HOUSING THE URBAN POOR IN NAIROBI-KENYA:

A COMPREHENSIVE APPROACH TO UPGRADE KAYOLE-SOWETO

INFORMAL SETTLEMENT.

By

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DECLARATION

This thesis is my original work and has not been presented for any degree in any other university.

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DEDICATION

This thesis is dedicated to my family.

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ABSTRACT

Housing the low-income groups in Nairobi effectively is not a simple task. In the last few decades, the Government of Kenya (GoK) has attempted to solve the problem of housing the low-income group without success. The policy advocated in the 1960's of destroying informal settlements and taking back the low-income people to the rural areas failed dramatically. The alternative policies of providing serviced sites and upgrading informal settlements have also failed because these policies have been unable to serve the growing number of poor people in urban areas; further the approach could not reach the target group.

At present, the main barriers to improving housing in low-income areas are lack of security of tenure on land, resource constraints and the Building code and regulations that not only set standards unable to meet the needs of the urban poor, but also the interpretation and application of which have been done with a lot of confusion.

In Kayole-Soweto settlement, plot owners do not have title deeds. Some have developed their land on the basis of a TOL while others do not have any document for land ownership. However, the well-off have started to build flats without approved plans. On the side of the poor, some are in the process of improving their structures while others are still awaiting title deeds before they replace the temporary building materials used in the early 1990's when they were allocated the land. Due to the growing size of the urban population, Kayole-Soweto is overcrowded and people are grabbing the Ngong river bank and the open land to the north. Furthermore, the settlement is not adequately served by water and electricity; social infrastructures is either non-existent or inadequate.

The focus of this study therefore, has been to highlight the housing problems in Kayole-Soweto informal settlement, and thus propose a plan with realistic recommendations in order to create a healthy living environment for Kayole-Soweto residents have been made.

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LIST OF ABBREVIATIONS

AHF	: African Housing Fund
CBO's	: Community Based Organizations
EABS	: East African Building Society
FCR	: Fibre Cement Roofing
GoK	: Government of Kenya
HABRI	: Housing And Building Research Institute
HFCK	: Housing Finance Company of Kenya
HRDU	: Housing Research and Development Unit
KP & LC	: Kenya Power and Lighting Company
NCC	: Nairobi City Council
NCCK	: National Council Churches of Kenya
NGO's	: Non-Governmental Organizations
NHC	: National Housing Corporation
SLKL	: Savings and Loan of Kenya Limited
SSB's	: Stabilized Soil Blocks
TOL	: Temporary Occupation License
UoN	: University of Nairobi
UN	: United Nations
UNCHS	: United Nation Centre for Human Settlements (Habitat)
USAID	: United States Agency for International Development
WHO	: World Health Organization

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CHAPTER ONE: INTRODUCTION

1.1 Introduction

Most low-income people throughout the world lack access to adequate shelter and social services. In spite of progressive development in developing countries in recent decades, shelter for all challenges governments and remains difficult to realize. At least 600 million urban dwellers live in houses that are of very poor quality with inadequate provision for water, sanitation, drainage, and garbage collection. Their life and health are continuously at risk. Every year, millions of poor urbanites are harshly evicted from their homes, adding to the growing number of homeless estimated at over 100 million people (UNCHS, 1996a).

In Africa, the urbanization trend and high population growth have played a major role in the spread of squatter and informal settlements. Urban centres have become a magnet for commercial activities and industries. For this reason, rural-urban migration has increased so sharply that urban areas are not able to cope. Lack of adequate low- cost housing has thus led to the creation of squatter and informal settlements. In such areas, dwellings are very close to each other leading to inadequate lighting and ventilation. This situation is worsened by environmental problems owing to lack of basic infrastructural services. The conditions of life are deteriorating day by day given the combination of continuing shortages of shelter and services coupled with inadequate incomes.

The range of slums and squatter settlements differs from country to country. In developed countries, slums are classified as inadequate dwellings of dilapidated or deteriorated conditions that need more repairs than regular maintenance (Llyod, 1987). According the housing standards, at least one sixth of the Americans in the United States

live in dilapidated units (Llyod, 1978). Such units lack adequate sanitary facilities, are overcrowded and are located in undesirable surroundings. Although the non- slum dwellers in Japan cities live in physical conditions inferior to those of the average New York slum dwellers, the proportion of houses listed as inadequate is much smaller than that in New York City. This difference can be explained by the difference in the standards of living. In Africa, over one half of the urban population live in slums and squatter settlements. According to Kenya population census (GoK, 1996), 55% of Nairobi residents live in informal settlements. In Addis Ababa, 90% of the urban residents lived in squatter and informal settlements during the end of 70's whereas in Accra the number of the squatter residents averaged 60% (Mabogunje, 1978).

1.2 Growth rate of informal settlements in Nairobi

Since independence in 1963, Nairobi City has dramatically grown both physically and in population. The physical area covered by the city has increased from 83 km^2 in 1963 to 690 km^2 in 1989. The average rate of population growth experienced in the last 30 years is 7%; the Nairobi population moved from 350,000 in 1963 up to 1,346,000 in 1989. This has been mainly due to rural-urban migration and natural increase of the population.

The table below gives population statistic collected from different census:

YEAR	POPULATION	GROWTH RATE (%)
1948	118, 976	-
1963	350,000	7.46
1969	509,286	6.45
1979	827,775	4.98
1989	1,346,000	4.98
1999	2,500,000	6.39

Table No.1: Nairobi population growth between 1948-1999

Source: Kenya population census1948, 1969, 1979, 1989 and 1999.

Meanwhile, the supply of adequate and affordable housing has not matched the rapid growth of the population. The urban migrants can not afford the available conventional housing and rely on informal settlements where housing structures are built using temporary and recuperated materials. Basic infrastructure such as water, sanitation, and roads are extremely inadequate. In 1960's and early 70's, the official policy was to discourage informal settlements by demolishing all structures erected illegally on public or private land without considering the *'quasi legal status'* that enabled structure owners to build their houses. In fact, some plots were allocated by the local administration officials with a *Temporary Occupation Licence* (TOL) by means of a letter or even verbally. On private land, an agreement with the land owners was made which enabled migrants to construct temporary structures.

In spite of the informal settlements demolition policy, unauthorized settlements have proliferated over time and 55% of the total population of Nairobi now lives in informal settlements (Amis, 1996). Furthermore, informal settlements are growing at the rate of about 5% per year and accommodate a total population estimated at over 1.5 million (Matrix Development Consultant, 1993), i.e. about 60% of the population of Nairobi. Informal settlements occupy approximately 5% of the total residential area. In terms of overcrowding, the above statement shows how densities are high in the informal settlements. It is not uncommon to find 250 dwelling units per hectare whereas in middle income areas, the density is estimated at 25 units per hectare and only 15 per hectare in high-income areas (Matrix Development Consultant, 1993).

The physical layout of informal settlements thus does not in many cases give room for provision of water, sanitation, drainage, and roads. This has become a problematic exercise that must cause displacement and may also mean compensation for those affected. Another problem is that most of the residents in informal settlements are very poor. The majority of them earn less than Ksh. 2,000 /= per month (GoK, 1996). As a result, their living conditions are very poor and mortality rate caused by diseases and malnutrition is very high.

1.3 Problem Statement

According to the 1989 Kenya population census, informal settlements in Nairobi Municipality accommodate 55% of the whole urban residents (GoK, 1996). This is a manifestation of weakness in the implementation of government housing policy. In spite of the informal settlements demolition policy recommended by the first two National

Development Plans 1964-1968 (GoK, 1964) and 1968-1972 (GoK, 1968), housing the poor has remained high in the agenda of the state. This has been done with mixed success. The continuation of informal settlement clearance has increased the housing deficit and alternative shelter that has been provided has tended to be beyond the living ways of the target groups.

There have been many efforts to solve the extreme housing shortage for the low-income group in Nairobi, many efforts have been made but the additional housing stock has always ended up in the hands of the higher income group. For instance, according to Yahya (1990), the United States Agency for International Development in co-operation with the Kenya Government initiated a project of 4,406 units for low- income people but the intended beneficiaries were never reached. This is also the case in Dandora Phase II where houses developed for the low-income group fell into the hands of middle income people who were able to afford the repayments at the formal market rates.

Informal settlements upgrading does not only mean shelter improvement and provision of infrastructure services; environmental conditions play a crucial role for sustainability of such exercises. In Majengo, for instance, infrastructure facilities were provided in the first instance but due to congestion and overcrowding, they have decayed over time and thus become rapidly inadequate. Maintenance was very poor in some cases or totally lacking. On the other hand in Korogocho informal settlement, health centres and education facilities are overused and there is no planned room for further expansion. Another example of failure of informal settlement upgrading is found in Kawangware (Mulinge, 1986). The study done by Mulinge revealed that though the upgrading exercise increased the level of services in this areas, a lot was left

unaccomplished. The drainage system remained problematic and solid waste management continued to be neglected.

As far as Kayole-Soweto is concerned, houses are congested and overcrowded, both in terms of density of structures and occupancy rates. Houses are far from being in conformity with the Building By-laws and Planning standards. Most of the walls are made of recuperated materials such as iron sheets and cartons. The existing drainage is not adequate to cater for rainfall and waste water. Accessibility to plots is by access roads that become muddy and impassable during the wet season due to flooding. The spaces between dwellings do not allow location of pit latrines; in this area, public sewage line is not accessible to the residents. Social infrastructure such as primary schools, health centres, social halls, etc. are not provided. The neighbouring facilities in great Kayole are overcrowded because they were planned without Kayole-Soweto in mind. In addition, many economic activities are taking place in this settlement. A study of their characteristics in order to incorporate this aspect in the upgraded settlement will help to alleviate the unemployment rate, and hence to improve housing conditions.

1.4 Study Objectives

In the early 1980's, governments in developing countries and international development agencies became aware that slum clearance, instead of solving the low-income housing problems, reduced the already limited housing stock available. Therefore, the need for upgrading squatter and informal settlements is today advocated as it recognizes the investments in labour and money made by the poor families.

This study thus aims at setting out the background of growth of Kayole-Soweto settlement with special attention to housing conditions. This broad objective forms the basis of the following specific objectives:

- To examine the historical, social, cultural and economic situations of Kayole-Soweto settlement.
- To describe and analyze the conditions of infrastructure in Kayole-Soweto.
- To analyze the physical condition of housing structures.
- To establish a physical layout plan as a proposal for action and
- To formulate, on the basis of findings from the physical and socio-economic surveys, comprehensive and realistic recommendations to upgrade Kayole-Soweto informal settlement.

1. 5 Assumptions

For the purpose of this study, the following assumptions have been made:

(1) The low-income group will continue to rely on low-cost building materials.

(2) Inappropriate methodologies to improve housing conditions for the very low-income group is the major source of conflicts and thus failure of informal settlement upgrading.

(3) Informal economic activities are the main and most common source of income in informal settlements and,

(4) Low-income groups can improve their shelter through the process of self-help.

1.6 Research Justification

The Government of Kenya in co-ordination with various international agencies has implemented various low-income housing projects within the City of Nairobi. However, a closer analysis of performance shows that most of them have failed to reach the target group.

The area of squatter upgrading has, in the words of Mitulla (1988), almost been given a "black-out". For instance, land tenure complications led Baba Ndogo upgrading to fail. Another case of failure in trying to improve life in informal settlemnts is found in Kayole-Soweto itself. In 1989, the African Housing Fund (AHF) initiated a three year project to improve the housing conditions of 712 members of "Muungano Women Group" based in Kayole-Soweto. Among the target group, over 85% earned below Ksh. 2,000 per month and were unskilled people. As a first step, a few women were selected and trained in business skills, others in production of low cost building materials i.e roofing tiles and concrete blocks. By the year 1994, only 478 had been able to improve their houses through a loan scheme developed by African Housing Fund (Mugure, 1995). Various constraints, including insecurity of land tenure and leadership weaknesses, hindered the progress of the programme. The project could no longer sustain itself and

most of the members went back to their previous lifestyles in the slums. The dream of living in a decent house one day disintegrated into the air.

Many economic activities such as grocery shops, carpentry workshops, vegetable kiosks and other income-generating pursuits are taking place in a disorganized way. Therefore, planners in conjunction with all stakeholders, need to intervene before the situation becomes worse. As known, " *Prevention is better than cure*": there is hence need to study the characteristics that can be incorporated in the upgrading exercise.

1.7 Scope of the Study

This study covers the Kayole-Soweto settlement in Umoja location, Embakasi division in Nairobi city (see Map No. 1). The target group is about 10,000 families. The study will look at the spatial distribution of houses and their state. This housing aspect is examined together with the level of infrastructural services such as roads, drainage, sanitation, as well as environmental problems in general.

After studying the characteristics and distribution of social economic activities, the relationship between socio-economic activities and housing conditions will be investigated. Community based organizations (CBO's) and Non-Government Organizations (NGO's) working in the area will be evaluated in order to analyze their contribution towards solving the housing problems in Kayole-Soweto settlement .

1.8 Definition of concepts

- **Low-income group**: refers to that group under the poverty line. Those are people who earn less than one dollar per day i.e. about Ksh. 2,200 /= at the current exchange rate (GoK, 1998). Also, GoK (1996) considers as poor that group earning less than Ksh. 2,000 /=.

- **Adequate shelter:** refers to those structures with a minimum of 2 rooms, have at least a latrine, kitchen and bathroom. UNCHS (1996:21) states that adequate shelter must include not only living conditions but also working conditions that are healthy, safe, secure, accessible, and affordable; in addition, adequate shelter must be served with basic services, facilities and amenities, and the beneficiary must enjoy freedom from discrimination in housing provision and legal security of tenure.
- **Site and services scheme:** For the purpose of this study, site and services scheme refers to the development of land through the provision of roads, drainage, sewage and water supply. The beneficiaries of plots in such areas are required to build their houses at minimal standards.
- **Slums and squatter settlement:** Western authors consider these as areas that are not integrated economically and socially into the national development process, and thus use the terms slum and squatter settlement interchangeably. The main difference is that a slum is a legal settlement where houses are in deteriorated condition and infrastructure services are poorly maintained, whereas a squatter settlement is a spontaneous settlement in which people occupy public land or private land without any legal authorization or explicit permission from the owners. In most cases, both slums and squatter settlements are characterized by overcrowding and congestion

with unsuitable housing conditions. Infrastructure services are either grossly inadequate or non-existent and houses do not conform to any building regulations or standards.

- **Informal Settlements:** For the purpose of this study, informal settlement refers to an urban area with the following characteristics:

1. Most of the structure owners have a quasi legal tenure (TOL) from local authorities if it is public land or made a verbal or written agreement with the landowner in the case of private land. This is regarded as '*quasi legal right of land occupation*' that could be recognizable by-law. In a few cases, the owners do not have any right at all to settle on the land.
2. Structures do not conform to minimum building standards as set out in the building code.
3. Housing structures are let on a room by room basis.
4. Densities of structures are very high, exceeding 250 dwellings per hectare in some areas.

These characteristics are common for most informal settlements in Nairobi but are also applicable to some degree in other major towns of Kenya.

1.9 Research methodology

1.9.1 Sampling methodology

In general, structures in informal settlements are irregularly developed such that a purposive sampling technique may be the more appropriated technique for any study of informal settlement. In the case of this study, the area was covered according to the

spatial distribution of structures. The targeted sample size was 100 households but due to the limitations below, only 87 households were interviewed.

1.9.2 Data collection

The study attempts to describe the housing conditions in Kayole-Soweto, using both primary and secondary data. Field data was collected through two types of questionnaires (See appendix No. 2) administered in the months of September/October 1999. One targeted household heads while the other focused on the economic activities found in the settlement where the aim was to know the sources of supplies, the targeted market, the capital investments, and the kind of problems experienced by traders and entrepreneurs in the course of their business.

Informal interviews and simple observations were of great importance in providing first hand information. These were held with key informant; including elders of the settlement, the District Officer and other government officers dealing with housing in City Hall and the Ministry of Public Works & Housing.

The household questionnaire was designed mainly to:

- Discover the general information on the background of residents in Kayole-Soweto,
- Establish the socio-economic status of the residents,
- Describe the land ownership and the structure conditions in the study area, and
- Assess the physical and social infrastructure that have been put in place.

The business questionnaire was meant to find out:

- The mode of operation
- The source of supplies

- The targeted market
- The initial and recurrent capital investment and
- The main problems hampering business activities in Kayole-Soweto settlement.

1.9.3 Data analysis and presentation

Data collected was analyzed using descriptive statistical techniques which included the computation of percentages, frequencies and means. These techniques were also used to make inferences and deductions like regression analysis was applied to assess the relationship between education level and employment or the relationship between the rent paying capacity and income levels.

Data is presented in the form of tables and graphs. These tools are preferred for their simplicity in interpretation. In addition, photographs have been used to illustrate the physical aspects of the housing conditions and thus underpin the findings from the questionnaires.

1.10 Study limitations

The problems encountered during this study were mainly the lack of co-operation between interviewers and interviewees and the time allocated for the field survey.

In an informal settlement where the residents have low-incomes, their life style is not standardized and they have to struggle in different ways to earn their daily bread. Therefore, the household heads were not reachable during the day and it is only in the evenings and on weekends that one could expect to get them at home.

Furthermore, the interviewees were not willing to cooperate. As most of the respondents were either jobless or landless, they replied reluctantly to questions arguing

that a lot of research had been conducted in the area but they are not seeing any improvement in their life. It was the support from local leaders '*Wazee wa Kijiji*" that enabled me to have fruitful discussions with the residents.

The administration of household questionnaires thus took longer time than was planned. In addition, the base map which was available at the chief's office, contained only about 60 % of the physical features of the study area.

CHAPTER TWO: LITERATURE REVIEW

2.1 Housing problem worldwide

Housing is a basic need for human beings. The International Year of Shelter for the Homeless, observed in 1987 confirmed the need to intensify national and international efforts to produce, deliver and improve shelter for all, with particular emphasis on meeting the needs of the poor and disadvantaged people (UNCHS, 1990a). The struggle for shelter in the world is a major problem and has generated a variety of policy responses among governments. Housing citizens is not a specific problem for developing countries only.

In the industrialized countries, lack of adequate shelter for low-income people is not well covered by the media and scholars but it is really increasing. UNCHS (1986) estimated that between 500,000 to 3 million people are living in slums or are homeless in United States of America. In Canada, the number of homeless people that sleep on the streets was estimated at between 20,000 and 40,000 people (UNCHS, 1986).

In the developing countries, the housing problem is acute. The least developed countries are facing a challenge of a huge number of people who are either homeless or do not have adequate shelter. In these countries, the housing problem is expressed through squatter and informal settlements sprawl. The illegal occupation of vacant land has been one of the ways to solve housing problem in urban areas. The invaders erect their shelter without any consideration of building or planning regulations. Some structures are movable so that the occupants can move with them to other sites if public

authorities or landowners persist to harass them. Thus, the main characteristics of cities in developing countries are a serious shortage of dwelling units and the constant deterioration of the existing stock. In most cases, up to half of the urban population already live in informal settlements.

According to UNCHS (1996b), population in squatter and informal settlements vary from 50% to 80% in African countries, 40% to 70% in Latin America and 30% to 50% in Asia and Pacific. The big cities are experiencing shanty town growth rate in excess of 20% per year. At this rate, shanty towns double every 4 to 6 years. The public sector has been unable to efficiently assist the low-income group; very few countries like Hong Kong and Singapore succeeded (Wakely, 1976). For others, various constraints such as lack of finance, land tenure rights and high building standards are still barriers to tackling the serious problem of housing the urban poor.

