.6	41.1	9.5
NE/Eastern	0.0	3.5	0.9	6.5	52.7	18.5	92.8	28.1	76.0	0.7	15.7	4.6
Kisii	0.1	3.6	0.3	95.2	83.6	94.6	1.5	0.0	0.2	3.2	12.8	4.9
Kisumu	1.0	11.9	4.9	84.4	75.3	81.2	11.4	5.7	9.4	3.2	7.1	4.5
Siaya	0.2	0.0	0.2	81.8	91.7	82.2	15.7	0.0	15.1	2.3	8.3	2.5
S/Nyanza	0.2	9.7	0.8	48.1	79.0	50.0	49.5	8.1	46.9	2.2	3.2	2.3
Nyanza	0.3	10.3	1.6	76.9	81.7	77.0	20.1	4.8	18.2	2.7	3.2	3.2
Baringo	0.1	2.5	0.4	34.2	79.2	39.6	63.7	10.8	57.4	2.0	7.5	2.6
E/Marakwet	0.5	0.0	0.5	50.7	72.0	51.4	46.5	8.0	45.5	2.1	20.0	2.6
Kajiado	0.4	5.3	1.5	36.4	76.1	45.4	59.4	5.3	47.2	3.8	13.3	5.9
Kericho	0.3	19.7	1.5	60.4	68.8	60.9	36.6	3.3	34.6	2.7	8.2	3.0
Laikipia	1.0	28.8	5.7	81.0	42.9	74.5	14.7	0.0	12.2	3.3	28.3	7.6
Nakuru	2.5	26.2	10.4	84.3	63.6	77.4	8.8	0.6	6.1	4.4	9.6	6.1
Nandi	0.4	2.4	0.5	68.8	76.2	69.1	28.6	9.5	27.8	2.2	11.9	2.6
Narok	0.1	3.2	0.3	20.3	77.8	24.6	76.2	4.8	71.7	3.4	14.2	3.4
Samburu	0.3	0.7	0.4	5.5	53.9	12.9	92.0	38.8	83.9	2.2	6.6	2.8
T/Nzoia	0.2	19.7	4.0	88.4	68.9	84.3	8.8	3.6	7.8	2.6	7.8	3.9
Turkana	0.0	2.2	0.3	7.0	48.9	12.7	91.3	41.5	84.6	1.7	7.4	2.4
U/Gishu	0.6	17.1	6.9	77.7	71.9	75.5	18.9	1.6	12.3	2.8	9.4	5.3
West Pokot	0.1	0.0	0.1	15.4	89.2	20.2	82.2	3.1	77.1	2.3	7.7	2.6
R/Valley	0.5	13.8	2.5	46.9	65.8	49.8	50.0	8.6	43.7	2.6	11.8	4.0
Bungoma	0.2	12.8	1.6	85.9	78.0	85.0	11.2	1.8	10.2	2.7	7.4	3.2
Busia	0.1	3.9	0.4	72.4	88.3	73.6	25.5	2.6	23.7	2.0	5.2	2.3
Kakamega	0.3	11.5	0.9	91.2	65.4	89.9	5.7	0.0	5.4	2.8	23.1	3.8
Western	0.2	10.1	1.0	83.2	78.5	82.8	14.1	1.3	13.1	2.5	10.1	3.1

The analysis on the type of sewage disposal showed that at the national level, the pit latrine was the dominant sanitation method both in the urban and rural areas. In total, the analysis showed that 68.5 per cent of the households in the country used the pit latrine as a waste disposal method with 55.8 per cent being in rural areas and 12.7 per cent in urban areas. The analysis showed further that the bush served 20.1 per cent of the country's households with the highest concentration (19.3 per cent) being in the rural areas. In general, the analysis revealed that the pit latrine was widely used followed by the bush and the main sewer.

Analysis at the provincial level showed that in Nairobi province, the majority of households (50.3 per cent) used the main sewer with 39.4 per cent using pit latrines. In the other provinces except North Eastern, the principal waste disposal method was the pit latrine with the

following proportions: Central (91.2 per cent), Western (82.8 per cent), Nyanza (77 per cent), Eastern (58.4 per cent), Coast (55.2 per cent) and Rift Valley (49.6 per cent). In North Eastern Province, the analysis indicated that the principal waste disposal method was the bush which served 76 per cent of the province's households. Although the bush as a waste disposal method was not key in Central, Nairobi, Nyanza and Western provinces, it was quite significant in Rift Valley (43.7 per cent), Eastern (36.5 per cent) and Coast (34.1 per cent).

At the district level, the analysis showed that the main sanitation method was the pit latrine. However, the bush was key in 20 districts as follows: Turkana (84.6 per cent), Samburu (83.9 per cent), Wajir (83.5 per cent), West Pokot (77.1 per cent), Mandera (76.1 per cent), Narok (71.7 per cent), Marsabit (69.3 per cent), Garissa (68.4 per cent), Tana River (63.8 per cent), Kwale (58.3 per cent), Kitui (57.9), Baringo (57.4 per cent), Isiolo (54 per cent), Kajiado (47.2 per cent), South Nyanza (46.9 per cent), Elgeyo Marakwet (45.5 per cent), Kilifi (45.2 per cent), Kericho (34.6 per cent), Nandi (27.8 per cent) and Busia (23.7 per cent).

5.5 Households by Main Type of Sewage Disposal and Sex of Head

Table 5.4 shows percentage distribution of households by main type of waste disposal and sex of head. Analysis on type of sewage disposal by sex showed that at the national level, 18.7 per cent of the male headed households used the bush for faecal disposal compared to 22.7 per cent for female headed households. The provincial analysis indicated that in Nairobi, 2.2 per cent of the male headed households used the bush for sewage disposal while the figure for female headed households was 9.2 per cent. In Central Province, 0.6 per cent of the male headed households used the bush for sanitation compared to 0.5 per cent for females. The situation in Coast province was such that 33.8 per cent of the male headed households used the bush compared to 35.3 per cent for female headed households. In Eastern Province, the proportion of male headed households which used the bush was 33.4 per cent compared to 41.3 per cent for females. In North Eastern Province, 73.6 per cent of the male headed households used the bush compared to 73.3 per cent for females. The picture in Nyanza province was such that 16.6 per cent of the male headed households used the bush compared to 20.4 per cent for females. In the Rift Valley Province, 37.5 per cent of the male headed households used the bush with the proportion of females being 52.2 per cent. In Western Province, the situation was such that 12.1 per cent of the male headed households used the bush with 13.9 per cent being the proportion of female headed households.

**Percentage Distribution of Households by Main Type of Sewage Disposal, Sex of Head
and District, 1989**

Table 5.4:

District/ Province	Main Sewer			Pit Latrine			Bush			Other		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Kenya	8.2	4.5	6.7	68.1	68.8	68.5	18.7	22.7	20.1	5.2	4.0	4.7
Nairobi	49.1	55.9	50.3	40.5	34.4	39.4	2.2	9.2	2.1	8.3	0.5	8.2
Kiambu	9.7	7.1	8.7	83.4	87.4	84.8	0.8	0.6	0.8	6.1	4.9	5.7
Kirinyaga	0.9	0.6	0.8	93.9	94.9	94.1	0.4	0.3	0.4	4.8	4.2	4.7
Muranga	1.0	0.7	0.9	93.6	95.5	94.5	1.0	0.9	1.0	4.4	2.9	3.6
Nyandarua	4.5	3.4	4.1	91.2	92.6	91.7	0.5	0.5	0.6	3.7	3.5	3.6
Nyeri	4.5	3.2	4.0	89.6	92.3	90.8	0.5	0.2	0.4	5.4	4.3	4.8
Central	3.9	3.2	3.7	90.0	92.1	91.2	0.6	0.5	0.6	5.5	4.2	4.5
Kilifi	0.8	0.3	0.7	46.2	45.9	47.4	45.8	40.8	45.2	7.2	13.0	7.0
Kwale	0.7	0.3	0.6	36.9	33.0	35.6	35.6	62.2	58.3	5.9	4.5	5.5
Lamu	0.3	0.4	0.3	67.5	75.0	70.0	20.2	16.3	18.8	12.0	8.3	10.9
Mombasa	10.1	10.0	10.0	68.5	68.8	68.6	1.3	19.0	4.4	20.1	2.2	17.0
Taita Taveta	1.8	0.5	1.3	75.5	82.1	78.0	15.2	12.5	14.2	7.5	4.9	6.5
Tana River	2.4	1.0	2.0	32.5	27.1	30.8	61.6	68.8	63.8	3.5	3.1	3.4
Coast	2.7	1.7	2.5	54.4	56.5	55.2	33.8	35.3	34.1	9.1	6.5	8.2
Embu	2.1	1.8	1.9	85.6	83.8	84.1	8.3	10.5	8.9	4.0	3.9	5.1
Isiolo	5.3	2.2	4.0	37.7	36.5	37.2	50.9	58.3	54.0	6.1	3.0	4.8
Kitui	0.0	0.0	0.0	41.4	30.3	39.4	55.9	49.2	57.9	2.7	20.5	2.6
Machakos	3.1	1.4	2.3	75.5	76.7	76.1	17.8	19.2	18.4	3.6	2.7	3.2
Marsabit	0.2	0.0	0.1	29.9	25.9	28.2	67.5	71.7	69.3	2.4	2.4	2.4
Meru	0.6	0.3	0.5	85.7	84.5	85.3	10.2	11.1	10.5	3.5	4.1	3.6
Eastern	1.8	1.0	1.5	61.0	54.6	58.4	33.4	41.3	36.5	3.8	3.1	3.6
Garissa	3.3	2.2	2.8	25.1	27.9	25.6	68.8	67.2	68.4	2.8	2.7	2.9
Mandera	0.2	0.0	0.1	19.9	25.4	22.1	77.9	74.0	76.1	2.0	0.6	1.7
Wajir	0.2	0.0	0.1	6.9	6.9	6.9	84.4	82.0	83.5	8.5	11.1	9.5
N/Eastern	1.2	0.6	0.9	16.5	19.7	18.5	73.6	73.3	76.0	8.7	6.4	4.6
Kisii	0.5	0.3	0.3	94.6	94.5	94.6	1.3	1.8	0.2	3.6	3.4	4.9
Kisumu	5.9	3.2	4.9	81.0	81.4	81.2	8.0	11.7	9.4	5.1	3.7	4.5
Siaya	0.4	0.2	0.2	82.4	82.0	82.2	14.7	15.4	15.1	2.5	2.4	2.5
South Nyanza	1.1	0.5	0.8	52.2	47.3	50.0	44.3	49.9	46.9	2.4	2.3	2.3
Nyanza	2.1	0.9	1.6	78.0	76.3	77.0	16.6	20.4	18.2	3.3	2.4	3.2
Baringo	0.3	0.3	0.3	42.2	39.6	38.4	54.7	62.8	57.4	2.8	2.4	2.6
Elgeyo Marakwet	0.6	0.3	0.5	52.4	49.4	51.4	44.2	48.1	45.5	2.8	2.2	2.6
Kajiado	1.8	0.8	1.5	51.7	35.7	45.4	39.4	59.5	47.2	7.1	4.0	5.9
Kericho	1.6	1.4	1.5	64.0	53.4	60.9	31.2	42.9	34.6	3.2	2.3	3.0
Laikipia	6.4	4.4	5.7	72.8	77.0	74.5	11.9	12.9	12.2	8.9	5.7	7.6
Nakuru	11.1	9.0	10.4	76.8	79.0	77.4	5.6	6.8	6.1	6.5	5.2	6.1
Nandi	0.4	0.4	0.4	70.2	66.2	69.2	26.7	30.9	27.8	2.7	2.5	2.6
Narok	0.3	0.2	0.3	27.0	21.1	24.6	68.5	76.4	71.7	4.2	2.3	3.4
Samburu	0.6	0.0	0.4	17.3	9.0	12.9	78.3	89.0	83.9	3.8	2.0	2.8
Trans Nzoia	4.1	3.7	4.0	83.9	85.2	84.3	8.0	7.4	7.8	4.0	3.7	3.9
Turkana	0.4	0.0	0.3	15.9	8.9	12.7	80.8	89.3	84.6	2.9	1.8	2.4
Uasin Gishu	7.0	5.9	6.9	76.0	74.9	75.5	11.4	14.4	12.3	5.6	4.8	5.3
West Pokot	0.2	0.0	0.1	23.3	15.4	20.2	73.7	82.5	77.1	2.8	2.1	2.6
Rift Valley	2.7	2.0	2.5	52.0	42.0	49.8	37.5	52.2	43.7	7.8	2.9	4.0
Bungoma	1.9	1.0	1.6	85.1	84.8	85.0	9.9	11.0	10.2	3.1	3.2	3.2
Busia	0.5	0.2	0.4	74.4	72.5	73.6	22.8	24.9	23.7	2.3	2.4	2.3
Kakamega	1.2	0.7	0.9	89.1	90.8	89.9	5.5	5.3	5.4	4.2	3.2	3.8
Western	1.3	0.5	1.0	83.3	82.5	82.8	12.1	13.9	13.1	3.3	3.1	3.1

The district analysis showed almost the same pattern of the majority of those using the bush being headed by females. The following districts showed the highest percentage of female headed households which used the bush: Turkana (89.3 per cent), Samburu (89 per cent), West Pokot (82.5 per cent), Wajir (82.0 per cent), Mandera (74 per cent), Marsabit (71.7 per cent), Tana River (68.8 per cent), Garissa (67.2 per cent), Baringo (62.8 per cent), Kwale (62.2 per cent), Kajiado (59.5 per cent), Isiolo (58.3 per cent) and Kitui (49.2 per cent).

5.6 Households by Main Cooking Fuel

The type of cooking fuel used by households is normally an indicator of its welfare. During the 1989 census, households were asked to indicate their main type of cooking fuel. The results of their responses are summarized in Table 5.5 below.

Percentage Distribution of Households by Main Cooking Fuel and District, 1989
Table 5.5

District/ Province	Paraffin			Firewood			Charcoal			Other		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Kenya	4.2	54.9	15.5	90.1	13.1	73.0	3.6	19.8	7.2	2.1	12.2	4.3
Nairobi	-	68.4	68.4	-	2.9	2.9	-	8.7	8.7	-	20.0	20.0
Kiambu	14.3	76.3	25.0	61.5	6.9	59.5	7.7	1.2	7.4	16.5	15.6	8.1
Kirinyaga	7.9	65.7	12.1	88.3	16.4	83.1	1.2	4.1	1.4	2.6	13.8	3.4
Muranga	5.5	61.9	7.9	90.8	19.0	87.8	1.7	7.1	2.0	1.9	12.0	2.4
Nyandarua	2.5	32.2	6.1	90.7	14.0	81.4	4.9	44.6	9.7	1.9	9.2	2.8
Nyeri	6.0	53.1	11.3	88.8	17.7	80.8	2.7	13.3	3.9	2.5	15.9	4.0
Central	7.1	58.6	12.5	86.0	13.5	78.5	3.6	16.3	4.9	3.3	11.6	4.1
Kilifi	4.3	36.9	10.9	90.8	26.6	77.8	2.8	27.1	7.7	2.1	9.4	3.6
Kwale	8.8	50.0	9.4	85.2	28.6	84.4	3.1	7.1	3.2	2.9	14.3	3.0
Lamu	11.2	20.7	13.6	82.1	36.2	70.6	4.0	34.3	11.6	2.7	8.8	4.2
Mombasa	-	57.1	57.1	-	11.1	11.1	-	18.1	18.1	-	13.7	13.7
Taita Tavet	4.8	35.5	10.5	88.4	23.7	76.4	4.9	31.7	9.9	1.9	9.1	3.2
Tana River	5.0	20.7	7.8	90.1	49.7	82.8	3.2	24.9	7.1	1.7	5.0	2.3
Coast	6.9	44.4	18.3	87.1	21.7	67.2	3.6	23.0	9.5	2.4	10.9	5.0
Embu	4.4	55.9	10.5	90.6	20.3	82.3	2.8	11.0	3.8	2.2	12.8	3.4
Isiolo	3.4	21.7	9.5	90.4	27.5	69.6	4.3	43.8	17.4	1.9	7.0	3.5
Kitui	2.1	45.0	3.8	94.3	12.5	91.0	2.1	37.5	3.5	1.5	5.0	1.7
Machakos	3.3	43.2	7.1	92.0	18.9	85.1	3.0	28.4	5.4	1.7	9.5	2.4
Marsabit	0.8	18.9	3.9	96.3	68.6	91.6	1.4	8.3	2.6	1.5	4.2	1.9
Meru	3.3	33.3	4.9	92.5	29.6	89.1	2.6	25.9	3.9	1.6	11.2	2.1
Eastern	2.9	30.4	6.6	92.8	33.3	84.8	2.7	28.1	6.1	1.6	8.2	2.5
Garissa	1.7	27.7	9.3	94.5	34.6	77.0	2.0	31.2	10.5	1.8	6.5	3.2
Mandera	0.3	6.2	1.8	98.4	84.6	94.8	0.7	5.0	1.8	0.6	4.2	1.6
Wajir	1.0	11.5	3.3	97.9	77.5	93.5	0.4	8.2	2.1	0.7	2.8	1.1
N/Eastern	0.9	15.9	4.8	97.2	63.4	88.9	0.9	15.9	4.8	1.0	1.8	1.5
Kisii	3.0	33.3	4.7	93.3	42.1	90.4	1.7	14.0	2.4	2.0	10.6	2.5
Kisumu	7.6	42.6	17.3	85.3	21.9	64.2	5.1	33.6	14.6	2.0	1.9	3.9
Siaya	2.3	24.3	3.1	92.3	27.0	89.9	3.7	45.9	5.3	1.7	2.8	1.7
S/Nyanza	2.1	27.0	3.7	92.5	20.6	88.0	3.7	44.4	6.3	1.7	8.0	2.0
Nyanza	2.9	36.7	7.2	92.0	23.4	83.2	3.4	32.0	7.1	1.7	7.9	2.5
Baringo	1.9	28.0	5.0	93.5	39.8	87.2	2.6	28.0	5.6	2.0	4.2	2.2
E/Marakwet	1.9	33.3	2.7	91.8	16.7	90.0	4.5	37.5	5.3	1.8	12.5	2.0
Kajiado	10.3	49.3	19.1	78.4	13.8	63.9	7.7	26.7	12.0	3.6	10.2	5.0
Kericho	3.2	27.4	4.7	92.4	30.6	88.6	2.8	33.9	4.7	1.6	8.1	2.0
Laikipia	4.7	43.2	11.2	87.8	15.4	75.6	4.9	31.4	9.4	2.6	10.0	3.8
Nakuru	9.0	56.9	24.9	53.3	9.3	56.4	7.9	22.6	12.8	3.3	11.2	5.9
Nandi	2.4	26.2	3.4	92.3	33.3	89.8	3.4	38.1	4.9	1.9	2.4	1.9
Narok	2.1	31.7	4.0	90.9	11.1	85.9	5.1	50.8	8.0	1.9	6.4	2.1
Samburu	1.1	8.6	2.3	93.7	42.1	85.9	3.5	44.7	9.8	1.7	4.6	2.0
Trans Nzoia	3.1	26.4	10.2	91.7	16.8	79.0	3.0	17.8	7.6	2.2	29.0	3.2
Turkana	0.3	11.0	1.8	92.5	47.8	86.4	4.5	37.5	9.0	2.7	3.7	2.8
Uasin Gish	3.7	32.2	14.6	87.2	8.7	57.3	6.9	51.2	23.8	2.2	7.9	4.3
West Pokot	2.7	30.8	4.5	91.1	16.9	86.3	4.1	47.7	6.9	2.1	4.6	2.3
Rift Valley	3.4	36.4	8.4	89.9	19.9	79.3	4.6	35.8	9.3	2.1	7.9	3.0
Bungoma	2.9	33.3	6.2	91.7	19.4	83.9	3.5	41.7	7.6	1.9	5.6	2.3
Busia	2.6	20.0	3.9	93.1	18.7	87.5	2.8	56.0	6.8	1.5	5.3	1.8
Kakamega	3.6	23.5	4.9	92.2	25.5	88.7	2.6	37.2	4.4	1.6	13.8	2.0
Western	3.0	28.2	5.0	92.4	20.5	86.8	2.9	44.9	6.2	1.7	6.4	2.0

Analysis on the main cooking fuel showed that at the national level, the principal cooking fuel was fire wood which served 73.0 per cent of the country's households. The analysis further revealed that in urban areas, paraffin was the main cooking fuel since it served 54.9 per cent of the urban households. At the provincial level, the data indicated that apart from Nairobi, where the dominant cooking fuel was paraffin, the rest had fire wood as their main cooking fuel. The

proportions for firewood use in the provinces were: North Eastern (88.9 per cent), western (86.8 per cent), Eastern (84.8 per cent), Nyanza (83.2 per cent), Rift Valley (79.3 per cent), Central (78.5 per cent), Coast (67.2 per cent) and Nairobi (2.9 per cent).

