TITLE

AN ASSESSMENT OF HOUSING CONDITIONS IN RURAL KENYA : THE CASE OF MURANG'A DISTRICT .

BY

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DECLARATION

This thesis is my own original work. It has not been presented for a degree in any other University.

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ABSTRACT

This study on rural housing in Muranga'a District had a three-fold purpose:-to look into the historical development of housing from the traditional (since the advent of colonialism), to the present and the circumstances surrounding this development;to assess the present quality of housing and to investigate the socio-economic variables that influence the present quality of houses

Underlying the study were two premises i.e (i) There have been changes over time in housing from the traditional (since the dawn of colonialism) to the modern in the study area.(ii) There exists a marked degree of variability in rural housing conditions in Murang'a District.

There were also two hypotheses viz : There is no significant relationship between the housing conditions and the social factors in the study area (ii) There is no significant relationship between the housing conditions in the study area and the economic variables.

Data were collected from both primary and secondary sources to address the issues above. Secondary sources were mainly historical and archival materials collected on the historical changes in housing and other related aspects. Primary data were solicited using a questionnaire, aimed at providing data on socio-economic characteristics of households and housing quality. Data processing and analysis utilized techniques such as computations of averages, percentages, frequencies, correlations, cartographic and diagramatic representations.

The major findings of this study can be summarized as follows: (a) there have been changes from the traditional housing due mainly to colonialism and the subsequent changes such as villagization, consolidation and registration of land, introduction of cash crops and monetary economy, among others. (b) there exists a marked degree of variability in housing conditions between and within the various sub-areas of the district. This variation was found to be in terms of the types and conditons of building materials and the availability of amenities.

A statistical analysis using the Pearson's correlation analysis and the chi-square model exposed the socio-economic variables which influence the quality of houses in the area. These variables include the educational attainment, income level and the employment status of household heads. Others include how the farm was acquired and the nature of land tenure in terms of whether one has a title deed or not to his/her farm.

In view of the above findings, recommendations have been made with a view to alleviating the rural housing problems in Murang'a District. Some suggestions for further research have also been proposed.

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ORGANIZATION OF THE THESIS

The first chapter is an introduction consisting of the statement of the problem, objectives, hypothesis/premises, justification for the study, the study area, scope and limitation and finally the operational defination of terms.

The second chapter reviews related literature and the theoretical framework while chapter three deals with the research methodology. Chapter four focuses on the changes in housing over time. It is followed by the fifth chapter that deals with the rural housing conditions in the study area when the research was done.

Chapter six comprises the socio-economic variables influencing the rural housing conditions in Murang'a while the last chapter (seven) is a presentation of the summary, conclusion and recommendations of the study.

CHAPTER ONE:

1.0 STATEMENT OF THE PROBLEM

Housing conditions in the rural areas of Kenya, like in many other developing countries are poor in many respects. Most of the houses are constructed using unimproved traditional materials such as wattle and mud for wall and thatch for roof (Sterkenburg 1990;142).Houses built of such building materials have been shown to be of inferior hygienic standards, limited size and short-lived (Hanson:1973).

Most of these houses also lack basic amenities like toilets, bathrooms, clean portable water and electricity (Sterkenburg: 1990). Adequate supply of clean and safe drinking water and hygienic sanitation are fundamental to survival and good health of the people. Electricity on the other hand offers an alternative non-pollutant source of energy; besides saving on the rather diminishing woodfuel resources (Kenya 1985:52).

Inspite of the goal of the government to improve the quality of rural housing, a large proportion of the rural population in Kenya live in the aforementioned poor housing conditions (Olima, 1986), Beninum (1985), Sterkenburg (1979, 1981, 1984, 1986, 1988,) Hinderink, (1987), Kiamba (1991a, 1991b). It is actually estimated that about 1500 sub-standard houses are built in the rural areas of Kenya every week, thus a total of 78,000 houses per year (Gospal,1987).

In empirical research and policy formulation, urban housing has suprisingly received much more attention than rural housing (Olima 1986), Kisovi, (1984), Beinum (1985), Kiamba (1991b). Furthermore, studies done on rural housing have focused attention only on certain aspects. They have emphasised, for instance, the construction aspect, especially form (style and building materials), [(Andersen (1978), Bullock (1979), Kisovi (1984)]. They lack a comprehensive assessment of the totality of the built form of the rural house. For example, they have overlooked an evaluation of the essential elements of housing such as the provision of amenities like water, electricity supply, kitchen and sanitary facilities. Lack of research in these important aspects of rural housing, among others, is apparently lacking.

Another important omission, quite apparent in studies of rural housing is the historical investigation to establish which changes have occurred since the establishment of European settlements in the area todate and the factors which facilitated the changes as well as those which continue to bring about disparities in rural housing conditions within and between areas and especially at the district level. In particular, Murang'a District has received relatively less attention in regard to built forms of human settlements.

The study thus sort to examine the past and present status of rural housing conditions in the district. The study also aimed at determining the socio-economic factors that affect these housing conditions in terms of building materials ie house types.

The specific research questions that constitute the study are:

(i) What are the changes which have taken place over time (since the advent of colonialism todate) in rural housing in the study area and what could have caused such changes?

(ii) What are the present status of rural housing conditions in the district?.

(iii) Which socio-economic variables are responsible for the spatial variation in rural housing conditions in the study area,in terms of house types, as per the building materials?.

1.1 OBJECTIVES OF THE STUDY

1.1.0 General Objectives:

To provide insight into the differentiation of the present state of rural housing conditions in Murang'a District; to identify the factors influencing the housing conditions and to make suggestions for the improvement of these conditions.

1.1.1 Specific objectives

(i) To trace over time, the changes in housing conditions in the district,especially changes in traditional house type and the factors which might have been responsible for such changes.

(ii) To study the rural housing conditions in the study area from the viewpoint of structural differentiation and

building materials.

(iii) To analyse the current rural housing conditions in the district in terms of building materials and the maintainance level of such materials, the availability of facilities and amenities such as kitchen, bathroom, toilets, water and electricity supply.

(iv) To determine the socio-economic factors that are responsible for the differences in housing conditions in terms of building materials, (factors such as age, sex, and educational attainment of the household head, household income, size of the farm and others are used in this study). Research in other areas has empirically demostrated that these factors are, to a large extent, responsible for rural housing variations.

1.2 RESEARCH HYPOTHESES AND PREMISES:

1.2.1 Research premises

(i) There have been changes over time in housing from the traditional to the modern in the study area that is, since the advent of colonialism todate.

(ii) There exists a marked degree of variability in rural housing conditions in Murang'a District.

1.2.2 Research Hypotheses

(i) There is no significant relationship between the existing housing conditions in terms of building materials, and the social factors such as sex, age, marital status, and the educational attainment of the household head and the size of the household in the study area.

(ii) There is no significant relationship between the housing conditions in the study area and the economic variables such as household income, occupation of the household head,and size of the farm.

1.3 SCOPE AND LIMITATION OF THE STUDY

The study is confined to the rural areas of Murang'a District of Central Province, Kenya. An attempt has been made to trace the origin, settlement and territorial organisation of the people. This has been done with a view to providing background information on the peoples' way of life including their traditional housing.

The changes from the traditional housing (at the advent of colonialism) to the present housing and the possible causes of such changes have also been visited. These changes are in such aspects as the materials used for construction and the design of the houses among others.

Some of the emphasis of the study have also centred around the present housing conditions in terms of house-types as per the materials used for construction and the maintainance conditions

of such materials other aspects are the design of the houses and the availability of such amenities as kitchens, adequate supply of safe drinking water and hygienic sanitation. Focus has also been on the socio-economic factors that lead to different house-types in terms of building materials in the study area.

The forest zone and the houses therein, housing in the urban areas of the district and institutional housing such as houses provided by government ministries, schools, churches etc have been excluded from the study. This is because their construction and maintainance do not involve a household's decisions and resources.

1.4 DEFINITION OF TERMS

1.4.1 HOUSEHOLD: In the Integrated Rural Survey (1976 - 1979), a household is defined as comprising of a person or group of persons generally bound by ties of kinship who normally reside together under a single roof or under several roofs within a single compound and who share a common source of food, (Kenya, 1981).

In this study, the definition above is used and co-wives of polygamous unions living within a single compound are included in the same house-hold as their husbands, regardless of the cooking arrangements.

1.4.2 HEAD OF HOUSEHOLD: The senior member of the household residing in the household's homestead or returning at frequent intervals. He/she makes ultimate decisions concerning the

expenditure of the household income and/or the agricultural and other economic activities.'

1.4.3 FARM-SIZE: The total acreage of land used for agricultural purposes. This includes individual grazing land, fallow, forest and land rented from others. Excludes communal land and land rented to others.

1.4.4 HOUSING CONDITIONS:

Constitute various components viz: house-type in terms of building material - whether temporary (traditional materials), semi - permanent (transitional materials) or permanent (modern materials). These conditions also include the availability of such amenties and facilities as toilets, kitchen, bathroom, water and the supply of electricity.

1.4.5 SOCIO-ECONOMIC FACTORS: These are defined as those sociological and economic aspects attributed to man and his environment such as the head of the household's age, sex, marital status and educational attainment, farm size, income level and number of members of the household, among others.

1.4.6 MAIN SOURCE OF WATER SUPPLY:

This is the source of water used during the most part of the year by the household.

1.4.7 SEPARATE KITCHEN

A structure on the homestead where meals are prepared.

1.4.8 TOTAL HOUSEHOLD INCOME: This is the sum of farm income, off-farm income and the remittances of all household members.

1.5 STUDY AREA

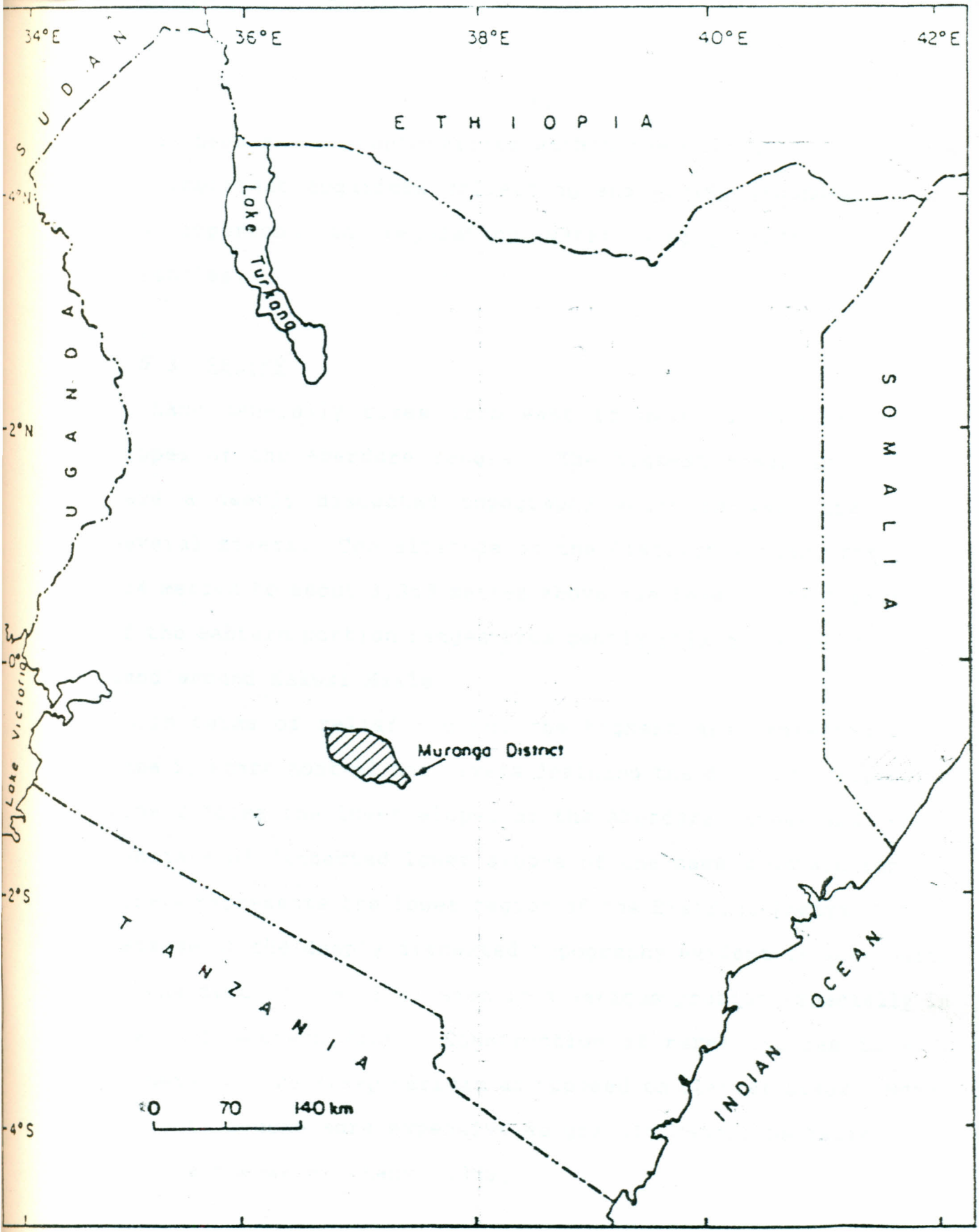
1.5.1 LOCATION:

The study was carried out in Muranga District. The district is situated in the Central Province, Kenya (Fig. 1). It has an area of about 2476 square kilometres and lies 0^0 34's and 1^0 07's and between 36^0 E and 37^0 27'E (Kenya 1989). It is bordered to the north by Nyeri District, Kiambu District to the south, Kirinyaga, Embu and Machakos Districts to the west (Muranga District Development Plan).

1.5.2 GEOLOGY:

The geology of the district consists of volcanic rocks of pleistocene period, Tertiary rocks and basement rocks of the Archean type. Volcanic rocks occupy the western part of the district bordering Aberdare ranges, while rocks of the basement system occupy the eastern portion of the district.

The volcanic accumulations originated from the Rift Valley and Mt Kenya, the earliest of them, the phonolites, flowed from the west during the Miocene period. These were subsequently covered by deposits of ash and basalt. Further extrusion of phonolites as well as trachyte and basalt originated from Mt Kenya during the tertiary and pleistocene periods. Soils emanating from the volcanic activity are rich in humus and generally fertile and are thus important for agriculture.



FIG·1 : LOCATION OF STUDY AREA IN KENYA·

Porus beds and disconformities within the volcanic rocks system are important acquifers collecting and moving ground-water and are important in regulating water supply from wells and boreholes.

1.5.3 RELIEF

Land generally rises from east to west culminating in the slopes of the Aberdare ranges. The highest areas in the west have a deeply dissected topography which is well drained by several rivers. The altitude of the District varies from about 914 metres to about 3,353 metres above sea level. The topography of the eastern portion ranges from gently rolling relief to level land around Kakuzi Hills.

In terms of relief region, the highest area referred to as zone 1, where most of the rivers draining the district originate. Zone 2 forms the lower slopes of the Aberdare ranges and zone 3 consists of dissected lower slopes of the same mountain ranges. Zone 4 represents the lower region of the District (Kenya, 1989). Because of the deeply dissected topography evident in most parts of the district, soil erosion is a serious problem especially in the high western Zone. Construction of rural centres is also hampered by the steep terrain as opposed to flatter areas. Water projects become more expensive as gravity cannot be relied upon to move the water (Kenya 1989).

1.5.4 SOILS

Generally, the soils developed from volcanic rocks in the western and northern parts of the district are richer and deeper

than those developed over the rocks of the basement complex in the south eastern part. The soils of the basement complex are poor and shallower and have a low humus content.

Soil erosion is high and its extent is evidenced by the siltation of the Tana River and the dams downstream. Soil degradation and loss in the district is largely due to erosion by running water, rainfall and earth movements. Another reason is over cultivation due to land pressure especially in the high and medium potential zones/areas. Soil erosion is also aggravated by overgrazing, deforestation, by bush burning and clearing and cultivation of marginal areas without soil erosion control measures. Erosion is most in the steep slopes (grain/coffee zones) and least serious in the marginal areas in the soth-west except Kakuzi/Ithanga where a combination of agricultural and topography aggrevate the situation.

1.5.5 CLIMATE, AGRICUTURAL POTENTIAL AND POPULATION DENSITY

The district can broadly be divided into three climatic regions: The western portion with an equatorial climate; the central region with a sub-tropical climate and the eastern part having semi-arid conditions. These zones correspond to agro-ecological zones in the district.

There are two main rainy seasons caused by the movement of the Inter-Tropical Convergence Zone (I.T.C.Z) of the Southern and Northern airmasses. The first one is the short rains (October/November), and the second in the long rainy season (March/May), although another season, the 'Gathano' (mainly in the upper zone) overlaps with the long rains. The amount of

rainfall is largely dictated by relief.

The district can also be divided into temperature zones which also correspond with the agro - ecological zones. In the eastern side, the mean maximum temperature are 26^0 C - 30^0 while the mean minimum annual temperatures are 14^0c - 18^0c. In the west, minimum annual temperatures are 6^0 c or below and the mean maximum temperatures are 18^0c and less. The central area is midway between the two.

Agricultural potential decreases from the north-western to the south-western side of the district. Agriculture is the backbone of the economy with over 98 per cent of the families deriving their livelihood from it. Income levels and their distributions also follow agricultural potential zones (Kenya, 1989), thus land plays a vital role in the district's economy.

Much of the district is very densely populated and the district has the fourth highest population density in the country (Kenya,1989).

Having given a general introductior of the reseach study, we can now move on and review the literature related to this work.

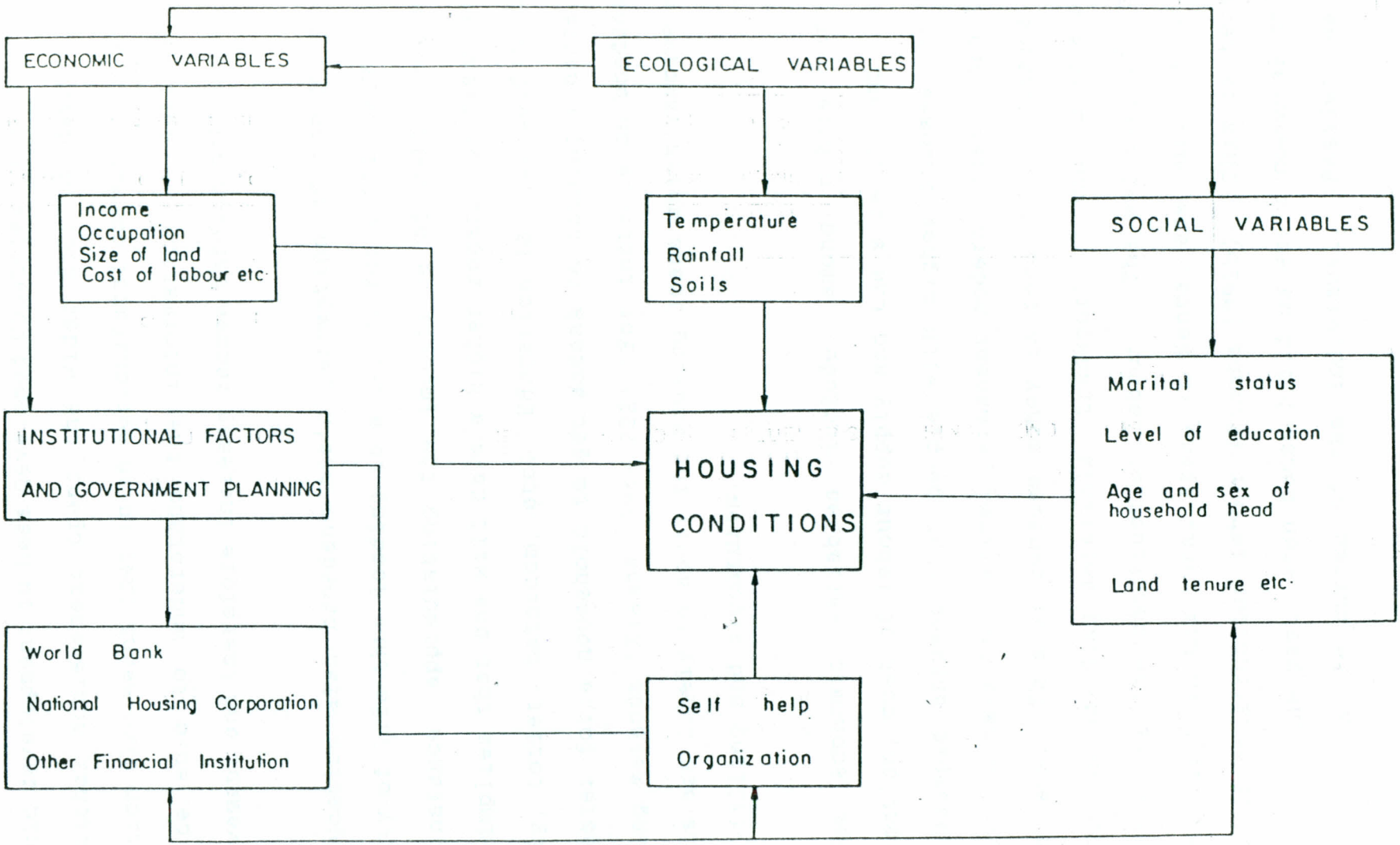
CHAPTER TWO: LITERATURE REVIEW

2.1 THEORETICAL FRAMEWORK:

Changes in housing conditions are normally reflections of the socio-economic alternations in a society (Kisovi:1984). Theoretical contributions to be considered here are therefore the elements related to social changes and the associated factors. Smith (1976) defines social changes as a modification or replacement of particular patterns or units by other noble ones. Macleaver (1924) defines social changes as`progress'. Progress here implies reduction of regional inequalities and social disparities, as well as advance in standards of human purpose, health, education, literacy, housing, transport etc. Olima (1986) also observes that the housing problem which exists in the rural areas in Kenya is becoming recognized as both social and economic in nature.

