COMMUNITY PARTICIPATION IN SUSTAINABLE RURAL SHELTER DEVELOPMENT IN MACHAKOS DISTRICT, KENYA.

BY

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A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF ARTS, DEPARTMENT OF GEOGRAPHY KENYATTA UNIVERSITY.

1997
DECLARATION:

This thesis is my original work and it has never been presented for a degree in any other University.

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This thesis has been submitted for examination with my approval as a University Supervisor.

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ABSTRACT:

Human settlement has since the 1976 Vancouver Habitat Conference been emphasised as an important ingredient of national development. It has come to be seen as a contributing factor to both economic growth and development in any economy that invests in it. Likewise, shelter has been seen as positively contributing towards improved quality of life and human dignity. To achieve quality shelter, countries have to invest large proportion of their national budget, a situation lacking especially in the developing countries. This has led to mushrooming of slums and unplanned shelter in the urban areas. In the rural areas, shelter quality is inadequate; it is characterised by use of locally unimproved materials that are subjected to vermin attack, fire and other natural disasters. To solve shelter problems in both urban and rural areas, a number of approaches have been used such as mortgage schemes and site and service programmes in the urban areas and loaning schemes as well as self help in the rural areas where the residents have sought concerted effort in improving their built environment.

This study has been concerned with investigating the concerted effort approach in rural shelter development, herein referred to as 'community participation'. Community participation was investigated with reference to the residents mutual involvement in seeking solutions to their shelter needs, as they contribute their own abilities and resources. The study also investigated the community involvement in shelter projects initiated or sponsored by NGOs and other development agencies.
The analysis indicated that there exists a relationship between community participation and shelter development in the study area. Shelter was categorised into temporary, semi-permanent and permanent, defined by the materials used. Community participation was found to occur in the provision of building materials by fetching or collecting them from the field and delivering to the building sites, improving the raw local materials to more advanced and durable state as in the making of bricks and in financing the purchase of the materials from either within the locality or from outside their environment. The community also participates in the provision of construction labour either through financial contribution or manually participating in building of their houses.

Looking at rural shelter holistically, it was found that the community also participates in provision of building materials for kitchens and granaries. However, the materials needed in the construction of these facilities are mostly locally available, hence community participation is largely through gathering. Water is an important component of shelter, but it is a problem in the area. In seeking solutions to water problem, the residents have enhanced the available water resources by protecting springs, constructing sub-surface dams and water storage facilities. To satisfy this need, the community participates in digging trenches for pipes, as was found in Matuu areas, building dams (locally referred to as 'Koo') as in Masii, clearing bushes and transporting materials. They also contribute finances towards purchasing the necessary materials and paying specialised labour. They also contribute materials such as construction stones.
The residents also perceive security as an important part of their built form. It was indicated that various security problems are experienced in the area ranging from petty stealing to theft of farm produce and tools, attacks by wild game and cattle rustling. To solve the security problems, the residents apply different approaches. Community vigilance is among the approaches applied in combating criminal activities where the residents have set night patrol groups to enhance security.

Finally, the community was found to be involved in projects initiated or sponsored by external agents, such as the Machakos Catholic Diocesan Development Committee and the World Neighbours. These NGOs have projects that are shelter related, especially in water programmes (see chapter five). In these programmes the community is involved in contributing labour, materials, finances and leadership. The involvement of community has led to the sustenance of the programmes after the withdraw of the sponsors for they (beneficiaries) feel they too have a stake in them (project) other than the accruing benefits.

To analyse the effectiveness of community participation in shelter development, housing quality as related to materials used was assessed. This was looked at from the durability of the materials. It was found that the aspect of community participation has significantly contributed to durable houses especially in the provision of wall building materials. However, the community's effectiveness in provision of durable roofing materials is low due to cost implication and the widespread use of less durable but cheaper materials especially grass for thatching. It was also found that there was least community
participation in the provision of durable floor materials. This is attributed to the widespread earthen floor in rural areas.

Lastly, a chi-square test of significance of community participation and shelter development indicates that there does exist a statistical relationship between community participation in building materials provision and shelter development. There is also a statistical relationship between community participation in construction of water sources and water development.

In conclusion, it is argued that this study has found out that in solving shelter problems, the rural residents of Machakos district have utilized locally available human and natural resources, a finding that is consistent with the theoretical framework developed for this study.
ACKNOWLEDGMENT:
There are many people whose assistance, criticism and support has helped this study be a success. However, it is not possible to mention all of them here. It gives me great pleasure and pride to have benefited from their contribution for which I am grateful.

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Lastly, very special thanks go to my wife Hellen Mutare for her understanding, support and encouragement throughout the period of the fieldwork and thesis writing and for caring for our children Joy Wanjiru and Winnie Muthoni.
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The study Community Participation in Sustainable Rural Shelter Development in Machakos District, Kenya is based on an empirical investigation into the participatory mechanisms of the rural inhabitants of the district. It is concerned with the assessment of how the local community has utilized both physical and human resources in their endeavour to realize their shelter needs. It seeks to reveal how through concerted efforts via formal and informal community groups the residents have been able to influence their built environment by planning, constructing and maintaining.

(i) **Shelter:** Encompasses the following components, a sheltered place of living, working and production; related function, amenities of water and sanitation, access to social and physical infrastructures such as health centres, schools, markets, and other essential services and grain store which is an important component of rural shelter.

(ii) **Local Community:** People living and working in a particular region who are target of development programs by national and regional policies.

(iii) **Community Participation:** Development effort of the local community in locally initiated and/or externally sponsored development programs aimed at improving their quality of life.
(iv) **Sustainable shelter development:** Shelter or shelter elements that serve the shelter needs of a people and that has been envisaged, planned, formulated and implemented by the local inhabitants whose maintenance and control is based on the local resources.

(v) **Self-help groups (local groups):** formal and informal groups by local community engaged in activities aimed at improving their quality of life through mutual help in terms of labour and/or finances.

(vi) **External agencies (outsiders):** Organizations or People concerned with local development, who themselves are not necessarily residents of the area. They have the resources and/or skills necessary for alleviating deficient local living and working conditions. Such as NGOs, Development Agencies etc.
LIST OF ABBREVIATION.

ASALS - Arid and Semi-Arid Lands.
CBOs - Community Based Organizations.
DDC - District Development Committees.
ECA - Economic Commission for Africa.
FAO - Food and Agricultural Organization.
GSS - Global Strategy for Shelter to the year 2000.
IMF - International Monetary Fund.
IRD - Integrated Rural Development.
NGOs - Non-Governmental Organization.
RHLS - Rural Housing Loan Scheme.
SAPs - Structural Adjustment Programs.
SPSS - Scientific Programme for Social Sciences.
UNCHS - United Nations Centre for Human Settlement.
WCARRD - World conference for Agrarian Reform and Rural Development.
CHAPTER ONE:

1.0 BACKGROUND OF THE STUDY:

1.1 INTRODUCTION

Rural areas are of prime importance in the development process especially in the developing countries whose economies are agriculture oriented and where the majority of the population live and work. Any attempt therefore towards improving the living standards here would be addressing the well-being of the majority.

For a long time, approaches geared towards ameliorating the rural problems have been based on the world development model, emphasising on economic growth and focusing particularly on industrialization, and the transfer of technology and culture from the North to the South (Ekins, 1986). However, with the introduction of the basic needs approach in the 1970s, international agencies such as the World Bank and the Food and Agricultural Organization (FAO) of the United Nations formulated the "New style" and "Integrated Rural Development" (IRD) approaches respectively. Both approaches aimed at improving productivity and social welfare of the rural poor. However they failed to realize their objectives due to "sectoral biases" by the granting agencies and continued exclusion of the beneficiaries from project development (Carvalho, 1984:6). The basic need approach was emphatic on human scale development approach, seeking not only the economic growth but also development geared towards attain social welfare of the beneficiaries.
With the inception of the United Nations Centre for Human Settlement (UNCHS)-Habitat in 1976 in Vancouver, Canada, Human Settlement development has been appreciated as an important ingredient in the process of Regional Development (UNCHS 1990). Shelter, an important component in human settlement development, like food, water and clothing is a basic need and the most visible indicator of socio-economic, political and emotional stability of the people, (Onibokun, 1986; Olima, 1986). However, more than one billion of humanity do not have shelter fit for human habitation (UNCHS 1991) and "yet very few developing countries have coherent and explicit rural shelter policies" (UNCHS 1992:1).

Shelter refers not only to the dwellings in terms of permanency, space and privacy but also to the associated amenities of clean portable water, sanitary facilities, energy, security and access to social and physical infrastructures.

Most developing countries hoped to provide their citizens with decent shelter by adopting a 'provider' or conventional approach especially in the urban areas. This approach meant a direct government involvement and emphasized on standards. It however necessitated enormous cost due to high construction standards, expensive building materials and maintenance, hence, going beyond the reach of the poor (Mabogunje, 1980). There has therefore been a shift towards 'supportive' or non-conventional approach, seeking a reduced direct government involvement and emphasising on the role of the beneficiaries.
In the rural areas the task of shelter development has been and will continue to be the concern of the inhabitants with the Government's role revolving around technical advice on the use of improved traditional materials, funding housing self-help groups and co-operatives projects and providing services that the local community is unable to meet effectively such as land tenure, social and physical infrastructures and security.

The non-conventional approach has led to the growth of 'popular or community participation' concept in shelter development. The concept emphasis on the control and involvement of the beneficiaries in decision making, implementation and managing of the projects. Since it is their destiny in question, their involvement creates a sense of ownership and a higher chance of project success, thus, sustainability in development is more or less guaranteed.

The concept of popular or community participation in shelter development was first introduced and stressed at the 1976 Habitat Conference in Vancouver Canada. During the conference, a number of papers which examined the problem of regional development were presented. It was argued that popular participation ensures success in projects for it addresses people's desires and aspirations and augments human and financial resources necessary for community development. It was recommended that popular participation should be an indispensable element in planning strategy and in their formulation, implementation and management.

The Habitat "New Agenda" for human settlement (UNCHS 1988) advocating an enabling strategy challenged governments to
recognize the importance of human settlement in national
development and incorporate the participatory mechanisms of the
beneficiaries. This contention has been repeated in the United
Nations 'Global Strategy for Shelter to the year 2000' (GSS)
(UNCHS 1991).

In Kenya, Sessional Paper No.5 of 1966-67 which contains the
National Housing Policy articulates the call for the rural
resident to provide for their own shelter through self-help and
housing cooperatives. This call has been repeated in the
subsequent Five Year Development Plans (1974-78; 1979-83;
1984-88). It is this global, regional and national emphasis for
the rural residents to provide for their shelter that has
provoked the need for this study which was conducted in the rural
areas of Machakos District.

This thesis is divided into seven chapters. The first three
chapters contain theoretical and operational frameworks that have
been followed in the study. The rest of the thesis reports on the
findings presenting the analytical results.

Chapter one contains a background of the study highlighting the
development models that have presided the concept of popular or
community participation in regional development. It also contains
the statement of the study problem which indicates the gist of
the study emphasising the participatory mechanisms of the rural
residents. Other sections of the chapter contain the research
objectives, hypotheses and premises, justification of the study,
its scope and limitation and lastly, is an elaborate description
of the study area.
Chapter two contains the operation and theoretical frameworks. This includes a review of literature on regional development and a theoretical framework on the same as has been envisaged by various regional development scholars. The third chapter outlines the research methods that the study has adopted in data collection and analysis.

Chapters four, five and six present the research findings. Chapter four deals with the housing conditions in the rural areas of the study area emphasising on the types of human habitat. Chapters five and six present the results of descriptive analysis on the concept of community participation and relating to shelter development. Chapter seven contains the summary and conclusion highlighting on the findings of the study, presenting areas for further research and recommendations.

1.2 STATEMENT OF THE PROBLEM:

The gist of this study has emerged from the realization that despite the global, regional and national advocacy for community participation in shelter development studies on rural shelter in Kenya continue to pay much emphasis to the causes of and existing conditions of rural housing (Sterkenberg 1978, 1988; Kisov 1984; Olima 1986; Kiamba 1991 a, b). This study goes beyond this point and addresses the concept of community participation in shelter development highlighting its modes and effectiveness in uplifting the status of human built environment in Machakos District. It also investigates the participation in shelter development projects by external agencies, Churches and Non-governmental organization. Rural shelter has been addressed
broadly in terms of the house and associated amenities with specific regard to provision of building materials, construction labour and financing of projects.

Shelter development is perceived as the desire and implementation towards a standard shelter as defined by the Kenya government housing policy of a house with a living room, two bedrooms, kitchen, bathroom and two toilets (Kenya 1967). It also entails the changing of shelter from temporary through semi-permanent to permanent state. This hence refers to the improvement of shelter to a durable status by using more durable and sustainable materials.

The study has therefore attempted to answer the following specific questions:

1. How has the rural community been sustaining and developing their shelter over time? Are there new community based methods and/or techniques being applied to improve local shelter in the study area?

2. Has there been any governmental as well as NGOs shelter development projects in the study area?

3. Has the local community been involved in NGOs and Governmental shelter development projects? if so, at what level?

4. What constraints are faced by the community based projects in shelter development?
5. How far has community participation in shelter development helped to ameliorate the housing problems and improve the rural shelter status in the study area?

1.3 OBJECTIVES OF THE STUDY:

Based on the above questions, the study has the following objectives:

1. To establish the activities of formal and informal local community based groups in rural shelter development in the study area.
2. To identify the external agents and their activities in shelter development in the study area.
3. To assess the level of involvement of the local community in shelter development projects by NGOs and other agents.
4. To determine the effectiveness of community participation in shelter development in the study area.
5. To determine the constraints of community participation in sustainable shelter development in the study area.

1.4 RESEARCH HYPOTHESES AND PREMISES:

1.4.1 RESEARCH PREMISES:

1. There is a marked appreciation of the role of community participation in rural shelter development in the study area.

2. NGOs and other agents have been involved in shelter
development in the study area.

1.4.2 RESEARCH HYPOTHESIS:

There is no significant relationship between sustainable shelter development and community participation in the study area.

1.5 JUSTIFICATION OF THE STUDY:

It is public knowledge that the rural areas in the developing countries are the homes and economic realms of the majority of the population (Carvahlo 1984). It is also envisaged that the political and economic trends today are towards empowering the masses especially the disadvantaged. Hence, it is obvious that eventually economic and political power of these countries will be based in the rural areas, a trend that will hopefully check on the alarming rural urban migration. However, this will only be realised if the socio-economic needs of the people are well articulated and deliberately addressed and the spatial disparity between the rural and urban areas checked.

With the emergence of the restructuring of the world economic and political spheres, emphasising on the "New World Order", governments will continue to reduce their expenditure especially on the provision and sustenance of the basic needs, and concentrating on the provision of infrastructures and services that might not be provided effectively by the target population. People will have more responsibility in meeting their basic needs and supporting the Central Governments.
Though a basic need, shelter in the rural areas has been and will continue to be a concern of the inhabitants. However, given their disadvantaged socio-economic position, compounded by their low irregular incomes, concerted efforts and mutual aid will be of great contribution in influencing their living standards. Through locally based formal and informal community organisations the rural residents will seek to solve their most desired and felt needs. Through such organisations democratically identified project priorities will be addressed and their sustenance more or less guaranteed.

Based on this Universal conceptualization of popular participation in regional development, the study has undertaken an investigation on the participatory mechanism of rural population in the Machakos District in their endeavour to meet their shelter and associated amenities needs.

The choice of Machakos District for this study was based on its ASALs' nature and human populous conditions. Likewise a number of studies have been carried out on its housing conditions (Kisovi, 1984; Sterkenberg, 1988; Kiamba, 1991a) and yet the influence of concerted and mutual aid has not been sought in explaining the shelter conditions.

The findings of the study will hopefully be a focal point for Planner and Agencies interested in regional development since it reveals the most abundant physical and human resources that may be tapped to enhance the living standards of the people. The study also points out areas that should be addressed by development agencies, scholars and researchers with the aim of
enhancing and instituting programmes at the grass root level for grass root support to ensure sustainability.

Since the importance of the beneficiaries is emphasized as not only an end but also as a means of programme development, the findings of the study are likely therefore to be useful tools for National and District Planners in Machakos and similar environments. This will help realize maximum utilization of both natural and human resources so as to realize an upward trend in rural development, with particular emphasis to shelter which has continued to portray desperation among majority of the rural inhabitants.

1.6 SCOPE AND LIMITATION OF THE STUDY:

This study was confined and conducted in the rural areas of Machakos District of Eastern Province. The study avoided parts of the district that are gazetted as urban settlements such as Machakos Township, Athi River, Matuu, Tala and Kangundo among others.

The focus of the study is on the participatory mechanism of the rural inhabitants in their endeavour to achieve sustainable shelter development. Their participation was investigated through their formal and informal Community Based Organisations (CBOs) and in programmes initiated or supported by development agencies, churches and NGOs.

