SELF HELP HOUSING AS AN ALTERNATIVE STRATEGY OF PROVIDING AFFORDABLE HOUSING TO THE LOW INCOME URBAN HOUSEHOLDS IN KENYA

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BY

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ABSTRACT

The purpose of this study is to investigate the viability of self help housing production as a possible option of providing housing to the low income residents in Kenyan urban areas. The idea of self help in housing development is based on the utilization of own labour and management skills in the construction process in order to reduce the overall cost of housing construction. The application of this idea is tested by relating self-help methods of construction to a case study of Dandora Housing Project, a large site and service housing scheme in the City of Nairobi, consisting of 6,000 serviced plots approximately.

The study identified three dominant external factors that influence the amount of housing produced through self-help processes in the Kenyan urban areas. These factors are: the availability of serviced land; availability of capital financing for housing construction at individual and government levels; and the type and level of housing and planning standards required by public authorities.

The results from the investigation of self-help methods of construction applied in the Dandora project shows that there is a good potential of self-help housing production in Kenya. Participants in this project have demonstrated that they can tap otherwise unutilized labour and financial resources, as well as management skills to build their own dwellings. It is also true that a substantial reduction in construction costs is realized in self-help housing projects. Factors contributing to the savings in costs include: the use of special sources and informal contacts to acquire building materials; the selective hiring of specialized labour; the general reduction of materials used; and the maximum utilization of own labour and mutual help from friends and relatives.

According to the findings from this study, the key to the success of self help housing production in Kenyan urban areas is the availability of serviced plots for low income urban families. Also the present housing legislation requires to be reviewed in order to allow smaller plots and single room self contained dwellings as the minimum solution for low income urban residents.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Studies undertaken in Kenya during the last twenty years reveal that the vast majority of the Kenyan urban population have very low absolute incomes.[1] According to the 1979-1983 National Development Plan, 60 percent of the families living in urban areas earn less than Sh. 900 (nine hundred Kenyan Shillings)[2] per month which is equivalent to $70 U.S. approximately. Parallel to this low level of households income are very high prices of housing, both for renters and buyers. The cost of constructing a conventional minimum-standard dwelling unit in the urban areas is in excess of Sh. 44,000 at 1978 prices. Adjusting for inflation at 10 percent per year this cost amounts to Sh. 70,000 at 1983 prices. The Ministry of Works and Housing defines a minimum standard house to consist of two habitable rooms, a kitchen, one toilet and a shower.

Given the prevailing low household incomes, the high cost of construction renders it impossible for over 70 percent of the urban population to afford decent housing. As a result they are forced to reside in overcrowded conditions in 'standard housing'. Those far down on the income ladder resort to living in slums and squatter settlements. In Nairobi alone 37 percent of the population live in squatter settlements, and a high proportion of squatters to total population have been recorded for Mombassa and Kisumu, the next two largest towns in Kenya after Nairobi.

1.2 Purpose of Study

The primary objective of this thesis is to assess the viability of self-help housing in Kenyan urban areas. Self-help in housing production is based on the utilization and organization of own labour and management skills in the construction process to reduce the overall cost of housing construction.[3] The application of this idea is tested by relating self-help methods of construction to a case study on one of the urban housing projects employing self-help methods of housing development and management. The project chosen for the case study is Dandora Site and Service project in Nairobi.

1.3 Scope and Limitations

The discussion in this study is limited to housing development in the urban areas. While traditional self-help, where no paid labour is involved, has been successfully utilized over the ages, its successes have largely been observed in the rural areas where social interaction and the concept of community belongingness is of high intensity. A similar cohesive community is virtually non existent in the urban areas. Unlike the rural areas high population densities in urban areas necessitate the application of building and planning standards to control development and also for purposes of public health and safety.

In this study 'low cost housing' and 'low-income housing' are used to denote all housing being occupied or earmarked for ownership or occupation by low income families. Low income families are those with the head of each family earning between Sh. 300 (U.S. $22) and Sh. 1,200 (U.S. $88) per month.

We recognize that the informal sector plays an important role in the production of housing in urban areas.[4] But since most of the informal sector activities are not documented, the data used in this study largely excludes the informal sector operations.

1.4 The Concept of Self-Help Housing

It is difficult to get a single definition that can incorporate all aspects of self-help housing construction. Some researchers relate self-help housing to the methods used by squatters to construct and improve their housing with or without external assistance. Examples of this type of self-help are illustrated by J. Turner and R. Fichter, in Freedom to Build (1972) and by G. K. Payne in his evaluation of the Gecekondus of Ankara (1982) to mention a few.[5]

In contemporary literature writers have come to accept another form of self-help that recognizes the management qualities of plot owners in the construction process even though they do not necessarily construct the houses with their own hands.[6] In this type of self-help the plot owners are provided with financial assistance in the form of materials loans. The government takes the responsibility of providing public and community facilities for the entire development. This form of self-help has encountered some powerful backers such as the World Bank and the United Nations.[7]

The definition which best suits the two types of self-help construction processes is given by N. O. Jorgensen.

> With respect to housing, self-help does not necessarily mean that the individual or group does not employ paid labour, but it implies that they organize and manage those employed as well as their own inputs. To the extent these inputs are unpaid for in cash or in easily convertible goods this is a measure of the self-help efforts.[8]

Within the context of this study, self-help housing projects incorporate government sponsored housing schemes where the individuals are assisted to construct and improve their own housing while the government and local authorities provide public services and community facilities.

1.5 Premise

The main concern of an individual aspiring to buy or construct his own house is the cost he has to pay for the house. His decision on the type of house he contemplates to invest his resources on, largely depends on the resources available to him and the satisfaction he expects to derive from the house.

Low income families in urban areas have limited options open to them regarding their choice of accommodation because most of them cannot buy or construct dwellings which satisfy the standards required by the authorities. Since the prices of formal housing are too high for them to afford, they revert to renting accommodations available in the market; the type of housing they choose to rent being dependent on the portion of their monthly incomes they can allocate for rent.[9] If the rent to income ratio is too high, the choice is to continue consuming more housing and less of other household necessities or move to relatively poorer accommodation of lower rent, in order to avail a larger portion of family income for other needs.

In instances where incomes are very low, nearly all of the family income is used to purchase basic necessities like food, health care, education and clothing, that little or none of the income is left to pay for shelter. The obvious place for such a family to seek shelter is in squatter settlements.[10] Where conditions allow, the family may temporarily

lodge with friends or relatives but ultimately it has to look for the type of shelter it can afford itself.

The hypothesis in this study is that contractor-built conventional housing continues to cater to the middle and high income categories and the bulk of the urban population which is in the low-income brackets cannot afford this type of housing. It is through self-help methods of construction and delivery of housing that the urban poor may lay some hope of affording decent accommodation in the expanding cities and towns of our developing Kenya.

1.6 Urban Housing Problem: A Historical Overview

The urban housing problem is a subject of much concern in the developing world. Of all the problems facing urban residents in developing countries, the lack of decent housing is usually the most apparent. In Kenya the housing problem dates far back into the colonial period. However it was during the transitionary period from colonial rule to political independence that major problems started to surface.

Before 1963, the year that Kenya attained its political independence from Britain, the African population in urban areas was relatively small. The restriction of movement imposed upon the Africans by the Colonial Administration largely reduced the number of Africans seeking residence in the towns.[11] Wages for the African employees were substantially low to support a family in the towns. The Carpenter Report in connection with the low wages for African employees in 1954 notes:

> "We have to face up to the fact that, for the majority of the urban African labour force, married life is at present only obtainable at the sacrifice of health and decency."[12]

During the colonial period, by a system of racial laws and covenants, the Africans were segregated and confined to the poor sections of the urban areas. The government encouragement of a differential pattern of urban development as confirmed by the Simpson Report of 1913 further aggravated the housing problem of the poor Africans. This report states;

> In the interests of each community and the healthiness of the locality and country, it is absolutely essential that in every town and trade centre there should be a well-defined and separate quarters for Europeans, Asiatics and Africans.[13]

The trend of housing development invariably followed racial boundaries. The Europeans were having the best housing followed by the Asians, while the Africans took the spoils in servant housing of their masters and those in the general labour force resided in poorly constructed and serviced housing in designated African estates. Segregation was accompanied by a general denial of public services and community facilities to the Africans.[14]

The first major effort by the government to provide housing for the urban poor was outlined in the Housing Ordinance of 1943. The Ordinance urged local authorities to provide housing to the Africans at subsidized rents and instituted a stricter enforcement of legal obligations to employers to provide accommodation for their workers. It also allowed Africans to build housing in towns using temporary materials.[15]

To encourage and facilitate the construction of employer-provided housing, the Commissioner of Lands later in 1943 issued policy guidelines by which cheap land was to be made available to employers for the construction of housing for their African employees.[16] In Nairobi major employers utilized this opportunity and constructed single room, dormitory type housing for their workers.

Despite the government effort to improve housing conditions and guaranteeing cheap land to employers, the housing situation continued to deteriorate. In an effort to arrest this situation the Vasey Report of 1950 recommended a direct involvement by the public sector in the development of African residential quarters in the form of site and service projects.[17] The administration considered the Vasey Report radical and its recommendations were not implemented.

A follow-up of the Vasey Report was The East African Royal Commission in 1955 which favoured the creation of an African middle class in urban areas based on land and property rights. It relaxed some of the earlier policy guidelines to allow the wealthier Africans to participate in the production of African housing.[18]

Although the government policy changed towards the latter half of the 1950's in the direction of encouraging African middle class in towns, construction activities fell drastically during this period and did not appreciably recover until 1967, four years after Independence. The value of private buildings constructed in the main towns fell from Sh. 161,164,000 (U.S. $11,850,300) in 1959 to Sh. 32,560,000 (U.S. $2,394,100) in 1963.[19]

By 1960, laws restricting the movement of Africans into and within towns were lifted and later abolished after Independence. As a result of this new freedom of movement many people who had no land in the rural areas moved to the towns in search of employment. The rapid increase of urban population that followed exerted tremendous pressure on the already inadequate housing stock in the urban areas.

The challenge to the new independent government of 1963 was to correct the ills left by its predecessor. Housing shortage was acute and most of the housing in the African residential areas required repair or enlargement to accommodate the larger families, as wives and their children were able after Independence to join their husbands in towns without requiring special permits.

In 1964 the government invited a United Nations Mission led by L. Bloomberg and C. Abrams to evaluate the housing conditions prevailing in the urban areas. The mission found that the country was experiencing serious housing problems in the urban areas in the form of acute housing shortage, poor housing quality, and over crowding in existing housing stock.[20] Its recommendations formed the basis of the current urban housing policy.

1.7 Urban Housing Policy

The urban housing policy revolves around the Housing Act, the Rent Restriction Act and the Five Year National Development Plan documents. The Housing Act established the National Housing Corporation in 1967 following a suggestion by the UN mission,[21] with powers to implement housing projects throughout the country and to make loans to local authorities for the construction of housing.

The Rent Restriction Act defines the powers of the Rent Tribunals in regulating house rents. The Tribunals have powers to control rents of dwelling units renting at Sh. 2,500 (U.S. $183.8) or less per month.[22] Rent controls are designed to protect low-income tenants from exploitation by landlords who normally take advantage of housing shortages to increase rents to unreasonable levels. However, it is difficult to maintain house

rents at low levels given the acute housing shortage prevailing in the urban areas.

The current National Development Plan (1979-1983) lays much emphasis on the improvement of housing conditions in both urban and rural areas.

> A central point for every Kenyan family is the home. The family house is valued not only for the shelter and facilities it provides, but for the entire environment surrounding it including accessibility to employment...Because of the special importance of housing, Government takes considerable interest in the entire housing situation and the need for its improvements.[23]

In the urban areas the housing policy aspires to fulfill three basic objectives.[24]

1. To absorb the extra demand caused by urban population growth by increasing the existing housing stock in urban areas;
2. To contain the housing shortfall that exists in major urban centres; and
3. To direct most of the construction finance from government funding to those families in the lowest income brackets whose need for shelter is greatest.

The first two objectives listed above relate to the overall increase in the production of housing by the public and private sectors. The third objective addresses itself to the distribution of national wealth towards a more equitable balance between the 'haves' and the 'have nots'. Most of the public funds earmarked for housing development are used in the construction of low cost housing in the urban areas.

At this point it is important to mention that the government does not advocate incentives such as cash subsidies, housing allowances and tax shelters in order to stimulate development and consumption of housing. One

of the arguments against cash subsidies is that they would have negligible effect on overall housing conditions owing to the high magnitude of the current housing deficit and the large proportion of urban residents in the low income category who require subsidies to afford modest housing. In addition, the government does not have the revenue necessary to support such massive subsidy programs.

Despite the open policy of non-subsidization of housing development, there are many examples where the government has offered construction finance at subsidized interest rates. Latently it subsidizes housing development by buying land in the private market and offering it free for low cost housing development.

1.8 Study Outline

The study is contained in six chapters. In chapter one the concept of self-help as perceived in this thesis is introduced; the purpose of the study is stated and the problem is defined. Chapter two presents the background information required to understand the housing situation in the country. Discussed in this chapter are the demographic characteristics of urban households, availability and demand for urban housing and the supply mechanisms used to deliver low cost housing to urban residents.

One of the factors which make it difficult for self-help construction methods to function well in the urban areas is the complications brought about by housing standards. Chapter three deals exclusively with housing standards relevant in the production of urban low cost housing. Their application is reviewed and the effect they place on the provision of shelter is discussed.

In chapter four, the four types of self-help housing systems encompassed by low cost housing programs in Kenya are analysed. As part of the evaluation of self-help housing production, this chapter brings into perspective the peoples' expectations of policies supporting self-help housing construction and the reaction of the administrators and politicians on the final output obtained from self-help housing programs.

In chapter five the process of self-help housing construction, based on a case study of Dandora Site and Service project in Nairobi is examined. Dandora project is the first major housing scheme in Kenya to utilize self-help methods of housing development. The experiences gained from it provide useful reference for other housing projects employing similar techniques in many urban centres across the country. The purpose of the Dandora case study is to test the hypothesis presented earlier in sub-section 1.5 of this chapter.

Chapter six summarizes the findings of the study. Also in this chapter the conclusions arising from the research, and some policy recommendations are presented.

References

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2. 13.6 Kenya Shillings are equivalent to U.S. $1.0 at August 1983 exchange rates compiled by the Central Bank of Kenya.

3. John F. C. Turner, Issues in Self-Help and Self-Managed Housing, in P.M. Ward (Ed.), Self Help Housing: A Critique, Mansell Publishing Limited, London, 1982, pp. 99-111.