This research thus examines social change in terms of changes in housing conditions as dictated by the social, economic and institutional factors of the study area. A conceptual framework was constructed to show how the interplay of various factors lead to different housing conditions (Figure 2.1).

Social factors include age, sex, marital status and education achievement of the household head and the size of the household. It is, for instance, assumed that the higher the educational achievement of a person, the better the house he is likely to



Source: Adopted and modified from Kisovi (1984)

FIG 2: A SIMPLIFIED CONCEPTUAL FRAMEWORK OF INTEGRATED FACTORS INFLUENCING HOUSING CONDITIONS

construct. Education has been seen as an indicator of socio-econonic development in Less Developed Countries (Kiamba 1991a). Educational achievement opens the wider door of development. Education also means that in an agricultural community, a person will be able to understand the information on agricultural improvement and therefore increase income through better yields.

Education also broadens one's perception of improving the quality of life thus leading to a desire for better housing by, for instance, appreciating the importance of better hygiene. This implies that one will have a higher regard for clean water supply, toilet, bathroom, etc. Education is also said to make it easier for a household to get access to housing finance and housing methods (Kiamba 1991a:222). For instance an uneducated people are likely to apply for housing loans which involve much form-filling and signatures.

The economic variables include, among others, income, occupation, cost of labour supply and the size of land. It is for example assumed that people with higher incomes are more likely to have the desired permanent/modern houses than those with less. This is because money is required to finance such things as building materials, transport of the materials and payment for the construction labour. The majority of houses being built in the rural areas in Kenya, are built using some form of construction labour (Kiamba:1991b). This is because, unlike in the past, when house building was a communal affair, today it is the burden of the individual. Besides, as more

people build their houses using more modern and intermediate materials, traditional building skills are being replaced by trained builders/contructors. Since not everybody in a community can belong to one career (say construction), more and more people will be expected to hire some form of labour for house construction.

Besides, modern/permanent building materials are more costly than traditional/temporary materials. For example, such roofing materials like tiles are more costly than thatch. Mud and wattle walls are also cheaper to construct than walls constructed using such modern materials like quarry stones or cement blocks. This is because the permanent materials will demand more in terms of transport costs, labour requirements, and the actual cost of these materials. Modern materials are usually much more costly because of high industrialization and the fact that some raw materials are imported. At the same time, the construction of the house, and the maintenance or improvement of its condition may require some funds because with time, houses tend to deteriorate thus require frequent repairs and/or replacements.

It may also however, be worthwhile to note that the income levels of a household at a given point in time may not be a very accurate measure of the influence of income on the level of housing conditions. "An important determinant of housing conditions is the stability of monetary income over long periods of time" (Sterkenburg 1990 :141). This income stability is influenced by the number and variety of income sources, the range

of crops cultivated, the security of food production for household consumption and the nature of the non-farm employment. Permanent off-farm employment of the household head or one of its members often creates income from which a household's most pressing needs can be paid. The relationship between household income and housing conditions may be weakened by several factors at the level of individual households such as the priority for good housing conditions and the security of tenure (Sterkenburg: 1990).

First, the larger households with a high number of dependants experience higher expenditure on food, clothing and especially education. As a result, the amount remaining for housing improvement is less. Secondly, a household may attach a higher priority to good housing and spend a high proportion of their incomes on it and/or carry out proper maintainance. Alternatively, they may give preference to expenditure on other items either luxury or consumer goods or productive investment of various kinds. Sterkenburg (1990), for instance, found out that in the settlement schemes in Nakuru District, the length of period that settlers lived in the new area of residence appeared to have influence on housing conditions as new settlers gave priority to direct productive investment before expanding and improving their houses. Besides, it is possible that households may find nothing wrong in their housing. Daily Nation (1985:28) indicates that it is a fact that some rich people in the rural areas have not used their wealth to put up decent houses and instead put up good corrugated iron roofed garages for their cars

while they themselves live in grass thatched huts.

Sometimes, sudden calamities such as illness or death of a relative necessitates the diversion of money from building purposes. Because of this, households of similar size and income levels may differ with respect to housing conditions.

Finally, it is also assumed here that the relationship between income and housing is affected by a time perspective, ie, high incomes in the past, for example from paid labour, may have been invested in housing improvement and consequently the present low income may coincide with a relatively good housing situation.

Land in this case is also considered to be an important determinant of housing conditions in terms of the size of the holding and the nature of tenure. Murang'a District being the fourth most densely populated district in Kenya, together with the fact that 98 percent of the rural households depend on agriculture for their livelihood (Kenya 1989), makes the above arguement more valid. Thus it will most likely follow that the larger the household's holding, the more agricultural products got and presumably the more the income. Income has already been found to have a bearing on housing conditions. In addition, households may be hesistant to improve on their housing situation because of lack of security of tenure on farm land (Sterkenberg 1990). Such a household may also hesitate to develop and improve such land by for instance, planting cash crops (perennial) like coffee or tea. This may have some bearing on the income of the

household and subsequently, again, its housing situation.

It has also been found that the occupation of the head of household may also influence housing conditions. Kisovi(1984) found that occupation have some influence on the housing conditions. This study thus assumes that the occupation of the head of the household will influence the housing conditions of household. Occupation is closely related to the level of education in that the more educated one is, the more he\she is likely to be employed in the formal sector of the economy and presumably earn higher incomes.

Institutional variables and government planning will influence housing conditions especially the provision of clean and safe drinking water and electricity. A Rural Housing Loan Scheme (RHLS) was started in 1967 by the Kenya Government with the objective of assisting poor rural households in the improvement of their houses. This is done by making loans available through the National Housing Corporation (NHC) which is responsible for the implementation of government housing programme. Researchers such as Kiamba (1991a) and Olima (1986) have indicated that the loan scheme has missed the target group due to restrictive loan conditions, lack of resources, weaknesses in the organization of the scheme and the demand that permanent conventional materials be used. The scheme thus has been found to benefit mainly the working (employed) population who are a negligible minority in the rural areas (Kisovi 1984).

The ecological factors determine the agricultural potential and since 98 percent of the families in the study area depend on agriculture for their livelihood, (income levels and distribution follow the agricultural potential zones), these variables are assumed to be manifested in the economic variables.

2.2 OPERATIONAL FRAMEWORK

Numerous studies on housing conditions in urban and rural areas have been carried out in Kenya and elsewhere in the world.

Onibokun (1986) looked at the housing problems facing the rural areas of Nigeria and pointed out that in the northern part of Nigeria, no electricity was available and people rely on locally available sources of energy.

In the south, only 23.8 percent of the houses had electricity, 22.3 percent tapped water, 17.6 percent untreated water from streams. He also found out that the majority of the rural houses in Nigeria had been built using unimproved traditional materials. Also lacking were good toilets and bathrooms, proper cooking spaces and adequate and efficient refuse disposal facilities. Onibokun recommended that large allocation of funds need to be made to the rural areas to correct specific regional imbalances in the rural needs. He also called for a policy change in favour of rural areas.

The above research dwelt in details on the quality of housing in the rural areas of Nigeria. However, the factors that led to the poor conditions observed were not being looked into. The present study by looking at the socio-economic variables determining the differentials in housing will attempt to fill this apparent gap.

Hanson, (1973) studied the rural housing in the Eastern plateau of Ethiopia, and found out that the traditional hut was becoming inconvinient for the changed conditions. It's main drawbacks being inferior hygienic conditions, limited size and small duration. She further noted that the traditional materials are becoming scarce. The new house type, the tin-roofed house, expressed the desire for an improved housing standard, but did not function satisfactorily regarding the layout plan and construction. She noted that the corrugated-iron for roofing had not been accompanied with an outlet for smoke, thus causing serious problems with cooking and heating. Since the tin-roofed house did not include a ceiling, the house became hot in day time and cold at night. As a recommedation to this, Hanson came up with designs of farm houses suited to this area.

Schreckenbach and Abankwa (1983) present information essential to building designers through comprehensive text and exquisite drawings and put it in context. The variations in climate and hence in the living habits of the people in the tropical zone is made clear.

The book also describes traditional solutions to construction problems and illustrates the positive and negative aspects of these techniques. It also provides a comprehensive range of alternative solutions, covering modern traditional materials where appropriate. The above two studies (Hanson 1973) and Schneckenbach and Abankwa (1983) give important insights in evaluating and giving recommendations on the rural housing in the study area.

UNCHS (1989) looks at Malawi Gravity water supply programme. This is a case-study documenting how one rural water-supply programme, the Malawi-Rural Gravity-fed piped-water supply programme has been the most successful rural water supply programme in the country. Its success has been measured by the degree to which water delivery system is operational. A historical account of Malawi's water supply problem is also given.

The success of the programme was found to be mainly because of the involvement of the users in the planning, execution, operation and maintenance of their water supply system. Other factors which contributed to its success but were found not to be easily replicable include geography, political organisation and stability, lack of corruption and the availability and cost of materials. This study deals with one of the important amenities (water), which together with other amenities, influence the rural housing quality. It offers important guidelines on how such a programme can be initiated and run. However, it does not

deal with other aspects of housing such as the quality of the house itself. By looking at housing from a more comprehensive perspective, this study hopes to fill this gap.

Anderson (1977) in his study on housing and settlement patterns in small areas reveals enormous variety of traditional housing forms and methods in Kenya, both types of houses (building materials used) and types of settlement patterns are dealt with. He argues that the type of building is strongly influenced by the materials prevailing in the area, the climatic conditions and the nature of production activities.

Anderson also found out that settlement patterns is strongly determined by the need for production activities and type of adaptation to the natural environment. Anderson's study focuses on a detailed description of traditional architecture but pays marginal attention to recent changes in housing conditions including the availability of amenities. The present study will consider these overlooked aspects in the rural areas of Muranga District.

Babu (1989) deals with an analysis of the forces behind Kikuyu traditional architecture and its developments in time perspective. It starts with a historical background dealing with settlement of the Kikuyu in Kenya. He then looks at the social organizations of the Kikuyu community such as inter-family, intra-family, clan and communal level. He also deals with the

occupation pattern of the Kikuyu including their mode of livelihood, division of labour, and social institutions and their impact on the traditional architecture.

Babu also describes the built forms in a traditional set up such as huts, cattle kraals, nature of materials and the techniques applied in construction. He also investigates the conscious and unconscious involvement of elements supposed to let architecture adopt itself to the existing climate as for instance, temperature, rainfall and relative humidity. Finally, he dwells on the changes in traditional architecture as a result of changed lifestyles imposed by colonialism and the subsequent involvements by the development of the nation. This study gives important insight into the changes in housing in the study area since most of the people in the study area belong to the Kikuyu ethnic community. However, this study does not look into the housing conditions then, and the factors that influenced such conditions. The present study attempts to bridge this gap by focussing on such aspects as the present rural housing quality and the socio-economic factors influencing this quality.

Bullock (1979) examined the changes that were taking place in housing in Kiambu District, Kenya. He also explored the factors facilitating the rapid change which had occurred since the institution of land consolidation in the 1950s. He noted changes in architecture and materials used and attributed the rapidity of these changes to the resettlement and rebuilding on the newly consolidated land holdings between 1956 and 1959

period.

Kisovi (1984), investigated the influence of socio-economic variables on the spatial and structural patterns of rural houses in Ukambani, Kenya. His analysis indicated that there was a relationship between socio-economic inequalities and the house types in the study area. Permanent houses were most prevalent near the district headquarters and the main rural centres (distance decay function)

He also noted that the socio-economic variables had created large disparities in housing, undesirable temporary grass thatched houses for the disadvantaged Akamba people among the galvanized iron, cement-stone structural units for the well-to-do. He recommended that the principles of social justice in allocation of social benefits like housing should ensure the interests and needs of the least fortunate Kenyans are also looked into. These two studies [Kisovi (1984) and Bullock (1979)], dwelt mainly on the house-types in terms of building materials the maintainance condition of such materials and downplayed the importance of amenities such as toilets, bathrooms, water and electricity supply which the present study will pay attention to.

Kiamba (1991b) examines the extent of the poor quality of rural housing in the Third World. He points out the poor physical quality of the housing structures, the lack of emenities such as water, toilets and electricity. The lack of community

facilities such as schools and hospitals is also exposed. The housing deficiencies are analysed as they relate to the Developing Countries and Kenya in particular.

Some of the reasons which lead to the poor state of rural housing are discussed. They include low incomes, lack of finance, lack of building materials and skills and the high population growth rates. Recommendations are made on how to alleviate the problem through the improvements of the existing rural housing delivery system. Kiamba (1991b) does not however dwell on the historical development of housing in the areas he has discussed. The present study will touch on this omitted aspect.

Malombe (1986) discusses housing in Ahero and West Kano irrigation schemes in Kisumu District, Kenya. The study reviews housing conditions for the tenants before and after the inception of the schemes using two case studies. The report identifies and discusses the major problems of housing development in irrigation schemes. Recommendations for planning and improvement of housing in irrigation schemes are given.

The report concludes that successful development of housing in irrigation schemes has to take into account the people's way of life. This would in turn influence the overall success of irrigation schemes in Kenya. The above study has similar objectives with the present one in that it looks at the background to the present housing conditions and identifies and

discusses the problems of providing housing before giving recommendations.

Olima (1986) examines the rural housing provision in Siaya District, Kenya, by focussing on the problems of providing decent housing in the light of the locally available building materials used, sizes of house, architectural style and quality in the sub-areas of Siaya. Like the above study, the present study attempts to establish the quality of housing and the factors that determine that quality.

Kiamba (1991a) looked at the effectiveness of the Rural Housing Loan Scheme (R.H.L.S) in Machakos District, Kenya. He attempted to understand the existing level of housing quality among the rural households and how R.H.L.S has helped them. It was found out that the loan scheme had missed the target due mainly to restrictive loan conditions. Other problems cited include the lack of resources and weakness in the organization of the scheme; and also the demand that permanent conventional materials be used. This demand made the house construction too expensive for the intended beneficiaries.

Kiamba recommended that a more pragmatic approach to housing such as the setting-up of a specific department responsible for coordinating rural housing policy and the need for decentralization of the implementing body (National Housing Corporation). The need for development and popularization of improved building materials has also been emphasised. Kiamba has

dwelt extensively on the conditions of houses and the problems encountered in the provision of decent houses. The provision of electricity is however not looked into in his study. The present study will include this amenity.

Sterkenburg (1978, 1981, 1982, 1983, 1984, 1986, 1988) has availed information on rural housing conditions in Kiambu, Kisii, Kisumu, Kakamega, Nakuru, Meru and Machakos Districts respectively. By carrying out surveys in each of the districts, he comes up with reports which reveal that housing conditions here are influenced by factors such as variation in natural environment, the cultural setting comprising the attitude towards housing and the available craftmanship; high population densities, the organization of agricultural production and related degree of commercialization; economic situation especially the income conditions of the population particularly farm size, types of soils and available building materials and the government policy especially with respect to amenities and services.

The above studies by Sterkenburg reveal that housing conditions in the rural areas of these districts are poor in many respects, houses are often made of non-durable building materials and quickly deteriorate in quality, they lack essential amenities such as kitchen, toilet, bathing facilities and good quality drinking water. Other similar studies have been carried out by Beinum (1985) and Hinderink (1987) in Kwale and Nyeri Districts respectively. The present study is intended to augment the data

availed by the above studies by focussing on the housing conditions of the rural areas of Murang'a District.

From the preceding literature review, it is apparent that most of the studies done here concentrated on certain aspects of housing, leaving out others. This study hopes to contribute towards the alleviation of this anomaly.

2.3 JUSTIFICATION FOR THE STUDY

The identification of housing problems can be done by observing the gap between the actual housing conditions and the desired state of housing, consistent with the country's National Development objectives (Olima 1986). The desired state of housing in Kenya is contained in the National Development plans which, since 1970 have stressed the importance of housing improving people's living standards and raising the national economic performance. In 1970, for example, the government declared that :

> "The prime objective of the government policy is to move towards a situation in Kenya where every family will live in a decent house, whether privately built or state sponsored, which provides at least the basic standards of health and privacy and security" (Kenya, 1970:51).

In the housing policy, the Kenya government considers this decent house as of having a minimum of two habitable rooms, constructed of permanent materials with separate kitchen and basic sanitary facilities such as toilet and shower compartments. It is also the intention of the government that all households be supplied with piped water come the year 2000. The supply of

electricity to all household is also a priority of the government. The rural electrification programme though stalled today, had been initiated to meet this target.

In general the Government of Kenya recognizes housing as a basic need whose construction and improvement contribute both directly and indirectly to employment and output (Kenya,1979). However,it has been observed that shelter development has been considered from a consumption rather than a production perspective thus has generally been relegated to the bottom end of rural development priorities, (UNHCS(1991;Olima 1986). Practice has however shown that, housing improvement programmes, including the provision of community facilities, promote the establishment of a construction industry, increase labour requirements and the range of skills required in employment. Such programmes also help to develop related industries that are concerned with the supply of building materials and the manufacture of small components in wood and metal and the supply of home furnishings.

The need for this study arises because most studies in housing have mainly concentrated on urban areas and little has been done on rural areas [Sterkenburg (1986, 1988, 1990), Beinum (1985), Kisovi (1984), Olima (1986), Kiamba (1991 a), (1991 b)]. This gap in knowledge mean that policy makers are likely to fail in their duties as they cannot provide necessary advice regarding provision of housing in the rural areas. Data from this study will hopefully be useful to rural housing research especially with regard to the Kenya Government's policy of District Focus

For Rural Development.

In developing countries like Kenya, there is need to establish suitable and reasonably detailed data for factors affecting the provison of rural housing. There is therefore a need to undertake studies that would look into the rationale of government intervention through policy measures and providing assesment in order to alleviate rural-urban drift.

The study also hopes to make some contribution to the knowledge of rural housing in Kenya and the Third world in general and suggest policy changes that would help solve the problem. The recommendations made will hopefully be useful to the government in formulating suitable strategies for dealing with the problems of rural housing.It is also hoped that the study will provide a useful base to the people of Murang'a District in making wiser decisions for improving the conditions of their houses.

CHAPTER 3 RESEARCH METHODOLOGY

3.0 INTRODUCTION

This chapter deals with a detailed research design used in this study. A number of themes are dealt with viz; sampling, methods of data collection and methods of data processing and analysis.

3.1.0 DATA COLLECTION

Basically, there were two types of data that were collected in this study namely, secondary data and primary data from the field survey.

3.1.1 SECONDARY DATA

This study began by a broad review of documents focussing on shelter. This initial review facilitated fomulation of questions that could not be answered by existing literature, leading to the crystallization of objectives and what the study set to achieve.