A study done by UNCHS (Habitat), (1986) in 1980 verifies these facts:

CITY	URBAN POPULATION 000's	POPULATION IN INFORMAL SETTLEMENTS 000's	%
Addis Abba	1,668	1,418	85
Luanda	959	671	70
Dar-es-Salaam	1,075	645	60
Bogota	5,493	3,241	59
Nairobi (Census, 1989)	1,346	740	55
Ankara	2,164	1,104	51
Lusaka	791	396	50
Tunis	1,046	471	45
Manila	5,664	2,666	40
Mexico	15,032	6,013	40
Karachi	5,005	1,852	37
Caracas	3,093	1,052	34
Uma	4,682	1,545	33
Paolo	13,541	4,334	33

Table No. 2: The trend of squatter and informal settlements in the developing countries.

Source: UNCHS, 1986.

In Kenya, Nairobi has experienced a large influx of citizens from rural areas in the last three decades which has resulted to a growth rate of about 7% per annum of the total population. This high rate of migration has led to expansion of informal settlements that have become more difficult to control. Apart from the weaknesses in implementing the housing policy to contain the proliferation of informal settlements, poverty has been another major constraint for GoK to provide adequate shelter for all by the year 2000. However, all National Development Plans have given a ray of hope to the estimated 13.2 million Kenyans (GoK, 1998) who live below the poverty line.

According to a study done by Knapp and Kopperhöfer (1982), 48% of the lowest income households did not have adequate housing in 1972. This figure increased sharply to 63% in 1976. The study revealed that there were very few homeless families arguing that road reserves and other open lands were invaded by dwellings with multiple characteristics including shanties, dugouts, sheds, stalls, cartons, polythene, wood, mud and wattle etc.

In the 1970's, the GoK recognized that the problem was serious: "In spite of considerable progress since independence, the general standard of living is unsatisfactory for most of the urban population. There is overcrowding and unauthorized construction of unplanned dwellings built with unsuitable materials and without proper sanitation. Lack of basic infrastructure such as water supply, sewage and roads in unauthorized building areas has prevented any significant improvement. This type of housing creates an unacceptable low standard of environment, with a danger of epidemic diseases and outbreaks of fire..." (GoK, National Development Plan 1974-78: 469).

In order to overcome the problem of housing low-income people in Kenya, a comprehensive strategy must be put in place. This should include provision of serviced lands for low income groups, a review of national building standards, and make available the appropriate building materials and also educate citizens on appropriate technologies that had performed in testing stage.

2.2 The Nature and Concept of Slum and Squatter Settlements

2.2.1 Introduction

During the first half of the 20th century, there was a lot of agitation for slum elimination in western countries. Despite this, there was no governmental agreement on the definition of a '*slum*'. Therefore, scholars tended to relate slum areas with high population densities, congestion of structures and overcrowding of rooms. In 1969, Hawey Warren Zarbough defined a slum as an area of extreme poverty, an area of deteriorated buildings, of high birth rates, infant mortality, illegitimacy and death; an area of pawnshops where money can be lent in exchanged with articles, of gangs and crimes etc. For him, a slum is a disintegrating neighbourhood that has reached the limit of decay; it is a disintegrated and disorganized area with dilapidated dwellings where most of the landlords are about to sell their land and ask just the rent that is required to pay the taxes while waiting for an hypothetical buyer. From this definition, it is therefore clear that the term '*slum*' applied as such is both an economical and sociological phenomenon.

On the other hand, squatter settlement in the less developed countries means illegal occupation of land where people use their own devices to construct the shelter. The illegality aspect of squatting discourages capital investment in housing and the aspect

of constructing houses on self-help basis is mainly due to the absence of capital. In most cases, the unauthorized dwellings are built with materials that are not recognized by the building codes.

2.2.2 The Evolution of informal settlement in Kenya

In Kenya, the majority of households in informal settlements still have a monthly income of less than Ksh. 2,000 and the income levels are declining in real terms (Matrix Development Consultants, 1993). The commercialization process of unauthorized settlements has resulted in the creation of a real estate market. The urban poor must rent accommodation, even if they are able to build their own dwellings on the invaded land. The provision of low-income shelter in unauthorized settlements is now a commercial activity. Already by 1970, all additional units were built for commercial purpose (Amis, 1984). To highlight this, a study carried out by Amani Housing Trust (AHT) in 1998, published in the magazine 'Mwananchi' (1999), found that 92% of the residents in Mathare 4A are tenants and only 8% are owners of the structures they live in. Furthermore, people who stay outside Mathare have erected 70% of structures for commercial purposes. Among the remaining 30% of structures owned by people who live in Mathare, two-thirds are rented.

Meanwhile the political acceptance of such land marketing in low-income residential areas is seen as an element of legitimacy of informal settlement. Obudho (1986) qualifies such an attitude as a '*Laissez-faire policy*' where the government ignores the housing problem and leaves the housing sector to its own and supports the more economically productive sectors. From the time of independence in 1963 up to 1970, the public sector produced 9,500 (GoK, 1970) housing units instead of 44,000 units

estimated by the United Nations Programme of Technical Assistance in 1964 as the need in housing in Kenya for the period 1963 – 1970 (GoK, 1966b).

According to Kenya census 1969, the average total urban growth was about 7.0 % between 1962 and 1969 while the African urban population grew at the rate of 10.7% (Stern, 1978). After independence, Africans became dominant in urban areas, especially those in the low- income group. Since that time, rents began to rise, shortage in housing became steadily acute so that low income residential areas became more and more overcrowded. A well documented research done by Amis (1996) found that the average number of persons per dwelling between 1970 and 1990 was 5 in Kibera; 4 in Mathare; 5 in Korogocho and 5 in Kawangware.

The estimations done by Matrix Development Consultants (1993) are not far from those figures. Informal settlements within and around the main towns of Kenya especially in Nairobi started to grow fast. As a result, the population without proper shelter increased leading to the proliferation of unplanned urban settlements constructed with any form of materials that do not match with the building standards. To underpin the evolution of informal settlements in Kenya, Amis (1996) gives figures of the five main squatter settlements in Nairobi:

	1960	1965	1975	1980	1992
Kibera	3,000	6,000	20,000	62,000	248,360
Mathare Valley	-	3,000	65,000	120,000	58,960
Dagoretti and Kawangware	18,000	30,000	65,000	90,000	186,250
Korogocho	-	-	5,000	40,000	56,580

Table No. 3: Growth of the five main squatter settlements in Nairobi

Source: Amis (1996).

The Government of Kenya did not fully appreciate the nature of the problem and acted very negatively. Up to the early 1970's informal settlement clearance was strongly advocated (GoK, 1964). This was a restrictive policy where the Government of Kenya attempted to solve the housing problem for low-income group by pushing the urban poor out of Nairobi City (Obudho, 1986). For such groups, the strategy was to provide no urban services like water, electricity, sewage systems, education and health facilities in order to discourage the very low-income residents to stay in urban areas. The strategy was in use up to the late 1970's where houses were demolished and evicted people took one site to another. For example in 1969, 30,000 people were evicted from the Eastleigh squatter settlement with 6,733 dwellings demolished by the Nairobi City Council bulldozers (Hake, 1977). In 1990, two large settlements Muoroto and Kibagare, were razed by city authorities. It is estimated that about 30,000 people were displaced and

some resettled in the current Kayole-Soweto informal settlement. All these led to not only loss worth millions of Kenya shillings but also human suffering and bitterness.

Werlin (1974), also affirms that housing the low-income people in Nairobi was not welcome by politicians. The late President Kenyatta and other Ministers argued that the advocated policy of site- services scheme was not appropriate for a city like Nairobi. For them, the scheme would lead to slums spreading, thus spoiling the beauty of Nairobi and bringing crime and diseases. Furthermore, this could encourage rural people to migrate to urban centres, especially those who believe that their salvation is in residing in town. Indeed, the government's responsibility was not to facilitate rural-urban migration but rather to repatriate migrants to their home areas (Obudho, 1986). The slogan of the 1970's and 1980's '*Turudi Mashambani*' was meant to encourage people to leave the urban areas for the rural areas.

For various reasons, including political sensitivity and to the intervention of some external agencies such as the World Bank and USAID, informal settlements came to be partially recognized by the GoK. Thus, since the late 1970's, informal settlement upgrading policy combined with site and services scheme have been implemented to reach the very poor in urban areas. However this new strategy did not cut down the development of informal settlements; the phenomenon is still challenging the Kenya Government.

2.3 Technical aspects of low-cost housing

Most of the governments in developing countries are committed to improving the living standards of their citizens and spend a good portion of their entire capital budget

on housing sector. The problems that are facing these countries are of various forms and these include scarcity of finance, scarcity of skilled manpower and appropriate building materials. The dilemma for the urban poor is to make a choice between traditional building materials and traditional building techniques and the imported ones. Adequate shelter by various definitions must be constructed with materials that meet certain performance standards such as strength, durability, thermal resistance, and so forth using a range of different techniques. Apart from technical specifications, there are other factors that must be considered such as appearance, local availability, suitability for use with the other materials chosen, and maintenance problems, etc. Bearing all these factors in mind, the choice of technology for low-cost structures will be determined by the cost and availability of the building materials.

However, to rely only on least-cost technologies on the basis of the economic considerations is not always recommendable. Low-cost technology is cheap and can be adapted for construction of individual houses because it is from local resources, but it is relatively inefficient. Considering the quality level of the technology, the existing standards are restrictive. For instance, under-burnt or over-burnt brick must be rejected because they are of poor quality and liable to break during transportation or handling. Labour and fuel expenses are also to be considered accordingly. On the other hand, modern technology and imported building materials involve the use of scarce foreign exchange.

The use of labour-saving or capital-intensive building technologies is more efficient but requires enormous capital investment. Therefore, only a very small proportion of urban residents are able to afford such technology. Another aspect to bear

in mind when designing housing programmes for the low-income group, is that high technology is labour-saving while the majority of the urban poor are jobless. Furthermore, modern technology requires skilled labour that is lacking in developing countries.

Between the two extremes, there is intermediate technology that is appropriate for the low-income group. Schumacher (1973) stated that:

> " *Appropriate technology is cheap to establish, small in scale, so as to be suitable for methods, and produce goods from local materials for small, mainly urban poor and rural communities...* ".

An appropriate technology is intended to create a larger number of jobs than any other new investment. It also involves less complex organization by using more localized sources of raw materials, avoiding the need for large scale power supply and require short supply and distribution networks. Such technology is even easier to finance. On this line, special efforts are taking place and progress in research is being made. Several innovative materials and construction techniques have been developed. For instance, the Central Building Research Institute based in India has developed and tested construction techniques that could be adapted in shelter upgrading projects in developing countries.

Those techniques, as listed by Mathur (1993), are:

-Water proofing for mud walls

- Fire-retardant treatment of thatch roofs

- Preservative treatment for bamboo

- Seasoning and treatment of timber

- Water-proofing treatment for roofs

- Reconstruction of roofs and floors using recast cement/clay agro-waste components.
- Prevention of dampness in building
- Anti-termite treatment in houses
- Provision of essential services such as sanitation with leaching pits and waste disposal system
- Mud bricks/blocks
- Stabilized clay bricks/blocks
- Micro concrete tiles.

In the same line, HABRI (Housing and Building Research Institute) of the University of Nairobi has carried out extensive research on SSB's (Stabilized Soil Blocks) and FCR (Fibre Cement Roofing) tiles. Unfortunately, dissemination of the results is still problematic and the information is only accessible to a limited number of people. Therefore, some producers release products of low quality and this causes a lot of harm to the spread of low cost and appropriate building technology.

As far as SSB's and FCR tiles are concerned, Agevi provides useful information compiled in a HABRI Brochure serie. Although they are many ways of using earth as a building material, HABRI has concentrated its efforts on SSB's which it considers to have the greatest potential for future development. The blocks are made by compaction of a suitable soil in a mould under pressure. The soil is tested and modified if necessary by adding stabilizer, sand and water. The stabilizer is a very important component in SSB's making as it binds all the soil particules together and protects them from the effects of moisture and rain. The stabilizers in use are cement, lime and bitumen. The

cement is generally recommended for soils with a high sand content whereby lime is suitable for soils with a high silt or clay content. Bitumen is used to reduce the water absorption of SSB's. Other ingredients of SSB's are water and sand. If the soil is high clay content, the soil is mixed with sand to make clay/sand ratio suitable for stabilization with cement. Water used to produce SSB's must be clean fit for drinking, saline water is discarded.

In SSB's making, not all soils are suitable. There are series of tests methods done to judge its grading, plasticity and its behaviour under compaction. Some of the simplified short-cut methods commonly used to select soils suitable for SSB's production are:

1. Odour test: as black cotton soils are useless for SSB's making, a sample of soil is smelt immediately after excavation in order to detect any organic matter.
2. Touch test: a sample of soil is pressed between fingers and palm. Once slightly wet, a sandy soil has no cohesion at all, a silty soil has moderate cohesion and clay soil becomes plastic and sticky.
3. Adhesion test: when a knife easily penetrates a ball of soil slightly moisted, it means that the proportion of clay is low; but if the soil tends to resist the penetration and sticks to the knife when it is pulled out, it indicates the soils has high proportion of clay. Also, sand and silty soil are easily removable when washing hands whereas clay soil need to be rubbed off.
4. Water retention test: with a sample of soil, a ball is formed by adding enough water to hold it together. The ball is gently retain into the curved palm and vigorously tapped by the other hand, shocking the ball horizontally. If it takes 5

to 10 taps to bring the water out and when pressed the water disappears and then the ball breaks into pieces, these symptoms indicate that the soil contents very fine sand. If water comes out after 20 to 30 taps and the ball does not crumble, instead flatten once pressed, there is presence of sitly clay. If the soil does not react or perform very slow reaction on pressing, then the soil contents very high proportion of clay.

5. Dry strength test: two to three samples of soils are flattened to 1 cm thickness and 5 cm diameter and dried in the sun. Pieces of the dry samples are crushed between thumb and index finger. Pure clay won't pulverize and will be broken with great difficulty whereas sandy clay will be crushed into powder with a little effort. A silty soil with low clay content will pulverize with any effort.

6. Ribbon test: a sample of soil is formed into a cigar shape and progressively flattened between the thumb and forefinger to form a ribbon of 3 to 6 mm thickness. If the ribbon grows up to 25 and 30 cm long, it indicates a presence of high clay content. If the ribbon grow up to 5 and 10 cm long, it indicates low clay content and if the soil does not allow ribbon making, there is a negligible clay content in the soil.

7. Sedimentation test: a cylindre glass jar of 1 littre capacity is filled quarter full with soil and the rest with clean water. The soil is soaked and stirred after one hour. This is repeated after one hour more and then the jar is left on horizontal surface standing undisturbed. After 45 minutes, the solid particules will have settled at the bottom and therefore the proportion of silt and clay can be measured

using a scale ruler. This test is very simple to carry out but it is of poor accuracy (Norton, 1986).

Therefore, the above tests are not always conclusive and can even be contradictory. Laboratory tests are thus recommended although they are time consuming and require the use of standardized laboratory equipment. The grading of a soil suitable for SSB's production is scheduled as follow:

Aggregate	Particule size in mm	Percentages (%)
Gravel	2.0 <	-
Sand	0.06 to 2.0	40 to 70
Silt	0.002 to 0.06	20 to 30
Clay	0.002 <	10 to 30

Table No. 4: Grading of soil suitable for SSB's production.

Source: Agevi E. (Not dated).

According to Agevi, the soils most suitable for SSB's production should contain 75 % maximum of sand and 10 % minimum of clay.

Before use of SSB's products in construction, performance tests are done and these include mostly rupture/bearing capacity and water absorption. Ten blocks out of every 100 produced blocks are tested after 28 days. A block is dropped on a hard ground surface from a height of ± 1.5 metres. A good block should not break. A test to determine the maximum load a block can take without breaking is also done and at least 0.24 N/mm^2 is acceptable. To measure the water absorption of blocks, samples are randomly selected, weighed and immersed in water of 15^0 C to 25^0 C. After 24 hours, the

blocks are removed from water, reweigh and dried in oven under 100^0 C and 115^0 C for 24 hours.

Water absorption is then determined as follow:

$Wa = \frac{m_2 - m_1}{m_1} \times 100$ where m_1 is the mass of block oven dry and m_2 the mass of block after 24 hours in water. According to Agevi, water absorption for a good block should not exceed 15 %.

HABRI has also developed research on FCR tiles which was seemed to provide low-cost and durable roof using locally available raw materials and resources. The FCR tiles technology can be carried out from simple manual processes to large scale production plants producing thousands of FCR tiles per day. In Kenya and Uganda, it was estimated in 1992 over 60 operational small scale plants with a production capacity of over 250,000 sq m of roof per year (UNCHS, 1992c).

The important components in FCR tiles making are cement, sand, fibres and water. The cement acceptable for FCR products is the OPC (Ordinary Portland Cement) freshly produced i. e. aged of less than one month and carefully stored. The sand indicated to produce good quality of FCR should be well graded with maximum particule size of 2 mm. Sands with more than 5 % of clay and silt should be avoided. For fibres, a wide range of vegetable fibres has been tested and found acceptable to produce good quality of FCR tiles. These fibres include sisal, coconut coir, palmnut among others. Man-made fibres such as polyprophylene are also acceptable (UNHCS, 1992c). The fibres are cut in small pieces ranging between 20 mm maximum and 10 mm minimum length. For any cement-based product, water suitable for human consumption is always

recommended. Additional and optional ingredients can be used if they are available at a reasonable cost and if they are to ensure a higher quality of FCR products. Those optional additives are accelerators, plasticizers, coulouring pigments etc. The coulouring pigment mostly in use is iron oxide used to produce red tiles.

Though developing countries are committed to improving housing for the poor, building standards are playing an important role in the adoption of appropriate techniques and technology for low-cost structures. In 1978, Mabogunje argued that building standards applied to shelter provision in Africa, Asia and Latin America are simply extensions of normative requirements that prevailed in the 19th century in Western Europe. For him, such policies had hindered the provision of housing for low-income group. Yahya (1990) added that the concept of minimum standards in developing countries is irrelevant and inconsistent with provision of housing at affordable cost.

In Nairobi, Yahya (1990) recognized that the setting of minimum standards for housing was a hindrance to provision of housing units in Umoja Phase II. They added that more housing units could have been constructed at a cheaper cost if the standards of the infrastructure had been lowered, without necessarily affecting the life quality of the beneficiaries of the project.

A seminar organized by UNCHS (Habitat) in Stockholm on how building codes and regulations can be adapted to meet the basic needs of the poor recognized that :

> *"...a new approach is necessary to ensure that the maximum resources of countries are applied as a matter of priority to meeting directly and expeditiously the basic needs of the least advantaged members of society in urban and rural areas"*(UNCHS, 1990b).

The seminar noted that a small improvement in the quality of life of many is more equitable than a bigger improvement for a few. Thus, one of the resolutions was to recommend that developing countries draw up or revise building codes and regulations in order to facilitate the accomplishment of a graduated improvement in the quality of life of the poor.

In reality, there are several factors that affect low-cost housing programmes. The most significant are economic conditions and political decisions. Once these conditions are no longer barriers, the programme designers should provide housing that satisfies most social needs. The task is to promote individual housing units with a minimum initial expenditure and constructed in such a way that maintenance cost is reduced to a minimum. For instance, designers should ensure that:

- The basic services are provided with the minimum quantities of materials.
- The building materials are sufficiently durable for the required life of the structure.
- The house can be constructed with a minimum amount of skilled labor.

Given below are some of the aspects to consider when designing a housing programme for low-income groups:

- Road design and layout: in general, capital investment for roads is high and roads are costly to maintain. The length and width should thus be reduced to the minimum possible. Access to individual plots should be such that a vehicle can pass when there is necessity and common parking areas for vehicles should be provided.
- Design of individual units: the main objective is to erect as many units as possible for occupation by individual households with a reduced amount of labour and building materials while bearing in mind the maintenance cost and the building standards.

- Open space for recreation purpose: it is an another important aspect that must be taken into account when designing housing for low income group and this must be done without compromising the housing cost.