Community participation is also addressed in terms of provision of building materials, labour and financing of shelter projects.
and associated amenities such as water and security.

However, the study does not emphasis on the assessment of the causes of and conditions of rural housing in the study area as this has been addressed elsewhere (Kisovi, 1984; Sterkenberg, 1988; Kiamba, 1991a). Any reference to the same is for the purpose of clarification and complementary.

1.7 THE STUDY AREA:
1.7.1 INTRODUCTION:

Machakos District is one of the Districts of Eastern Province of Kenya (Fig 1.1). It is marked by a striking physiographic unit of a series of hill masses at the centre between the Athi-kapiti plains in the northwest and the lava Yatta plateau in the northeast. The notable hill masses are the Mua, Iveti and Kangundo massif of the basement complex rock and Ol Donyo Sabuk (2144 m), (Kenya 1989). However, most of the southern parts of the district are lying within a gentle slopping part towards the Athi river broken by occasional hills.

1.7.2 ADMINISTRATIVE AND POLITICAL UNITS:

Machakos district has six division which are further subdivided in locations and sublocations. The divisions include Yatta, Masinga, Kangundo, Mwala, Kathiani and Central (fig.1.2). The district has five parliamentary constituents whose boundaries follow the divisional ones.
1.7.3 WATER RESOURCES:

Overall the drainage pattern is from west to east. However, most of the streams are seasonal flowing only during the rain seasons. Athi river is the major perennial drainage, the Tana and Thika drain the northern parts of the district. The Mua hills also has a few perennial streams whose flow become intermittent at low altitudes as the inhabitants use them for both domestic and farm use upstream. Springs and streams offer potentials for piped and gravity fed water for domestic and livestock use in the low altitude areas.
Figure 1: Location and Position of Machakos District. (Source: Kenya 1994: lx)
FIG 1.2 ADMINISTRATIVE AND POLITICAL UNITS OF MACHAKOS DISTRICT.
(Source: Kenya, 1994-6)
Generally, surface water is scarce but subsurface water resources (found under the sandy river beds) are an important source for domestic and livestock uses. They offer high potential for development of non-piped water as in the construction of subsurface dams.

The distribution of watershed and soils offer only limited low cost irrigation potential in the District (Kenya 1989). Some divisions such as Yatta are better favoured for irrigated agriculture which utilizes the Yatta farrow water which was constructed by the colonial government, draining from Thika river.

The government of Kenya has already identified the great potentiality of Athi and Tana and plans are underway to develop water resources to enhance irrigated agriculture in the District. (Kenya 1989). Fig.1.3 presents the drainage pattern of Machakos District.

1.7.4 ECOLOGY

Ecologically, Machakos District falls within the Arid and Semi-arid Land (ASALs). It is an area of extreme rainfall variation, typically good seasons are interspersed with extremely dry periods and variation in the outset of rain seasons which adds to the difficulty of ensuring adequate crop production. The rainfall varies with altitude; with an average rainfall ranging from slightly over 1000mm in some of the highlands to slightly below 500mm in the low-lying south and south east parts. Rainfall has a bimodal pattern with a significant difference in
distribution during different years (Table 1.1). The two rainy seasons occur from March to April and November to December.

Table 1.1 Annual rainfall totals for Machakos Town (mm) 1973-80.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ppt(mm)</td>
<td>772.7</td>
<td>867.6</td>
<td>722.3</td>
<td>670.8</td>
<td>955.7</td>
<td>1112.9</td>
<td>1226.1</td>
<td>1021.1</td>
</tr>
</tbody>
</table>

(source: Kenya 1993).

It is also notable that most of the district falls in the semi-arid Agro-Ecological zonation table 1.2 (Jaetzold 1983) making agricultural activities expensive and unreliable.

Given the land capacity therefore, farmers in Machakos district mainly carry out subsistence farming due to shortage of land in the high potential areas and low rainfall in most of the district. Crops that are grown during the two rainy seasons include maize, beans, peas (pigeon and cow) green grams, etc. However, no one season has one particular crop planted but all the mentioned are planted at the same time (Shimdt and Jeatzold, 1983). Fig. 1.4 presents an Agro-ecological Zones map of the district.
### Table 1.2: The Agro-ecological zonation of Machakos District:

<table>
<thead>
<tr>
<th>Agro-Climatic Zone</th>
<th>Description of Area</th>
<th>Main land-use Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High potential</strong></td>
<td>Hill Masses of Iveti Maua and Kangundo</td>
<td>Coffee, Maize, Cotton, Citrus, Forest</td>
</tr>
<tr>
<td>LH₂</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Medium potential</strong></td>
<td>Lower slopes of hills adjacent locations of Mwala, Kileta, Matungulu, Mitaboni, Masii, Muthetheni, Muputi, Ithanga, Kalama</td>
<td>Coffee, Maize, Beans, Pigeon peas, Sunflower, Sorghum, Citrus fruits, Livestock rearing.</td>
</tr>
<tr>
<td>LH UM₂ and UM₃-LH₄, UM₃</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UM₄, LM₂-LH₄</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Low Potential</strong></td>
<td>Whole of Yatta Division, Wamunyu Kibauni</td>
<td>Maize, Pepper Sorghum, Kapella, Pigeon peas, Beans, Cotton, Sunflower, Livestock rearing</td>
</tr>
<tr>
<td>LM₃,UM₃, UM₃-UM₆</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LM₆</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


#### 1.7.5 SOILS:

The main types of soil in the district include

- **Ultisols:**

These are deeply weathered soils enriched with clay and highly coloured by iron oxide occurring mainly on the hill masses, particularly in the densely populated high potential agricultural land.
LEGEND

District Boundary
Zone Boundary
LH2...Wheat / Maize Pyrethrum Zone
LH3...Wheat / Barley Zone
LM3...Main Cotton Zone
LM4...Marg. Cotton Zone
LM5...Livestock Millet Zone
UM2...Main Coffee Zone
UM3...Marg. Coffee Zone
UM4...Sunflower / Maize Zone
UM6...Ranching Zone

FIG 1.4 AGRO ECOLOGICAL ZONES OF MACHAKOS DISTRICT
(Source: Kenya, 1994-7)
- Entisols:
These are developed from recent sediments and often of coarse texture.
- Inseptisols:
These are young soils without clay enrichment and of minimal weathering.
- Vertisols:
They have more than 3% clay especially rich in swelling clay characterised by deep cracks when dry and are high in nutrients.
- Oxisols:
They are generally intensively leached of all un weathered residuals and the stable weathered products.
- Aridosols and Lava:
They are developed on volcanic ash slightly weathered lava and are extremely permeable. Fig 1.5 presents a general soil distribution pattern in Machakos district.

Generally, the development potential of the Agro-climatic zones in Machakos is determined by various complementary factors including rainfall, soil type and pressure on land. The zones classified as high potential (LH3) are already suffering from population pressure and the only possible remedy is to increase the yield per hectare by introducing high yielding varieties of food crops suitable to this kind of climate.
FIG 1.5 SOIL DISTRIBUTION IN MACHAKOS DISTRICT. (Source Kenya 1984:3)
The low potential zones are mainly areas of big tracts of open grassland which receive very little rainfall. These areas have a potential of producing drought resistant crops such as Pigeon peas for consumption and cotton and sunflower as cash crop. Livestock rearing in the harsher areas of this zone has a brighter future and should be encouraged by introducing better breeds for production of more meat; watering of the animals should also be initiated.

1.7.6 **NATURAL RESOURCES:**

Machakos district is endowed with a number of natural resources which if tapped and enhanced may be an economic supplement for the district revenue earnings. They include:-

**Forest Resources:**

Gazetted forest in Machakos District covers about 15,292.5 hectares out of which 2,249.4 hectares are under forest plantation, 9,277 hectare under bush and 4,421.1 hectare under protected forest. The major zone of forests are the hills of Ol Donyo Sabuk, Iveti, and Mua. The forest plantations yielded some 886 cubic metres of timber in 1982 (Kenya 1989:6). The industry direct employs about 500 people. With continued forest plantation and reafforestation, the district will earn more income and offer more employment.
Mineral Resources:

The district has a large quantity of building sand in the seasonal river beds which has been earning the local government authorities and residents high income from sand harvesting. In addition the district has soils suitable for making building bricks. This type of soil is available in all divisions and has been used as a source of alternative building material. Other resources include quarry stones available at Kathiani in Kangundo, Matuu in Yatta, Kimutwa in Central division and some parts of Kalawa location neighbouring Kimutwa. This resource is an important source of revenue to quarry owners and workers beside being an important source of building material in the district.

Fishery:

As a resource, fishery has been enhanced with the construction of the Masinga dam along the Tana river and several subsurface dams being constructed under the Machakos Integrated Development Programme (MIDP). Similarly fish exists in perennial rivers especially Athi and Thika and small-scale fishing by individuals is going on.

Hydro-Electricity:

The district can use the waterfalls on Athi river (fourteen falls) at Ol Donyo Sabuk to develop Hydro-electricity for local consumption, however, the district hosts the giant Masinga HEP plant.
Handcrafts:

The Akamba who are the dominant of all ethnic communities in Machakos district are gifted in handcraft skills. The skills could be developed further by providing incentives in the form of organized marketing and production system to enable wood carving and basket making penetrate foreign market. Presently, the residents especially women folks have joined together to form groups involved in especially pottery and basket making to earn some income.

Wildlife:

Machakos district has the advantage of a national park at Ol Donyo Sabuk. There however exists conflict between this resource and the inhabitants who encroach into the park to farm and on the other hand game attacks which are common on the peripheral farms especially by buffalos, Hippos and Monkeys.

1.7.7 DEMOGRAPHIC AND SETTLEMENT PATTERNS:

Machakos district is the most populous of all the ASAL districts in Kenya with a population of 757128 and a density of 121 (Kenya 1991). It is important to note that the population trend is such that the high potential zones will continue to exhibit high population growth rates. Likewise, the trend is expected to be reflected in the medium and low potential zones due to natural increase and the effect of migration from the higher potential zones which are experiencing great pressure on the resources.
The urbanization rate on the other hand has assumed an upward trend with the population almost doubling since 1969 and almost tripling in 1979 (Kenya 1989). Machakos Township has grown tremendously, a fact that may be explained by boundary extension to enclose large population within a rural set up. Other growing urban centres in Machakos district include Matuu, Tala and Athi River.

In the District, the human settlement pattern and intensity is highly influenced by soil types and climate. Areas having potential soils are able to support high population density, however the settlement density trends declines in the drier and less fertile lands.

Table 1.3: table shows the household density in the district. However, it has been observed that where irrigation is practised, the settlement density is higher as in Yatta division along the Yatta farrow in Matuu location.
### Table 1.3: Household Density in Machakos District.

<table>
<thead>
<tr>
<th>Administrative Area</th>
<th>Number of Households</th>
<th>Square Kilometres</th>
<th>Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ndithini</td>
<td>2605</td>
<td>200</td>
<td>13</td>
</tr>
<tr>
<td>Masinga</td>
<td>2887</td>
<td>424</td>
<td>7</td>
</tr>
<tr>
<td>Masinga</td>
<td>5492</td>
<td>624</td>
<td>9</td>
</tr>
<tr>
<td>Kdalani</td>
<td>2868</td>
<td>187</td>
<td>15</td>
</tr>
<tr>
<td>Natuu</td>
<td>4273</td>
<td>231</td>
<td>18</td>
</tr>
<tr>
<td>Kinyaata</td>
<td>5316</td>
<td>563</td>
<td>9</td>
</tr>
<tr>
<td>Katangi</td>
<td>740</td>
<td>104</td>
<td>7</td>
</tr>
<tr>
<td>Yatta</td>
<td>13197</td>
<td>1085</td>
<td>12</td>
</tr>
<tr>
<td>Ndonyo Sabuk</td>
<td>1282</td>
<td>113</td>
<td>11</td>
</tr>
<tr>
<td>Matungulu</td>
<td>3708</td>
<td>159</td>
<td>23</td>
</tr>
<tr>
<td>Kangundo</td>
<td>10163</td>
<td>139</td>
<td>73</td>
</tr>
<tr>
<td>Kakuyuni</td>
<td>1173</td>
<td>26</td>
<td>45</td>
</tr>
<tr>
<td>Kangundo</td>
<td>16320</td>
<td>437</td>
<td>37</td>
</tr>
<tr>
<td>Mwala</td>
<td>3546</td>
<td>173</td>
<td>20</td>
</tr>
<tr>
<td>Wamunyu</td>
<td>2487</td>
<td>188</td>
<td>13</td>
</tr>
<tr>
<td>Muthetheni</td>
<td>3788</td>
<td>153</td>
<td>25</td>
</tr>
<tr>
<td>Masii</td>
<td>747</td>
<td>31</td>
<td>24</td>
</tr>
<tr>
<td>Kibauni</td>
<td>4030</td>
<td>368</td>
<td>11</td>
</tr>
<tr>
<td>Mwala</td>
<td>14598</td>
<td>913</td>
<td>16</td>
</tr>
<tr>
<td>Lukenya</td>
<td>1114</td>
<td>26</td>
<td>43</td>
</tr>
<tr>
<td>Kathiani</td>
<td>2057</td>
<td>1295</td>
<td>2</td>
</tr>
<tr>
<td>Mitaboni</td>
<td>1346</td>
<td>37</td>
<td>36</td>
</tr>
<tr>
<td>Kathiani</td>
<td>4517</td>
<td>1358</td>
<td>3</td>
</tr>
<tr>
<td>Mutithoni</td>
<td>1178</td>
<td>7</td>
<td>168</td>
</tr>
<tr>
<td>Mumbuni</td>
<td>606</td>
<td>17</td>
<td>36</td>
</tr>
<tr>
<td>Nuwuti</td>
<td>506</td>
<td>13</td>
<td>37</td>
</tr>
<tr>
<td>Iveti</td>
<td>2959</td>
<td>52</td>
<td>57</td>
</tr>
<tr>
<td>Konza North</td>
<td>393</td>
<td>418</td>
<td>1</td>
</tr>
<tr>
<td>Central</td>
<td>5643</td>
<td>507</td>
<td>11</td>
</tr>
<tr>
<td><strong>MACHAKOS</strong></td>
<td><strong>59766</strong></td>
<td><strong>4924</strong></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>


It has also been observed that human settlement have utilised the locally available materials for construction. Kisovi, 1984, analysed the composition of materials used for floor, roofing and walls as locally acquired. He found that in Ukambani, 85% of the floors of domestic houses were earthen, 63.3% were wattle and clay or raw brick walled, 36.1% had stone or baked brick walls and 74% were grass thatched. Kiamba 1991a also emphasised on the low standard of houses in Machakos district indicating that 14.8% lacked bathrooms and 13% had their Kitchen outside the main house, a status that falls short of government of Kenya desire
for decent shelter for the citizen of a standard house consisting of two bathrooms a kitchen, a toilet and a shower.

The water situation is inadequate in Machakos district given its ASAL nature. However, Sterkenberg 1988 indicated that water is obtained from various sources such as rivers and streams and to a lesser extent from boreholes and wells. Sometimes water is diverted from streams into furrows for both irrigation and domestic use as in Yatta or piped either through gravitational force as in Mutituni or pumped. Similarly, water is obtained from ponds created through the construction of subsurface dams as in Masii or to a less extent by roof catchment during the rainy seasons.

1.7.8 SUMMARY

It is clear that the rural areas of the developing countries in general and Kenya in particular are of diverse human and natural resources. It is however envisaged that a rational utilization of these resources in the long run sustain the livelihood of the inhabitants.

It is therefore important to analyse how the rural inhabitants of Machakos District have utilised these diverse resources. This chapter is instrumental in the bid to focus the study into its main issues of highlights the importance of popular participation in shelter development. This has been illustrated by the extensive study background and more so as contained in the study problem. The study background has outlined the chronological ascendance of the community participation approach
in regional development in general and rural shelter in particular.

Also important in the chapter are the research questions which have facilitated the formulation of the research objectives. Likewise the research premises and hypotheses are important for they have created a platform for argument and analysis. The review of the human and natural resources the District is endowed with is important since the endogenic capacities of a region is important in its development.

The scope and limitation of the study like its justification are important aspects of the study as they give a focus to other researchers, planners and interested parties in regional development.
CHAPTER TWO

2.0 OPERATIONAL AND THEORETICAL FRAMEWORK:

2.1 INTRODUCTION

This Chapter presents an extensive review of literature and Theoretical Framework. The essence of the chapter is to highlight the outlined component of regional development over time. That is, to highlight the various proportions findings from different studies on the issue of regional development and in particular those that relate to rural areas. It also outlines the findings on shelter status by various studies and the various ways sought to ameliorate the shelter trends world wide. It highlights the gaps that have persistently remained unattended, a part of which this study addresses.

This chapter also contains a theoretical review from which a theoretical framework has been elaborated, a framework that forms the path of operation in this study.