4. The informal sector of the economy includes the activities of all those who work outside the formal economy and monetary transactions. Participants in the informal sector subsist on their often irregular incomes, providing services for themselves or for others in exchange of cash or goods. Normally informal sector actives exclude the services of large institutions such as commercial banks, insurance companies, housing companies, etc. and participants operate outside the government system of planning, taxation and licencing. An in-depth discussion of informal sector activities in Kenya are discussed in I.L.O. Report, (1972), op. cit., pp. 223-232 and pp. 503-508.

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12. Ibid., p. 61.

13. Ibid., p. 53.

14. Ibid., p. 62.

15. G. K. Kingoriah, Policy Impacts on Urban Land Use Patterns in Nairobi, Kenya: 1899-1979, Ph.D. dissertation, Indiana State University, 1980, p. 284.

16. Ibid., p. 285.

17. Herbert H. Werlin, (1974), p. 58.

18. G. K. Kingoriah, (1980), p. 288.

19. R. E. Stren, Urban Development in Kenya and Tanzania: A Comparative Analysis, Institute of Development Studies, University of Nairobi, 1974, p. 1.

20. Ibid., p. 2.

21. Ibid.

22. Before the Rent Restriction Act was amended in 1981, the rent tribunals' power to control rent was restricted to unfurnished dwellings with a 'standard rent' of Sh. 800 or less.

23. Republic of Kenya, Development Plan 1979-83, Government Printer, Nairobi, 1979, p. 170.

24. Ibid., p. 172.

CHAPTER II

URBANIZATION, INCOMES AND THE CURRENT HOUSING SITUATION IN KENYA

We are concerned in this study with examining whether self-help housing provides a viable solution to low income housing problems in Kenyan urban areas. It is therefore necessary to investigate the factors which contributes to the current housing problems and the actions being taken to address these problems. Among the determinants of urban housing conditions is the level and rate of urbanization. Rapid increase of urban population necessitates a matching increase of housing to absorb the extra population. The rate at which new housing is put into the market on the other hand depends on the capacity of governments and individuals to construct housing and the ability of individual households to consume the housing provided.

This chapter discusses the existing situation in terms of demographic patterns, household incomes, affordability, and the supply factors that control the total amount of housing constructed in the urban areas.

2.1 Urbanization

The term 'urban area' is generally defined as an area of high population concentration with a certain level of infrastructural services. But different countries have their own interpretation as to what constitutes an urban area. In most cases the size of the population in a settlement is used to define an urban area.

Canada Mortgage and Housing Corporation takes 2,000 inhabitants as the minimum necessary for a settlement to acquire an urban centre status.[1] Bor and

Smulian in their projection of urban population of Venezuela take a concentration of 1,000 people to constitute an urban centre.[2] Other countries and institutions have used larger population requirements. For example, the European Conference of Statistics at Prague takes 10,000 residents as the criterion of an urban centre.[3]

In Kenya an urban centre is defined as a nucleated settlement sustaining a population of more than 2,000 residents on non-agricultural activities.[4] These centres vary in size from the largest city of Nairobi with a population of 827,000 residents in 1979 to small towns serving as rural centres. The distribution of urban population among the largest seventeen towns is shown in Table 2.1. They account for eighty seven percent of the total urban population. Map 1 shows the location of the important towns in Kenya.

Kenya cannot be classified as a highly urbanized country. In 1948 only 5.1 percent of the national population lived in urban areas, increasing slightly to 7.2 percent in 1962.[5] The total share of the urban population rose from 9.9 percent in 1969 to 14.7 percent in 1979.[6] By the year 2000 it is estimated that 30 percent of the national population will be living in urban areas (see Table 2.2).

Between 1969 and 1979 population censuses the urban population had been growing at an average rate of 7.2 percent annually. If this growth rate is sustained the urban population will be over four times the 1979 level by the turn of the century. (Table 2.2).[7]

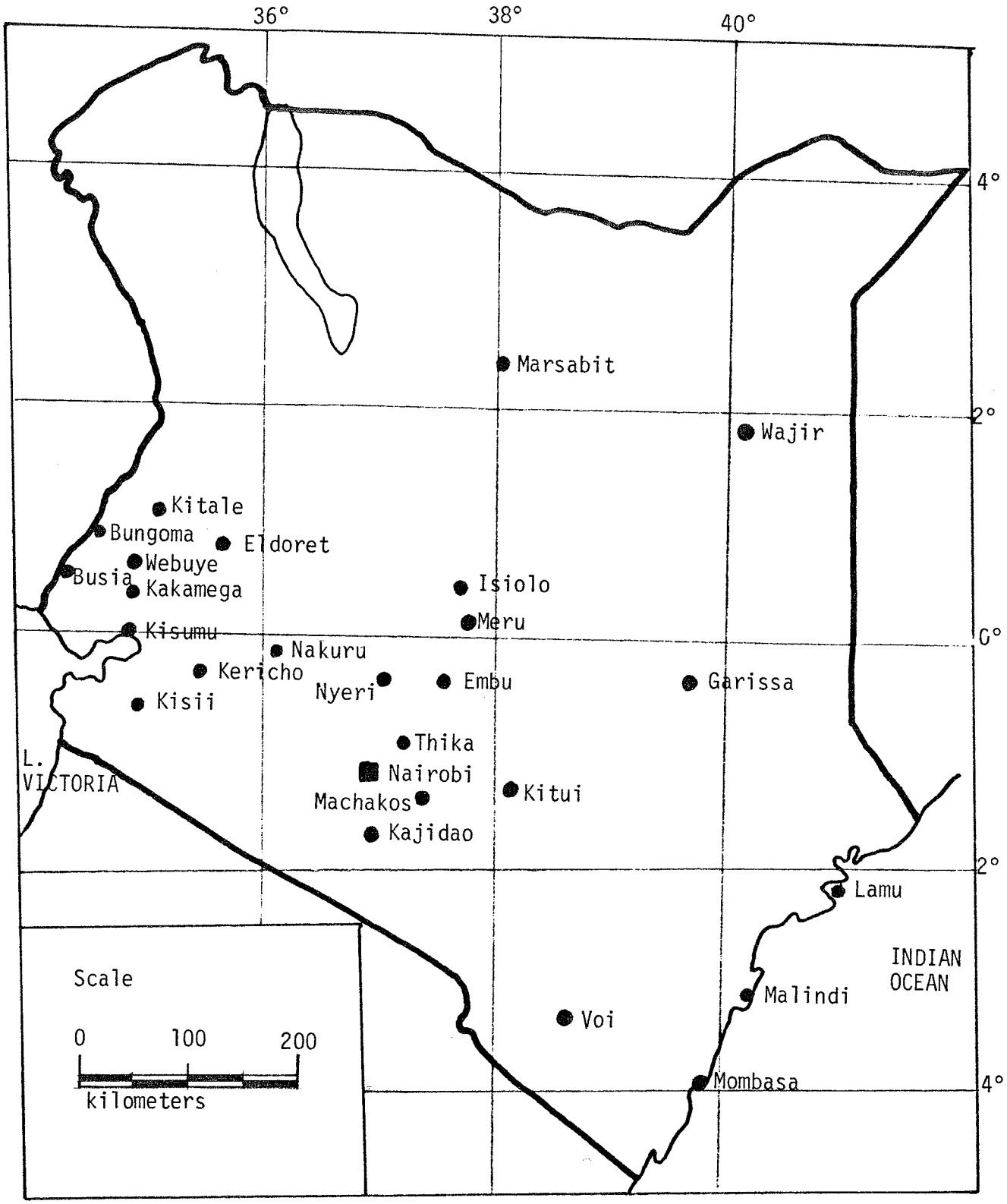
Table 2.1 Distribution of Urban Populations in Major Urban Centres in 1969 and 1979

Urban Centre	Population 1969	1979	Annual Average Growth Rate (percent)
Nairobi	509,300	827,800	5.0
Mombasa	247,100	341,100	3.3
Kisumu	32,400	152,600	16.8
Nakuru	47,200	92,900	7.0
Machakos	6,300	84,300	29.4
Meru	4,500	70,400	31.7
Eldoret	18,200	50,500	10.8
Thika	18,400	41,300	8.4
Nyeri	10,000	35,800	13.6
Kakamega	6,200	32,000	17.8
Kisii	6,100	30,000	17.1
Kericho	10,100	30,000	11.3
Kitale	11,600	28,300	9.3
Bungoma	4,400	25,200	19.1
Busia	1,100	24,900	37.2
Malindi	10,800	23,300	8.0
Nanyuki	11,600	19,000	5.1
Total	955,300	1,909,400	7.2

Source: Central Bureau of Statistics, 1981 Economic Survey.

Note: The urban boundaries were extended between 1969 and 1979 leading to the population of a larger area being covered in 1979 population census.

MAP 1 LOCATIONAL DISTRIBUTION OF MAJOR TOWNS IN KENYA



Source: R. A. Obudho et. al., Development of Urban Systems in Africa, 1979.

Table 2.2 Projection of Urban Population to Year 2000 (in thousands)

Year	Urban	Rural	Total	% of Urban Population
1969 (census)	1,083	9,680	10,943	9.9
1979 (census)	2,171	13,156	15,327	14.2
1980 (projection)	2,327	13,521	15,848	14.7
1990 (projection)	4,663	17,477	22,140	21.1
2000 (projection)	9,347	21,583	30,930	30.2

Source: Central Bureau of Statistics (Kenya), 1960 and 1979 population censuses.

2.1.1 Rural Urban Migration

A great deal of the root causes of migration of people from rural to urban areas in Kenya is not well documented. But various studies have produced some explanations.[8] The factors considered to be related to the root causes of migration are categorized as being either of the 'push' or 'pull' variety. The 'push' factors are those factors which force people to leave rural areas. The 'pull' factors relate to those conditions in the urban areas which attract people to the towns. Both 'push' and 'pull' factors exert their forces simultaneously.[9]

The push factors arise from rural unemployment, poverty and the increasing population pressure on agricultural land leading to the displacement of some of the farm population.[10] The lack of employment opportunities for students graduating from rural schools force these students to move to the towns in search of employment and better living.[11] According to a survey undertaken in 1970, covering eight of the largest

towns in the country, the prospects of finding a job in the towns and the inability of the rural areas to absorb skilled and semi-skilled labour of the rural population remain the two major reasons influencing migrants to drift to the towns.[12] Only a very small proportion of the migrants drift to urban areas to gain access to the services and facilities available in the towns and supposedly non-existant in the rural areas (see Table 2.3). In support of this point the World Bank has observed:

> The use of amenities as such seems of less immediate significance. Use of amentities generally requires payments and is therefore conditional on earning a sufficient income.[13]

Obviously the attraction exerted by the urban centres by virtue of their economic dominance create a strong pulling force in the urban areas. There is a greater tendency of the more educated individuals to migrate in search of higher earnings and better job prospects associated with the towns. Similar prospects also exist for the unskilled and semi-skilled workers.

The fact that migration accounts for about 60 percent of urban population growth, and the migrants are generally poor people and school leavers looking for better employment opportunities in the urban areas, it is reasonable to assume that most of the housing required to cater for population growth is that which can accommodate low income people. As we will show later in this chapter there is presently an acute shortage of low cost urban housing in the country which reinforces the need for low cost solutions to housing problems in the urban areas.

Table 2.3 Reasons for Migrating Among Urban Migrants Aged 15 to 50 Years, 1970 (Percentage)

Reason	Level of Education		Age		Total
	Primary	Secondary	15-22	23-50	
Could not find work	82.8	76.1	79.9	82.6	80.9
Land was not available	3.5	2.1	1.4	5.2	3.2
Could not enter school	2.9	8.1	7.3	0.9	4.4
School not available	0.5	0.7	0.7	0.4	0.6
Lack of amenities	-	0.7	0.4	-	0.2
Other	10.6	12.3	10.3	10.9	10.7
Total	100.0	100.0	100.0	100.0	100.0

Source: I.L.O., Employment, Incomes and Equality in Kenya, 1972.

2.2 Need and Demand for Housing

2.2.1 Housing Need

The relationship between inadequate housing and the capacity of individuals to pay for the accommodations provided in the open housing market has given impetus to government intervention in housing production throughout the Third World.[14] These interventions vary from direct involvement by governments in the construction process and providing the private sector with financial assistance to construct low cost housing, to actual acceptance and recognition of squatters, an occurrence common in many South American countries.[15]

In Kenya, the inadequacy of housing exists throughout the country in both rural and urban areas. But it is in the latter where the inadequacy is more evident and the housing need is greatest due to high population densities.

Housing need embraces the total requirement for shelter, without considering the capacity of families to pay for it. Such need may be expressed as a minimum quality of structure, a maximum rate of occupancy or an upper limit on the proportion of income spent on housing.[16] Other secondary factors associated with housing need includes a maximum of privacy and security, and the critical distance beyond which travel to work becomes too costly.[17]

A realistic way of establishing a fairly objective criterion for housing need is to determine the amount of physical space required to fulfill the minimum housing requirements for those who have not yet achieved these requirements.[18] This criterion has been used to estimate the

housing need of the urban population in Kenya.[19] The need is expressed as the number of dwelling units required to allow each family to occupy one dwelling unit of acceptable standards. The United Nations considers the housing need to be satisfied if every family is accommodated in a house of minimum acceptable standards.[20] In numerical terms housing need is therefore the difference between the housing stock and the total number of families in an area.

There are many difficulties encountered in determining the housing need. On the outset planners encounter practical problems in classifying and enumerating the existing housing stock. Individuals of different ages or families with varying numbers of children have different notions of 'needs'. Different geographical areas may necessitate application of different housing standards.[21] Even some dwellings constructed with poor quality materials within the definition of 'acceptable standards', (standards are discussed later in Chapter III), have shown to satisfy other housing needs by being close to employment areas.[22]

In countries without massive housing shortage and experiencing a relatively slow urban household formation[23] the United Nations estimates that an additional ten dwellings per year for every 1,000 families can satisfy the housing requirement necessitated by population increase and obsolescence of existing housing stock.[24] These countries are highly urbanized and their rural to urban migration has little or no net effect on the urban population growth.

In developing countries the United Nations estimate is far below what is required to meet the housing need. Most of these countries are

highly unurbanized, and they are urbanizing at a very high rate. In addition to the amount of housing necessary to cater for the high population growth, developing countries also find themselves in a situation of massive housing deficits. Inadequacy of construction finance does not even allow them to build enough dwellings to cater to the population increase alone. In which case housing deficits continue to expand.

This situation of massive housing shortage, a high rate of urbanization and inadequate supply of construction finance is what Kenya is experiencing today.