The evolution of settlements and territorial organisation in the district were traced by review of historical and archival materials. The historical development of housing from the traditional to the present and the factors that facilitated it were discerned. This was done in such institutions as Kenyatta University, Nairobi University, Central Bureau of statistics and

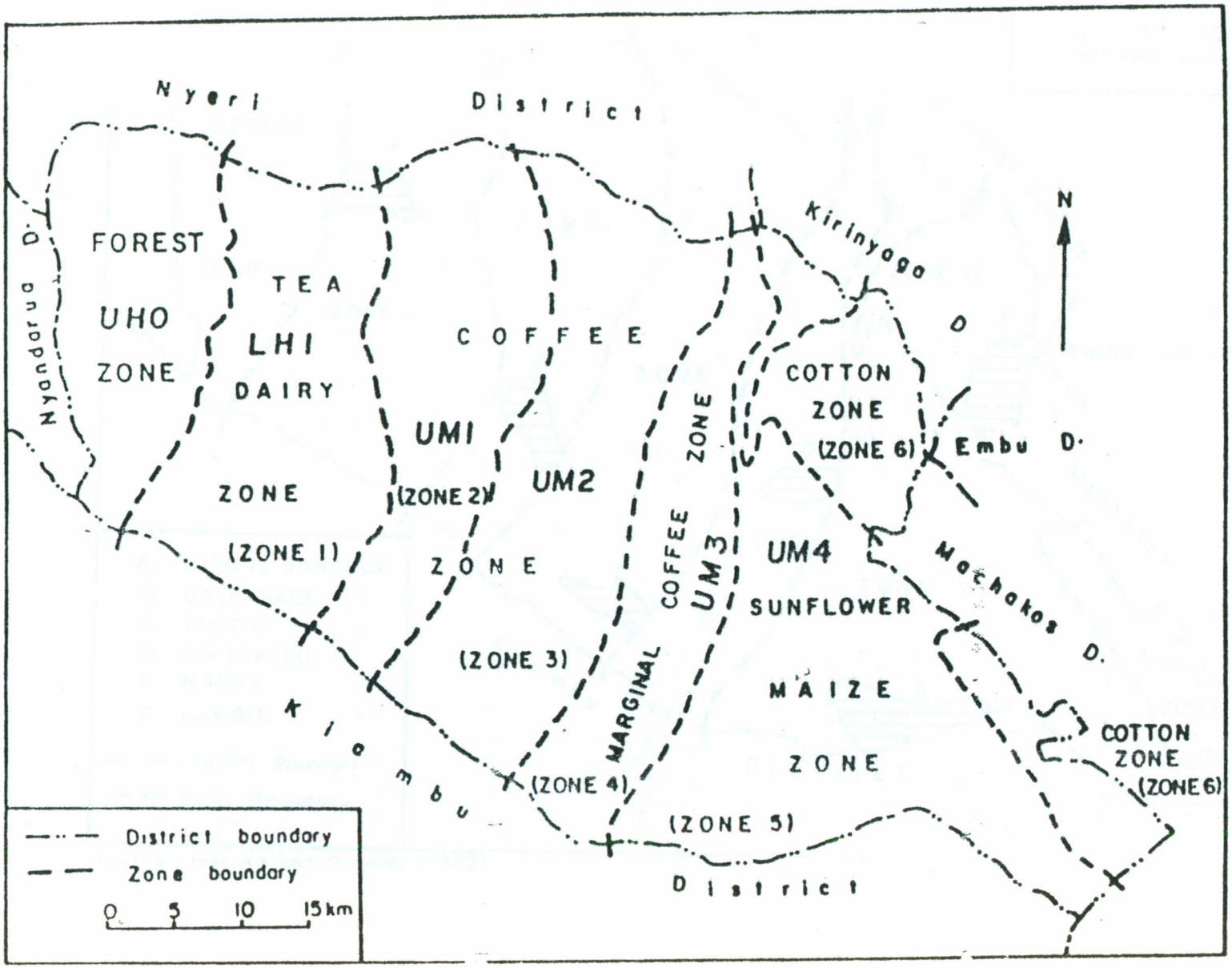
other public libraries.

3.1.2 SAMPLING PROCEDURE

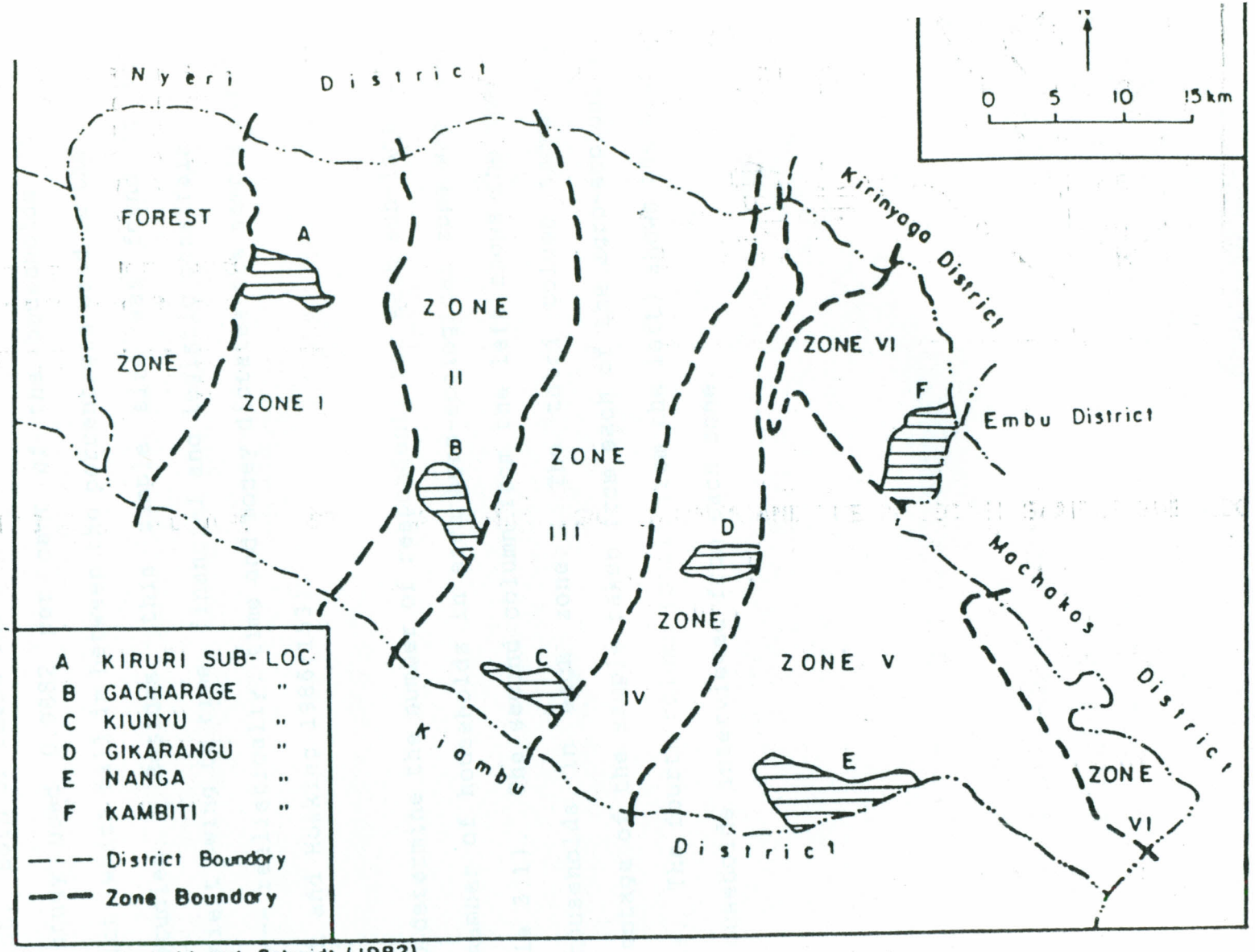
Due to the large size of the district and the large number of households involved, sampling was found necessary. Stratified random sampling was used. This was found to be a suitable method for it gave each household an equal opportunity to be picked.

The district was stratified according to the Agro-ecological zonation system as defined by Jaetzhold and Schmidt (1983). Six main zones were involved viz; Tea dairy zone (zone 1) Coffee tea zone (zone 2), Main coffee zone (zone 3) Marginal coffee zone (zone 4), Sunflower maize zone (zone 5) and Cotton zone (zone 6).- Fig 3.1. The administrative map of the district was used to randomly select (through ballot sampling) a sub-location from each of the agro-ecological zones (Fig 3.2). From the agro ecological zone 1,2,3,4,5, and 6, the sub-location Kiruri, Gacharage, Kiunyu, Gikarangu, Nanga and kambiti respectively, were seleted (Table 3.1). Sub-locations were selected so as to reduce the distance to be travelled and for the purpose of quick counts and supervision. This sub-locations also fell in the agro-ecological zones.

Transects were then drawn across each of the related sub-locations based on the road networks and other types of routes like footpaths. Rural housing studies have used varied sample sizes; for example Sterkenburg (1986), used 0.07 per cent of the total number of households in the district while Kiamba (1991 a)



Source Joetzold and Schmidt (1982)



Source: Joetzold and Schmidt (1982)

FIG. 3.2 : MURANGA DISTRICT AGRO-ECOLOGICAL ZONES AND THE SELECTED SAMPLE SUB-LOCATIONS.

used 0.157 per cent of the total number of households in Machakos district. Both of these two studies came up with valid results. This study used 0.0882 per cent of the households in the district, which fall in between the percentages used in the above two studies. Besides, this sample size was found to be convenient owing to time, financial and logistic constraints " ---------- realistically, time and money dictates the sample size" (Clark and Hosking 1986:153).

To determine the number of respondents for each sub-location, the number of households in each agro-ecological zone was used (Table 3.1). The second column from the left shows the number of households in each zone. The third column shows the percentage of the sample taken from each of the agro-ecological zones. The fourth column (still from the left) shows the number of households interviewed from each zone.

TABLE 3.1: SELECTION OF SAMPLE HOUSEHOLDS

Agro-ecological zone	No of households	Percentage Sample	Number Interviewed	Name of Sub-Location
Zone 1 (LH1)	23,700	13.9	21	Kiruri
Zone 2 (UM1)	40,900	24.0	36	Gacharage
Zone 3 (UM2)	53,000	31.2	47	Kiunyu
Zone 4 (UM3)	27,300	16.1	24	Gikarangu
Zone 5 (LH4)	15,600	9.2	14	Nanga
Zone 6 (LM4)	9,500	5.6	8	Kambiti
TOTAL	170,000	100.0	150	

SOURCE: ADOPTED FROM: KENYA (1990)

3.1.3 PRIMARY SOURCES OF DATA:

DATA COLLECTION.

These data were collected through administration of a questionaire (appendix 1) in the selected sub-locations of the district. Before the field work commenced, authority was sought to do the research (appendix III) from the office of the

President.

Respondents were personally interviewed to solicit for information on household characteristics such as sex, age, marital status etc of the household head in the first section of the questionaire. The second section elicited information on the socio-economic characteristics of the household heads. The third section dealt with housing characteristics which included information on the types of materials used for construction of the houses, the conditions of such materials and the availability of amenities such as toilets, bathrooms, kitchen, water and electricity supply. The last section of the questionaire solicited for information on the head of household's perception and aspiration of and on housing respectively.

Since Muranga district is a large area, it was difficult for the researcher to individually cover the entire area within the time frame. A research assistant conversant with the area (an undergraduate) was hired. A two day training session was held for the research assistant. Each questionaire item was discussed in details so that the assistant understood the meaning. The training session also focussed on how to approach sensitive questions on aspects concerning family size, income and marital status. The research assistant was observed performing interviews on the 'test subjects'. In general, by training the assistant, it was hoped that he would be in a position to avoid the pitfalls of personal bias, wrong method of asking questions, and the dangers of giving the respondents the false hope about the

improvement of their housing situation.

This research adopted the household (defined in chapter 1) as the basic survey unit. This strategy was predicated on the premise that housing provision is a reality for individual heads of households; prompting individual response. Oral interviews were conducted with the selected household heads.

Initially, the author made a reconnaisance survey of the study area making observations generally on the nature of rural housing conditions. This was followed by a pilot survey carried out to pre-test the questionaire. Ten households were chosen for this purpose. From the results, improvements were done on the ordering of related questions, eliminating duplications, questions restated and the questionnaire coded.

3.2.0 DATA ANALYSIS

3.2.1 DOCUMENTARY DATA

Documentaty Data on changes in housing in Murang'a District over time was analysed, corroborated and presented qualitatively. Data had been gathered to verify premises one; thus this premise was verified qualitatively. Past events and circumstances relating to housing and settlements in general were identified and their role assessed.

The validity of historical information was established by counter checking facts from several sources. This called for a

wider review of literature from diverse sources. The data collected here regarded, foremost, that on early settlements in the study area. The origin of the settlers and the circumstances surrounding their decision to migrate to this area was also looked into. This was done in view of the fact that housing is part of a wider subject - settlement - and could thus have some important insights to housing.

The territorial organisation of the people was also investigated in an attempt to understand how people actually settled on the land. Traditional housing was also looked into, starting with the general traditional housing in Africa, through the Kikuyu traditional homestead, the traditional house to the present housing. The traditional house was looked at from the point of view of how labour was organised for house-building, the types of building materials and how they were acquired and finally, the internal functional division of the houses.

The changes from the traditional to the present types of housing is dealt with in the light of such historical circumstances as colonialism and the events that came with it. Such events include the villagization policy and the eventual consolidation and registration of land. The effects of the introduction of the monetary economy is also investigated.

3.2.2 STATISTICAL ANALYSIS

Initially, the questionnaire were edited to ensure that the entries and/or recordings were properly done. This was done at the end of each work day (field work day) and repeated when all questionaires were collected. The questionnaires were then coded in readiness for computer analysis.

Different methods were used to analyse the data. Intially, summary statistics were generated from the data set using the Statistical Package for Social Sciences (S P S S). Thus, the frequency distribution characteristics of the data were summarised. The summary statistics were then used to interprete the data so as to draw valid inferences from the observed variables. These Statistics were first produced for the whole sample and then for each agro-ecological zone. The later (for each agro-ecological zone), facilitated a comparative study between the various agro-ecological zones of the district in terms of the present housing conditions.

Basically, the summary statistics were used as the first step in testing premises two that there exists a marked degree of variability in rural housing in the study area. Another method namely the Housing quality measurement index was also applied to verify this premise further. This is discussed in the next section.

3.2.3 HOUSING QUALITY MEASUREMENT INDEX:

The housing quality measurement index has become a popular tool in the analysis of rural housing data in Kenya. It has been used in such studies as that of Olima (1986), Sterkenburg (1986) and Kiamba (1991a), among others. The index used here is adopted from these studies.

The index considers a broad category of housing aspects such as building materials, the maintainance condition of the floor, roof and wall, the availability of toilets, kitchen, water and electricity supply in assesing housing quality. The Index is basically a score system designed such that the various aspects of housing conditions are weighted (Appendix 2).

Housing quality measurement index allows for a comparison of the general housing conditions for individual households and for the sub-areas of the region. Existing conditions of the various house components for instance floor, wall and roof reflect the housing conditions as they exist, considering the level of improvement and maintanance that has occurred since the house was constructed (Olima, 1986).

In this study, the highest score/point possible for each of the aspects was three points while the lowest was zero. Where the floor and walls were plastered regularly,they were indicated as satisfactory for mud and earth-bricks houses. Thus they both scored two points each. However where floors were found to be dusty and walls cracking,they were indicated as being in poor

conditions and were allocated one point each. Well maintained concrete-cement floor materials, as well as well maintained stone/concrete/wooden walls were indicated as being in good conditions thus awarded 3 points each.

Houses with leaking roofs were also rated as being in poor conditions and awarded 1 point, while grass thatch roofs, which were well maintained were indicated as being in satisfactory conditions thus scored 2 points. Well maitained roofs made of corrugated iron-sheets and tiles were indicated to be in good conditions thus scored the maximum three points for roof conditions.

A one-roomed house scored one point, a house with two or three rooms scored 2 points, while one with more than three rooms scored the maximum 3 points. On the other hand, houses which did not have a kitchen, toilet and bathroom scored one point for each of the three housing aspects. Where these facilities (kitchen,toilet and bathroom) were outside the house, each aspect was awarded 2 points. On the other hand, where these facilities were located inside the main house, each aspect was awarded 3 points.

The availability of water and electricity was also weighted. Where water was available over a distance of over 1000 metres, the household was awarded one point, whereas, between 100-1000 metres, two points were awarded. Where the distance to the water source was less than 100 metres, the household was awarded the highest scored of 3 points. On the other hand, where electricity was available for the household, two points were awarded while those which lacked this amenity were not awarded

a score.

Finally, the materials used for the construction of the floor, wall and roof were also assessed as per the type of material. Temporary materials for each category were awarded a point each. For example a grass thatched roof was awarded one point as well as a mud and wattle/poles walled house. An earth floor also scored one point.

Semi-permanent materials for each of the three categories of housing aspects(floor, wall and roof)were awarded 2 points each. For example a wooden wall was awarded 2 points. Permanent materials such as corrugated iron-sheets and tiles roofs, a quarry stone/concrete wall and plastered floor were awarded 3 points each, thus a maximum of 9 points and a minimum of 3 points for the three aspects.

The maximum possible score for each household was 35 points while the minimum was 11 points. The housing quality was rated as follows: 11 - to - 20 = Poor, 21- to - 29 = Satisfactory, 30 and above = Good.

This analysis was done manually where the raw data was obtained from the questionaire (Appendix 1), previously administered. The results of the Housing Quality Measurement Index are presented in chapter five.

3.2.4 CORRELATION ANALYSIS

In geographical analysis, the desire often is to find out if any statistical relationships exists between selected variables and whether the performance of one variable can be predicted from

the perfomance of another. The issue above can be partly answered by the use of correlation analysis.

Correlation is a measure of the relationship or association between two or more variables, indicating the direction and degree of variation between the variables. Correlation is essentially a possible connection, relationship or interdependence between two sets of phenomena (Balchandani 1982:106).

The Pearsons product moment correlation for the pair of related social-economic variable explaining housing conditions was generated and the coefficients measured the strength and weakness of the relationship between any two such variables.

The formula below was used to compute bivariate correlation coefficients between variables (Johnston, 1980)

$$r_{XY} = \frac{Nxy - xy}{[Nx^2 - (x^2)]\ [N^2y - (y^2)]}$$

Where:

X = Observation of the ith variable X

Y = Observation of variable Y

N = Number of Observations

The coefficient of correlation (r) vary between 0 and + 1. The closer the value of r to + 1, the stronger the relationship

between the variable and the closer to zero, the weaker the relationship. When the coefficient of correlation in positive, it means that, an increase in the value of one variable is associated with an increase in the value of the other variable. A negative correlation is associated with inverse relationship between variables. The results of this analysis are presented in chapter six.

3.2.5 CHI-SQUARE ANALYSIS (X^2)

The Chi-square test is employed to determine whether the observed frequencies of a given phenomenon differ significantly from the frequences which might be expected for a given hypothesis. This test is recommended and widely used in geography because of its simple data requirements since it requires observations only on the nominal scale ie class frequencies (Shaw and Wheeler, 1985). The test is even more widely applicable when it is recalled that both ordinal and interval/ratio scale data can be easily converted to the nominal form.

The formulae for computing the chi-square value is as follows:

$$X^2 = \frac{(O - E)^2}{E}$$

Where:

X^2 = Chi-square

O = Observed frequencies

E = Expected frequencies

Further computation in respect to this method is the determination of the degree of freedom. These are obtained from both rows and columns. Thus in the above case, total number of columns is L, therefore degree of freedom is (L-I). Overall degrees of freedom for rows and columns is (K-I) (L-I).

When the chi-square (X^2) value has been calculated as above, it is tested for significance by comparing the computed value to the critical value provided by chi-square (X^2) tables or graphs (see appendix iii) at certain levels of significance.

The level of significance is the probability of rejecting the null hypothesis when it is actually true. The level of significance chosen here is 0.05.

A chi-square value is considered significant when it is larger than the table value at a given level of significance. This method was selected to test the hypotheses that there is no significant relationship between :

(i) House-type (variable 18) and social variables, such as educational level of the household head, size of the family, marital status of the household head etc.

(ii) House-type(variable 18) and economic variables such as income of the household head, land tenure, employment status etc.

Thus the method was used to test hypothesis 1 and 2 of this study. In order to apply Chi-square test to any geographical data, the following conditions must be fulfilled: The data must be in the form of frequencies counted within each category; the total number of observed cases must exceed twenty. The observations must be independent which means that one observation must not influence another (Hammond and McCullagh, 1978). The result of the Chi-square test are presented in Chapter 6.

Conclusion

In conclusion, this chapter has dwelt in details on the research design used in this study. Methods of collecting both secondary and primary data have been explained in details. The analysis of both secondary and primary data have also been dealt with in details. Our hope is that this chapter will help a great deal in enhancing our understanding of the results presented in the chapters that follow.