2.2 LITERATURE REVIEW

Uplifting of the living standards of the people especially in the developing countries has become a matter of concern at the global, regional and national levels. Various institutions have come out in support and in search of approaches and strategies that may influence positively the life and productivity of the poor especially in the rural areas where;

"About 70%, that is about 2.3 billion people in developing countries of the world live and work, as small scale subsistence farmers and statistics indicate this trend will continue" (Carvalho 1984:2).
Any programme therefore geared towards alleviation of the problems in the rural areas would be addressing the plight of a majority of humanity in the developing countries, who also depend heavily on the agrarian sector for their social and economic wellbeing.

Furthermore, the importance of the rural sector in the National economies of these countries is evident from the distribution of the labour force in the various sectors.

"Agriculture alone employs about 70% of the labour force while the remaining 30% are employed in industrial, manufacturing and service sector: Although this large labour force is engaged in agricultural activity, the productivity of the agricultural sector is relatively low. In the developing countries it represents only about 28% of the GPD" (Carvalho 1984:3).

Hence, the most visible scenario is that a significant proportion of the rural population fall below the poverty line. According to the world Development Report, 1990, it was estimated that more than one billion people, or almost one-third of the total world population of the developing world were living on less than $370 per capita annually, of which 90% were in the rural areas of South Asia and Sub-Saharan Africa (World Bank 1990).

National and International measures towards ameliorating some of these problems have been many, but recording little success. This has been explained by the fact that for a long time these measures have consistently been equated with agricultural
productivity and economic growth by both National government and most of the granting agencies. That is, development has been quantified with little regard for quality of life, an aspect that has recently come out strongly in the development strategy that truly address the wellbeing of the people.

Similarly, rural development has erroneously been seen as a series of programmes and projects designed to assist agricultural productivity that has been initiated by the National Governments with aid from external agencies as a solution to rural problems (Carvalho 1984).

It has also been envisaged that, most organizations are inclined towards projects for rural areas in the developing countries, focusing mainly on their particular sector interest. For example, the World Bank and UN-FAO focus their development efforts mainly at initiating agrarian reform, improving agricultural productivity by structural transformation from subsistence to commercial production and hope therefore will bring about changes from the traditional static societies to modernized societies (Carvalho 1984:5). It has almost become a belief that infusion of money into projects (however desperate) constitutes development and would somehow contribute to the improvement of rural living standards.

However, the 1970s witnessed a drastic change in opinions and trends with a significant shift in the rural development approaches. This sprang from the introduction of human aspects in the strategies basing development programmes not only on quantification but emphasising on their qualification. This came
with the aspect of the new found concept of "basic need strategy". The strategy advocated growth and equity in the distribution of national wealth and development efforts. Based in the strategy, the World Bank and UN-FAO initiated approaches in an effort to reach the maximum number of the poor directly. This was through the 'New Style' philosophy by the World Bank and the 'Integrated Rural Development' (IRD) by UN-FAO. Both approaches were designed to improve both productivity and the social welfare of the rural poor.

"Unfortunately indications are that, these efforts too are being increasingly superseded by sectoral interest of the aid granting agencies, to the detriment of the rural people" (Carvalho 1984:6).

As much as projects initiated through the basic need strategy may have contributed to the improvement of rural settlement, their overall impact on the rural habitat has been minimal. Hence, an exclusive debate on the aspect of human settlement development was initiated of which its socio-economic, political and moral importance were deliberated. This was at first emphasised during the United Nations Centre for Human Settlement (UNCHS) - Habitat, 1976, Vancouver - Canada. It was stated that

"The most important objective of human settlements planning is the improvement of the quality of life of the people, assisting the most disadvantaged people to improve their standards of living and to cause a more equitable distribution of wealth that is generated through economic development and growth" (UNCHS, 1976:)

The importance of human settlement in the National development and more so its importance on human welfare development has been emphasised since.

"Both rural and urban settlement have been important in the economy since they are the focal points of commercial, industrial, administrative, recreational and social services required by the growing population. This therefore calls for special attention to be paid to such settlements" (Obudho, 1992).

During the Vancouver conference one of the perception that emerged and which has been reinforced since is that 'Human settlement should be considered a high priority issue at the national level' (UNCHS 1988:3).

It is thus important to relate the human settlement goals to those of overall national and international development agenda (UNCHS 1988:19). Out of the human settlement debate, shelter has been seen as a basic human need that plays a major role in human life and dignity.

"Shelter is fundamental to peoples' physical, physiological, and economic well-being in all countries. Whether in urban or rural settlements, shelter is the most visible expression of country's ability to satisfy some of the most basic needs of its people (UNCHS 1990:3)."
Yet it is envisaged that one billion of the world humanity do not have shelter fit for human habitation (UNHCS 1991). Studies on shelter have repeatedly painted a picture of desperation where majority of the world population especially in the South Asia and Sub-Saharan Africa continue to live in dehumanizing environments.

Other than the economic factors that may explain the shelter status, most governments in the developing countries have for a long time considered shelter to be a consumption investment, hence of low priority compared to industries, agriculture, health, education and provision of infrastructures (Olima 1986). This has resulted in the growth of urban slums and a majority of the poor living in overcrowded homes.

Whereas in the rural areas shelter shortage is not acute, the quality is inadequate. Rural inhabitants life is compounded with the problem of low irregular incomes and dispersed settlements which deny them the platform to acquire modern building materials whose prices are sky rocketing or negate them the ability to put pressure on the central government system. Hence rural homes are characterised by structures made of unimproved local material of mud and wattle for the walls, thatched roofs and earth floors. The houses are hence susceptible to destruction by rain, wind, fire or vermin. The rural residents also lack access to clear portable water, and other social and physical infrastructure (Olima, 1986).

The inadequate shelter status has been indicated by various works. In India, the situation is such that the rural housing conditions are characterised by deficiencies; lacking basic civil
services of portable water, medical care, electricity and decent houses. This has been marked by an acute shortage of shelter with a backlog of 15 million units (Bijlani, 1982).

In Malawi, the situation is no better with the majority of rural population living in low standard houses made of unimproved materials of mud and wattle, earthen floor and thatched roofs (UNCHS 1992). Though such structures appear cheaper at the initial stages, they require constant repair and are vulnerable to destruction by fire and vermin.

Onibokun (1986) indicates a situation of inadequate shelter in rural Nigeria. He reveals that, though housing is important in the attainment of physical and moral health of the people, a vast number for the rural population live in substandard houses and environments that are unhealthy, unplanned and subhuman. This has been attributed to the low economic status of the inhabitants and unclear housing policies. He thus advocates for policies that would be based on the actual needs and priorities of the people based on their cultural traits. Hence the Universal policy is not feasible given that needs and priorities differ between communities, villages and between rural and urban areas.

In Kenya various studies on rural shelter indicate that conditions are appalling. Olima 1986 on a study in Nyanza reveals that the houses are characterised by overcrowding, lacking bathrooms, and adequate source of portable clean water, improper sanitation and lacking services and requirements for dignified existence. Similar revelations have been made by Sterkenberg 1979, 1981, 1982, 1983, 1984, 1986, 1988 in a series
of studies on rural housing conditions in Kiambu, Kisii, Kisumu, Kakamega, Nakuru, Meru and Machakos respectively. Other than the poor housing status, Sterkenberg also indicated the individualistic house development task which compounded with low irregular incomes, environmental factor and the history of settlement in particular areas influence the nature of houses.

Kisovi (1984) in a study on rural housing in Ukambani reveals that the situation is in need of improvement. He found that most influencing factors are the socio-economic status of the residents and their spatial location. Better houses are hence associated with well to do people and the younger generation, and the spatial location in relation to the growth poles and communication routes.

In its commitment to ensure decent shelter for its people, the Kenya Government through the National Housing Corporation initiated the 'Rural Housing Loan Scheme' (RHLS) in 1967 aimed at assisting those who are unable to provide their own shelter. Kiamba, (1991a) conducted an investigation on the effectiveness of the scheme. The study revealed that the scheme was unsuccessful due to the rigid condition of adequate collateral, regular incomes, and use of permanent materials which could not be met by the target group (the low income households). Hence the scheme benefitted the middle and upper income groups. The study also blamed the failure on the concentration of operations of the scheme in the capital negating the beneficiaries role in its implementation. There is therefore a need for an alternative strategy that may enable the poor to benefit from similar schemes which are geared towards their welfare.
In search for a solution to the shelter problem, the concept of community participation has come out very strongly as an alternative for regional development. Questions have been posed on the world models which emphasize the transfer of technology and culture from the western world. A model that emphasizes industrialization and economic growth as synonymous to development, a model that quantifies life. There is thus a shift from this paternalistic trend in development mechanism. A mechanism that seeks both quantitative and qualitative elements in development. Development that seeks to uplift the quality of life of the disadvantaged. Hence it seeks the full participation of the beneficiaries in projects and programmes that profoundly affect their life (Ekins 1986).

Rural development is a much more complex phenomenon with no single universal solution and no perfect answer. It is a process of gradual transformation of socio-economic and political issues to meet the changing needs and aspirations of the rural people (Carvalho 1984). It ought therefore to be based on the people as actors but not as objects.

Carvalho 1984 also observes that, it is the continued exclusion of the beneficiaries in project planning, formulation, implementation and management that has greatly contributed to the low performance of the World Bank's 'New Style' philosophy and the UN-FAO 'I.R.D'. Since rural development is for the rural population, their participation is crucial for it ensures that projects and programmes are in response to peoples' needs. It ensures a greater chance of success because of the involvement of the local population and augments the human and financial
resources necessary for community development.

Community participation in planning has been viewed as an important aspect in addressing the aspiration of the people and is responsible for the creation of a sense of ownership among the people hence ensuring sustainability as opposed to outside impositions which may collapse with the departure of the aiding agencies (Oyugi 1975).

Franklyn (1988) contends that "one of the key features of development planning that has emerged from the wider conceptualization of development since mid-1970s is the notion of popular participation, both as an important condition for achieving sustained economic growth and social progress and as a fundamental goal to development in its own right. According to this conceptualization, popular participation is generally associated with active involvement of the beneficiaries in formulation, implementation and monitoring of projects aimed at attaining clearly defined objectives of development (1988:vii).

The importance of popular participation in regional development has been emphatically stressed by Lohman and Muller 1986. They state that "Community participation is these days considered a Panacea for most, if not all human settlement problems. It is considered as the only promising strategy to meet human settlement needs at the required large scale, particularly of low income population. It is seen as a management tool for governments in cooperating creatively with communities and NGOs" (1986:25).
Jancinto (1990) views popular participation in the development process in East Africa as a toll for the implementing official policies (such as Universal education and health), a common standpoint in the 1960s. However there was an evident shift in the 1970s where people sought to implement their own objectives. They established for themselves organizations and self managed activities pegged on the ideas of responsibility, autonomy and power and geared towards their perceived development needs.

It is this self managed organizations that Chambers 1974 refers to as self-help groups. The self-help groups, he asserts, came into being at the close of the 1960s as people become disillusioned with the failure of the local authorities to provide them with social and physical infrastructures. These formal or informal self-help groups have since attracted local membership seeking to address their common problems.

It is through such participation that Odada and Ayako (1988:102) states that "the pace at which the water goal can be attained remains an empirical question, but intuitively, it can be argued that the enhancement of community participation through self help, water supply projects would speed up the pace of attaining this objective and ensure its sustainability".

It is hence out of such observations that studies have been conducted on community participation in regional development. UNHCS (1992) outlines a success story of community participation in rural Bangladesh through the 'Grameen Banking System'. Through groups of the poor segment of the population, loans were advanced to promote self employment. Mutual aid in maintaining the
projects and loan repayment was encouraged to secure further funding. The success of the project saw the bank grow to a membership of 470,000 people between 1976 and 1989.

All said and done, we cannot divorce rural settlement planning from rural development since both are concerned with improving the living conditions of the rural population, in the improvement of their agricultural productivity, employment and income, and in mechanisms necessary to coordinate and implement rural development activities (Carvalho 1984).

Community participation concept that is to be focused on rural development squarely targets aspects of rural settlement such as the house and associated amenities of water, storage, security etc. This study has been concerned with those aspects of development that concerns shelter development. The vitality of the masses through concerted effort in the task of shelter development has been documented.

Turner (1976) asserts that when dwellers control the major decision and are free to make their own contribution in the design, construction or management of their housing, both the process and environment produced stimulates individual and social wellbeing. When people have no control over, nor responsibility for key decision in the housing process on the other hand, dwelling environments may instead become a barrier to personal fulfilment and a burden to the economy.

While Turner (1976) contends that "when they have access to available resources and are free to use them in their own ways,
people and their Community Based Organizations can build up to five times more than the governments with the same funds to similar or better standards (1986:8).

As already indicated, shelter form a major yard stick of human well being, dignity and existence, and reflects a government's ability to provide its citizens with the basic needs. However, majority of the rural inhabitants have been left to provide for their own shelter with little or no assistance from the central government (Kenya 1967, Olima 1986, UNHCS 1992 b, Kisovi 1984). However, the timely emphasis for joint commitment by the rural inhabitant to provide and develop their shelter is a welcome idea. Its workability has been demonstrated on a number of instances in various countries.

On the realization that the bulk of rural shelter in the developing countries has been and will be built by the people themselves with minimum or no assistance from the public agencies, UNHCS (1991) in its celebrated declaration of Global Strategy for Shelter to the year 2000 (GSS) emphasis on a non-conventional approach to shelter development or a 'supportive approach'. The GSS calls for government involvement revolving around advise on the use of improved local materials, provision of truck infrastructures and other elements that the local community cannot meet effectively. However, more participation of local Community Based Organizations (CBOs) has been encouraged. This is to be compounded with the use of indigenous building materials, local building skills and training in leadership and organization skills.
Cases of the participation of the local communities in the improvement of their habitat has been indicated in East Africa. Laquian (1983) identifies the 'Mabati' or house building groups especially by women. It is here observed that such community development helps bring people together in project formulation and in cost reduction by urging participants to use mutual aid and self-help in project implementation.

The participation of the people in the task of improving their shelter either through their own initiated projects or in projects sponsored by aiding agencies has been universalised. UNHCS (1992 a) has cases in point as in Malawi, Bangladesh and Ecuador. In Malawi the 1986 Habitat - award winner 'Rural Housing Programme' (RHP), sponsored by UNHCS and the Malawi Government has evidently witnessed community training on the improvement and use of local materials coupled with construction techniques. The programme has grown benefiting 2000 families in 1991 compared to 13 families in 1983.

The beneficiaries have not only been involved in the programme but have participated in improving their shelter to permanent status and commercially utilised the learnt skills in the construction and sale of the locally improved materials such as stabilised clay-sisal fibre bricks and roofing tiles.

In Bangladesh, successful self employment groups in terms of performance and loan repayment from the Grameen Bank enjoyed financing for housing. This was only possible if all the members had complied, hence community responsibility and effort became a vital tool. There is hence an improved trend within the
In Ecuador, the 1987 earthquake prompted the assistance of the habitat to the victims. The repair, construction and rebuilding of the houses, roads and bridges was on mutual aid between the government, Habitat and the communities. This was easy given the traditional mutual way of life (Minga), and has witnessed the construction of earthquake resistant houses using local material (Bamboo) improved road network and water supply system.

Other successful cases in shelter development through community participation have been revealed in Sri-Lanka through the '1.5 million housing programme' Building and Social Foundation BSF (1990). The programme had its basis on the premise that 'the shelter problem of the poor can be solved through their own effort with support where appropriate' (BSF 1990:3). The success on the provision of shelter for the low income families in Sri-Lanka lies entirely on the governments realization of the abilities and potentials of the families, groups of poor families. The poor communities were involved in deciding and implementing while the government was to create an enabling atmosphere of operation.

In India, through the Housing and Urban Development Corporation (HUDCO), shelter status has been uplifted, Bijlani (1982). Through this programme, financial assistance was advanced to the very poor and their participation encouraged through mutual aid in the construction, transportation and site preparation. The participants have enjoyed improved shelter with decent latrines, sewer system and electricity.
2.3 THEORETICAL FRAMEWORK:

In an attempt to develop a framework that centres community participation aspects in regional development particularly in the development of rural shelter, reference is made to postulation by various scholars. Of importance, are the attempts to develop a theoretical framework by Chamber, 1976; Carvalho, 1984 and Ekins, 1986 in what has come to be known as the 'New Economics'. In the new economic, development is referred to as 'Another Development' aimed at avoiding the conventional reference to development (Ekins 1986:43).

Unlike the conventional development which aims at quantitative economic performance of a sector or a country. 'Another development' stresses on qualitative results and is geared towards meeting the fundamental human needs which are not necessarily quantifiable.

'Another development' therefore has five basic principles which Ekins, (1986:44) has outlined as follows, that it should be;

Need Oriented; that is, being geared towards meeting human needs, both material and non-material. Development should begin with the satisfaction of the basic needs of those dominated and exploited, who constitute the majority of the world population.

Indigenous; that is, stemming from the heart of each society, which defines in sovereignty its values and the vision of its future. Since development is not a linear
process, there could be no universal model and only the plurality of development patterns can answer to the specificity of each society.