The trend in the districts seemed to be similar to that of the provinces where the widely used cooking fuel was firewood except for Nairobi and Mombasa. The districts which registered the highest usage of firewood were: Mandera (94.8 per cent), Wajir (93.5 per cent), Marsabit (91.6 per cent), Kitui (91 per cent), Kisii (90.4 per cent), Elgeyo Marakwet (90 per cent), Siaya (89.9 per cent), Nandi (89.8 per cent), Meru (89.1 per cent), Kakamega (88.7 per cent), Kericho (88.6 per cent), South Nyanza (88 per cent), Muranga (87.8 per cent), Busia (87.5 per cent), Baringo (87.2 per cent), Turkana (86.4 per cent), West Pokot (86.3 per cent), Narok (85.9 per cent), Samburu (85.9 per cent), Machakos (85.1 per cent), Kwale (84.4 per cent), Kirinyaga (83.1 per cent), Tana River (82.8 per cent), Embu (82.3 per cent), Nyandarua (81.4 per cent) and Nyeri (80.8 per cent).

5.7 Households by Main Cooking Fuel and Sex of Head

Table 5.6 shows the percentage distribution of households by main cooking fuel and sex of head.

Analysis on the main type of cooking fuel by sex of head of household showed that at both the national and regional levels, firewood was widely used, with female headed households being the major users. For instance, 81 per cent of all female headed households used firewood at the national level compared to 68.1 per cent for males. The same trend was evident in the provinces and the districts.

5.8 Households by Main Type of Lighting

As is the case with cooking fuel, the type of lighting used by households is an indicator of its welfare. Table 5.7 shows the distribution of households by main type of lighting. Analysis on households by main type of lighting indicated that at the national level paraffin lamps were dominant type of lighting used by majority (81.3 per cent) of households in the country.

The provincial analysis revealed that in all the provinces, the dominant type of lighting was paraffin lamps as follows: Western (92.6 per cent), Central (90 per cent), Nyanza (89.5 per cent), Coast (82.2 per cent), Eastern (74.1 per cent), Rift Valley (64.8 per cent), Nairobi (54.4 per cent) and

Percentage Distribution of Households by Main Cooking Fuel, Sex of Head and District, 1989
Table 5.6

District/ Province	Paraffin			Firewood			Charcoal			Other		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Kenya	18.7	9.7	15.5	68.1	81.0	73.0	7.9	5.7	7.2	5.3	3.6	4.3
Nairobi	69.8	62.1	68.4	2.4	5.1	2.9	8.2	10.8	8.7	19.6	22.0	20.0
Kiambu	28.3	18.9	25.0	55.3	67.0	59.5	7.7	6.9	7.4	8.7	7.2	8.1
Kirinyaga	12.4	11.5	12.1	82.5	84.0	83.1	1.5	1.2	1.4	3.6	3.3	3.4
Muranga	9.2	6.1	7.9	85.9	90.4	87.8	2.1	1.6	1.9	2.8	1.9	2.4
Nyandarua	6.9	5.0	6.1	79.7	83.9	81.4	10.3	9.0	9.7	3.1	2.1	2.8
Nyeri	12.8	8.9	11.3	78.2	84.4	80.8	4.4	3.5	3.9	4.6	3.2	4.0
Central	14.3	9.8	12.5	76.0	82.8	78.5	5.1	3.2	4.9	4.6	4.2	4.1
Kilifi	11.6	7.8	10.9	76.1	81.7	77.8	8.1	7.5	7.7	4.2	3.0	3.6
Kwale	10.9	6.4	9.4	82.4	88.8	84.4	3.6	1.9	3.2	3.1	2.9	3.0
Lamu	15.5	8.3	13.6	67.1	79.7	70.6	12.4	9.4	11.6	5.0	2.6	4.2
Mombasa	58.5	50.6	57.1	10.5	14.3	11.1	16.8	22.5	18.1	14.2	12.6	13.7
Taita Taveta	12.6	6.9	10.5	69.1	83.7	76.4	11.2	7.2	9.9	7.1	2.2	3.2
Tana River	9.1	4.7	7.8	80.7	87.8	82.8	7.7	6.1	7.1	2.5	1.4	2.3
Coast	21.8	12.6	18.3	63.5	75.4	67.2	10.2	8.5	9.5	4.5	3.5	5.0
Embu	11.3	9.3	10.5	81.1	84.4	82.3	3.9	3.6	3.8	3.7	2.7	3.4
Isiolo	12.2	5.5	9.5	64.8	76.7	69.6	19.4	15.1	17.4	3.6	2.7	3.5
Kitui	4.7	2.7	3.8	88.9	93.1	91.0	4.5	2.7	3.5	1.9	1.5	1.7
Machakos	8.7	4.8	7.1	82.0	89.4	85.1	6.3	3.8	5.4	3.0	2.0	2.4
Marsabit	5.4	1.9	3.9	89.4	94.8	91.6	3.0	1.9	2.6	2.2	1.4	1.9
Meru	5.0	4.7	4.9	88.9	89.5	89.1	3.8	3.7	3.9	2.3	2.1	2.1
Eastern	8.0	4.6	6.6	83.0	87.9	84.8	6.6	4.9	6.1	2.4	2.6	2.5
Garissa	10.6	6.5	9.3	75.9	79.3	77.0	9.9	11.8	10.5	3.6	2.4	3.2
Mandera	2.2	0.8	1.8	93.6	96.7	94.8	2.0	1.4	1.8	2.2	1.1	1.6
Wajir	4.0	1.8	3.3	92.7	95.2	93.5	2.1	2.1	2.1	1.2	0.9	1.1
N/Eastern	5.6	3.0	4.8	87.4	90.4	88.9	4.8	5.1	4.8	2.3	1.5	1.5
Kisii	5.5	3.4	4.7	89.0	92.7	90.4	2.8	1.6	2.4	2.7	2.3	2.5
Kisumu	22.1	9.3	17.3	55.6	78.2	64.2	17.5	9.8	14.6	4.8	2.7	3.9
Siaya	4.4	2.1	3.1	86.7	92.7	89.9	7.3	3.5	5.3	1.7	1.7	1.7
S/Nyanza	4.6	2.5	3.7	85.4	91.5	88.0	7.9	4.4	6.3	2.1	1.6	2.0
Nyanza	9.2	4.2	7.2	78.2	89.7	83.2	9.1	4.7	7.1	3.5	1.4	2.5
Baringo	6.0	3.1	5.0	85.1	90.9	87.2	6.5	4.0	5.6	2.4	2.0	2.2
E/Marakwet	3.1	1.9	2.7	88.5	93.2	90.0	6.2	3.4	5.3	2.2	1.5	2.0
Kajiado	24.2	11.8	19.1	56.5	74.9	63.9	13.3	10.1	12.0	6.0	3.2	5.0
Kericho	5.2	3.7	4.7	87.7	90.8	88.6	4.8	4.4	4.7	2.3	1.1	2.0
Laikipia	13.5	7.2	11.2	71.9	81.4	75.6	10.0	8.5	9.4	4.6	2.9	3.8
Nakuru	28.3	17.9	24.9	52.1	65.7	56.4	13.6	11.1	12.8	6.0	5.3	5.9
Nandi	3.7	2.6	3.4	89.1	91.5	89.8	5.2	4.1	4.9	2.0	1.8	1.9
Narok	4.9	2.5	4.0	83.4	90.1	85.9	9.2	6.1	8.0	2.5	1.3	2.1
Samburu	4.2	0.8	2.3	80.4	91.2	85.9	13.1	6.5	9.8	2.3	1.5	2.0
Trans Nzoia	11.1	8.1	10.2	78.0	81.8	79.0	7.8	7.1	7.6	3.1	3.0	3.2
Turkana	2.7	0.9	1.8	82.8	90.8	86.4	11.4	5.8	9.0	3.1	2.5	2.8
Uasin Gishu	16.2	10.3	14.6	53.9	66.1	57.3	25.2	19.9	23.8	4.7	3.7	4.3
West Pokot	5.9	2.1	4.5	83.3	91.5	86.3	8.2	4.8	6.9	2.6	1.6	2.3
Rift Valley	9.6	5.3	8.4	72.3	84.7	79.3	9.9	7.2	9.3	8.2	2.8	3.0
Bungoma	6.8	4.5	6.2	82.9	86.1	83.9	7.8	7.1	7.6	2.5	2.3	2.3
Busia	4.9	2.8	3.9	86.2	89.3	87.5	4.3	5.9	6.8	5.0	2.0	1.8
Kakamega	5.8	3.6	4.9	86.7	91.6	88.7	5.3	3.1	4.4	2.2	1.7	2.0
Western	6.8	3.4	5.0	84.8	89.3	86.8	6.8	5.2	6.2	1.6	2.1	2.0

North Eastern (43.3 per cent). In Nairobi Province, electricity as a type of lighting was quite prominent because it served 42.5 per cent of the households. In North Eastern Province, the census data showed that fuel wood was quite significant because it served 39.6 per cent of the households.

Percentage Distribution of Households by Main Type of Lighting and District, 1989

Table 5.7

District/ Province	Electricity			Paraffin Lamps			Fuel Wood			Other		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Kenya	1.9	32.1	8.7	86.2	64.3	81.3	7.0	0.9	5.6	4.9	2.7	4.4
Nairobi	-	42.5	42.5	-	54.4	54.4	-	0.3	0.3	-	2.8	2.8
Kiambu	12.6	36.9	16.9	84.7	60.2	80.4	0.6	0.6	0.6	2.1	2.3	2.1
Kirinyaga	1.9	26.4	3.7	94.7	70.8	93.0	0.7	0.0	0.7	2.7	2.8	2.6
Muranga	1.8	35.7	3.2	95.5	59.2	94.0	0.5	2.4	0.6	2.2	2.7	2.2
Nyandarua	0.4	20.8	2.9	96.0	77.5	93.8	0.9	0.0	0.8	2.7	1.7	2.5
Nyeri	3.6	45.0	8.2	93.2	53.1	88.8	0.9	0.0	0.8	2.3	1.9	2.2
Central	3.9	33.6	7.0	93.0	64.4	90.0	0.8	0.0	0.7	2.3	2.0	2.3
Kilifi	2.6	26.6	7.5	91.3	69.0	86.8	2.4	1.0	2.1	3.7	3.4	3.6
Kwale	2.4	18.2	2.6	91.9	72.7	91.7	2.8	0.0	2.8	2.9	9.1	2.9
Lamu	5.2	48.4	15.8	87.6	49.6	78.0	5.0	0.4	3.9	2.2	1.6	2.3
Mombasa	-	35.5	35.5	-	60.7	60.7	-	1.0	1.0	-	2.8	2.8
Taita Taveta	1.5	21.9	5.2	92.5	73.2	89.0	2.4	1.6	2.3	3.6	3.3	3.5
Tana River	1.8	9.4	3.2	86.7	86.7	86.6	7.4	0.5	6.2	4.2	3.4	4.0
Coast	2.6	32.2	11.6	90.1	64.1	82.2	4.0	0.7	3.0	3.3	3.0	3.2
Embu	1.8	30.9	5.5	91.3	58.7	87.2	1.7	0.8	1.6	5.2	9.6	5.7
Isiolo	1.7	15.4	7.5	44.0	80.3	59.3	44.7	1.2	26.4	9.6	3.1	6.8
Kitui	0.5	35.0	1.9	81.0	62.5	80.3	9.2	0.0	8.8	9.3	2.5	9.0
Machakos	1.0	21.3	2.9	94.1	75.5	92.4	1.1	0.0	1.0	3.8	3.2	3.7
Marsabit	0.2	21.8	3.9	29.4	67.1	35.8	63.1	4.1	53.1	7.3	7.0	7.2
Meru	1.0	24.2	2.4	91.3	58.1	89.1	4.3	1.6	4.0	3.4	16.1	3.5
Eastern	1.1	21.3	4.1	74.2	73.3	74.1	18.3	1.3	15.8	6.4	4.1	6.0
Garissa	0.4	34.0	10.2	54.9	60.1	56.0	19.2	2.4	14.3	25.5	3.5	19.5
Mandera	0.1	7.8	2.1	23.6	85.3	39.5	72.0	1.6	53.8	4.3	5.3	3.6
Wajir	0.3	12.9	3.0	24.3	73.2	34.6	61.3	13.4	50.9	14.1	0.5	11.5
North Eastern	0.3	19.2	5.1	33.6	72.2	43.4	51.4	5.1	39.6	14.7	3.5	11.9
Kisii	0.7	17.5	1.7	80.5	77.2	80.3	0.6	1.7	0.7	18.2	3.6	17.3
Kisumu	1.8	14.7	6.4	93.7	82.4	89.7	0.6	0.3	0.5	3.9	2.6	3.4
Siaya	0.5	10.8	0.9	95.4	89.2	95.2	0.5	0.0	0.5	3.6	0.0	3.4
South Nyanza	0.5	14.0	1.4	93.8	81.2	93.0	0.6	0.0	0.6	5.1	4.8	5.0
Nyanza	0.8	14.4	2.6	91.1	79.5	89.5	0.5	0.0	0.5	7.6	6.1	7.4
Baringo	1.0	11.9	2.5	56.2	82.2	59.5	38.7	1.7	34.3	3.8	4.2	3.7
E/Marakwet	1.6	25.0	2.2	60.2	70.8	60.5	30.1	0.0	29.4	8.1	4.2	7.9
Kajiado	3.5	22.6	7.8	86.2	74.8	83.4	4.1	0.4	3.3	6.2	2.2	5.5
Kericho	1.6	22.0	2.8	93.2	78.0	92.3	0.5	0.0	0.5	4.7	0.0	4.4
Laikipia	2.2	30.8	7.0	82.4	65.7	79.6	12.4	0.6	10.4	3.0	2.9	3.0
Nakuru	4.0	32.3	13.4	89.8	63.4	81.1	2.2	0.3	1.6	4.0	4.0	3.9
Nandi	1.0	11.6	1.5	93.1	83.7	92.7	0.3	4.6	0.5	5.6	0.1	5.3
Narok	1.1	22.2	2.4	58.7	69.8	59.4	29.4	0.0	27.6	10.8	8.0	10.6
Samburu	1.5	20.7	4.4	10.9	54.7	17.5	83.0	22.0	73.9	4.6	2.6	4.2
Trans-Nzoia	0.7	10.0	3.5	89.5	52.2	87.6	1.4	0.3	1.2	8.4	37.5	7.7
Turkana	0.3	9.6	1.6	7.2	52.2	13.3	82.7	30.1	75.6	9.8	8.1	9.5
Uasin Gishu	1.5	16.1	7.0	90.6	78.8	86.1	1.5	0.5	1.1	6.4	4.7	5.8
West Pokot	2.7	6.1	2.9	25.9	84.8	29.8	67.1	1.5	62.8	4.3	7.6	4.5
Rift Valley	1.6	20.4	4.5	63.8	70.4	64.8	28.3	4.6	24.7	6.3	4.6	6.0
Bungoma	0.6	12.0	1.8	93.8	85.2	92.8	0.6	0.0	0.5	5.0	2.8	4.9
Busia	0.6	15.8	1.8	92.3	78.9	91.3	0.4	0.0	0.4	6.7	5.3	6.5
Kakamega	0.8	16.0	1.6	94.0	84.0	93.5	0.5	0.0	0.5	4.7	0.1	4.5
Western	0.6	14.1	1.7	93.4	83.3	92.6	0.5	0.0	0.5	5.5	2.6	5.2

The district analysis on type of lighting showed that in most districts the dominant lighting type was paraffin lamps except for Mandera, Wajir, Samburu, Turkana and West Pokot where the dominant type of lighting was fuel wood with 53.8, 50.9, 73.9, 75.6 and 62.8 per cent, respectively.

5.9 Households by Main Type of Lighting and Sex of Head

Table 5.8 shows the percentage distribution of households by main type of lighting and sex of head.