CHAPTER FOUR:

CHANGES IN RURAL HOUSING IN MURANG'A DISTRICT OVER TIME

4.0 Introduction:

This chapter attempts to discuss the changes in housing in Murang'a District over time from the dawn of colonialism to the modern. It starts by tracing the evolution of settlements in the District and the territorial organization of the inhabitants. This is done with a view to gaining deeper insight into the earlier people's way of life in the area.

Traditional housing is then discussed in details followed by an evaluation of changes that have occured in housing to date. The type of changes and the circumstances surrounding these changes are also discussed.

4.1.0 EVOLUTION OF SETTLEMENTS IN MURANGA'A DISTRICT

According to Ogot (1968), the Kikuyu (who comprise an everwhelming majority of the people of Murang'a), belong to a group of Bantu speaking population reffered to as "Eastern Bantus". Linguistically, this (Eastern Bantus) refers to people inhabiting the region between the highland areas, stretching from northern Tanzania to the Kenya highlands and the coast. It includes such linguistic sub-groups as the Akamba, Embu, Meru, Chagga, Pare, Taita, Nyika, Pokomo etc.

Ogot (1971) also argues that the Eastern Bantu, like all Bantu-speaking people descended from an ancient Bantu nucleus situated in the northern Katanga in the present day Zaire. From this area, their ancestors expanded and occupied the East African coast between Lamu and River Juba, and finally from the 13th century A.D, their more immediate ancestors began to migrate out of this northern coastal settlement area into the interior. Fig 4.1.

Ogot's views are also reflected in Guthrie's (1962) linguistic studies which propose a dispersal area around Shaba region, (Zaire) from which quick eclliptical expansion took place towards the east and west. This is evident from the prevalence of high percentages of Bantu roots in Kikongo on the west coast and Kiswahili in the east coast. Archaeological evidence from Bantu Iron age agrees well with this general linguistic proposal. The distribution of "Channel- dimple-based " pots of the first millenium A.D has generally supported a south-north expansion of Bantu.

Soper, (1980), postulates through archeology that the Kikuyus might have together with some other Bantu people, originated in the western shores of Lake Victoria (a place suggested to be Buhaya), moved to around Mount Kilimanjaro and then towards Mount Kenya.

Kenya, (1986), argues that the various theories that explain the origin of the Kikuyus may not be quite helpful as far as

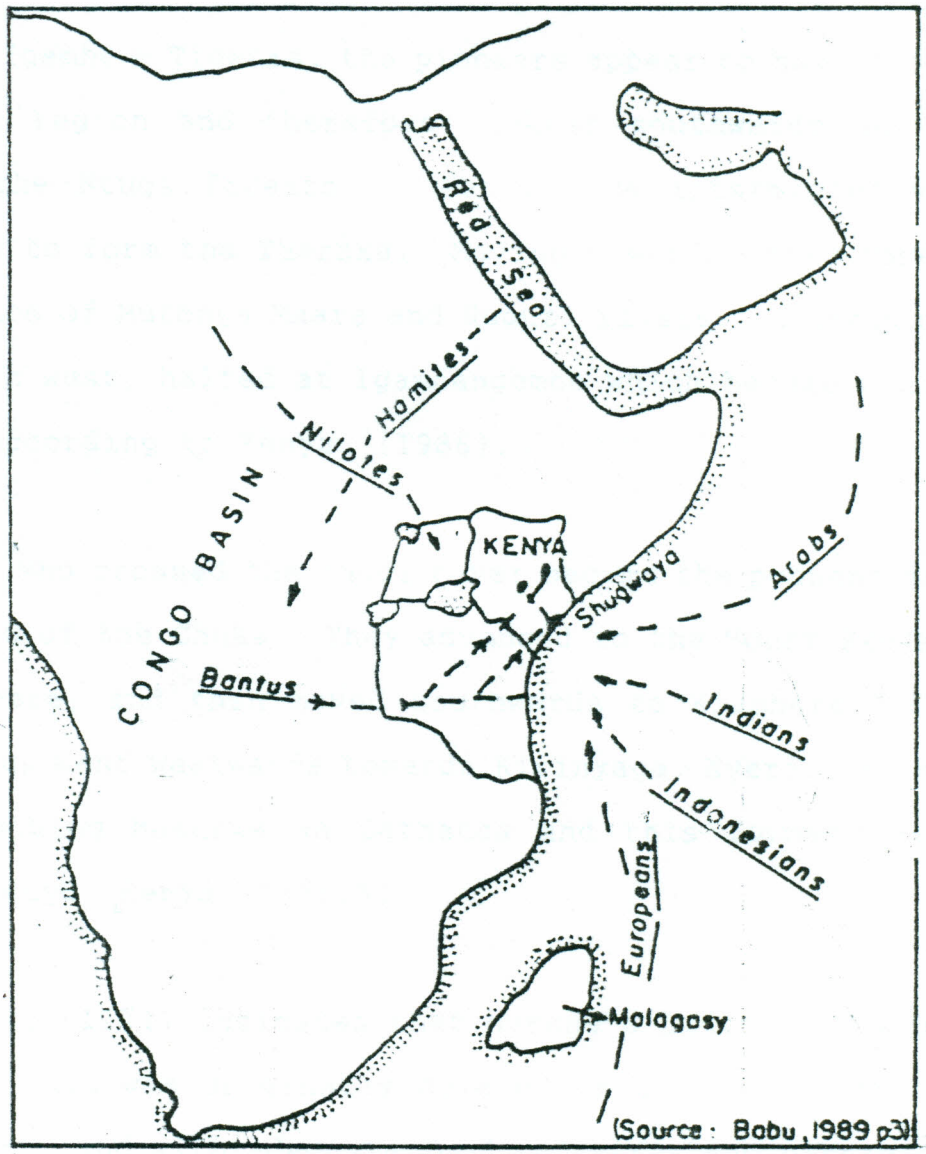


FIG 4:1 THE RACIAL MOVEMENTS AROUND EAST AFRICA AND THE BANTUS MOVEMENT IN KENYA

their history is concerned. However, their implication is that the Kikuyu migrated from beyond Mbeere in the present day Embu District and that they were related to their neighbours. They are therefore said to have migrated from Igembe-Tigania (north-east of the present Meru land).

From Igembe - Tigania, the pioneers appear to have avoided the highland region and therefore trekked southwards and stopped around the Ntugi forests . Here, some intermigled with the Thagishu to form the Tharaka. Moving onwards, they came to the confluence of Mutonga Maara and Ruguti rivers. A group moved to the south west, halted at Igambangombe which became a dispersal point, according to Kenya, (1986).

Those who crossed the Thuci river became the present day Embu, ancestors of the Chuka. They advanced to the Mount Kenya ridges into Mbeere, and then moved southwards to Kiambere Hill. The last group went westwards towards Kirinyaga, Nyeri, and Murang'a thus reaching Mukurwe wa Gathanga and this formed the proper proto-Kikuyu (Kenya:1986:15).

Muriuki (1974) indicates that Murang'a District now occupied by the Kikuyu was originally covered by a huge forest. It was a pleasant land with adequate food and water and plenty of game. Besides meat, the early inhabitants were able to collect a variety of wild fruits, roots and berries. Here, lived the hunting and gathering peoples known as the Gumba and Athi. The Gumba hunted in the plains, while the Athi lived mostly in the

forests.

The Gumba are said to have been a sort of little people like the pygmies, who lived on roofed-over, dug-out caves or tunnels. They hunted with bows and arrows and are said to have kept bees, worked with iron and made clay pottery. The Gumba were hunters and gatherers who neither cultivated nor possessed livestock. They traded with the kikuyus, selling ivory, hides and skins in exchange for meat and livestock. Many Kikuyu sub-clans are descendants of the Athi while others have intermarried with them.

The reason(s) as to why the Kikuyus moved into Gumba and Athi lands is not quite clear. Kenya (1986) suggests that the reasons for the migration of the Kikuyus from Igembe - Tigania (in the north-east of the present Meru country), were environmental ie Igembe-Tigania had very poor climatic conditions and had very few resources and experienced a high incidence of malaria.

Muriuki (1974), however, argues that though we may not be quite certain of the causes of migration of the Kikuyu into Gumba and Athi lands, it probably happened in the 16th century or early 17th century. He continues to explain that many tribes were then 'on the move' and that it may be that the Kikuyu feared the pressure of the Galla (among others) who were moving south from Ethiopia. Once the idea of moving was established, more and more families thought it was a good idea and followed the example of those who had already moved. "The Kikuyu did not occupy the whole of what is known as the kikuyuland at once" (Muriuki

1974). It is probable that they continued to expand from their first homes right up to the middle of the 19th century. So the immigration and the settlement of the kikuyu plateau was a slow process.

The first settlement were by individuals and small family units who moved into the new country inorder to claim ridges of land for themselves. They cleared the forests and planted crops. The clearance of the forest by the pioneers pushed the game animals into the high mountain forests and moorlands and into the plains of the south (Muriuiki 1978).

4.1.1 TERRITORIAL ORGANIZATION

According to the myth of origin, all the Kikuyu descended from a single family consisting of Gikuyu, his wife Mumbi and their nine daugters from whom the Kikuyu clans are named i.e, Anjiru,''Aceera','Agaciku','Ambui','Ambura/Akiuru/Ethaga', Ange/Aitherandu','Angui,/Aithiegeni','Angari,/Aithakahuno', 'Airimu/Agathigia', and 'Aicakamuyu', [Muriuki (1974:133), Kenyatta, (1936:6), Cagnolo, 1933:20)]. Although the facts presented in the myth are that Gikuyu and Mumbi had nine daughters, a tenth one is usually named because "at one point in the history of the Kikuyu, an additional clan the 'Aicakamuyu', was formed from the descendants of a girl from one of the clans who become an unmarried mother" (Muriuki 1974:13).

According to Kenyatta (1971), what began as a matrilineal, matriarchal society got transformed into a patrilinear,

patriarchal society based on the original female centred clans. This structural contradiction meant that the clan in kikuyu society has never been as closely knit as in other Kenyan societies. Historically therefore, the elementary family 'Nyumba', consisting of a man, his wife or wives and their children was the core of the kikuyu society (Muriuki, 1974:35).

Under normal circumstances, members of the 'Nyumba', which was relatively autonomous and self-reliant, formed a homestead, 'mucii'. The next territorial based kin group was the 'Mbari'-lineage, which consisted of members of several patrilineal and patriarchal homesteads that traced their origin to the same male ancestor. The 'mbari' is what became predorminant in kikuyu society as the effective maximum social unit although the original clan names were refered to. 'Itura'-village, was inhabited by people belonging to several homesteads who may not have been of the same lineage or clan - 'Muhiriga'.

Writing about villages in Murang'a District during the last century, Francis Hall, who was the first District Commissioner of Murang'a and whose name, Hall, the District was originally named after, stated:

> "the villages, ... are built in clearings surrounded by a thicket of dense bush. The jungle is almost impenetrable; but as an additional defence, an immense number of pits are dug about four feet deep in the bottom of which sharp stakes are planted. These pits being completely hidden by the folliage, add considerably to the dangers of forcing an entrance. The single approach is by a zig-zag path through the jungle, leading to a narrow entrance which is defended on both sides by tall stakes and at night carefully barricaded" (Kenya, 1986:18).

From the above, it can be summarized that there was plenty of land at the beginning of this century as evidenced by the thick forests. There is also the implication that people did not live quite far away from each other (homesteads), though Lambert (1965) indicates that homes were rather scattered not grouped in compact villages.

From 'Itura', which was the focal point of political, religious and social life came the 'Mwaki' and then the 'rugongo'. 'Rugongo', was the maximum socio-political unit beyond which its members had little interaction and knowledge and that is why the people of south of the Chania river, which is now called Kiambu District, were simply referred to as 'andu a Karura or Kabete' - the people of Karura or Kabete by the northerners; while those north of river Chania were referred to by the southerners as 'Metumi'- Murang'a and 'Gaki', Nyeri.

In territorial terms, 'rugongo' was more or less a ridge whose residents were of the same lineage if it was populous or several lineages. The implication is that 'mbari' rather than the clan - 'muhiriga' was a corporate group which could easily mobilize its members for corporate activities - such could include the building of huts, which was a communal activity as will become apparent in the preceding discusssion.

Since all the Kikuyus are originally believed to have originated from the ten original clans bearing the female names of the daughters of Gikuyu and Mumbi, it would not have been

possible for them to continue as corporate groups.This was because they were founded by females in what came to be a patrilineal and patriarchal society and each clan did not occupy its own exclusive region. Instead, as population increased or need for movement arose, individual household heads or groups of them, moved into new areas(Kenya, 1986).

Upto the beginning of this century, therefore, land among the kikuyu had been held by a small group of consanguineously - affinally related groups of people. This is the land that is usually referred to as 'Githaka', which could not be alienated by anyone individually without consultation with those who could lay claim to it through inheritance rules. As far as Murang'a District is concerned, the 'githaka' system of landownership existed with the tendency towards individual (household) ownership (Kenya 1986:141). However, colonialism with its land alienation and subsequent villagization policies changed all these as will become apparent shortly.

4.2.0 TRADITIONAL HOUSING IN MURANG'A DISTRICT

4.2.1 Traditonal Housing in Africa:

Bullock (1979) argues that the African house types have been grouped into a number of categories based primarily on the basic elements of plan, wall and roof. This gives a broad classification, first into rectangular, circular or oval plans. Wall and roof variations lead to the general distinction among

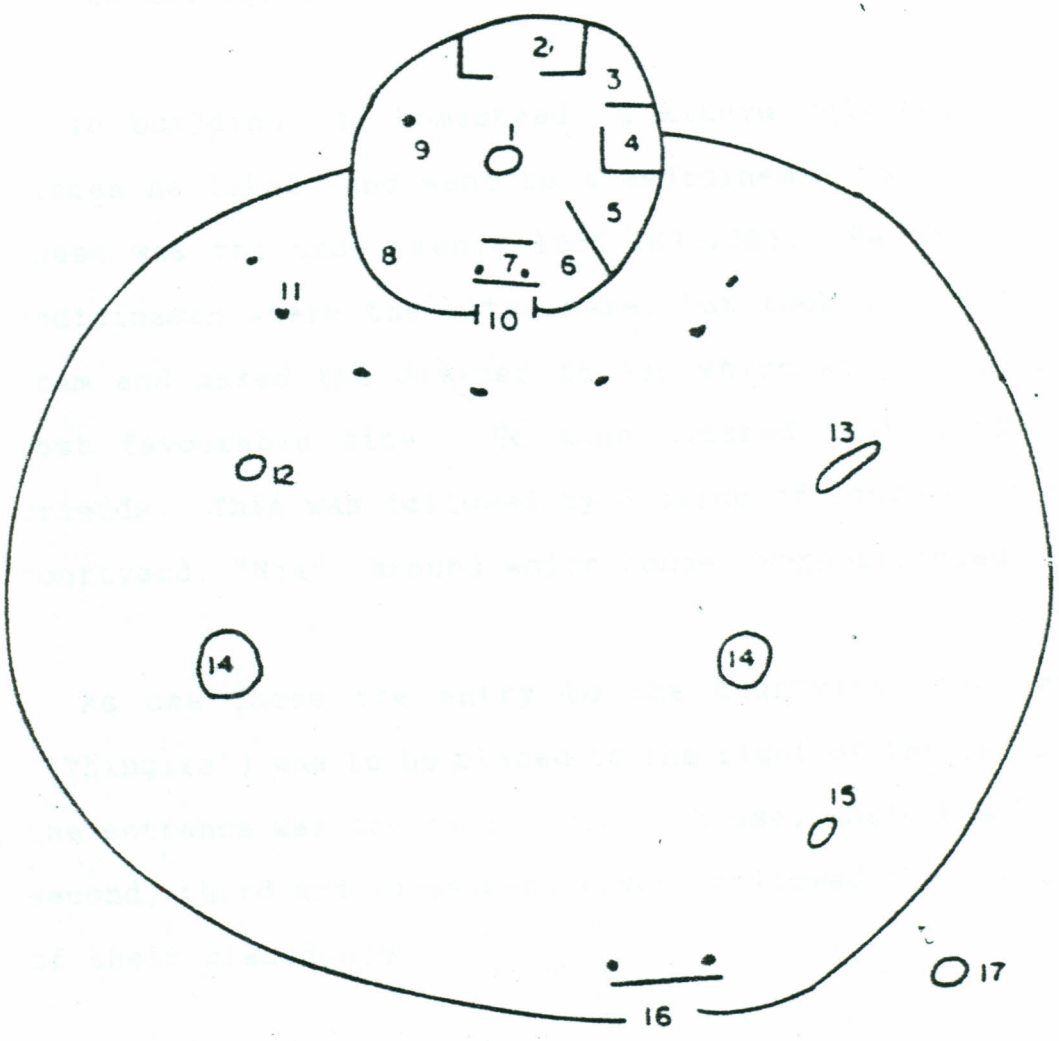
those with circular plans, between "beehive", and what has been termed "cylindrical'' or "cone-on-cylinder".

Beehive houses are those in which roof and wall form a continuous structural unit as for example, Sindano houses in Ethiopia. In 'cone-on-cylinder' houses, the vertical walls are structurally separate from the conical roofs which rest on them as in the Gala and Gurage house (Bullock 1979:224).

4.2.2 Kikuyu Traditional Homesteads:

Kenyatta (1971), stated that "it is a common ambition of every Gikuyu young man to have a hut or huts, which means implicitly to have a wife or wives. The establishment of homesteads gives a man special status in the community; he is referred ot as 'muthuri' (an elder, and is considered capable of holding a responsible position in the affairs of the tribe). Thus it is the desire of every Gikuyu man to work hard and accumulate property, which will enable him to build a homestead of his own". There is a kikuyu proverb which says "wega umaga na mucii", that the quality of a man is judged by his homestead (Ibid:74)

Kenya (1986) also indicates that a Murang'a kikuyu homestead, 'Mucii', consisted of a circular enclosure which is surrounded by hedge with a low doorway (Figure 4.1). A large household might have two compounds, an inner and an outer within the homestead (Middleton and Kershaw 1965:27, as in Kenya 1986:187). The large size of the homestead was attributed to the status,



Source: Kenyatta (1971:54).

1 Riko - Firestone
2 Uri i wa Mutumia - Wifes' Bed
3 Thegi — Store
4 Uriri wa Muiritu - Girls' Bed
5 Gicegu - Goat-Coop
6 Gatureini - Tools' repository
7 Ruri — Windscreen
8 Kwero kwa mburi - Goats' place
9 Mwato — Food barrel
10 Muromo - Entrance
11 Githaku - Verenda
12 Kehanya - Pole on which sweet potatoes plant leaves are hung for goats
13 Muharati — Trough
14 Ikumbi — Granary
15 Baine - Outside fireplace
16 Thome — Gate
17 Kiara - Dunghill
18 Ruĝisi - Fence

FIGURE 4.2: PLAN OF A KIKUYU HOMESTEAD

wealth and age of its head.

In building the homestead, a kikuyu selected two or three places he liked, and went to a medicineman to ask him which of these was the best (Kenya 1986:187-188). He did not tell the medicineman where the sites were, but took sticks to represent them and asked the diviner to say which stick represented the most favourable site. He then cleared that ground with his friends. This was followed by drawing of rough circles for the courtyard, "Nja", around which houses were arranged.

As one faces the entry to the courtyard, the man's house ('Thingira') was to be placed to the right of the centre. Facing the entrance was the senior wife's house, while the house of the second, third and subsequent wives, followed the circle in order of their precedence.

The arrangement of the houses was always counter-clockwise with the main house first, the first wife's house etc. Thus the seniority of the wife could be determined by observing the position of her house on the compound. The 'thingira', was placed more or less infront of the first wife's home. Each of the woman's main door faced the 'thingira'. " Until recently the Murang'a Agikuyu, an agricultural people, used to construct grannaries (for keeping grains). Each grannary was sited near the gate, but facing the wives' (owners) houses respectively", (Kenya 1986:188). The son's houses were built behind their mother's houses. Mothers' houses and the cattle pen were placed

behind the houses of the men away from the gate.

4.2.3 THE HOUSES

The kikuyu traditional house is of the cone-on-cylinder type mentioned earlier (Bullock 1979). Here the vertical walls are structurally separate from the conical floors, which rests on them. Kenyatta (1971:74) asserts that "All Gikuyu huts are of a round type, with wooden walls and grass thatch roofs". While Kenya (1986:188) indicates that the traditional \Murang'a kikuyu houses resembled a cylinder and roof conically shaped.