Self-reliance; that is, utilising rationally the resources of the biosphere in full awareness of the potential of local ecosystem as well as the global and local outer limits imposed on the present and future generation. It implies the equitable access to resources by all as well as careful socially relevant technologies.

Based on structural transformation; they are required, more often than not, in social rations in economic activities and in their spatial distribution as well as in the power structure, so as to recognise the conditions of self-management and participation in decision making by all those affected by it.

The search for an alternative framework/model for regional development, addressing the status of the rural poor that has emerged from the disillusionment by the so-called trickle down effect. The trickle down effect has its originality from the global development model based on economic growth through industrialization and transfer of technology and culture from the North to the South and from the Core to the periphery. The new economics framework is hence emphatic on the bottom-up approach with its basic goals being a return to human scale, active and creative public participation, local self-reliance and ecological constraints. The corner stone for the philosophico-political foundation is decentralization aiming at bypassing centralized
power and authority, bureaucratic structure, mechanistic models and other technocratic instrument. An aspect summarised by Chambers (1974) as spatial reversal from the concentration of power, wealth and skill in the core at the expense of draining and depriving the peripheries.

The aspect of popular participation which is central in the new economic framework has been summarised by Carvalho, (1984) as sine quinone in determining the constraints and potentials of a community, its needs and priorities. To realize development therefore interested agencies both governmental or non-governmental should base their project on the priorities and needs of a beneficiaries if projects are to be sustained. On the other hand, the local community may independently through formal and/or informal groups pursue the task of addressing their fundamental needs.

Chambers (1974), has therefore outlined various ways by which local participation may be analysed which the study will adopt greatly. Local participation may be viewed to mean the participation by the local people, local government staff or joint participation by both staff and people in projects. For the participation to occur, various institutions may be vital channels. These institutions may include local government authorities, development committees, community development committees, self help groups, public meetings and local interested groups such as churches, women groups and political parties.
Community participation should also be analysed on the light of the objectives and functions which may be viewed from its originality, that is, either top-down or bottom-up. The participation of the people to meet the fundamental needs may be through formal and/or informal local based groups.

This study focuses on the rural shelter development as an objective and a function of the local people of Machakos district, (as a fundamental human need). The study addresses how the local people have jointly participated in the task of providing and developing their shelter. This has been analysed in terms of provision of material for the construction of houses whether local or imported, the labour aspect in the preparation and construction of houses, the financial aspect for the construction and purchase of materials.

The study also addresses itself to the various institutions whether local or otherwise which have been instrumental in aiding the local people meet their defined shelter needs.

Given shelter as an objective of development a framework based on the above analysis is developed. In the framework there are three fundamental partners, that is, the government with its political power which may directly or indirectly influence shelter development. The second partner is the donor agencies which may be locally or externally based. This may include NGOs, Church organisations, political parties and development agencies. They are instrumental in supporting local efforts especially towards poverty alleviation. Like the government the donor agencies may directly provide shelter facilities to the people.
The last partners and the most central in this framework is the beneficiaries. These may be individual households or the community in general. The government and donor agencies effort towards shelter development will benefit the local people and be sustained by the people if it truly address their needs. Hence a need to involve the people especially in determining their needs and priorities. Since the study is tied to the aspect of community participation the interaction of the donors, government and beneficiaries will be analysed through existing formal or informal local groups, here referred as community groups. Similarly, community participation will be analysed independent of the donors and government particularly where very informal groups have been instrumental in shelter development.

In short, it may be stated that though each partner may directly provide the beneficiaries with shelter, this study seeks to establish how shelter has been developed through the community. How the government and donors have through community groups enabled individual households acquire shelter. Similarly, how through community groups individual households have attained shelter.

Fig 2.1 presents the conceptual model of the interrelation of the three variables towards shelter development. In the model, the government through its administrative wings (District Development Committees (DDC), Provincial Administration and the Local Authority) facilitates the operation of the donors and community groups. This is done through registration and licensing of their operations. Similarly, the government provides financial support to individual households through such schemes as the Rural
Housing Loan Scheme. On the other hand, it finances and provides logistic support to community groups through the local government wing of Community Development Assistant.

The donors on the other hand, provide both financial and logistic support to individual households or community groups. This may be through training, expertise advise, programme support need assessment among others.

Lastly, the community groups provide to the whole partnership the target beneficiaries (that is, the purpose for the operation), human resources of leadership, expertise, labour and some funds. Through this interaction, individual households acquire the necessary shelter requirements.
Fig 2.1: CONCEPTUAL FRAMEWORK OF INTERACTING VARIABLES FOR SHELTER DEVELOPMENT

Source: Adopted and modified from Chambers, 1974; Carvalho, 1984 and Ekins, 1986.

2.4 SUMMARY:

The current chapter has been an important rejoinder of the operational and theoretical framework that this study has
adopted. It has enabled the study establish important aspect of the investigated topic particularly on its practicability and feasibility as has been established elsewhere. It has also enabled the study demonstrate the need for concern as far as shelter status is concerned in the rural areas.

The shelter status has been found as wanting by various studies both locally and internationally. However, solutions have been sought in various ways especially by engaging the beneficiaries themselves. It is their participation in development that has been grossly emphasised on the theoretical framework.

The literature survey has been important for this study for it has shed light on the situation of the rural shelter in the world. It has also most importantly enabled the exaltation of the community participation in regional development and shelter.

It has also demonstrated the importance of human settlement to national development and planning. In particular, it has illustrated the justification of the qualification of development as opposed to quantification as a prime measure of development. The study has highly depended on qualitative approach of development. An approach that has seen beneficiaries not only as the end for regional development but also as means. And finally, the conceptual model summarises the interplay that exists and that which can be enhanced collectively by all the parties interested in aiding the rural inhabitants meet their needs, not as passive recipients but as partners in shelter development.
CHAPTER THREE

3.0 METHODOLOGY:

3.1 INTRODUCTION:

This study is based on empirical research that combines both primary and secondary data to realize its objectives. The chapter outlines the various research techniques that the study adopted for data collection and analysis. Various techniques (methods) were utilised in the collection of data. Since this study aims at establishing the various community efforts applied in shelter development interviews, participant observation and library techniques were used. Likewise since the area of study was broad, sampling was applied. For the analysis of the data, various techniques have been applied. The results of the analysis enabled the study to test the shelter development and community participation.

3.2 DATA COLLECTION:

3.2.1 Sampling techniques:

Political, administration and ecological potential maps of the study area were used to stratify the study area and to establish the population densities of each study stratum. The study area was subdivided into four ecological potential zones that occur in the District (Survey of Kenya 1970). Sampling was based on administrative and ecological potential boundaries.

From each of the stratum, households were selected purposively along transects which were drawn across the zones along lines of communication such as road networks, foot paths etc.
3.3 RECORDING SCHEDULE:

Both primary and secondary data were recorded in the study from various sources including household heads, NGOs working in the District, government officials and library sources.

3.3.1 Primary data:

Household heads were interviewed through administering indepth, structured but open ended questionnaire (Appendix I). The administration of the questionnaire was by the researcher and research assistants recruited from particular study stratum.

The research assistants were trained and closely supervised by the researcher. From the interviews data on socio-economic factors on shelter development were covered.

The baseline information gathered was on the socio-economic variables in shelter development. They indicated sources of material, the means of acquiring the material, labour in the construction of the houses and associated amenities of water, kitchen, granaries, sanitary facilities, the costing and sources of funds for the material. General security of both individual households and the community was also investigated through the questionnaire.

The interviews also sought to establish the constraints experienced in community project and the perceived solutions by the respondents. Outside assistance in shelter development was also investigated. Interviews were conducted with officials in
development agencies, NGOs and government officers on the development projects they are involved in the study area. Other respondents included household heads whose shelters were along or near the transects. Also teachers in schools along or near the transects were interviewed. All respondents came from within the rural parts of Machakos District.

Interviews were conducted during the day and only adult respondents and heads of the households were interviewed. Other than the administration of questionnaire, photographs were also taken on the community activities in the area.

3.3.2 secondary data:

Secondary data were derived from library material, public records and existing literature. Any secondary data used indicates its source, year of publication and publishers.

Secondary data was used in definition of demographic trends and status in the study area, the composition and spatial distribution of population and household sizes. This enabled the researcher arrive at a workable sample size for each sample unit.

3.4 DATA ANALYSIS:

Data collected for the purpose of this study from both primary and secondary sources were analysed in a bid to realise the laid down objectives and hypotheses in chapter one. Various techniques that assist realise this prime objective were used.
Objectives one, two, three and four are presented qualitatively and descriptively. Through qualitative analysis, the findings on the operation of both formal and informal CBOs, the operations of the outside agencies, community involvement in the outside agencies shelter activities and the constraints facing community shelter activities were synthesised.

Interview reports from the outside agent offices and CBOs officials were also qualitatively reported. Qualitative analysis is complemented with a descriptive analysis. By descriptive analysis, summary statistics were used to show the trend of community participation in shelter development and in analysing shelter development particularly on the utilization of indigenous building materials and labour.

Data were also analysed using procedures outlined in the spss package (Nie, 1975). The programme was used particularly in cross tabulation to demonstrate the relationships that exist between variables. Using the cross tabs, it was possible to generate contingency tables by which relationships between the variables were investigated.

Analysis was also conducted on the housing quality in the study area. To achieve this, the durability factor of the materials used for the housing elements of walls, roofs and floors was computed. Housing quality can be described as good or poor depending on the materials used (Kenya, 1996).

To measure the housing quality, the models below were adopted from Kenya (1996) to help compute the durability factor for
walls, roof and floors.

Model 1.

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

Where
- \(WDF\) = Wall Durability Factor
- \(ST\) = Houses with stone walls
- \(BR\) = Houses with brick walls
- \(BL\) = Houses with block walls
- \(N\) = Total number of houses

Model 2.

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

Where
- \(RDF\) = Roof Durability Factor
- \(IS\) = Houses with iron sheet roofs
- \(T\) = House with tile roofs
- \(C\) = Houses with concrete roofs
- \(AS\) = Houses with asbestos sheet roofs
- \(N\) = Total number of houses

Model 3.

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

Where
- \(FDF\) = Floor Durability Factor
- \(CT\) = Houses with concrete screen floors
- \(T\) = Houses with tiled floors
- \(N\) = Total number of houses

Since the gist of this study is to investigate community participation in rural shelter development, the formulae were used to relate the housing quality and community participation based on the durability factor of the three housing elements. This enabled determination of the effectiveness of community participation in shelter development in Machakos District.

Further analysis involved the testing of the hypothesis that, there is no significant relationship between community participation and shelter development in Machakos District. To test hypothesis (H01), a Chi-Square analysis was carried out.
using model 4 below. The chi-square enabled to test the relationship existing between the various variables of community participation and rural shelter development in Machakos District.

Model 4.

\[ \chi^2 = \sum^r \sum^k \frac{(O-E)^2}{E} \]

\( \chi^2 \) = Chi Square
\( \sum^r \) = sum of rows
\( \sum^k \) = sum of columns
\( O \) = Observed Frequencies
\( E \) = Expected Frequencies

The observation on the occurrence of community participation was recorded. This helped in showing the shelter elements with most participatory tendencies and also the most occurring form of participation.

The generated values of the chi-square were compared to the critical values provided in the chi-square table at 0.05 significant level.

3.5 SUMMARY:

The chapter on research methods used is important for it bridges the theoretical chapters and the empirical chapters. It is via this chapter that what has been envisaged in the previous chapters will be linked to the chapters that follow. It has been possible therefore to indicate the various methods which have been used in collecting the necessary data and how this
information was reported.

Of important, the chapter has presented the sources of data, methods of collecting and analysing. Similarly, the importance of data analysis has also been illustrated whereby the use of SPSS package has made it feasible to summarise the findings into workable statistical facts. This has been important for it enabled to show the kind of relationship that exists between the various variable of shelter development.

The following chapters will be geared towards reporting the findings and analysis results. The findings will generally dwell on the characteristics of the household owners, shelter status in Machakos District, the participatory modes of the community in their quest to meet their shelter needs, and on the operation of the external agencies in the shelter development endeavours.
CHAPTER 4

4.0 RURAL HOUSING CONDITIONS IN MACHAKOS DISTRICT:

4.1 INTRODUCTION

It is difficult to relate the concept of community participation to shelter without a thorough understanding of the shelter status in the study area. These insights are contained in the present chapter which has outlined a number of aspects that have been envisaged as important components of shelter development. These aspects have been categorized into three broad sections.

Firstly, the characteristics of the household heads are analyzed. This has been looked at from a socio-economic aspect, for it has been found that, the socio-economic status of a person plays an important role in influencing his or her built environment (Kisovi, 1984).

Secondly, the chapter looks at the aspect of household information. This information ranges from the space on which the house occupies, its nature in terms of permanency and quality based on the materials used in the construction. Lastly, the study treats shelter in a holistic manner, hence all the associated amenities have been analysed by which a complete rural homestead is envisaged.

4.2 HOUSEHOLD HEADS:

In this study, household heads (females and males) were the respondents. The study found that 48.3% of the respondents were males and 51.7% females. This may appear inconsistent with the expected male household headship given that in the Akamba family
setup, like most African setups, men are regarded as the head of the families and households. However, this dominance of female respondents may be explained by the fact that either their husbands were out working in the field or in the urban areas, or were dead or were just not at home. In some instances female respondents indicated that much of the shelter development tasks were handled through their husbands efforts.

As already indicated above, only adult respondents were interviewed. The age of the respondents ranged between 23 years old to 94 years old from a sample of 120 respondents. The biggest proportion of the respondents was aged 38 years and 40 years taking about 6.7% followed by 28 and 34 years 5.8%. The age category represented adults who had houses whose historical development they knew and had families living there.

Another important aspect of the respondent was their occupation. Occupation normally indicates respondents major source of income. The study was conducted in the rural areas of Machakos District, and like most rural settlement in the developing countries inhabitants of these environments depend largely on land as a source of their livelihood. From the land, agricultural activities are conducted at both subsistence and commercial levels. Through the sale of farm produce (both crops and animals) the inhabitants have strived to make ends meet. However, other sources of livelihood have been established. The residents have engaged in economic activities such as wood and fibre craft, and small-scale businesses that provide goods and services to the villages while others have sought paid employment.
Of the respondents, 75.8% were recorded as farmers who identified farming as their major source of income, 11.7% were either teachers or civil servants, 6.7% were business people operating small scale retail shops in their local centres, 3.3% were artisans involved in wood and fibre craft, carpentry and metal works, and 2.5% were employed by individual business establishments or companies as drivers.

Literacy level of the respondents was also an important aspect that the study addressed. Literacy levels were categorised on various levels; 10.8% were non-literate meaning that they either had never received any formal education or had experienced literacy lapse, 50.0% had received primary education and were able to read and write, 24.2% secondary education, 2.5% had received college training and had acquired various skills from polytechnic and professional institutes, 1.7% had university education.

4.3 **HOUSING CONDITIONS:**

Shelter being an important human basic need is vital in both qualitative and quantitative perspective. Rural inhabitants have for a long time been the providers and implementers of their rural shelter needs. However this has been hampered by repeated low economic status and abilities. It has also been envisaged that the shelter problems in the rural areas are not necessary quantitative but qualitative (Oniboknn 1986, Kisovi 1984, Olima 1986). Emphasis has been laid on the need for improving the quality of the locally available materials and building techniques, in a bid to ensure quality and affordable shelter for
To demonstrate the housing trend in the Machakos, this study has addressed not only the shelter status but also the owners holding rights of both land and the house, to create a foundation for clear analysis of its development. On the tenure of land 55.7% of the household visited lived on their own land that they have acquired from willing sellers or through land buying societies or are registered in their names, 41.7% lived on land that they inherited from their parents under whom the land was initially registered, 0.8% represented tenants, and 1.7% were squatters.

Houses in Machakos District vary considerably in size. The size of the house is herein perceived in terms of the number of living rooms rather than the space occupied. It was found out that, 16.7% of the household interviewed had single rooms in which the families lived and cooked if there was no detached kitchen. 35.7% were two roomed, another 35.7% three roomed and 11.9% had either four rooms or more.

On the housing quality the study has categorized housing type as temporary, semi-permanent or permanent. Temporary houses have been described as those made of mud and wattle, or are made of raw brick walls, grass thatched and earthen floors 30.8% were in this category. Semi-permanent houses are described here as those which were brick walled, iron sheet roofed and earthen floors representing 27.5%, while permanent houses are those that had baked brick or stone walled, iron sheet or tile roofed and concrete floored and represented 40.8% of the households.
The study reveals that the rural inhabitants of the Machakos District have continually utilised the local available materials in the bid to secure shelter as advocated by Habitat (UNCHS, 1988, 1992). They have used the soils which are ideal either for brick making (Kenya 1989) or for mud walls. They have also used largely available sand from dried river beds in cementing their floors and have used grass for thatching. However, materials that are not produced locally such as iron sheets for roofing and cement have been imported from outside the District. The use of bricks and mud may be explained by two factors. Firstly, by the climatic characteristics of this area which has not been suitable for the growth of trees, such that poles and timber are not readily available while importation from well watered areas such as Iveti, Mua or outside the district is difficult and expensive given the low economic status of the inhabitants. Secondly, respondents indicated that the area is highly invested by vermin that destroy poles and timber. This may also explain why granaries are mounted on stone pillars than timber poles stumps.