Percentage Distribution of Households by Main Type of Lighting, Sex of Head and District, 1989

Table 5.8

District/ Province	Electricity			Paraffin Lamps			Fuel Wood			Other		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Kenya	10.3	6.0	8.7	79.2	82.7	81.3	5.1	6.5	5.6	5.4	4.8	4.4
Nairobi	41.2	48.2	42.5	55.5	49.2	54.4	0.2	0.5	0.3	3.1	2.1	2.8
Kiambu	18.7	13.8	16.9	78.5	83.4	80.4	0.6	0.6	0.6	2.2	2.2	2.1
Kirinyaga	3.9	3.3	3.7	92.7	93.4	93.0	0.7	0.9	0.7	2.7	2.4	2.6
Muranga	3.8	2.6	3.2	93.4	94.8	94.0	0.5	0.5	0.6	2.3	2.1	2.2
Nyandarua	3.2	2.4	2.9	93.6	94.2	93.8	0.8	0.8	0.8	2.4	2.6	2.5
Nyeri	9.4	6.4	8.2	87.7	90.6	88.8	0.8	0.7	0.8	2.1	2.3	2.2
Central	8.0	5.6	7.0	88.9	91.3	90.0	0.6	0.8	0.7	2.5	2.3	2.3
Kilifi	7.9	6.3	7.5	86.2	86.8	86.6	2.3	1.9	2.1	3.6	3.0	3.6
Kwale	3.1	1.6	2.6	91.3	92.6	91.7	2.8	2.9	2.8	2.8	2.9	2.9
Lamu	17.1	12.3	15.8	75.7	83.0	78.0	4.3	2.9	3.9	2.9	1.8	2.3
Mombasa	35.0	36.8	35.5	61.4	58.9	60.7	0.9	1.3	1.0	2.7	3.0	2.8
Taita Taveta	6.7	2.9	5.2	87.2	91.7	89.0	2.7	2.1	2.3	3.4	3.3	3.5
Tana River	4.1	1.0	3.2	85.5	88.8	86.6	6.2	6.1	6.2	4.1	4.1	4.0
Coast	12.7	8.9	11.6	80.8	85.3	82.2	3.1	3.1	3.0	3.4	2.7	3.2
Embu	6.2	4.2	5.5	86.9	88.3	87.2	0.2	1.8	1.6	6.7	5.7	5.7
Isiolo	9.8	4.1	7.5	58.0	61.6	59.3	25.6	27.3	26.4	6.6	7.0	6.8
Kitui	2.5	1.1	1.9	79.7	80.8	80.3	8.7	8.9	8.8	9.1	9.2	9.0
Machakos	3.6	1.9	2.9	91.4	93.8	92.4	1.0	1.0	1.0	4.0	3.3	3.7
Marsabit	5.4	1.9	3.9	35.8	35.6	35.8	52.1	54.2	53.1	6.7	8.3	7.2
Meru	2.6	2.0	2.4	89.3	88.7	89.2	4.8	6.1	4.0	3.3	3.2	3.5
Eastern	4.9	2.3	4.1	74.4	73.6	74.1	14.9	17.4	15.8	5.8	6.7	6.8
Garissa	10.9	8.7	10.2	53.9	60.4	56.0	15.1	12.7	14.3	20.1	18.2	19.5
Mandera	3.6	2.2	2.1	35.6	44.8	39.5	56.7	48.3	53.8	4.1	4.7	3.6
Wajir	3.6	1.8	3.0	32.1	39.9	34.6	52.3	47.7	50.9	12.0	10.6	11.5
North Eastern	5.9	4.5	5.1	39.3	53.2	43.4	39.4	39.7	39.6	15.4	2.6	11.9
Kisii	1.9	1.3	1.7	80.7	79.7	80.3	0.6	0.8	0.7	16.8	18.2	17.3
Kisumu	7.7	4.3	6.4	88.6	91.5	89.7	0.5	0.5	0.5	3.2	3.7	3.4
Siaya	1.2	0.6	0.9	95.2	95.4	95.2	0.4	0.6	0.5	3.2	3.4	3.4
South Nyanza	1.9	0.7	1.4	92.4	93.5	93.0	0.7	0.7	0.6	5.0	5.1	5.0
Nyanza	3.5	1.6	2.6	88.2	90.6	89.5	0.5	0.7	0.5	7.4	7.1	7.4
Baringo	3.1	0.9	2.5	62.4	54.1	59.5	30.7	41.0	34.3	3.8	4.0	3.7
E/Marakwet	2.7	1.2	2.2	60.9	59.9	60.5	28.3	31.8	29.4	8.1	7.1	7.9
Kajiado	10.0	4.5	7.8	81.9	85.4	83.4	2.8	4.0	3.3	5.3	6.1	5.5
Kericho	3.1	2.0	2.8	91.9	93.2	92.3	0.4	0.7	0.5	4.6	4.1	4.4
Laikipia	8.2	5.2	7.0	78.5	81.4	79.6	10.3	10.6	10.4	3.0	2.8	3.0
Nakuru	14.8	10.5	13.4	79.7	83.6	81.1	1.6	1.5	1.6	3.9	4.4	3.9
Nandi	1.6	0.7	1.5	92.6	92.9	92.7	0.4	0.4	0.5	5.4	6.0	5.3
Narok	3.1	1.3	2.4	61.9	55.5	59.4	24.4	32.6	27.6	10.6	10.6	10.6
Samburu	6.9	1.9	4.4	20.4	15.2	17.5	68.8	78.5	73.9	3.9	4.4	4.2
Trans Nzoia	3.7	2.7	3.5	87.3	88.2	87.6	1.3	1.0	1.2	7.7	8.1	7.7
Turkana	2.2	0.9	1.6	16.1	10.3	13.3	72.1	79.9	75.6	9.6	8.9	9.5
Uasin Gishu	7.7	5.9	7.0	85.6	87.5	86.1	1.1	1.1	1.1	5.9	5.5	5.8
West Pokot	4.3	0.5	2.9	31.5	27.1	29.8	59.7	67.9	62.8	4.5	4.5	4.5
Rift Valley	5.3	3.1	4.5	65.0	59.6	64.8	20.1	31.5	24.7	9.6	5.8	6.0
Bungoma	2.0	1.3	1.8	92.3	93.5	92.8	0.6	0.3	0.5	5.1	4.9	4.9
Busia	2.3	1.4	1.8	91.0	91.7	91.3	0.4	0.2	0.4	6.3	6.7	6.5
Kakamega	1.9	1.2	1.6	93.0	94.0	93.5	0.5	0.5	0.5	4.6	4.3	4.5
Western	2.1	1.3	1.7	92.1	93.2	92.6	0.5	0.3	0.5	5.3	5.2	5.2

Analysis on main type of lighting by sex of head of household indicated that only 10.3 per cent of the male headed households in the country had access to electricity for lighting with the percentage for female headed households being 6 per cent.

The provincial analysis revealed that in Nairobi, 41.2 per cent of the male headed households had access to electricity for lighting compared to 48.2 per cent for the female headed households. In Central Province, 8 per cent of the male headed households had access to

electricity for lighting compared to 5.6 per cent for females. The situation in Coast Province was similar where 12.7 per cent of the male headed households had access to electricity for lighting compared to 8.9 per cent for their female counterparts. In Eastern Province, 4.9 per cent of the male headed households had access to electricity for lighting compared to 2.3 per cent for the female headed households. In North Eastern Province, 5.9 per cent of the male headed households used electricity for lighting while the figure for females was 4.5 per cent. In Nyanza Province, 3.5 per cent of the male headed households had access to electricity for lighting compared to 1.6 per cent for females. The same pattern was revealed in the Rift Valley where 5.3 per cent of the male headed households had access to electricity for lighting compared to 3.1 per cent for females. In Western Province, the analysis revealed that 2.1 per cent of the male headed households had access to electricity for lighting compared to 1.3 per cent for females.

The district analysis showed a similar trend where only a few households had access to electricity for lighting and of the few, those headed by females were a minority except for Nairobi and Mombasa where females seemed to be marginally higher than men. The districts whose female headed households seemed to have the least access to electricity for lighting were Tana River(1 per cent), Kitui(1.1 per cent), Kisii(1.3 per cent), Siaya(0.6 per cent), South Nyanza(0.7 per cent), Nandi(0.7 per cent), Narok(1.3 per cent), Baringo(0.9 per cent), Elgeyo Marakwet(1.2 per cent), Turkana(0.9 per cent), West Pokot(0.5 per cent), Bungoma(1.3 per cent), Busia(1.4 per cent) and Kakamega(1.2 per cent).

CHAPTER 6: A CONSOLIDATED APPROACH TO HOUSING QUALITY

6.1 Background

Having analysed data on housing characteristics and social amenities collected during the 1989 census, an attempt was made to compute a house quality index to assist readers to have a quick view of the housing situation. This was done notwithstanding the full appreciation of the fact that there are difficulties in defining housing quality. It should, however, be noted that housing quality index presented in the report treated all geographical regions as being similar notwithstanding the climatic and geographical diversities prevalent in different regions of the country.

For purposes of this chapter, the best house was defined as:

1. One whose roof was covered with iron sheets, tiles, concrete or asbestos sheets,
2. One whose walling material was stone, brick or block,
3. One whose floor was finished with cement screed or tiles,
4. One which was served by piped water,
5. One which had the main sewer or a septic tank for sewage disposal,
6. One in which either electricity or gas was used for cooking and
7. One in which electricity was used for lighting.

The first section of this Chapter focuses on the ranking of houses by building materials and related amenities while the second one centres on house rank quality indices.

6.2 Housing Quality by Ranking

As has been mentioned elsewhere in this volume, the housing questions in the census centred on type of roof, type of wall, type of floor, main source of water, main type of sewage disposal, main type of cooking fuel and main type of lighting.

The roofing materials in the census questionnaire were given the following codes:-

1. Iron sheets.
2. Tiles.
3. Concrete.
4. Asbestos sheets.
5. Grass\makuti.
6. Other.

For purposes of ranking, all houses in codes 1 to 4 were given score 1, those in code 5 score 2 while those in code 6 were given score 3.

For walling, the following codes were assigned:-

1. Stone
2. Brick/block
3. Mud/wood
4. Mud/cement
5. Grass/makuti
6. Iron sheets
7. Grass/reeds
8. Others

The ranking programme assigned codes 1 and 2 score 1, codes 3 to 6 score 2, code 7 score 3 and code 8 score 4.

With respect to floors, the following codes were given in the census questionnaire:

1. Cement
2. Earth
3. Wood
4. Tiles
5. Other

The ranking programme assigned codes 1 and 4 score 1, code 3 score 2, code 2 score 3 and code 5 score 4.

Water sources in the census questionnaire were given the following codes:

1. Pond
2. Dam
3. Lake
4. Stream/river
5. Well
6. Borehole
7. Piped
8. Jabias
9. Other

The ranking programme assigned code 7 score 1, code 5 and 6 score 2, code 8 score 3, codes 2 to 4 score 4, code 1 score 5 and code 9 score 6.

The main types of sewage disposal in the census questionnaire were given the following codes:

1. Main sewer
2. Septic tank
3. Pit latrine
4. Bucket latrine
5. Cess pool
6. Bush
7. Others

The ranking programme assigned codes 1 and 2 score 1, code 3 score 2, codes 4 and 5 score 3, code 6 score 4 and code 7 score 5.

The codes given to the main types of cooking fuel were:

1. Electricity
2. Paraffin
3. Gas
4. Firewood
5. Charcoal
6. Other

The ranking programme assigned codes 1 and 3 score 1, code 2 score 2, code 5 score 3, code 4 score 4 and code 6 score 5.

The main types of lighting were given the following codes:

1. Electricity
2. Paraffin lamps
3. Fuelwood
4. Candle
5. Solar
6. Other

The ranking programme assigned code 1 score 1, code 5 score 2, code 2 score 3, codes 3 and 4 score 4 and code 6 score 5.

The total score for any one house was achieved as follows:

Total score = Roof + Wall + Floor + Water + Sewage + Fuel + Light.

The highest score for the best house was 7 while the lowest score for the worst house was 32. For convenience, the houses were grouped into the following classes according to scores obtained:

7 to 10 points -	Rank 1
11 to 13 points -	Rank 2
14 to 16 points -	Rank 3
17 to 19 points -	Rank 4
20 to 22 points -	Rank 5
23 to 25 points -	Rank 6
26 to 28 points -	Rank 7
29 to 32 points -	Rank 8

The results of the ranking are summarized in Table 6.1 below:

**Percentage Ranking of Housing by Type of Building Materials and Facilities
per District, 1989**

Table 6.1

AREA OF ENUMERATION	RANKS								TOTAL
	1	2	3	4	5	6	7	8	
Nairobi Total	67.8	11.8	18.0	1.5	0.3	0.1	0.0	0.5	100.0
Nairobi Urban	67.8	11.8	18.0	1.5	0.3	0.1	0.0	0.5	100.0
Kiambu Total	21.5	20.2	26.4	28.9	2.4	0.0	0.0	0.6	100.0
Kiambu Rural	9.6	18.2	23.7	28.2	2.3	0.0	0.0	0.5	82.5
Kiambu Urban	11.9	2.0	2.7	0.7	0.1	0.0	0.0	0.1	17.5
Kirinyaga Total	8.3	10.4	24.6	47.7	8.6	0.0	0.0	0.4	100.0
Kirinyaga Rural	4.3	9.2	23.5	46.9	8.6	0.0	0.0	0.4	92.9
Kirinyaga Urban	4.0	1.2	1.1	0.8	0.0	0.0	0.0	0.0	7.1
Muranga Total	6.4	8.0	19.4	59.1	6.6	0.1	0.0	0.4	100.0
Muranga Rural	4.0	7.4	18.5	58.8	6.6	0.1	0.0	0.4	95.8
Muranga Urban	2.4	0.6	0.9	0.3	0.0	0.0	0.0	0.0	4.2
Nyandarua Total	6.8	8.7	21.1	46.9	15.6	0.2	0.0	0.6	99.9
Nyandarua Rural	1.1	6.5	18.3	46.0	15.3	0.2	0.0	0.6	88.0
Nyandarua Urban	5.7	2.2	2.8	0.9	0.3	0.0	0.0	0.0	11.9
Nyeri Total	10.4	9.5	30.0	42.4	7.2	0.1	0.0	0.4	100.0
Nyeri Rural	4.0	8.3	27.7	41.2	7.1	0.1	0.0	0.4	88.8
Nyeri Urban	6.4	1.2	2.3	1.2	0.1	0.0	0.0	0.0	11.2
Central Total	12.3	12.5	24.5	43.6	6.5	0.1	0.0	0.5	100.0
Central Rural	5.5	11.2	22.5	42.9	6.4	0.1	0.0	0.5	89.1
Central Urban	6.8	1.3	2.0	0.7	0.1	0.0	0.0	0.0	10.9
Kilifi Total	9.5	10.0	7.5	40.8	25.2	6.4	0.0	0.6	100.0
Kilifi Rural	2.2	4.9	4.0	37.0	24.8	6.4	0.0	0.4	79.7
Kilifi Urban	7.3	5.1	3.5	3.8	0.4	0.0	0.0	0.2	20.3
Kwale Total	5.1	9.0	6.6	25.4	46.1	7.5	0.0	0.3	100.0
Kwale Rural	4.6	8.6	6.4	25.2	46.0	7.5	0.0	0.3	98.6
Kwale Urban	0.5	0.4	0.2	0.2	0.1	0.0	0.0	0.0	1.4
Lamu Total	9.5	17.4	11.0	42.0	18.6	1.4	0.0	0.1	100.0
Lamu Rural	2.0	6.0	8.6	38.8	18.1	1.4	0.0	0.1	75.0
Lamu Urban	7.5	11.4	2.4	3.2	0.5	0.0	0.0	0.0	25.0
Mombasa Total	53.1	18.4	18.0	7.8	2.3	0.1	0.0	0.3	100.0
Mombasa Rural	53.1	18.4	18.0	7.8	2.3	0.1	0.0	0.3	100.0
Taita Taveta Total	11.5	10.2	19.8	37.3	19.4	1.5	0.0	0.3	100.0
Taita Tavete Rural	3.6	7.4	14.5	35.4	19.0	1.5	0.0	0.3	81.7
Taita Taveta Urba	7.9	3.8	5.3	1.9	0.4	0.0	0.0	0.0	19.3
Tana River Total	5.4	5.6	12.5	9.1	39.6	27.4	0.0	0.4	100.0
Tana River Rural	1.6	2.5	9.6	6.1	35.4	26.4	0.0	0.3	81.9
Tana River Urban	3.8	3.1	2.9	3.0	4.2	1.0	0.0	0.1	18.1
Coast Total	23.6	12.7	12.9	24.0	21.3	5.1	0.0	0.4	100.0
Coast Rural	2.0	4.1	4.9	19.8	20.0	5.0	0.0	0.2	56.0
Coast Urban	21.6	8.6	8.0	4.2	1.3	0.1	0.0	0.2	44.0

Table 6.1 (cont.)

AREA OF ENUMERATION	RANKS								TOTAL
	1	2	3	4	5	6	7	8	
Embu Total	10.1	7.6	19.1	42.0	20.2	0.6	0.0	0.4	100.0
Embu Rural	3.0	6.0	17.6	41.0	19.7	0.6	0.0	0.4	88.3
Embu Urban	7.1	1.6	1.5	1.0	0.5	0.0	0.0	0.0	11.7
Isiolo Total	11.8	9.9	10.5	12.4	23.9	30.8	0.4	0.3	100.0
Isiolo Rural	1.5	2.1	3.3	8.1	20.9	30.5	0.4	0.1	66.9
Isiolo Urban	10.3	7.8	7.2	4.3	3.0	0.3	0.0	0.2	33.1
Kitui Total	1.5	6.1	13.3	21.5	56.3	1.0	0.0	0.3	100.0
Kitui Rural	0.6	3.8	12.8	21.2	56.2	1.0	0.0	0.3	95.9
Kitui Urban	0.9	2.3	0.5	0.3	0.1	0.0	0.0	0.0	4.1
Machakos Total	7.9	13.1	19.1	31.7	27.0	0.8	0.0	0.4	100.0
Machakos Rural	2.1	11.4	18.1	31.0	26.7	0.8	0.0	0.3	90.4
Machakos Urban	5.8	1.7	1.0	0.7	0.3	0.0	0.0	0.1	9.6
Marsabit Total	3.5	5.3	4.4	17.4	32.7	36.2	0.2	0.3	100.0
Marsabit Rural	0.3	1.5	1.4	13.1	31.1	35.3	0.2	0.2	83.1
Marsabit Urban	3.2	3.8	3.0	4.3	1.6	0.9	0.0	0.1	16.9
Meru Total	4.3	11.2	20.9	34.8	27.4	1.0	0.0	0.4	100.0
Meru Rural	2.0	9.9	19.9	34.4	27.1	1.0	0.0	0.4	94.7
Meru Urban	2.3	1.3	1.0	0.4	0.3	0.0	0.0	0.0	5.3
Eastern Total	5.8	10.4	17.9	31.0	31.4	3.1	0.0	0.4	100.0
Eastern Rural	1.8	8.5	16.7	30.2	31.0	3.1	0.0	0.4	91.7
Eastern Urban	4.0	1.9	1.2	0.8	0.4	0.0	0.0	0.0	8.3
Garissa Total	14.5	2.9	4.6	8.2	22.2	46.6	0.5	0.5	100.0
Garissa Rural	0.6	0.6	1.0	2.5	20.3	45.3	0.2	0.3	70.8
Garissa Urban	13.9	2.3	3.6	5.7	1.9	1.3	0.3	0.2	29.2
Mandera Total	2.5	2.7	2.4	9.7	34.7	47.5	0.1	0.4	100.0
Mandera Rural	0.0	0.2	0.3	3.0	27.8	42.5	0.1	0.2	74.1
Mandera Urban	2.5	2.5	2.1	6.7	6.9	5.0	0.0	0.2	25.9
Wajir Total	0.8	5.7	1.3	7.1	64.8	20.0	0.0	0.3	100.0
Wajir Rural	0.2	0.6	0.5	4.5	54.0	18.2	0.0	0.2	78.2
Wajir Urban	0.6	5.1	0.8	2.6	10.8	1.8	0.0	0.1	21.8
N/ Eastern Total	6.0	3.8	2.8	8.3	40.3	38.2	0.2	0.4	100.0
N/ Eastern Rural	0.3	0.5	0.6	3.3	33.8	35.5	0.1	0.2	74.3
N/ Eastern Urban	5.7	3.3	2.2	5.0	6.5	2.7	0.1	0.2	25.7
Kisii Total	2.6	4.6	6.8	40.0	45.4	0.1	0.0	0.5	100.0
Kisii Rural	0.8	3.5	6.0	38.9	44.7	0.1	0.0	0.4	94.4
Kisii Urban	1.8	1.1	0.8	1.1	0.7	0.0	0.0	0.1	5.6
Kisumu Total	19.0	10.9	12.5	23.2	33.0	1.0	0.0	0.4	100.0
Kisumu Rural	3.1	3.7	6.3	20.2	30.3	0.8	0.0	0.3	64.7
Kisumu Urban	15.9	7.2	6.2	3.0	2.7	0.2	0.0	0.1	35.3
Siaya Total	2.6	5.0	9.0	23.9	56.0	3.1	0.0	0.4	100.0
Siaya Rural	1.0	4.2	9.0	23.5	55.7	3.1	0.0	0.3	96.8
Siaya Urban	1.6	0.8	0.0	0.4	0.3	0.0	0.0	0.1	3.2

Table 6.1 (cont.)