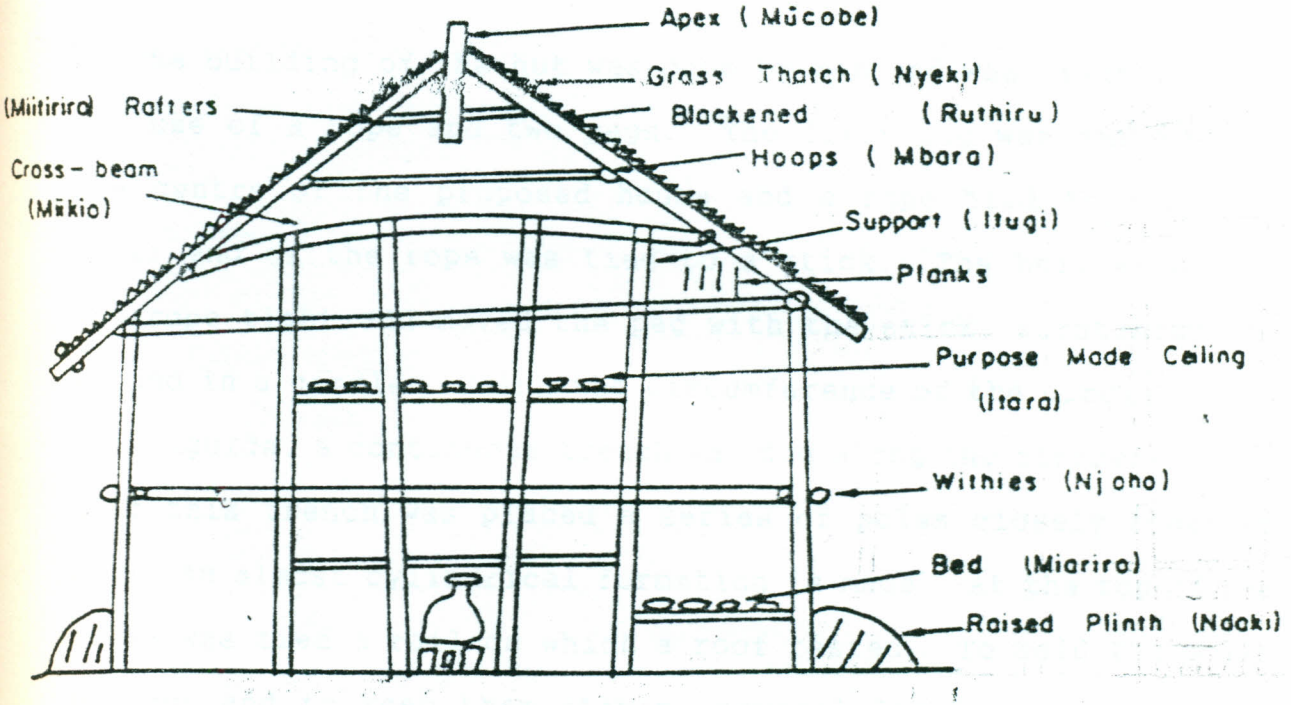
It has been suggested that the cone-on-cylinder houses signify the settled agricultural societies of Africa, beehive types being more typical of nomadic pastoralists, hunters and food gatherers (Bullock, 1974:224). While some have associated house types with broad cultural groupings, others suggest an environmental explanation for house type and their distributions. There is merit in both viewpoints for as Goldschmidt (1969:1) has commented "..... tribal architecture ..... is responsible as much to the inner environment of cultural pressupposition and social interaction as it is to the external environment of wind and weather". This he concluded after observing different house types in an area with similar external enviroment in Northern Ghana.

In the kikuyuland, which Murang'a District is part of, accounts and illustrations of housing in the journals of early

European travellers demonstrate the existence of two house types before the turn of the last century; both of the cone-on-cylinder type (Bullock 1979:224). One had walls made of vertically placed adzed planks; a building technique called "palisaded". This form was hardly known by the middle of the twentieth century and its demise probably related to the clearing of forest (Ibid:pp 224). The other type was the "wattle-and daub" structure consisting of a pole and sapling framework covered in clay. This had become the norm of most kikuyuland by the mid-twentieth century (fig 4.2).

Kenya (1976:188) asserts that this later house type occassionally had a mud wall and sometimes small vertical sticks placed close to each other could make up the wall. In some cases, mud was placed on the vertical poles thus forming a wall of mud-plus poles. In case of mud houses a framework of sticks was intertwined with large stumps forming the vertical structure which ended up in a rail to which the roof structure was attached (fig 4.2).

These vertical poles were put together against several horizontal lines of rafters which were meant to hold the mud. The roof was made up of poles which were arranged in such a way that there were straight poles which started from different parts of the rails and ended up in the appex where all similar poles from the rails joined. At the appex was a stick standing out which was meant to hold the grass.



Source: Babu (1989 : 37).

FIGURE 4.3: MATERIAL AND TECHNIQUES (TYPICAL SECTION)

House building was a communal affair as Kenyatta (1971:75) indicates .....

> "When a family is engaged in the work of building a hut or huts, the help of neigbours and friends is necessary in order to expedite the work. A man goes round asking his friends to help him and at the same time telling them what type of building materails he would like them to supply. At the same time, the wife visits her women friends, requesting them to help in various ways. Those who cannot take part in collecting building materials are asked to help in providing food and drinks for the builders".

The building of the hut was done by men and was designed with the use of a rope and two pegs. The first peg was hammered at the centre of the proposed house and a rope tied to it. The other end of the rope was tied to a stick. The builder pulled the rope tight and moved the peg with the stick, scratching the ground in a circle. Using the circumference of the circle as the sketchguide, a continuous trench was dug along the circumference. Into this trench was placed a series of poles closely together until an almost cylindrical formation is made. At the top of the poles was tied a rail on which a roof rested. To hold the poles upright and to keep them stable, several lines of rafters were tied horizontally along the circumference of the wall. In other versions, separate holes were dug into which stronger poles would be erected. Several horizontal lines of rafters were tied crossing the vertical poles at right angles. Mud would then be placed in the open spaces. Once this was completed, building the roof structure began. A triangle of poles was constructed which was used as a basis on which other rafters would rest. At one of the angles of the triangle, was a small-stick which would later be useful during thatching. This triangle was then built

into a roof before it was placed on the structure.

Thatching was done after that roof was securely placed on the rails. Thatching was done by women, while rest of the building was men's work. Materials for thatching was 'Nyeki'(grass) mixed with Blackened fern,'Ruthiru', and some green banana leaves. The grass was firmly tied on the roof structure with the support of the small stick at the appex to which ending grass was tied. Thatching started from the edges towards the appex where it ended. Since thatching was done in seveal layers, the first was tied to the roof structure. All the other subsequent layers were expertly arranged. But the last layer was tied to the appex. The materials used in binding two or more poles together was the back of 'Migio'(Triumfetta Macro Phylla) or 'Muodwe' (Abudilidon Longiscuspe) plants. Most of the poles used were mainly from 'Mutamaiyu' (Olear Africana).

Once the roof thatching was completed, the house was considered fully built. The door,'Rigi', was made of climbing plants, lianas, ('Miugu') which were plaited like a carpet. Three poles were used to support it - two poles at the sides and the other at the centre. An illustration is provided in Figure 4.2. refered to earlier.

Sometimes, two or more huts were built simultaneously as in the case of a man having more than one wife, or a large family which could not be housed in one hut (Kenyatta 1971:74). But generally, customs required that even a man with one wife should have two huts, one for his wife's private use and one for himself for general use. The woman's hut was called 'Nyumba'. Here it was a taboo for a mere stanger to enter because it was considered

a traditional sacred abode of the family and the proper place to hold communion with their ancestral spirits. All aspects of religious and magical ceremonies and sacrifices which concerned the family were centred around the 'Nyumba' (Kenyatta (1971).

4.2.3.1 Internal Functional Divisions

The already built house was traditionally divided into defined functional areas. For the woman's hut, it may be six paces from the entrance to the fore-place in the centre (Kenyatta 1971:79). The roof was supported by a series of poles equidistant from the centre. The poles fulfiled a two-fold purpose; besides supporting the roof; they were the mainstrays of partitions which divided the hut into apartments. The apartments depended on the needs of the occupants.

Generally, as one entered the door, he first got into a place known as 'ruri' or resting place. On the right side of the 'ruri', was the 'Gicegu', a place for goats. This was where goats were sometimes fed. Next to it was 'kiriri', or 'Kiruma', the girls sleeping place. At the centre of the house was 'riiko', the fireplace. Above the fireplace, supported by four poles was constructed a raised platform,'Itara', for keeping firewood, so that the wet firewood would dry easily and faster. On the left of the house, as one enters the door post, the 'ruri', was 'ranga' or 'Uriri', a woman's bed place. It was not partitioned from the rest of the house. Just above the bed 'Uriri', was the 'thegi' where already cooked food could be kept. Within the 'thegi', area was a place for keeping a woman's personal items. The beehive (Mwatu) was placed just outside the

entrance.

A man's hut, 'thingira', unlike that of a woman was internally very simple; it had only one partition or not at all, (Kenyatta 1971:81). Where there was one, it was used to divide the bedstead from the fireplace. " The main functional areas were a sleeping and a fireplace", (Kenya 1986:191). There was also a place where food was placed. The left of the hut was left open, this was to provide a large sitting-place for the family and their visitors; for the man's hut was used for general purposes while the woman's hut was strictly used for her private purposes and family matters.

According to the Murang'a version, young boys, unmarried, slept inside the man's hut, (Kenya 1976:191). When sons reached ten years, and over, their fathers built houses for them but the girls continued to live in their mother's house until they were married. The boys house was a small structure inside of which was nothing but a bed place.

4.3 CHANGES FROM TRADITIONAL TO PRESENT DAY HOUSING IN MURANG'A DISTRICT.

Kenya (1986:217) indicates that throughout the history of Murang'a District, there have severally occured changes both in the technology used in production organization of the labour and gradual improvement in the quality of material culture produced. A comparison of traditional Murang'a kikuyu houses with the modern ones reveals that there have been changes in both the materials used for construction and the architectural form of the houses....."externally, a modern ordinary mwananchi house in

Murang'a is rectangular or square instead of being circular in plan" (Ibid pp 191). This has also been confirmed by the finding in chapter five of this research.

Changes have also happened in the materials used for wall and roof. Though most of the walls are still constructed using mud and wattle/poles, other materials such as wood, bricks and quarry stones have been introduced. Partition walls have also been introduced in modern houses compared to the past ones.

Roof materials have also changed considerably, very few people still use grass; the majority opting for such materials as Corrugated iron-sheets on timber frame truss and less frequently, tiles.

There are also, though in modified form, some traditional elements and practices in the internal functional division. Thus, in a number of today's ordinary houses, just above the fire-place (riiko), there is a shelf for drying and storage of firewood (itara). In today's house, asserts Kenya (1986), the girl's bedroom is mostly next to their parent's. Some people still keep goats in their houses next to the fireplace.

However, and unlike the traditional houses, most of the homesteads have a house in which lives the wife, the husband, the girls and the young children. There is in most cases a separate house for boys and a kitchen where goats may also be kept. Traditional houses did not have windows compared to the windows of todays houses. Moreover, the rule concerning the position of son's houses relative to that of the parents is not observed as people today construct houses in any convenient place (Ibid:p 192). The daughters continue to live in the main house until

they get married or move out to search for or do a job.

While in the traditional setting the fire-place was within the living house, nowadays most of the kitchens are constructed some distance from the main house. The reason is that if fire breaks out in the kitchen, it should not affect the main house. There does not seem to be a particular convention in which modern kitchens are built. Kitchens are designed differently from one homestead to another. This means that what is important here is the convinience rather than established norm or socially approved design pattern (Kenya 1986:193).

Cognolo (1933) also indicates that in the traditional setting, nothing existed in the way of sanitary conveniences, the adjoining bush would answer the purpose. Today, many homesteads have at least a toilet and probably a bathroom.

4.3.1 REASONS FOR THESE CHANGES

The above changes started with the advent of colonial rule in Kenya. After the completion of the Kenya-Uganda railway in 1901, the then governor of Kenya, Sir Charles Eliot encouraged more Europeans to settle, what followed was land alienation, forced labour on Africans, taxations and appointments of colonial chiefs (Kenya 1986:2). Babu (1989:43) also indicates that the scramble for Kenya saw the penetration of the colonialists and missionaries into the deep interior of central province.

By 1915, Africans were restless. The kikuyu in particular complained of land alienation among other things (Kenya 1986:20). Political tension between the kikuyu and the British colonialists continued and finally explored into a violent rebellion against

the colonialists in shape of Mau Mau war in the early 1950s. A state of emergency was declared in 1952 and between then and 1953, when the colonial government thought it wise to cut-off forest Mau Mau fighters from the villages, families were herded together in fortified villages. These villages had barbed wire around them, a dry moat of 12 feet wide and 14 feet deep, with sharp pegs in it and armed homeguards keeping watch round the clock.

Each family, usually a nucleated family, had to build its own house in the camp and if a family did not have a male household head who may have been detained or in the forest fighting, then women had to perform these duties. This implied that the traditional role of men being the main builders of houses, women doing the thatching only, had to change (Kenya 1986:144).

Bullock (1979), refers to the above concentration of dispersed rural population into emergency villages as "villagization". The effects of the Mau Mau war and the villagization initiated new developments. Babu (1989) reveals that huts in the colonial villages were completely round with only four posts to support firewood loft above the fireplace. This was to make sure that the mau mau fighters could not hide anywhere in the huts as colonial soldiers could glance at once into the round hut and see all the occupants " (Babu: 1989:43).

However, this could not go very far for the parent-children privacy was needed. The people in villages unconciously started screening off the parents and girls beds (miaro) with short walls of interwoven twigs and barely the height of a tall man. The boys bed which came next to the entrance was not screened. The

entrance porch screen still remained but redesigned to avoid goats and sheep entrance (Figures 4.4,4.5 and 4.6 below).

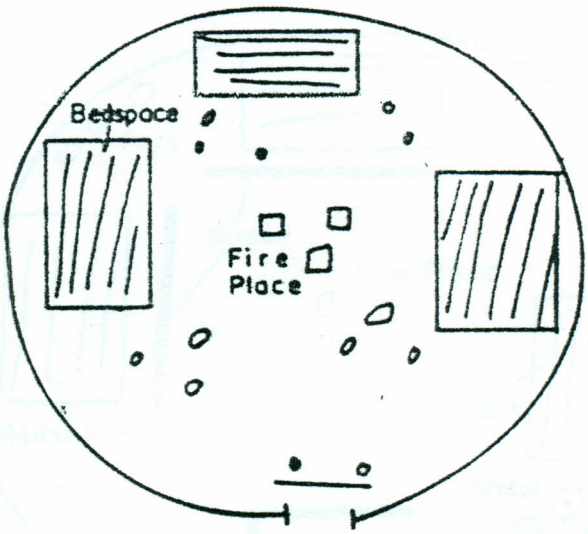
Domestic animals (goats and sheep) were taken and housed elsewhere (kwa mburi). A village for them was built. Cattle slept outside the fenced yards of this 'new village'. The huts were completely round with the fireplace and a space for fattening rams. Nobody slept in the animals hut.

Pit latrines were now introduced in the villages, they were lined up among the major circulation area leading to the river. They were collectively used. The hut also had some small window openings closed by a wooden disc.

Babu (1989) continues to show that the introduction of a village meant that the whole family now lived in the same hut against the social ethics. Many homesteads were burnt down and others deserted for ever and social life was stopped; brothers could not necessarily live together or near.

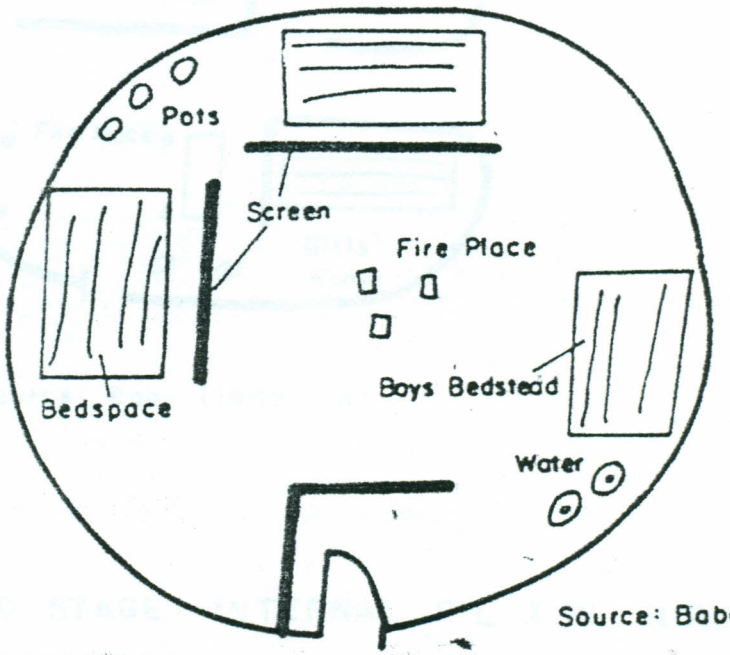
Bullock (1979) indicates that having taken the major step of villagization, the colonial government went further in 1955 when it committed itself to land consolidation..... "which was to have a marked impact in the whole fabric of the kikuyu landscape" (Ibidi:p 227).

Bullock 1979) observes that the significance of this revolution for housing was four-fold. In the first place, when the population was resettled on the newly consolidated farms in 1959 and 1960, there was a great wave of new housing construction. Much of these new constructions made use of more substantial materials than had been customary and was facilitated by bank loans which farmers could now raise for the first time



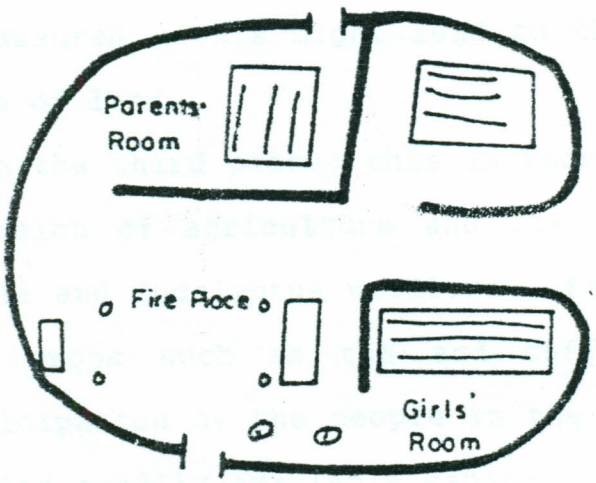
Source: Babu, (1989: 44)

Fig. 4.4 THE FIRST STAGE OF THE COLONIAL VILLAGE HUTS: COMPLETLY OPEN.



Source: Babu (1989:44)

FIG·4·5·THE SECOND STAGE: SCREEN WALL FOR PRIVACY NEEDS INTRODUCED·



Source: Babu (1989:46)

FIG 4.6 THE THIRD STAGE: INTERNAL PLAN NOW FULLY DEVELOPED.

against the security of their new title-deeds.

Secondly, the increased security of tenure which the new title deeds offered, encouraged a great investment than had previously appeared wise, particularly in housing and the planting of cash crops. It would be risky for one to for example, build a permanent house on a piece of land whose title of ownership is not assured. This might lead to the loss of ownership of the piece of land.

In the third place, this increased security also led to the extension of agriculture and the clearing of large areas of wattle and Eucalyptus woodland. Finally, the newly introduced cash crops such as tea and coffee led to a much greater participation by the people in the cash crop economy resulting in more readily available capital.

In addition Bullock (1979) adds that "with this new range of choices open to him, the kikuyu now acquired a new status symbol. If he had wealth, the farmer could construct his house of stone or less expensive though still innovative materials, if not, he could at least demonstrate progressive attitude by building in the new rectangular plan; if only in traditional materials ... the poor and the conservative still adhered to traditional materials and plans".

Bullock (1979) continues and argues that for the kikuyu, adoption of the rectangular plan probably symbolizes a profound change in cultural values. He indicates that the change from communal ownership of land (its rejection), and the adoption of private ownership implies a rejection of the traditional hierachy and its associated values "Although it was the pressures of the

modern economy which caused the change in values, it was these changed values rather than economic influences in supply of materials which most significantly influened the decision to adopt the rectangular plan" (Ibid pp 235).