On materials used 72.2% of the houses had brick walls, 22.2% wattle and mud, 4.8% stones and only 0.8% timber. On roofing, 73.3% were iron sheet roofed and 26.7% grass thatched. However, most of the houses had earthen floors representing 54.2% and 45.8% concrete.

Given that majority of the houses were made of local material, little investment has been undertaken on the purchase of construction material especially on walls whereby 75.8% indicated that they had not spent funds on their purchase, 55% did not buy floor material and 21.7% roofing material. However, it was
indicated that finances were spent on the labour that participated in the provision of this material, either directly by paying employed labour or indirectly by providing food and associated entertainment to the assisting community members.

4.3.1 Housing Facilities:

Shelter refers not only to the housing structure but also to the associated amenities of water, sanitary and storage facilities, security, etc. This study addresses the shelter in totality. Among the amenities that this study perceived as vital in a complete habitable shelter were, kitchen, granary, toilet, bathroom, water and security. It was established that 44.2% of the homesteads visited had a kitchen, a granary, a toilet and a bathroom. 2.5% had no bathrooms, 10.0% had no toilets, 2.5% lacked both toilets and bathrooms, 6.7% lacked granaries and toilets, 1.7% had only kitchens and lacked all other amenities of granary, toilet and bathroom. 0.8% had no kitchens, another 0.8% had no kitchen and toilets, 1.7% lacked kitchens, toilets and bathrooms, another 0.8% had no kitchen, granary and toilet, and another 0.8% of the household lacked all the categorised amenities of kitchen, granary, toilets and bathrooms.

All these amenities were located and positioned detached from the main house, a visibly normal situation in a rural setup. The kitchen were constructed separately from the main house which may be explained by the Akamba traditions based on gender specialization with the women performing their domestic chores in the kitchen as men remained in the main house. This could also be explained by the fact that most rural houses were too small.
to contain all activities including cooking.

The granaries are also very important amenities. They provide storage facilities for the farm harvests, farm tools and other implements. Like the kitchens, the granaries are also separate from the main house.

It was observed that most of the rural inhabitants lived in a complete rural shelter as defined in this study. But as indicated by the above statistics, some homes lacked this complete shelter, that is lacking one or more of the basic amenities. Those without detached kitchens either cooked in the main house or outside. Other homes lacked the sanitary facilities all together or had a common toilet that served the entire homestead.

In the construction of the amenities as is for the houses, the use of local material was appreciated. This has led to a diverse classification on types. Like the houses, the kitchens were categorised as temporary, semi-permanent and permanent, based on the construction materials used. Temporary kitchens were envisaged as those that were made of mud and wattle walls, or raw bricks, grass thatched roofed and earthen floors. This constituted 70.8%. About 18% were semi-permanent, that is, made of iron sheet roofing and 4.2% were permanent being iron sheet roofed, concrete floored and baked bricks or stones for walls.

On sanitary facilities, toilets and bathrooms were considered most important. 90.0% of the households had pit latrines detached from the main house. However, 10.0% of the households lacked this very important facility. Though some households had bathrooms,
most of them either washed in the houses or outside at night.

Granaries too have been grouped into temporary, semi-permanent and permanent. Temporary granaries were described as those that were made of local material of sisal poles and beam for wall and floor and were grass thatched. Semi-permanent represented those that were timber or iron sheet walled, and iron sheet roofed and permanent represented those that were stone and baked brick walled as represented in table 4.1.

Table 4.1 Types of granaries:

<table>
<thead>
<tr>
<th>Categorize</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cum. Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temporary</td>
<td>93</td>
<td>77.5</td>
<td>77.5</td>
</tr>
<tr>
<td>Semi-permanent</td>
<td>10</td>
<td>8.3</td>
<td>85.8</td>
</tr>
<tr>
<td>Permanent</td>
<td>1</td>
<td>.8</td>
<td>86.6</td>
</tr>
<tr>
<td>Missing</td>
<td>16</td>
<td>13.4</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Source: field data.

It is important to emphasize that the use of locally available material for the construction of these amenities has been taken into consideration. The materials were used in their original state or after some improvement such as baked bricks which are important wall construction materials. Tables 4.2 (a), (b) and (c) below show the type of materials used in the construction of kitchen.
Table 4.2 Materials for Kitchen Construction:

(a) **Material for kitchen walls:**

<table>
<thead>
<tr>
<th>Types</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cum. Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>mud and wattle</td>
<td>36</td>
<td>30.0</td>
<td>30.0</td>
</tr>
<tr>
<td>bricks</td>
<td>70</td>
<td>58.3</td>
<td>88.3</td>
</tr>
<tr>
<td>stones</td>
<td>4</td>
<td>3.3</td>
<td>91.7</td>
</tr>
<tr>
<td>iron sheet</td>
<td>1</td>
<td>.8</td>
<td>92.5</td>
</tr>
<tr>
<td>missing</td>
<td>9</td>
<td>7.5</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>120</td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

(b) **Materials for kitchen roof:**

<table>
<thead>
<tr>
<th>Types</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cum. percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>grass</td>
<td>79</td>
<td>65.8</td>
<td>65.8</td>
</tr>
<tr>
<td>iron sheet</td>
<td>33</td>
<td>27.5</td>
<td>93.3</td>
</tr>
<tr>
<td>missing</td>
<td>8</td>
<td>6.7</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>120</td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

(c) **Material for kitchen floor:**

<table>
<thead>
<tr>
<th>Type</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cum. percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>earthen</td>
<td>104</td>
<td>86.7</td>
<td>86.7</td>
</tr>
<tr>
<td>concrete</td>
<td>8</td>
<td>6.7</td>
<td>93.3</td>
</tr>
<tr>
<td>missing</td>
<td>8</td>
<td>6.7</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>120</td>
<td></td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: field data.

The study reveals that the use of locally available materials was highly presented in the construction of the kitchen. This may be explained by the fact that they are cheaply supplied from the fields and are most ideal for this environment in terms of thermo regulation. Like in kitchen construction, granary construction too recorded a massive use of local material, see the table below 4.3 (a), (b) and (c).
Table 4.3 Materials for Granary Construction:

(a) **Material for granary wall**

<table>
<thead>
<tr>
<th>Type</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cum. percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mud and wattle</td>
<td>1</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>timber</td>
<td>24</td>
<td>20.0</td>
<td>20.8</td>
</tr>
<tr>
<td>stones</td>
<td>1</td>
<td>0.8</td>
<td>21.7</td>
</tr>
<tr>
<td>sisal poles</td>
<td>79</td>
<td>65.8</td>
<td>87.5</td>
</tr>
<tr>
<td>missing</td>
<td>15</td>
<td>12.5</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

(b) **Material for granary roof**

<table>
<thead>
<tr>
<th>Type</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cum. percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>grass</td>
<td>90</td>
<td>75.0</td>
<td>75.0</td>
</tr>
<tr>
<td>iron sheet</td>
<td>14</td>
<td>11.7</td>
<td>86.7</td>
</tr>
<tr>
<td>missing</td>
<td>16</td>
<td>13.3</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td></td>
<td>100.0</td>
</tr>
</tbody>
</table>

(c) **Material for granary floor**

<table>
<thead>
<tr>
<th>Type</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cum. percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>earthen</td>
<td>2</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>concrete</td>
<td>1</td>
<td>.8</td>
<td>2.5</td>
</tr>
<tr>
<td>sisal</td>
<td>79</td>
<td>65.8</td>
<td>68.3</td>
</tr>
<tr>
<td>timber</td>
<td>22</td>
<td>18.3</td>
<td>86.7</td>
</tr>
<tr>
<td>missing</td>
<td>16</td>
<td>13.3</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td></td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: field data.
Most of Machakos District has soils and climate that support the growth of drought resistant plants such as the sisal and elephant grass, common in the savanna. The growth of the luxuriant tree plants has been hindered, hence low timber supply. The inhabitants have therefore resulted to the use of available material of sisal poles for the walls and floor of the granary accounting for 65.8% respectively. Similarly grass for thatching has been dominating recording 75%.

4.3.2 Water Resources

Of all the basic needs, water plays a significant role for both domestic and industrial needs. In rural Machakos, water is for both small scale irrigation projects and shelter construction task. In construction, water is utilised in making of bricks and mud for walls.

Though availability of clean portable water is a major area of concern in the rural areas, the residents of the Machakos District have attempted to solve the problem through various measures. This has been either through construction of water reservoirs in their homesteads or the village site or by enhancing the available water resources. The table 4.4 below indicates the major sources of water.
Table 4.4 Water Sources:

<table>
<thead>
<tr>
<th>Type</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cum. percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>rivers</td>
<td>22</td>
<td>18.3</td>
<td>18.3</td>
</tr>
<tr>
<td>springs</td>
<td>24</td>
<td>20.0</td>
<td>38.3</td>
</tr>
<tr>
<td>roof catchment</td>
<td>3</td>
<td>2.5</td>
<td>40.8</td>
</tr>
<tr>
<td>boreholes</td>
<td>6</td>
<td>5.0</td>
<td>45.8</td>
</tr>
<tr>
<td>protected spring</td>
<td>15</td>
<td>12.5</td>
<td>58.3</td>
</tr>
<tr>
<td>piped</td>
<td>15</td>
<td>12.5</td>
<td>70.8</td>
</tr>
<tr>
<td>dam (sub-surface)</td>
<td>15</td>
<td>12.5</td>
<td>83.3</td>
</tr>
<tr>
<td>canal</td>
<td>19</td>
<td>15.8</td>
<td>99.2</td>
</tr>
<tr>
<td>missing</td>
<td>1</td>
<td>0.8</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Source: field data.

In a bid to ensure a constant water supply for both domestic farm use, various water storage facilities have been developed. Among the major storage facilities include iron water tanks, block concrete water tanks, jerican, etc as illustrated in table 4.5 below.
Table 4.5 Water storage facilities:

<table>
<thead>
<tr>
<th>Type</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cum. percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>tank</td>
<td>11</td>
<td>9.2</td>
<td>9.2</td>
</tr>
<tr>
<td>jerricans</td>
<td>88</td>
<td>73.3</td>
<td>82.5</td>
</tr>
<tr>
<td>drums (barrels)</td>
<td>13</td>
<td>10.8</td>
<td>93.3</td>
</tr>
<tr>
<td>tank and jerricans</td>
<td>7</td>
<td>5.8</td>
<td>99.2</td>
</tr>
<tr>
<td>missing</td>
<td>1</td>
<td>.8</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td></td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: field data.

Despite the fact that water storage facilities ought to be emphasized, most households have not been able to achieve this given their low economic status. To alleviate this problem, people are being called upon to find ways of improving their water situation and have embarked on various methods of working. This may be supported by the fact that 45% of the total households depend on protected springs, piped water, sub-surface dams, boreholes and roof catchment, 15.8% depend on the canal (Yatta Furrow), and only 38.3% depend on natural water sources of rivers and spring.

The study went a step further and treated shelter development from a humane perspective. To achieve this, the aspect of the security in the homestead has been considered. This has been approached from the nature of security problems experienced and the measure adopted. The problems experienced are reported in Table 4.6.
The major security problems experienced are related to the environment and human. Being a marginal land, Machakos District neighbour the Nairobi National park and has in it the Ol Donyo Sabuk game park. Animals from the areas or from unoccupied Savanna land within the district attack the farmers and destroy crop. However we cannot ignore the human destructive tendency that account for the major security concern in the study area as indicated by over 40% of the respondents. Most of the human destruction tendencies reported centred on the theft of farm produce. This may be explained by the fact that a crop failure due to poor season or due to poor farm management may be disastrous to a victim family. Though Machakos enjoys the famine relief programme during drought, the ration is not always sufficient. This may lead to people encroaching into others farms to seek sustenance.

Table 4.6 Security problems:

<table>
<thead>
<tr>
<th>Type</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cum. percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>rustling</td>
<td>5</td>
<td>4.2</td>
<td>4.2</td>
</tr>
<tr>
<td>burglary</td>
<td>5</td>
<td>4.2</td>
<td>8.3</td>
</tr>
<tr>
<td>game attack</td>
<td>12</td>
<td>10.0</td>
<td>18.3</td>
</tr>
<tr>
<td>farm theft</td>
<td>38</td>
<td>31.7</td>
<td>50.0</td>
</tr>
<tr>
<td>rustling and farm theft</td>
<td>8</td>
<td>6.7</td>
<td>56.7</td>
</tr>
<tr>
<td>burglary and game attack</td>
<td>2</td>
<td>1.7</td>
<td>58.3</td>
</tr>
<tr>
<td>burglary and farm theft</td>
<td>2</td>
<td>1.7</td>
<td>60.0</td>
</tr>
<tr>
<td>missing</td>
<td>48</td>
<td>40.0</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Source: field data.
4.4 SUMMARY

This study has for complementary purposes sought to establish the quality of shelter in rural Machakos District. It has found that though shelter shortage is not a major problem, the quality and size is a point of concern. Of the households interviewed, 73.3% had shelter with less than four rooms. In addition, 59.2% were either temporary or semi permanent; made of unimproved local materials of mud and wattle or raw bricks for walls, grass thatched and of earthen floors.

It was also noted that most households had access to water though not clean drawn from sub-surface dams which are not treated or from dry river bed wells. To alleviate this water crisis, it was found that the local inhabitants have sought to protect their springs or have started piped water projects. They have also improved on their water storage through the construction of water tanks.

All said and done the rural residents of Machakos District have utilised the locally available human and natural resources in a bid to improve the quality of their life. They have improved their building materials such as baked bricks and have utilised their human resources.
CHAPTER 5

5.0 COMMUNITY AND RURAL SHELTER DEVELOPMENT IN MACHAKOS DISTRICT

5.1 INTRODUCTION

The previous chapters of this thesis have focused mainly on the importance of shelter to human life and dignity and of most importance, on the envisaged importance of regional development. As already stated, especially in chapter one and two, the various models and theories of regional development have emphasised on quantification of development. However, the continued disillusionment among inhabitants in the rural areas of developing countries and the imbalance between the core and the peripheries has necessitated a search for alternative approaches.

One approach aims at not only quantification but also the qualification of development. The aspect of community or popular participation in development has thus been emphasised. The humane aspects of development has been highlighted; stressing on the importance of quality of human life and dignity.

In chapter four of this thesis we outlined the shelter status in Machakos District emphasising on the quality in terms of the materials used, and the completeness of shelter in as far as amenities such as water, sanitary and storage facilities and security are concerned. Likewise, the characteristics of household heads have been addressed for they play an important role in determining the quality of shelter.
The current chapter aims at addressing the gist of the study, that is, to reveal descriptively how the shelter provision in Machakos District has been influenced by and through the local community effort. The chapter is subdivided into four sections, each explaining the extent of community effort in shelter development.

5.2 Community Participation in Provision of Construction Material

The principle behind the concept of community participation in regional development is emphatic on the efforts of the beneficiaries in all the spheres of development, from the formulation of projects to implementation and management.

This study has treated shelter development as a basic human need that all human races aim at realizing. Chapter four has elucidated on the utilization of local material in the construction of houses and associated amenities. The utilization of these materials will therefore involve assembling the same in the construction site and their modification.

The aspect of community participation in the provision of materials has therefore been categorised into three major operations. Firstly the community may contribute in the provision of material through gathering. Gathering here refers to that task of availing the material from the field to the construction site. This could involve collecting and transporting of sand from the river bed to the site, cutting and transporting grass and sisal poles to the site or collecting the soils and water to make mud or bricks for the walls.
Secondly the community may be involved in making of the materials for instance building bricks. Making of bricks involves mixing soil with water and moulding it to form blocks which are either sun dried (hence raw bricks) or baked under intense heat in a funnel locally known as 'Ndumbia or Ndui'. Thirdly, community participation in material provision has also occurred through buying or funding. This involves the contribution of funds, communally through CBOs (locally known as 'myethia'). Under the 'Myethia' individuals form groups and contribute funds, and the money is shared among member in turn. A member may use the funds to purchase shelter materials or the fund may be used by the group to improve shelter, for instance the construction of water storage tanks, as in the Mua Hills area. Tables 5.1 presents statistical summary, outlining the various methods of community participation in the process of realising the material needs in the construction of houses.