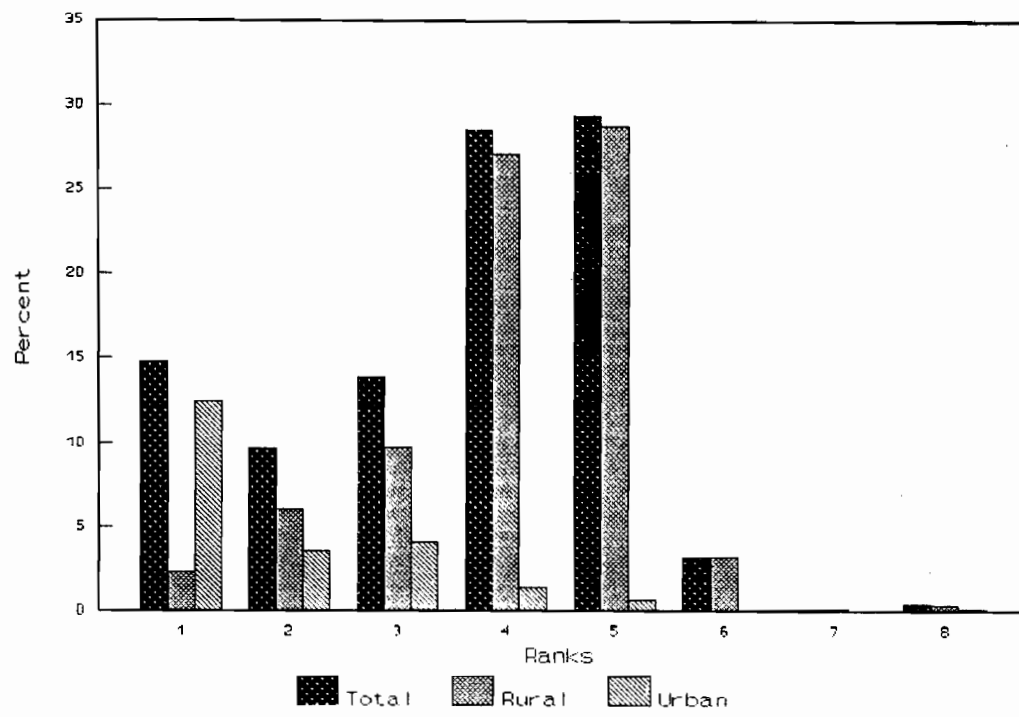
AREA OF ENUMERATION	RANKS								TOTAL
	1	2	3	4	5	6	7	8	
S/ Nyanza Total	2.6	5.4	6.7	18.8	61.8	4.2	0.0	0.5	100.0
S/ Nyanza Rural	0.6	3.6	5.5	18.0	61.2	4.2	0.0	0.5	93.6
S/ Nyanza Urban	2.0	1.8	1.2	0.8	0.6	0.0	0.0	0.0	6.4
Nyanza Total	6.1	6.3	8.5	26.8	49.8	2.1	0.0	0.4	100.0
Nyanza Rural	1.3	3.7	6.4	25.6	48.8	2.1	0.0	0.4	88.3
Nyanza Urban	4.8	2.6	2.1	1.2	1.0	0.0	0.0	0.0	11.7
Baringo Total	3.6	5.2	7.5	15.3	65.4	2.6	0.0	0.3	99.9
Baringo Rural	0.7	2.7	5.3	12.6	63.9	2.5	0.0	0.3	88.0
Baringo Urban	2.9	2.5	2.2	2.7	1.5	0.1	0.0	0.0	11.9
E/ Marakwet Total	2.8	5.3	5.3	18.6	65.9	1.9	0.0	0.2	100.0
E/ Marakwet Rural	1.5	4.6	5.1	18.5	65.7	1.9	0.0	0.2	97.5
E/ Marakwet Urban	1.3	0.7	0.2	0.1	0.2	0.0	0.0	0.0	2.5
Kajiado Total	15.5	10.2	13.5	12.6	25.6	21.3	0.8	0.5	100.0
Kajiado Rural	4.9	6.3	8.1	11.5	24.7	20.8	0.7	0.4	77.4
Kajiado Urban	10.6	3.9	5.4	1.1	0.9	0.5	0.1	0.1	22.6
Kericho Total	5.2	17.4	8.2	19.2	46.0	3.7	0.0	0.3	100.0
Kericho Rural	2.5	15.1	7.3	19.1	45.8	3.7	0.0	0.3	93.8
Kericho Urban	2.7	2.3	0.9	0.1	0.2	0.0	0.0	0.0	6.2
Laikipia Total	8.8	8.3	13.0	41.9	25.8	1.6	0.1	0.5	100.0
Laikipia Rural	1.7	5.3	8.6	40.0	25.5	1.6	0.1	0.4	83.2
Laikipia Urban	7.1	3.0	4.4	1.9	0.3	0.0	0.0	0.1	16.8
Nakuru Total	24.9	9.7	18.7	29.8	16.0	0.3	0.0	0.6	100.0
Nakuru Rural	4.6	5.6	12.6	27.8	15.7	0.3	0.0	0.4	67.0
Nakuru Urban	20.3	4.1	6.1	2.0	0.3	0.0	0.0	0.2	33.0
Nandi Total	3.1	14.5	9.0	25.6	46.7	0.8	0.0	0.3	100.0
Nandi Rural	1.8	13.6	8.1	24.9	46.2	0.8	0.0	0.3	95.7
Nandi Urban	1.3	0.9	0.9	0.7	0.5	0.0	0.0	0.0	4.3
Narok Total	4.4	2.4	4.0	10.1	57.0	21.2	0.4	0.5	100.0
Narok Rural	1.0	1.5	2.8	9.7	56.7	21.1	0.4	0.5	93.7
Narok Urban	3.4	0.9	1.2	0.4	0.3	0.1	0.0	0.0	6.3
Samburu Total	3.1	6.1	3.7	3.6	42.6	39.1	1.5	0.3	100.0
Samburu Rural	1.1	2.0	1.5	2.0	38.1	38.6	1.5	0.3	85.1
Samburu Urban	2.0	4.1	2.2	1.6	4.5	0.5	0.0	0.0	14.9
Trans-Nzoia Total	8.3	7.5	11.1	39.6	32.9	0.2	0.0	0.4	100.0
Trans-Nzoia Rural	0.8	4.5	6.3	36.6	31.9	0.2	0.0	0.4	80.7
Trans-Nzoia Urban	7.5	3.0	4.8	3.0	1.0	0.0	0.0	0.0	19.3
Turkana Total	3.6	4.6	2.3	6.6	65.3	17.0	0.2	0.4	100.0
Turkana Rural	0.5	2.0	1.1	4.8	61.1	16.5	0.2	0.3	86.5
Turkana Urban	3.1	2.6	1.2	1.8	4.2	0.5	0.0	0.1	13.5
Uasin Gishu Total	16.0	14.8	16.0	31.9	20.2	0.6	0.0	0.5	100.0
Uasin Gishu Rural	1.2	5.6	5.3	29.2	19.7	0.5	0.0	0.3	61.8
Uasin Gishu Urban	14.8	9.2	10.7	2.7	0.5	0.1	0.0	0.2	38.2

Table 6.1 (cont.)

AREA OF ENUMERATION	RANKS								TOTAL
	1	2	3	4	5	6	7	8	
West Pokot Total	5.0	5.0	4.3	5.7	73.3	6.2	0.1	0.4	100.0
West Pokot Rural	2.5	3.2	3.1	5.1	72.9	6.2	0.1	0.4	93.5
West Pokot Urban	2.5	1.8	1.2	0.6	0.4	0.0	0.0	0.0	6.5
Rift Valley Total	9.8	9.7	10.3	22.3	41.6	5.8	0.1	0.4	100.0
Rift Valley Rural	2.1	6.4	6.6	20.7	41.0	5.7	0.1	0.3	82.9
Rift Valley Urban	7.7	3.3	3.7	1.6	0.6	0.1	0.0	0.1	17.1
Bungoma Total	6.8	6.9	9.9	49.3	26.1	0.6	0.0	0.4	100.0
Bungoma Rural	1.7	4.8	7.5	48.3	25.9	0.6	0.0	0.3	89.1
Bungoma Urban	5.1	2.1	2.4	1.0	0.2	0.0	0.0	0.1	10.9
Busia Total	4.5	5.8	4.5	40.4	43.1	1.2	0.0	0.5	100.0
Busia Rural	1.4	4.0	3.3	39.7	42.5	1.2	0.0	0.4	92.5
Busia Urban	3.1	1.8	1.2	0.7	0.6	0.0	0.0	0.1	7.5
Kakamega Total	4.5	5.7	7.3	48.4	33.6	0.2	0.0	0.3	100.0
Kakamega Rural	2.2	4.7	6.4	47.6	33.5	0.2	0.0	0.3	94.9
Kakamega Urban	2.3	1.0	0.9	0.8	0.1	0.0	0.0	0.0	5.1
Western Total	5.1	6.0	7.4	47.3	33.3	0.5	0.0	0.4	100.0
Western Rural	1.9	4.6	6.2	46.4	33.1	0.5	0.0	0.3	93.0
Western Urban	3.2	1.4	1.2	0.9	0.2	0.0	0.0	0.1	7.0
Kenya Total	14.8	9.7	13.9	28.5	29.4	3.2	0.1	0.4	100.0
Kenya Rural	2.3	6.1	9.8	27.1	28.8	3.2	0.1	0.3	77.7
Kenya Urban	12.5	3.6	4.1	1.4	0.6	0.0	0.0	0.1	22.3

It is evident from Table 6.1 above, that urban houses were better placed than their rural counterparts. For instance, of the 14.8 per cent houses ranked 1 at the national level, only 2.3 per cent were in the rural areas with the rest being in the urban areas. A graphical representation of the house ranks at the national level is shown in Fig. 1 below.

Figure 1: House Ranks at National Level



At the provincial level, Nairobi led in the number of houses in rank 1 (67.8 per cent) followed by Coast (23.6 per cent), Central (12.3 per cent), Rift Valley (9.8 per cent), Nyanza (6.1 per cent), North Eastern 6.0 per cent), Eastern (5.8 per cent) and Western (5.1 per cent).

The districts which recorded the lowest scores in rank 1 were Kitui (1.5 per cent) and Wajir (0.8 per cent) while the ones which recorded the highest scores in rank 1 were Nairobi (67.8 per cent) and Mombasa (53.1 per cent).

In general, the analysis as portrayed in Table 6.1 showed that most of the houses in Kenya fell under ranks 4 and 5.

6.3 House Rank Quality Indices

On the basis of the ranking in section 6.2 above, it was possible to compute house rank quality indices at various levels using Table 6.1 as follows :-

$$HRQI = \frac{R_1 \times P_1 + R_2 \times P_2 + R_3 \times P_3 + R_4 \times P_4 + R_5 \times P_5 + R_6 \times P_6 + R_7 \times P_7 + R_8 \times P_8}{PT}$$

Where

HRQI = House Rank Quality Index

$R_1 \times P_1$ = The product of Rank 1 and the Percent Value in Rank 1

$R_2 \times P_2$ = The product of Rank 2 and the Percent Value in Rank 2

$R_3 \times P_3$ = The product of Rank 3 and the Percent Value in Rank 3

$R_4 \times P_4$ = The product of Rank 4 and the Percent Value in Rank 4

$R_5 \times P_5$ = The product of Rank 5 and the Percent Value in Rank 5

$R_6 \times P_6$ = The product of Rank 6 and the Percent Value in Rank 6

$R_7 \times P_7$ = The product of Rank 7 and the Percent Value in Rank 7

$R_8 \times P_8$ = The product of Rank 8 and the Percent Value in Rank 8

PT = Percent Total of the area

This information is contained in Table 6.2 below. The table generally shows that the house rank quality indices in the urban areas were better than those of the rural areas. At the national level, a 3.60 index was registered. At the provincial level, Nairobi registered the best index (1.57) followed by Central (3.22), Coast (3.24), Eastern (3.83), Rift Valley (3.96), Western (4.01), Nyanza (4.16) and North Eastern (4.91). District analysis showed the best indices in Nairobi (1.57), Mombasa (1.90) and the worst indices in Mandera (5.16) and Samburu (5.02).

Indices arranged in ascending order is contained in Appendix IV of this volume.

House Rank Quality Indices by District, 1989

Table 6.2

District/Province	Indices		
	Rural	Urban	Total
Nairobi	-	1.57	1.57
Kiambu	2.97	1.33	2.74
Kirinyaga	3.52	1.82	3.40
Muranga	3.61	1.50	3.54
Nyandarua	3.81	1.98	3.60
Nyeri	3.47	1.86	3.29
Central	3.41	1.72	3.22
Kilifi	4.48	1.94	3.84
Kwale	4.25	2.29	4.23
Lamu	3.88	2.20	3.48
Mombasa	-	1.90	1.90
Taita Taveta	3.79	2.14	3.49
Tana River	4.85	3.18	4.56
Coast	4.21	2.00	3.24
Embu	3.82	1.82	3.58
Isiolo	5.07	2.51	4.22
Kitui	4.39	2.12	4.30
Machakos	3.80	1.80	3.61
Marsabit	5.18	2.39	4.81
Meru	3.83	2.08	3.75
Eastern	4.00	2.00	3.83
Garissa	5.54	2.50	4.65
Mandera	5.53	4.12	4.16
Wajir	5.14	4.09	4.91
North Eastern	5.39	3.48	4.91
Kisii	4.33	2.70	4.23
Kisumu	4.15	2.16	3.45
Siaya	4.44	2.23	4.37
South Nyanza	4.61	2.41	4.47
Nyanza	4.62	3.51	4.16
Baringo	4.65	1.52	4.43
Elgeyo Marakwet	4.53	1.88	4.47
Kajiado	4.45	2.12	3.92
Kericho	4.10	1.84	3.96
Laikipia	4.08	2.15	3.75
Nakuru	3.71	1.75	3.06
Nandi	4.09	2.58	4.02
Narok	4.97	1.98	4.81
Samburu	4.32	3.27	5.02
Trans-Nzoia	4.20	2.33	3.84
Turkana	4.03	3.25	4.79
Uasin Gishu	4.03	2.12	3.30
West Pokot	4.75	1.86	4.58
Rift Valley	4.34	2.23	3.96
Bungoma	4.07	2.05	3.85
Busia	4.34	2.25	4.18
Kakamega	4.13	2.10	4.03
Western	4.15	2.14	4.01
Kenya	4.10	1.87	3.60

CHAPTER 7: ASSESSMENT OF KENYA'S HOUSING POLICY

7.1 Background

As mentioned in chapter 1, the government goal has been that every Kenyan family would live in a decent house. It is in an attempt to meet this goal that Kenya's first Housing Policy was prepared vide Sessional paper No. 5 of 1966/67. The purpose of this chapter is to appraise the policy following the findings from the 1989 census. The assessment is done on the basis of the five main headings of the policy, namely:

1. Urban and rural housing policy
2. Housing finance
3. Administrative organization
4. Housing programme
5. Research and education

7.2 Urban and Rural Housing Policy

The intention of the Government on urban and rural housing was to facilitate the construction of good quality housing for Kenyans. With respect to the urban areas, the declared policy in 1967 was to provide 7,600 units annually to alleviate shortage. This figure was based on the expected growth of the number of households from 161,600 in 1962 to 222,500 in 1970. To achieve the targeted units, the government in collaboration with local authorities was to organise a programme which would provide adequate housing in a healthy environment to the urban dweller at the lowest possible cost to the occupants. Over the years, various attempts have been made to realise this goal through such programmes as site and service schemes, tenant purchase schemes and settlement upgrading initiatives. What is however clear from the analysis in chapter 3 is that not much local authority housing seemed to have been built, especially in the rental sector, since it accounted for only 4.4 per cent of Kenya's rental housing market. In the realm of owner occupation, not much success is evident from the analysis as far as the urban areas were concerned because they accounted for only 20.2 per cent of the total number of houses. These patterns are manifested throughout at the provincial and district levels.

With respect to rural housing, it had been recognized very early that the majority of Kenyans lived in the rural areas and that it is here that initiatives would be taken to improve housing quality. The policy stated that improvement would be in terms of construction materials and services. The approach to be taken to achieve results was to mount demonstration projects and facilitate the use of good quality building materials at reasonable prices. As to whether this goal was ever achieved, the analysis showed that housing quality by construction materials and amenities was not very impressive in the rural areas. For instance, the analysis at the national level showed that it is only 48.1 per cent of all the rural houses that had durable roofs compared to 89.2 per cent for urban houses. This trend seemed to be similar even at the district level where durable roofs in rural areas were fewer than non-durable ones.

As far as walling in rural areas is concerned, the analysis revealed a remarkably low wall durability factor (13.7 per cent) compared to 47.1 per cent in urban areas. This low wall durability factor for rural areas was reflected throughout in the districts.

The situation regarding floors in the rural areas was not different from other elements because it revealed a durability factor of only 16.4 per cent compared to 70.8 per cent for urban areas. Analysis in the districts showed the same trend with the urban areas registering a higher floor durability factor than the rural areas.

With respect to services or amenities, the analysis showed that most households were drawing water from the stream/river, used pit latrines for waste disposal, firewood for cooking and paraffin lamps for lighting. The analysis however showed some rural areas where the dominant sanitation method was the bush and fuel wood a key source of lighting.

7.3 Housing Finance

The housing policy was very elaborate on finance for it indicated that finance was the one primary factor on which a sound housing programme must hinge. The focus, therefore, was to mobilize sufficient capital for an adequate public housing programme while giving every encouragement to the private sector and individuals to play a full part. The government has registered some success here with the private sector doing quite well, especially for the high income class who are a minority. The middle income and low income groups have, however, been left to experience extreme housing difficulties. They are often not able to afford home ownership or decent rental accommodation and so are left to find solace in substandard housing which at the national level accounted for 52.9 per cent of urban housing. Home ownership, according to the analysis, was significant in rural areas where it accounted for 88.0 per cent of housing. The analysis further revealed that home ownership was insignificant in urban areas.

As far as the goal of mobilizing sufficient capital for an adequate public housing programme was concerned, not much success had been registered by 1989 for, as noted in chapter 3, the public housing stock was not significant. For instance, at the national level, it was a mere 4.6 per cent meaning that public sector involvement in housing production in Kenya was largely insignificant. The analysis showed that public sector involvement in housing even in the districts was too low compared to the private sector initiatives. It may be necessary to investigate the cause of this scenario.

7.4 Administrative Organization

The policy provided that the supervision of the housing programme for the country as a whole would be vested in the central government through the Ministry in charge of Housing. This Ministry was to ensure that there were regular policy reviews and surveys. It was also to ensure that there was close liaison with the Ministry of Local Government, other relevant departments concerned with development planning and the private sector. Going by the outcomes in the housing sector as revealed in this Volume, this administrative organization has not performed well.

7.5 The Housing Programme

The focus here was on employers providing housing for their employees. The government, local authorities, parastatals and private companies have tried in this regard but not significantly. Analysis at the national level showed that rental housing under these agencies

accounted for only 7.8 per cent of the total housing in the country. Analysis in the districts showed a similar pattern.