To meet the basic shelter needs the total urban housing requirement has been estimated at some 290,000 units during the 1978-83 Development Plan period.[25] This includes a shortfall of 140,000 units (1978) and a requirement of 30,000 units per year to meet the expected increase in urban households. In Nairobi alone approximately 10,000 new dwellings are needed every year.[26] Since the construction of new houses lags far behind the increase in urban households and there is no chance of eliminating the existing massive backlog, the housing deficit is becoming larger and larger every year.[27]

Table 2.4 represents the resultant household formation in the urban areas due to population increase between 1976 and year two thousand. Between 1980 and the turn of this century approximately 1.6 million additional dwellings are necessary to cater to the increase in urban population.

Obviously it is not possible to construct 1.6 million dwellings in the urban areas within the next 30 years, given the present low production

levels of urban housing in the country. It is also worth noting that the criteria used to determine the housing deficit are designed to exclude all housing which has not been approved by the local authorities. As a result many sound dwellings constructed of permanent materials which do not fulfill all of the requirements of the local authorities are excluded in the housing statistics, thus exaggerating the urban housing deficit.

Table 2.4 New Housing Units Required to Meet Urban Population Growth up to Year 2000

Period	Population Increase ('000)	Dwelling Units Required ('000)
1976 - 1980	684	136.4
1981 - 1985	967	241.9
1986 - 1990	1,369	273.8
1991 - 1995	1,935	387.0
1996 - 2000	2,749	549.8
Total (1976 - 2000)	7,704	1,588.9

Source: Based on population projections on Table 1.3.

Note: To compile the projections in this table we have assumed a household size of 5 persons. This is the same figure used by the World Bank in its population study for Kenya.

2.2.2 Distribution of Income

The level of income is the determinant factor of housing in any setting. At household level it determines the housing services a family can afford. At national scale it reflects a country's capacity to house its population at standards which do not distort investment allocation. Poor

families with little disposable incomes are forced by circumstances to consume fewer housing services while governments faced with adversely scarce resources cannot raise the capital required to finance massive housing programs.[28]

Kenya is among the poorer countries in the world. Its annual per capita income is U.S. $380. In this respect it has little financial resources to fund massive capital development projects. Most if its projects requiring heavy funding and long term finance are sponsored by major foreign institutions like the World Bank, United States Aid for International Development Agency, Canadian International Development Agency, etc.

The per capita income obscures many truths about the structure and distribution of incomes in Kenya. According to a 1972 I.L.O. report "the top 10 and 20 percent of households account for 35 and 55 percent of the total urban households' income respectively, while the lower 25 percent receive a mere 6 percent".[29] The concentration of wealth among few rich individuals has barely changed since 1972.[30] Today many urban households live in absolute poverty. The majority of households incomes is far below the country's per capita income.

The seriousness of the high level of poverty is rightly stated in a World Bank Mission report as follows:

> The (income) problem does not have to be approached in terms of narrowing 'gaps' or redistributing incomes from the rich to the poor,...the real problem is that of poverty, and the real challenge is to raise the level of the majority of the population who have as yet benefitted little from past progress.[31]

Accurate figures for income distribution among the urban households are not available. However, earnings from wage employment for urban resi-

dents in 1977 are shown in Table 2.5. These figures exclude casual labourers, unpaid family workers, the under employed and workers in the informal sector. Including them will no doubt raise the number of households in the lower income category.

From Table 2.5 it is clear that the majority of urban workers receive very low wages. Among the largest 22 towns in the country, 62 percent of the households receive less than Sh. 800 per month which increases to 71 percent when workers earning between Sh. 800 and Sh. 1,000 per month are included (see Table 2.6).

Apart from Nairobi 71 percent of the wage earners receive less than Sh. 800 per month and 53 percent receive a monthly wage of less than Sh. 600 per month (Table 2.6). A comparison of wage levels between various towns reveals that higher wages are prevalent in the larger towns than in the smaller towns. As an example, in Thika and Eldoret towns over 80 percent of the employees receive less than Sh. 1,000 per month while 35 percent of Nairobi employees have monthly wage incomes in excess of Sh. 1,000.

Another distinct characteristic of employment distribution between the urban centres in Kenya is that the proportion of people in wage employment is higher in Nairobi than in the other towns. Out of a population of 152,000 residents in Kisumu, only 8.6 percent are in wage employment.[32] Mombasa with slightly more than double the Kisumu population has 20 percent of its population in wage employment.[33] In Nairobi one in every three persons is employed.[34]

Since it has been established that the majority of urban residents rely on wage incomes for their living, towns with higher employment levels

Table 2.5 Distribution of Wage Employment in Major Urban Centres, 1977

Income Group (Sh./month)	No. of Persons Employed	% of Total Employed	Cumulative % of Total Employed
under 200	9,387	2.6	2.6
200 - 399	74,112	20.6	23.2
400 - 599	85,976	23.8	47.0
600 - 799	55,401	15.4	62.4
800 - 999	30,572	8.5	70.9
1,000 - 1,499	41,631	11.5	82.4
1,500 - 1,999	19,408	5.4	87.8
2,000 - 2,999	19,586	5.4	93.2
3,000 - 5,999	18,387	5.1	98.3
6,000 - over	6,173	1.7	100.0
Total	360,633	100.0	100.0

Source: Central Bureau of Statistics, Statistical Abstract 1978

Table 2.6 Proportion of Wage Earners Receiving Monthly Wages of up to Sh. 600, 800, and 1,000 Respectively in Selected Towns, 1977

Town	Sh. 0 - 600 %	Sh. 0 - 800 %	Sh. 0 - 1,000 %
Nairobi	42	56	65
Mombasa	49	69	77
Kisumu	54	69	78
Nakuru	53	67	75
Eldoret	57	75	81
Thika	67	78	84
Kakamega	52	65	72
Kericho	67	75	84
Webuye	56	68	75
Total (22 Towns)	47	62	71
Total (21 Towns excluding Nairobi)	53	71	78

Source: Central Bureau of Statistics, Statistical Abstract 1978.

may be assumed to enjoy a better standard of living.[35] Fewer jobs means that less people have the means to pay for public services. This may explain why a town like Nairobi takes more than its proportionate share of urban housing programs. As an example,out of a total of 8,886 house completions during 1974-78 Development Plan period, 6,240 were located in Nairobi accounting for 70 percent of the funds allocated for housing programs during that period. For comparison purposes Nairobi population is about 40% of the total urban population and only 5.4% of the national population.

2.2.3 Development Costs for Low Cost Housing

The major components which share development costs in the production of urban housing are land, infrastructural services and actual construction. Other costs include landscaping, professional fees, survey fees, interest on capital during construction, legal fees and stamp duty. In addition the occupant has to pay for connection charges and deposit for the various services associated with urban areas e.g. water supply, electricity and refuse collection.

For low-cost housing programs land is provided by the government.[36] No capital financing is required to purchase the plot but a small fee in the form of land rent payable to the Commissioner of lands is levied to every plot (see Table 2.7). Even where the land for housing programs has to be acquired, the acquisition costs are not recovered from the project beneficiaries. With land being supplied almost free, costs associated with housing construction and the installation of infrastructure remain the major concerns in the allocation of funds available for development of low cost housing.

Table 2.7 Monthly Charges to Plot Allottees for Selected Site and Service Housing Schemes (in shillings)

	Basic Services Wet-core and Kitchen provided (Migosi-Kisumu)	Basic Services clustered wet-core provided (Chaani-Mombasa)	Basic Services only. (Kayole-Nairobi)
Total Mortgage	25,778	16,800	16,765
Infrastructure	153.4	86.8	40.8
Materials loan	46.5	43.4	89.2
Recovery of Mortgage	199.9	130.2	130.0
Other Charges			
Land Rent	5.0	5.0	6.0
Reserve for bad debt	7.7	4.3	2.0
Rates	8.0	8.0	10.0
Utilities	33.0	58.0	40.0
Total Monthly Charges	253.6	205.5	188.0
& of Materials loan to Total Mortgage	23.3%	33.3%	68.6%

Source: Ministry of Works and Housing: Second Urban Project, 1978.

2.2.3.1 Cost of Infrastructure

According to United Nations for Human Settlements (Habitat) infrastructure is defined as 'the complex network designed to deliver to or remove from the shelter, people, goods, energy and information'.[37] In this study the term infrastructure is deemed to mean the public services within a housing development. These services include roads, footpaths, storm water drainage, foul sewerage, water supply, refuse removal and the supply of electricity.

In low cost housing the provision of infrastructure (except) electricity which is supplied by East African Power and Lighting Company) is the responsibility of local authorities. Observations from recent low cost housing projects reveal that the cost of infrastructure constitutes a fairly large proportion of the development costs. This is clearly shown in Table 2.7 where the proportionate cost of infrastructure to total mortgage is 33 percent for the Mombasa example and as high as 69 percent for Kayole site and service project in Nairobi. The high cost of infrastructure is attributed to the application of high infrastructure standards. More often than not they are higher than the minimum required under the Kenyan legislation governing building and infrastructure standards (see Chapter III) for low cost housing in urban areas.

Most of the infrastructure costs are attributed to roads, sewerage and water supply, and among the three items roads are the most expensive depending on specifications. According to the costs summarized in Table 2.8, roads including surface water drainage, account for 39 to 47 percent of the total infrastructure costs per plot. Sewerage network is the next

expensive item. It accounts for 27 to 31 percent of the costs. Water supply constitutes a fairly small proportion of the servicing costs.

Basically the standards used for the infrastructure services presented in Table 2.8 are more or less similar. All plots are provided with sewered sanitation draining to main sewer or communal septic tanks, individual piped water connections for every plot, and approximately 50 percent of the plots in each scheme have road access up to the plot boundary. Most of the access roads are gravel surfaced but some are paved.[38]

2.2.3.2 Construction Costs

The ministry of Urban Development and Housing[39] estimates a contractor built, two room house of minimum standards to cost Sh. 44,000 at 1978 prices.[40] Adjusting for inflation at 10 percent per year the cost of such a house in 1983 is about Sh. 70,000. Assuming an affordable house to cost two and a half times the annual income of a household, the minimum standard house can only be afforded by households earning above Sh. 2,000 per month. In 1977, 88 percent of the urban population earned less than Sh. 2,000 per month.

The most relevant costs to self-help housing construction, the main subject of this study, are those experienced in the site and service housing schemes. In these schemes all the necessary infrastructure is provided by the local authority and the individual is left to construct his own dwelling.[41] Some financial support is provided to the participants (allottees) in the form of materials loans. The materials loans offered are less than what is required to purchase all building materials, but are nearly enough to complete the major structure components, i.e. foundations, walls, roof and roof covering.

Table 2.8 Estimated Infrastructure Cost Per Plot on (World Bank/Kenya Government) Second Urban Project Sites

	Kayole-Nairobi		Mikindani-Mombasa		Migosi-Kisumu	
	Cost per Plot (Sh.)	%	Cost per Plot (Sh.)	%	Cost per Plot (Sh.)	%
Site Preparation						
Clearing and grading	92	1.3	92	1.2	92	1.2
Topography & Soil Survey	37	0.5	99	1.3	37	0.5
Lot demarcation	220	3.2	550	7.0	220	3.0
Sub-Total	349	5.0	741	9.5	349	4.7
On-Site Infrastructure						
Roads and drainage	2695	38.7	3325	42.3	3477	46.6
Paths	301	4.4	182	2.3	392	5.3
Water reticulation	811	11.7	638	8.1	566	7.6
Sewage reticulation	2142	30.8	2323	29.6	1988	26.7
Security lighting	330	4.7	312	4.0	353	4.7
Refuse collection	330	4.7	330	4.2	330	4.4
Sub-Total	6611	95.0	7110	90.5	7108	95.3
Total	6960	100.0	7852	100.0	7458	100.0

Source: Discussion Paper No. 1, Bylaws Study, 1981.

The philosophy behind site and service schemes assumes the plot allottee builds his house with his own hands or with the help of friends and relatives. Estimates for construction cost therefore, excludes the cost of labour, contractors' profits and overhead costs.

Construction costs for recent site and service housing projects are shown in Table 2.9. From the Table it can be observed that while the costs for Mombasa and Kisumu sites are almost the same, there is a substantial difference in costs for Nairobi sites. Nairobi offers relatively lower construction costs. Though it is difficult to compare these sites using the data available, the lower construction costs for Nairobi sites can be attributed to savings arising from the allottee constructing all the superstructure in Nairobi sites. For Mombasa and Kisumu sites the kitchen and sanitary facilities (toilet and shower) are provided by the project through the use of a contractor, hired by the Council.[43]

Experience in Dandora housing project in Nairobi confirms Turner's argument that owner built dwellings cost less to develop than large scale contractor-built houses.[44] The allottees in this project also maintain that they have produced a better quality house than what a large scale contractor would have produced at the same cost.[45]

One of the issues raised in site and service projects is the inadequacy of materials loans. A recent study undertaken in 1982 advocates the increase of materials loan to between Sh. 25,000 and Sh. 30,000.[46] This amount, the study argues is more realistic given the high construction costs prevailing in the urban areas.

Table 2.9 Cost of Constructing a Minimum Shelter [a/] in Second Urban Project Sites in 1977 (Sh.)

Town	Project Site	Basic Cost Per Plot	Materials Loan	Total Cost
Kisumu	Migosi[b/]	19,700	6,000	25,700
Mombasa	Chaani[b/]	20,100	5,600	25,100
Mombasa	Mikindani[b/]	20,100	5,600	25,700
Nairobi	Mathare[c/]	5,400	11,500	17,900
Nairobi	Kayole[c/]	5,100	11,500	16,600

Source: Ministry of Works and Housing, Department of Housing, August 1982.

Note: a/ A minimum shelter refers to a single sleeping room with a separate kitchen, toilet and shower.
b/ The local authority provides a wet-core (toilet and shower) and kitchen before handing over the plot to its allottee. The loan is used to build one sleeping room.
c/ The project supplies infrastructure connections to individual plots and the plot allottee is required to construct the minimum shelter from the materials loan.

2.2.4 Affordability of Housing

The major problem of affordability of urban housing in Kenya is manifested in the capacity of urban households to pay for their housing in the urban housing market. As indicated earlier in this chapter, there is a high level of absolute poverty among urban households. Many people find it impossible to rent or buy their own housing at prevailing housing prices.

Supplies of new housing provide houses for those households who can afford the rent or loan repayment dictated by their anticipated profits and the construction costs they incur. Disregarding the recipients of such housing, as long as housing investment continues to yield high returns, developers will continue to cater for that segment of the population which can afford the type of housing they are willing to bring to the market. The type of housing they offer is dominantly of the middle and high cost type. They respond to effective demand and not to housing need.[47]

Needless to say the housing provided in the market cannot reach all residents in the urban areas. Some residents are discriminated because of price. When housing prices or rental payments are too high, low income families are not able to afford them. Others are discriminated because of location. Long distance to employment areas entails an additional expenditure on transportation or a longer time of walking to get to their places of employment.[48]

The cost of housing determines what proportion of family income is available for other necessities competing for the family budget. Money spent to pay for accommodation is not available for other goods and services.