Besides changes in attitude and values some of the raw materials used in the past are no longer easily available. Kenya (1986) argues that..."while plant based raw materials for house building were abundantly available in the forests and bushlands in the district in the past, this is no longer the case nearly all available land of all parts of Murang'a is under use and there is no bush or woodland remaining free for anybody to collect raw materials from where they exist, they are under restriction. For instance, the forest zones are under strict surveillance of the forest authorities". This could be quite true, given that the District is the fourth most densely populated in Kenya (Kenya 1988).

The above general sentiment was also echoed by one of the respondents (Wanjiru Kimani) from Kambiti sub-location whose house had a thatch roof. She indicated that one major problem is that since more grass needs to be added to the roof, at least annually, the biggest constraint is that suitable grass is no longer easily available thus she suffers a leaking roof quite often.

Kenya (1986) also argues that since clay was much used in wall building in Murang'a District, its availability especially where it was used to smear walls is constrained by the limited amount of land used for quarrying clay and at the same time used for building houses, planting vegetables and others. "As such, clay

as a raw material in the building industry is being phased out just like grass thatch in Murang'a which has almost been supplemented by corrugated iron sheets or other types of metals" (Ibid:p 215).

4.4.0 CONCLUSION:

In conclusion, we have tried to trace the history of the inhabitants of the rural areas of Murang'a District, their origin and how they settled in this area. The inhabitants of the area are mainly ethnic kikuyus (more than 98 per cent) and the District is considered to be the tribes ancestral home (Muriuki 1974).

The traditional house of the kikuyu has also been discussed in details. In general, it has been observed that the kikuyu traditional house (the cone-on-cylinder type) have changed alot in both structure and materials used for building. The colonization of area by the British and eventual villagization and later resettlement, consolidation and registration of land together with the introduction of cash crop economy have been seen to have a great role in the above mentioned changes. Todays rural houses in the rural areas of Murang'a are mainly square or rectangular in shape, constructed using traditional materials, modern materials or a mixture of both.

CHAPTER 5: PRESENT SOCIAL-ECONOMIC AND HOUSING CHARACTERISTICS IN THE RURAL AREAS OF MURANG'A DISTRICT

5.1 INTRODUCTION

This chapter describes the housing conditions in the district and how the various socio-economic factors relate to the provision of housing. It mainly aims at verifying (or otherwise) premise two of the study. The results are obtained from the descriptive statistics generated from the primary data using the procedures outlined in the SPSS.

Aspects of household structure such as household size, age of the household head, marital status and educational levels are discussed. The economic activities and income are also dealt with so as to find out the family resources available for housing.

The chapter goes on and describes the various housing conditions such as the house types, building materials used, availability of amenities and the maintenance of floor, wall and roof. A general housing assesment is then done, pointing out the poor, satisfactory and good housing. In general, this chapter attempts to come up with the data on the housing stock in the study area.

5.2 SOCIO-ECONOMIC CONDITIONS

5.2.1 Family Structure

The household size ranged from one to twelve persons. The average size of the households was 6.5 persons. Those with up to six people per household accounted for 51.0 percent and 49.0 percent has a family size of more than six people. The district generally has a family size which is more than the national average of six persons per household.

The Agikuyu are traditionally polygomous, but in recent times, changes have occured such that more and more households are becoming monogamous. This can be attributed to the diminishing land resources available to households as population size increases. This may also be seen as a reflection of the changes taking place in the social and cultural traditions of the people.

In the past, it was seen as prestigious to have more than one wife. This is because the ability to pay dowry for them reflected a person's wealth and position in the community. Many wives and a large household meant that one had alot of property, especially land and livestock. This polygomous nature of the inhabitants of the study area could to some extent account for the rather large household sizes.

These large household sizes could have implicaton for the amount of resources available. There would be competition between the various needs such as food, educational and clothing and this

may lead to a shortage of resources available for housing.

TABLE 5.1: HOUSEHOLD SIZES IN MURANG'A DISTRICT

Household size	No	%
1 - 2	9	6.0
3 - 4	28	28.8
5 - 6	39	26.1
7 - 8	39	28.2
9+	35	22.9
TOTAL	150	100.0

Source: Field data:

Majority 69.3 percent of the households heads were men. This is mainly because the kikuyu are a patriarchal society, ie, traditionally a man is the head of the household. However, this is changing as for instance, 30.7 percent of the households are headed by women. Since only 14.0 percent of the total number of household heads were widowed, it implies that some of the female heads of households never married. This again can be viewed as a reflection of the social-cultural changes happenning in the community. The implication for housing here is that since among the Agikuyu, women have difficulties inheriting property especially land from their parents, female headed household are likely to have relatively less resources available for better housing.

The ages of the household heads, ranged from 24 to 85 years; with 71.3 per cent below 55 years of age. This 71.3 percent falls within the category which is seen as the most productive in the country. It is also, the age group which is likely to get financial credit. For example the Rural Housing Loan Scheme cannot give loans to people who are over 55 years of age. Besides, the retirement age in Kenya is 55 years, thus those above this age may not enjoy the benefits of savings and credit societies common in many work-places in Kenya. Thus, the age factor is also likely to affect the quality of housing.

5.2.2 OCCUPATION:

Farming was found to be the major occupation of household heads in the study area. This was reflected by the fact that 62.0 per cent of the respondents have farming as their major occupation; whereas 37.3 per cent are wage earners or were in business. However, many of these wage earners could have been employed in agriculture related activities as for instance in plantations and agricultural processing plants.

TABLE 5.2: OCCUPATION OF HOUSEHOLD HEADS IN THE STUDY AREA

Occupation:	No.	%
Farmer	93	62.0
Wage earner	45	30.0
Business	11	7.3
No response	1	0.7
TOTAL	150	100.0

Source: Field Data.

5.2.3 LAND OWNERSHIP

The access to land in the rural area of Muranga District is important due to the predominance of agriculture as the main source of livelihood for the majority of households. All households interviewed, except one, were found to own some land, though the sizes of holdings differed. The majority, 52.7 per cent, had holdings which were one or less acres. Only 8.0 per cent have five or more acres of land. The average size for all the household is about two acres.

The minimum land holding recommended for viable agricultural activites in Kenya is five acres (Kiamba, 1991a: 118). Thus about 91.3 per cent of the households have below the above recommended size. This could have diverse effects on the levels

of housing provision.

TABLE 5.3: FARM SIZES IN MURANG'A DISTRICT

Farm Size	Number	%
0-1	79	52.7
1-5	57	37.9
5+	8	4.7
TOTAL	150	100.0

Source: Field Data.

It was also found out that among the households that were interviewed, 72.7 per cent have inherited their land, 25.3 per cent had purchased, while 2.0 per cent were squatters or tenants. However, the majority of these respondents did not have a permanent security of tenure ie did not have title deeds to their holdings. Only 40.0 per cent had title deeds. The security of tenure for the households may have some influence on the housing quality in that the more secure the tenure, the more one would be ready to invest in and develop the holding thus earn higher income. Income has been found to have some bearing on the level of housing quality. Besides, one would be expected to be hesitant in building a permanent house on land for which he/she does not have a permanent security of tenure.

5.2.4 INCOME:

The district is characterised by relatively low income as evidenced by the result of the study. The official minimum income needed by a household to meet its daily requirements is Kshs 1,000 per month (Kiamba 1991a). However, over time, inflation has rendered this figure inappropriate. About 53.3 per cent of households have monthly income of approximately Ksh. 1,000 and below; while the rest had less than this figure.

Low income may have diverse implications on housing since, after meeting their food and other family requirements, there would be little left for housing.

TABLE 5.4: INCOME LEVEL FOR THE STUDY AREA:

Income Levels	Number	%
0 - 500	33	22.0
501 - 1000	47	31.3
1001 - 1500	14	9.3
1501 and above	56	37.3
	150	100.0

Source: Field data

5.2.5 EDUCATION:

Traditionally, Kikuyus had no formal education and so people would be educated informally through the use of stories, parables, practical participation in daily events etc. Boys would learn from the elders who would spend time with them and through their association would pass knowledge to them. Girls would be taught about what was expected of them by their mothers and other elderly women. However, with the advent of Westernisation this has changed considerably and now formal education has become quite common.

Table 5.5: Education levels attained by Households heads in the study area.

Educational level	Number	%
Non -literate	27	18.0
Primary School	79	52.7
Secondary school	29	19.3
Tertiary level	15	10.0
	150	100.0

Among the respondents of this study, it was found out that 18.0 percent did not have any formal education, 79.0 per cent had primary education, 19.3 per cent had secondary education while

10.0 percent had tertiary education. Education can thus be seen as another aspect where social changes are taking place in the District.

As was noted in chapter 2, those with no formal education would normally find it difficult to deal with matters which need to be documented. They are likely to fail say to apply for housing loans which involve much form-filling and signatures. The most educated household heads can therefore have an advantage over those with less or no formal education.

Besides, education makes one understand the importance of better hygiene thus the importance of such amenities as toilets, bathrooms, kitchen and safe drinking water.

5.3 NATURE OF RURAL HOUSING

This section will discuss the houseforms, the materials used, availability of amenities and the maintainance conditions of the houses currently being used by the rural households of Murang'a District.

5.3.1 House Forms

Four types of houses exist in the study area. One of them is the round shaped house, usually made of unimproved locally available materials, for instance mud and wattle walls, compacted earth for floor and a grass thatched roof. However, this type

of house formed only 0.7 per cent of all the sampled households in the district.

The second type of house is one made of the traditional materials mentioned above; but whose shape varied between square and rectangular shapes. Thus the main difference between the first type of house and this second type was the shape taken by the house. The houses made of purely traditional materials in the study area formed 13.3 per cent of all sampled houses.

The third type of house is the transitional square or rectangular shaped built using both traditional materials and modern materials . It normally has earth or cement screed floor, mud bricks or timber walls or mud and wattle walls and iron-sheets roof.

This type of houses are the majority forming about 65.3 per cent of the sampled houses. They can be seen as a transition stage between the traditional and modern houses.

The fourth type of houses are the modern square, rectangular "T" or "L" shaped houses which make 21.3 percent of the houses in the study area. They are built using modern materials such as cement screed or tiles for floor, cement block, natural or quarry stones or concrete blocks for walls and a roof made of corrugated iron sheets or tiles. The areas of high agricultural potential seem to have better houses than the marginal areas. For example (zone 1), Tea-Dairy zone, had 33.3 per cent of houses

permanent and 66.7 percent semi-permanent; there were no temporary/traditional houses. On the other hand, a marginal zone, cotton zone (zone 6), had 62.5 per cent of the houses as semi-permanent and 37.5 per cent temporary. There are no modern houses here.

5.3.2 Foundation and wall

Findings from this study show that the materials used for foundation are poles, loose stones/bricks, fired bricks, quarry stones and cement concrete blocks.

Table 5.6: Materials used for foundation in the study area

Type of Material	Number	%
Poles	65	44.7
Loose stones/bricks	45	30.0
Fired/baked bricks	1	0.7
Concrete/cement blocks	13	8.7
Total	150	100.0

Poles were used by the largest number of repondents, 47.7 percent, whereas loose stones/bricks were the second most popular for foundation. As is evident, 30.0 per cent of the households use them. Concrete/cement blocks are used by 8.7 percent while the least popular material for foundation are fired bricks 0.7

per cent.

For the wall, the materials used were mud/wattle, timber, sun-dried bricks, baked/fired bricks and quarry stones. As illustrated on the table below, the most popular building material for wall is mud/wattle, 35.3 per cent, while the second most popular wall material is sundried bricks, 32.7 per cent. Quarry stones, 30 per cent and timber (sawn wood), 11.3 per cent were the third and the fourth most popular materials respectively. The least used material for wall is Baked/fired bricks 0.7 per cent.

Table 5.7: Materials used for wall in the study area

Type of material	Number	%
Mud/wattle poles	5.3	35.5
Sundried bricks	49.0	32.7
Quarry stones	30.0	20.0
Timber (sawn wood)	17.0	0.7
Total	150.0	100.0

Source: Field data

The wattle poles used for wall construction and foundation are cut from forests and kept until they are dry. After the plot

where the house is to be built is measured, holes are then dug to a depth of about one foot.. The poles are then firmly erected. This type of foundation is used for the traditional and/or transitional house.

Such a foundation however, will not last for long due to decomposition and the effect of insects like termites which damage the untreated wood. This leads to the need for frequent replacement of the foundation and walls. It is however becoming increasingly difficult and expensive to get the wattle poles due to the continuing clearance of forests for agricultural development. This indicates the need for other forms of materials or a method of making the materials last longer. Sundried bricks are made from a well done mixture of clay and water. The mixture is then put into rectangular moulds and compacted to block shapes using hands. After this, the block shapes are removed and kept on a clear area where they are left to dry for a period of about two weeks before they are used for building. This is one area where low income households could benefit from research geared towards the improvement of such materials.

Other households go beyond this stage and bake the raw bricks. The bricks are arranged into a kiln which is then filled with firewood, lit and sealed. It is not opened until after a week or so when all the firewood is completely burnt and the kiln has cooled down. These baked bricks are then ready for use. This method however, consumes alot of firewood and with the current

scarcity of firewood in the study area, improvements need to be made so as to make building materials easily available.

Other materials used for foundation and wall are concrete blocks and natural/quarry stones. The quarry stones are available from quarries in the area. They are seen as the best local building materials.

5.3.3 Floor

Earth is the floor material used by the majority of the households interviewed, 70 percent. About 28.3 per cent use concrete or cement screed. When earth is used, it involves limited expenses for all that is done is compacting the soil within the perimeter of the walls using a piece of wood or by just stamping on the soil.

5.3.4 Roof

The most popular material used for roof is corrugated Iron-sheets which accounted for 93.3 per cent of all the roofs in the sample. Grass was the second most important with 5.3 per cent, while the least used was tiles 1.3 per cent. It can clearly be seen that the use of permanent building materials is most pronounced in the roof than in the floor foundation and wall.

This could point out the importance of roof in an area which experiences heavy tropical downpours during the rainy season. This could also be an indicator of the increasing shortage of

grass in the area, caused by settlement and agricultural activities.

Table 5.8 Materials used for Roof in the rural areas of Murang'a District

Materials used for roof	Number	%
Corrugated Iron sheets	140	93.3
Grass	8	5.8
Tiles	2	1.3
Total	150	100.0

Source: Field data

5.3.5 Maintenance Condition Of Houses

This study found out that 22.0 per cent of the floors, 28.0 per cent of the walls and 64.7 per cent of the roofs were well maintained. However, 24.0 per cent of the floors, 26.7 per cent of the walls and 22.0 per cent of the roofs were in a state of disrepair and therefore needed proper improvements or total replacement. The rest the floors, walls and roofs were poorly maintained but could be repaired.

Table 5.9: Conditions of the floor, wall and roof for the Rural Households Sampled

Conditions	Floor	Wall	Roof
Poor	24.0	26.7	22.0
Satisfactory	54.0	45.3	13.3
Good	22.0	28.0	64.7
Total	100.0	100.0	100.0

Source: Field data

It can be seen that among the households in the study area, the floor was worst in terms of maintenance among the three housing elements. While the roof was the best maintained. This could be an indication of the value attached to the roof due to the protection it affords from the weather especially the heavy rainfall that comes twice a year. It also reflects the fact that maintenance is related to the type of building material used. For example, the high percentage of roofs built with permanent materials could lead to the high percentage of well maintained roofs.

The low level of floor maintainance could also be as a result of the assumption that more resources should be invested in the wall and roof which protect people from the elements such as rainfall, extreme temparatures etc. There are therefore fewer resources left for the floor. This might also point to a lack of knowledge about keeping the houses clean, for it is not an

expensive endeavour to sweep the earth floors which are most common. This could therefore suggest the need to educate the people of the health hazards which result from floors invested with vermin and dangerous insects like fleas and jiggers.

5.3.6 Amenities

Some houses were found to be lacking in such amenities as kitchen, bathroom, toilet and clean and safe drinking water and electricity supply.

Table 5.10 Availability of Kitchen, Bathroom and Toilet Utilities

	Kitchen		Bathroom		Toilet	
	No	%	No	%	No	%
No utility	45	30.0	71	47.3	5	3.3
Utility as separate Unit	88	58.7	65	43.3	143	95.5
Utility inside Main house	17	11.3	14	9.3	2	1.3
Total	150	100.0	150	100.0	150	100.0

Source: Field data

As shown on the table, 30.0 per cent of the households lacked kitchens 58.7 per cent had kitchens as separate units, while 11.3

per cent had their kitchens inside the main house. The table also shows that 47.3 per cent had no bathrooms, 43.3 per cent had their bathrooms separated from the house, while only 9.3 per cent had their bathrooms inside the main house. Finally, it is clear from the same table that 3.3 per cent of the households had no toilets 95.5 per cent had their toilets as separate units while 1.3 per cent had their toilets inside the main house.

The lack of kitchen meant that a household had to cook in the sitting room or one of the other rooms. This could cause ill health due to harmful gases from firewood and charcoal used in cooking. Absence of toilets also has serious health implications for people end up using the nearby bushes. It can also be noted that lack of toilets is not necessarily due to expenses involved but possibly due to lack of knowledge about its importance. Making a toilet involves little capital outlay. A hole is dug and poles are put across it and then the area is fenced.

The distance to the water source was also found to vary.

TABLE 5.11 Distance to the water source in the study area

Distance in Meters	No	%
Over 1000	1	0.7
501 - 1000	25	16.7
100 - 500	89	59.3
On Plot	33	22.0
Inside main house	2	1.3
Total	150	100.0

SOURCE: FIELD DATA

About 59.3 per cent of the respondents had to walk distances ranging from 100 metres to 500 metres to reach the water source and about 17.4 per cent fetched their water more than 500 metres away from their houses. Only 23.3 per cent had their source of water located on plot or inside main house.

People in the study area were found to get their water from several different sources viz; stream/dam/wells, roof catchment, communal and private water taps. About 68 per cent got their water from either a stream, dams or wells; while 8.7 per cent obtained their water from roof catchments.
Those who got their water from communal water taps accounted for 16.0 per cent and only 7.3 per cent had water from their own taps.

An interesting thing here is that in some households, there were water taps but the water projects had collapsed more than a year before the survey was done. This may spell a need to look into the circumstances surrounding the collapse of such projects with a view to reviving them.

It should also be noted that the more the distance of the water source from the homestead, the more the time and energy used to obtain the water. Besides, water from such sources as streams, dams and wells is more often than not untreated, thus unsafe for domestic use. This is as compared to tap water which in most cases is treated thus making it safe for domestic use. It also appears that the Kenya Government's objective of

supplying piped water to each homestead in the country is far from being achieved.

TABLE 5.12: SOURCE OF WATER FOR HOUSEHOLDS IN THE STUDY AREA.

SOURCE OF WATER	No	%
Stream/Well/Dam	103	68.0
Roof Catchment	13	8.7
Communal Water tap	24	16.0
Own tap	11	7.3
Total	150	100.0

SOURCE: FIELD DATA

Electricity was also found to be lacking in all homesteads subjected to the interview. Bearing in mind that wood fuel resources are fast diminishing (as discussed in chapter one); the need for the installation of electricity cannot be over-emphasised.

5.3.7 SOURCE OF CONSTRUCTION FINANCE

The study found out that an overwhelming majority of the households, 79.3 per cent, had their own savings as the source of construction finance while a further 8.7 per cent had their sources from friends and own savings while an equal proportion got it from Co-operative bank loans. About 2.0 per cent obtained

their finance from normal bank loans (by mortgaging their properties) and only 0.7 per cent got their construction finance from self-help groups.

This indicates that the level of public institution involvment in the construction of houses and especially so, the rural Housing Loans Scheme (RHLS) is lacking. The RHLS was established by the government of Kenya with the aim of helping the rural poor improve the condition of their houses. There is therefore a need to look into the reason(s) leading to this state of affairs in the area.

5.3.8 HOUSING PERCEPTION AND ASPIRATIONS

It was found out that 94.7 per cent of the people/household heads interveiwed prefered to live in the rural areas and only about 5.3 per cent preferred to live in Urban areas. This may call for a need to improve the general Socio-economic conditions in the rural areas.

Most of the household heads were found to be dissatisfied with their present housing conditions.