Though the room sizes must be reduced to the minimum, the approach of *'bed-space'* is to be avoided. The minimum floor areas are to be found in the building standards and regulations and the public health acts although some building codes and building By-law are still problematic. For the internal circulation space, any area designed purely for circulation is to be avoided because this increases the overall floor area of the building and consequently the cost. In low-income housing programmes, circulation area must be reduced to the minimum.

2.4 Conclusion

Adequate shelter has become an important component of human rights since it was adopted by the Universal Declaration of Human Right in 1948. In the Istanbul summit on Habitat Agenda held in 1996, UNCHS (Habitat) stated that adequate housing should be characterized not only by the *'one is housed'* but also adequate privacy, adequate space, physical accessibility, adequate security, security of tenure, structural stability and durability, adequate lighting and ventilation, adequate basic infrastructure, suitable environmental quality and health related factors and adequate and accessible location with respect to work and basic facilities.

In addition, all these must be done bearing in mind the cost in providing adequate housing. In order to prevent squatter and informal settlements in urban areas, the components such as land, finance, building materials, and building code formulations

must be addressed. Access to land and legal security, *inter alia*, are strategic entry points to the provision of adequate housing specifically for the low-income group.

CHAPTER THREE: MAIN CONSTRAINTS TO HOUSING IMPROVEMENT IN LOW-INCOME AREAS

3.1 Security of Tenure

It has been said that the improvement of housing in informal settlements can be left to individual's initiative only when they are given security of tenure on their plots. This security encourages them to take the risk of large investments in housing, and also makes it possible to obtain a loan for housing improvements. There are several constraints to housing improvement in informal settlements; the point that heart the efficient upgrading operation, whatever manner it may be structured, is an operational land market with fairly unambiguous titling arrangements. The basic questions here are to know who are the house owners, who are the actual occupants of houses, and to whom to offer the tenure on the plot. A range of situations can occur where plot holders, structure owners and structure occupants are different people. In such cases, the crucial question arises: Who is to be given the security of tenure in order to ensure optimal development of the plots.

In Kayole-Soweto, the plots have been given out on the basis of a TOL to the former squatters evicted from various part of the city in late 1980's. These are former residents of Muoroto informal settlement (near Machakos bus station), former squatters around Kangemi market and on land belonging to Kenya Airports Authority. Therefore, complicated situations may occur where the landowner is not the owner of the structure and is not even staying within the Kayole-Soweto settlement.

3.2 Building Codes

Throughout the world, housing development is always guided by Building standards and regulations by which local authorities control housing development. Building standards and regulations refer to those legislative rules made by parliament; they then become operational once they are adopted by the local authority. Also, local authorities have possibilities of controlling housing development through what is called ' Codes and By-laws'. These are building rules made by a particular local authority to suit the particular conditions and environment in the concerned area. Both 'Building standards and By-laws' are supposed to lead housing developers by providing adequate standards. But what are '*adequate standards*?'

On the urban poor side, these Building standards and By-laws are likely barriers for improvement of their shelter. In Kenya, the Building code is subdivided into two different parts where part one termed Grade I deals specially with housing of high level standards and Grade II By-laws is more concerned with lower level standards housing. In most cases, the first handicap to improvement of an informal settlement is to convince the local authority the change of land-use.

Since the approval of status change has been obtained, the following set of Grade II By-laws can be applicable and the main points are (for more details, see Appendix No. 2):

CONSTRUCTION	
1. Foundations	Adequate to support load
2. Floors	
- Level above ground level	0.15 m
- Materials specified	Compact earth, or concrete, or other approved material.
3. Walls	
- Materials (load bearing walls)	Mud and wattle acceptable, capable of carrying roof.
4. Roofs	
- Materials for roof covering	Corrugated iron, aluminium or other permanent materials or shingles.

Source: Building code

PLANNING AND DESIGN		
1. The Plot		
- Minimum area	260	m^2 **
- Maximum plot coverage	33 1/3	% **
- Minimum space around buildings:		
▪ To front boundary	1.50	m *
▪ To side and rear boundary	1.50	m *
▪ Distance from pit latrine to habitable room	4.5	m ***
2. Room dimensions		
- Minimum area	7	m^2
- Minimum area per person	3.50	m^2
- Minimum width	1.98	m
- Minimum height	2.10	m
3. Lighting and ventilation		
- Minimum area of windows	1/10	of floor area
- Minimum area of opening parts	1/20	of floor area
- Permanent vents for habitable rooms, WC, bathroom and kitchens.	$1/100^{th}$	of floor area

Table No. 5: The main set of Building Code Grade II By-Laws

Source: Building Code

* By-Law can be waived by Council.

** By-Law can be waived by Commissioner of lands.

*** In exceptional circumstances the council may reduce this distance on the advice of Medical Officer of Health or Chief Health Inspector.

The second barrier is the implementation of Building By-laws. Although these laws seem to be flexible, local authorities often lack skilled staff to search for fair alternatives. Furthermore, these city authorities have shown little flexibility in the interpretation and application of Building By-laws, thereby undermining the use of local materials. Therefore, the Grade II By-laws are applied in the field with a lot of confusion and distortion where local authorities impose unclear standards and are thus seen by local communities as barriers instead of being facilitators of housing improvement in low-income areas.

As far as informal housing is concerned, the Public Health Act of Kenya Laws, CAP 242 has come in and set requirements for sanitation in residential areas. Engineering standards and need for access are also covered, all these to ensure a good and healthy environment in residential areas.

But, the interpretation and application of the Public Health Act has been left to the local authorities to translate into applicable measures. Also, the Medical Officers of Health have the right to reject any housing development if they feel it is unsuitable for '*good and safe environment*'. It should then be noted that all those players hinder the housing development by confusing developers specifically the low-income people.

In general these codes and regulations need to be adapted so that they can be more realistic and appropriate in terms of affordability, safety, security and health of the local communities in low-income areas. In reality, local housing conditions are not static but vary with time and thus standards suitable for the common man are best formulated with local knowledge and experience.

In a paper submitted to the Second International Symposium on Housing for the Urban poor held in Birmingham in April 1994, Schilderman (Quoted by UNCHS, 1996)

appreciated the changes of Building By-laws proposed by a Ministerial Commission in Kenya. He said:

> *"The 1968 version of by-law no. 219 requires facilities for washing clothes; these must be of a minimum size of 90 x 60 cm for slab and 90 x 90 cm for a splash area; the slab must be made out of 7.5 cm concrete on a suitable foundation, and provided with of 0.5 inch. Standpipe and tap are connected to the mains.*
>
> *The 1992 version proposes that ...all dwelling should be provided with facilities for washing clothes and utensils; this will allow for any size and type of floor, e.g. thin concrete or clay tiles".*

Therefore, the revised 1992/95 Building code is updated and more flexible in the implementation process, which is most important when one is dealing with low-cost housing.

3.3 Appropriate building materials

This problem has been fully highlighted in a report addressed to Fourteenth Session of UN Commission on Human Settlements (UNCHS, 1992); the report qualifies the supply of building materials as a *'mounting crisis'*. In general, there has been some improvement in production of local building materials, but the imported building materials tend to dominate the use of local building materials. One of the reason seems to be the high demand that the supply can not cope and the result is to import materials to fill the gap left by the local building materials industry. Subsequently, the prices of building materials are ever rising; and this affects the total cost of the houses. The hope of one-day becoming a house owner for the urban poor is thus reduced.

The price increase of building materials is generally attributed to various factors such as:

- Depletion of raw building materials like wood, grass, earth, building stones and limestone,
- The rising costs of energy production of materials like cement, steel and burnt brick.
- The use of inappropriate technology in the building industry. It is clear that governments in developing countries have established factories for the production of local building materials to substitute the imported ones, but these plants depend largely on imported spare parts and machinery which slow down production of local materials,
- Finally, distribution and marketing problems have hampered the promotion of the use of local building materials on a wider scale.

3.4 Housing Finance Systems

3.4.1 Low-cost Housing Finance

Housing finance has its own specific characteristics in the field of finance systems. To ensure adequate return from housing funds, private sector has developed strategies that exclude the low-income groups. Although housing finance is still one of the major constraint in housing improvement, the poor people have their own ways to construct their shelter over with a minimal external inputs.

Nevertheless, housing development should be a joint effort between government and individuals where government is more concerned with physical and social infrastructure and acts as a facilitator in structure financing. Once roads, schools, hospitals, water supply are in place, the government has a wide range of alternatives to

support structure improvement by facilitating housing loan, providing security loan or delivering title deed, subsidizing the construction material, providing technical support among others.

However, experience shows that when it comes to housing finance for low-income groups, the best way to exclude them is that urban poor do not have resources. This is simply an exit back door because poor people have many other potentials like desire and skill to build their shelter. They are even willing to pay more of what is generally required (generally 25 to 30 % of the income is spent for housing improvement or rent) once a credit opportunity is offered.

Unfortunately, housing loans require a lot of conditions that are beyond the low-income groups. The term of loan down repayment is too long, generally over ten years. Furthermore, housing loan for low-income group is more complicated by the annuity covering both interest and capital. And yet, the property must meet all kinds of building standards to be considered for housing loan.

It is on the basis of all this rigidity that finance institutions are not willing to finance low-cost housing. Even if the candidates meet the required conditions, they are likely to be refused the loan because small loans are costly to administer and unprofitable compared to big loans. Due to the high demand of housing loan, banks set lower limits of loan size just to push out the low-income people.

In fact, a close analysis of that situation leads to state that the hindered barrier is the lack of confidence in low-income group. Their unstable resources often cause fluctuations in loan down payments and the tendency is to misuse the housing funds; and when it comes to dealing with the defaulters, the eviction process became almost

impossible. Emotions mixed with political affairs arise; involving open conflicts and even participation of the whole community whereas in high-income areas, the eviction is a fairly smooth matter.

For all these reasons, the urban poor are perceived by the financial institutions as 'a *high risk group*'! To minimize these risks once they are persuaded to consider the low-income groups, the banks increase the charges and once again housing loan goes beyond the means of the urban poor. Therefore, to extend housing loan from financial institutions to the low-income people becomes dilemma to the policy makers.

3.4.3 Main Actors in Housing Finance in Kenya

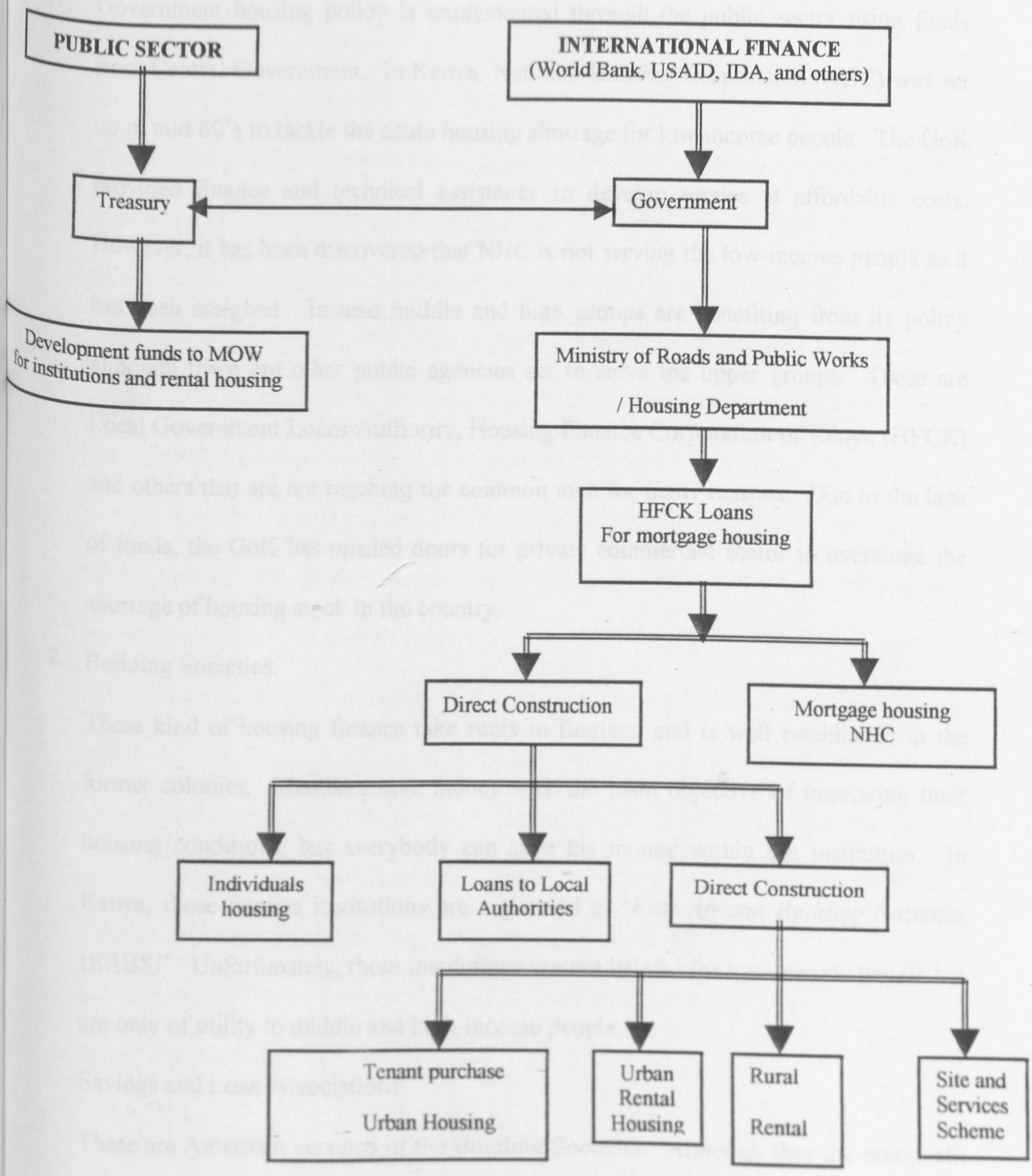


Fig. No. 1: Financial Institutions Framework in Kenya

Source: Adapted with slight changes from Shihembetsa (1985)

The most important formal and informal financial institutions are:

1. The government:

   Government housing policy is implemented through the public sector using funds from Central Government. In Kenya, National Housing Corporation (NHC) was set up in mid 60's to tackle the acute housing shortage for low-income people. The GoK provided finance and technical assistance to develop estates at affordable costs. However, it has been discovered that NHC is not serving the low-income people as it has been assigned. Instead middle and high groups are benefiting from its policy although there are other public agencies set to serve the upper groups. These are Local Government Loans Authority, Housing Finance Corporation of Kenya (HFCK) and others that are not reaching the common man for many reasons. Due to the lack of funds, the GoK has opened doors for private commercial sector to overcome the shortage of housing stock in the country.

2. Building Societies:

   These kind of housing finance take roots in England and is well established in the former colonies. Members save money with the main objective of improving their housing conditions, but everybody can save his money within the institution. In Kenya, these finance institutions are registered as '*East African Building Societies* (EABS)'. Unfortunately, these institutions are not helpful for low-income people but are only of utility to middle and high-income people.

3. Savings and Loan Associations:

   These are American versions of the Building Societies. Although they are non-profit making institutions, a reasonable percentage of the borrowed money is retained just to

cover administration costs and other connected fees. All funds come from the member's deposit and are insured by the public sector. In Kenya, the associations are known as '*Savings and Loans of Kenya Limited* (SLKL)' but they do not also cater for the low-income people.

4. Savings and Credit Unions (SACCO's):

This model of saving is generally a group of few people with a common bond like inhabitants living in the same neighbourhood or workers of a factory. Members are of low-income and start to save on a regular basis. All have same rights within the Union regardless of the size of their deposits and are all collectively responsible for the liabilities of their Union. A committee is elected and runs the administrative tasks including granting of small short term loans to members.

In this case, a member does not save necessarily for housing but the credits are also given for school fees, hospital bill clearance, etc. on short term between 6 months and 1 year. The interest rates are low which range from 6 % for deposits and 12 % for loans which is immensely favorable for the low-income people and also for the success of the union. The goodness of these Unions is that there is no need for a mortgage document like title deed. What matters is the reliability of a member and here, the only judge is the committee. This aspect makes the unions more suitable for low-income groups and a housing loan can easily be extended for up to five years and may cover the total cost of the structure depending only on the ability of the member to pay back the loan.

5. Housing Cooperatives:

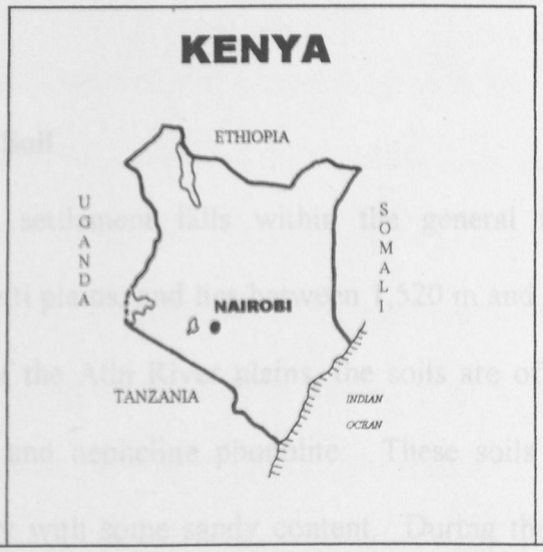
These institutions operate in the same way as Saving and Credit Union with the only difference being that in a housing cooperative the units produced remain the property of the cooperative.

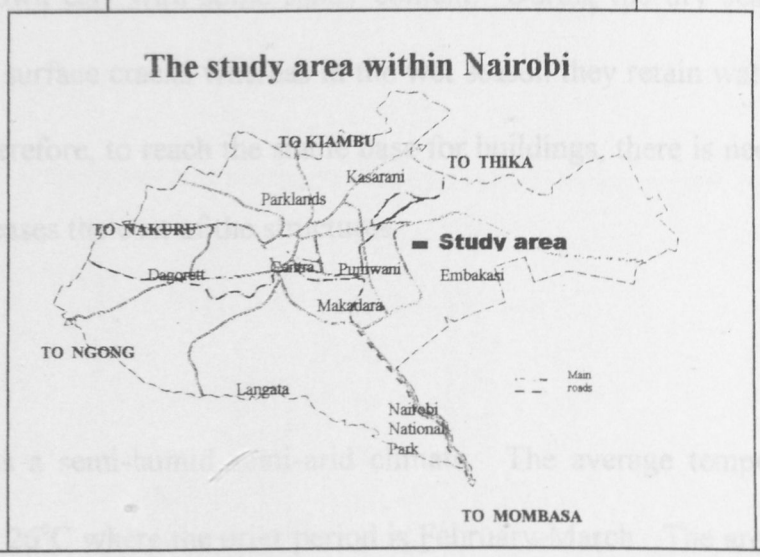
In urban areas, the common bond can be for instance having been allocated plots in a site-and-service scheme or being evicted as group from a squatter and allocated together in another temporary settlement. After saving enough funds to build the first structures, members agree on criteria of selection through a '*Lottery*' or the '*First come first served principle*'. The allottees continue to contribute until all members have been housed.