A change in housing payments at a given period of time would therefore necessitate an adjustment of expenditure on other household goods and services.

For any new housing entering the market at a certain rental or loan repayment level, the households who aspire to occupy them fall into three basic categories; each category relating directly to the level of household income. The first category consists of those households who can afford payments at that level without reducing their expenditure on other essential goods and services. These are the households with savings or surplus income to spend on housing.

The second category embraces those households who can only afford that level of housing expenditure by reducing their consumption of other essential services. These households have to make a choice between housing expenditure and other essential amenities.

The last group comprises of households who cannot afford that level of housing expenditure even if they eliminate consumption of other essential services. This group formsthe majority of urban households in Kenya. They are the ones who are faced with severe affordability problems. For them to benefit from new housing their incomes have to increase or the housing prices have to be adjusted downwards.

The mechanisms of housing market and government housing programs have not helped much to reduce affordability problems in Kenyan urban areas during the last two decades. In 1970 it was estimated that 70 percent of the urban population could not afford a minimum standard house. At that

time the minimum standard house was estimated to cost Sh. 12,000.[49] By 1978 a similar house was costing Sh. 44,000.

While house prices and rents have more than trebled during the last decade, household incomes have barely increased. It is estimated that more than 80 percent of the urban families cannot presently afford a house of minimum standards.[50]

The current National Development Plan covering the period 1979-1983 plainly admits that the prices of new housing and the rents in rental housing are beyond the reach of the majority of urban families.[51] The government realizes the need to address housing programs to the low income housing problems but its efforts are frustrated by the inadequacy of resources and the high cost of construction.

> It is imperative that the greater part of resources allocated for urban housing should be to produce housing for low income families. During the past plan period, (1974-78) there was considerable public and private investment in urban housing. However, the acceleration in construction costs have tended to push housing prices steadily beyond (the reach of) low income families.[52]

In view of the wide gap between the high and low income groups even subsidized housing tends to benefit people with above average incomes.[53] What is termed as 'low cost housing' is 'middle or high cost' in actual situations where the majority of applicants are disqualified because of their low incomes. In government sponsored housing programs qualifying allottees must, among other qualifications, be earning an annual income equivalent to a third of the cost of the house.[54] In a way then, the cost of construction determines which income category is to be considered in a new housing development and this applies to all types of housing construc-

tion including low cost housing schemes. With high construction costs, low income families are automatically disqualified solely on income basis.

2.3 Housing Supply

The supply of housing for urban households is met from three sources: the private sector, the public sector and the private informal sector. Housing supplied by the informal sector is excluded in national housing statistics because of two main reasons. One, they do not meet the minimum standards required by local authorities. This makes the housing produced in the informal sector illegal properties, which cannot be recognized by the local authorities. Recognizing them officially by including them in the housing statistics may be construed as legalizing sub-standard structures which the local authorities are not prepared to accept.[55] Second, the data on informal sector activities is normally scattered. Apart from the large towns actual surveys of informal sector activities including housing is rarely carried out. While it is easy to estimate new constructions in a town during a given period by using records for sub divisions and occupation certificates for residential buildings, such data do not exist for housing produced by the informal sector, making it impossible to enumerate them without undertaking a unit by unit count.[56]

In Nairobi approximately 33 percent of the residents live in housing provided by the private (formal) sector.[57] Most of this housing serves the middle and upper income groups. Included in this category are employer provided housing and old tenements built during the colonial period for the Asian community. Another 30 percent is accommodated in public sector housing comprising of both rented and tenant purchase estates (27%) and

Table 2.10 Housing Systems in Nairobi, 1970

Housing Type	Sector		Estimated Population	% of Population
Squatter	Popular (informal)	Unapproved housing on land developers have no legal right to occupy	97,200	18
Companies and individuals	Popular (informal)	Unapproved housing on land developers do have legal right to occupy	102,600	19
Old tenements	Private (formal)	Primarily housing built for Asian extended families, now occupied mainly by Africans	54,000	10
Employer provided housing	Private (formal)	Includes servant housing as well as development by large-scale employers	37,800	7
Private: medium and high cost	Private (formal)	Approved housing serving middle and upper income groups	84,400	16
Sites and Services	Public	Serviced plots	16,200	3
Rental and tenant-purchase estates	Public	Public housing for rent and purchase	145,800	27
Total (all sectors)			538,000	100

Source: World Bank, Kenya: Population and Development, July 1980.

site and service schemes (3%). The remaining 37 percent live in unapproved housing commonly referred to as unplanned, uncontrolled or squatter settlements.

As illustrated by Table 2.10 the private informal sector plays an important role in the production of housing in urban areas. The high percentage of developers who construct housing without seeking the approval of the authorities (because approval would not be granted for the houses they would like to construct) is in itself an indication of the severe scarcity of appropriate housing in Kenyan urban areas. In Mombasa and Kisumu, approximately half of the population live in unapproved housing.[58]

2.3.1 Housing Output

By all indicators Kenyan providers of urban housing have made a forward step towards improving the housing conditions in the urban areas since Kenya's Independence in 1963. In recent years there has been an emphasis to direct more resources to low cost housing.[59] However, there have been problems in determining what type of housing best suits the urban population.

During the colonial rule most of the housing provided for low income families consisted of one room units.[60] Most of them had a communal ablution block serving a cluster of rooms. In 1964 immediately after independence the 'Working Party on Building Standards' recommended that one room-units be abandoned because they were inadequate for an urban family.[61] The government response at that time was that 'financial and economic considerations dictate a standard of one room to a man and his wife'.[62] But government support of one room units dwindled during the

Table 2.11 Public Housing Stock by Number of Rooms

Administering Authority	Number of Units						
	1 room	2 rooms	3 rooms	4 rooms	5 rooms	unknown	Total
Local Authorities	14,678	13,433	5,623	2,543	305	--	35,687
National Housing Corporation	2	17	1,108	296	183	--	1,605
Housing Finance Company of Kenya	--	--	252	1.506	1,960	--	3,718
Government Ministries	9,535	4,229	114	236	185	6,112	20,411
Government Institutions	9,760	1,432	1,004	1,187	91	1,132	14,606
Total	33,975	19,121	8,101	5,768	2,724	7,244	76,933
Total Percentage	44.2	24.9	10.5	7.5	3.6	9.4	100.1

Source: Housing Stock in Major Towns in Kenya, April 1977.

first few years of Kenya's independence. Government and local officials started to associate one room units with bad memories of colonization which advocated bad housing for the Africans.[63] Consequently the production of such housing was strongly discouraged and finally abandoned. The last single room dwelling unit to be constructed out of public funds was in 1974.[64]

A survey undertaken in 1975 for 22 municipalities showsthat 44 percent of the urban housing consists of one roomed dwelling units (Table 2.11). Most of the single roomed units presently found in urban areas were constructed in the early fifties and some in the sixties.

Table 2.12 represents the planned construction of new residential housing during the 1979-83 Development Plan period. The planned output is 74,800 dwelling units out of which 6,800 units are for the rural areas. In terms of financial arrangements, the government intends to spend 1,066 million shillings while the private sector contribution is estimated at 1,172 million shillings. The traditional and informal sector development is not included in the official housing statistics shown in Table 2.12.

Poor performance in the production of housing in the past places some doubt on whether the planned output will be realized by the end of the current plan period (1979-1983). Over the past plan period (1974-78) out of a planned target of 69,000 dwelling units only 9,000 units were produced, a mere eighth of what was planned.[65]

The determination of the government to reach a wide segment of the unhoused urban population is manifested in its insistence on low cost housing programs. 90 percent of the government allocation on housing development is used to finance site and service housing schemes.[66] The

Table 2.12 Planned Output of Dwelling Units During 1979-83 Plan Period

Developer	Type of Housing Development				
	Serviced Plots	Rental	Upgrading Schemes	Mortgage Schemes	Total
N.H.C.					
Urban Housing	11,532	5,800	--	4,000	21,332
Rural Housing	--	--	--	6,800	6,800
Central Government					
Urban II	16,000	--	10,000	--	26,000
Pool Housing	--	530	--	--	530
Staff Housing	--	1,130	--	843	1,973
Institutional Housing	--	2,600	--	--	2,600
L.A. Housing	500	2,968	--	--	3,468
Total Government	28,032	13,028	10,000	11,643	62,703
Private Sector	--	4,843	--	7,264	12,107
Total Units	28,032	17,871	10,000	18,907	74,810

Source: Republic of Kenya, Development Plan 1979-1983.

Abreviations: N.H.C. - National Housing Corporation
L.A. - Local Authorities

other 10 percent is used to construct complete housing units for immediate occupation.

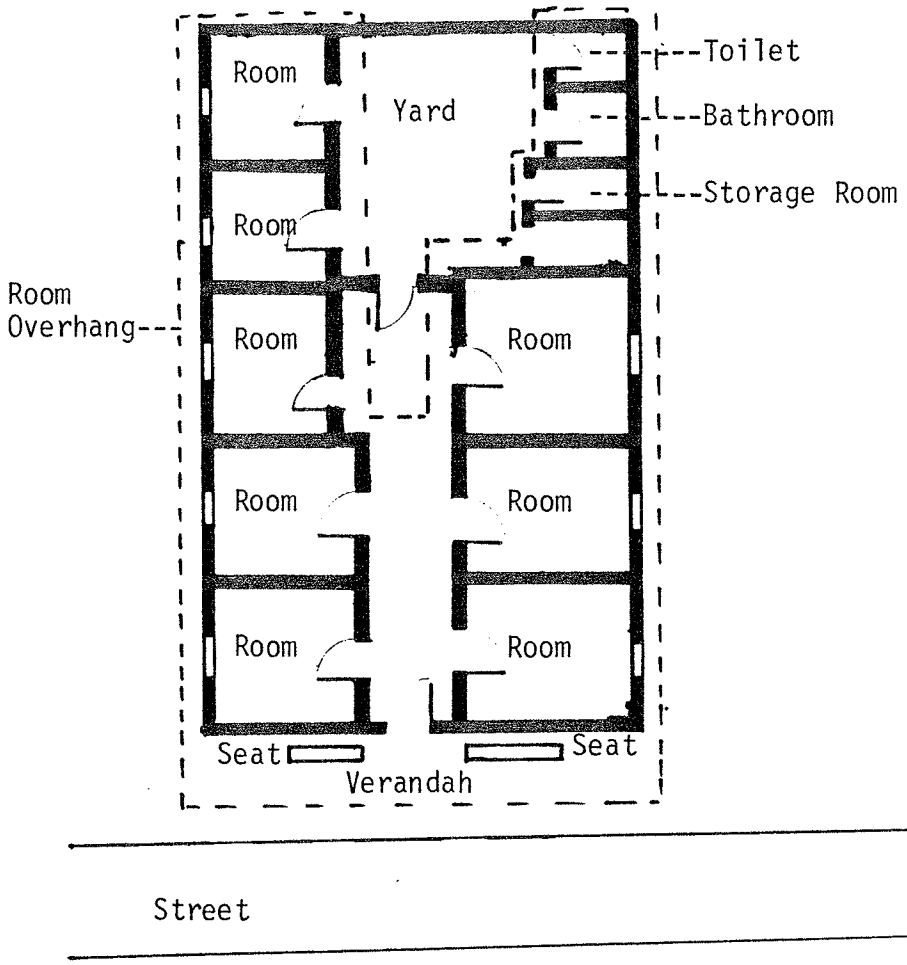
2.3.2 House Types

It is not possible to describe or illustrate in this thesis, all the different house types for housing constructed for low income urban households in Kenya. The National Housing Corporation (NHC), the Housing Research and Development Unit (HRDU) of the University of Nairobi and the larger municipalities have developed housing type plans which are suitable for site and service schemes. The NHC has adopted a range of house-types based on the principle of the 'Swahili house' (see Figure 1) and that of the conventional corridor house types which have been improved over the last 15 years.[67] A recent HRDU study for site and service schemes in Kenya reveals that a number of plan types used by NHC are not suitable for progressive development.[68] To clarify this point further, two examples are described as illustrated by Figure 2 and Figure 3.

The HRDU type plan represented by Figure 2 utilizes the 'zero lot line' concept which allows buildings to extend up to the plot boundaries. A common party wall separates the dwellings in adjacent plots. In site and service projects the party wall is a double wall, each allottee constructing his own wall on his side of the plot.

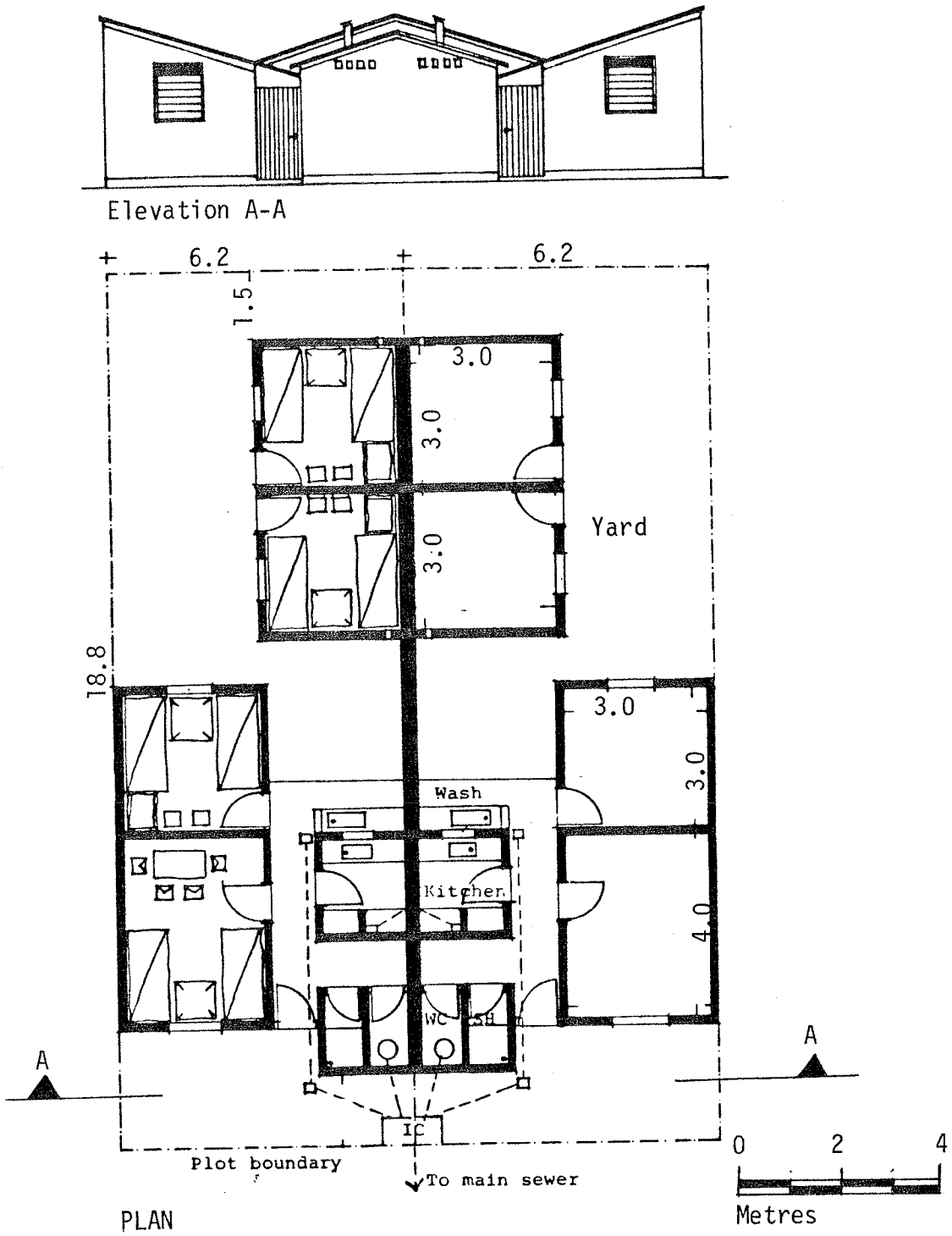
The development in each plot consists of three separate units. The kitchen, bathroom and toilet form one unit and four rooms are in two units of two rooms each. Where construction finance is not adequate to construct all four rooms and the service unit (kitchen, bathroom/shower and toilet) at the same time, and this is the prevalent situation to