7.6. Research and Education

The intention of the Government here was to undertake research into low cost housing technologies, low cost building materials and general research in housing. This area of research has been marked with some success with the creation of the then Housing Research and Development Unit (now, Housing and Building Research Institute) at the University of Nairobi and the starting of housing related courses in public universities and other colleges. The result is that, today, we have some low cost building materials in the construction industry which can be used in place of conventional ones. These include stabilized soil blocks and fibre concrete roofing tiles. What is, however, questionable is whether actually enough dissemination work on the materials has been done. The analysis shows that not much dissemination has been achieved in view of the apparent low durability factors registered against all the building elements considered - roofs, floors and walls.

CHAPTER 8: SUMMARY OF FINDINGS AND RECOMMENDATIONS

8.1 Background

From the analysis done in chapter 2 to 6, a number of issues emerged. This chapter highlights the major findings of the analysis and makes some recommendations.

8.2 Summary of Major Findings

Female Headed Households

The analysis on household characteristics revealed that at the national level, 35.2 per cent of Kenya's households as at 1989 were headed by females compared to 64.8 per cent which were headed by males. Nyanza had the highest proportion of female headed households (42.6 per cent) while Nairobi had the least (19.5 per cent). Analysis by district indicate that Samburu had the highest proportional female headed households (52.0 per cent). It was also generally evident that female headed households were more pronounced in the rural areas than in the urban areas.

Household Sizes

The analysis also showed that whereas household sizes ranged from 1 to 12 and more persons, the median household size at the national level was 4 persons. At the provincial level, median household sizes ranged from 2.1 for Nairobi to 4.5 for Western Province.

Households by age of Head

It was evident from the analysis that the majority of household heads (68 per cent) were under age 45. The median age group at the national level was 35-39 years with the median age for the heads being 36.5 years.

Households with Children Under 15 Years

In terms of children in the households, the analysis showed that at the national level, 71.2 per cent of the households had at least one child under age 15. Provincial analysis indicates that North Eastern and Western Provinces had the highest percentage, 81.2 and 80.1 per cent, respectively, while Nairobi had the lowest 42.9 per cent. In terms of future housing requirements, it was noted that some of these children will need houses of their own even before the next census meaning that appropriate interventions should be put in place to adequately respond to this inevitable housing challenge.

Housing by Tenure

The analysis presented in chapter 3 revealed that most of the houses in the country were owner occupied. This was common in the rural areas as opposed to urban where rental accommodation was dominant. The owner occupancy at national level stood at 73.0 per cent. At the provincial level, Nairobi had the lowest owner occupancy rate (13.4 per cent). At the district level, the analysis showed a high owner occupancy rate for rural areas and low rates in

urban areas. Possible reasons for low owner occupancy rates in urban areas include the mobile nature of urbanites, insecurity of land tenure, prohibitive prices of housing and cultural attachment to rural areas.

Public Housing Stock

The analysis revealed low public sector involvement in housing development. Public housing stock accounted for only 4.6 per cent of the total housing stock in the country. The highest public sector involvement in housing was recorded in Nairobi (14.8 per cent), Mombasa (10.3 per cent) and Nakuru (9.6 per cent).

Average Household Occupancy Rate

The census results revealed that at the national level, the average household occupancy rate was 4.9 persons. Urban areas had an average occupancy ranging from 2.9 to 5.1 persons with an average of 3.5 persons while rural areas had much higher occupancy ranging from 3.1 to 5.5 persons with an average of 5.3 persons.

Construction Materials

In terms of construction materials, the census data showed that iron sheets and grass/makuti were the predominant roof covering in the country, with iron sheets accounting for 51.5 per cent and grass/ makuti accounting for 40.2 per cent.

With respect to walls the analysis revealed that mud/wood was dominant in the country (56.8 per cent). At the provincial level, the situation was much similar with mud/wood being the major wall type in all the provinces except for North Eastern and Nairobi which had grass/reeds and stone, respectively as leading walling materials.

On floors the analysis revealed that the majority of the houses (69.7 per cent) had earth floors. The highest concentration of the earth floors (63.7 per cent) were in the rural areas with only 6 per cent in the urban areas. Cement was the dominant floor finish in urban areas.

Sources of Water

The analysis also showed that the two main sources of water for Kenyan households were stream/river (39.8 per cent) and piped (31.9 per cent). It was evident that stream/river was the main source of water in rural areas while in the urban areas, 85.2 per cent of the households had access to piped water.

Sewage Disposal

The national pattern for waste disposal was such that households served by pit latrines represented 68.5 per cent of the total. This means that pit latrines were the main type of sewage disposal accessible to Kenyans followed by the bush which accounted for 20.1 per cent. The provincial analysis revealed that apart from Nairobi and North Eastern Provinces, the rest had pit latrines as their main type of sanitation. In Nairobi, the principal sewage disposal method was the sewer (50.3 per cent) followed by pit latrines (39.4 per cent).

Cooking Fuel

The analysis further revealed that the main cooking fuel for Kenyans was firewood which served 73 per cent of the country's households. In the urban areas, paraffin was the dominant cooking fuel. At the provincial level, the same trend was portrayed in all the provinces except for Nairobi where the dominant cooking fuel was paraffin. At the district level, the analysis indicated that in all the districts, firewood was the main cooking fuel except for Nairobi and Mombasa where paraffin was the main cooking fuel.

Type of Lighting

Analysis on households by main type of lighting indicated that at the national level 81.3 per cent of the households used paraffin lamps as their main type of lighting. The same trend was observed in all the provinces. Electricity was used by 32.1 per cent of the urban households compared to only 1.9 per cent for their counterparts in the rural areas.

8.3 Recommendations

Female Headed Households

Since the analysis shows that female headed households were quite significant in Kenya in 1989, it is recommended that the housing policy be reviewed to become responsive to this reality. This is particularly important because the analysis in general indicated that female headed households had poorer housing than their male counterparts. The approach to be adopted should be geared towards easing bottlenecks in housing developments so that women are enabled to participate effectively in the housing sector.

Household Sizes

On the question of household sizes, family planning campaigns should be strengthened through a participatory approach because although the analysis revealed that at the national level the median household size was 4 persons and between 3 and 5 persons in most of the provinces and districts, it was also evident that a number of households are large.

Children Under 15 Years

On the question of under age children, the analysis indicated that some of the children who were under 15 years will be adults even before the next census and will therefore require houses of their own. To ensure that such people are decently housed, the policy should provide elaborate guidelines to key actors in housing development on how to cope with this situation.

Public Sector Housing

Since the analysis showed a low level of public sector involvement in the housing sector, the Government should no longer cling to the notion of providing housing directly to its people. It should rather shift focus to facilitating housing development in line with the Global Strategy for Shelter to the Year 2000 as was adopted by the United Nations in 1988. This facilitating role

should be in terms of redirecting resources to those in need of housing and minimising bottlenecks in housing development. This calls for a major review of the current policy and some institutional reorganisation.

Owner Occupation in Urban areas

Since the analysis revealed a low level of owner occupancy in urban areas, it is recommended that identified bottlenecks like high cost of finance, insecurity of land tenure, inadequate credit facilities for housing development and attachment to rural areas should be addressed. This again calls for, among other things, a rethinking of the current housing Policy so as to be more elaborate on how to improve home ownership in the urban areas.

Average Household Occupancy Rates

While the analysis revealed average household occupancy rates of between 3 to 5.5 persons, in certain households these may be indicators of overcrowding. This is particularly true in one roomed houses in urban areas. Over crowding could not however be captured properly because dimensions of houses in terms of floor space and number of rooms were not captured.

It is recommended that the number of rooms of houses should be included in the questionnaire in future censuses in order to facilitate the computation of relevant housing quality indices such as floor space per person. However, on the basis of the findings presented in this Volume, it is recommended that smaller families should be promoted to ensure sustainable development.

Roofing Materials

The analysis further indicated that iron sheets and a combination of grass and makuti were the commonly used roofing materials in Kenya. Iron sheets have a high import component which when viewed realistically amounts to loss of resources. Whereas the spirit of liberalisation is in force, it is recommended that efforts should be made for mass production of locally available alternative roofing materials like vibrated micro concrete roofing tiles. This calls for further research into alternative building materials and vigorous dissemination of standardized technologies. It is hoped that by the next census, a significant improvement will be noted in roofing by way of use of more durable and locally available building materials. In order to achieve progress, it is suggested that the Ministry in charge of Housing should initiate national campaigns for promoting use of alternative roofing materials and technologies.

Walling Materials

The dominance of mud and wood as wall materials suggests a lack of reliable alternatives as and when needed by households. Efforts should be made in making alternative walling materials. Whereas it is true that a number of alternative walling materials like stabilized soil blocks have been developed, enough dissemination has not been done. It is suggested that the Ministry in charge of Housing should initiate national campaigns for promoting alternative walling materials and technologies. The focus should be on mass production and use of such materials on public buildings.

Floor Materials

The analysis also showed that floors in most houses were finished with earth. This again calls for an evaluation of whether actually we have better and affordable alternatives. If not, then something should be done to improve their quality by making floor materials cheaper or take steps to develop sustainable alternatives which can be considered durable.

Water Sources

As far as accessibility to water to households is concerned, the analysis showed that rivers and streams were the main source especially for rural areas. It is recommended that since there is a direct relationship between availability of portable water and the health of people, participatory methods for availing portable water within an acceptable distance (100 metres) for every household be initiated and strengthened. It is recommended that in the next census, the questionnaire on sources of water should also include the distance of the source of water from the house and for piped water, whether it is within the house or outside.

Sewage Disposal

On the question of sewage disposal, whereas the majority of Kenyans used pit latrines, it was shown that at the national level, about 20.1 per cent of the households used the bush. In several districts, the bush as a type of sewage disposal was used by over 50 per cent of the households. It is recommended that since there is also a direct relationship between improper sanitary facilities and outbreak of certain diseases, relevant health actors should step up public awareness campaigns to ensure that ideal toilet facilities are constructed through personal initiatives and/or community participation with the government as a facilitator.

Cooking Fuel

With respect to the main cooking fuel, the analysis showed that firewood was most common in the rural areas and paraffin in the urban areas. There are problems associated with each of these situations. For instance, over-dependence on firewood has environmental effects which hinge on deforestation with a possibility of causing desertification and a host of other negative environmental impacts. Whereas the government has been in the forefront in promoting afforestation, it is common knowledge that trees take a long time to grow and yet felling is on a daily basis. Too much reliance on paraffin usage is also detrimental because it is an imported material. In the light of the foregoing, it is recommended that alternative sources of energy for cooking be sought and promoted. This challenge should be seriously taken up by the central government, research institutions and relevant non-governmental organisations.

Type of Lighting

The analysis also showed that the dominant lighting type in both urban and rural areas was the paraffin lamp. It is recommended that other alternatives be sought and promoted so as to cut down consumption of paraffin which is imported. Since electricity as a type of lighting is cheap in the long term and has other benefits like creation of small business, it is recommended that its development be strengthened. In particular, the on going rural electrification programme

should be intensified. It is also recommended that renewable types of energy should be fully exploited for the benefit of the majority.

House Rank Quality Indices

In order to improve on the house rank quality indices, it would be necessary to encourage all actors in the shelter development process to initiate quality campaigns with the aim of improving the human habitat.

In view of the findings obtained from the analysis, it is further recommended that the following activities be undertaken as a matter of urgency:

1. A similar analysis as contained in this volume for major administrative centres in Kenya.
2. A study to investigate, among other things, the reasons for low owner occupancy rates in urban areas, the low usage of durable materials for housing and the dominance of the bush factor in some districts.
3. A study to develop a housing quality model for Kenya.

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Appendix II

NUMBER OF HOUSEHOLDS BY SIZE AND SEX OF HEAD

SEX OF HEAD	HOUSEHOLD SIZE												TOTAL
	1 Persons	2 Persons	3 Persons	4 Persons	5 Persons	6 Persons	7 Persons	8 Persons	9 Persons	10 Persons	11 Persons	12 Persons +	
KENYA													
Male ..	417,235	335,032	299,551	314,996	312,356	287,984	248,451	198,487	146,150	120,725	46,634	88,230	2,815,831
Female ..	196,292	184,596	210,024	217,663	202,586	168,582	126,816	86,614	55,763	39,763	14,448	24,026	1,527,173
Total ..	613,527	519,628	509,575	532,659	514,942	456,566	375,267	285,101	201,913	160,488	61,082	112,256	4,343,004
KENYA - Rural													
Male ..	203,206	187,651	205,062	237,951	250,464	240,847	214,693	175,107	130,834	108,294	42,196	80,200	2,076,505
Female ..	141,860	144,573	172,845	185,632	177,437	150,990	115,009	79,115	51,120	36,314	14,448	21,587	1,289,650
Total ..	345,066	332,224	377,907	423,583	427,901	391,837	329,702	254,222	181,954	144,608	56,644	101,787	3,366,155
KENYA - Urban													
Male ..	214,029	147,381	94,489	77,045	61,892	47,137	33,758	23,380	15,316	12,431	4,438	8,030	739,326
Female ..	54,432	40,023	37,179	32,031	25,149	17,592	11,807	7,499	4,643	3,449	1,280	2,439	237,523
Total ..	268,461	187,404	131,668	109,076	87,041	64,729	45,565	30,879	19,959	15,880	5,718	10,469	976,849
NAIROBI													
Male ..	83,378	67,312	43,091	34,317	26,405	19,349	13,117	8,547	5,232	4,088	1,289	1,896	308,021
Female ..	18,768	13,817	12,039	9,899	7,592	5,031	3,128	1,853	1,089	762	259	440	74,677
Total ..	102,146	81,129	55,130	44,216	33,997	24,380	16,245	10,400	6,321	4,850	1,548	2,336	382,698
CENTRAL Province													
Male ..	69,907	46,197	42,131	45,867	45,267	41,825	36,070	28,845	21,481	16,668	6,861	9,236	410,355
Female ..	43,155	30,834	33,904	34,293	31,920	26,603	20,072	13,509	8,636	5,566	2,059	2,303	252,854
Total ..	113,062	77,031	76,035	80,160	77,187	68,428	56,142	42,354	30,117	22,234	8,920	11,539	663,209
CENTRAL Province - Rural													
Male ..	50,901	36,409	36,617	41,304	41,040	39,096	34,246	27,752	20,814	16,220	6,697	9,026	360,722
Female ..	36,305	26,884	30,303	31,247	29,791	25,232	19,290	13,109	8,413	5,416	2,008	2,242	230,240
Total ..	87,206	63,293	66,920	72,551	71,431	64,328	53,536	40,861	29,227	21,636	8,705	11,268	590,962
CENTRAL Province - Urban													
Male ..	19,006	9,788	5,514	4,563	3,627	2,729	1,824	1,093	667	448	164	210	49,633
Female ..	6,850	3,950	3,601	3,046	2,129	1,371	782	400	223	150	51	61	22,614
Total ..	25,856	13,738	9,115	7,609	5,756	4,100	2,606	1,493	890	598	215	271	72,247
KIAMBU District													
Male ..	30,777	17,929	14,579	15,094	14,500	12,685	10,329	7,863	5,472	4,185	1,659	2,261	137,333
Female ..	13,313	9,625	10,434	10,138	9,080	7,357	5,271	3,438	2,272	1,510	563	642	73,643
Total ..	44,090	27,554	25,013	25,232	23,580	20,042	15,600	11,301	7,744	5,695	2,222	2,903	210,976
KIAMBU District - Rural													
Male ..	21,186	12,487	11,459	12,609	12,540	11,242	9,375	7,300	5,146	3,951	1,588	2,172	111,055
Female ..	10,414	7,811	8,711	8,699	8,049	6,687	4,911	3,238	2,169	1,435	545	622	63,291
Total ..	31,600	20,298	20,170	21,308	20,589	17,929	14,286	10,538	7,315	5,386	2,133	2,794	174,346
KIAMBU District - Urban													
Male ..	9,591	5,442	3,120	2,485	1,960	1,443	954	563	326	234	71	89	26,278
Female ..	2,899	1,814	1,723	1,439	1,031	870	360	200	103	75	18	20	10,352
Total ..	12,490	7,256	4,843	3,924	2,991	2,113	1,314	763	429	309	89	109	36,630
KIRINYAGA District													
Male ..	6,554	5,084	5,998	6,640	6,337	5,768	5,011	4,077	3,051	2,440	956	1,406	53,322
Female ..	4,729	3,335	3,557	3,458	3,286	2,669	2,037	1,356	925	599	201	255	26,407
Total ..	11,283	8,419	9,555	10,098	9,623	8,437	7,048	5,433	3,976	3,039	1,157	1,661	79,729
KIRINYAGA District - Rural													
Male ..	5,006	4,304	5,580	6,283	6,072	5,562	4,884	3,997	3,005	2,411	941	1,387	49,432
Female ..	4,044	2,976	3,277	3,230	3,158	2,596	1,984	1,341	915	590	198	251	24,560
Total ..	9,050	7,280	8,857	9,513	9,230	8,158	6,868	5,338	3,920	3,001	1,139	1,638	73,992
KIRINYAGA District - Urban													
Male ..	1,548	780	418	357	265	206	127	80	46	29	15	19	3,890
Female ..	685	359	280	228	128	73	53	15	10	9	3	4	1,847
Total ..	2,233	1,139	698	585	393	279	180	95	56	38	18	23	5,737

Appendix II (cont.)