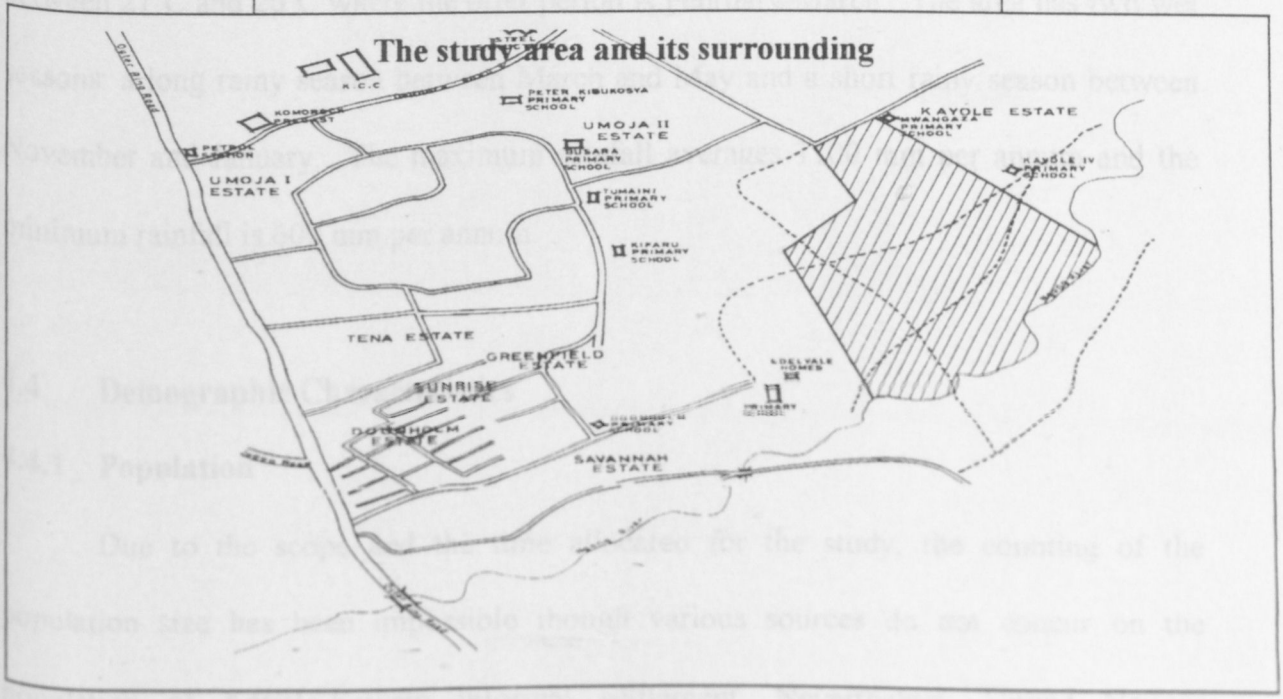
CHAPTER FOUR: BACKGROUND TO THE STUDY AREA

4.1 Spatial Description

Kayole-Soweto is located in Umoja location in the Eastern part of Nairobi City about fifteen kilometres from the Central Business District (CBD). It is one of the fourteen informal settlements that are found in Embakasi Division, as identified by Ngau (1995:27). It covers an area of approximately 140 hectares and has as common border to the eastern side with Kayole Estate. In the Southwestern part is the Ngong River that separates the site from Mugoya quarry site and the Embakasi Air Force land. To the North lies a large tract of land owned by the Highridge Teachers College that borders with Umoja Estate. The following maps show the geographical location of Kayole-Soweto.







Map No.1: **Location of Kayole-Soweto**

4.2 Topography and Soil

Kayole-Soweto informal settlement falls within the general flat landscape of the expansive Athi River-Kapiti plains, and lies between 1,520 m and 1,650 m above the sea level. Like other parts of the Athi River plains, the soils are of tertiary basic igneous rocks like olivine basalt and nepheline phonolite. These soils are generally reddish brown to dark brown clay with some sandy content. During the dry season, the soils become hard with surface cracks whereas in the wet season they retain water resulting in waterlogging. Therefore, to reach the stable base for buildings, there is need to excavate deep and this increases the cost of the structures.

4.3 Climate

The settlement has a semi-humid semi-arid climate. The average temperatures range between 21°C and 26°C where the drier period is February-March. The area has two wet seasons: a long rainy season between March and May and a short rainy season between November and January. The maximum rainfall averages 1100 mm per annum and the minimum rainfall is 600 mm per annum.

4.4 Demographic Characteristics

4.4.1 Population

Due to the scope and the time allocated for the study, the counting of the population size has been impossible though various sources do not concur on the population of Kayole-Soweto informal settlement. Nevertheless, United Nations

Industrial Development Organization estimates the whole population at 10,000 households (Nation Newspaper, January 4, 1999). This leads to estimate the population of Kayole-Soweto at over 30,000 inhabitants using an average household size of 3.94 (Field survey, Sept./Oct. 1999). Kathenge (1999), referring to records from Nairobi City Council, estimates the population of Kayole-Soweto to be 30,750 people, a population size that we found reasonable according to our field verification. The following figure illustrates the population structure of Kayole-Soweto informal settlement:

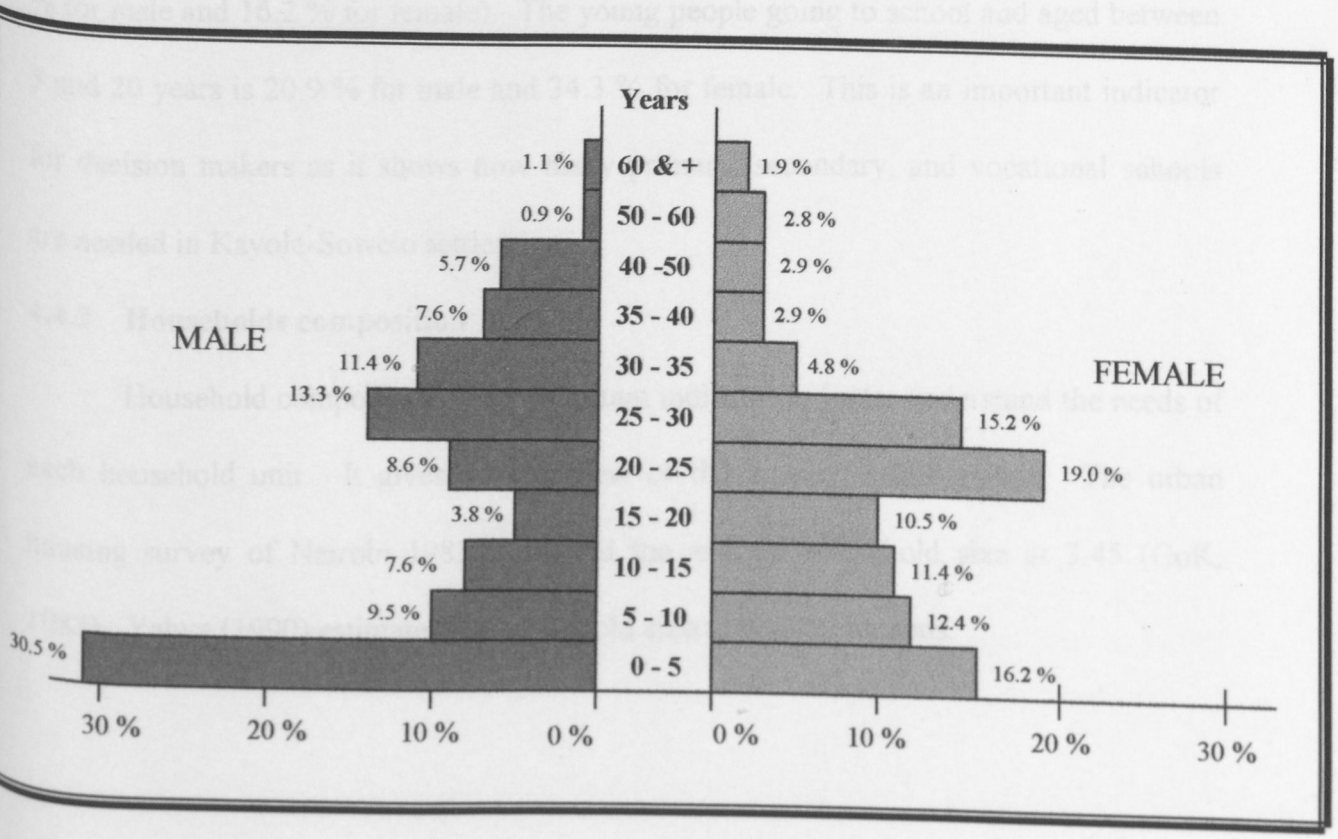


Figure No.2: Population structure of Kayole-Soweto residents

Source: Field survey Sept./Oct. 1999

The age group between 20 and 40 years form an important portion of the whole population. This shows that the area is settled by the economically active people. Those are mostly workers in informal sector (40.9% for male and 41.9% for female) who come to settle in Kayole-Soweto due to the relatively low rent in that area.

Female aged between 20 and 30 years are of higher proportion (34.2 %) than male of the same age (21.9 %). These are wives who care about their family or single parents who run their own business in informal sector. The high proportion of women aged between 20 and 30 years can explain the high proportion of children below 5 years (30.5 % for male and 16.2 % for female). The young people going to school and aged between 5 and 20 years is 20.9 % for male and 34.3 % for female. This is an important indicator for decision makers as it shows how many primary, secondary, and vocational schools are needed in Kayole-Soweto settlement.

4.4.2 Households composition

Household composition is an important indicator to better understand the needs of each household unit. It gives an overview of the housing requirements. The urban housing survey of Nairobi 1983 estimated the average household size at 3.45 (GoK, 1983). Yahya (1990) estimates the household size to be 3.59 persons.

Meanwhile, field survey revealed that the household size in Kayole-Soweto is distributed as follow:

Household size in Kayole-Soweto	Number of Respondents	Percentages of Households
1	5	5.8 %
2	18	21.2 %
3	12	13.5 %
4	22	25.0 %
5	15	17.3 %
6	7	7.7 %
7	7	7.7 %
8	2	1.8 %
Total	**87**	**100.0 %**

Table No.6: Size of households

Source: Field survey Sept./Oct. 1999

Therefore, the average household size in Kayole-Soweto is estimated at 3.94 as the 87 surveyed households comprise 343 people.

4.5 Economic Characteristics of Kayole-Soweto

4.5.1 Employment

Most of the Kayole-Soweto residents (65.0% of the respondents) are self-employed working in informal sector. They are mainly engaged in grocery kiosks, green vegetables stands, carpentry, shoe repairs, hawking and so forth. 26.9 % of the respondents declared

that they are unemployed while 30.8 % and 42.3 % are employed and self-employed respectively. Plate No.1 shows a market place where the dealers sell their goods on the road carriageway.

Plate No.1: Economic activities in Kayole-Soweto informal settlement.

4.5.2 Education Level – Employment and Income Levels

In Kayole-Soweto, 92.6 % (Field survey, Sept./Oct. 1999) of the population fall below the poverty line as defined by the Government of Kenya (GoK, 1998). Those who earn more than Ksh. 5,000 /= that can be considered as relatively well off among the low-income groups. The low-income levels in Kayole-Soweto can be linked with the low education level, which cannot allow the residents to compete in the skilled job market.

The following table shows the educational level of the household heads in the study area:

Education Level of the Household heads	Number of respondents	Percentages
None	20	23.0 %
Primary	23	26.4 %
Secondary	44	50.6 %
University	0	0.0%
Total	**87**	**100.0 %**

Table No.7: Educational level of the household heads

Source: Field survey Sept./Oct. 1999

These figures indicate that most of the household heads have reached secondary school level but we found that almost all dropped out before completing their secondary education. The drop out rate is very high: about one fifth of the pupils leave prematurely because of lack of school fees, poor feeding and lack of appropriate books as well as lack of proper studying environment at home (Source: The Principal of St. Justin Secondary School, Oct. 1999). Generally, children from wealthier families perform better at school due to the better studying environment. During the field survey, no respondent has revealed to be a graduate and those who have got other professional training like artisans, carpenters and others, in spite of their number in the settlement, the interviewed did not declare other training apart of the formal education.

In fact, the effect of low education level on the living standard is evident. In the study area, the average income per household head is estimated at Ksh 2,609 /= per month and the average income per capita is Ksh. 750 /=. The chart below gives the income level of Kayole-Soweto residents.

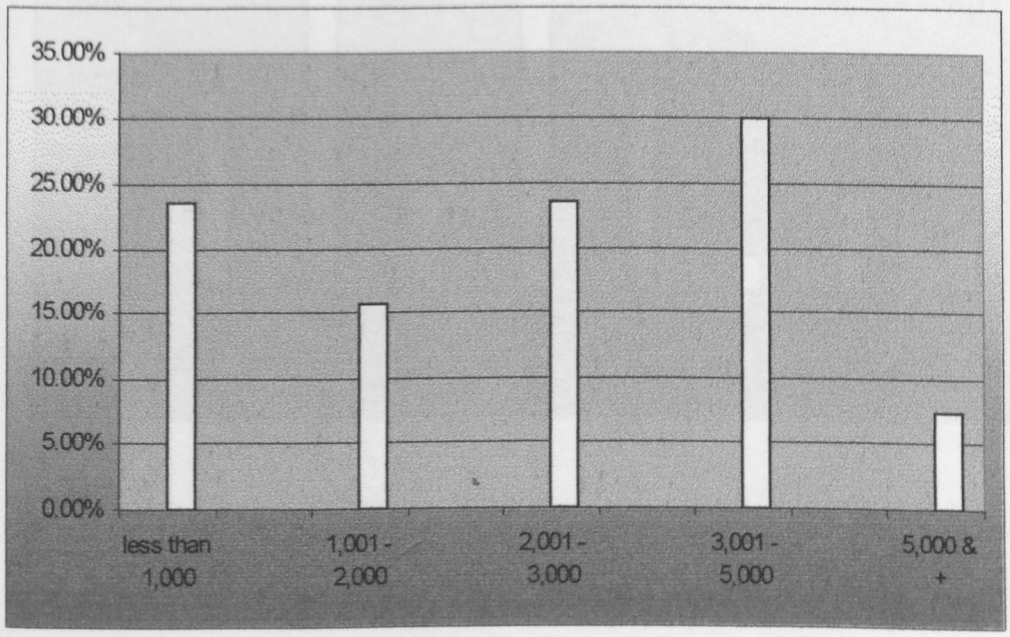


Figure No.3: Income levels of household heads

Source: Field survey Sept./Oct 1999

4.5.3 Rent Paying Capacity and Income Levels

Rent paying capacity is a direct function of income levels of residents. According to the rule of thumb where rent varies generally between 25% and 30% it has been found out that Kayole-Soweto residents cannot rent two rooms, as the majority (92.6%) earn less than Ksh 5,000 /=. The rent of a two roomed house in good condition ranges from Ksh. 1,500 /= to Ksh. 2,500 /=.

In fact, rent per room in Kayole-Soweto varies from Ksh 500 /= to Ksh 1,000 /= per month as shown below:

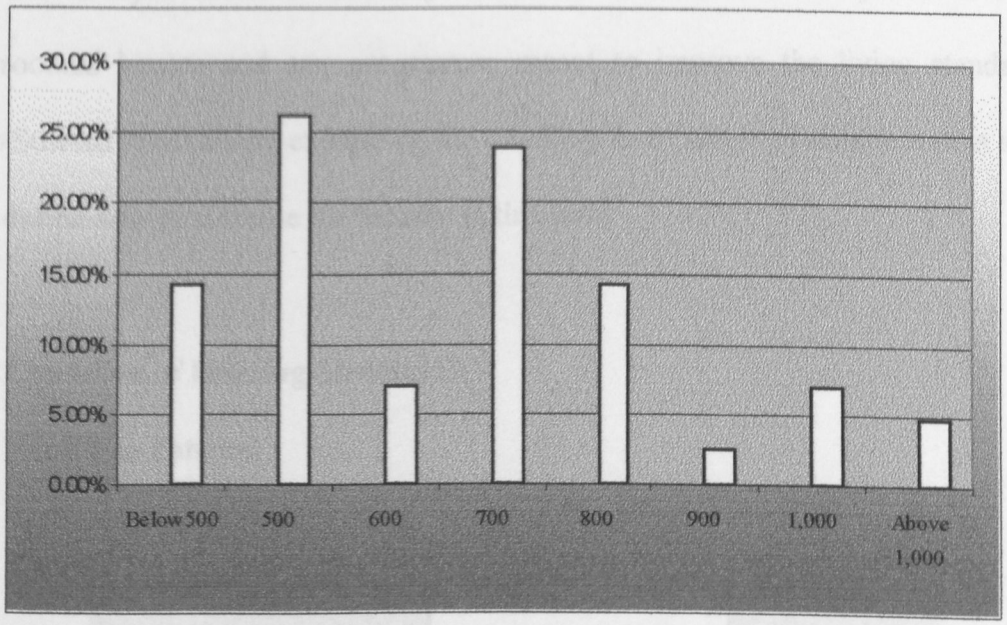


Figure No.4: Rent per month per room

Source: Field survey Sept./Oct. 1999

It is then clear that most of the Kayole-Soweto residents are able to pay rent that varies from Ksh 500 /= up to Ksh 700 /= per month. Those who can afford a rent above Ksh. 700 /= are few. In reality, the current rents are grouped into three categories based specifically on the conditions of the structure that one stays in. For the temporary structures in bad condition, the rent is less than Ksh 500 /=. For the semi-permanent dwellings, the rent average is Ksh 700 /= per room per month while those of good condition cost Ksh 1,000 /= or more. This shows that 14.3 % are only able to afford a house in a temporary structure let for less than Ksh 500 /=, 73.8 % can afford a semi-

permanent structure and the remaining 11.9 % are the upper class of low-income group who can afford a house of Ksh 1,000 /= and more.

This analysis indicates that Kayole-Soweto households are only able to stay in single roomed houses and any programme meant to improve the living standard of Kayole-Soweto residents by expanding the dwelling from single to double rooms should clearly define how to increase the income in this area.

4.6 Condition of Housing Structures

4.6.1 Land Use Pattern

Land use	Area in hectares	Percentages
Residential area	56.18	40 %
Social infrastructure	8.90	6 %
Roads	21.35	15 %
Open land	47.28	34 %
Ngong River bank	6.29	4 %
Total	140.00	100 %

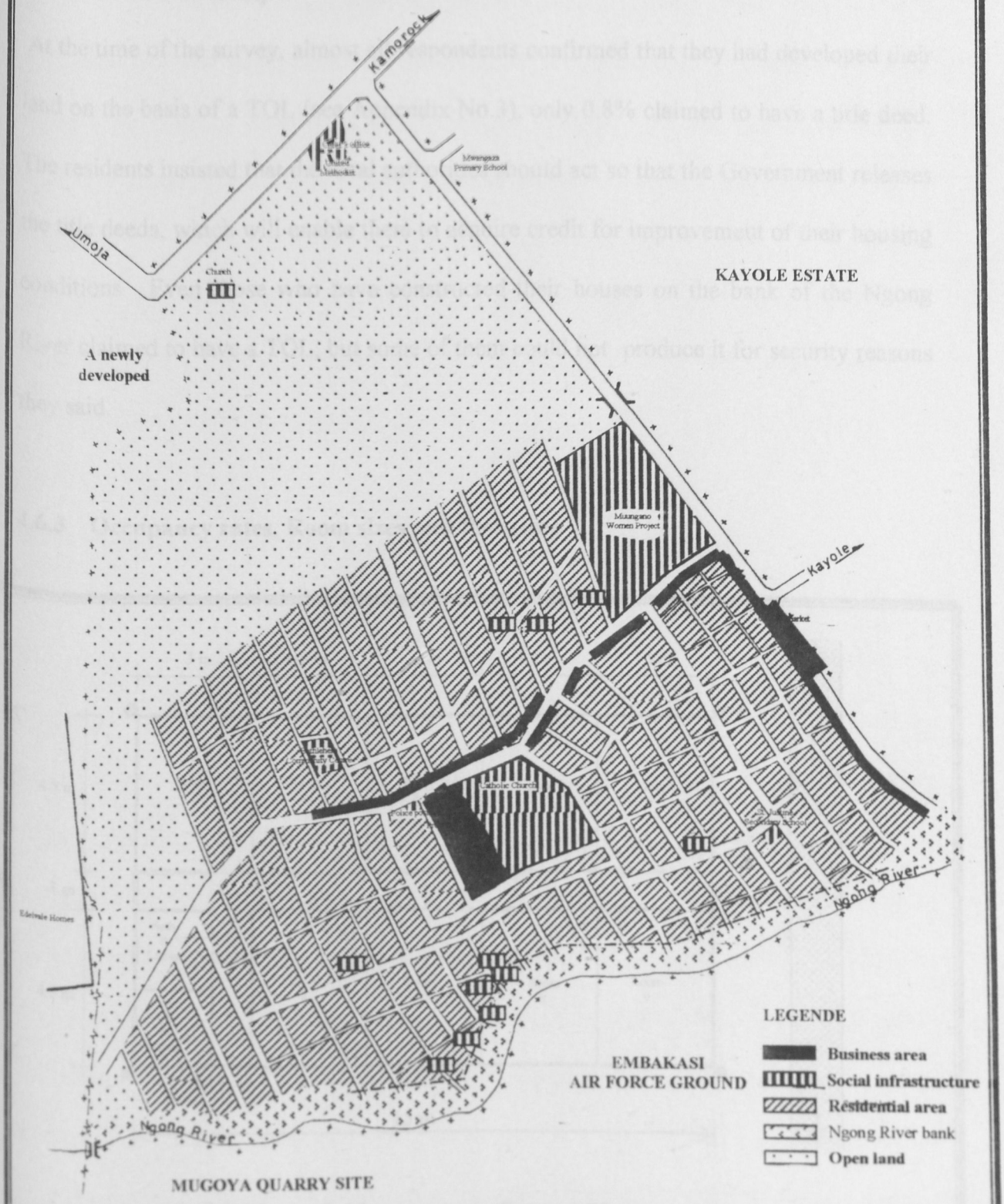
Table No.8: Land use pattern

Source: Field survey Sept./Oct. 1999

Like other low-income settlement in Nairobi City, Kayole-Soweto is also overcrowded with a population of 30,750 settled on an area of 56.18 hectares i.e. 547 people per hectare. In that area, the household size is 3.94 (Field survey, Sept./Oct. 1999) which

leads us to conclude that there are about 140 structures per hectare. As a consequence of that situation, residents have started to 'grab' in the north, the open land owned by the Highridge Teachers College; and in the south the bank river (see Map No.2). The Ngong River bank occupies an area of 6.29 ha; and is an area suitable for urban agriculture. The following map shows the area occupied by structures and other different land uses:

KAYOLE-SOWETO SETTLEMENT



Map No.2	**Land use pattern**	By S. NTIRAMPEBA March 2000		N

4.6.2 Land ownership

At the time of the survey, almost all respondents confirmed that they had developed their land on the basis of a TOL (see Appendix No.3), only 0.8% claimed to have a title deed. The residents insisted that the local authorities should act so that the Government releases the title deeds, which will enable them to acquire credit for improvement of their housing conditions. Even those who have constructed their houses on the bank of the Ngong River claimed to have a TOL, but some of them could not produce it for security reasons they said.