FIGURE 1: A Sketch Plan for a Typical Swahili House



Source: Adapted from Kenya Bylaws Study Report, Volume II, (1981)

FIGURE 2: An Example of an HRDU House Type Plan



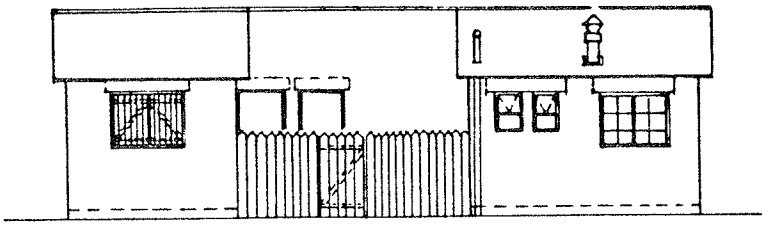
most low income families in Kenya, the family (an allottee in site and service schemes) has the option of constructing the service unit first, and there after add on the other rooms as finances permit. Apart from the foundation a good roof design can permit construction of the two rooms in two stages, whereby one room is completely finished before the second one is started.

The HRDU type plan is suitable to site and service schemes with small plots of less than one hundred and twenty (120) square metres. Proper arrangement of the windows and doors allows for cross ventilation in each room. By placing most of the external walls on the plot boundaries, maximum open space within the plot is realized.

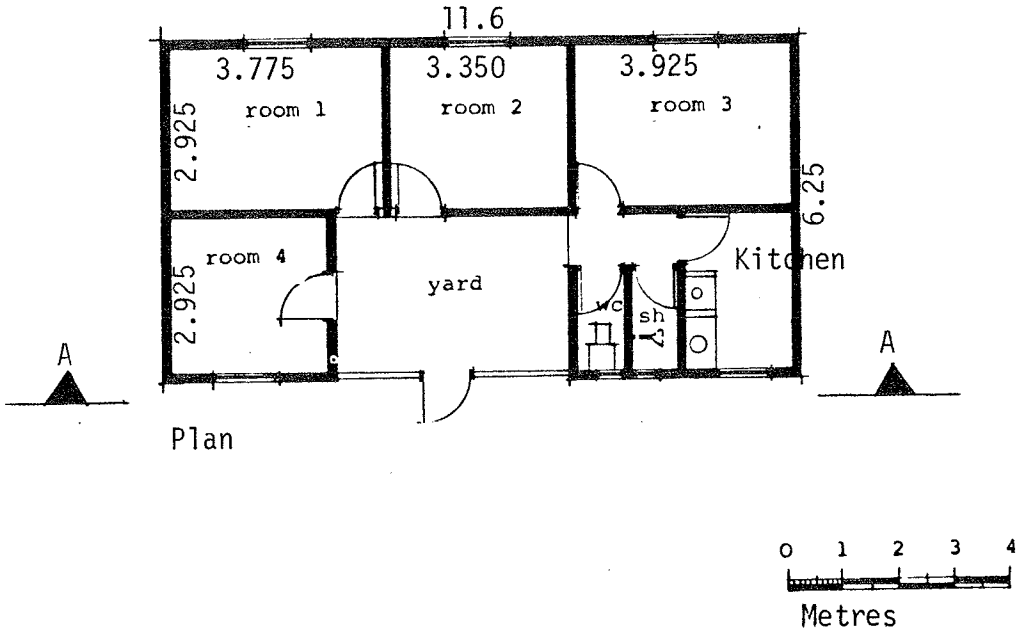
The other type plan represented by Figure 3 is an example of an NHC type plan that was used for Site and Service No. 2 in Webuye Town. In this type of design the possible sides to place the windows are along the longitudinal elevations of the building. Unlike the HRDU example, construction of back to back dwellings is not possible. The design allows for only one stage development. Even if it is possible to construct the walls of each room separately, problems arise when laying separate foundations for each room. Roof joints are also likely to require high quality workmanship which an ordinary allottee does not possess. Another major disadvantage of the Webuye house type plan is the high servicing costs because of the wide plots, and inefficient utilization of serviced land because a large plot is required to accommodate a similar unit as that described for the HRDU type plan.

The problem of one stage development is related to the detached house types being used to suit middle and high income desires. When

Figure 3 An Example of an NHC House Type Plan
(Webuye Site and Service No. 2)



Elevation A-A



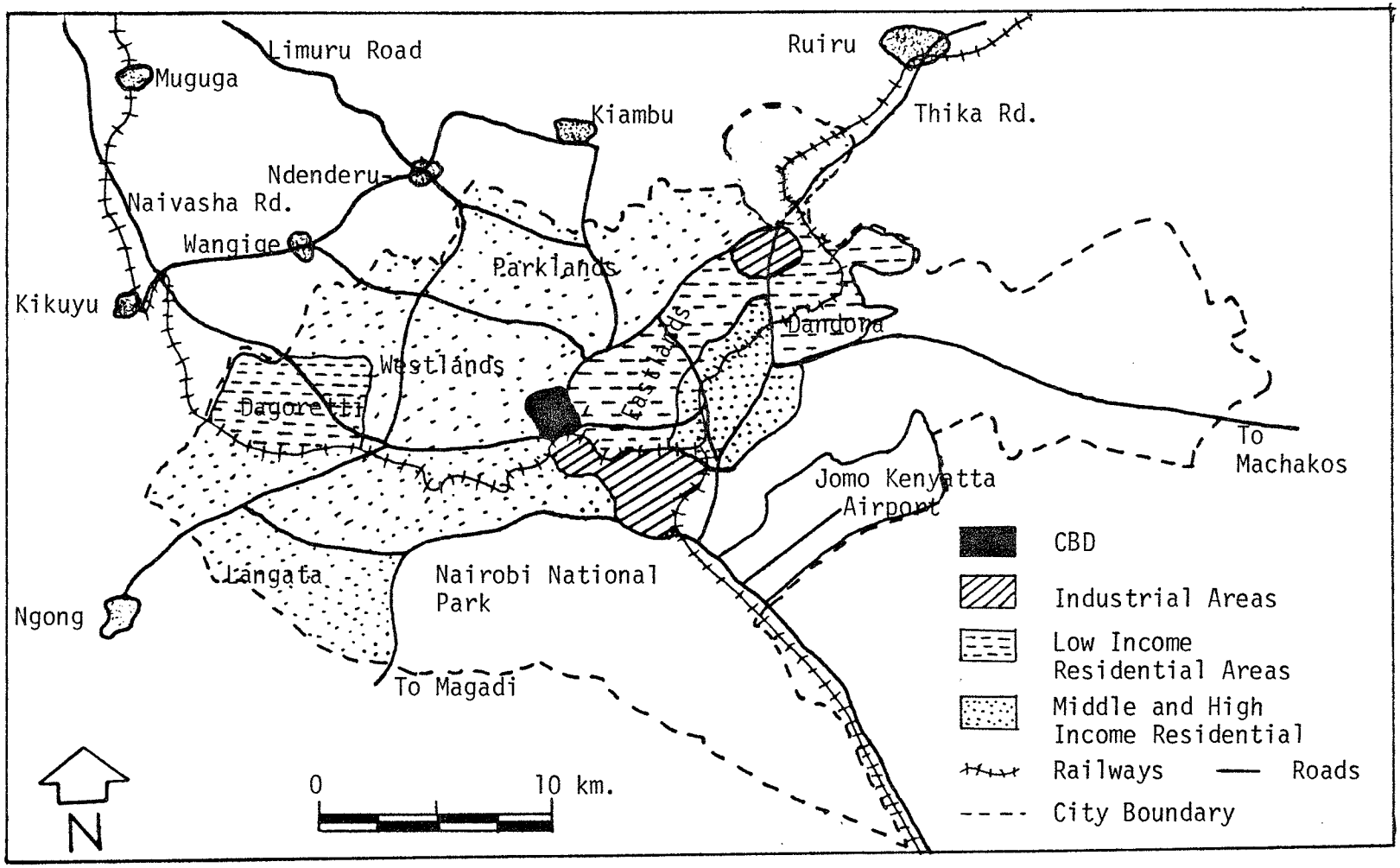
applied to site and service schemes, designs which only permit one stage development have often resulted in financial hardships to allottees and incomplete houses. In other instances the plots are left undeveloped for many years when the allottee is trying to accumulate enough money to complete all the construction of the dwelling.[69] For low cost housing programs where the allottee is supposed to build his own house, it is therefore essential to avoid the use of type plans which cannot accommodate a progressive form of housing development in consonance with the household's income. Plans of the types represented by Figure 2 are more suitable for low income families using the self-help approach of housing consolidation in the urban areas.

2.4 Availability of Urban Land for Residential Use

Two concerns have to be addressed by planners and providers of low cost housing when it comes to the supply of urban land for housing development. The first concern is related to the availability of vacant land which can be allocated for development and the second concern is that of finance necessary to acquire additional land from the private sector to provide for future housing programs.

The availability of land for low cost housing is dependent on the overall land use pattern in an urban area. Land earmarked for residential development has to compete among the various qualities of residential estates in accordance with the wants of different income groups. It happens among this competition, that low cost housing is the last to be allocated urban land in a capitalistic land market. The land use pattern of Nairobi (Figure 4) is used as an example to illustrate how planners and the market system discriminate against residential development for low income groups.

Figure 4 Distribution of Residential Land in Nairobi, 1979



Source: Adapted from G. K. Kingoriah, Policy Impacts and Land Use Patterns in Nairobi, Kenya: 1899 - 1979 (1980)

While 80 percent of Nairobi residents fall in the low income bracket, less than one fifth of the land for residential use has been allocated for low income residential development. Some of the traditional low income residential areas to the east of Nairobi, normally referred to as Eastlands, (see Figure 4) have recently been infiltrated by middle-income residential housing for families earning above Sh. 3,000 per month. Examples of such estates are Buru-Buru, Harambee and Kimathi estates whose monthly rents average Sh. 1,500 per unit.[70]

The power to acquire and allocate urban land for low cost housing in Kenya is vested in the office of the Commissioner of Lands in the Ministry of Lands and Settlement.[71] Under the Land Acquisition Act of 1968 and Sections 75, 117 and 118 of the Constitution, the justification for compulsory acquisition of land for public use is spelled out.[72] The acquisition can be justified on political, economic, or moral considerations. Using these considerations 'it is quite clear that there are no difficulties in compulsorily acquiring land for low cost housing.'[73] However the process of acquisition is lengthy and many problems are encountered before an acquisition is concluded. The major problem is the determination and payment of compensation.[74]

The courts can interject and reject the acquisition on the grounds that a 'public purpose' is not being served by the acquisition. According to the By-laws Study (1981) 'there are no indications that the courts have been invited to address themselves on the question of low cost housing'[75] despite the fact that they have decided on many cases regarding compulsory land acquisition.

The success of many housing programs relies largely on the availability of government land to locate the housing projects. Land has become the most expensive single item in low cost housing schemes. As an example, in Dandora, a recent Site and Service project in Nairobi the construction of a two-roomed dwelling costs less than Sh. 10,000 through self-help construction. The plots in this development are changing hands unofficially at prices in excess of Sh. 25,000.[76] Obviously such a price cannot be afforded by a low income family in Nairobi.

The suitability of available land for low cost housing needs to be scrutinized before the project commences. Careless allocation of land in the past has made some projects to be unnecessarily more expensive. To support this argument three examples of recent site and service projects are used. In Isiolo Town a site and service project was abandoned during construction when it was found that the site was located on black cotton soil.[77] It took four years before another site was located. In Bungoma, after communal septic tanks had been built for sewage disposal it was found that a sewer which could have served the site more cheaply existed. The third example is that of a Site and Service project in Nyeri Town where half of the plots were laid on a flood plain and had to be abandoned.[78]

The government is finding it more and more difficult to acquire land from private landlords because of the high cost of urban land. In the Second Urban Housing Project which is sponsored jointly by the World Bank and the Kenya Government, the government decided to selectively acquire land for roads and community facilities only, in the project sites in Kisumu Town.[79] This trend of selective acquisition is more likely to continue in the future mainly because the government does not have the financial

resources required to acquire all the land necessary for low income housing in the urban areas.

2.5 Housing Finance

According to Grimes 'the financing of housing, like that of any durable asset is facilitated by a system that efficiently mediates funds from surplus economic agents to deficit units (builders and buyers of houses)'.[80] Because of its relatively long useful life, house construction is aided by the availability of long term credit. Who supplies the long term finance and under what conditions, remains the main determining factor of how much and what type of new housing is entering the housing market at any given time.

2.5.1 Sources of Construction Finance

The major contributor of development capital for residential construction in Kenya is the central government (see Table 2.13). The financial allocation from public funds accounts for 56 percent of total residential development during 1979-83 Development Plan period. Funds from government sources are channelled through the National Housing Corporation. The other 44 percent of the funds come from private institutions generally referred to as the private sector.

The private institutions include building societies such as Housing Finance Company of Kenya, East African Building Society and Savings and Loans; commercial banks; insurance companies; co-operative associations; and private individuals who manage to raise money through their own savings or borrowing from relatives and friends, to purchase or build their dwellings.