Table 5.1 Community participation in the provision of materials for the house: (%)

<table>
<thead>
<tr>
<th></th>
<th>Walls</th>
<th>Roof</th>
<th>Floor</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gathering</td>
<td>10.8</td>
<td>17.5</td>
<td>1.7</td>
<td>30.0</td>
</tr>
<tr>
<td>Making</td>
<td>32.5</td>
<td>0.8</td>
<td>1.7</td>
<td>35.0</td>
</tr>
<tr>
<td>Funding</td>
<td>0.8</td>
<td>8.3</td>
<td>0.8</td>
<td>9.9</td>
</tr>
<tr>
<td>Total</td>
<td>44.1</td>
<td>26.6</td>
<td>4.2</td>
<td>74.9</td>
</tr>
</tbody>
</table>

Source: field data
In the provision of wall materials the community participated in the various activities and their participation accounted for 44.1%. However, it was revealed that making was the most prevalent community activity accounting for 32.5%.

Of the households visited 26.6% had acquired their roofing material through community effort. However gathering took the highest occurrence with 17.5%. This involved the gathering of grass for thatching from the field. This may be attributed to the fact that grass thatching was the most prevalent and cheapest source of roofing material. However, those who wished to use alternative roofing materials especially iron sheet could afford without necessarily invoking community support. Moreover, the residents seem to be drifting towards the usage of iron sheet as they wish to have better roofed houses either due to the diminishing supply of grass in the field as more land is opened to cultivation or as individual land ownership restrict free access to land as opposed to communal ownership. And lastly the need to improve on roof catchment as source of water has necessitated the need for iron sheet. The community is hence putting more effort on the purchase of roofing materials which presents 8.3% compared with the purchase of wall materials presented by 0.8%.

Community effort in floor material provision was minimal. This may be explained by the fact that majority of the houses had earthen floor (about 53.3%) compared to concrete floors which accounted for 45.8%. However, it was found that 4.2% of the households acquired their floor materials through community effort. Generally, there is a minimal representation.
On the provision of material for the construction of kitchen, granary and sanitary facilities there was a great similarity as in the provision of material for houses. For instance the community effort was present in the gathering, buying and make of kitchen wall materials accounted for 41.7%, as indicated in tables 5.2.

Table 5.2 Community participation in the provision of materials for the kitchen:(%)

<table>
<thead>
<tr>
<th></th>
<th>Walls</th>
<th>Roof</th>
<th>Floor</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gathering</td>
<td>14.2</td>
<td>49.2</td>
<td>0.0</td>
<td>63.4</td>
</tr>
<tr>
<td>Making</td>
<td>26.7</td>
<td>0.0</td>
<td>0.0</td>
<td>26.7</td>
</tr>
<tr>
<td>Funding</td>
<td>0.8</td>
<td>3.3</td>
<td>0.0</td>
<td>4.1</td>
</tr>
<tr>
<td>Total</td>
<td>41.7</td>
<td>52.5</td>
<td>0.0</td>
<td>94.2</td>
</tr>
</tbody>
</table>

Source: field data.

Most of the kitchens were detached from the main house and had a separate roofing structure. The community participated in the provision of the material especially grass for thatching. Of the household visited 65.8% had grass thatched roofs. The community assisted in gathering the material from the field (49.2%) compared to 3.3% funding. The dominance of grass usage in the roofing of the kitchen and the high percentage of community participation may be explained by the fact that, though these are important constituents of complete shelter they are regarded inferior. It was observed that most respondents viewed the kitchen with a gender bias.
Likewise, the community has been involved in the provision of granary construction materials as indicated in table 5.3. However much of the community effort was in the provision of roofing materials Accounting for 50.8%.

Table 5.3 community participation in the provision of materials for the granary:(%)

<table>
<thead>
<tr>
<th></th>
<th>Walls</th>
<th>Roof</th>
<th>Floor</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gathering</td>
<td>9.2</td>
<td>47.5</td>
<td>10.0</td>
<td>66.7</td>
</tr>
<tr>
<td>Making</td>
<td>0.0</td>
<td>0.8</td>
<td>0.8</td>
<td>1.6</td>
</tr>
<tr>
<td>Funding</td>
<td>0.8</td>
<td>2.5</td>
<td>1.7</td>
<td>5.0</td>
</tr>
<tr>
<td>Total</td>
<td>10.0</td>
<td>50.8</td>
<td>12.5</td>
<td>73.3</td>
</tr>
</tbody>
</table>

Source: Field data.

Though men constructed the structure, it was the role of the of women to thatch it. Women have therefore been assisting each other in the thatching; hence the high percentage of community participation. The use of the grass in the kitchen and granary roofing has been attributed to the fact that grass helps maintain a relatively cool conditions inside the structures given the high day temperature associated with the ASAL nature of Machakos District. This improves the working conditions in the kitchen and storage conditions in the granary.

The granary is an important component in rural shelter. This has been necessitated by the fact that the houses are generally too small to facilitate comfortable living and storage. The Akamba people have done this through mounting their granaries on raised
rock pillars particularly due to vermin menace. The community has helped in the provision of these materials and the floor platform construction accounting for 12.5.

5.3 **Community participation in Construction labour**

Like in the provision of the material, the community has been involved to an extent in the construction of both the houses and the amenities. It is important to mention here that the Akamba people have traditionally had a specialized labour force set up for house building. Usually, men are charged with the task of making mud or bricks for walls, while women supply water for the construction.

Division of labour is similarly seen in the roofing where men set up the walls and roofing beam while women gather the grass and thatch the houses. The study revealed that this communal mutual aid and specialisation still persist despite the emerged monetary economy. The gender sensitivity in shelter development may be attributed to physical strength. The shelter task that is male managed such as making of bricks and shelter structure construction requires more physical strength than fetching water and thatching which is performed by the women.

Assessing the aspect of community participation in labour, the study considered two aspects which though independent, are complementary and sometimes merging. Community labour participation may be direct or indirect. This may be through finances acquired by individuals from community groups and used in meeting labour expenses or directly through manual work.
Manual work has here been treated as any physical task the household owner undertakes in putting up shelter. This may be as in laying the foundation for the houses, erecting poles, laying the beams, plastering the houses with mud, or laying the bricks to make walls. Manual work has also been categorised as the task of roofing the house either as men assist in making and laying the beams or the thatching task of women.

Table 5.4 presents the methods of communal participation in the provision of labour. It was found that 35.0% of the households had enjoyed communal support in meeting construction labour requirements. However, manual work was most prevalent (32.5%) compared with financial assistance (0.8%). It is therefore envisaged that the human resource is most abundant in Machakos compared to financial resources.

As stated elsewhere, the traditional mutual aid way of life of the Akamba people has persisted. Given the economic status of the rural inhabitants of Machakos District whose basis is mostly of unreliable agricultural activities, the most abundant and readily available resource is the human labour as opposed to finance, hence the high percentage of manual labour.
Table 5.4: Community Participation in labour Provision for the construction houses:(%)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cum.percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finance</td>
<td>1</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Manual work</td>
<td>39</td>
<td>32.5</td>
<td>43.3</td>
</tr>
<tr>
<td>Finance + manual work</td>
<td>2</td>
<td>1.7</td>
<td>35.0</td>
</tr>
<tr>
<td>missing</td>
<td>78</td>
<td>65</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field data.

Manual work was also found to be prevalent in the construction of housing amenities especially the kitchens accounting for 59.2% compared to 0.8% financial support (table 5.5). However, the community support in construction of granaries was found to be lowly represented accounted for 1.7%. This may be explained by the fact that the structures are too small such that household labour was sufficient or paid labour was found cheaper.

Table 5.5: Community participation in labour provision for the construction of kitchen:(%)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cum.percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual work</td>
<td>71</td>
<td>59.2</td>
<td>59.2</td>
</tr>
<tr>
<td>Finance</td>
<td>1</td>
<td>0.8</td>
<td>60</td>
</tr>
<tr>
<td>missing</td>
<td>48</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field data.
5.4 Community participation in water provision

This study has perceived shelter in totality and of all the requirements that make human habitat, water is vital (Oyugi, 1973; Odada and Odhiambo, 1989; UNCHS, 1992). Given the arid nature of Machakos District, water situation may be explained as inadequate and anthropogenic efforts are vital if the situation is to be rectified. The water resources are few especially due to the seasonality of the rivers and streams. It is a common feature to have most of the river valleys dry except for the major rivers originating from the central Kenya highlands such as the Athi and Thika. The local highlands in Machakos District such as Mua, Iveti and Kiima Kimwe, though important water catchment zones, do not sustain the local rivers and streams such that even major courses originating from them (hills) such as Thwake dry up.

To achieve the water requirements of the district various organizations have worked closely with the residents through the local CBOs. The community has contributed towards this in various ways. This has been through provision of labour, finances or material for the construction of sub-surface dams or protected springs. In general community effort in the construction of water sources represents 35.8% as illustrated in table 5.6 below.
Table 5.6: Community participation in construction of water sources

<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cum. percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>labour</td>
<td>19</td>
<td>8.3</td>
<td>8.3</td>
</tr>
<tr>
<td>financed labour</td>
<td>14</td>
<td>11.7</td>
<td>20</td>
</tr>
<tr>
<td>labour, material</td>
<td>1</td>
<td>0.8</td>
<td>20.8</td>
</tr>
<tr>
<td>finance labour</td>
<td>18</td>
<td>15.0</td>
<td>35.8</td>
</tr>
<tr>
<td>material</td>
<td>18</td>
<td>15.0</td>
<td>35.8</td>
</tr>
<tr>
<td>missing</td>
<td>77</td>
<td>64.2</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>120</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: field data.

The study revealed that there are various sources of water on which the households depend. However, only 38.3% of the households depend on water sources without some human influence (i.e. rivers and springs). However, since most of the rivers and streams are seasonal, the inhabitants have to depend on subsurface water that is drawn from shallow wells in the dry river beds.

Having perceived their water needs and handicaps, the local people have at various levels pooled resources to either protect or improve their water resources. They have protected the existing natural springs by constructing concrete reservoir with a single drawing outlet, (plate 1); on which 12.5% of the household depends. Others have been engaged in piped water supply projects, (12.5%); subsurface dams, (12.5%) and boreholes on which 5.0% of the households depend. Though roof catchment is an
important source of water in most rural settlements, the trend is not highly represented in Machakos District. This may be explained by the variation and unreliability of rainfall in the study area and the widespread use of thatched roofs which are poor in water harvesting.

Plate 1: A CBO constructed protected spring in Mua.
To meet their water needs therefore, the community through the CBOs has participated in various ways such as in the provision of labour particularly in the digging of trenches for laying pipes, in the construction of dams (locally the dams are referred to as 'koo'), in the periphery fencing and in the transportation of building material. Community participation has also been in terms of financial contribution towards the projects for the purchase of such implements as cement, metal bars, pipes and for the payment of professional fee and in the supply of material such as sand and stones.

The community has greatly participated in these water projects whereby 35.8% of the respondents indicated that they were involved in the endeavour of ensuring water supply. 8.3% participated in the provision of labour, 11.7% had a compounded participation of labour provision and funding and 15.0% participated in all the three forms. To realise their objective, the inhabitants have initiated a number of CBOs through which they have been able to secure clean water.

Among such NGOs is the Mukalala-Kakumini Water Project in Matuu. Having appreciated their water needs, the residents pooled their resources to seek a solution to this problem. To realise their objective, each member registered with Ksh.25/-fee and makes a further contribution of Ksh.1000/-. They are also involved in digging trenches for laying of the pipes. The project has sought the services and support from the Diocesan Development Service (DDS). The DDS has supplied the project with water pipes and was involved in the surveying of the project. Further support pledges towards the project have been from the ministry of health and the
ministry of water development on water treatment and the supply of the remaining 600 x 20 feet water pipes respectively.

Through the project, the local community is now enjoying clean water from Thika river and many more will benefit from this project with the completion of the remaining two phases.

In the Central division of the Machakos district particularly in Mutituni location, the local inhabitants have initiated water related projects. The location enjoys an added advantage in relation to other areas given that the existence of Mua hills has been an important catchment area. To enhance this water resources there exists two main CBOs. That is Mwamba Wa Kyamwilu (the unity of Kyamwuwilu area) and Kwakaviti project Kasiani.

The Mwamba wa Kyamwilu project started as a welfare organization with a purpose of assisting bereaved families by making a monthly contribution of Ksh.1/- from every adult (over 18 years) in Kyamwilu village. As the money accumulated, they realised they had a more stressing problem of communication and of movement of farm produce. They therefore advanced their programme towards construction rural access roads. They have since managed to make a road from Mtituni shopping centre to Kaloleni which is at the summit of the Mua hills avoiding the rather long main road connecting Machakos Township and Kangundo town. Having realised this objective, they embarked on water management project. They have so far managed to protect three springs by the use of concrete basins with only one outlet (see plate 1). The group still notes the problem of having the springs far from their homes. To bring water into their houses they have planned to
construct a reservoir tank at the top of Mua hill, pump the water from the springs and supply it to the houses by gravity.

The project is soliciting for funds through the Community Development Assistant (CDA) and has also approached the DDS. For the project to be completed the DDS has asked the members to contribute Ksh.200,000/- and they meet the extra budget of Ksh.100,000/-.

The Kwakaviti project Kasiani project was started in 1985 by the people through the support of the DDS and Machakos Integrated Development Programme (MIDP). In support of the project, the DDS provided the material such as iron bars, cement and pipes and the MIDP helped in the construction of water tanks in which water connects and drains through the pipes. The community on the other hand participated by providing stones, sand and digging trenches.

At present, the DDS has withdrawn from the project and is being sustained by the community through maintenance and repair. The project aims at extending the pipes to cover the entire and take water closer to the residents. They also intend to expand the storage facilities and replace the plastic pipes with metallic ones which are more durable.
Plate 2. CBO constructed piped water outlet.

Other water management projects involves the sinking of wells particularly in Kangundo division. There also exists water tanks construction community groups initiated and managed by women such as 'Kusea kahawa' group in Kaloleni Central division. Through such groups individuals contribute resources and labour to enable each member secure a water tank (see plate 3).
Another important shelter aspect that was investigated by this study was security. Like in other districts in Kenya, Machakos experiences various types of security problems. Investigating on the community perception of this shelter aspect, it was revealed that the community is concerned with the maintenance of law and order. This has been in collaboration with the administration and the ministry of wildlife and tourism especially in areas neighbouring game reserves such as Kianzavi. The community vigilance has been prompted by persistent attack by wild game especially on farms neighbouring the game parks. Similarly, there exist human attack on homesteads and farms; stealing household goods, farm produce and implements. In reinforcing security, community vigilance was reported and accounted for 14.2% of the efforts sought.
5.5 **External Agent activities in Rural Shelter Development in Machakos District:**

This section seeks to reveal the findings of the study in relation to the presence of the outside agents and their activities towards shelter development in the study area. In this study, outside agents are treated as those organization and interested parties working in the study area and whose originality is not locally based. By locally based, the study implies initiated by the beneficiaries of the projects.

It was found that the government through the ministry of culture and social services, has granted the operation of a variety of NGOs and Development Agents in Machakos District. However, not all have been involved in the strict sense of shelter development. However, some have directly or indirectly been involved in this task.

The study revealed that there exists in Machakos District development organizations with various activities such as, water development (33.3%), Rural Access Road development (1.7%), Health (5.8%), Famine Relief (2.5%) and Business Enterprises (1.7%). In other words 45.0% of the household interviewed indicated the awareness of the existence of such organizations working in their neighbourhood.

Of these organizations, the operations closely linked to shelter were those of the Catholic church Diocesan Development Services (DDS), the World Neighbours, the NCCK and the Local Authority. This study has in details elucidated the operation of DDS and
The DDS is a Catholic Church NGO whose operation is aimed at uplifting the living status of the local community. Its operation covers Machakos, and Makueni District. This development wing of the Machakos Diocese operates on the premise of creating awareness among people through mobilization. They do this through seminars and workshops at local centres and churches. Fortunately the programme is non-denominational in its operation and all benefit from its aid. However, the setting of project priorities is wholly community based.

The DDS supports a variety of programmes with different activities such as:

- Women and development programme; this programme is based on the assumption that women have been marginalised. The programme is aimed at creating confidence and women empowerment and participation in development.
- Water Development Programme
- Semi-Arid Land use Programme
- Health Care and Nutrition Programme
- Functional Adult literacy (FAL) beside the three Rs FAL incorporate leadership and development skills, Business skills through seminars and workshops.
- Small enterprises and self employment programme; this is basically an income generating programme, such as paraffin selling projects (especially by women), posho mills, hardware stores, food stores, tailoring, leather work, carpentry and welding.
- Parish Development Committee Programme - Its purpose is to train people to be used as mobilizing agents to facilitate sustainable mechanism when the diocese withdraws from the project.

- Rural saving and credit

- Small Home Programmes for the handicapped

- Aids and Prevention Programme

- Children Rehabilitation

- Education Programme

- Education Programme (Catholic Sponsored Schools)

- Religious Awareness Education Programme

The operation of the DDS uses the Grameen model of assisting the local people uplift their living status. There is a secretariat of 13 interdependent programmes that are intertwined to enable assist the community in their own identified projects.