4.6.3 Occupancy rates, Room sizes and Plot sizes

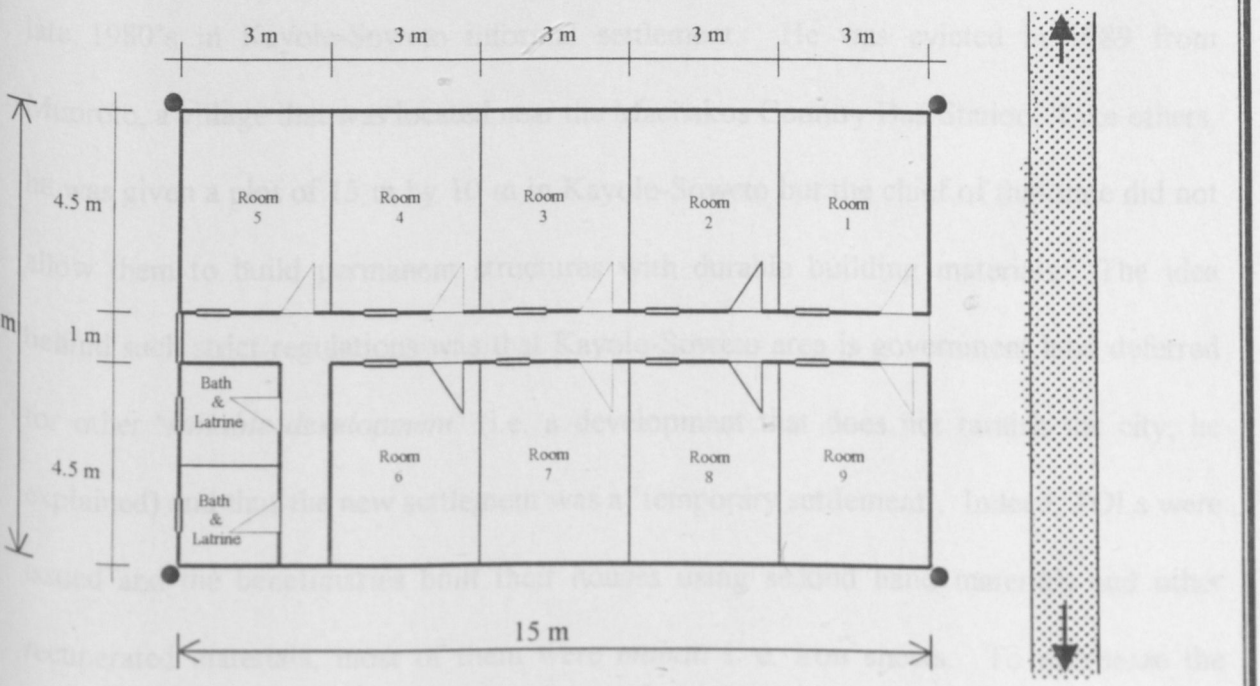


Fig. No. 5: Plot coverage: Typical Plan

Over 90% of visited households were occupying a single room where the only difference was the water connection and size of rooms occupied. The size of rooms varies from 9 m^2 to 16 m^2 that is 3m x 3m to 4m x 4m. It was also found that the structures occupy the maximum space possible on plots, leaving corridors of one metre maximum for movement. This high plot coverage varies from 90 % to 100 %. In this area, no completed structure has been found to occupy less than 90 % of the plot and those that have a 100 % plot coverage are flats. Except in some rare cases, plots are of two sizes : 15m x 10m and 20m x 15m.

A story behind plot coverage in Kayole-Soweto informal settlement:

Okoko Steven is one of the many people who got temporary accommodation in late 1980's in Kayole-Soweto informal settlement. He was evicted in 1989 from Muoroto, a village that was located near the Machakos Country Bus Station. Like others, he was given a plot of 15 m by 10 m in Kayole-Soweto but the chief of that time did not allow them to build permanent structures with durable building materials. The idea behind such strict regulations was that Kayole-Soweto area is government land deferred for other '*suitable development*' (i.e. a development that does not tarnish the city, he explained) and thus the new settlement was a 'temporary settlement'. Indeed, TOLs were issued and the beneficiaries built their houses using second hand materials and other recuperated materials, most of them were *mabati* i. e. iron sheets. To maximize the returns from the temporary plot; Okoko S. added that they constructed the houses without leaving one centimetre behind the mabati walls (i.e.100% plot coverage).

Therefore, this explains the actual plot coverage where the beneficiaries of plots in early 1990's covered the whole plot and constructed single rooms to maximize the rent before eviction. For the time being, Okoko S. has no intention to improve his house as long as he does not have any guarantee for the plot ownership, he concluded.

4.6.4 Building materials

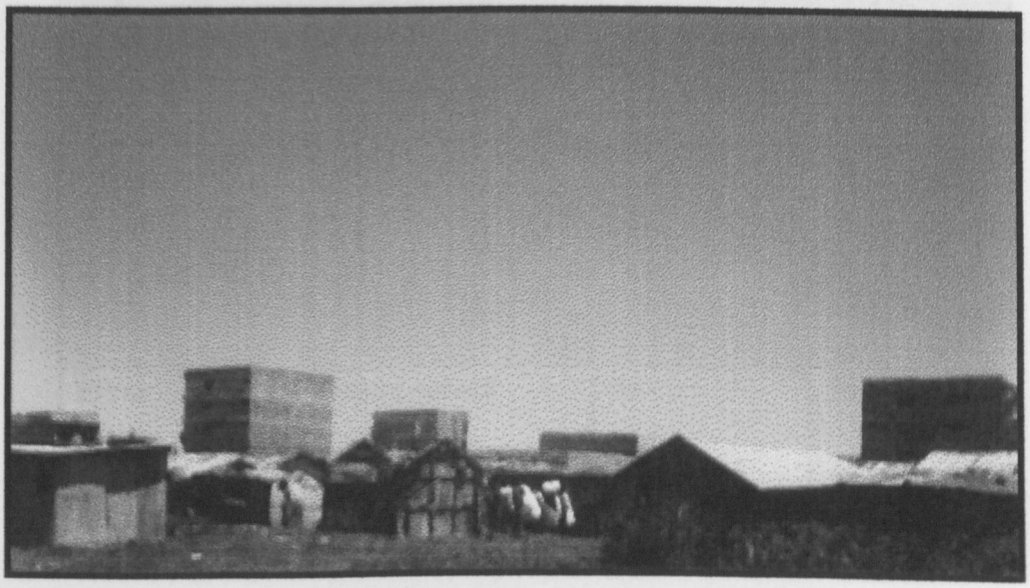


Plate No.2: Structures with various building materials

The main building materials used in Kayole-Soweto are iron sheets for roofs, quarry stone and iron sheets for walls, and cement screed for floors. This is illustrated by the following figures:

Element of the structure	Building materials	Number of respondents	Percentage
Roof	Iron sheets	71	81.1 %
	Concrete tiles	7	8.6 %
	Others*	9	10.3 %
Wall	Timber	5	5.7 %
	Bricks	5	5.7 %
	Iron sheets	35	39.6 %
	Quarry stone	39	45.2 %
	Others*	3	3.8 %
Floor	Cement screed	66	75.5 %
	Earth	21	24.5 %

Table No.9: Building material used in Kayole-Soweto settlement

Source: Field survey Sept./Oct.1999

* The term '*others*' has been used here to mean any recycled material such as cartons, pieces of metal etc.

It was observed that quite a number of flats were coming up in the study area. As the building regulations are not strictly or fairly enforced, residents ignore them and developers are putting up high rise flats without legal permit. The roofs of the surveyed high-rise flats are not complete, as they are reinforced concrete slabs waiting for additional floors. Because of lack of housing loan facilities, land is developed on incremental basis.

4.6.5 State of the structures

Human needs differ from one person to another but shelter, safe water, food, and clothing are the most common basic needs. Shelter as a need has been recognized by all National Development Plans by providing strategies and policies that could improve the housing sector in the country. The contribution of the housing sector in the economic development is vital considering its aspect of creating jobs. Furthermore, good housing conditions improve public health by providing healthy living and working environment.

However, in spite of the housing policy formulated by the GoK to improve living conditions in towns, field survey revealed that 68.7% of structures are either in bad or very bad condition. Those are new or old structures that are not well maintained and thus should be renovated. The figure below shows the trend of housing condition in the study are:

Figure No.6: Condition of Structures

Source: Field survey Sept./Oct.1999

The implementation of the GoK Housing Policy has really failed and when it comes to low-income people, the situation becomes worse. Based on building materials of various building elements like walls, roofs, and floors; it has been found that 40.4 % are permanent, 11.5 % are semi-permanent and 48.1% are temporary structures. The plates below show some of the temporary and permanent structures in Kayole-Soweto settlement:

Plate No.3: Temporary structure

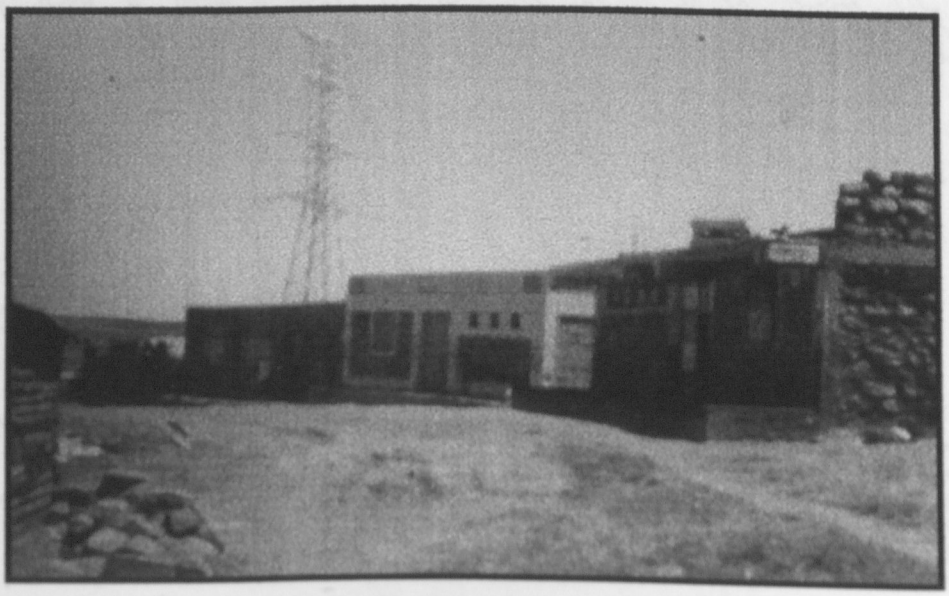
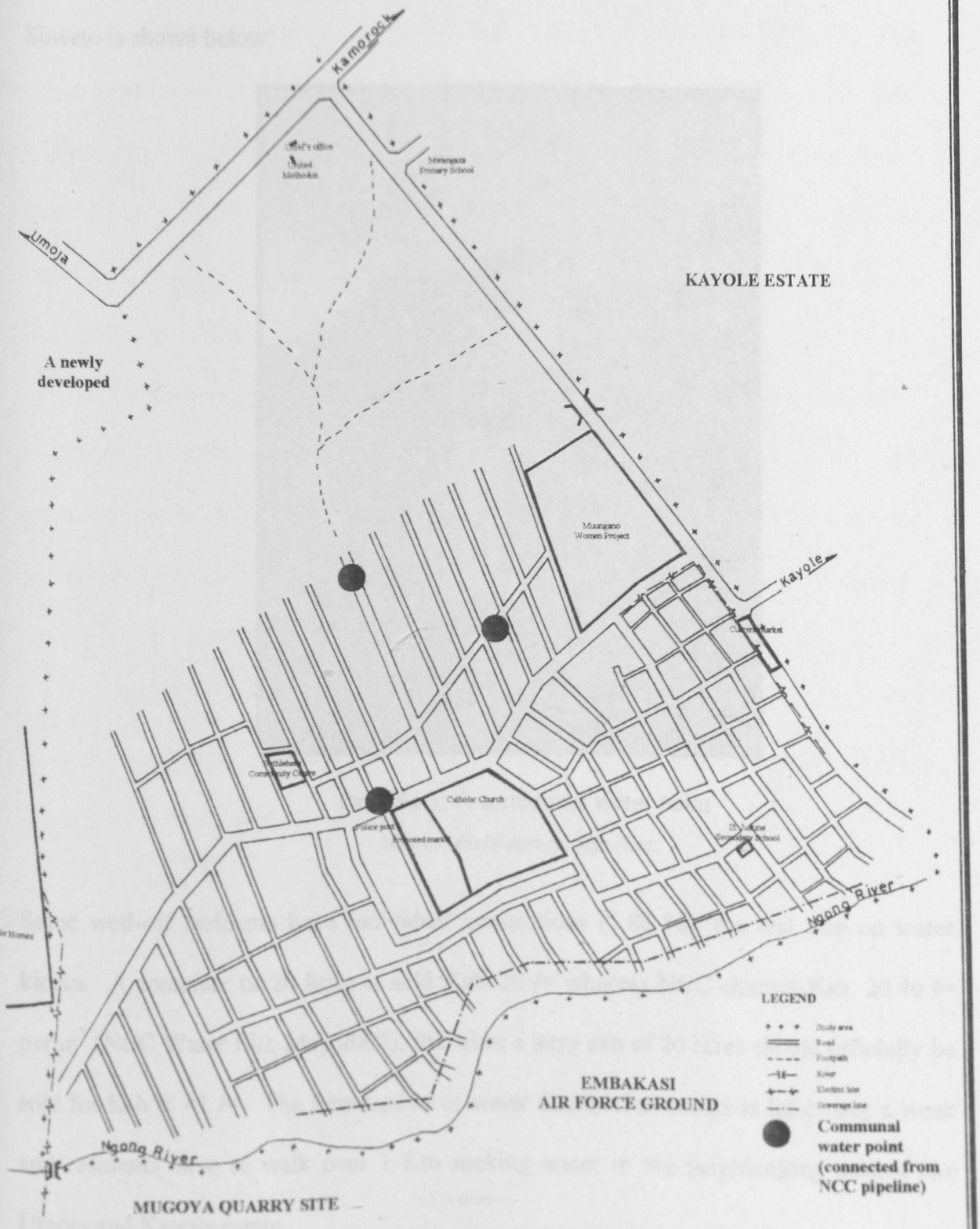


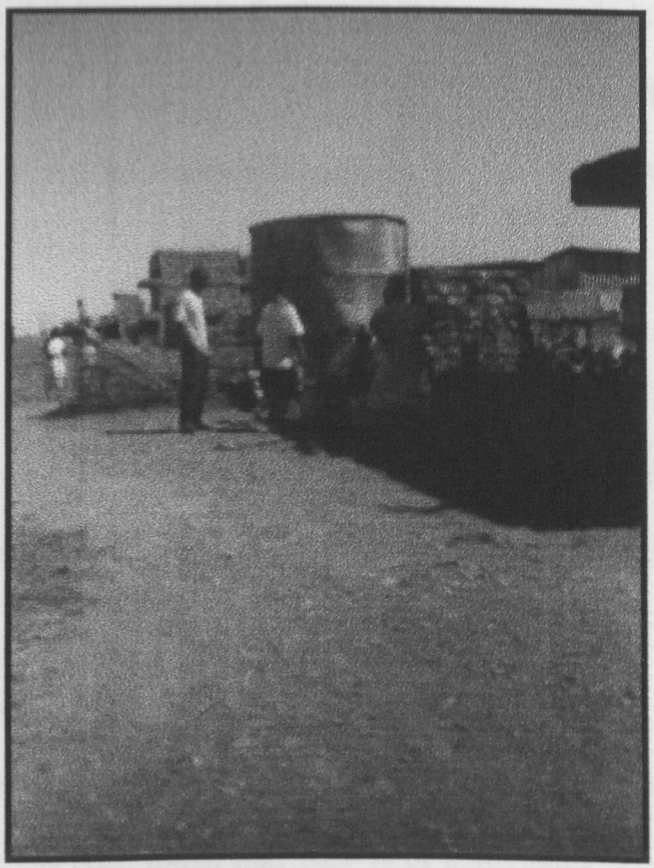
Plate No.4: Permanent structures
Source: Field survey Sept./Oct.1999

KAYOLE-SOWETO SETTLEMENT



Map No.3	Water supply	By S. NTIRAMPEBA March 2000		N

The residents of Kayole-Soweto have only 3 communal water points (see Map No.3) owned and managed by local organizations. One of the water points available in Kayole-Soweto is shown below:



Pate No.5: A communal water point

Source: Field survey, Sept./Oct.

Some well-off residents have individual connections (5.88 %); the rest rely on water kiosks. A container of 20 litres is sold Ksh. 20 /= whereas NCC charges Ksh. 20.46 /= per m^3 (NCC Water Bill, May 2000), therefore a jerry can of 20 litres should officially be sold for Ksh 0. 41 /=. The interruption of water distribution occurs at least once a week and residents have to walk over 1 Km seeking water in the neighbouring estates like Umoja and Kayole estate.

In fact, 99.3 % of residents are complaining that the supply of water is inadequate and only 0.7 % feel that water cost is high which means that residents are more sensitive to lack of water than to its cost. They are willing to pay high price for the water, what matter is for them, is its availability. Nobody thought that water could be contaminated as it is managed by 'a trusted agency' that is the NCC. When asked why they do not draw water from Ngong River, all rejected this option because they are aware of the potential diseases Ngong River water could expose them to diseases. Irunga K., a resident of Kayole-Soweto, expressed his view in these terms:

"Do you know what Ngong River is? It is a fully polluted river; it is a useless dead river."