Table 2.13 Allocation of Capital Financing for Housing Development, 1979 to 1983

	Amount (Sh. '000)	Percent
National Housing Corporation	419,000	15.9
Central Government Staff Housing	196,200	7.4
Loans for Medium and High Cost Housing	56,000	2.1
Research and Studies	57,300	2.2
Second Urban Project (Nairobi Mombasa and Kisumu)	337,400	12.8
Institutional Housing	250,400	9.5
Total Central Government	1,316,300	49.9
Local Authorities own sources	150,000	5.7
Total Public Sector	1,466,400	55.6
Private Sector (Non government contribution)	1,172,000	44.4
GRAND TOTAL	2,638,400	100.0

Source: Republic of Kenya, Development Plan 1979-1983.

The commercial banks finance housing developments when the liquidity is high. Although lending policies vary from bank to bank, the terms are normally less favourable than those obtained from building societies. As an example, the repayment period of a loan obtained from a commerical bank rarely exceeds ten years, while building societies can extend their credit over a twenty year term.[81]

The insurance companies are becoming more involved in the financing of housing development. They offer loans to their clients for house purchase and also provide credit for large scale estate development for the middle and high income housing market.[82]

2.5.2 Lending Methods

The lending agencies formulate their lending procedures to safeguard their businesses and also to control the incidence of risk. Among the controlling devices is a guarantee on repayment in form of security, and an undertaking by the employer to deduct loan repayments from the borrower's salary.[83]

Mortage lenders require a valuation of the property being mortgaged. Traditionally the valuation leans on the cautious side leading to the property offered as security to be grossly undervalued. This is because both the valuer and the lending institution wish to protect themselves in the event that the property has to be sold because of default. Also the lending institutions insist on using their valuers. Succumbing to the influence of the lending institutions and also to protect the interests of

their employers, such valuers are likely to produce biased valuations in favour of the lending institution.[84]

The cost of money to the borrower is determined by the interest charged and the time required to recover the loan. In a period of high interest rates the total loan to be recovered increases. Also for a relatively shorter repayment period, the monthly payments are higher than they would otherwise be if the term is extended to cover a longer period.

The interest rates (1980) vary from a low of 6.5 percenton loans by the government to local authorities to 14 percent on loans advanced by the building societies.[85] In order to encourage owner occupations the government had in the past set lower interest rates to be charged on owner occupier residential purchases.[86] However owing to the inadequacy of construction finance there is a tendency for the private institutions to charge higher rates on their credit.

The prevailing rates are already very high for low income families. For instance the monthly repayment on a Shs. 25,000 loan over 15 years at 10 percent is Shs. 273. But over the same period if the interest rate is lowered to 7 percent the repayment would be Shs. 229.

Lowering of interest rates to more concessionary rates is one of the practical ways to assist the low income families to own housing in the urban areas.[87] But problems arise when distributing the available funds to a house hungry nation, where the demand for such funds is great and the funds available are grossly inadequate.[88] In this regard a policy of

controlling interest rates though relevant to the Kenyan situation, requires supportive policies which will induce more private capital into residential development.

Another aspect of construction credit is that lenders require a downpayment normally equivalent to 10 percent of the purchase price. Where another property is used as collateral to secure a housing loan the total amount of the loan is calculated at 75-80 percent of the property value.[89] Since poor people rarely own any real property, they cannot qualify for construction loans from the private sector. In urban areas they scrabble for the rarely forthcoming housing programs in Site and Service Schemes.

2.5.3 Repayment Period

The normal repayment period applied by financial institutions on housing credit varies from ten to twenty years. The government extends this period to forty years for rental housing developed by local authorities out of public funds. Though a long period of repayment would benefit borrowers in the low income categories, lenders tend to favour shorter repayment periods on credit for low cost housing. The main argument being that low quality of construction and building materials reduce the life span of the dwelling. In this regard 'a mud and wattle house built on a spacious freehold or a 99 year leasehold site may have less mortgage appeal (to lenders) than a minimum standard concrete block structure on a relatively smaller site held on a 33 year lease'.[90]

2.5.4 Capital Financing for Low Income Groups

The financial market in the conventional world regards the poor as a bad security risk.[91] They have little material wealth for collateral, low

savings and are frequently in debt. Many of them do not have regular employment or stable business holdings to pay their debts promptly. Those in regular employment receive very low wages which barely suffice the day to day expenses on basic needs.[92] For these and other reasons banks refuse to support individual housing loans for low income people. For their money to reach the low income people the banks advance large loans to developers for massive projects secured by government guarantees.[93]

The main source of construction finance for low income people is their hard won savings and small loans from friends and relatives. Due to their low capacity to accumulate large savings, they build small projects in small increments. They improve their houses as their families grow and as they acquire savings.[94]

In order to assist low income families and to take advantage of their energies on improving their housing, new kinds of loans are needed in small amounts, with a long repayment period and secured by the house itself. Granting of materials loans in site and service schemes is a step forward towards increasing the capacity of low income families to house themselves in the urban areas. Another method is to advance small loans to housing co-operatives or similar organizations who then onlend to low income families to construct their own dwellings. If such loans are secured by government guarantees, the potential loss to government is less than the cost of constructing and maintaining public housing.[95]

In Kenya the main source of construction finance is the central government. The finance is allocated to particular projects through the National Housing Corporation or directly to the large municipalities which can implement the programs themselves.

2.5.5 National Housing Corporation (NHC)

The National Housing Corporation is the implementing agency of all residential construction financed by government through the ministry holding the housing portfolio. Within the last 15 years the Department of Housing has circulated between five ministries. The NHC was established in 1967 under the Housing Act.[96] Under the Act, the corporation has the right to approve loans for the construction of housing schemes approved by the ministry responsible for housing. NHC can also 'apply to the minister responsible for local authorities to suspend the operation by any (building) by-lay inconsistent with the conditions specified by the Corporation for any (housing) scheme'.[97] Such an application is necessary where the Corporation is to allow lower construction and space standards in low cost housing programs.

In the 1974-78 Development Plan period the NHC implemented 37 site and service housing schemes. During the current plan period 28,000 plots have been planned to be serviced and another 47,332 low cost housing units would be constructed from government funds at a total cost of Shs. 1,316 million.[98] For site and service housing schemes the NHC lends the money to town councils at 6.5 percent interest for a maximum of 20 years. The councils then advance the loans to the plot allottees, each allottee receiving a maximum loan of Shs. 7,000 to purchase construction materials. Another Shs. 7,000 per allottee is available for the installation of infrastructure and services.[99]

2.6 Conclusion

A synopsis of the discussions presented in this chapter reveals that affordability remains the major characteristic of housing problems in

Kenyan urban areas. There is a great dichotomy between the prices of the housing produced in urban areas and the level of incomes of individual urban households. There is also a vast gap to be filled if urban residents have to be supplied with what is termed as 'minimum standard housing' by the authorities.

The demand for housing is generated whenever extra population has to be provided with accommodation. We have observed that over 60 percent of the increase in urban population comprise of migrants from the rural areas who have little or no income. These migrants seek accommodation with their poor relatives and friends and those who eventually get employed get low paying jobs, in effect increasing the number of the low income people in urban areas and consequently exerting insurmountable pressure to the already inadequately housed low income families.

While it is true that the housing produced in the urban areas through conventional free market operations by the private sector, normally caters for the middle and high income housing sector, it is also true that a significant proportion of the government housing programs exclude a large segment of the poor families. The government requirement that applicants must be earning an annual income about four tenths the price of the completed house in order to qualify for a housing program automatically excludes about seventy percent of urban families in the lower income category from benefitting in government housing programs. In order to enable the low income people to participate in such programs, two policy options may be applied. One option is to increase the ratio of qualifying income to housing price, so that households in lower income categories can qualify.[100] The other is to redefine the minimum standard house such that dwellings constructed of temporary materials can be allowed in urban areas.

There seems to be an exageration of housing deficits in the housing statistics. The enumeration of housing stock is based on 'minimum standard dwellings'. Such dwellings it was found, can only be afforded by less than 30 percent of the urban population. This does not mean that 70 percent of the population is unhoused. What it means is that those who cannot afford a 'standard' house of their own team up with friends or take up residence in 'unapproved' dwellings. We found that many 'unapproved' dwellings are 'sound' structures properly constructed and weatherproof but fail to satisfy some aesthetic qualities required by the housing authorities. In our opinion if all the 'sound' dwellings could be included in the housing stock, the housing deficit statistics would present a much lower figure that reflects the actual housing deficit.

A major element in the short supply of urban housing is the availability of serviced land. The acute shortage of serviced land, i.e. land connected to main sewer network, water supply and major roads, has a high influence on housing development and land prices. For low income housing vacant government land is rarely available and owing to the high cost of urban land the government is finding it more difficult to acquire land from private landlords. Low cost housing (for low income people) in the future will therefore rely on private investments by the low income people themselves. But these people require financial and technical assistance to produce and manage their own housing, a goal that can best be achieved through self-help housing techniques.

The principal factor that inhibits self-help housing production by low income people in urban areas is the complication brought about by housing standards.

What these standards are, and how they affect the production of low income housing development including self-help housing, is the subject of discussion in the next chapter.

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74. Low Cost Housing and Squatter Upgrading Study (1978), p. 189-193.

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77. Black Cotton Soil is considered to have zero load bearing capacity and the Kenya Building Code requires it to be excavated within the entire area of new buildings.

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100. It has been found that low income families can allocate a lot more of their incomes on housing development than the traditional 25 percent. As an example in Dandora Site and Service Project in Nairobi, some plot allottees have managed to allocate their total monthly incomes to housing construction in order to finish the required two rooms within the 18 month time limit set by the City Council.

CHAPTER III

HOUSING STANDARDS

It had been established in the previous chapter that affordability at individual and national levels are the main problems inhibiting production and consumption of housing in the urban areas in Kenya. Why affordability remains the major porblem is largely attributed to the mismatch between the type (in terms of quality and cost) of housing produced and the level of household incomes. On the supply side there are standards which define what people ought to have and on the consumption side the household incomes determine what people can have. By the rule of the thumb the higher the housing standards the higher the construction costs and the smaller is the population affording housing.

At the time of preliminary research for this thesis it was found that housing standards remain the major frustrating factor on self-help housing production. This does not mean that the other considerations necessary for efficient production of self-help housing such as the use of local materials, application of appropriate technology and the availability of serviced land and construction finance are not important. But we are convinced that where housing standards are set at appropriate levels to enable low income people to construct their own houses, poor families can, with small financial assistance and technical advice, produce modest solutions to low income housing at little or no subsidy from the government. This chapter will examine the application of housing standards in low cost housing developments and their relevance to self-help housing production in urban areas.

3.1 Introduction

The general essence of standards is to ensure a healthy environment. They are supposed to safeguard the safety of residents from disease, fire, and climate while at the same time ensuring an acceptable level of comfort.[1]

The poor are often accused of constructing their shelter in settlements which do not satisfy minimum standard requirements for safety and health.[2] These minimum standards are set at levels which the elite and bureaucrats think are low enough to maintain a healthy environment. But many studies on standards in developing countries have found that some of the standards are not only too high to be afforded but are also unnecessary and inappropriate in the local context.[3] Many contemporary planners and providers of shelter for the low income segment of the urban population often question the merit of setting unaffordable standards for the poor majority in the urban scene.[4] Setting standards at very high levels in itself promotes the existence of slums and removes otherwise 'sound housing' in terms of safety and health, from the officially recognized housing stock.[5] The United Nations Centre for Human Settlements (Habitat) calls for government in developing countries to review their urban policies so that the poor can benefit.

> Governments, in tackling the basic needs of the poor, should aim to achieve within the limits of available resources, the optimal improvement for the largest number of the least advantaged members of society. Building codes and regulations should therefore provide for the graduated or step by step improvement of the built environment.[6]

Three government publications share the opinion that housing standards required in Kenyan urban areas are too high. These publications are: the Report of Low Cost Housing and Squatter Upgrading Study (1978), Kenya Bylaws Study (1981), and the 1979-83 Development Plan. The need for a

review of housing standards is best reflected in the 1979-83 Development Plan which observes:

> Within the urban areas effective development has been impeded in the past by a conflict between standards and needs. Over the last plan period (1974-1978) only 8 percent of the low-cost units planned (in the urban areas) were in fact completed and these cost on average five times the expected costs. Excessive high and unrealistic standards for building design, occupancy, and municipal services were clearly a major contributing factor....During the planning period (1979-83) all municipalities will review their housing standards in order to make them appropriate....and to reduce them to the minimum consistent with the provision of low cost housing needs at reasonable costs.[7]

Despite the government's committment to review the housing standards, difficulties of defining the minimum level of acceptable standards remains a major problem.

3.2 Definition of Housing Standards

The internationally accepted definition of standards related them to 'a technical specification or other rule based on consensus, approved by a recognized standardizing body for repeated or continuous application'.[8] The standards encompassed in this definition differ from what is referred to as standards in the design and construction of buildings in Kenya because of two main reasons. One, the housing standards are defined under legislation and the people are not consulted when the legislation is being passed. Two, most of the standards are based on the British Standards which have little relevance to the Kenyan situation.[9]

For the purpose of this study housing standards refer to the requirements of local authorities or government departments which have to be satisfied in order that the design and construction of residential buildings can be approved. These requirements are embodied in the Kenyan Legislation under the Building Code and the Public Health Act (PHA) and also local

authority's town planning requirements. Dwellings which do not conform with these requirements are generally referred to as sub-standard, and they are normally excluded from national housing statistics.[10]

3.2.1 Relevance of Public Health Act

The PHA is the most powerful piece of legislation in the formulation of urban housing standards. Although it does not in itself define standards of design or construction, it requests and when necessary requires local authorities to make bylaws to define these standards. PHA is the over-riding legal authority regarding all matters that may be construed to affect public health. According to Section 126A of the Act the Minister for Local Government who is responsible for approving building bylaws proposed by local authorities cannot approve the bylaws without the agreement of the Minister for Health.[11] A similar rule applies if a local authority wishes to relax any of its own bylaws. The Minister for Health has to be satisfied before the relaxation is accorded formal approval.[12]

3.2.2 The Building Code

Despite the power of the PHA to control the content of the local authorities' building bylaws the detailed requirements for the erection of buildings are contained in the Building Code. The Code is comprised of two orders" 'The Local Government (adoptive Bylaws) (Building) Order 1968', informally described as 'Grade 1' Bylaws; and 'The Local Government (Adoptive Bylaws) (Grade II Building) Order 1968'. Both orders are made by the Minister for Local Government under the powers conferred by Section 210 of Local Government Act, Chapter 265 of the Laws of Kenya. A technical weak point of the Building Code is that the two sets of Building Bylaws are only adoptive and not mandatory.[13]

In theory local authorities can opt to use their own bylaws instead of adopting those set in the Building Code. But in practice all local authorities prefer to use the Building Code which is widely accepted as the national building code in the country. Even Nairobi City Council which has its own building bylaws (Building Bylaws 1948), uses the bylaws set out in the Building Code. A number of local authorities have added other bylaws which apply within their area of jurisdiction only.[14]

Within the Building Code there are two groups of bylaws which are specifically related to low cost housing. The first group is contained in 'Grade 1' Bylaws as bylaws 215 to 227. Areas where these set of bylaws apply are designated as 'Scheduled Special Areas' and have to be zoned so in the physical development plan of the council.