NUMBER OF HOUSEHOLDS BY SIZE AND SEX OF HEAD

SEX OF HEAD	HOUSEHOLD SIZE												TOTAL
	1 Persons	2 Persons	3 Persons	4 Persons	5 Persons	6 Persons	7 Persons	8 Persons	9 Persons	10 Persons	11 Persons	12 Persons +	
MURANGA District													
Male ..	13,047	10,816	9,696	11,047	11,538	11,165	10,061	8,252	6,245	4,636	1,913	2,246	100,662
Female ..	12,222	8,621	9,499	9,963	9,725	8,359	6,542	4,416	2,732	1,597	609	553	74,838
Total ..	25,269	19,437	19,195	21,010	21,263	19,524	16,603	12,668	8,977	6,233	2,522	2,799	175,500
MURANGA District - Rural													
Male ..	11,241	9,966	9,270	10,680	11,224	10,924	9,892	8,143	6,175	4,586	1,889	2,222	96,212
Female ..	11,377	8,149	9,058	9,580	9,456	8,187	6,432	4,359	2,697	1,576	602	538	72,011
Total ..	22,618	18,115	18,328	20,260	20,680	19,111	16,324	12,502	8,872	6,162	2,491	2,760	168,223
MURANGA District - Urban													
Male ..	1,806	850	426	367	314	241	169	109	70	50	24	24	4,450
Female ..	845	472	441	383	269	172	110	57	35	21	7	15	2,827
Total ..	2,651	1,322	867	750	583	413	279	166	105	71	31	39	7,277
NYANDARUA District													
Male ..	6,004	3,991	4,110	4,373	4,338	4,127	3,589	3,026	2,584	2,327	1,093	1,784	41,346
Female ..	3,252	2,824	3,206	3,411	3,250	2,739	2,143	1,607	1,140	833	317	447	25,169
Total ..	9,256	6,815	7,316	7,784	7,588	6,866	5,732	4,633	3,724	3,160	1,410	2,231	66,515
NYANDARUA District - Rural													
Male ..	3,975	3,033	3,558	3,871	3,948	3,821	3,378	2,903	2,485	2,279	1,069	1,753	36,073
Female ..	2,481	2,400	2,801	3,043	2,953	2,553	2,043	1,545	1,098	816	307	438	22,478
Total ..	6,456	5,433	6,359	6,914	6,901	6,374	5,421	4,448	3,583	3,095	1,376	2,191	58,551
NYANDARUA District - Urban													
Male ..	2,029	958	552	502	390	306	211	123	99	48	24	31	5,273
Female ..	771	424	405	368	297	186	100	62	42	17	10	9	2,691
Total ..	2,800	1,382	957	870	687	492	311	185	141	65	34	40	7,964
NYERI District													
Male ..	13,525	8,377	7,748	8,713	8,554	8,080	7,080	5,627	4,129	3,080	1,240	1,539	77,692
Female ..	9,639	6,429	7,208	7,323	6,579	5,479	4,079	2,692	1,567	1,027	369	406	52,797
Total ..	23,164	14,806	14,956	16,036	15,133	13,559	11,159	8,319	5,696	4,107	1,609	1,945	130,489
NYERI District - Rural													
Male ..	9,493	6,619	6,750	7,861	7,856	7,547	6,717	5,409	4,003	2,993	1,210	1,492	67,950
Female ..	7,989	5,548	6,456	6,695	6,175	5,209	3,920	2,626	1,534	999	356	393	47,900
Total ..	17,482	12,167	13,206	14,556	14,031	12,756	10,637	8,035	5,537	3,992	1,566	1,885	115,850
NYERI District - Urban													
Male ..	4,032	1,758	998	852	698	533	363	218	126	87	30	47	9,742
Female ..	1,650	881	752	628	404	270	159	66	33	28	13	13	4,897
Total ..	5,682	2,639	1,750	1,480	1,102	803	522	284	159	115	43	60	14,639
COAST Province													
Male ..	52,989	35,988	26,853	24,734	22,952	21,108	18,270	14,908	11,342	10,800	4,485	15,576	260,005
Female ..	12,474	12,227	13,110	13,284	12,204	10,477	8,102	5,874	4,022	3,358	1,420	3,822	100,374
Total ..	65,463	48,215	39,963	38,018	35,156	31,585	26,372	20,782	15,364	14,158	5,905	19,398	360,379
COAST Province - Rural													
Male ..	16,196	12,277	11,690	12,754	13,641	13,983	13,121	11,077	8,717	8,523	3,513	13,149	138,641
Female ..	4,754	6,016	7,455	8,304	8,261	7,616	6,048	4,480	3,053	2,591	1,077	2,991	62,646
Total ..	20,950	18,293	19,145	21,058	21,902	21,599	19,169	15,557	11,770	11,114	4,590	16,140	201,287
COAST Province - Urban													
Male ..	36,793	23,711	15,163	11,980	9,311	7,125	5,149	3,831	2,625	2,277	972	2,427	121,364
Female ..	7,720	6,211	5,655	4,980	3,943	2,861	2,054	1,394	969	767	343	831	37,728
Total ..	44,513	29,922	20,818	16,960	13,254	9,986	7,203	5,225	3,594	3,044	1,315	3,258	159,092
KILIFI District													
Male ..	8,318	6,291	5,143	5,253	5,513	5,711	5,505	4,828	4,023	4,400	1,761	8,818	65,564
Female ..	2,273	2,230	2,558	2,763	2,801	2,615	2,130	1,712	1,279	1,299	513	1,823	23,996
Total ..	10,591	8,521	7,701	8,016	8,314	8,326	7,635	6,540	5,302	5,699	2,274	10,641	89,560
KILIFI District - Rural													
Male ..	3,658	3,505	3,493	4,056	4,528	4,960	4,916	4,412	3,710	4,103	1,644	8,396	51,381
Female ..	1,129	1,474	1,939	2,268	2,391	2,325	1,881	1,553	1,158	1,202	472	1,682	19,474
Total ..	4,787	4,979	5,432	6,324	6,919	7,285	6,797	5,965	4,868	5,305	2,116	10,078	70,855

Appendix II (cont.)

NUMBER OF HOUSEHOLDS BY SIZE AND SEX OF HEAD

SEX OF HEAD	HOUSEHOLD SIZE												TOTAL
	1 Persons	2 Persons	3 Persons	4 Persons	5 Persons	6 Persons	7 Persons	8 Persons	9 Persons	10 Persons	11 Persons	12 Persons +	
KILIFI District - Urban													
Male ..	4,660	2,786	1,650	1,197	985	751	589	416	313	297	117	422	14,183
Female ..	1,144	756	619	495	410	290	249	159	121	97	41	141	4,522
Total ..	5,804	3,542	2,269	1,692	1,395	1,041	838	575	434	394	158	563	18,705
KWALE District													
Male ..	5,987	4,561	4,301	4,641	4,772	4,878	4,374	3,467	2,727	2,508	1,020	3,098	46,334
Female ..	1,796	2,180	2,684	2,843	2,756	2,480	1,959	1,404	965	803	351	832	21,053
Total ..	7,783	6,741	6,985	7,484	7,528	7,358	6,333	4,871	3,692	3,311	1,371	3,930	67,387
KWALE District - Rural													
Male ..	5,737	4,456	4,239	4,577	4,718	4,835	4,329	3,447	2,710	2,492	1,012	3,085	45,637
Female ..	1,755	2,151	2,661	2,817	2,730	2,458	1,941	1,393	962	801	350	828	20,847
Total ..	7,492	6,607	6,900	7,394	7,448	7,293	6,270	4,840	3,672	3,293	1,362	3,913	66,484
KWALE District - Urban													
Male ..	250	105	62	64	54	43	45	20	17	16	8	13	697
Female ..	41	29	23	26	26	22	18	11	3	2	1	4	206
Total ..	291	134	85	90	80	65	63	31	20	18	9	17	903
LAMU District													
Male ..	1,669	964	893	813	826	674	597	512	413	318	152	298	8,129
Female ..	257	345	403	404	388	337	298	209	172	111	51	124	3,099
Total ..	1,926	1,309	1,296	1,217	1,214	1,011	895	721	585	429	203	422	11,228
LAMU District - Rural													
Male ..	1,039	646	644	611	663	545	505	430	348	270	124	222	6,047
Female ..	149	238	308	309	313	271	241	183	138	92	37	93	2,372
Total ..	1,188	884	952	920	976	816	746	613	486	362	161	315	8,419
LAMU District - Urban													
Male ..	630	318	249	202	163	129	92	82	65	48	28	76	2,082
Female ..	108	107	95	95	75	66	57	26	34	19	14	31	727
Total ..	738	425	344	297	238	195	149	108	99	67	42	107	2,809
MOMBASA District													
Male ..	28,508	19,081	12,241	9,657	7,377	5,626	4,013	2,968	1,999	1,735	744	1,725	95,674
Female ..	5,761	4,800	4,403	3,862	2,988	2,148	1,520	1,068	725	585	256	596	28,712
Total ..	34,269	23,881	16,644	13,519	10,365	7,774	5,533	4,036	2,724	2,320	1,000	2,321	124,386
TAITA TAVETA District													
Male ..	6,318	3,394	2,566	2,519	2,547	2,422	2,167	1,879	1,292	995	467	740	27,306
Female ..	1,744	1,797	2,017	2,331	2,323	2,040	1,623	1,080	627	383	162	265	16,392
Total ..	8,062	5,191	4,583	4,850	4,870	4,462	3,790	2,959	1,919	1,378	629	1,005	43,698
TAITA TAVETA District - Rural													
Male ..	4,406	2,403	1,930	1,972	2,115	2,064	1,924	1,682	1,166	912	428	672	21,674
Female ..	1,271	1,471	1,686	2,005	2,046	1,847	1,492	1,004	583	347	150	234	14,136
Total ..	5,677	3,874	3,616	3,977	4,161	3,911	3,416	2,686	1,749	1,259	578	906	35,810
TAITA TAVETA District - Urban													
Male ..	1,912	991	636	547	432	358	243	197	126	83	39	68	5,632
Female ..	473	326	331	326	277	193	131	76	44	36	12	31	2,256
Total ..	2,385	1,317	967	873	709	551	374	273	170	119	51	99	7,888
TANA RIVER District													
Male ..	2,189	1,697	1,709	1,851	1,917	1,797	1,614	1,254	888	844	341	897	16,998
Female ..	643	875	1,045	1,081	948	857	572	401	254	177	87	182	7,122
Total ..	2,832	2,572	2,754	2,932	2,865	2,654	2,186	1,655	1,142	1,021	428	1,079	24,120
TANA RIVER District - Rural													
Male ..	1,356	1,267	1,384	1,538	1,617	1,579	1,447	1,106	783	746	305	774	13,902
Female ..	450	682	861	905	781	715	493	347	212	149	68	154	5,817
Total ..	1,806	1,949	2,245	2,443	2,398	2,294	1,940	1,453	995	895	373	928	19,719

Appendix II (cont.)

NUMBER OF HOUSEHOLDS BY SIZE AND SEX OF HEAD

SEX OF HEAD	HOUSEHOLD SIZE												TOTAL
	Persons 1	Persons 2	Persons 3	Persons 4	Persons 5	Persons 6	Persons 7	Persons 8	Persons 9	Persons 10	Persons 11	Persons 12	
TANA RIVER District - Urban													
Male ..	833	430	325	313	300	218	167	148	105	98	36	123	3,096
Female ..	193	193	184	176	167	142	79	54	42	28	19	28	1,305
Total ..	1,026	623	509	489	467	360	246	202	147	126	55	151	4,401
EASTERN Province													
Male ..	41,914	33,143	36,051	43,627	48,260	49,261	46,290	38,504	29,696	23,631	10,305	17,307	417,989
Female ..	23,492	25,078	30,464	34,233	34,714	31,193	25,165	17,982	11,913	8,551	3,495	5,478	251,758
Total ..	65,406	58,221	66,515	77,860	82,974	80,454	71,455	56,486	41,609	32,182	13,800	22,785	669,747
EASTERN Province - Rural													
Male ..	28,986	26,103	31,844	40,143	45,211	46,815	44,431	37,222	28,836	22,936	10,012	16,763	379,302
Female ..	18,874	22,146	27,817	32,032	33,013	30,060	24,374	17,487	11,587	8,328	3,392	5,304	234,414
Total ..	47,860	48,249	59,661	72,175	78,224	76,875	68,805	54,709	40,423	31,264	13,404	22,067	613,716
EASTERN Province - Urban													
Male ..	12,928	7,040	4,207	3,484	3,049	2,446	1,859	1,282	860	695	293	544	38,687
Female ..	4,618	2,932	2,647	2,201	1,701	1,133	791	495	326	223	103	174	17,344
Total ..	17,546	9,972	6,854	5,685	4,750	3,579	2,650	1,777	1,186	918	396	718	56,031
EMBU District													
Male ..	5,738	3,780	4,071	5,040	5,226	5,193	4,782	3,985	3,207	2,433	1,238	1,708	46,381
Female ..	3,925	2,664	3,011	3,068	2,911	2,525	1,974	1,366	892	491	215	275	23,317
Total ..	9,663	6,424	7,082	8,108	8,137	7,718	6,756	5,351	4,099	2,924	1,453	1,983	69,698
EMBU District - Rural													
Male ..	3,619	2,803	3,484	4,517	4,755	4,836	4,527	3,809	3,094	2,335	1,199	1,653	40,631
Female ..	3,186	2,230	2,626	2,771	2,696	2,403	1,890	1,314	863	470	210	262	20,921
Total ..	6,805	5,033	6,110	7,288	7,451	7,239	6,417	5,123	3,957	2,805	1,409	1,915	61,552
EMBU District - Urban													
Male ..	2,119	957	587	523	471	357	255	176	113	98	39	55	5,750
Female ..	739	434	385	297	215	122	84	52	29	21	5	13	2,396
Total ..	2,858	1,391	972	820	686	479	339	228	142	119	44	68	8,146
ISIOLO District													
Male ..	1,377	1,216	1,171	1,173	1,149	980	775	486	340	215	71	140	9,093
Female ..	710	1,084	1,174	1,043	931	637	390	251	117	83	42	44	6,506
Total ..	2,087	2,300	2,345	2,216	2,080	1,617	1,165	737	457	298	113	184	15,599
ISIOLO District - Rural													
Male ..	446	660	795	863	864	731	603	358	253	156	40	87	5,856
Female ..	387	758	839	806	691	478	269	166	76	54	24	31	4,579
Total ..	833	1,418	1,634	1,669	1,555	1,209	872	524	329	210	64	118	10,435
ISIOLO District - Urban													
Male ..	931	556	376	310	285	249	172	128	87	59	31	53	3,237
Female ..	323	326	335	237	240	159	121	85	41	29	18	13	1,927
Total ..	1,254	882	711	547	525	408	293	213	128	88	49	66	5,164
KITUI District													
Male ..	5,217	4,568	4,389	5,763	6,748	7,203	7,160	5,972	4,851	3,975	1,798	3,284	60,928
Female ..	3,883	4,011	5,361	6,666	7,018	6,649	5,518	4,009	2,654	1,883	850	1,329	49,631
Total ..	8,900	8,579	9,750	12,429	13,766	13,852	12,678	9,981	7,505	5,858	2,648	4,613	110,559
KITUI District - Rural													
Male ..	3,872	3,958	4,086	5,495	6,568	7,065	7,063	5,904	4,809	3,930	1,779	3,242	57,771
Female ..	3,230	3,786	5,171	6,520	6,920	6,577	5,470	3,979	2,631	1,870	844	1,316	48,314
Total ..	7,102	7,744	9,257	12,015	13,488	13,642	12,533	9,883	7,440	5,800	2,623	4,558	106,085
KITUI District - Urban													
Male ..	1,345	610	303	268	180	138	97	68	42	45	19	42	3,157
Female ..	453	225	190	146	98	72	48	30	23	13	6	13	1,317
Total ..	1,798	835	493	414	278	210	145	98	65	58	25	55	4,474

Appendix II (cont.)

NUMBER OF HOUSEHOLDS BY SIZE AND SEX OF HEAD

SEX OF HEAD	HOUSEHOLD SIZE												TOTAL
	1 Persons	2 Persons	3 Persons	4 Persons	5 Persons	6 Persons	7 Persons	8 Persons	9 Persons	10 Persons	11 Persons	12 Persons +	
MACHAKOS District													
Male ..	16,488	10,553	9,481	11,487	13,771	15,100	14,977	13,207	10,726	8,785	4,355	7,867	136,797
Female ..	6,464	7,370	9,428	11,895	13,619	13,290	11,528	8,641	5,961	4,478	1,921	3,184	97,779
Total ..	22,952	17,923	18,909	23,382	27,390	28,390	26,505	21,848	16,687	13,263	6,276	11,051	234,576
MACHAKOS District - Rural													
Male ..	11,009	7,440	7,742	10,132	12,608	14,198	14,270	12,736	10,400	8,479	4,238	7,669	120,921
Female ..	4,611	6,284	8,518	11,124	13,019	12,855	11,225	8,454	5,833	4,380	1,879	3,113	91,295
Total ..	15,620	13,724	16,260	21,256	25,627	27,053	25,495	21,190	16,233	12,859	6,117	10,782	212,216
MACHAKOS District - Urban													
Male ..	5,479	3,113	1,739	1,355	1,163	902	707	471	326	306	117	198	15,876
Female ..	1,853	1,086	910	771	600	435	303	187	128	98	42	71	6,484
Total ..	7,332	4,199	2,649	2,126	1,763	1,337	1,010	658	454	404	159	269	22,360
MARSABIT District													
Male ..	1,077	2,057	2,463	2,489	2,430	2,043	1,520	935	613	605	101	292	16,625
Female ..	1,742	2,376	2,434	2,012	1,475	889	512	273	175	234	30	80	12,232
Total ..	2,819	4,433	4,897	4,501	3,905	2,932	2,032	1,208	788	839	131	372	28,857
MARSABIT District - Rural													
Male ..	458	1,646	2,125	2,176	2,151	1,784	1,308	769	507	520	70	179	13,693
Female ..	1,503	2,075	2,113	1,689	1,226	721	391	207	116	200	18	36	10,295
Total ..	1,961	3,721	4,238	3,865	3,377	2,505	1,699	976	623	720	88	215	23,988
MARSABIT District - Urban													
Male ..	619	411	338	313	279	259	212	166	106	85	31	113	2,932
Female ..	239	301	321	323	249	168	121	66	59	34	12	44	1,937
Total ..	858	712	659	636	528	427	333	232	165	119	43	157	4,869
MERU District													
Male ..	12,017	10,989	14,476	17,675	18,936	18,742	17,076	13,919	9,959	7,618	2,742	4,016	148,165
Female ..	6,968	7,573	9,056	9,549	8,760	7,203	5,243	3,442	2,114	1,382	437	566	62,293
Total ..	18,985	18,562	23,532	27,224	27,696	25,945	22,319	17,361	12,073	9,000	3,179	4,582	210,458
MERU District - Rural													
Male ..	9,582	9,596	13,612	16,960	18,265	18,201	16,680	13,646	9,773	7,516	2,686	3,933	140,430
Female ..	5,957	7,013	8,550	9,122	8,461	7,026	5,129	3,367	2,068	1,354	417	546	59,010
Total ..	15,539	16,609	22,162	26,082	26,726	25,227	21,789	17,013	11,841	8,870	3,103	4,479	199,440
MERU District - Urban													
Male ..	2,435	1,393	864	715	671	541	416	273	186	102	56	83	7,735
Female ..	1,011	560	506	427	299	177	114	75	46	28	20	20	3,283
Total ..	3,446	1,953	1,370	1,142	970	718	530	348	232	130	76	103	11,018
NORTH EASTERN Province													
Male ..	2,417	3,882	5,045	5,806	6,362	6,126	5,429	4,112	2,836	2,557	495	1,204	46,271
Female ..	1,987	3,659	4,000	3,746	3,360	2,563	1,753	1,070	676	576	116	292	23,798
Total ..	4,404	7,541	9,045	9,552	9,722	8,689	7,182	5,182	3,512	3,133	611	1,496	70,069
N/EASTERN Province - Rural													
Male ..	664	2,483	3,774	4,603	5,207	5,069	4,459	3,420	2,312	2,083	322	764	35,160
Female ..	1,241	2,626	2,947	2,778	2,513	1,897	1,254	738	442	370	48	94	16,948
Total ..	1,905	5,109	6,721	7,381	7,720	6,966	5,713	4,158	2,754	2,453	370	858	52,108
N/EASTERN Province - Urban													
Male ..	1,753	1,399	1,271	1,203	1,155	1,057	970	692	524	474	173	440	11,111
Female ..	746	1,033	1,053	968	847	666	499	332	234	206	68	198	6,850
Total ..	2,499	2,432	2,324	2,171	2,002	1,723	1,469	1,024	758	680	241	638	17,961
GARISSA District													
Male ..	1,338	1,497	1,721	1,917	1,980	1,913	1,817	1,336	982	912	176	403	15,992
Female ..	737	1,092	1,219	1,092	1,065	847	602	381	230	216	43	100	7,624
Total ..	2,075	2,589	2,940	3,009	3,045	2,760	2,419	1,717	1,212	1,128	219	503	23,616

Appendix II (cont.)