This statement is quite true as the river is carrying human waste and other highly toxic contaminated waste water from industrial area dumped in the river through the sewerage system without any kind of pre-treatment. Unfortunately little is done to keep children far from this river to prevent water-borne diseases.

The effect of water shortage in Kayole-Soweto is that residents restrict the use of water to the minimum. It has been found that 76.4 % of households consume less than 100 litres per household per day as shown in the table below:

Water consumption per household per day	Number of respondents	Percentages of Households
20 Litres and less	15	17.6 %
40 Litres	22	25.5%
60 Litres	26	29.4 %
80 Litres	3	3.9 %
100 Litres and above	21	23.6 %
TOTAL	**87**	**100.0 %**

Table No.10: Water consumption per day per household in Kayole-Soweto

Source: Field survey Sept./Oct.1999

From the field survey, the average consumption is estimated at 60 litres per household per day. These rates are far below those recommended by the World Health Organization. It states that in low-income urban areas like Kayole-Soweto, the consumption of water per day per inhabitant should be at least 20 litres. Note that those who may consume over 100 litres per day have individual connections and those are estimated to be 5.88% households of the whole population. In short, water supply in Kayole-Soweto is insufficient and any improvement on the living conditions in the area must be closely linked with the improvement of water supply.

4.7.2 Sanitation

- **Solid Waste Management**

The status of waste management in Kayole-Soweto is dramatic. This is reflected by the very poor management of garbage. It is common to find big heaps of garbage in front of houses or blocking roads as shown in this plate:

Plate No. 6: Heap of garbage in front of PAG Soweto Primary School

Source: Field survey Sept./Oct. 1999

The survey revealed that 7.4 % of residents throw garbage in pits within the plots and the rest dump their solid waste on the undeveloped plots or on the access roads. As there is no communal site to dispose of solid waste, those who collect garbage within the plots either burn it on site, which causes air pollution in the residential area.

- **Waste water disposal**

As far as sanitation is concerned, Kayole-Soweto does not have a conventional drainage system to collect waste water although a system line passes through the settlement in its southern part (see Map No.3). Asked why the Kayole-Soweto residents are not benefiting from this facility, the assistant chief of that area replied that the drain is undersized to satisfy all the potential demand.

Beside that fact, Kayole-Soweto being an informal settlement, the well-off may not be allowed to take advantage of that drainage line and leave the waste water flowing along the roads as is shown on the plate below:

Plate No.7: Current waste water management

Source: Field survey Sept./Oct. 1999

Furthermore, no household was found to have its own private pit latrine. Majority share the facility with other households, and 5.3 % do not have a latrine at all. Most pit latrines are in a deplorable condition and pose health hazards especially to the children. This explains why human excreta is seen in the compounds, along the roads and on the river bank of Ngong River. Therefore if this situation is not checked as a matter of priority, wastewater from domestic use will soon cause a real danger for public health.

- **Storm Water Drainage**

In Kayole-Soweto, there is no drainage system to collect and direct storm water to minimize damages. The effect is that the area is flooded when it rains, roads become impassable, and private/public properties are damaged. For instance, a market designed to replace the existing one has been boycotted due to its inaccessibility (see the current and the proposed market area on Map No.5).

4.7.3 Energy

- **Energy for cooking purpose**

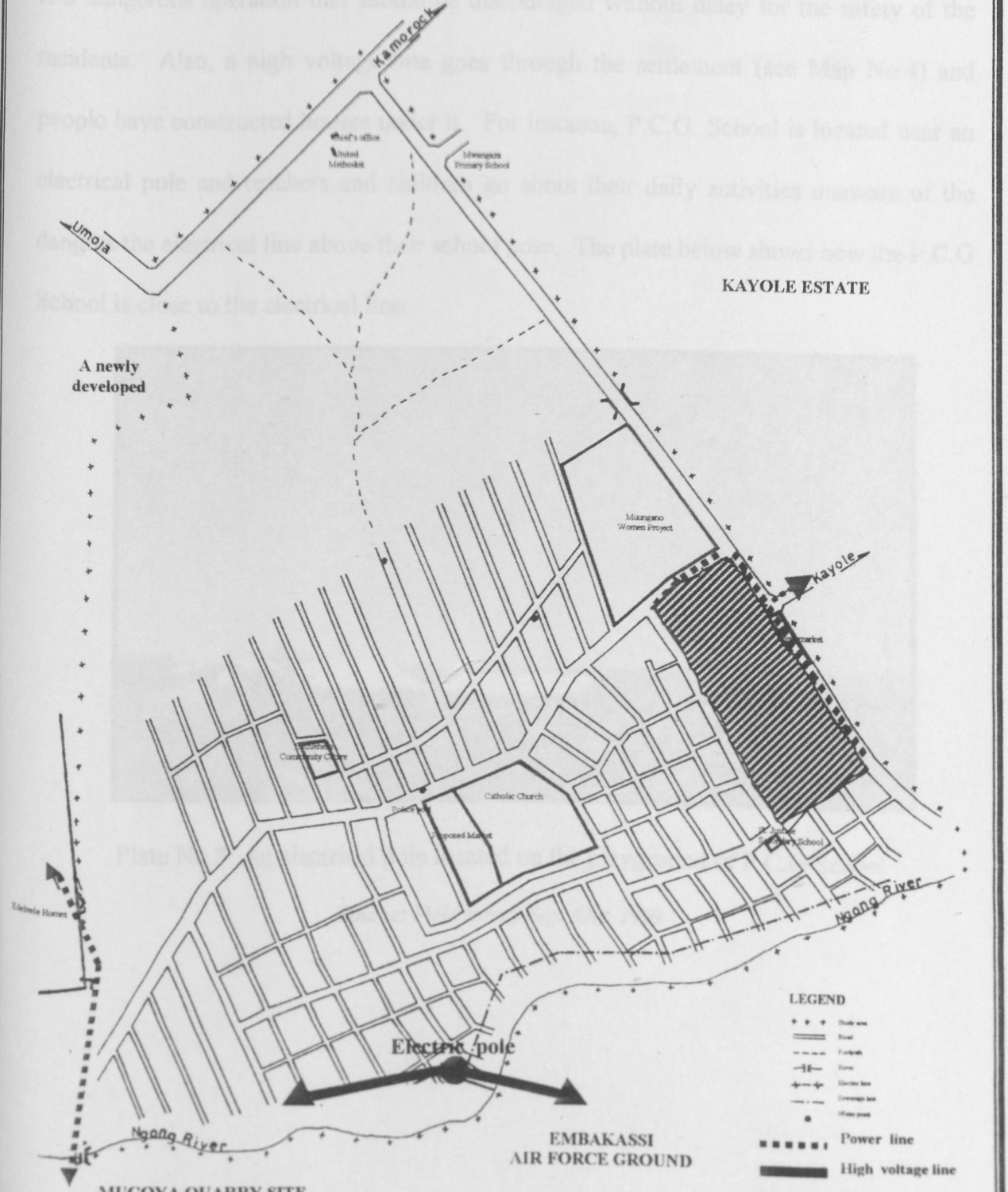
Residents in Kayole-Soweto, do not have kitchens. All the visited residents place a small table in one of the corners of the room and all were found to use stoves because paraffin is the most available fuel on the local market. Asked why they do not use charcoal or firewood, some said that it is because they are renting a single room and others evoked the problem of plot-structure occupancy (see Fig. No.5). The ventilation in terms of openings in the wall i.e. windows and doors is inadequate compared to the building regulations, thus the gas released when one is cooking certainly harms the respiratory system.

There is no electricity in this settlement, otherwise, it should be used as a cooking alternative although it is expensive. The other alternative should be the use of gas cooker but this is a dream considering the income level of the resident.

- **Energy for lighting purpose**

Kayole-Soweto residents face a problem of lighting during the night. At home, they rely on kerosene lamps/lanterns. Street lighting does not exist, and residents continue to stay in darkness in the evenings which leads to insecurity. Further, the informal activities like furniture making, welding, grain mills etc. can not prosper without electricity. The area served by electricity is a small portion neighbouring Kayole Estate as shown on the following map:

KAYOLE-SOWETO



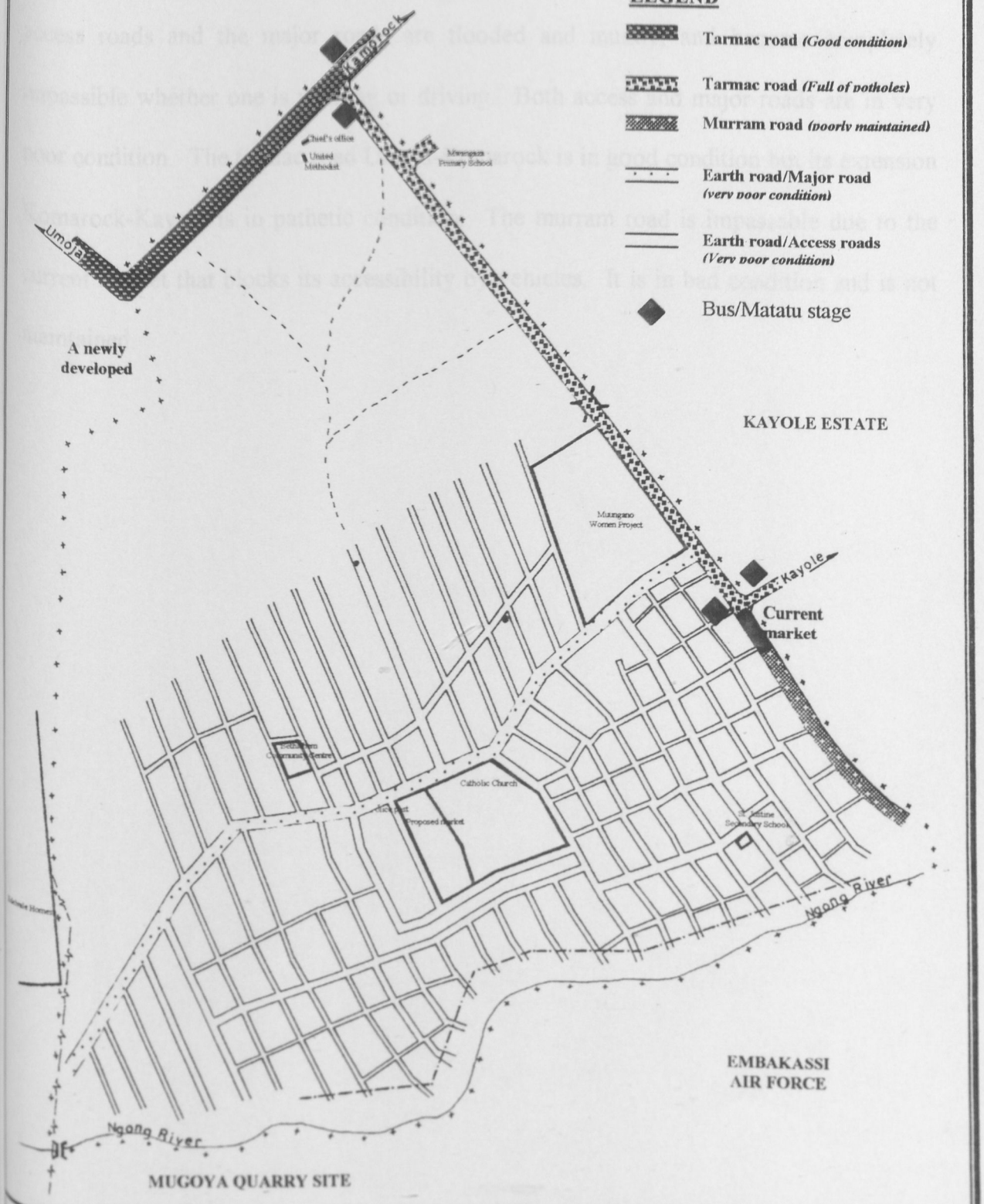
Map No.4	Electricity	By S. NTIRAMPEBA March 2000	

In the area served by electricity, it has been found that residents tap power illegally. This is a dangerous operation that should be discouraged without delay for the safety of the residents. Also, a high voltage line goes through the settlement (see Map No.4) and people have constructed houses under it. For instance, P.C.G. School is located near an electrical pole and teachers and children go about their daily activities unaware of the dangers the electrical line above their school pose. The plate below shows how the P.C.G School is close to the electrical line:

Plate No.8: An electrical pole located on the playground of P.C.G School

Source: Field survey Sept./Oct. 1999

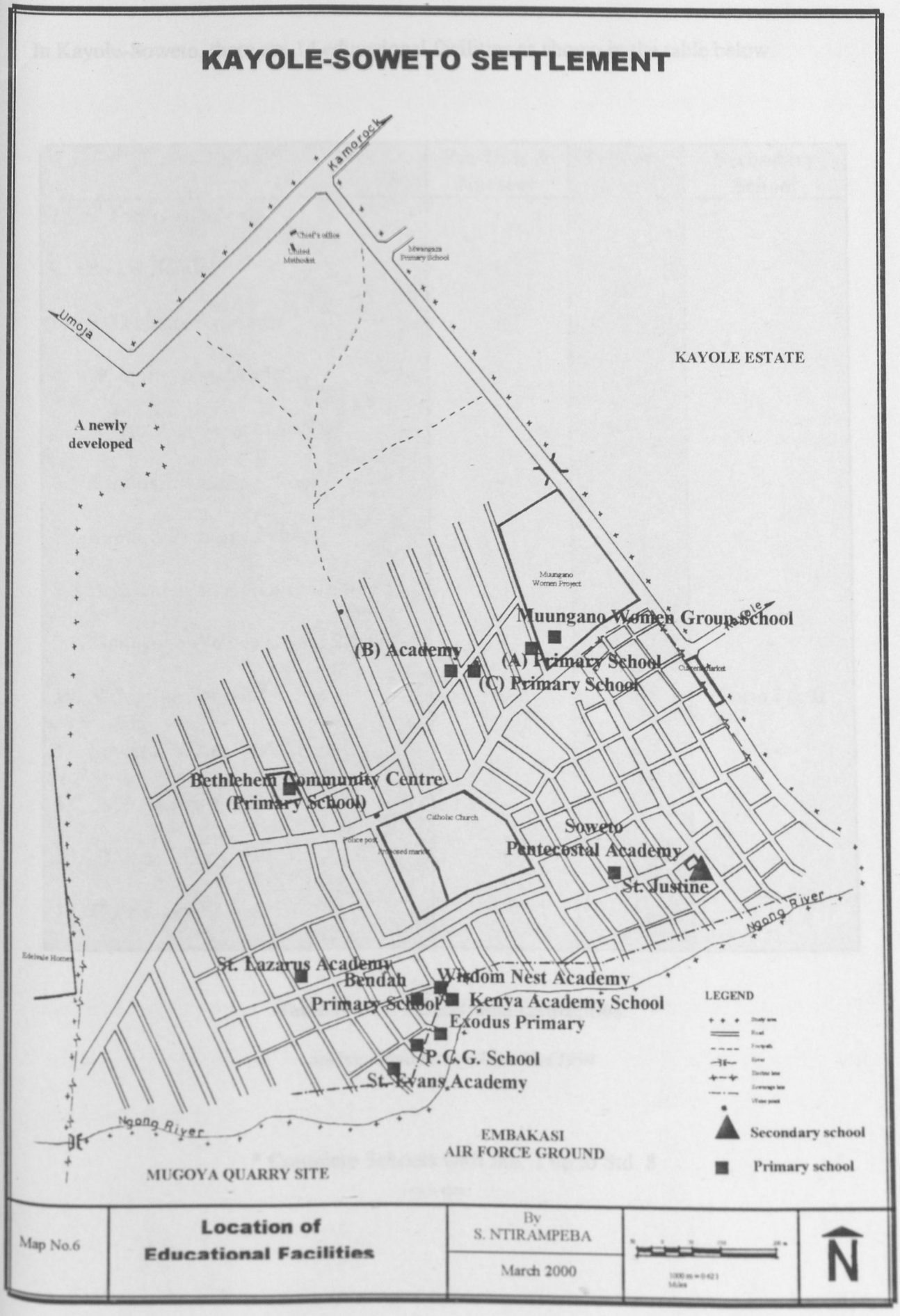
KAYOLE-SOWETO SETTLEMENT



Map No. 5	Roads network	By S. NTIRAMPEBA March 2000		N

As shown on Map No.5, Kayole-Soweto is well served with access roads leading to plots; but the maintenance and drainage systems are very poor. During the wet season, the access roads and the major roads are flooded and muddy, and become completely impassible whether one is walking or driving. Both access and major roads are in very poor condition. The tarmac road Umoja-Komarock is in good condition but its extension Komarock-Kayole is in pathetic condition. The murram road is impassable due to the current market that blocks its accessibility by vehicles. It is in bad condition and is not maintained.

4.7.5 Educational Facilities



In Kayole-Soweto, there are 14 educational facilities as shown in the table below:

Name	Pre-Unit & Nursery	Primary School	Secondary School
1. S^{t} Evans Academy	+	-	-
2. P.C.G School *	+	+	-
3. S^{t} Lazarus Academy *	+	+	-
4. Wisdom Nest Academy	+	–	-
5. Kenya Academy School	+	+	-
6. Exodus Primary School	-	+	-
7. Bendah Primary School	+	+	-
8. Bethlehem Community Centre *	-	+	-
9. Muungano Women Group School*	-	+	-
10. S^{t} Justine School *	-	+	Form I & II
11. Soweto Pentecostal Academy	+	+	-
12. A Primary School	-	+	-
13. B Academy	+	-	-
14. C Primary School	+	+	-

Table No.11: Educational institutions.