The second group is the Grade II Bylaws. These bylaws relax some of the requirements of 'Grade 1' Bylaws regarding construction materials, room sizes and plot coverage. According to the Building Code, Grade II Bylaws 'apply to all land within the council's area of jurisdiction except where otherwise specified by the council, after having obtained approval of the Commissioner of Lands, and except where the Local Government (Adoptive Bylaws) Building Order has been applied'.[15]

As we have indicated earlier, for the bylaws contained in the Building Code to become effective within a local council jurisdiction, they must be adopted by the council. The adoption procedure starts with the publication by council of a notice of intent to adopt the bylaws in the local media. After the publication, the council must pass a resolution adopting the Bylaws subject to the approval by the Minister for Local Government. By

placing a 'legal notice' of the approval in the Kenya Gazette, the Bylaws acquire the protection of the force of law.[16]

3.3 Indoor Space Standards

The space requirements laid down in the building legislation are summarized in Table 3.1. Different rooms serving different functions are categorized under the intended functions and legislation defines their dimensions in accordance with the intended function, even though in low income areas a room may serve a multi-purpose function of a bedroom, table room, living room, kitchen, and storage room at the same time. Many rooms designed as kitchens end up being used as bedrooms or multi-function rooms, and similarly bedrooms may be assigned any, or a combination of, various domestic uses after the dwelling is completed.[17]

Table 3.1 Permissible Space Requirements Inside Rooms for Low-Cost Housing

	Area (m^2)	Minimum Lateral Dimension (m)	Height (m)
Master living room	11.15	1.98	2.13
Other living rooms	6.97	1.98	2.13
Kitchen	2.32	1.37	2.13
Bathroom	1.04	0.79	1.98
Toilet	1.04	0.79	1.98

Source: Kenya Building Code

Note: All measurements have been converted to metric units by this author and rounded to two decimal points.

Records for recent low cost housing projects across the country, show that local authorities apply higher space standards than what the legislation demands. A comparison of data on Table 3.1 and Table 3.2 confirms this notion. While the legislation allows a habitable room with a floor area

Table 3.2 Size of Rooms in Selected Site and Service Schemes

Project	Living Room		Kitchen	
	Minimum Width (m)	Room Sizes (m^2)	Area of Kitchen (m^2)	No. of Rooms Served
Nairobi: Dandora Phase I	1.9	6.8-14.3	7.8	4
Kisumu: S&S No. 1	3.0	10.2	3.6	3
Webuye: S&S No. 1 & II	2.8	8.3-11.5	5.4	4
Kitale: S&S No. 1	3.0	12.2	5.4	5
Mombasa: Kisauni	3.0	9.3-11.3	4.5	4
Nanyuki: S&S No. 1	2.2	6.0-14.1	5	3
Nanyuki: S&S No. 2	3.1	12.0-16.0	7.25	6
Kakamega: S&S No. 2	2.74	7.5-11.3	4.65	5
NHC Type Plans	2.0	8.0-16.0	4.6-8.32	6

Source: Adapted from Discussion Paper 5, Kenya Low-Cost Housing Bylaw Study.

Note: Living room refers to all habitable rooms except kitchens.

of 6.97 square metres, only in Dandora project in Nairobi and in Nanyuki site and service scheme where such small rooms have been approved by the respective councils. It is also interesting to note that most of the rooms constructed in Dandora range in size from 6.8 to 14.3 square metres of floor area with a higher percentage of the larger rooms.

For the majority of low cost housing schemes, there is a high preference of larger rooms than the minimum allowed in the Building Code. The more often cited explanation for such a preference is the need for subletting excess rooms to supplement allottee's income. An observed fact is that subletting reduces the loan burden on the allottee. For allottees who are in the process of constructing more rooms to reach the maximum allowed on their plots the extra income gained from subletting increases their capacity to fully develop their plots at a considerably shorter time.[18]

Another factor leading participants in low cost housing schemes to prefer larger rooms is the multi-functional nature of each room.[19] Families living in 'low income' areas, owners and renters alike, are forced by their low incomes to occupy single rooms. For modest comfort room units have to be large enough to accommodate a single bed or two, a small table and leave enough cooking and storage space.

An investigation of rents in Dandora conducted by this author in August 1982, reveals that rents are more or less directly proportional to the area of rooms with large rooms commanding a higher return on capital than small ones. Assuming allottees are aware of such tenants behaviour, they will construct large rooms to attract tenants and also to maximize their returns.

Considerable research on appropriate room sizes in relation to their use has been undertaken by the Housing Research and Development Unit (HRDU) of the University of Nairobi. Relating room sizes to average amount and sizes of furniture for poor families, they have come up with suggestions for optimal room sizes in the highland regions of Kenya. In these regions whose temperatures range from 8°C to 25°C, they recommend a minimum internal dimension of 2.1 metres and an area of 7 square metres per room.[20] Though HRDU does not have any specific recommendations regarding room sizes for the lowland climatic regions, one can assume that more indoor space is required in hot-humid and hot-dry areas. Mombasa and Kisumu belong to the hot-humid areas of the lowland climatic regions and Nairobi enjoys the cool climate prevalent in the highland regions. This may justify the small rooms in Dandora-Nairobi and Nanyuki Site and Service Schemes (Table 3.2).

3.4 Density Controls

Density controls are enforced on housing developments as an attempt to control crowding of dwellings and persons to manageable levels and also to maintain a healthy built environment.[21] Densities are expressed in persons, habitable rooms or dwelling units in a hectare or acre of land in residential use. They are of two kinds: gross and net. The land to which gross density is calculated includes the area occupied by roads, commercial centres, community facilities, public open space and residential plots.[22] Gross densities assist planners to estimate the amount of public services (roads, water, electricity, sewerage facilities, etc.) and community facilities (schools, shopping, community centres, etc.) required in a residential development. Net density applies only to the actual land used for residential purposes. This land includes residential plots, access roads within the estate, footpaths, small areas of open space and corner shops.[23]

Generally gross densities are used to allocate residential land use in physical development plans for large urban areas. Net densities on the other hand are applied to specific developments in an urban area in accordance with the stipulated gross densities of the larger area.

Density controls are enforced through legislation by defining minimum plot sizes, maximum plot coverage and by limiting the rate of occupancy in residential units.

3.4.1 Plot Size

Standards governing the size of plots have been used in urban areas to limit the number of housing units a new development can accommodate. The Kenya Building Code sets the minimum area of a residential plot in an urban area at 2,800 square feet (260 m^2). A local authority wishing to allow smaller residential plots has to seek approval from the Commissioner of Lands.[24] The common practice by many local authorities is to agree with this minimum as a dictum and refuse to accept schemes with smaller plots. This is reflected by the relatively large plots on schemes implemented through the National Housing Corporation and also for those developed by the local authorities (see Table 3.3).

Table 3.3 Plot Sizes for Selected Low-Cost Housing Schemes

Project	Developer	Plot Size (m^2)	Plot Coverage
Dandora Ph. 1	Nairobi City Council	90-160	50%
Kisumu No. 2	Kisumu Municipal Council	212	50%
Webuye	National Housing Corporation	225	25%
Kisauni	Mombasa Municipal Council	325	22%
Nanyuki No. 1	National Housing Corporation	297	30%
Nyeri No. 1	National Housing Corporation	288	unknown

Source: Republic of Kenya, By-Laws Study, Vol. II, 1981.

The calculation below illustrates how a 100 square metres plot can accommodate a four-roomed dwelling and still satisfy the existing requirements under Grade II Bylaws of the Kenya Building Code (see Table 3.1).

	Square Metres
1 habitable room of 11.15 m^2	11.15
3 habitable rooms of 6.97 m^2 each	20.91
1 kitchen of 2.3 m^2	2.30
1 toilet of 1.04 m^2	1.04
1 shower room of 1.04 m^2	1.04
Total floor area	36.44
Allow 30% for wall thickness and internal verandahs	10.93
Total plinth area	47.37

Assuming a 50% plot coverage, the minimum plot area to accommodate this dwelling unit is 95 square metres which translates to approximately 100 square metres after rounding.

In international standards a plot of 100 square metres may be considered as a large plot. According to a survey by the World Bank on site and service projects in 27 developing countries, 41 percent of the plots are less than 100 square metres and 25 percent are over 300 square metres. Most of the bigger plots are found in Africa and the small ones in Asia.[25] In India for example, plots as small as 60 m^2 are allowed in the Town of Hyderabad.[26]

Despite the proven suitability of small plots for low cost housing schemes across the developing world, Kenya seems reluctant to adopt plots of small sizes in its housing projects earmarked for low income families. The most recent project,[27] consisting of over 23,000 urban plots and estimated to house approximately a quarter million people in the low income

bracket living in the three largest towns in Kenya, has remarkably large plots as shown in Table 3.4. Many local authorities and some government officials who are involved in the production of urban housing still believe that small plots and a reduced level of servicing contribute to the propagation of slums in towns and should be avoided as much as possible.

3.4.2 Plot Coverage

Plot coverage is the amount of land covered by the building in relation to the area of the plot. The Building Code requires that the area covered by the building be less or equal to 25 percent of the plot area unless express approval is granted by the Commissioner of Lands.[28] This requirement leads to a lot of waste of expensive urban land especially on one-storey site and service projects and other rental housing for low income families. Such requirements can only be justified where pit latrines are contemplated for sewage disposal. With conventional waterborne sewage disposal, 50 percent plot coverage has been found to be satisfactory even for plots as small as 100 square metres.[29] Donatus Okpala suggests a plot coverage as high as 70 percent in low cost housing schemes.[30]

3.4.3 Occupancy Ratio

The occupancy ratio is defined as the number of persons per room. In most developing countries 'this standard is not clearly spelt in terms of the number of persons per room but is often expressed in relation to the usable area'.[31] The Kenya Building Code requires a dwelling to provide at least 40 square feet (3.72 m^2) of floor area in habitable rooms, for every occupant. According to this specification a minimum sized room of 75 square feet (6.97 m^2) allowed by the BC, cannot accommodate a married couple. In order to legally accommodate two persons in minimum sized room HRDU suggests

Table 3.4 Size of Plots Recommended for Second Urban Project Sites

Project Site	Size of Plots (m^2)
Nairobi Sites	
Mathare North	96-160
Mathare Valley	144
Riruta	500
Kayole	96-160
Villa Franca	140-160
Mombasa Sites	
Chaani	250-350
Mikindani	216
Miritini	216
Kisumu Sites	
Nyalenda	250
Manyatta	216
Migosi	192

Source: Republic of Kenya, Low Cost Housing and Squatter Upgrading Study (1978).

an occupancy requirement of 3.5 square metres per occupant.[32] The By-Laws Study (1981) has come up with a similar recommendation.

3.4.4 The Effect of Density Controls

The combination of the above mentioned controls establish the population densities for new housing developments. They are also used to determine the amount of housing that is to be condemned as substandard and even institutions like the Housing Research and Development Unit (HRDU) of the University of Nairobi seem to accept these density controls as optimal solutions. Within these controls HRDU recommends net densities of 240 - 460 persons per hectare for low income housing which we consider to be far away from reality if low income people are ever to afford their own housing in urban areas.[33] A plot which has the dwelling occupying 25 percent of its total area at most, seems to suggest the backyard and the front lawn, ranks highly in low income residential areas. But to the contrary the living space (area of dwelling) by all reasoning is of higher preference to low income people than beautiful gardens around the house. Instead of limiting the dwelling to 25 percent of the plot area, 50 to 70 percent plot coverage can substantially increase the efficiency of residential land in single storey residential development. Another excess is found with the 'minimum plot size' requirement. Given the relatively high cost of urban land, a 260 square metre plot is quite a large plot for a low income family. A modest plot for a low income house in the urban area need be 100 square metres at the maximum to enable low income families to afford the plots. Assuming 100 square metre plots, 50 percent plot coverage for a four roomed dwelling unit and an occupancy rate of 2.5 persons per room for a new housing development, such a development would have a net population density of 1,700 persons per hectare. It has been shown in a recent low cost

housing study that with proper planning and maximum utilization of open space and public service networks, single storey housing development can realize a net density of 1,100 to 1,800 people per hectare without endangering public health.[34]

3.5 Construction and Material Standards

It is now accepted in low cost housing literature that many people without building experience can construct their own dwellings. John Turner in his work in Peru found that the poor could efficiently organize themselves into building groups if given the opportunity to do so. He argues in Freedom to Build that what is required of the poor is land and financial resources for them to improve or construct their dwellings.[35] Speaking of the inefficiencies of project administrators, Turner uses an example of his own experience of a project he supervised in Arequipa, Peru.

> In Arequipa, however, it was quite absurd to have introduced so many complications. All we really had to do was approve simple sketch plans, and distribute cash in appropriate stages as each operation was completed satisfactorily. We spent enormous amounts of time and energy...to organize people into groups unnecessarily, to buy and distribute materials they could get more cheaply themselves, and trying to get them to do building work by complicated rotas....We quite failed....(we) introduced a far less efficient system....As I eventually learned, the economy of their own forms of self-help were based on the capacity and freedom of individuals and small groups to make their own decisions, more than on their capacity to do manual work.[36]

Thus, the point of contention is not that individuals cannot build and manage their own dwellings. What brings difficulties in self-help housing construction in urban areas is the requirement by local authorities that both construction and materials used have to satisfy laid down standards. Often, it is argued that these standards are far above what is necessary to maintain a healthy environment.[37] Authorities have failed to recognize that unnecessarily high construction and materials standards can

in themselves contribute to the deterioration of a neighbourhood especially if such a neighbourhood is dominated by low income families. The quality and quantity of the housing stock especially in the industrialized and highly institutionalized countries have been found to depend more on the management and maintenance of housing systems than on the way in which they are built or the type of materials used in the construction. As Colin Ward notes, the often jerry-built semi-detached houses of the British suburbs, the ideal homes of the majority built in the 1930's, are in far better shape today than the more solidly built council housing of the same period.[38] In Third World countries it has been observed that when given the opportunity to improve their own housing over time, low income families have proved to satisfy minimum construction and materials standards.[39]

Looking at the construction standards required by legislation in Kenya we see that the legislation does not require the use of a qualified contractor in the building of the dwelling. However the words 'approved manner' and 'approved designer' are frequently found in the Building Code which implies that the local authority may require the use of a licenced artisan to build certain elements of the building. An example of such elements is the plumbing works and electrical fittings. Most local authorities would insist that a developer employ a qualified plumber in a construction to convince themselves that the workmanship is in accordance with the laid down standards.