NUMBER OF HOUSEHOLDS BY SIZE AND SEX OF HEAD

SEX OF HEAD	HOUSEHOLD SIZE												TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	
	Persons	Persons	Persons	Persons	Persons	Persons	Persons	Persons	Persons	Persons	Persons	Persons +	
GARISSA District - Rural													
Male ..	297	819	1,163	1,460	1,564	1,549	1,479	1,111	787	746	114	291	11,380
Female ..	401	743	850	793	814	644	455	279	167	141	20	39	5,346
Total ..	698	1,562	2,013	2,253	2,378	2,193	1,934	1,390	954	887	134	330	16,726
GARISSA District - Urban													
Male ..	1,041	678	558	457	416	364	338	225	195	166	62	112	4,612
Female ..	336	349	369	299	251	203	147	102	63	75	23	61	2,278
Total ..	1,377	1,027	927	756	667	567	485	327	258	241	85	173	6,890
MANDERA District													
Male ..	526	1,301	1,725	2,032	2,176	2,006	1,745	1,290	832	816	148	428	15,025
Female ..	645	1,379	1,456	1,456	1,215	902	617	342	232	183	33	103	8,563
Total ..	1,171	2,680	3,181	3,488	3,391	2,908	2,362	1,632	1,064	999	181	531	23,588
MANDERA District - Rural													
Male ..	199	920	1,339	1,616	1,769	1,644	1,381	1,042	657	628	84	228	11,507
Female ..	452	995	1,083	1,071	882	623	400	209	131	106	9	27	5,988
Total ..	651	1,915	2,422	2,687	2,651	2,267	1,781	1,251	788	734	93	255	17,495
MANDERA District - Urban													
Male ..	327	381	386	416	407	362	364	248	175	188	64	200	3,518
Female ..	193	384	373	385	333	279	217	133	101	77	24	76	2,575
Total ..	520	765	759	801	740	641	581	381	276	265	88	276	6,093
WAJIR District													
Male ..	553	1,084	1,599	1,857	2,206	2,207	1,867	1,486	1,022	829	171	373	15,254
Female ..	605	1,188	1,325	1,198	1,080	814	534	347	214	177	40	89	7,611
Total ..	1,158	2,272	2,924	3,055	3,286	3,021	2,401	1,833	1,236	1,006	211	462	22,865
WAJIR District - Rural													
Male ..	168	744	1,272	1,527	1,874	1,876	1,599	1,267	868	709	124	245	12,273
Female ..	388	888	1,014	914	817	630	399	250	144	123	19	28	5,614
Total ..	556	1,632	2,286	2,441	2,691	2,506	1,998	1,517	1,012	832	143	273	17,887
WAJIR District - Urban													
Male ..	385	340	327	330	332	331	268	219	154	120	47	128	2,981
Female ..	217	300	311	284	263	184	135	97	70	54	21	61	1,997
Total ..	602	640	638	614	595	515	403	316	224	174	68	189	4,978
NYANZA Province													
Male ..	36,543	43,420	42,877	48,845	50,652	47,589	40,951	32,680	23,178	18,326	6,579	11,588	403,228
Female ..	42,237	36,536	41,293	43,209	40,349	32,737	23,692	15,610	9,429	6,505	2,136	3,777	297,510
Total ..	78,780	79,956	84,170	92,054	91,001	80,326	64,643	48,290	32,607	24,831	8,715	15,365	700,738
NYANZA Province - Rural													
Male ..	22,570	33,210	35,609	42,561	45,017	42,948	37,390	29,992	21,356	16,912	6,014	10,685	344,264
Female ..	38,190	33,240	37,712	40,074	37,520	30,610	22,145	14,518	8,817	6,010	1,953	3,459	274,248
Total ..	60,760	66,450	73,321	82,635	82,537	73,558	59,535	44,510	30,173	22,922	7,967	14,144	618,512
NYANZA Province - Urban													
Male ..	13,973	10,210	7,268	6,284	5,635	4,641	3,561	2,688	1,822	1,414	565	903	58,964
Female ..	4,047	3,296	3,581	3,135	2,829	2,127	1,547	1,092	612	495	183	318	23,262
Total ..	18,020	13,506	10,849	9,419	8,464	6,768	5,108	3,780	2,434	1,909	748	1,221	82,226
KISII District													
Male ..	7,519	7,705	9,844	13,256	15,183	15,785	14,898	13,065	9,924	7,663	3,107	4,318	122,267
Female ..	5,772	6,917	9,185	10,922	11,437	10,163	8,113	5,745	3,587	2,472	885	1,127	76,325
Total ..	13,291	14,622	19,029	24,178	26,620	25,948	23,011	18,810	13,511	10,135	3,992	5,445	198,592
KISII District - Rural													
Male ..	5,941	6,614	9,106	12,538	14,468	15,121	14,302	12,568	9,553	7,365	3,011	4,170	114,757
Female ..	5,403	6,482	8,663	10,409	10,960	9,757	7,795	5,487	3,454	2,336	842	1,056	72,644
Total ..	11,344	13,096	17,769	22,947	25,428	24,878	22,097	18,055	13,007	9,701	3,853	5,226	187,401
KISII District - Urban													
Male ..	1,578	1,091	738	718	715	664	596	497	371	298	96	148	7,510
Female ..	369	435	522	513	477	406	318	258	133	136	43	71	3,681
Total ..	1,947	1,526	1,260	1,231	1,192	1,070	914	755	504	434	139	219	11,191
KISUMU District													
Male ..	15,012	13,638	11,269	11,182	10,723	9,214	7,276	5,398	3,676	2,794	999	1,781	92,962
Female ..	9,660	7,643	8,169	8,057	7,103	5,669	3,917	2,537	1,461	980	315	624	56,135
Total ..	24,672	21,281	19,438	19,239	17,826	14,883	11,193	7,935	5,137	3,774	1,314	2,405	149,097
KISUMU District - Rural													
Male ..	5,531	6,556	6,266	6,974	7,027	6,313	5,133	3,790	2,623	2,000	638	1,218	54,069
Female ..	7,084	5,647	6,004	6,270	5,515	4,506	3,057	1,957	1,129	732	215	439	42,555
Total ..	12,615	12,203	12,270	13,244	12,542	10,819	8,190	5,747	3,752	2,732	853	1,657	96,624

Appendix II (cont.)

NUMBER OF HOUSEHOLDS BY SIZE AND SEX OF HEAD

SEX OF HEAD	HOUSEHOLD SIZE												TOTAL
	1 Persons	2 Persons	3 Persons	4 Persons	5 Persons	6 Persons	7 Persons	8 Persons	9 Persons	10 Persons	11 Persons	12 Persons +	
KISUMU District - Urban													
Male ..	9,481	7,082	5,003	4,208	3,696	2,901	2,143	1,608	1,053	794	361	563	38,893
Female ..	2,576	1,996	2,165	1,787	1,588	1,163	860	580	332	248	100	185	13,580
Total ..	12,057	9,078	7,168	5,995	5,284	4,064	3,003	2,188	1,385	1,042	461	748	52,473
SIAYA District													
Male ..	6,023	9,549	8,606	9,174	8,970	8,053	6,429	4,652	3,145	2,280	775	1,442	69,098
Female ..	14,231	10,847	11,002	10,546	9,393	7,074	4,664	2,820	1,663	1,004	343	601	74,188
Total ..	20,254	20,396	19,608	19,720	18,363	15,127	11,093	7,472	4,808	3,284	1,118	2,043	143,286
SIAYA District - Rural													
Male ..	5,123	9,014	8,197	8,798	8,598	7,753	6,196	4,503	3,035	2,201	736	1,401	65,555
Female ..	13,849	10,589	10,721	10,291	9,158	6,917	4,552	2,754	1,612	979	329	589	72,341
Total ..	18,972	19,603	18,918	19,089	17,757	14,670	10,748	7,257	4,647	3,180	1,065	1,990	137,896
SIAYA District - Urban													
Male ..	900	535	409	376	372	300	233	149	110	79	39	41	3,543
Female ..	382	258	281	255	234	157	112	66	51	25	14	12	1,847
Total ..	1,282	793	690	631	606	457	345	215	161	104	53	53	5,390
SOUTH NYANZA District													
Male ..	7,989	12,528	13,158	15,233	15,776	14,537	12,348	9,565	6,433	5,589	1,698	4,047	118,901
Female ..	12,574	11,129	12,937	13,684	12,416	9,831	6,998	4,508	2,718	2,049	593	1,425	90,862
Total ..	20,563	23,657	26,095	28,917	28,192	24,368	19,346	14,073	9,151	7,638	2,291	5,472	209,763
SOUTH NYANZA District - Rural													
Male ..	5,975	11,026	12,040	14,251	14,924	13,761	11,759	9,131	6,145	5,346	1,629	3,896	109,883
Female ..	11,854	10,522	12,324	13,104	11,886	9,430	6,741	4,320	2,622	1,963	567	1,375	86,708
Total ..	17,829	21,548	24,364	27,355	26,810	23,191	18,500	13,451	8,767	7,309	2,196	5,271	196,591
SOUTH NYANZA District - Urban													
Male ..	2,014	1,502	1,118	982	852	776	589	434	288	243	69	151	9,018
Female ..	720	607	613	580	530	401	257	188	96	86	26	50	4,154
Total ..	2,734	2,109	1,731	1,562	1,382	1,177	846	622	384	329	95	201	13,172
RIFT VALLEY Province													
Male ..	105,166	77,350	71,833	76,108	75,563	68,764	58,321	46,193	34,073	29,030	10,417	18,248	671,066
Female ..	33,817	41,425	49,435	51,245	46,195	37,624	27,860	19,086	12,549	9,085	3,036	4,705	336,062
Total ..	138,983	118,775	121,268	127,353	121,758	106,388	86,181	65,279	46,622	38,115	13,453	22,953	1,007,128
RIFT VALLEY Province - Rural													
Male ..	65,715	53,408	56,524	63,361	64,950	60,752	52,325	42,021	31,257	26,600	9,671	17,088	543,672
Female ..	24,274	34,085	42,329	44,809	41,193	34,097	25,510	17,547	11,632	8,413	2,833	4,400	291,122
Total ..	89,989	87,493	98,853	108,170	106,143	94,849	77,835	59,568	42,889	35,013	12,504	21,488	834,794
RIFT VALLEY Province - Urban													
Male ..	39,451	23,942	15,309	12,747	10,613	8,012	5,996	4,172	2,816	2,430	746	1,160	127,394
Female ..	9,543	7,340	7,106	6,436	5,002	3,527	2,350	1,539	917	672	203	305	44,940
Total ..	48,994	31,282	22,415	19,183	15,615	11,539	8,346	5,711	3,733	3,102	949	1,465	172,334
BARINGO District													
Male ..	6,238	4,202	4,011	4,390	4,442	4,305	3,655	2,841	2,057	1,619	586	913	39,259
Female ..	2,683	3,018	3,330	3,271	2,923	2,237	1,504	959	601	363	134	185	21,208
Total ..	8,921	7,220	7,341	7,661	7,365	6,542	5,159	3,800	2,658	1,982	720	1,098	60,467
BARINGO District - Rural													
Male ..	4,430	3,280	3,445	3,945	4,072	4,003	3,440	2,665	1,945	1,538	555	855	34,173
Female ..	2,270	2,673	3,019	2,983	2,680	2,050	1,388	879	557	338	123	166	19,126
Total ..	6,700	5,953	6,464	6,928	6,752	6,053	4,828	3,544	2,502	1,876	678	1,021	53,299
BARINGO District - Urban													
Male ..	1,808	922	566	445	370	302	215	176	112	81	31	58	5,086
Female ..	413	345	311	288	243	187	116	80	44	25	11	19	2,082
Total ..	2,221	1,267	877	733	613	489	331	256	156	106	42	77	7,168
E. MARAKWET District													
Male ..	5,077	3,860	3,420	3,695	3,750	3,550	2,909	2,187	1,418	1,025	360	496	31,747
Female ..	1,718	2,150	2,368	2,446	2,127	1,718	1,156	690	434	232	85	104	15,228
Total ..	6,795	6,010	5,788	6,141	5,877	5,268	4,065	2,877	1,852	1,257	445	600	46,975
E. MARAKWET District - Rural													
Male ..	4,766	3,721	3,325	3,617	3,688	3,502	2,874	2,167	1,400	1,010	354	483	30,907
Female ..	1,646	2,108	2,318	2,413	2,107	1,699	1,140	677	424	227	85	102	14,946
Total ..	6,412	5,829	5,643	6,030	5,795	5,201	4,014	2,844	1,824	1,237	439	585	45,853
E. MARAKWET District - Urban													
Male ..	311	139	95	78	62	48	35	20	18	15	6	13	840
Female ..	72	42	50	33	20	19	16	13	10	5	2	2	282
Total ..	383	181	145	111	82	67	51	33	28	20	6	15	1,122

Appendix II (cont.)

NUMBER OF HOUSEHOLDS BY SIZE AND SEX OF HEAD

SEX OF HEAD	HOUSEHOLD SIZE												TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	
	Persons	Persons	Persons	Persons	Persons	Persons	Persons	Persons	Persons	Persons	Persons	Persons +	
KAJIADO District													
Male ..	5,595	4,468	4,338	4,239	4,094	3,582	2,678	1,929	1,324	1,220	287	556	34,310
Female ..	2,129	3,228	3,861	3,807	3,282	2,442	1,627	979	569	465	112	160	22,661
Total ..	7,724	7,696	8,199	8,046	7,376	6,024	4,305	2,908	1,893	1,685	399	716	56,971
KAJIADO District - Rural													
Male ..	2,888	2,844	3,231	3,316	3,281	2,946	2,247	1,655	1,140	1,077	243	485	25,353
Female ..	1,357	2,584	3,215	3,247	2,814	2,148	1,411	863	505	417	94	137	18,792
Total ..	4,245	5,428	6,446	6,563	6,095	5,094	3,658	2,518	1,645	1,494	337	622	44,145
KAJIADO District - Urban													
Male ..	2,707	1,624	1,107	923	813	636	431	274	184	143	44	71	8,957
Female ..	772	644	646	560	468	294	216	116	64	48	18	23	3,869
Total ..	3,479	2,268	1,753	1,483	1,281	930	647	390	248	191	62	94	12,826
KERICHO District													
Male ..	15,574	13,039	12,521	13,652	13,749	12,636	11,152	9,207	7,039	5,917	2,358	4,008	120,852
Female ..	3,863	4,960	6,258	7,180	6,992	6,256	4,959	3,672	2,475	1,854	724	1,204	50,397
Total ..	19,437	17,999	18,779	20,832	20,741	18,892	16,111	12,879	9,514	7,771	3,082	5,212	171,249
KERICHO District - Rural													
Male ..	12,693	11,509	11,530	12,853	13,122	12,159	10,798	8,936	6,882	5,794	2,307	3,947	112,530
Female ..	3,387	4,597	5,921	6,852	6,747	6,066	4,835	3,597	2,434	1,813	714	1,190	48,153
Total ..	16,080	16,106	17,451	19,705	19,869	18,225	15,633	12,533	9,316	7,607	3,021	5,137	160,683
KERICHO District - Urban													
Male ..	2,881	1,530	991	799	627	477	354	271	157	123	51	61	8,322
Female ..	476	363	337	328	245	190	124	75	41	41	10	14	2,244
Total ..	3,357	1,893	1,328	1,127	872	667	478	346	198	164	61	75	10,566
LAIKIPIA District													
Male ..	5,791	3,381	2,751	2,804	2,752	2,505	2,219	1,734	1,321	1,203	441	761	27,663
Female ..	1,975	1,953	2,266	2,465	2,330	2,034	1,650	1,122	751	512	174	264	17,496
Total ..	7,766	5,334	5,017	5,269	5,082	4,539	3,869	2,856	2,072	1,715	615	1,025	45,159
LAIKIPIA District - Rural													
Male ..	3,628	2,380	2,207	2,338	2,394	2,252	2,032	1,612	1,251	1,164	424	737	22,419
Female ..	1,302	1,528	1,915	2,160	2,093	1,875	1,544	1,057	708	483	167	256	15,088
Total ..	4,930	3,908	4,122	4,498	4,487	4,127	3,576	2,669	1,959	1,647	591	993	37,507
LAIKIPIA District - Urban													
Male ..	2,163	1,001	544	466	358	253	187	122	70	39	17	24	5,244
Female ..	673	425	351	305	237	159	106	65	43	29	7	8	2,408
Total ..	2,836	1,426	895	771	595	412	293	187	113	68	24	32	7,652
NAKURU District													
Male ..	29,853	17,982	14,043	13,315	12,352	10,948	9,272	7,554	5,596	4,788	1,724	2,498	129,926
Female ..	9,239	7,631	8,311	8,534	7,918	6,616	5,078	3,615	2,370	1,625	547	692	62,176
Total ..	39,092	25,613	22,354	21,849	20,270	17,565	14,350	11,169	7,966	6,413	2,271	3,190	192,102
NAKURU District - Rural													
Male ..	15,306	9,081	8,296	8,387	8,296	7,909	6,987	5,935	4,508	3,913	1,493	2,194	82,305
Female ..	5,333	5,031	5,783	6,306	6,153	5,402	4,281	3,097	2,092	1,423	498	611	46,010
Total ..	20,639	14,112	14,079	14,693	14,449	13,311	11,268	9,032	6,600	5,336	1,991	2,805	128,315
NAKURU District - Urban													
Male ..	14,547	8,901	5,747	4,928	4,056	3,040	2,285	1,619	1,088	875	231	304	47,621
Female ..	3,906	2,600	2,528	2,228	1,765	1,214	797	518	278	202	49	81	16,166
Total ..	18,453	11,501	8,275	7,156	5,821	4,254	3,082	2,137	1,366	1,077	280	385	63,787
NANDI District													
Male ..	7,225	5,298	5,243	6,213	6,607	6,463	5,942	5,006	3,754	3,043	1,347	2,354	58,495
Female ..	1,680	2,232	2,712	3,024	3,014	2,611	2,191	1,552	1,027	754	312	427	21,536
Total ..	8,905	7,530	7,955	9,237	9,621	9,074	8,133	6,558	4,781	3,797	1,659	2,781	80,031
NANDI District - Rural													
Male ..	6,489	4,867	4,938	6,000	6,384	6,293	5,790	4,908	3,679	2,995	1,316	2,321	55,980
Female ..	1,487	2,070	2,562	2,903	2,922	2,546	2,154	1,529	1,011	738	308	415	20,645
Total ..	7,976	6,937	7,500	8,903	9,306	8,839	7,944	6,437	4,690	3,733	1,624	2,736	76,625
NANDI District - Urban													
Male ..	736	431	305	213	223	170	152	98	75	48	31	33	2,515
Female ..	193	162	150	121	92	65	37	23	16	16	4	12	891
Total ..	929	593	455	334	315	235	189	121	91	64	35	45	3,406
NAROK District													
Male ..	4,745	4,448	5,462	6,283	6,215	5,644	4,785	3,714	2,590	2,280	508	1,013	47,687
Female ..	2,066	3,703	4,984	5,118	4,665	3,729	2,597	1,673	1,102	800	146	294	30,877
Total ..	6,811	8,151	10,446	11,401	10,880	9,373	7,382	5,387	3,692	3,080	654	1,307	78,564

Appendix II (cont.)