For a CBO to qualify for financial or material support from the DDS it must be registered with the same and be operational. Financial support especially for business enterprises has a maximum of Ksh. 50,000/- which is repayable on an agreed schedule. However, Water Development Programmes support which is closely linked to shelter development varies in support depending on the size. Groups that are registered with the District Community Development office (DCD) do not always qualify for support. On the other hand the DDS does not aid individuals but groups in small enterprises ranging between 3 and 8 members to qualify; however social groups must have a membership of over 40 to qualify for support. The DDS currently has rendered its support to over 2700 groups all within the range of programmes
As indicated in section 5.4 of this chapter the DDS has been instrumental in the support of water projects and the members have been fully incorporated in its operations.

The World Neighbour on the other hand is an NGO that is fully operational in Machakos District. It is an International Organization operating in East and Central Africa region. Its operation in Machakos started in 1990 and aims at assisting the community in problems that it (community) has prioritized. It operates under the Rural Development Programme Policy (RDPP) and centres its operation in areas of water projects, health activities especially on training of traditional birth attendants, livestock and agricultural programme and agro forestry. In Eastern province World Neighbour has projects in Machakos, Kitui and Makueni and has it region office in Machakos township.

The operation of World Neighbour Kenya (WNK) approaches the community through the chiefs and their assistants who call for "barazas" (meetings). It is in such meeting that WNK explain to the community their (WNK) objectives and encourage the formation of Village Development Committees (VDC). Through the VDC the community is sensitized on the need to uplift their status. This has led to the community establishing their needs and priorities. With the community, WNK agree on how to tackle their perceived and felt priorities. However, it was indicated that where CBOs existed and their programmes within the WNK working framework support was availed.
Water is an important shelter aspect that WNK has addressed. It aims at realising clean portable water for both domestic and animal use. To realize this objective, WNK asks the community to establish the source. The community is also involved in clearing bushes, digging trenches and contributing towards construction of water tanks, the WNK contributes pipes, cement and technical advise. The WNK does not recover the money, spent on such projects. It was also revealed that, the WNK aided individual household improve their roof catchment by construction of water tanks as in Muthetheni location, Kionyweni sublocation.

In Kionyweni women group, out of 66 members, 32 have benefitted by acquiring water tanks. In this particular project, those members whose roof were grass thatched were assisted to get iron sheets and those with iron sheet roofed homes got water tanks. WNK has also assisted construct a subsurface dam at Muthetheni and three water tanks in three primary schools in the location. Other outside agents that have been involved in upgrading the living status of the people of Machakos district include KENGO who have particularly been operational in Yatta division. They are involved in energy conservation programmes and afforestation. They have encouraged particularly women groups in making of energy saving jiko (stove) and initiating of tree nurseries. Some household also indicated that they have benefitted from water tanks constructed by KENGO as demonstration models in Yatta division.

AMREF operates in Kangundo division particularly Kianzavi where they have been involved in medical care especially immunization.
Finally, it appears from the findings of this study that it is the DDS and WNK that have programmes closely linked to shelter as it (shelter) is defined in this study. This is especially so in water management projects. It has also been demonstrated that much of the work is done with the involvement of community whereby the projects are locally based and the outside agents comes in as facilitators and partners but not as masters. The next section of this chapter outlines how the society has been involved in those projects.

5.6 Community Participation in Agent's Shelter Development Projects:

Section 5.5 reports the activities of outside agencies in shelter development in the study area. It has been indicated that not all agents operating here are directly related to shelter development. On the other hand any development that is geared toward uplifting to living status of the people ought to be indigenous for the project to be sustained Carvalho (1984), Ekins (1986), Chamber (1986), Turner (1986).

Similarly, community programme ought to fully utilize the local resources and technology for sustenance of such projects. This study has revealed that many of the projects that have had the support of outside agents have been on going projects or projects that have been through community initiative. The water development projects that have been discussed in section 5.4 of this chapter are locally initiated and have had the support of the outside agencies through the initiation of the community itself. The external agencies have not appeared to be the
As has been revealed through the interviews with the officials of these projects, it is the local people who have appreciated their needs and have the will to meet them. It has also been revealed that, the local people have participated in various ways in the projects that have had external support. It was indicated that 27.5% of the household were involved in various ways in externally supported projects (table 5.7).

Their involvements were in the provision of labour, where they participated in such activities as clearing bushes, digging trenches, transporting materials and constructing the sub-surface dams. They are also involved in the provision of materials, such as stones and sand from the field and from dry river beds for the construction of dams and water tanks. And lastly the community was involved in funding the projects and providing leadership. It was also indicated that the external agencies granted support in terms of material, finances or technical advice. For the community to fully appreciate the project as theirs, their contribution and participation is vital.
Table 5.7: Community participation in Agents supported projects:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cum. Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>labour</td>
<td>11</td>
<td>9.2</td>
<td>9.2</td>
</tr>
<tr>
<td>material</td>
<td>1</td>
<td>0.8</td>
<td>10.0</td>
</tr>
<tr>
<td>funds</td>
<td>4</td>
<td>3.3</td>
<td>13.3</td>
</tr>
<tr>
<td>labour+material</td>
<td>2</td>
<td>1.7</td>
<td>15.0</td>
</tr>
<tr>
<td>material+funds</td>
<td>7</td>
<td>5.8</td>
<td>20.8</td>
</tr>
<tr>
<td>labour+funds</td>
<td>4</td>
<td>3.3</td>
<td>24.2</td>
</tr>
<tr>
<td>labour+material+fu</td>
<td>4</td>
<td>3.3</td>
<td>27.5</td>
</tr>
<tr>
<td>missing</td>
<td>87</td>
<td>72.5</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td></td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: field data.

5.7 The Constraints of Community Participation in Rural Shelter Development in Machakos District

Table 5.8 below lists the constraints of community participation. It was found that though community participation may ease development tasks, it has its own handicaps with 70.0% of the respondents indicating the existence of various constraints that they felt hamper the realization of community projects. The constraints ranged from material acquisition to lack of morale. Most of the respondents (35.8%) indicated that financial problems were most pressing. Similarly low commitment by some people is also prevalent as reported by 21.7% of the responses.
Table 5.8: Constraints of Community projects

<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cum. Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>poor leadership</td>
<td>5</td>
<td>4.2</td>
<td>4.2</td>
</tr>
<tr>
<td>Misappropriation</td>
<td>4</td>
<td>3.3</td>
<td>7.5</td>
</tr>
<tr>
<td>Lack of funds</td>
<td>43</td>
<td>35.8</td>
<td>43.3</td>
</tr>
<tr>
<td>low commitment</td>
<td>26</td>
<td>21.7</td>
<td>65.0</td>
</tr>
<tr>
<td>outside interference</td>
<td>1</td>
<td>0.8</td>
<td>65.8</td>
</tr>
<tr>
<td>lack of equipment</td>
<td>5</td>
<td>4.2</td>
<td>70.0</td>
</tr>
<tr>
<td>missing</td>
<td>36</td>
<td>30.0</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td></td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: field data.

On the other hand, officials of the CBOs were emphatic on some of the constraints they have encountered in their bid to realize their objectives. The Mwamba wa Kyamwilu projects has repeatedly faced financial shortfalls especially in the endeavour to expand water reservoirs on the summit of Mua hills. Also the project covers a large region and has a big membership. This has been very appealing to politicians who have grossly interfered with in its operation. Similar problems have been experienced in the Kwakaviti project Kasiani in its bid to expand the project to cover a larger part of their village.

5.8 SUMMARY

The approach of community participation in regional development has been emphasised (Carvalho, 1984; Ekins, 1986; UNCHS, 1986; 1988; 1991). Community participation highlights the importance
of the involvement of the beneficiaries in any project that seeks to improve their welfare. Similarly the beneficiaries have been viewed as not only the end but also the means towards realising their felt and perceived needs and desires. This may be achieved directly through locally initiated formal and informal groups or indirectly through participation in projects initiated or sponsored by external agencies.

This study has found that the rural inhabitants of Machakos District have actively been involved in community mutual aid in the search for regional development. They have formed local informal groups that come in aid of the members. They have assisted each other in the search of building materials such as grass for roofing and mud and bricks for walls. Such assistance has eased the labour and financial strain that would be subjected to individual families.

Other than having community mutual aid to facilitate housing needs, the community has also joined to secure other needs such as water and security. They have also formalised their groups by registering with the Community Development Office. This has enabled them reach for assistance from willing donors, NGOs and religious organizations such as NCCK. Such formal groups have also benefitted from DDC among other organizations. The community has also been involved in projects sponsored by external agencies through the supply of materials, labour or funds.
CHAPTER SIX:

6.0 Housing Quality and Community Participation in Machakos District.

6.1 Introduction:

Shelter is a basic human need, however, in the developing countries in general and Kenya in particular housing policies have been directed to the urban centres (Kenya, 1967, 1974, 1989).

It has however been the desire of the government of Kenya to improve the housing and living conditions of its people. This has been exemplified through a number of housing development initiatives which have been undertaken since independence. These initiatives include; site and service scheme, slum upgrading, rental scheme, tenant purchase scheme and rural housing loan scheme (Macharia, 1985; Kiamba, 1991 a, b; Kenya 1996).

It has been envisaged that, the Kenya housing policy is biased towards the low and medium income group of the urban population. However, it appears that there is no specific policy for the rural community especially the poor.

Rural housing therefore has been an individual responsibility or community assisted achievement. In the previous chapters, we have shown the characteristics of rural housing and the extent of community participation or mutual aid in rural shelter development.
In this chapter, we seek to establish the effectiveness of community participation in influencing the quality of rural shelter and the relationship between shelter type and development and community participation. It is argued that there is a relationship between community participation and housing type and development.

6.2 Housing Quality by Construction Materials in Machakos District.

There are three basic elements of housing, that is, walls, roofs and floors. These elements can be of good or poor quality depending on the materials used, standards adopted and such other factors as climate, culture and socio-economic considerations (Kenya 1996).

This study has found that the utilisation of locally available materials in either their original raw nature or after some minor or major modification making them more durable and sustainable is prevalent.

The functional requirement of the three housing elements is varied. The three should however serve the purpose of effectively resisting vermin attack, fire, wind and rain. They should provide thermal comfort and create a hygienic habitat.

We can therefore measure the quality of shelter by assessing the functional requirement of each element based on the materials used. As indicated in chapter four, shelter has been categorised as temporary, semi-permanent and permanent.
To measure the housing quality by construction materials we adopted the durability factor models 1, 2 and 3 discussed in chapter three. The durability factor takes into account all wall construction materials other than mud and wattle and timber; all roof construction materials other than grass and makuti, and all floor construction materials other than earth. We hence consider shelter element that are of permanent category.

An analysis of the housing quality by considering the durability of the materials used indicated some variation in the three housing elements of wall (85.00), roof (74.17) and floor (41.17) for the District. This variations are consistent with the findings on the materials used, whereby more houses have utilised bricks for the walls, a factor attributed to the widespread availability of soils suitable for brick making and the scarcity of timber and other wood materials due to the climatic conditions of the study area.

On the other hand, the use of grass for thatching is high but diminishing hence the high roof durability factor. This has been attributed to the desire of the residents to have better roofed houses and the need to improve on roof catchment as a source of water. Lastly, the low durability factor for floors indicates that more houses still have earthen floors. Less people seem to prioritise the permanence of the floor element of the houses.

It is hence envisaged that in general the shelter quality in the rural areas of Machakos District is improving and there is visible shift towards the use of more durable and sustainable construction materials.
Given the above scenario, this study sought to further analyse the housing quality as related to community participation. This helped to measure the effectiveness of community participation in influencing housing quality in the district.

6.3 Housing Quality and Community Participation.

To analyse the housing quality by community participation the study utilised the material provision mode of participation. It was found that the community participated in the provision of materials for all three housing elements. It (community) also provided varied types of materials in terms of durability vis bricks, stones, iron sheet, concrete etc. This has led to a great variation in all the elements for the whole district. The durability factors by community participation measured 78.69 (walls), 32.26 (roofs) and 20.00 (floors).

Further analysis was done on the spatial differentiation. This was done on housing quality by ecological zonation. Ecologically, Machakos District has been categorised into four ecological zones namely zone 2 (equatorial climate), Zone 3 (dry sub-humid to semi arid), Zone 4 (semi arid) and zone 5 (Arid) (Kenya 1970).

By ecological potential it was found that there was some variations for both district totals and in cases of community participation. It was found that the durability factor by ecological zonation was high for the whole district for all the housing elements measuring 96.43 (Zone 4) for walls, 96.43 (Zone 4) for roofs and 66.67 (Zone 2) for the floors.
However, there was some variation when we considered the ecological zonation totals for the whole district and the cases of community participation. Table 6.1 indicates that when the durability factor for households that reported community activities was compared with the district some disparities were recorded at 78.69 and 85.00 respectively.

Table 6.1 Wall Durability Factor by Community Participation and Ecological Zones.

<table>
<thead>
<tr>
<th>Ecological Zones</th>
<th>Community Participation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>78.69</td>
<td>81.48</td>
</tr>
<tr>
<td>3</td>
<td>82.35</td>
<td>77.14</td>
</tr>
<tr>
<td>4</td>
<td>92.86</td>
<td>96.43</td>
</tr>
<tr>
<td>5</td>
<td>66.67</td>
<td>86.67</td>
</tr>
<tr>
<td>Machakos</td>
<td>78.69</td>
<td>85.00</td>
</tr>
</tbody>
</table>

Source: Field data

These differences were reflected on both the roofing and floor durability as presented in tables 6.2 and 6.3.

It was noted that similar variations occurred when we compared the durability factor analysis results by ecological zonation. The durability factor was generally higher for the district compared with cases of community participation.
This scenario indicates that the community was more involved in providing less durable materials in the construction of their shelter. This is especially so when we consider the roof and floor elements. This may be attributed to their (residents) economic status whereby human resources are more abundant and
readily available than the financial to be able to purchase or import the more durable materials.

Though the entire district appear to have a substantial use of permanent materials for the floor, there was a low use of similar materials when community participation was assessed.

It can therefore be argued that, though community participation has been found to influence and effectively contribute to shelter development in Machakos, the use of durable materials was high in the construction of wall elements and to a less extent in the roof element.

It is also argued that community participation was consistent in all the ecological zones with notable variations in both the roof and floor elements with the highest durability factor recorded in zone 2 at 83.33 and 66.67 respectively.

6.4 The Significance of Community Participation in Shelter Development in Machakos District:

A statistical test of significance of the relationship between community participation and shelter development was performed. A Chi-square test was adopted to relate the two variables of community participation and shelter development. This section aims at testing the Null Hypothesis (Ho) that, 'there is no significant relationship between community participation and shelter development in Machakos District'. To test this hypothesis, three interrelated hypotheses have been formulated and tested.
There is no significant relationship between community participation in building material provision and shelter development.

There is no significant relationship between community participation in labour provision and shelter development.

There is no significant relationship between community participation in water source construction and water development.

The first hypothesis testing aimed at relating the participation of the residents in the provision of building materials for their houses, kitchen and granaries. The community has played this role through gathering, making and funding whose observed frequencies are hereby used. Table 6.4 represents a chi-square testing of the first null hypothesis.

Table 6.4: Chi-square test of significance on material provision and shelter development:

<table>
<thead>
<tr>
<th>Community Participation:</th>
<th>Shelter Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gathering</td>
<td>House</td>
</tr>
<tr>
<td>36</td>
<td>76</td>
</tr>
<tr>
<td>Making</td>
<td>51</td>
</tr>
<tr>
<td>Funding</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>k1</th>
<th>E</th>
<th>k2</th>
<th>E</th>
<th>k3</th>
<th>E</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1</td>
<td>36</td>
<td>59.3</td>
<td>76</td>
<td>74.7</td>
<td>80</td>
<td>58.0</td>
<td>192</td>
</tr>
<tr>
<td>r2</td>
<td>51</td>
<td>26.0</td>
<td>32</td>
<td>32.7</td>
<td>1</td>
<td>25.4</td>
<td>84</td>
</tr>
<tr>
<td>r3</td>
<td>2</td>
<td>3.7</td>
<td>4</td>
<td>4.7</td>
<td>6</td>
<td>3.6</td>
<td>12</td>
</tr>
</tbody>
</table>

89       112  87  288

Source: Field data.
The computed value of the chi-square is 67.47 and there are 4 degrees of freedom. At 0.05 level of confidence, the critical chi-square value is 9.49.

Since the computed value is greater than the critical value it can be concluded that the null hypothesis (H₀) that there is no significant relationship between community participation in building materials provision and shelter development is rejected and the alternative hypothesis (H₁) that there is a significant relationship between community participation in building materials provision and shelter development adopted.