Source: Field survey, Sept./Oct.1999

* Complete Schools with Std. 1 up to Std. 8

None of the educational facilities is under GoK or NCC management, all have been set up by individuals or churches. As discussed earlier on the building code enforcement, the conditions of these facilities are deplorable as shown on this plate:

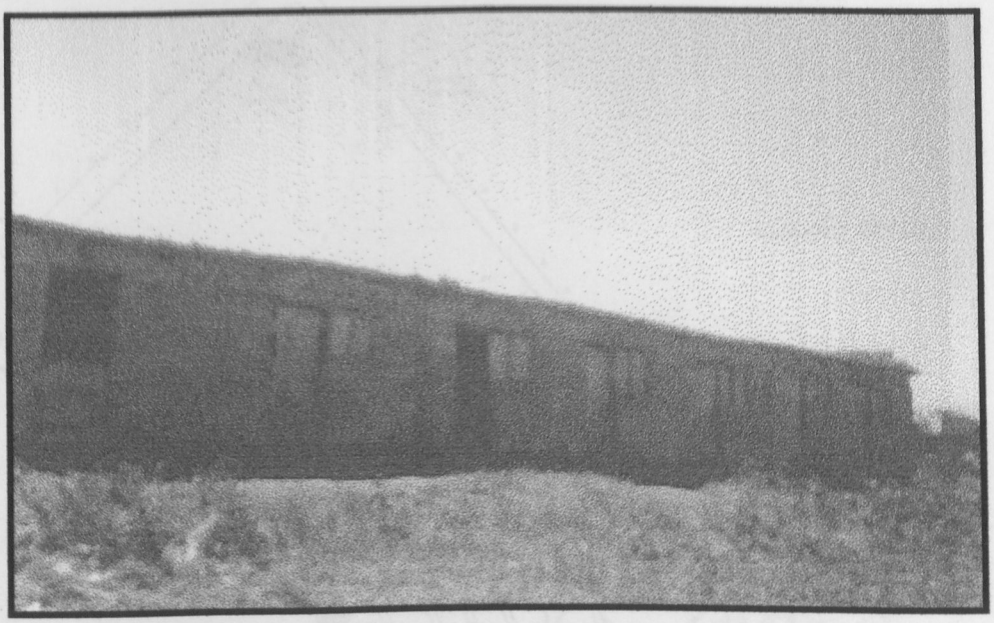
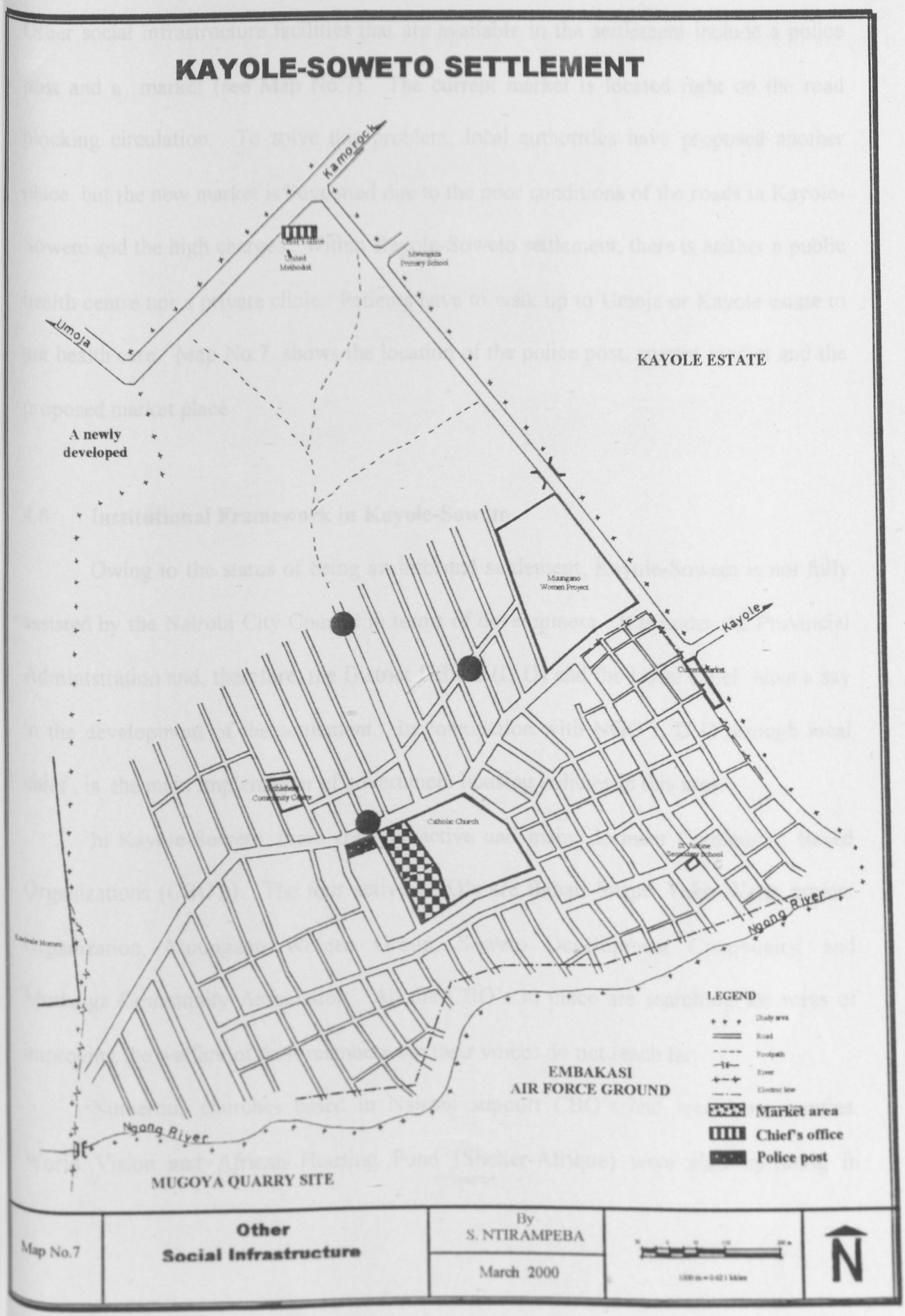


Plate No.9: Exodus Primary School

Source: Field survey Spet./Oct.1999

Besides the poor conditions of the educational facilities in Kayole-Soweto, the field survey revealed that only St. Justine School has a secondary level. For the primary level, only five schools have Std. 1 up to Std. 8 and others are still in the process of completing the remaining classes (see Table No.11). The residents therefore rely mainly on the neigbouring educational facilities like Umoja and Kayole Estates where primary and secondary schools are in good condition.

4.7.6 Other Social Infrastructure



Other social infrastructure facilities that are available in the settlement include a police post and a market (see Map No.7). The current market is located right on the road blocking circulation. To solve this problem, local authorities have proposed another place but the new market is boycotted due to the poor conditions of the roads in Kayole-Soweto and the high charges. Within Kayole-Soweto settlement, there is neither a public health centre nor a private clinic. Patients have to walk up to Umoja or Kayole estate to get health care. Map No.7 shows the location of the police post, current market and the proposed market place

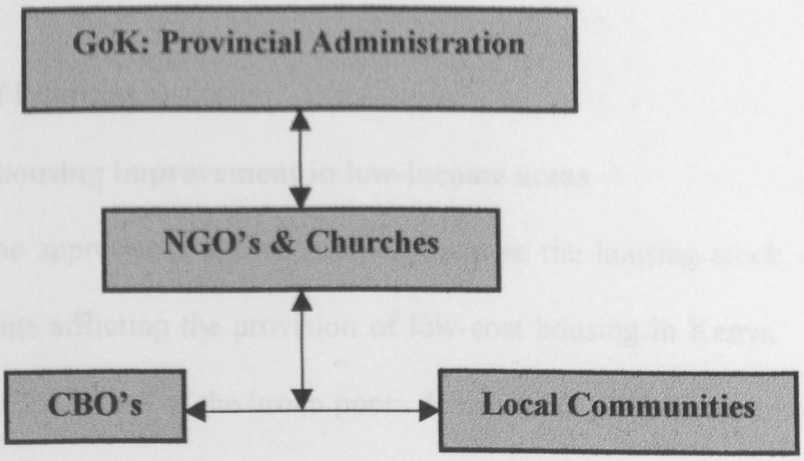
4.8 Institutional Framework in Kayole-Soweto

Owing to the status of being an informal settlement, Kayole-Soweto is not fully assisted by the Nairobi City Council in terms of development. It is under the Provincial Administration and, therefore, the District Officer (D O) and the Local Chief have a say in the development of the settlement. In conjunction with NGO's, D O through local chief, is the main implementer of government housing policies in this area.

In Kayole-Soweto, there are four active and many dormant Community Based Organizations (CBO's). The four active CBO's are Bahati Shauri Yako Water project Organization, Muungano Women Group, Soweto Development Community, and Muthaiga Community Association. All the CBO's in place are searching for ways of improving the welfare of their members but their voices do not reach far.

Numerous churches based in Nairobi support CBO's and local communities. World Vision and African Housing Fund (Shelter-Afrique) were also operating in

Kayole-Soweto but now, they have withdrawn. The institutional framework can be illustrated as follow:



CHAPTER FIVE: SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSION

5.1 Summary of Findings

5.1.1 Barriers to housing improvement in low-income areas

In spite of the appreciable efforts made to increase the housing stock, there are still several constraints afflicting the provision of low-cost housing in Kenya. Building standards are beyond the means of the urban poor. For instance, low-income households in Kayole-Soweto cannot afford to stay, say in four rooms, i.e. bedroom, sitting room, wet room, and store/kitchen; instead the intended beneficiaries of the upgrading operation will sell the plot to someone who can afford the building regulations and prefer to pay the market rent for a single-room. It is a reality that over 90% of the households in Kayole-Soweto stay in single-rooms due to limited and unstable resources. Building regulations suggest that 3 people should live in a 120 square feet (= 11.15 m^2) room but it has been found in Kayole-Soweto settlement that 34.5% of families of over 5 people stay in a single-room of about 12 m^2.

Therefore, to propose 3 or 4 rooms per household in Kayole-Soweto to solve households congestion may not work as suggested by Building By-laws; simply because the targeted families will quickly sublet the house as it is economical for them to settle in one room and let the remaining rooms to get extra money to satisfy other needs like food and education. However, a single-room should not be considered as an answer to housing size in Kayole-Soweto; but it can be used as a transitional solution whilst land security and income generation activities are being improved.

Another major constraint to the improvement of housing in low-income areas is the use of local building materials. At present, efforts are being made to improve local building materials so that they can compete in the market with the imported building materials. It is confirmed that the cost of Stabilized Soil Blocks for walls, is far less than the cost of concrete blocks. For the roof, the sisal cement tiles are cheaper than the concrete tiles. However, in spite of research efforts, very few findings have reached the urban poor and used on large scale.

5.1.2 Housing condition

The vast majority of houses in Kayole-Soweto are built outside the formal framework of building and planning regulations as they are built without any professional advice or any assistance from formal financial institutions. The structures are built incrementally i.e. *'bit by bit'* starting with one or two rooms or foundation only. High-rise flats are surrounded by houses in very poor condition (68.7% of the houses) and some are even constructed on road reserves or in the bank of Ngong River or on electrical way-leave. The kind of building technology and building materials depend to a large extent on the level of family resources on one hand and the land tenure of the household on other hand.

The study found that people who have a document of ownership *'Title Deed'* or document of occupancy *'TOL'*, improve their houses with time and most of the time some effort, small as it is, is made to maintain the house. Unfortunately, a good range of residents has fake documents (Field survey, Sept./Oct. 1999) and further research is needed to clarify the matter.

Another aspect of housing in Kayole-Soweto settlement is that most of the houses are constructed in such a way that they can generate money as there is no other source of

income (see Fig. No.5). The plot is exploited to the maximum and the room subdivisions reflect the will to get as many tenants as possible without considering the tenants welfare like cooking facilities, toilets, bathing places etc. Furthermore, the housing situation is worsened by the tendency of landlords to maximize profits and spend the strict minimum or no money at all to improve rented units, which explains why maintenance of structures in this settlement is very poor. To illustrate the commercial aspect of housing in Kayole-Soweto, the rent for a single-room dwelling varies from Ksh. 500 /= to Ksh. 1,000 /= per month in a settlement where 62.70% of households earn less than Ksh 3,000 /=.

5.1.3 Condition of infrastructure services

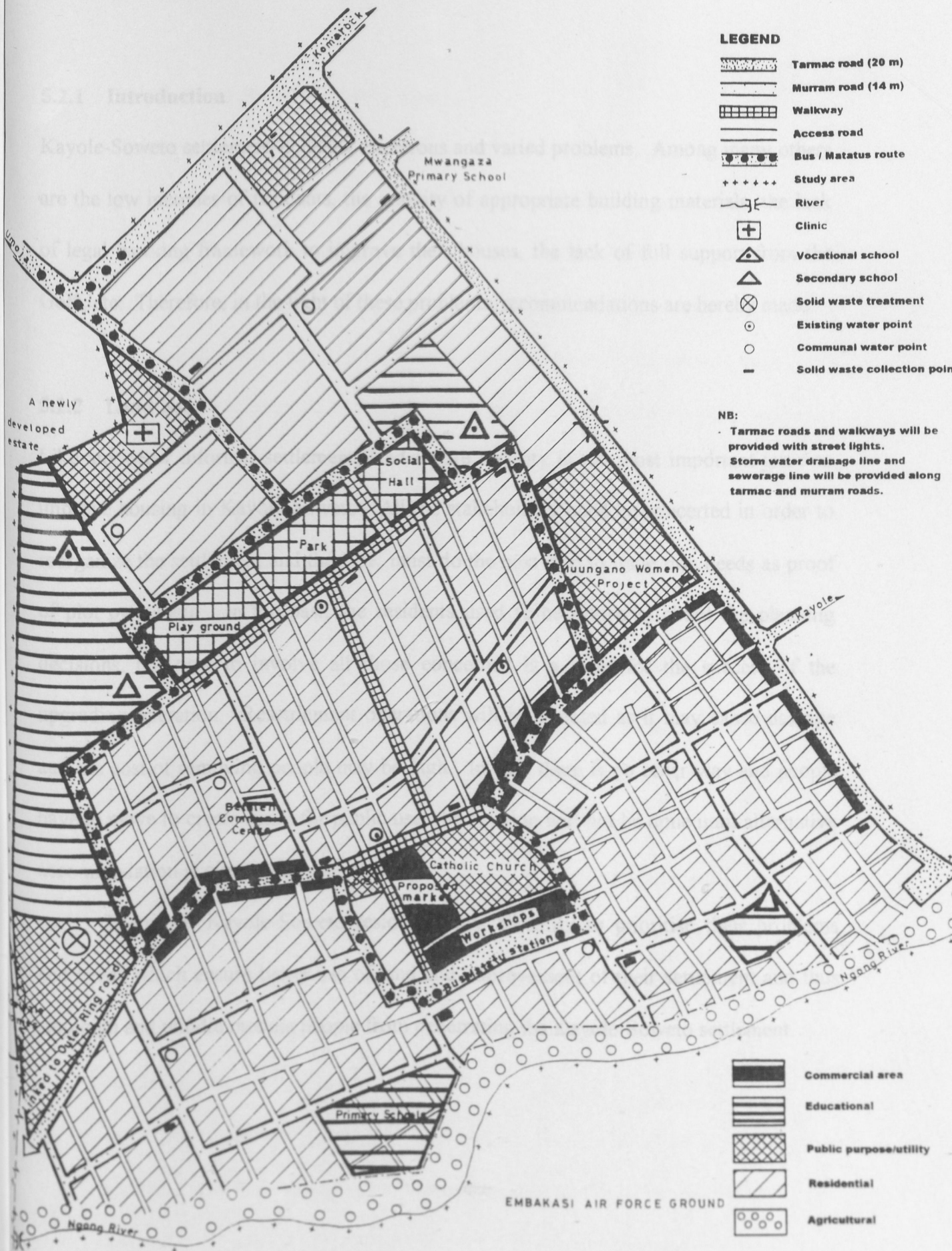
The settlement lacks adequate infrastructure services. Roads are muddy and become impassable during the rainy seasons. They are not even connected to major roads that could link the settlement to city centre. There is no storm water drainage system in the area. As a result, rainwater stagnates within plots and roads and thus damages properties. The area then becomes filthy as the muddy water is mixed with all kinds of waste like solid and domestic waste water which is a threat to human life.

Also, the distribution of water supply is not adequate. The settlement has 3 communal water points and only 5.88 % of household have connected their plots to the NCC water network. Beside the unfair water distribution, there is frequent interruption of water supply in the area which forces the residents to buy water of poor quality at more exorbitant rates from vendors. This is another threat to health and the meagre income of households is again spent to purchase water.

With respect to toilet facilities, 5.3 % of households do not have pit latrines and where they have one, it is in poor condition and is shared by all residents within the plot.

The settlement has 14 nursery and primary schools and 1 secondary school which trains up to form II. They do not have any vocational school. The majority of the primary schools do not have complete classes i.e. from Std 1 up to Std 8. They are also in poor condition and do not satisfy the demand as regards the number of children of school age (5 – 20) which corresponds to 20.5% of Kayole-Soweto population for male and 34.3% for female.

5.2 Recommendations



MAP NO.8	PROPOSED PLAN	By S. NTIRAMPEBA	50 0 50 100 200m

5.2.1 Introduction

Kayole-Soweto settlement is facing numerous and varied problems. Among many others are the low incomes of residents, the scarcity of appropriate building materials, the lack of legal working framework to improve their houses, the lack of full support from the GoK, etc. Therefore, in the light of these problems, recommendations are hereby made.

5.2.2 Land issue

Like any other informal settlement, land tenure security is the most important issue to improve housing in Kayole-Soweto. All the stakeholders must be concerted in order to reorganize the settlement and the GoK must do the next step to issue title deeds as proof of plot ownership. In the past, the residents used to be informed about the planning decisions, but now to involve all those concerned is a must for the success of the upgrading operation. Resettlement operations will be avoided as it may cause damage and the cost of removing people may be high. In case there is no other way and people have to move to create space for public use, the eviction will not be done until alternative accommodation is guaranteed.

Therefore, Kayole-Soweto residents have carefully to prioritise their problems and needs which ensure better use of land and improvement of their settlement and thus stop high and middle income people from penetrating the Kayole-Soweto settlement.

5.2.3 Physical and Social Infrastructure

- Access to safe water for all has gained national attention; unfortunately this is not yet well translated on the ground especially in Kayole-Soweto where residents have to walk long distances to fetch water or alternatively buy water of unknown quality at higher costs from vendors. Since the residents have proved their willingness to buy water, NCC should install at least 6 water points more in the short term (see Map No.8) while it is increasing private connections as individual connections have performed in reducing water wastage and in improving cost recovery. Note that according to WHO standards, one water point should serve 300 to 500 households. For this case of Kayole-Soweto upgrading, a water point should also include washing and bathing facilities.
- The study has revealed that 5.3 % of the residents do not have toilets. The upgrading operation should create space to accommodate communal toilet facilities in the short term; accessible to all residents and motivate the same time residents to build their own toilets. Well-wishers organizations like KAA and others will provide technical support in advising the residents where to locate a toilet and give them technical details of toilets construction bearing in mind the soil conditions and the household size. The building, maintenance and cleaning of the communal toilets will be left under responsibility of the residents working under the umbrella of CBO's.
- For the garbage collection, NCC has proved to be weak, that is why Kayole-Soweto residents should combine efforts to make their settlement clean. Dumping of solid waste everywhere must be discouraged and composting and

incineration system encouraged. Therefore solid waste collection points, incineration, and composting sites are carefully identified in order to avoid the air pollution from waste burning within the settlement (see Map No.8).

- During the wet seasons, stagnant water damages houses and access roads become impassable. A drainage system to collect water is then necessary and the drainage must be designed taking into consideration both its cost and maintenance that residents can cope with.
- KP&LC should intervene without delay to save the lives of children who daily play around an electrical pole of high voltage posted in the school ground. KP&LC/NCC should also install street lights on major roads in Kayole-Soweto for security purposes and regulate the tapping of electricity in the area. This way, the informal sector, as it is the major source of income of Kayole-Soweto residents will expand rapidly.
- In the settlement, there is urgent need to improve roads. The informal business can not progress if the settlement is inaccessible to people from the neighbouring estates and other parts of the city. Therefore, all access roads should be improved to be all weather roads. The major road that goes through the settlement should be tarmacked and thereafter linked to Outer Ring Road (see Map No.1 and Map No.8). Bus stages should be provided along this road as it will be used by public transport buses. Some of the all weather roads will be designed in a way that they can accommodate business activities, this to encourage small-scale activities in the settlement.
- As there is no health facility in the settlement, a clinic is also needed within the settlement to provide the first treatment before patients are transferred to better

equipped health facilities. The clinic should have a pharmacy and a laboratory. Through government channels and support, well-wishers will provide staff and drugs. The running and maintenance should be left to a strongly and organized CBO.

- In Kayole-Soweto, educational facilities are scattered every where within the settlement and sometimes 3 or 4 schools are close to each other. Those schools lack appropriate books as well as a proper studying environment. Government must come in and provide skilled teachers and educational materials. According to the average number of children going to school (31.35 %), at least one vocational training school and three secondary schools should be constructed. For space requirements, the Physical Planning Handbook states that each class should not exceed 40 pupils and a single stream should accommodate 160 pupils, double stream 320 pupils and triple stream 480 pupils (GoK, 1987). These schools must remain accessible to the poor and one of them should have boarding facilities to cater for the orphans, street children and other homeless children.
- Through the field survey, this study revealed that the settlement lacks social and cultural facilities. The only recreation facilities in place are bars. This implies that the youth have to walk up to neighbouring estates to get recreation facilities or alternatively end up in illegal recreation activities. Therefore, the settlement needs a communal and accessible place where they can develop their recreation skills.

5.2.4 Building Code and Building By-laws

- The process of land allocation in Kayole-Soweto has been done with a mixture of laxity and corruption. Good examples are the current market which is located on

the road and the multi-storey buildings erected without approval; all these done under the nose of local authorities.