TABLE 5.13: SATISFACTION WITH PRESENT HOUSING CONDITIONS IN THE STUDY AREA

	NO.	%
Very satisfied	3	2.0
Satisfied	40	26.7
Disatisfied	104	69.3
Very disatisfied	3	2.0
Total	150	100.0

Source: Field data

About 69.3 per cent of the households were disatisfied with the conditions of their houses while a further 2.0 per cent indicated that they were very dissatisfied. Only 26.7 per cent showed they were satisfied, while 2.0 per cent are very satisfied. This again calls for a need to look into ways through which the housing conditions in the study area can be made more satisfying to the residents. Suggestions as to how this can be done are given in chapter seven of this research.

It was also found out that much as the majority of the respondents are not satisfied with their present housing conditions, housing was not their first investment priority (Table 5.14)

TABLE: 5.14: INVESTMENT PRIORITIES FOR HOUSEHOLDS IN THE STUDY AREA:

INVESTMENT PRIORITY	NO.	%
Food	14	9.3
Housing	44	29.3
Education	60	40.0
Others	30	20.0
No response	2	1.7
	150	100.0

SOURCE: FIELD DATA

The table shows that majority of the household had education as their first investment priority, housing came second with 29.3 per cent, while food had 9.3 per cent. This may point to a need for an integrated approach in the attempt to better the lives of the people in the study area.

5.4 GENERAL HOUSING QUALITY

This section presents the results obtained from the Housing Quality Measurement Index discussed in section 4.2.2.1 of chapter four. It considers the widest variety of housing elements in the assement of housing conditions.

The results of the Index indicate that the rural housing conditions in Murang'a District vary between and within the agro-ecological zones. For the whole sample, 11.3 per cent of the households have good housing conditions. About 53.3 per cent have satisfactory conditions while 37.3 per cent have poor conditions (Table 5.15) below:

TABLE:5.15 OVERALL HOUSING CONDITIONS IN THE STUDY AREA

CONDITIONS	NO.	%
Good	17	11.33
Satisfactory	77	51.33
Poor	56	37.33
TOTAL	150	100.00

SOURCE: FIELD DATA

The general quality of rural housing was found to vary between the various agro-ecological zones and within the zones in the study area as shown in the table below.

TABLE 5.16: RURAL HOUSING CONDITIONS IN KIRURI SUB-LOCATION (AGRO-ECOLOGICAL ZONE1)

CONDITION:	NO.	%
GOOD	5	23.81
SATISFACTORY	8	38.10
POOR	8	38.10
TOTAL	21	100.00

TABLE 5.17: RURAL HOUSING CONDITIONS IN GACHARAGE SUB-LOCATION (AGRO-ECOLOGICAL ZONE 2)

CONDITIONS	NO.	%
Good	4	11.15
satisfactory	20	76.92
Poor	12	33.33
TOTAL	36	100.00

SOURCE: FIELD DATA

TABLE 5.18: RURAL HOUSING CONDITIONS IN KIUNYU SUB-LOCATION (AGRO-ECOLOGICAL ZONE 3)

CONDITIONS	NO.	%
Good	4	8.51
satisfactory	27	57.45
Poor	16	34.04
TOTAL	47	100.00

SOURCE: FIELD DATA

TABLE 5.19: RURAL HOUSING CONDITIONS IN GIKARANGU SUB-LOCATION (AGRO-ECOLOGICAL ZONE 4)

CONDITIONS	NO.	%
Good	5	20.83
satisfactory	12	50.00
Poor	7	29.17
TOTAL	24	100.00

SOURCE: FIELD DATA

TABLE 5.2.0: RURAL HOUSING CONDITIONS IN NANGA SUB-LOCATION (AGRO-ECOLOGICAL ZONE 5)

CONDITION	NO.	%
Good	0	0.00
Satisfactory	6	42.56
Poor	8	57.44
TOTAL	14	100.00

SOURCE: FIELD DATA

TABLE 5.2.1: RURAL HOUSING CONDITIONS IN KAMBITI SUB-LOCATION (AGRO-ECOLOGICAL ZONE 6)

CONDITION	NO.	%
Good	0	0.00
Satisfactory	3	37.50
Poor	5	62.50
TOTAL	8	100.00

SOURCE: FIELD DATA

The general impression created by the results of the Housing quality measurement index is that agro-ecological potential has some bearing on the rural housing condition in the study area. The low potential zones such as zone 5 and zone 6 had the lowest quality of housing with actually not a single household, among the sampled ones, having good conditions. For instance Nanga Sub-location (zone 5) had 62.5 per cent of the household having poor conditions while 37.5 per cent had satisfactory condition.

On the other hand, a high potential area like Kiruri (zone 1), had 23.8 per cent of the households reporting good conditions, 38.1 satisfactory and 38.1 per cent were in poor conditions. This may be explained by the higher income got from agriculture in the high potential areas as compared to the low potential areas.

5.5 CONCLUSION

This chapter has shown that social-economic and the rural housing conditions in Murang'a district differ spartially. Whereas some houses are in relatively good condition, a relatively high number of households have unsatisfactory conditions. Such housing conditions have been found inadequate in terms of such aspects as the quality of the building materials used for construction, the conditions of these materials and the availability of amenities. This calls for the need of intervention geared towards the improvement of the housing conditions in the area. This is discussed under section 7.6 of chapter seven.

6.0 CHAPTER SIX: FACTORS INFLUENCING THE RURAL HOUSING CONDITIONS IN MURANG'A DISTRICT

6.1 Introduction

The aim of this chapter is to outline the factors influencing the rural housing conditions in Murang'a District. The chapter is intended to test the two null hypotheses of this study viz: (i) There is no significant relationship between the economic variables and the house-type variations (in terms of building materials) in Murang'a District, (ii) There is no significant relationship between social variables and the house-type variations (in terms of building materials) in the study area. A number of variables have been selected which highlight the insights to the rural housing conditions (Table 6.1)

Table 6.1 LIST OF VARIABLES

V1	Gender/sex of the household head.
V2	Age of the household head.
V3	Marital status of the Household head.
V4	Number of Household members.
V5(a)	Number of young adults.
V5(b)	Number of school-age children.
V5(c)	Number of children/babies not in school.
V5(d)	Total number of children.
V6	Number of relatives in the household.
V7	Occupation.
V8	Employment status.
V9	Farm size in acres.

V10 Mode of acquisition of farm.

V11 Land tenure (whether with title-deed or not).

V12 Income group.

V13 Educational level.

V14 Source of Construction finance.

V15 Cost of labour.

V16 Architectural form/style of the house.

V17 Reasons for the form taken by the house.

V18 Type of house.

V19 Materials used for foundation.

V20 Materials used for floor.

V21 Materials used for wall.

V22 Materials used for roof.

V23 Conditions of the floor.

V24 Conditions of the wall.

V25 Conditions of the roof.

V26 Availability of kitchen.

V27 Availability of bathroom.

V28 Availability of toilet.

V29 Availability of water.

V30 Source of water.

V31 Availability of electricity.

V32 Number of rooms.

V33 Satisfaction with housing conditions.

V34 Investment priorities.

V35 Choice of residence.

V36 Suggestions for improvement.

Using the chi-square (x^2) test, several variables were found to be significantly related to the house-type variations in the study area. Furthermore, some linkages in theories and hypotheses on rural housing have been suggested in chapters one and two. Thus, what is required here is a set of independent variables attuned to the issue of rural housing conditions and the factors influencing these conditions. The results of the analysis are presented below, (Table 6.3).

6.2 RESULTS OF THE PEARSONS CORRELATION ANALYSIS AND THE CHI-SQUARE(X^2) ANALYSIS

The first step in the analysis involved the computation of the bivariate correlation coefficient among the related variables. These results were generated using equation (1) adopting the Statistical Analysis System (SAS) programme. The aim here was to determine whether there is any systematic relationship between the selected variables. The results of this analysis on the combined data set are depicted in Table 6.2

The results show that the variables are not highly correlated. This is because the correlation coefficients are found to be quite low. It was thus deemed fit to use the chi-square (x^2) test to determine which socio-economic variables had a significant relationship with the main dependant variable (house type-V18). House-type has also been used as the dependant variable in other housing researches for example Kisovi (1984). This is because the type of materials used for construction have a great bearing on the quality of the house. The chi-square (x^2) analysis was achieved using the procedures outlined in chapter four. The results of the chi-square analyis are shown in Table 6.3 below.

TABLE 6.2 PEARSONS CORRELATION COEFFICIENTS FOR THE COMBINED DATA SET IN THE STUDY AREA

	V1	V2	V3	V4	V5A	V5B	V5C	V5D	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16	V17	V18
V1	1.0000																				
V2	0.26693	1.0000																			
V3	0.43091	0.23036	1.0000																		
V4	-0.09895	-0.23546	0.34316	1.0000																	
V5A	-0.00965	-0.31083	-0.18370	-0.19706	1.0000																
V5B	0.12374	0.29345	0.25996	0.03148	-0.20558	1.0000															
V5C	0.17213	0.35463	0.08773	-0.00768	-0.14816	0.29713	1.0000														
V5D	0.05294	0.20760	-0.09363	-0.11566	0.13801	0.39458	0.14472	1.0000													
V6	-0.05721	-0.14387	-0.00307	-0.04045	0.18679	-0.04025	-0.17635	0.13441	1.0000												
V7	-0.24298	-0.30042	-0.24626	-0.02128	0.06628	-0.20691	-0.26466	-0.09981	-0.01073	1.0000											
V8	0.07817	0.24808	0.14649	0.09714	-0.14172	0.23290	0.10083	0.22905	-0.00126	-027307	1.0000										
V9	0.06599	0.39291	0.25319	0.07308	-0.21429	0.16830	1.16681	-0.03026	-0.30758	-0.09243	0.06723	1.0000									
V10	-0.01434	0.13433	-0.03843	-0.02401	-0.08760	0.06467	0.03087	0.12306	0.05102	0.02877	0.06403	-0.03757	1.0000								
V11	-0.07673	-0.36936	-0.10425	0.01096	0.13566	-0.00955	-0.20047	-0.01442	0.13944	0.14746	-0.09650	-0.43846	-0.12041	1.0000							
V12	-0.34575	-0.26611	-0.14533	0.02687	0.13014	-0.33556	-0.18482	-0.24172	-0.02474	0.38713	-0.19953	0.04348	0.01934	-0.02054	1.0000						
V13	-0.45440	-0.27909	-0.16377	0.12655	-0.12094	-0.23708	-0.21996	-0.21533	0.05939	0.34501	-0.16274	0.02118	0.02535	0.04466	0.47283	1.0000					
V14	0.00521	0.00874	0.06782	0.03447	-0.10658	-0.09756	-0.03111	-0.05259	-0.13311	0.07948	0.00565	-0.00202	0.08781	0.01227	0.06231	0.08312	1.0000				
V15	0.07957	0.15305	0.03540	0.12108	-0.19281	0.16098	0.12681	0.01729	-0.28949	-0.03060	0.07793	0.20618	0.08346	-0.23257	-0.08909	-0.04322	0.01438	1.0000			
V16	0.06894	0.05960	-0.00317	0.00877	-0.03398	-0.14705	0.07282	0.06075	0.01515	-0.03858	0.00185	0.10515	-0.05278	-0.10187	0.03115	0.01603	-0.06581	0.00870	1.0000		
V17	0.04417	0.07719	-0.05752	-0.06977	0.02544	0.28041	0.26224	-0.12608	-0.11887	-0.03941	-0.00397	0.10803	-0.01170	0.02970	-0.08905	-0.05457	-0.04153	0.06345	-0.07865	1.0000	
V18	0.00793	0.24559	0.06553	0.00593	-0.08476	-0.07827	0.20097	-0.03400	-0.02615	-0.02477	-0.08146	-0.25345	-0.05792	-0.26128	0.21620	0.22024	0.00481	0.05220	0.12167	-0.10475	1.0000

Table 6.3: Results of the Chi-square(x^2) showing the relationship between selected socio-economic variables and House-type (V18) at 0.05 level of significance

Variable Name	No. of Degrees of Freedom	Computed x^2	Critical x^2
V1	2	0.581	5.99
V2	92	95.295	118.76
V3	8	3.829	15.51
V4	24	31.407	36.42
V5A	18	18.242	28.87
V5B	16	12.739	26.30
V5C	10	16.674	18.31
V5D	20	23.580	31.41
V6	14	17.801	23.68
V7	4	5.365	9.49
V8	6	19.020	12.49
V9	14	12.711	23.68
V10	4	17.945	9.49
V11	2	10.519	5.99
V12	6	23.309	12.59
V13	6	16.729	12.59
V14	10	14.050	18.31
V15	38	34.279	49.78

Source: Field data

Table 6.3 shows that there is a significant relationship between the dependent variable, type of house (V18) and the independent socio-economic variables namely, the educational level of the household heads (V13); the income per month of the household heads (V12), the nature of land tenure (ie whether one has a title deed or not) V11, mode of acquisation of farm (V10) and employment status (V8). These relationships were deemed to be significant because in each case, the computed chi-square (x^2) value was found to be greater than the critical chi-square (x^2) value.

The respondents' educational attainment was found to be significantly related to the house-type since the value of the computed chi-square is 16.729 while the critical value is 12.59. We therefore reject the null hypothesis that there is no significant relationship between the social variable (educational attainment) and the dependent variable (type of house) and accept the alternative hypothesis that the two variables are significantly related. When these two variables were correlated, it was observed that the quality of the house rose with the level of education of the respondents ie they have a positive correlation coefficient (Table 6.2).

Educational attainment therefore has been shown to have some important bearing on the house-type. Kiamba (1991a) sees education as being an important indicator of socio-economic development in Third world countries. He also observes that literacy also means that in an agricultural community, a person will be able to understand the information on agricultural

improvement and therefore increase income through better yields. As was shown in chapter one, an everwhelming majority of the households in the study area depend on agriculture for their livelihood. Besides, Murang'a District is one of the most densely populated district in the country. This implies that the problem of scarcity of land is very likely to be prevalent. In chapter one, it was also observed that there is extensive soil degradation in the district mainly due to overcultivation and soil erosion. Most of the farms in the district are therefore intensively cultivated.

From the foregoing observations, it is thus imperative for farmers in the study area to apply modern methods of farming such as use of hybrid varieties of crops and improved breeds of livestock, practice soil conservation measures, use of insecticides, fungicides, etc. Thus the argument by Kiamba (1991a) that literacy in an agricultural society improve income through better yields is likely to hold water in Murang'a District.

Education is also said to broaden one's perception of improving the quality of life thus leading to a desire for better housing by for instance appreciating the importance of better hygiene. Hanson (1973) observed that houses built of traditional materials such as wattle (poles), mud, and thatch for roof are of inferior hygienic standards. It would therefore be expected that other things being constant, an educated person is likely to construct a better quality house than one who is illiterate. Education is also said to make it easier for one to get access to housing finance and housing methods (Kiamba 1991b).

The income level of the respondents (V12) also significantly related to the type of house (V18). Here, the value of the computed chi-square (x^2) is 23.309 while that of the critical chi-square is 12.59. We therefore reject the null hypothesis that income (an economic variable) is not significantly related to quality of house (house-type, V18) and accept the alternative hypothesis that there is a significant relationship between these two variables.

The pearson's correlation coefficient between these two variables was found to be positive (Table 6.2). This implies that the quality of houses in the study area rises with increase in income.

Generally, it is to be expected that the higher the income of household, the better the quality of the house they will live in. This has been found to be generally so in a developing country like Kenya where income levels are generally low (Kiamba 1991a:11)

Income is important because in the modern settings, money is required for the purchase of building materials, transporting such materials to the construction site and hiring of labour for the construction. It has actually been established that 60 per cent of rural houses in Kenya are built using some form of paid labour (Hinderink, 1987:87).

In chapter four of this research, it was observed that building materials and especially plant based materials have become quite scarce in the study area. People are thus now obliged to purchase such other building materials as Corrugated iron-sheets for roofing instead of grass which was previously the

most commonly used roofing material.

Generally however, the more modern the building materials (and presumably the better their quality), the more expensive they are. For example, such roofing materials as tiles and Iron-sheets are more costly than say thatch (grass), where it is available. Similarly, quarry stones and cement blocks used for wall construction are more expensive than the traditional mud and wattle. Kiilu (1989) indicates that the conventional/permanent building materials are usually very expensive due to high industrialization and the fact that most raw materials are imported. Besides, the maintainance of the houses also require frequent repairs and/ or replacements of some building materials, which may mean more financial expenditure.

However, the income level per month, of the head of the household may not solely determine the quality of the house. Sterkenburg (1990) observed that the relationship between income and the quality of housing may be weakened by several factors at the level of individual households; the priority for good housing conditions and the security of tenure. This may explain the rather weak or low correlation coefficient between type of house and income in the study area (0.21620). First the relatively large size of households (as observed in chapter five), may experience higher expenditure on food, clothing and especially education. In chapter five, it was observed that though 70 percent of the respondents reported being dissatisfied with their housing conditions, only about 29 percent indicated housing to be their first investiments priority.

Secondly, a household may attach a higher priority to good housing and spend a high proportion of their income on it and/or carry out proper maintainance. Alternatively, they may give preference to expenditure on other items, either luxury or consumer goods, or productive investements of some kind.

Besides, it is possible that some households may find nothing wrong with their housing. As discussed in chapter two, some rich Kenyans in rural areas have not used their wealth to put up decent houses and instead put up good corrugated iron-roofed garages for their cars while they themselves live in grass thatch huts (Daily Nation 1985:28).

Households of similar sizes and income may also differ with respect to housing conditions due to sudden calamities. For example, the illness or death of a relative may mean the diversion of money meant for building purposes. The relationship between income and housing may also be affected by a time perspective such that high incomes in the past may have been invested in housing and consequently the present low income may coincide with a relatively good housing situation (Sterkenburg 1990).

The nature of the land tenure of a household in terms of whether the head of the household has a title deed or not (V11) also had a significant relationship with the type of house. This is because the computed chi-square (x^2) value (10.519) is higher than the critical chi-square (x^2) value (5.99).

We therefore reject the null hypothesis and accept the alternative hypothesis that there is a significant relationship between the two variables.

In general, one without a title deed to his/her farm enjoy a lower security of tenure for that piece of land. Sterkenburg (1990) observed that households may become hesistant to improve on their housing situation because of lack of security of tenure on farm land. Such households may be hesistant in developing and improving such land for instance not planting perennial cash crops such as tea or coffee (main cash crops in the district), drilling boreholes etc to improve on their income. This is because of the feeling that they may be made to move out of that land any time and would prefer to minimize losses in their investments in the event of such movement. Their income and subsequently their housing situation will most likely be adversely affected. Besides, it would be a risky endeavour to construct a permanent house on a piece of land where one does not have security of tenure.

The mode of acquisition of farm in terms of whether the household head inherited, purchased or was a tenant/squatter (V10) was also found to significantly correlate with the type of house (V18). The computed chi-square (x^2) value is 9.49. Again, the null hyposthesis that these two variables were not significantly related was rejected and the alterntive hypothesis accepted.

It is likely that the respondents who inherited their farms were likely to have constructed better houses since they did not incur the initial costs of buying the land. On the other hand, those who purchased their farms are likely to have taken more time to come up with better houses, since most of their savings may have been exhausted by the purchase of their farms. Those

who were squatting on the farms they were occupying, were not likely to have come up with good quality houses because of the insecurity of tenure discussed in the preceding paragraphs.

Employment status (V8) was also found to be significantly related to the type of house (V18). The computed chi-square (x^2) value is 12.49. The null hypothesis is therefore rejected in favour of the alternative hypothesis that there exist a significant relationship between these two variables.

The correlation coefficient between these two variables is however quite low and negative (-0.13898). This could be explained by the fact that very few people depend on salaried employment for their livelihood. Only 30 percent of the sampled household head were on salaried employment. Most of those employed people, especially the permanently employed, came from the low potential areas. In Nanga sub-location for instance , most of the people were employed permanently as farm labourers in the nearby estates. Most of these people had very small holdings of less than one acre. Thus the poor pay they got as farm `hands' did not enable them to have better houses, though they were permanently employed. Almost sixty percent of houses were found to be in poor conditions in the above mentioned sublocation. The point here in that permanency of employment may reflect the poor and dependant status of the respondents rather than an opportunity to have higher income. The ones who are not employed may actually be self-employed and at the same time are also the employers; thus the negative correlation coefficient.

It had been hypothesised in chapter one that the gender, age and marital status of the household head would have no

singnificant relationship with the type of house. The chi-square (x^2) test proved this to be true as shown in table 6.3. The implication here is that regardless of the head of the household's age, sex and marital status, what mattered more was his/her income, educational level, land tenure etc.