A test of the second hypothesis aims at relating the participation of the residents in labour provision. In the provision of labour the community was found to have participated in two ways that is, manual work and by financing labour needed for the construction. The two variables; community participation and shelter development have been related and the relationship tested as contained in table 6.4.
Table 6.5: Chi-square test of significance on shelter development and labour provision:

<table>
<thead>
<tr>
<th>Community Participation:</th>
<th>Shelter Development</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>House</td>
<td>Kitchen</td>
<td>Granary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manual work</td>
<td>39</td>
<td>71</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funding</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>k1</th>
<th>E</th>
<th>k2</th>
<th>E</th>
<th>k3</th>
<th>E</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1</td>
<td>39</td>
<td>40.19</td>
<td>71</td>
<td>68.9</td>
<td>2</td>
<td>1.91</td>
</tr>
<tr>
<td>r2</td>
<td>3</td>
<td>1.45</td>
<td>1</td>
<td>2.48</td>
<td>0</td>
<td>0.1</td>
</tr>
</tbody>
</table>

42  72  2  116

Source: Field data.

The critical chi-square value at 0.05 confidence level is 5.99 which is greater than the computed value (2.69). It can therefore be concluded that the null hypothesis (Ho) that there is no significant relationship between community participation in labour provision and shelter development is accepted.

The low labour provision by the community and the acceptance of the null hypothesis has been attributed to the skilled labour required in building of brick walled and iron sheet roofed houses which is at most times is hired.

Finally, the third null hypothesis is tested to establish the relationship between community participation in water source construction and water development.
Table 6.6: Chi-square test of significance on community participation and water source development:

Community participation in water source development:

<table>
<thead>
<tr>
<th></th>
<th>Obs.</th>
<th>Exp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour</td>
<td>10</td>
<td>10.75</td>
</tr>
<tr>
<td>Finance and labour</td>
<td>14</td>
<td>10.75</td>
</tr>
<tr>
<td>Labour and Material</td>
<td>1</td>
<td>10.75</td>
</tr>
<tr>
<td>Finance, Labour and Materials</td>
<td>18</td>
<td>10.75</td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td></td>
</tr>
</tbody>
</table>

Source: field data.

Computed chi-square value = 14.76

Degrees of freedom = 3

The null hypothesis that, there is no significant relationship between community participation in water source construction and water development is rejected at 0.05 confidence limit whose critical values is 0.35. Hence the alternative hypothesis (H1) that, there is a significant relationship between community participation in water source construction and water development is adopted.

6.5 SUMMARY:

Rural shelter development has been found to be lacking both political and economic support from the central government. Hence, it has become an activity of the residents themselves, either individually or communally. This chapter relates the importance of community to the task of acquiring shelter and generally influencing the built environment. It has been found that the rural residents utilise locally available human and
natural resources to develop their shelter.

By utilising local resources, the residents have modified the available natural resources of soil, and plant materials skilfully constructing houses that are generally comfortable, affordable and sustainable. They have also developed projects to satisfy their water needs from the existing local water resources.

However, it is important to note that, the most significant community resource in influencing shelter development has been human resources. Human labour has been utilised in acquiring the necessary building materials compared with financial resources. Community participation has therefore been found to be most significance in shelter development in the tasks of providing building materials and the task of seeking solutions to water problems as compared to providing labour for the construction of the houses.

It can therefore be concluded that, community participation appears more practised among those residents utilising locally available materials as compared to those utilising materials imported from outside the local environment. The community has also influenced and effectively contributed to the housing quality in the study area. Though the community appears to be participating more in the development of houses utilising locally available materials, it has modified them (materials) to more durable and sustainable state hence, contributing to better quality houses for its members.
CHAPTER SEVEN:

7.0 Summary and Conclusion:

The main objective of this study has been to investigate the community participatory mechanisms that have been adopted and sustained by the rural inhabitants of Machakos District in the quest for satisfying their shelter needs. This chapter is intended to highlight the important findings that this study has revealed and suggest further research areas in a bid to formulate clear policies that can address the shelter problems in the rural areas especially in the developing countries where majority of world humanity live.

In chapter one it was indicated that the development and sustenance of rural shelter has been, and will continue to be, the responsibility of the residents themselves with little or no support from the national government. Shelter policies in most developing countries in general, and Kenya in particular, have persistently been biased in favour of the urban areas. Loaning institutions have been found to operate confidently among the urban inhabitants who have formal employment hence regular income to service any loan granted. However, the rural inhabitants find themselves in a situation of subsistence agriculture and unemployment hence cannot be favoured by loaning terms offered.

However, it has been argued that given the available physical and human resources, the rural residents can afford comfortable, durable and dignified shelter. Concerted effort among the rural residents has facilitated upgrading of shelter. The residents have been called upon to improve and utilise the locally available materials and their indigenous building technology for
more sustainable built environment. Likewise the operating organisations in rural areas have been called upon to seek the needs of the intended beneficiaries and ensure their involvement in any project they may initiate aiming at improving their (residents) standard of living.

On policy, this study recommends the strengthening of community participatory mechanism, cultivating on improvement of the available human and natural resources. Training on leadership, improvement of locally available resources to more durable and sustainable state should be emphasised. Likewise, governments and other interested parties should strive to assist the residents financially or otherwise through the existing Community Based organisations. Such recognition would help boost the morale of the beneficiaries and encourage the people to invest more on community based projects hence uplift their living conditions which is a policy target of the Kenya government.

Financing requirements should be relaxed to ease accessibility by individual households through community organisations where mutual assistance is encouraged in collateral and repayment

7.1 Summary of the Research Findings:

Investigating community participation of the rural residents in Machakos District, shelter was looked at in a holistic manner. Shelter was seen to encompass the houses and associated amenities of kitchen, granaries and sanitary facilities, water and security. Houses, kitchens and granaries were grouped into temporary, semi-permanent and permanent according to the
A look at the shelter conditions in the study area revealed that most of the houses, kitchens and granaries were largely temporary and semi-permanent. This indicates that the use of locally available materials of mud and wattle or raw bricks for walls and grass for thatching was prevalent.

It was also found that most houses had access to water. However, water availability was dependant on the location of the house in relation to the water source and the season of the year. During the rainy season, most of the valleys contain flowing streams which dry up immediately during the dry season given the ASAL nature of the study area. To solve the water problems, the residents have sought various methods such as protecting springs, construction of sub-surface dams, sinking boreholes, piping and construction of water storage tanks.

The study also found that the rural residents perceived security as an important shelter component. They reported the presence of security threats which range from petty theft to theft of farm produce and implements, cattle rustling and game attack.

Give the shelter conditions in the study area, the study sought to establish the community's role in realising the existing shelter. This broadly sought to establish the community participatory mechanism in the study area in the endeavour to realise their shelter needs. Community participation was sought in terms of their role in the provision of building materials, provision of labour in the construction of shelter and materials used.
participation in solving the water problems.

It was found out that the community participated in the provision of materials either by manually gathering them from the field and delivering to the building site, or by making them which involved the moulding of bricks which are either sun dried or baked. The community also participated in the financing where money was shared in turns among group members for the purchase of the materials from either the local environment or imported from outside the study area.

In the provision of labour, the community participated either through the financing of hired labour or manually participated in the construction of shelter. Similarly, the community participated in seeking solution to their water needs. They played important roles in the financing of the projects particularly in piped water projects, provided manual labour especially in clearing bushes and digging of trenches and provided materials especially for the construction of sub-surface dams.

It was also found out that the community was involved in projects that were sponsored by external agents. This was especially found in water projects sponsored by the Catholic Deocean Committee and the 'World Neighbours'. In such projects, the community contributed finances and provided the necessary labour which did not require specialised skills. The community also provided the leadership for such projects to enable their sustenance when the sponsors withdrew.
Analysis of the effectiveness of community participation in shelter development was presented by relating housing quality and durability of the materials used. It was found that community participation contributed to durable and sustainable shelter by providing durable materials for the wall and roof elements of their houses.

Lastly, a chi-square test of significance between community participation and shelter development indicated that, there exist a statistical relationship between community participation in building materials provision and shelter development. There also exist a statistical relationship between community participation in construction of water sources and water development.

This study has thus found that community participation is an alternative model for regional development and should be enhanced to supplement development activities by the government and other development agencies. The study introduces supportive argument in the field of academia where more recognition should be given to the seemingly desolate rural population given their indigenous abilities and resourcefulness. It shows that the beneficiaries of development programmes should be active partners and not passive recipients.

7.2 Suggestion for Further Research and Recommendations:

Shelter policies have not been in favour of the rural residents in the developing countries for along time. The existing policies appear to have rigid requirements that the rural residents lack such as regular incomes, collateral and demand for the usage of
industrial produced materials. However this study has revealed that, the usage of improved locally available materials such as baked bricks in the study area has led to development of comfortable, durable and dignified shelter that is affordable to the low income groups and peasant farmers in the rural areas.

Likewise, it has been found that the rural residents have indigenous building technology which may be enhanced and improved to take advantage of cheap local based labour. Lastly, it has been found that there exist a mutual way of life in the rural areas that may be enhanced and encouraged to help cut down on costs and promote the sustenance of rural based projects.

This study thus suggests that further research be conducted on the community participatory mechanisms in rural areas similar to the current study area to establish the universality of the mutual way of life of the rural residents or its uniqueness in Machakos District.

Studies should also be carried out on policy formulation that seek more appropriate funding and other related requirements for the rural residents who are discriminated by the present funding framework. Policy maker should seek to establish a mutually joint collateral and mutual servicing of loans among the rural residents and seek to qualify the use of locally available materials for affordable shelter.

Studies should also be carried out by the relevant disciplines to ascertain the viability of the use of improved locally available materials so as to cut down on cost of importing
building materials whose prices have been sky-rocketing making them unaffordable by the majority of the rural residents.

Lastly, aiding agencies, NGOs and other interested organisations seeking to assist the rural residents should formulate a framework defining ways of fully basing their projects on the desired and felt needs of the intended beneficiaries, involving them in the formulation, implementing and assessing the projects to ensure their sustainability.
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APPENDIX 1.

QUESTIONNAIRE:

INTRODUCTION:
The purpose of this questionnaire is to help gather data for an academic research. You are kindly requested to help by answering these few questions precisely and truthfully. The aim of this interview is to help get information on how as inhabitants of the rural Kenya have been working together to help yourselves through community effort development and improve shelter. All information will be treated confidential. The interview will take about 30 minutes of your precious time. Thank you for accepting to assist.

Division________________________ Location________________________
sub location____________________ Village________________________

Respondents Information:
1. Name________________________
2. Sex__________________________
3. Age (in years)_________________
4. Literacy level________________
5. Occupation__________________

Household Information:
6. Tenure of farmland
   01. Owner                      02. Inherited
   03. Tenant                     04. Squatter
7. Tenure of house
   01. Owner                      02. Inherited
   03. Tenant                     04. Squatter
8. Size of house (no. of rooms)
   01. Single
   02. Two
   03. Three
   04. Four and above ( )

Information on shelter development:

9. Materials used for the construction of walls
   01. Mud and wattle
   02. Bricks
   03. Stones
   04. Iron sheet
   05. Timber
   06. Grass
   07. Sisal poles ( )

10. Materials for the roof
    01. Grass
    02. Iron sheet
    03. Tiles ( )

11. Materials for floor
    01. Earthen
    02. Concrete ( )

12. What was your source of material?
    01. collected from the field walls ( )
    02. Bought roof ( )
    03. Donated floor ( )
    09. Not applicable.

13. If collected from the field, who did it?
    01. Self walls ( )
    02. Self and community roof ( )
    03. Community floor ( )
    04. Hired labour
    09. Not applicable.
14. If bought, what was the estimated cost?

01. less than 1000/=  
02. 1000/= - 5000/=  
03. 5000/= - 10000/=  
04. 10000/= - 15000/=  
05. 15000/= - 20000/=  
06. more than 20000/=  
09. Not applicable.

15. What was the source of funds for the purchase of the materials?

01. Self  
02. Self and community  
03. Community  
04. Loan  
09. Not applicable.

16. If loan, from whom?

17. If donated, by whom?

Walls ____________________________
Roof ____________________________
Floor ____________________________

18. What was the source of labour for the construction of your house?

01. Self  
03. Self and hired workers  
05. Self and community  
02. Hired workers  
04. Community  
06. Self, hired and community  
09. Not applicable.
19. What was the construction labour cost?
   01. Less than 1000/= 02. 1000/= - 5000/= 03. 5000/= - 10000/= 04. 10000/= - 15000/= 05. 15000/= - 20000/= 06. more than 20000/= 09. Not applicable.

20. What was the source of the fund for the construction labour?
   01. Self 02. Self and community 03. Community 04. Loan 09. Not applicable.

21. Have done any repairs on your house?
   01. Yes 02. No

22. If yes, which one?
   01. Walls 02. Roof 03. Floor 04. Doors/ windows 09. Not applicable.

23. What was the source of labour for the repair?
   01. Self 02. Hired workers 03. Self and hired workers 04. Community 05. Self and community 06. Self, hired and community 09. Not applicable.

HOUSING AMENITIES:

24. Do you have the following amenities in your house?
   Kitchen 01. Yes 02. No
   Toilet 01. Yes 02. No
   Bathroom 01. Yes 02. No
   Store/ granary 01. Yes 02. No
25. Are the amenities separated from the main house?
   
   kitchen 01. Yes 02. No ( )  
   Toilet 01. Yes 02. No ( )  
   Bathroom 01. Yes 02. No ( )  
   Store/ granary 01. Yes 02. No ( )  

26. If separated, what are the materials for the construction of the walls?
   

27. What are the materials for the roof?
   
   01. grass 02. Iron sheet 03. Tiles 09. Not applicable.  

28. What are the materials for the floor?
   
   01. Earthen 02. Concrete 03. Sisal poles 09. not applicable.  

29. What was the source of the materials?
   
   01. collected from the field. 02. Bought 03. Donated 09. Not applicable.  

Kitchen walls ( ) Granary walls ( )  
   roof ( ) roof ( )  
   floor ( ) floor ( )  

30. If collected from the field, who did it?
   

Kitchen walls ( ) Granary walls ( )  
   roof ( ) roof ( )  
   floor ( ) floor ( )
31. If bought, what was the cost?
01. Less than 1000/= 02. 1000/= - 5000/= 03. 5000/= - 10000/= 04. More than 10000/= 09. Not applicable.
Kitchen walls ( ) Granary walls ( )
roof ( ) roof ( )
floor ( ) floor ( )

32. What was the source of your funds?
01. self 02. self and community
03. Community 04. Not applicable.
Kitchen walls ( ) Granary walls ( )
roof ( ) roof ( )
floor ( ) floor ( )

33. What was the source of labour for the construction?
01. Self 02. hired workers Kitchen ( )
03. Self and hired workers 04. community Granary ( )
05. self and community 06. Self, hired and community
09. Not applicable.

34. What type of toilet do you have?
01. Pit latrine 02. Ventilated pit
03. WC 09. Not applicable.

35. Who constructed it?
01. Self 02. Hired workers
03. Self and hired 04. Community
05. self and community 09. Not applicable. ( )

36. What is the source of your water?
01. River 02. Spring ( )
03. Roof catchment 04. Borehole
05. Protected spring 06. Canal
07. piped 08. Dam 09. Not applicable.
37. Who constructed the source of water?
01. Self 02. Community
03. Donors 04. Government
05. Community and donors 06. community and government
09. Not applicable.

38. What do you use to store water?
01. Tanks 02. Jericans
03. Drums 04. Utensils
09. Not applicable.

39. Where a tank is used, how did you acquire it?
01. Bought 02. Constructed
03. Donated 09. Not applicable.

40. If bought, what was the source of the funds?
01. Self 02. community
03. loan 09. Not applicable.

41. If constructed, who did it?
01. Self 02. Hired workers
03. Self and hired workers 04. Community
05. Self and community 06. Self, hired and community
09. Not applicable.

42. Do you have any security problem in this place?
01. Yes 02. No

43. If yes, which one?
01. Theft of animals 02. burglary
03. Attack by wild game
04. Theft of farm equipment and produce
09. Not applicable.
44. How do you tackle the problem?

01. Hired security 02. Report to authority
03. Personal alert 04. Community vigilance
09 Not applicable

To be asked if community effort has been reported:

45. Of the community effort you have indicated, how would you rate them?

01. Poor 02. Average
03. Good 04. Very good
09. Not applicable

46. Explain your response in (45).

____________________________________________________________________

____________________________________________________________________

47. What are some of the problems experienced in community efforts in seeking better living conditions in your area?

01. Poor leadership 02. Misappropriation of funds
03. Diversion of funds 04. Lack of funds
05. Lack of commitment 06. Outside interference
07. Theft of materials 09. Not applicable.

48. What would you suggest as a solution to the problems mentioned above?

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________
To be asked to all the respondents:

49. In this place, has there been any outside agencies working to help improve people's living conditions?
   01. Yes  02. No

50. If yes, specify.

51. Which projects have they been undertaking?

52. Have you benefited from their work?
   01. Yes  02. No

53. If yes, specify.

54. Were you involved in any way in the project?
   01. Yes  02. No

55. If yes, specify.

END

THANK YOU AGAIN.