If the NCC does not intervene, lives in Kayole-Soweto are in danger. Are those tall buildings that are coming up taking into account the Building Code which is explicit in By-laws 52-93 about the structural requirements for walls, dimensions, weather resistance and maintenance? For instance, the Building Code states that:

> *" Foundations of every building should be so designed and constructed as to sustain the combined dead load of the building and imposed vertical and lateral loads and to transmit these loads to the ground shall not cause such settlement as may impair the stability of the building, or of adjoining works or structures; and taken down to such a depth or be so designed and constructed as to safeguard the sub-soil.".*

An inspection commission for Kayole-Soweto settlement should be set up to investigate the matter and make a report as regards the building requirements including proper and approved plans, lead-bearing, walls, siting, drainage, and space around the multi storey-structures.

As known, public interest must prevail over individual greed and the City Council Planning Department should prosecute the defaulters. Also, City Council must anticipate housing problems in advance instead of reacting to crises by proper planning and re-enforcement of planning regulations.

Although Building By-laws and Planning regulations are a pre-requisite to a healthy living environment, the Building Code 68 is outdated and seems to address the needs of a limited number of the population (According to Financial Review of September 21st, 1987:7, 70% of the total salaried population in urban areas belong to the low-income group. The middle income group comprises

about 25% of the country's population and 5% are of high-income group). Indeed, as the housing and population census report (1996:6) states :

> *"The current Building By-laws and Planning regulations have tended to favour high income earners who are a minority by specifying very high standards. The Grade II By-laws, which were meant to be friendly to low-income earners have not been adopted by many local authorities".*

Therefore, the reviewed Building Code 92/95 should be adopted by local authorities to make it possible for the Kayole-Soweto residents to build themselves adequate shelter. To achieve this objective, the local authority should provide clear guidelines to improve housing conditions in their area.

- Housing administration in Kenya is regulated by a series of Parliament Acts such as the Building Code, Public Health Act, Physical Planning Act, Local Government Act, and all these acts are formulated by uncoordinated bodies. Land allocation in Kayole-Soweto is under the responsibility of the Provincial Administration through Local Chiefs who lack the professional skills to understand and implement the housing requirements. This has led to the chaotic situation of land grabbing, double allocations of plot, arbitrary harassment and evictions, etc. To prevent such problems, Parliament Acts related to housing should be combined in one single act to facilitate easier interpretation of the acts and land allocation should be done with professionalism and integrity.

5.2.5 Implementation strategy

As discussed throughout this study, GoK has failed to provide healthy living environment in Kayole-Sowet settlement. However, there is still hope that GoK has not given up and can do '*something*' for Kayole-Soweto residents by acting as facilitator in the Kayole-Soweto Upgrading Operation. The operation requires proper coordination between the public, private, and informal sector whereby financial, institutional, and human resources are mobilized to bridge the gap '*needs/demand*' of Kayole-Soweto residents.

The main aspect of this partnership is to assess what Kayole-Soweto residents can afford and what local market can provide. Therefore, the fruit of this strategy is to share risks between all stakeholders while maximizing return for the benefit of all the participants that are public/private sector and Kayole-Soweto residents. The cornerstone leading to success of this operation is mainly based on the following:

(i) Educational training and sensitization programme:

Residents of Kayole-Soweto have a great role to play to improve their living environment. Government and professional bodies have the duty to ensure that Kayole-Soweto living environment is healthy but changes can not be done without Kayole-Soweto residents. All the concerned i.e. GoK, NGO's, CBO's, and Individual will provide more educational training especially in the field covering social organization and appropriate technical construction methods.

(ii) CBO's reinforcement:

Community organizations in Kayole-Soweto are weak. The study identified only 4 CBO's with active members who do not exceed in most cases 30 members. These CBO's are supported by NGO's like Shelter-Afrique, World Vision, Churches etc.; but the NGO's impact is not visible in the field. The weakness of CBO's then affects negatively potential collective actions such as garbage collection, road maintenance, water supply management etc. To overcome this problem and undertake efficient collective action, the residents should develop a strong and coordinated community based network to attract GoK and NGO's assistance. The strong CBO's network will be required to collect contributions from the residents and mobilize them in labour provision.

(iii) Fund raising:

In most cases, low-income people are not eligible to get a housing loan due to the stringent terms of lending like high interest rates, short-term repayment periods that make the monthly repayment unaffordable, collateral requirements, etc. With better understanding between all actors in the upgrading operation (residents, CBO's, NGO's, and GoK), a loan can be advanced to the local community through NGO's or CBO's credit scheme. To minimize the magnitude of the loan, the community will first demonstrate their solidarity through self-help spirit and '*Harambee*' scheme. Furthermore, informal business is prospering in that area and local artisans can make great impact on employment creation with

technical, economic and administrative support. For the fund to build social and physical infrastructure, it must be recovered indirectly through user charges and rates instead of harassing the individual plot owners to recover the infrastructure expense.

In short, the implementation strategy can be summarized as follows:

Programme	Objectives	Actors	Time frame
I. Land acquisition	1. Issues of title deeds 2. Encourage optimal use of Land. 3. Avail land for physical and social infrastructure.	1. Community 2. Politicians 3. GoK	Immediately
II. Provision of physical infrastructure	1. Increase up to 6 the number of communal water points. 2. Construction of at least 3 communal wet rooms having washing, bathing and toilet facilities. 3. Construction a sewerage network. 4. Construction of main drain to collect rain water. 5. Improve solid waste management i. e. proper use of dumping site and solid waste collection points.	1. Community 2. CBO's 3. NGO's 4. NCC	Continuous

II. Development of appropriate technology	1. Adopt appropriate and low-cost building technology. 2. Employment generation 3. Proper organisation and location of workshops.	1. Community 2. CBO's 3. ONG's	Immediately
V. Housing	1. To improve the quality and quantity of housing stock. 2. To reduce the level of overcrowding. 3. To eradicate mixture of business and housing.	1. Community 2. CBO's 3. NGO's 4. Private developers 5. Financial institutions	Immediately
. Transportation network	1. Improve roads condition. 2. Build new roads to open further development areas. 3. Construction of terminal facilities.	1. CBO's 2. GoK 3. NCC 4. Business community.	Long term
I. Social infrastructure	1. Construction of health centre. 2. Rehabilitate and adequately relocate the existing primary schools. 3. Construction of two secondary schools and two vocational schools. 4. Construction of social hall.	1. CBO's 2. NGO's 3. Business community 4. M O H 5. Ministry of Roads and Public Works.	Long term

5.3 CONCLUSION

The study established and clarified the complex problems that are facing Kayole-Soweto settlement residents. Those are specifically socio-economic problems, housing and environmental problems. All these require urgent intervention. The link between income level and housing conditions has been established. Therefore, it is the role of GoK to articulate legislative, institutional and financial frameworks that can allow Kayole-Soweto residents to improve their living conditions.

Also, housing improvement can induce families to increase their productivity as it mobilizes domestic savings. However, experience indicates that improving housing can have serious effects on rents and make them unaffordable to the urban poor who are then forced out of the upgrading operation and left worse-off than they were before. For this reason, an increase in income levels of households is a must for the success of the scheme. For instance, the promotion of small-scale businesses and small scale production within Kayole-Soweto can improve the incomes of the residents while at the same time support the improvement of structures. The provision of physical and social infrastructure can also offer opportunities for employment and thus increase the income levels of households in the settlement.

Another important aspect of this upgrading operation is that it is an entry point to learn skills for some residents and to develop experience for others and thus create potential for new small enterprises to start and others to grow up.

Finally, a study on housing in a settlement of over 30,000 people settled on about 140 hectares of land within a short time was not a simple task. Therefore, there is need of further research to fill the gaps that this study would not deal with in detail like to count

Kayole-Soweto residents, to investigate the relation between land ownership and structure ownership, better understanding of Kayole-Soweto residents; a task that could not be achieved through only one or two barazas. Though, the recommendations made trace the processes that the Kayole-Soweto upgrading operation should follow.

Now, all stakeholders, in particular Kayole-Soweto residents and decision-makers, have a first hand tool of great utility if housing conditions in Kayole-Soweto informal settlement are to be improved.

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APPENDIX NO.1: HOUSEHOLD AND BUSINESS QUESTIONNAIRES

HOUSEHOLD QUESTIONNAIRE

Declaration: "*Any information given will be used for academic purposes only, and not for any other purposes*".

Questionnaire N° :.....

Date of interview :.....

Name of Respondent :.....

Plot N° :.....

I. Background Information of the household head

1. Name :.....
2. Age :.....
3. Sex: Male ☐ 1 Female ☐ 2
4. Marital status:

   Single ☐ 1 Married ☐ 2 Widowed ☐ 3 Separated ☐ 4 Divorced ☐ 5
5. Education level

   None ☐ 1 Primary ☐ 2 Secondary ☐ 3 University ☐ 4 Other training ☐ 5

6. Number of people in the household :

Relationship with H/H head	Age	Sex	Education level	Occupation	Income
1.					
2.					
3.					
4.					
TOTAL					

7. How long have you lived in this house?

8. What is your last residence?.....

II. Welfare indices

9. What is your occupation ?

Employed ☐ 1 Unemployed ☐ 2 Self-employed ☐ 3

10. If employed, state the nature of employment

Formal sector ☐ 1 Informal sector ☐ 2

11. Do you have any other source of income?

Yes ☐ 1 No ☐ 2

12. What is your average monthly income in Ksh.?

Below 1000 ☐ 1 1001-2000 ☐ 2 2001-3000 ☐ 3 3000 and above ☐ 4

13. How much do you spend per month on the following in Ksh.?

1. Rent per month :.....
2. Food :.....
3. Water :.....
4. Education :.....
5. Health :.....

6. Clothing :.....
7. Fuel :.....
8. Housing improvement:.....
9. Saving :.....
10. Other (specify) :.....

III. Landlord ownership

14. Do you own this plot?

Yes	No
☐ 1	☐ 2

15. If yes, what is the type of ownership

Freehold	Leasehold	Others (specify)
☐ 1	☐ 2	☐ 3

16. What is the size of the plot ?.....m^2
17. How much is occupied by structures ?..... m^2
18. How did you acquire this plot ?

Inheritance	Government	Purchased	Others (specify)
☐ 1	☐ 2	☐ 3	☐ 4

19. If purchased, at what cost ?.....Ksh.
20. When did you bought the plot ?.....

IV. Housing

21. Nature of occupation

Owner occupied	Rented	Owner's representative	Family ownership (living rent free)
☐ 1	☐ 2	☐ 3	☐ 4

22. If owner occupied, state whether

Purchased	Constructed	Inherited
☐ 1	☐ 2	☐ 3

23. What was the source of the housing finance?

Own savings	Loan	Community Based self-help group	Others (specify)
☐ 1	☐ 2	☐ 3	☐ 4

24. Have you ever had credit advanced to you for house improvement?

Yes	No
☐ 1	☐ 2

25. If yes,

1. Amount :.....
2. Sources :.....
3. Purpose :.....
4. Repayment period :.....

26. Are you having problems / Did you have problems in repayment?

Yes	No
☐ 1	☐ 2

27. If yes, what kind of problems, what is causing/caused them and how do you intend to solve them/did you solved them?

.....

.....

.....

28. Indicate the housing conditions of structures within this plot n°:.....

Number of units	Rooms in structure	Total floor space	Remarks
1			
2			
3			
4			

29. What are the non residential activities in this plot

Tailoring	Salon	Butchery	Café	Others(specify)
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

30. What is the condition of the main house ?.....

Permanent	Semi-permanent	Temporary
☐ 1	☐ 2	☐ 3

31. How many rooms does the main house have?

Room	Number	Remarks
1. Bedrooms		
2. Living rooms		
3. Toilet		
4. Kitchen		
5. Bathroom		

32. Building materials of the main house:

1. Roof :

1. Iron sheets ☐
2. Tiles ☐
3. Grass thatch ☐
4. Others (specify) ☐

2. Wall :

1. Timber ☐
2. Bricks ☐
3. Concrete blocks ☐
4. Iron sheets ☐
5. Quarry stone ☐
6. Others (specify) ☐

3. Floor :

1. Cement ☐
2. Wood parquets ☐
3. Tiles ☐
4. Earth ☐
5. Others (specify) ☐

33. How old is the house? .....

34. Condition of the main house :

1. Very bad ☐
2. Bad ☐
3. Good ☐
4. Very good ☐
5. Excellent ☐

V. Water Supply and Sanitation

35. Source of water :

1. On plot ☐
2. Water kiosk ☐
3. Itinerant water vendor ☐
4. River/streams ☐
5. Any others (specify) ☐

36. Distance to water source:

Less than 500 metres	500-1000	1000-2000	More than 2000
☐ 1	☐ 2	☐ 3	☐ 4

37. How many litters (Jerry cans = 20 litres) do you use per day?.....

38. What do you think are the major problems as far as water is concerned?

Inadequate (Intermittent)	Contaminated	Expensive (How much per month)
☐ 1	☐ 2	☐ 3

39. What do you think are the likely solutions?

.....

.....

.....

40. How do you dispose your garbage ?

1. Throw in pit ☐
2. Throw by roadside ☐
3. Communal receptacle ☐
4. Others (specify) ☐

41. What sanitation method do you use ?

1. Private pit latrine ☐
2. Shared pit latrine ☐
3. Communal pit latrine ☐
4. Others (specify) ☐

VI. Communication and Transportation

42. What modes of transport do you use to place to of work ?

1. Walk ☐
2. Bicycle ☐
3. Matatu ☐
4. Kenya Bus Service ☐
5. Kenya Railway ☐
6. Private car ☐

43. What is the distance to the nearest:

1. Telephone :.....
2. Post office :.....
3. Bus stop :.....

VII. Energy

44. What are the major sources of energy do you use for cooking/for lighting ?

1. Firewood ☐
2. Kerosene ☐
3. Charcoal ☐
4. Gas ☐
5. Electricity ☐
6. Others (specify) ☐

45. What problems do you face in the process of getting your energy requirements

.....

.....

.....

46. What do you think are the likely solutions to the problems?

.....

.....

.....

VIII. Major problems

47. What are the major problems you face in general?

1. High rental charges ☐
2. Drainage ☐
3. Overcrowding ☐
4. Garbage collection ☐
5. Roads ☐
6. Water supply ☐
7. Others (specify) ☐

VIII. Community participation

48. Are you involved in any community based organization ?

Yes	No
☐ 1	☐ 2

49. If yes, what development activities are you engaged in?

.....

.....

.....

50. How did they start, when, why and by who?

Organization name	Active/Dormant	When started	Reason for formation
1.			
2.			
3.			
4.			

51. Which role are you willing to play for the development of your settlement?

52. What future do you see for this settlement?

.....

.....

.....

Thank you for your cooperation.

BUSINESS ACTIVITIES QUESTIONNAIRE

Questionnaire No. :.....

Date of interview :.....

1. Name of the interviewee :.....
2. Type of business :.....
3. Duration of existence :.....
4. Number of employees :.....
5. Age of proprietor :.....
6. Education background :.....

No schooling	1	☐
Primary	2	☐
Secondary	3	☐
College/University	4	☐

7. Mode of operation:

Partnership	1	☐
Co-operative	2	☐
Private company	3	☐
Public company	4	☐

8. Where do you get your supply from:

Kayole-Soweto	Other Estate (specify)	CBD	Outside Nairobi (specify)
☐	☐	☐	☐
1	2	3	4

9. What problems do you experience in the supply ?.....

.....

.....

10. Give suggestions how to solve them ?.....

.....

.....

11. Where is your market reach?

Local area	Other estates	Outside of Nairobi city
☐	☐	☐
1	2	3

12. What problems do you experience while marketing commodities?.....

.....

.....

13. Give suggestions as how those can be solved :.....

.....

.....

14. How big is your initial/recurrent capital investment?

15. Do you consider this amount adequate for your trade needs?

Yes	No
☐ 1	☐ 2

16. What problems do you encounter in your daily operations ?.....

.....

.....

17. Give suggestions as how to overcome these problems:.....

.....

.....

18. Have you received any training on elementary trade practices ?

Yes	No
☐ 1	☐ 2

19. If yes, do you find this training adequate?

Yes	No
☐ 1	☐ 2

20. If not, explain:.....

.....

.....

.....

THANK YOU FOR YOUR COOPERATION.

APPENDIX NO. 2: MAIN POINTS OF THE BUILDING CODE

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

Building materials	By-laws 32	No person shall use or permit or cause to be used in the erection of a building any material which is not: - of a suitable nature and quality for the purpose for which it is used, - adequate mixed or prepared, - applied, used or fitted in a proper manner so as adequately to perform the function for which it is designed.
Walls	By-laws 52	All walls built of stone, bricks or blocks shall be hard, durable and suitable for the purpose for which they are used.
	By-law 65	Every external wall of a domestic building shall adequately resist the penetration of rain.
	By-law 66	No wall shall permit the passage of moisture from the ground to the inner surface of any building or any part thereof.
	By-law 72(b)	Every external wall of a small house (dwelling house of a capacity of less than 560 cubic metres, but does not include a flat) shall have a resistance of internal fire of half an hour.
	By-law 77	External wall of any building other than a small house, shall, unless otherwise provided for in these By-laws, be non-combustible throughout and a fire resistance of two hours.
	The code also provides for various thicknesses of walls ranging from 215 millimetres to 762 millimetres depending on height and length.	

Roofs	By-law 94	A roof shall be so covered as to afford adequate protection against the spread of fire into the building.
	A roof shall be deemed to satisfy the above requirements if it is covered with one or more of the following materials: - Natural slates, or slabs of stone, - Tiles or slabs of burnt clay or concrete, - Slates, tiles or sheets of galvanized steel, or of other not less suitable materials, of an approved thickness. - Metal sheeting covered on both inner and outer surface with bituminous materials, or a similar approved weather-resisting protective covering, - Glass tiles or sheets, or glass bricks or blocks in concrete on metal frames, - Lead, cooper, zinc or aluminum, of an approved thickness, - Asphalt mastic with sanded or graveled finish containing not less than 83 per cent of mineral matter and laid not less than 18 millimetres thick on a suitable base, - Organic based roofing felt laid directly on a base of non-combustible material; not less than 13 millimetres thick, and - Organic based roofing felt covered with non-combustible materials, not less than 13 millimetres thick, or with bituminous macadam composed of fine gravel or stone chipping with not greater than 7 per cent of bituminous material.	
	By-law 96	The roof of a building shall be weatherproof.
Floors	By-law 98	Every domestic building shall adequately resist the passage of moisture from the ground. For a floor to satisfy this requirement, it should be such that its structure or its finish is impervious to moisture or has a damp proof layer.

Refuse disposal	By-law 139	Every domestic building shall be provided with approved means of refuse disposal.
Water supply	By-law 143	Plans of a building shall show that an approved supply of wholesome water sufficient for the purpose to which the building is to be put will be provided.
Drainage	By-law 168	Unless the council otherwise agrees, plans of every house must show satisfactory provision for the drainage of the building.

APPENDIX NO. 3: SIGNED BLANK TOL FORM

OFFICE OF THE DISTRICT OFFICER,
EMBAKASI DIVISION,
P.O BOX 30124
NAIROBI
24th October, 1990.

REF: EMB/LND.16/42/70

RE: TEMPORARY ALLOCATION OF PLOTS
EX - MUOROTO RESETTLEMENT SCHEMES:

TO: MR/MRS/MISS .....

ID/NO .....

This is to notify you that you have been allocated a temporary plot No..... which will be shown to you by the Surveryor in-charge from the City Commission at the site.

Please ensure you retain this slip for production during inspection by the Nairobi City Commission and Administration Officials.

However the temporary allocation is still subject to all City Commission by-laws iff force.

(P. OTIENO)
DISTRICT OFFICER
EMBAKASI DIVISION

DISTRICT OFFICER
EMBAKASI DIVISION
NAIROBI