NUMBER OF HOUSEHOLDS BY SIZE AND SEX OF HEAD

SEX OF HEAD	HOUSEHOLD SIZE												TOTAL*
	1 Persons	2 Persons	3 Persons	4 Persons	5 Persons	6 Persons	7 Persons	8 Persons	9 Persons	10 Persons	11 Persons	12 Persons +	
NAROK District - Rural													
Male ..	3,527	3,803	5,069	5,940	5,979	5,432	4,623	3,605	2,516	2,212	486	979	44,171
Female ..	1,724	3,448	4,764	4,909	4,517	3,631	2,527	1,643	1,081	779	140	291	29,454
Total ..	5,251	7,251	9,833	10,849	10,496	9,063	7,150	5,248	3,597	2,991	626	1,270	73,625
NAROK District - Urban													
Male ..	1,218	645	393	343	236	212	162	109	74	68	22	34	3,516
Female ..	342	255	220	209	148	98	70	30	21	21	6	3	1,423
Total ..	1,560	900	613	552	384	310	232	139	95	89	28	37	4,939
SAMBURU District													
Male ..	1,095	1,260	1,552	1,762	1,795	1,535	1,122	714	398	324	59	103	11,719
Female ..	1,036	2,038	2,498	2,379	1,916	1,305	723	385	217	128	32	44	12,701
Total ..	2,131	3,298	4,050	4,141	3,711	2,840	1,845	1,099	615	452	91	147	24,420
SAMBURU District - Rural													
Male ..	457	970	1,315	1,532	1,589	1,382	995	624	342	280	44	71	9,611
Female ..	868	1,820	2,244	2,095	1,689	1,150	630	305	175	98	14	29	11,117
Total ..	1,325	2,790	3,559	3,627	3,288	2,532	1,625	929	517	378	58	100	20,728
SAMBURU District - Urban													
Male ..	638	290	237	230	196	153	127	90	56	44	15	32	2,108
Female ..	168	218	254	284	227	155	93	80	42	30	18	15	1,584
Total ..	806	508	491	514	423	308	220	170	98	74	33	47	3,692
TRANS-NZOIA District													
Male ..	6,895	5,344	5,125	5,309	5,358	5,099	4,532	3,824	3,135	2,872	1,166	2,423	51,082
Female ..	1,899	2,191	2,680	2,978	2,795	2,508	2,105	1,498	1,143	889	318	570	21,574
Total ..	8,794	7,535	7,805	8,287	8,153	7,607	6,637	5,322	4,278	3,761	1,484	2,993	72,656
TRANS-NZOIA District - Rural													
Male ..	4,109	3,506	3,886	4,274	4,446	4,408	4,004	3,436	2,830	2,517	1,082	2,247	40,745
Female ..	1,281	1,644	2,118	2,456	2,384	2,195	1,875	1,353	1,039	814	295	533	17,987
Total ..	5,390	5,150	6,004	6,730	6,830	6,603	5,879	4,789	3,869	3,331	1,377	2,780	58,732
TRANS-NZOIA District - Urban													
Male ..	2,786	1,838	1,239	1,035	912	691	528	388	305	355	84	176	10,337
Female ..	618	547	562	522	411	313	230	145	104	75	23	37	3,587
Total ..	3,404	2,385	1,801	1,557	1,323	1,004	758	533	409	430	107	213	13,924
TURKANA District													
Male ..	1,353	1,534	2,317	3,047	3,312	2,738	2,034	1,493	983	1,061	120	456	20,448
Female ..	1,100	2,483	3,357	3,210	2,371	1,592	906	646	382	371	50	129	16,597
Total ..	2,453	4,017	5,674	6,257	5,683	4,330	2,940	2,139	1,365	1,432	170	585	37,045
TURKANA District - Rural													
Male ..	728	1,104	1,937	2,695	2,945	2,465	1,841	1,368	884	962	105	383	17,417
Female ..	897	2,185	2,998	2,853	2,151	1,399	797	556	319	313	40	103	14,611
Total ..	1,625	3,289	4,935	5,548	5,096	3,864	2,638	1,924	1,203	1,275	145	486	32,028
TURKANA District - Urban													
Male ..	625	430	380	352	367	273	193	125	99	99	15	73	3,031
Female ..	203	298	359	357	220	193	109	90	63	58	10	26	1,986
Total ..	828	728	739	709	587	466	302	215	162	157	25	99	5,017
UASIN GISHU District													
Male ..	12,720	8,999	6,680	6,794	6,571	5,986	5,265	4,220	3,312	2,928	1,250	2,257	66,982
Female ..	2,657	2,856	3,286	3,465	3,211	2,715	2,252	1,694	1,129	850	307	509	24,931
Total ..	15,377	11,855	9,966	10,259	9,782	8,701	7,517	5,914	4,441	3,778	1,557	2,766	91,913
UASIN GISHU District - Rural													
Male ..	4,345	3,205	3,263	4,064	4,362	4,388	4,047	3,442	2,810	2,431	1,072	2,013	39,442
Female ..	1,136	1,546	2,090	2,405	2,384	2,147	1,870	1,423	963	742	269	463	17,447
Total ..	5,481	4,751	5,362	6,469	6,746	6,535	5,917	4,865	3,773	3,173	1,341	2,476	56,889
UASIN GISHU District - Urban													
Male ..	8,375	5,794	3,417	2,730	2,209	1,598	1,218	778	502	497	178	244	27,540
Female ..	1,521	1,310	1,187	1,060	827	568	382	271	166	108	38	46	7,484
Total ..	9,896	7,104	4,604	3,790	3,036	2,166	1,600	1,049	668	605	216	290	35,024
WEST POKOT District													
Male ..	3,005	3,535	4,370	4,605	4,566	3,772	2,756	1,770	1,146	750	211	410	30,896
Female ..	1,772	2,982	3,524	3,368	2,651	1,861	1,112	601	349	242	95	123	18,680
Total ..	4,777	6,517	7,894	7,973	7,217	5,633	3,868	2,371	1,495	992	306	533	49,576
WEST POKOT District - Rural													
Male ..	2,349	3,138	4,082	4,400	4,382	3,613	2,647	1,668	1,070	707	190	373	28,619
Female ..	1,586	2,851	3,373	3,227	2,552	1,789	1,058	568	324	228	86	104	17,746
Total ..	3,935	5,989	7,455	7,627	6,934	5,402	3,705	2,236	1,394	935	276	477	46,365

Appendix II (cont.)

NUMBER OF HOUSEHOLDS BY SIZE AND SEX OF HEAD

SEX OF HEAD	HOUSEHOLD SIZE												TOTAL
	1 Persons	2 Persons	3 Persons	4 Persons	5 Persons	6 Persons	7 Persons	8 Persons	9 Persons	10 Persons	11 Persons	12 Persons +	
WEST POKOT District - Urban													
Male ..	656	397	288	205	184	159	109	102	76	43	21	37	2,277
Female ..	186	131	151	141	99	72	54	33	25	14	9	19	934
Total ..	842	528	439	346	283	231	163	135	101	57	30	56	3,211
WESTERN Province													
Male ..	24,921	27,740	31,670	35,692	36,895	33,962	30,003	24,698	18,312	15,625	6,203	13,175	298,896
Female ..	20,362	21,020	25,779	27,754	26,252	22,354	17,044	11,630	7,449	5,360	1,927	3,209	190,140
Total ..	45,283	48,760	57,449	63,446	63,147	56,316	47,047	36,328	25,761	20,985	8,130	16,384	489,036
WESTERN Province - Rural													
Male ..	18,174	23,761	29,004	33,225	34,798	32,184	28,721	23,623	17,542	15,020	5,967	12,725	274,744
Female ..	18,222	19,476	24,282	26,388	25,146	21,478	16,388	11,236	7,176	5,186	1,857	3,097	180,032
Total ..	36,396	43,337	53,286	59,613	59,944	53,662	45,109	34,859	24,718	20,206	7,824	15,822	454,776
WESTERN Province - Urban													
Male ..	6,747	3,979	2,666	2,467	2,097	1,778	1,282	1,075	770	605	236	450	24,152
Female ..	2,140	1,444	1,497	1,366	1,106	876	656	394	273	174	70	112	10,108
Total ..	8,887	5,423	4,163	3,833	3,203	2,654	1,938	1,469	1,043	779	306	562	34,260
BUNGOMA District													
Male ..	6,264	6,866	8,799	9,895	10,206	9,524	8,729	7,489	5,899	5,480	2,122	5,656	86,929
Female ..	3,286	4,017	5,028	5,423	5,212	4,596	3,748	2,737	1,985	1,481	517	1,034	39,064
Total ..	9,550	10,883	13,827	15,318	15,418	14,120	12,477	10,226	7,884	6,961	2,639	6,690	125,993
BUNGOMA District - Rural													
Male ..	3,553	5,270	7,671	8,881	9,344	8,818	8,182	7,065	5,558	5,180	2,002	5,448	76,972
Female ..	2,488	3,470	4,485	4,923	4,836	4,293	3,487	2,586	1,885	1,417	490	986	35,346
Total ..	6,041	8,740	12,156	13,804	14,180	13,111	11,669	9,651	7,443	6,597	2,492	6,434	112,318
BUNGOMA District - Urban													
Male ..	2,711	1,596	1,128	1,014	862	706	547	424	341	300	120	208	9,957
Female ..	798	547	543	500	376	303	261	151	100	64	27	48	3,718
Total ..	3,509	2,143	1,671	1,514	1,238	1,009	808	575	441	364	147	256	13,675
BUSIA District													
Male ..	3,568	4,934	5,310	6,041	6,282	5,861	4,796	3,764	2,554	2,258	807	1,778	47,953
Female ..	4,468	4,382	5,189	5,364	4,862	3,722	2,697	1,699	1,020	829	261	499	34,992
Total ..	8,036	9,316	10,499	11,405	11,144	9,583	7,493	5,463	3,574	3,087	1,068	2,277	82,945
BUSIA District - Rural													
Male ..	2,604	4,282	4,847	5,608	5,900	5,512	4,589	3,588	2,430	2,144	776	1,686	43,966
Female ..	4,036	4,055	4,805	5,013	4,583	3,517	2,562	1,616	969	784	249	486	32,675
Total ..	6,640	8,337	9,652	10,621	10,483	9,029	7,151	5,204	3,399	2,928	1,025	2,172	76,641
BUSIA District - Urban													
Male ..	964	652	463	433	382	349	207	176	124	114	31	92	3,987
Female ..	432	327	384	351	279	205	135	83	51	45	12	13	2,317
Total ..	1,396	979	847	784	661	554	342	259	175	159	43	105	6,304
KAKAMEGA District													
Male ..	15,089	15,940	17,561	19,756	20,407	18,577	16,478	13,445	9,859	7,887	3,274	5,741	164,014
Female ..	12,608	12,621	15,562	16,967	16,178	14,036	10,599	7,194	4,444	3,050	1,149	1,676	116,084
Total ..	27,697	28,561	33,123	36,723	36,585	32,613	27,077	20,639	14,303	10,937	4,423	7,417	280,098
KAKAMEGA District - Rural													
Male ..	12,017	14,209	16,486	18,736	19,554	17,854	15,950	12,970	9,554	7,696	3,189	5,591	153,806
Female ..	11,698	12,051	14,992	16,452	15,727	13,668	10,339	7,034	4,322	2,985	1,118	1,625	112,011
Total ..	23,715	26,260	31,478	35,188	35,281	31,522	26,289	20,004	13,876	10,681	4,307	7,216	265,817
KAKAMEGA District - Urban													
Male ..	3,072	1,731	1,075	1,020	853	723	528	475	305	191	85	150	10,208
Female ..	910	570	570	515	451	368	260	160	122	65	31	51	4,073
Total ..	3,982	2,301	1,645	1,535	1,304	1,091	788	635	427	256	116	201	14,281

APPENDIX III

Detailed Percentage Distribution of Households by Tenure

PLACE	OWNER OCCUPIED	RENTAL ACCOMODATION						Total
		Government	Local Authority	Parastatal	Private Company	Individuals	Other	
Nairobi	13.4	5.5	6.3	4.0	4.5	60.7	5.6	100
Kiambu	59.0	1.7	1.4	1.3	9.1	23.9	3.6	100
Kirinyaga	85.0	1.6	0.3	1.0	0.8	9.3	2.0	100
Muranga	86.8	1.2	0.2	0.4	4.4	5.6	1.4	100
Nyandarua	75.9	3.1	0.9	0.4	1.3	14.7	3.7	100
Nyeri	79.9	2.6	0.5	0.5	1.7	12.0	2.8	100
Central	77.2	2.0	0.7	0.7	3.5	13.1	2.8	100
Kilifi	78.7	1.7	0.6	0.3	2.0	14.2	2.5	100
Kwale	87.7	1.6	0.3	0.2	2.3	6.6	1.3	100
Lamu	79.3	5.1	0.2	0.1	0.5	11.6	3.2	100
Mombasa	23.1	3.4	3.1	3.8	2.1	60.7	3.8	100
Taita Taveta	76.0	2.8	0.6	1.2	6.3	11.3	1.8	100
Tana River	74.5	4.5	0.2	2.8	1.5	7.9	8.6	100
Coast	69.9	3.1	0.8	1.4	2.4	18.6	3.8	100
Embu	84.0	2.3	0.2	0.4	1.0	10.9	1.2	100
Isiolo	71.8	5.9	0.8	0.1	1.5	16.0	3.9	100
Kitui	92.6	1.0	0.2	0.1	0.3	4.9	0.9	100
Machakos	87.1	1.2	0.2	0.7	1.1	8.4	1.3	100
Marsabit	87.6	2.8	0.1	0.4	0.4	5.6	3.1	100
Meru	90.3	0.9	0.2	0.3	0.7	6.3	1.3	100
Eastern	85.6	2.4	0.3	0.3	0.8	8.7	1.9	100
Garissa	78.4	4.6	0.5	0.2	0.5	12.7	3.1	100
Mandera	93.1	2.3	0.1	0.1	0.0	3.0	1.4	100
Wajir	94.0	2.9	0.2	0.1	0.1	2.1	0.6	100
North Eastern	88.5	3.3	0.3	0.1	0.2	5.9	1.7	100
Kisii	91.3	0.9	0.3	0.3	1.4	4.9	0.9	100
Kisumu	66.2	2.4	1.3	2.7	1.9	23.5	2.0	100
Siaya	92.7	0.7	0.2	0.1	0.3	5.2	0.8	100
South Nyanza	88.9	1.0	0.2	0.7	0.5	7.5	1.2	100
Nyanza	84.8	1.3	0.5	1.0	1.0	10.2	1.2	100
Baringo	84.9	2.8	0.4	0.6	1.0	8.5	1.8	100
E/Marakwet	89.8	2.5	0.4	0.8	1.4	4.1	1.0	100
Kajiado	69.5	2.5	0.5	0.8	3.5	19.3	3.9	100
Kericho	73.0	1.3	0.4	0.8	15.9	6.8	1.8	100
Laikipia	67.6	4.5	0.6	0.8	4.4	15.9	6.2	100
Nakuru	48.7	4.1	3.1	2.4	8.2	28.6	4.9	100
Nandi	76.6	1.3	0.4	0.6	12.5	7.2	1.4	100
Narok	84.2	1.8	0.5	0.1	1.6	8.9	2.9	100
Samburu	86.8	3.2	0.2	0.1	1.1	7.1	1.5	100
Trans Nzoia	67.5	3.1	2.1	3.6	2.4	16.6	4.7	100
Turkana	88.3	2.9	0.1	0.2	1.3	5.0	2.2	100
Uasin Gishu	56.1	2.6	3.0	2.1	4.5	28.9	2.8	100
West Pokot	87.4	2.1	0.2	0.2	2.7	6.0	1.4	100
Rift Valley	75.4	2.7	0.9	1.0	4.7	12.5	2.8	100
Bungoma	86.2	1.1	0.2	0.3	1.0	9.9	1.3	100
Busia	88.9	1.2	0.2	0.2	0.4	8.0	1.1	100
Kakamega	90.5	1.0	0.5	0.9	0.5	5.5	1.1	100
Western	88.5	1.1	0.3	0.5	0.6	7.8	1.2	100
Kenya	73.0	2.2	1.2	1.2	3.2	16.8	2.4	100

APPENDIX IV

ARRANGEMENT OF HOUSE RANK QUALITY INDICES IN ASCENDING ORDER

PLACE	INDEX
NAIROBI	1.57
MOMBASA	1.90
KIAMBU	2.74
NAKURU	3.06
CENTRAL	3.22
COAST	3.24
NYERI	3.29
UASIN GISHU	3.30
KIRINYAGA	3.40
KISUMU	3.45
LAMU	3.48
TAITA TAVETA	3.49
MURANGA	3.54
EMBU	3.58
NYANDARUA	3.60
MACHAKOS	3.61
MERU	3.75
LAIKIPIA	3.75
EASTERN	3.83
KILIFI	3.84
TRANS-NZOIA	3.84
BUNGOMA	3.85
KAJIADO	3.92
RIFT VALLEY	3.96
KERICHO	3.96
WESTERN	4.01
NANDI	4.02
KAKAMEGA	4.03
NYANZA	4.16
BUSIA	4.18
ISIOLO	4.22
KWALE	4.23
KISII	4.23
KITUI	4.30
SIAYA	4.37
BARINGO	4.43
ELGEYO MARAKWET	4.47
SOUTH NYANZA	4.47
TANA RIVER	4.56
WEST POKOT	4.58
GARISSA	4.65
TURKANA	4.79
NAROK	4.81
MARSABIT	4.81
NORTH EASTERN	4.91
WAJIR	4.91
SAMBURU	5.02
MANDERA	5.16
KENYA	3.60

APPENDIX V: DEFINITIONS

Main residential structure: This refers to the principal structure where most of the household activities, e.g. sleeping, cooking and eating, take place. They also encompass all main structures occupied by wives in a polygamous marriage. The term is used interchangeably with housing unit, dwelling, building and household. It is only main houses which were counted during the census.

Owner Occupied Housing: This refers to housing which is occupied by owners.

Purchased House: Means the house has been bought by the owner or is in the process of buying it.

Constructed House: Refers to a house which is built and occupied by the owner.

Inherited: Refers to a house which has been received by legal right of succession or by a will by the occupant.

Government Rented: Refers to housing rented by the government for occupation by civil servants.

Local Authority: Refers to all dwelling units rented by local authorities to occupants.

Private Company Rented: Refers to housing that has been rented to the occupant by a private firm.

Individual Rented: Refers to housing that has been rented by the occupant from a landlord or a landlady.

Other Form of Tenure: Includes unauthorized dwelling units.

Ponds: Refers to a small area of still water which normally collects after rain or from an underground drainage.

Dam: Refers to a reservoir formed by building a barrier across a river to hold back water and control.

Well: Refers to a man-made shaft dug in the ground from which water is obtained using buckets.

Borehole: Same as the well but much deeper than it and a pump is used for drawing the water into a tank, buckets etc.

Jabias: Refers to rain water harvested from any catchment into a hole/tank and used for domestic purpose.

Main Sewer: Refers to a situation where the sewage liquid waste from the structure is drained by pipes into a main tank of the estate.

Septic Tank: This is a tank into which sewage is conveyed and remains there until the activity of bacteria liquifies it enough to drain away.

Bucket Latrine: This is a bucket placed in a residential area used for human excreta.

Cess Pool: This is a pool into which liquid waste from the dwelling units is drained.

Household: This consists of a person or a group of persons who live together in the same dwelling unit or homestead and eat together. It may consist of one or more persons and may occupy a whole building or part of a building or many buildings in the same compound.

Non-Durable Floor: Any floor which is made of earth, timber or such other material which is considered to be permanent by the Building code.

Durable Wall: Any wall which is made of such permanent materials as bricks, concrete and blocks.

Durable Roof: Any roof which is not made of such undurable materials as tin, grass, makuti, polythene paper and cartons.

Appendix VI: Main Contributors to Census Analytical Reports

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