Farm size (V9) and the size and structure of the family (V4 to V6) were also found to have no significant relationship with house-type. As observed earlier, the average size of farms in the study area is rather low. This may imply that what matters is not the size of the farm but the farming methods applied in terms of the income got from the farm. This may again be influenced by the level of education as observed earlier in this chapter. Education may influence the methods of farming for an educated person is likely to adopt modern farming methods than an illiterate one.

The family size and structure may also not have influenced the type of houses to a significant level because much as the family may be large, the income and educational levels for instance, may overshadow the effect of the large family. It is likely that people with large families may also have higher incomes or have accumulated more resources over time to offset the potential negative influence of a large family on the housing situation.

Variable 14, source of construction finance had no significant relationship with house-type. This is possible because most of the households got their construction finance from mainly one source namely, one's own savings (80 percent).

This indicates that there is very little public sector involvement in the construction of houses in the study area.

This is in agreement with Kiamba's (1991b) observations that the public sector involvement in the construction and improvement of houses in the rural areas of Kenya is negligible.

Finally, the cost of labour for house construction (V15), was also found to have no significant relationship with type of house variable 18. For one, the data availed by the survey was inadequate. Only about 61 out of the 150 household heads interviewed responded to the question on this subject. Besides, even for those who responded, their responses were mainly guesses since respondents did not keep records on this subject and also the difficulty in quantifying the cost of the labour which was contributed by the households members or by friends and relatives, free of charge or payment by kind. Thus the data obtained on this aspect may be deemed unreliable.

6.3 Conclusion

In this chapter, we have found out that the housing conditions in the study area, in terms of the materials used for construction is significantly related to variables such as the educational attainment, income per month, and the employment status of the household head. Other variables which influence the quality of houses significantly include, nature of land tenure and mode of farm acquisation.Basically then, these are the socio-economic variables influencing the quality of houses in the study area.

The other socio-economic variables which were suggested to have influence on housing quality in chapter two were found not to have significant relationships with the type of house.

Possible explanations for all these relationships have been suggested and discussed. It is thus now important to move on to our final chapter on summary, conclusions and suggestions for further research.

CHAPTER SEVEN: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

7.0 Introduction

Having been thorougly emersed in an intricate examination of rural housing in Murang'a District, the researcher must now rise once again above the detail. The intention being to reflect macroscopically rather than microscopically upon what has been accomplished in the preceding chapters. It is considered here that presenting a summary of each chapter would be too laborious and involves alot of repetition. In this concluding chapter it is thus, intended to draw and put together some of the major findings and contribution of the study (summary), reccommendations for action and finally suggest avenues for further research.

7.1 Conclusion

The main objective of this study was to investigate the problem of rural housing in Murang'a District, Kenya. In chapter one, it was suggested that the spatial and structural patterns of houses in the rural areas of Murang'a District tend to reflect the social and economic conditions in the district. Subsequently, two premises and two hypotheses were formulated (see section 3.0).

Basically, two types of data have been utilized in this study viz; primary data and secondary data. Primary data included information on household characteristcis such as sex, age, marital status etc of the household head, the socio-economic characteristics of the head of household, housing characteristics

and finally the perception and aspirations of and on housing respectively, of the household head. This information was elicited through a questionaire.

Secondary data was generated on the evolution of settlements and territorial organization, historical development of housing from the traditional to the present and the factors that facilitated this development were discerned. This data was got mainly from review of historical and archival material. Secondary data was analysed qualitatively by counter checking facts from several sources. On the other hand, primary data was analysed statistically by use of a computer.

It has been found out in this study that the inhabitants of the study area are mainly the Kikuyu ethnic group who belong to a wider linguistic group refered to as the Bantu. Like other Bantu people of Eastern Africa, the Kikuyu are said to have originated from the general western direction of Africa, around Zaire (chapter 4). Murang'a Distict has also been found out to be the ancestral home of the Kikuyu.

The findings of this study also point out that the traditional house of the kikuyu (the cone-on-cylinder type) has changed alot in both structure and the materials utilized for building. The colonization of the area by the British and the eventual villagization and later resettlement, consolidation and registration of land and the introduction of monetary economy have played a great role in the housing changes mentioned above. Difficulties in the procurement of the traditional materials previously used for house building such as thatching grass and building poles have also been seen to be of some importance in

the said changes. The scarcity of these materials have mainly been attributed to the high population increase in the study area.

This population increase have resulted to the clearing of most areas under natural vegetation to make way for settlement and cultivation.

The research findings related to house differentiation in Murang'a reveal that houses are of different structural types viz; square, rectangular "T" or "L". These are unlike the traditional houses which were circular in plan. There are also differences in the materials used for construction betweeen the traditional houses and the present ones. Presently, most of the houses are built using a mixture of both traditional materials and modern materials. Mud and poles are the main materials used for wall construction while corrugated iron-sheets dominate the roof materials.

Electricity was found to be lacking in all the interviewed households while the quality of water and distance to the water source from the homesteads was found to vary. Using the housing quality measurement index, it was generally found that housing conditions varied between and within the various agro-ecological zones in the study area. The poorest housing conditions corresponded with the agro-ecological zones with the lowest agricultural potential while higher potential zones had better housing conditions.

In the above assesment, the Housing Quality Measurement Index considered both the quality and present conditions of the building materials and the availability of the amenities that go

with good housing.

By using the chi-square (x^2) test of significance, the socio-economic variables that significantly related with the quality of houses in the study area were unearthed. The main variables that govern the above quality include; the income level, educational attainment and the employment status of the household heads, the nature of land tenure and the mode of acquisition of farm. The other socio-economic variables suggested in chapters one and two as influencing the housing quality were found to have no significant relationship with quality of houses in Murang'a District. Such variables included age, gender and marital status of the household heads, among others.

Thus it can be said that even after independence, housing in the rural areas of Murang'a District have been changing over time and space. These changes can be attributed to the rates of development in education and other socio-economic dimensions in the area; a result consistent with general theories of social changes (see chapter 2). These findings indicate that the society in Murang'a is in a state of change as reflected by changes in housing. Having given a summary of the findings we can now examine the implicatios of these research findings.

7.2.0 Contributions of the Study

1 This study adds knowledge to the concerns of housing. It is hoped that the results will complement investigations into the problems of rural housing and housing in general.

2 The research widened the author's horizon on rural housing as well as other aspects of rural settlements.

3 The study has put into record the hitherto unrecorded observations such as the various house types in the study area, the socio-economic characteristics of households (among others) and their possible influences on quality of housing.All this information is compiled and original statistical data in form of tables and diagrams presented.

7.3 RECOMMENDATIONS:

1. Expansion of local manufacturing capacity for building materials should be encouraged through the establishment of cottage industries for the production of materials such as burnt bricks, ceramics, tiles, mud blocks, and sand-concrete blocks and window/door frames.
2. Research should be emphasised in the viability of local alternatives like stabilized earth and roofing materials. This should be done through the provision of more funds to research institutions. The transfer of knowledge in the handling of such materials and technologies from the research stage to the community should also be encouraged.
3. Since water is indispensable for good living, concrete attempts should be made by the government to provide portable water for rural households. If piped water

cannot be provided for all areas, provision of boreholes at central locations should be made especially in the marginal areas.

4. Where toilets are lacking, or of poor quality, communal latrines should be encouraged and provided through self-help.

5. Make finance more available through the mobilization of local savings by using co-operative movements, pension scheme and insurance funds where possible.

6. Remove barriers to rural housing financing by targeting the rural poor and other disadvantaged groups and involving them in decision making as to who gets the finances.

7. Greater cooperation is necessary between the government agencies and non-governmental organizations concerned with improvement of water and electricity supply , health, education and agriculture in the improvement of rural housing and quality of life in the study area. These agencies should be encouraged to invest more of their resources here.

8. Have a pragmatic approach as to the quality of housing envisaged and the amount of resources available.The house constructed using permanent materials only as envisaged by the government, has proved to be a mirage to many.

7.4 AREAS OF FURTHER RESEARCH

1. Studies parallel to this one need to be done in other rural areas with an aim to compare findings.
2. A follow-up study needs to be done in Murang'a District to look into the problem of water supply. Emphasis should probably be laid on the circumstances surrounding the failure of water projects that have been initiated here in the past. This should be done with an aim of reviving and even expanding them.
3. Research on the other aspects of rural housing in the study area such as access to educational, health and other infrastructural facilities should be done so as to come up with a more comprehensive study of housing in the area.

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APPENDIX 1

QUESTIONAIRE

I am a post-graduate student from Kenyatta University conducting a survey on rural housing conditions in Murang'a District. The purpose of this study is for academic requirements and therefore the information will be treated as strictly confidential. You are respectively requested to assist in the work by answering questions carefully. There is no `right' or `wrong' answer.

Thank you.

NAME OF RESPONDENT .....

SUB-LOCATION .....

LOCATION .....

DISTRICT .....

A. HOUSEHOLD CHARACTERISTICS

1. Is the head of the household 01) Male ( )
02) Female ( )

2. Age of the household head .....

3. Marital status of the head of household
01). Single 03). Divorced
02). Married 04). Widowed

4. Number of household members .....

5. How many children do you have?

Number

(i) Young adults

.....

(ii) School-age children

.....

(iii) Children/babies not of school age

.....

Total

.....

6. Number of other relatives in the household

.....

B. SOCIO-ECONOMIC ACTIVITIES

7. Occupation (main source of income)

01) Farmer
02) wage-earner
03) Business person
04) Others (specify)
.....

8. If employed is your work:

01) Temporary
02) Semi-permanent
03) Tenant (squatter)

9. What is your farm size in acres? .....

10. How did you acquire your farm?

01). Inheritance 03). Tenant (squatter)

02). Purchase 04). Others (specify)

.....

11. Do you have a title deed to your farm?

01). Yes

02). No

12. Please, indicate which income group you belong to (in kshs.per month).

01) 0 - 500

02) 501 - 1000

03) 1001 - 1500

04) 1501 and above

13. What is your educational level?

01). Non-literate 03). secondary school

04). Primary school 04). Tertially level

14. Source of construction finance

01). Friends and own savings 04). Bank loan

02). Won savings 05). Insurance

03).Cooperative loan 06). National housing cooperative

07).Self-help group

15. Cost of labour (kshs) .....

C. HOUSING CHARACTERISTICS

16. What is the architectural form/style of your house?

01). Circular
02). Square
03). Rectangular

17. Give reasons for the form taken by your house?

01). Custom and tradition
02). Climate
03). Nature of building materials
04) No reason

18. What is the type/form of the construction of the house?

01). Temporary (with traditional materials)
02). Semi-permanent (with mixed materials)
03). Permanent (permanent building materials)

19. Materials used for foundation

01). Poles
02). Loose stone/sun-dried bricks.
03). Fire bricks
04). Quarry stones
05). Concrete/cement blocks

20. Materials used for floor

01) Earth
02) Timber
03) Concrete/cement
04) Tiles

21. Materials used for wall:

01) Mud and wattle
02) Timber
03). Sundried bricks
04). Fired bricks
05). Quarry stones

22. Materials used for roof

01). Grass

02). Corrugated iron

03). Sisal cement sheets

04). Tiles

23. Conditions of floor

01). Bad

02). satisfactory

03). Good

24. Conditions of the wall

01) Bad

02) satisfactory

03) Good

25. Conditions of the roof

01). Bad

02). Satisfactory

03). Good

26. Availability of kitchen

01). None

02). Separate unit

03). Inside main house

27. Availability of bathroom

01) None

02) Separate unit

03) Inside main house

28 Availability of the toilet

01) None

02) Separate unit

03) Inside main house

29 Availability of water

01) Over 1000 metres

02) 501 - 1000 metres

03) 100 - 500 metres

04) on plot

05) Inside main house

30. Source of water

01) Stream/well/Dam

02) Roof catchment

03) Communal water tap

04) Own tap

31. Is there electricity in the homestead?

01). Yes

02). No

32. Number of room(s) .....

D. HOUSING PERCEPTION AND ASPIRATIONS

33. Are you satisfied with your present housing conditions?

01). Very satisfied

02). Satisfied

03). Dissatisfied

04). Very dissatisfied

05). Don't know

34. If you had some extra money, what would be your first priority to invest in?

01). Food

02). Clothing

03). Housing

04). Education

05). Others (specify) .....

35. Where would you wish to live?

01) No response

02) Rural area

03) Urban area

36. If you are dissatisfied with your present housing condition, what do you think could be done to improve it?

01). .....

02). .....

APPENDIX 2

Housing Quality Measure Index

				Points
1.	Floor Condition:			
	(i)	Bad		1
	(ii)	Satisfactroy		2
	(iii)	Good		3
2.	Wall Condition:			
	(i)	Bad		1
	(ii)	Satisfactory		2
	(iii)	Good		3
3.	Roof condition:			
	(i)	Bad		1
	(ii)	Satisfactory		2
	(iii)	Good		3
4.	Number of rooms:			
	(i)	One		1
	(ii)	Two or three		2
	(iii)	More than three		3
5.	Availability of Kitchen, Toilet and bathroom:			
	(i)	None	(1)	
	(ii)	Outside the house	(2) Maximum	9
	(iii)	Inside main house	(3) Points	

6. Availability of water:

(i)	Over 1000 metres	1
(ii)	100 - 1000 metres	2
(iii)	Below 100 metres	3

7. Availability of electricity:

(i)	None	0
(ii)	Available	2

8. Materials used for floor, wall and roof:

(1)	Temporary	(1)		
(ii)	Semi-permanent	(2)	Maximum	9
(iii)	Permanent	(3)	Points	

TOTAL .....

The maximum possible score for a house is 35 points and the lowest is 11. The housing quality was rated as the following:

11 - 20	=	Poor
21 - 29	=	Satisfactory
30 and above	=	Good

Index adapted from Olima (1986), Sterkenburg (1987) and Kiamba (1991a).

APPENDIX 3

CRITICAL VALUES ON THE CHI-SQUARE DISTRIBUTION

	SIGNIFICANCE LEVEL				
	0.10	0.05	0.01	0.005	0.001
1	2.71	3.84	6.64	7.88	10.83
2	4.60	5.90	9.21	10.60	13.82
3	6.25	7.82	11.21	12.84	16.27
4	7.78	9.49	13.28	14.86	18.46
5	9.49	11.07	15.09	16.77	20.52
6	10.64	12.59	16.81	18.55	22.46
7	12.02	14.07	18.48	20.28	24.32
8	13.36	15.51	20.29	21.96	26.12
9	14.68	16.92	21.67	23.59	27.88
10	15.99	18.31	23.21	25.19	29.59
11	17.23	19.68	24.72	26.76	31.29
12	18.35	21.00	26.22	28.30	32.91
13	19.81	22.35	27.69	29.82	34.53
14	21.06	23.68	29.14	31.32	36.12
15	22.31	25.00	30.58	32.80	37.70
16	23.54	26.30	32.00	34.27	39.29
17	24.77	27.59	33.41	35.72	40.75
18	25.99	28.87	34.80	37.16	42.31
19	27.20	30.14	36.19	38.58	43.82
20	28.41	31.41	37.57	40.00	45.32
21	29.62	32.67	38.98	41.40	46.80
22	30.81	33.92	40.29	42.80	48.27
23	32.01	35.17	41.64	44.18	49.73
24	33.20	36.42	42.98	45.56	51.18
25	34.38	37.65	44.31	46.93	52.62
26	35.56	38.89	45.64	48.29	54.05
27	36.74	40.11	46.96	49.65	55.48
28	37.92	41.34	48.28	50.99	56.89
29	39.09	42.56	49.59	52.34	58.30
30	40.26	43.77	50.89	53.67	59.70
40	51.81	55.76	63.69	66.77	73.40
50	63.17	67.51	76.15	79.49	86.66
60	74.40	79.08	88.38	91.95	99.61
70	85.53	90.53	100.43	104.22	112.32
80	96.58	101.88	112.33	116.32	124.84
90	105.57	113.15	124.12	128.30	137.21
100	118.50	124.34	135.81	140.17	149.45

The critical values are determined by reference to the sample degree of freedom (v) and the selected significance level. If the test statistic equal or exceeds the critical value then the null hypothesis is rejected.

APPENDIX 4

RESULTS OF THE HOUSING QUALITY MEASUREMENT INDEX

QUESTIONAIRE NO	TOTAL POINTS	CONDITION (RATING)
1	29	Satisfactory
2	16	Poor
3	19	Poor
4	26	Satisfactory
5	15	Poor
6	22	Satisfactory
7	23	Satisfactory
8	20	Poor
9	19	Poor
10	13	Poor
11	15	Poor
12	27	Satisfactory
13	16	Poor
14	31	Good
15	27	Satisfactory
16	21	Satisfactory
17	33	Good
18	34	Good
19	31	Good
20	23	Satisfactory
21	30	Good
22	16	Poor
23	30	Good
24	17	Poor
25	26	Satisfactory

26	23	Satisfactory
27	29	Satisfactory
28	22	Satisfactory
29	22	Satisfactory
30	23	Satisfactory
31	19	Poor
32	30	Good
33	24	Satisfactory
34	19	Poor
35	20	Satisfactory
36	29	Satisfactory
37	20	Poor
38	31	Good
39	26	Satisfactory
40	24	Satisfactory
41	26	Satisfactory
42	21	Satisfactory
43	21	Satisfactory
44	27	Satisfactory
45	19	Poor
46	19	Poor
47	20	Poor
48	20	Poor
49	21	Poor
50	24	Satisfactory
51	19	poor
52	21	Satisfactory
53	25	Satisfactory

54	18	Poor
55	22	Satisfactory
56	19	Poor
57	20	Poor
58	18	Poor
59	30	Good
60	21	Satisfactory
61	18	Poor
62	17	Poor
63	25	Satisfactory
64	19	Poor
65	22	Satisfactory
66	19	Poor
67	31	Good
68	18	Poor
69	19	Poor
70	24	Satisfactory
71	19	Poor
72	22	Satisfactory
73	20	Poor
74	27	Satisfactory
75	31	Good
76	29	Satisfactory
77	29	Satisfactory
78	26	Satisfactory
79	25	Satisfactory
80	24	Satisfactory
81	19	Poor

82	27	Satisfactory
83	22.	Satisfactory
84	26	Satisfactory
85	18	Poor
86	27	Satisfactory
87	27	Satisfactory
88	17	Poor
89	23	Satisfactory
90	29	Satisfactory
91	21	Satisfactory
92	27	Satisfactory
93	23	Satisfactory
94	19	Poor
95	24	Satisfactory
96	19	Poor
97	22	Satisfactory
98	28	Satisfactory
99	30	Poor
100	23	Satisfactory
101	29	Satisfactory
102	23	Satisfactory
103	30	Good
104	23	Satisfactory
105	22	Satisfactory
106	26	Satisfactory
107	24	Satisfactory
108	22	Satisfactory
109	19	Poor

110	31	Good
111	23	Satisfactory
112	28	Satisfactory
113	21	Satisfactory
114	23	Satisfactory
115	15	Poor
116	23	Satisfactory
117	32	Good
118	30	Good
119	23	Satisfactory
120	30	Good
121	24	Satisfactory
122	21	Satisfactory
123	19	Poor
124	18	Poor
125	32	Good
126	17	Poor
127	19	Poor
128	16	Poor
129	22	Satisfactory
130	28	Satisfactory
131	20	Poor
132	20	Poor
133	18	Poor
134	21	Satisfactory
135	17	Poor
136	16	Poor
137	14	Poor

138	22	Satisfactory
139	19	Poor
140	23	Satisfactory
141	23	Satisfactory
142	20	Poor
143	16	Poor
144	22	Satisfactory
145	13	Poor
146	20	Poor
147	22	Satisfactory
148	15	Poor
149	22	Satisfactory
150	19	Poor

APPENDIX 5

PAGE 2

THIS IS TO CERTIFY THAT:

Prof./Dr./Mr./Mrs./Miss THOMAS NJUGUNA KIBUTU

of (Address) P.O. BOX 43844 NAIROBI

has been permitted to conduct research in ..... Location, MURANGA District, CENTRAL Province,

on the topic SOCIAL ECONOMIC FACTORS INFLUENCING RURAL HOUSING CONDITIONS IN IN MURANGA DISTRICT

for a period ending APRIL, 1993

PAGE 3

Research permit No. OP/13/001/230. 46

Date of issue 16TH FEBRUARY 1993

Fee received KSHS. 100/=

PERMANENT SECRETARY OFFICE OF THE PRESIDENT

(R. MUSE WANASAKAMI)

Applicant's Signature

FOR: *Permanent Secretary, Office of the President*