The most debated item in the provision of housing for low income families in Kenyan urban areas is the type of construction materials to be used. Many local authorities believe that high standard materials guarantee better dwellings and less risks of safety and fire incidence. They are

sceptical about sub-standard materials which are attributed to the propagation of slum conditions in the urban areas.[40]

The legislation governing the type of materials to be used in low cost housing projects is in two parts: 'Grade I' By-Laws which requires the use of permanent materials and 'Grade II' By-Laws which allows the use of local semi-permanent materials like mud and wattle for walls, and thatch for roof coverings. Table 3.5 summarizes the minimum requirements of Grade II By-Laws for low income residential areas.

Despite the provision of use of local semi-permanent materials in the legislation, most low cost housing schemes are constructed of expensive permanent materials.[41] This observation is confirmed by survey findings contained in the HRDU's Site and Service Report which showed that 86% of the allottees participating in housing programs for low income families used or intended to use permanent materials, such as concrete blocks or stones for walls and concrete slabs for floors. Thatch is rarely used in low cost housing schemes with the exception of the Swahili Villages in the town of Mombasa where 'traditional local materials are widely and advantageously used'.[42] We have shown later in Chapter V that the requirement by local authorities that plot allottees in self-help projects have to use permanent construction materials, persuades allottees to hire subcontractors in order to match the quality of construction with the expensive materials used. Thus the more expensive are the materials the higher the tendency for allottees to seek the services of sub contractors, in effect reducing the participation of the plot owners in the construction process.

Table 3.5 Permissible Materials Under Grade II Bylaws

Building Element	Bylaw No.	Specified Minimum Standard
Foundations	18	-Type of material not specified. -Material has to be strong enough to the satisfaction of the council to support the load transmitted to them.
Walls	19	-Mud and wattle or similar timber, capable of supporting the roof. -Internal and external faces finished smooth with materials approved by the Council.
Floors	20	-Concrete or compacted earth, at least 150mm above the ground level.
Roofs	21	-Roof support of poles or similar material -Roof covering of corrugated iron, asbestos, shingles or other permanent materials; Council may set aside areas where grass or similar materials can be used.

Source: Republic of Kenya, Building Code.

3.6 Health Standards

The health standards which relate directly to the production of low cost housing are concerned with ventilation, day lighting, sewerage and sanitary conveniences. The legislation that governs health standards applicable to buildings is the Public Health Act (1972) and Public Health Drainage and Latrine Rules of 1948. Most of the requirements of the Public Health Act relating to buildings are reflected in the Kenya Building Code.

3.6.1 Ventilation and Lighting

There has not been established a direct correlation between ventilation standards and the incidence of disease in high density residential areas. The formulation of these standards, like many of the standards used in developing countries are more or less a reproduction of the standards used in Europe during its period of rapid urbanization, after the industrial revolution.[43] This leads to inappropriate design which wrongly over stress the importance of ventilation in new construction. For instances it is not uncommon to see similar standards requirements in countries who had a common colonial master, despite the variations of climatic, cultural and economic conditions of these countries. As regards to ventilation we see that former British Colonies like Malawi, India, Zambia, Nigeria and Kenya have building codes which require the area of windows to be 10 percent of the floor area of every room. Zambia has recently revised its building code to allow the minimum window area to be 5 percent of the floor area.[44]

According to Givoni, the function of 'health ventilation' is to provide the necessary amount of oxygen for breathing, cooking, etc., to prevent unduly high levels of carbon dioxide and disagreeable odours.[45] Studies have shown that even without a permanent vent, there is sufficient infilt-

ration of air through the window cracks to provide the necessary air flow for minimum air requirements of ordinary families.[46] The Indian Central Building Research Institute at Roorkee in an attempt to establish the relationship between 'the standards of lighting and ventilation, and their effect on residential densities and minimum size of rooms' came out with no conclusive proof about the basis of this relationship.[47] In the absence of scientific justification of ventilation and lighting standards necessary for the upkeep of a healthy built environment, it can be argued that these standards are more associated with comfort and to a lesser extent to public health.[48] For a family struggling to secure basic shelter, ventilation would rank lowly among its priorities of housing services.

Bylaw 151 in the Kenya Building Code requires every room to have cross ventilation with a permanent air vent of cross sectional area equal to one percent of the floor area. This bylaw has two effects. It outlaws back to back row housing because they cannot provide cross ventilation. The permanent vent if not properly screened, allows insects like mosquitoes and flies which are detrimental to people's health.

3.6.2 Sewage Disposal

In theory one would expect to find two disposal systems of human wastes in Kenyan urban areas: 1) water-borne sewerage and 2) pit latrines. In practice pit latrines are more the exception than the rule. They are in operation in a handful of towns. Most towns with water-borne sewerage systems do not allow the use of pit latrines at all.[49]

The rationale of enforcing the water-borne sewerage system in housing projects intended for very low income families have little justification.

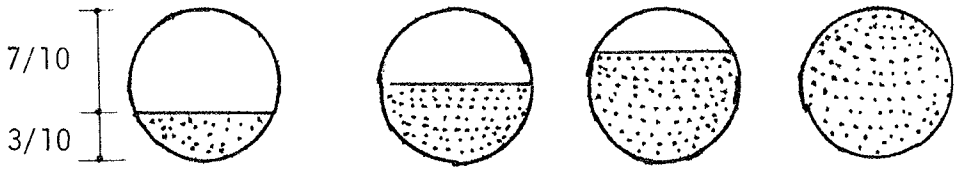
G. deKruijff in his evaluation of sanitation alternatives for site and service schemes in Kenya disapproves the use of expensive sewage disposal in a housing project designed to benefit very low income people.

> The environmental logic and expense of the whole process can be called into question: a conventional water-borne sewerage system means adding 40 litres of expensively treated and transported water to half litre of excreta per person per day, and thereafter treating the sewage thus produced to remove the excreta before the effluent can be discharged back into a lake or river. Sewage treatment costs are often higher even than those of water treatment....In fact it is very doubtful if water can be made available in large enough quantities to fulfill the conventional sewerage requirement for urban Kenya.[50]

Apart from the high cost of maintaining a water-borne sewerage system, tremendous capital costs are incurred to connect the water closets with the sewer network. Sewerage being a public service, the health authorities insist on high quality of workmanship and high materials standards in order to minimize the health hazards which may arise from sewer blockages. However, despite the use of high construction and material standards, sewer blockages are more recurrent in low income urban neighbourhoods than in middle and high income residential areas because of other reasons. In Site and Service Schemes sewer blockages are associated with the under utilization of the sewers.[51]

Studies have shown that the efficiency of sewers increases as it approaches maximum capacity. To avoid blockages the self-cleansing velocity of 0.9 - 1.0 metres per second should be reached once a day.[52] Figure 4 shows the velocity and rate of discharge for a 160mm UPVC sewer laid at a gradient of 1:100 at various depths of effluent.

Figure 5 The Effect of Depth of Flow on Velocity and Rate of Discharge for Sewers



Depth of flow	3/10	5/10	7/10	10/10 (full)
Verocity	0.66 metre/sec	0.93 m/s	1.05 m/s	1.1 m/s
Rate of discharge	3 litre/sec	8 l/s	15 l/s	20 l/s

Some observations on site and service housing projects may assist to explain the high incidence of sewer blockages in low income residential areas. Unlike other housing projects, site and service schemes are based on the gradual development and consolidation of housing. Sewers in these schemes are designed for maximum residential density while it takes many years before the scheme is fully developed to contain the maximum density. Plots are developed and occupied at random leaving some portions of the sewers dry. Not limited to Site and Service Schemes, but to all low income urban neighbourhoods, is the low level of water consumption. A study by Waweru and Associates estimates the average daily water consumption in these neighbourhoods, to approximate 70 litres per person per day.[53] Another aspect of the sewage from low income urban residents is the high content of solids, arising from the use of more solid waste materials such as newspapers and coconut husks instead of normal soft toilet paper.[54]

The combined effect of low water consumption per capita, initial low occupation of the site and the high level of solids in the sewage, results in a higher incidence of sewer blockages in Site and Service housing pro-

jects. In these schemes therefore, there is a need to examine alternative solutions of sewage disposal to meet efficiently the needs of the residents.

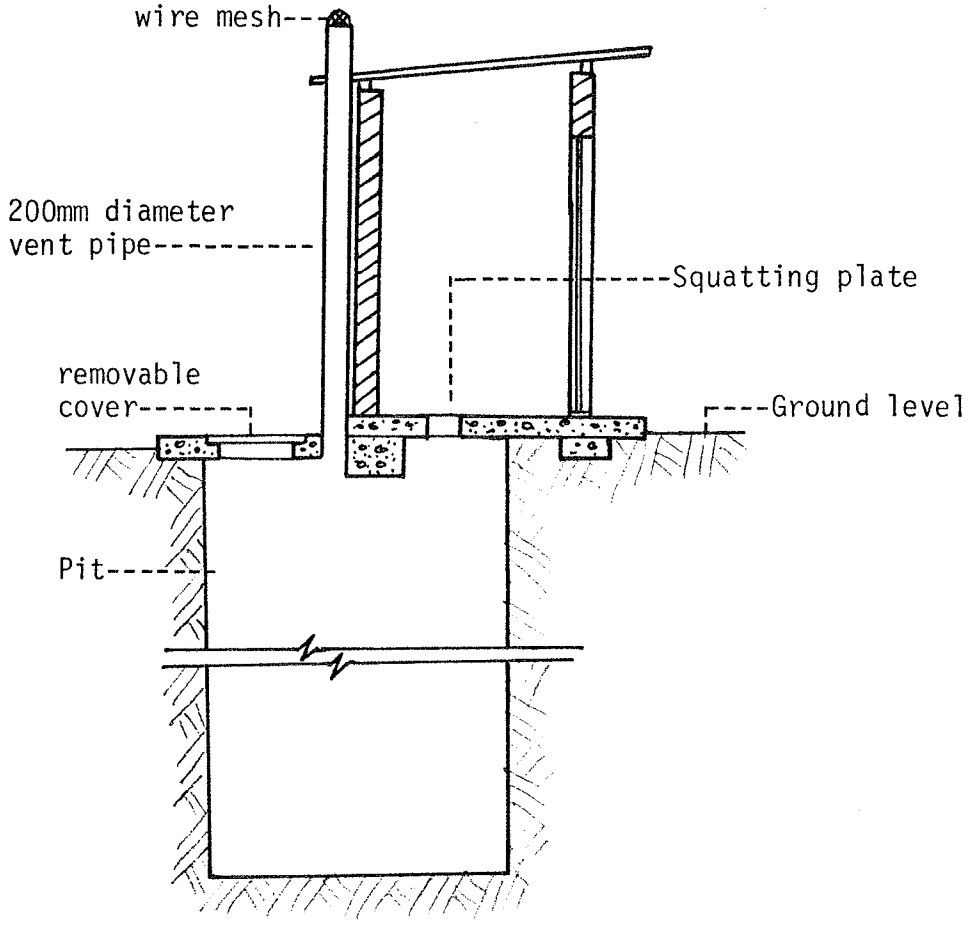
One of the options available which recognizes the hard economic situation of low income urban residents, is the relaxation of standards to accommodate intermediate solutions such as pit latrines, aqua privies and pour flush toilets. Improved aqua privies and pour flush toilets can be connected to discharge their affluent into sewers at a later date as finances permit.[55]

3.6.2.1 Pit Latrines

Grade II Bylaws allow the use of pit latrines in low cost housing schemes in the urban areas, provided that the site is large enough to accommodate a 30 feet (10m) clear distance between the dwelling and the latrine. Despite the provision of pit latrines by the Building Code, they are not permitted in most low cost housing projects in urban areas. As a result the urban poor have to continue paying for expensive water-borne sewage systems or have none at all.

Recent investigations on the viability of pit latrines has provided latrine designs that are convenient for low density residential areas.[56] They are odourless and have minimal fly and mosquito nuisance. An example of these latrines is the 'Ventilated Improved Pit' (VIP) latrine (Figure 5). In the VIP type of pit latrine the pit is slightly offset to make room for an external vent pipe as shown in Figure 5. The vent must be large enough (150-200 millimetres in diameter), to let in daylight into the pit in order to attract flies and mosquitoes from the pit to the vent pipe. A screen at the top of the vent pipe traps the insects inside the pipe. Since the pit side of the pipe is dark, the insects trapped inside the pipe will be

Figure 6 An Example of a Ventilated Improved Pit Latrine



struggling to get out to the outside and will remain trapped in the pipe and eventually die without escaping from the pit.

The vent pipe is painted black so as to absorb maximum heat radiation. The hot air inside the pipe creates an upward air draft with a corresponding downward draft through the squatting plate. Any odours from the pit are exhausted through the vent pipe, leaving the superstructure free of any odours. Pit latrines are easy and cheap to construct and maintain and where they are used as an intermediate solution of excreta disposal, they

enable people to accumulate savings and eventually connect their sanitary conveniences to the piped sewage system.

A major disadvantage of the pit latrine is that it requires a plot to have more than one pit to allow a minimum period of one year for decomposition of the pit contents, before the pit can be emptied.[57] In addition pits should not be too close together as this may overload the ground capacity to absorb waste.[58] In this regard pit latrines generally are of limited use in high density, low income residential areas.

3.6.2.2 Aqua Privy and Pour Flush Toilets

The aqua privy and the pour flush toilets (Figure 7) are in many ways a simplified form of the septic tank using the same physical and biological processes.[59] They are intended to deal directly with excreta and requires only a small amount of added water to clean the squatting plate and the entry funnel and to maintain the fluid level. The tank containing the sewage in either the aqua privy or the pour flush toilet is far smaller than the conventional septic tank producing less effluent than the septic tank, though the effluent contains more solids.

The aqua privy and the pour flush toilets have proved to function satisfactorily in densely populated urban areas. According to Henry Mann, they 'provide one of the best compromise systems of sanitation as they need less water, less capital equipment, and less maintenance than any other system capable of the same degree of protection from nuisance and disease'.[60] A study by HRDU shows that aqua privies and pour flush toilets can be provided with soakaways during the first years of a site and service project and then be connected to the sewer system (see Figure 8) of the urban area after most of the plots have been developed.[61] The same study also reveals

Figure 7 An Illustration of an Aqua Privy and a Pour Flush Toilet

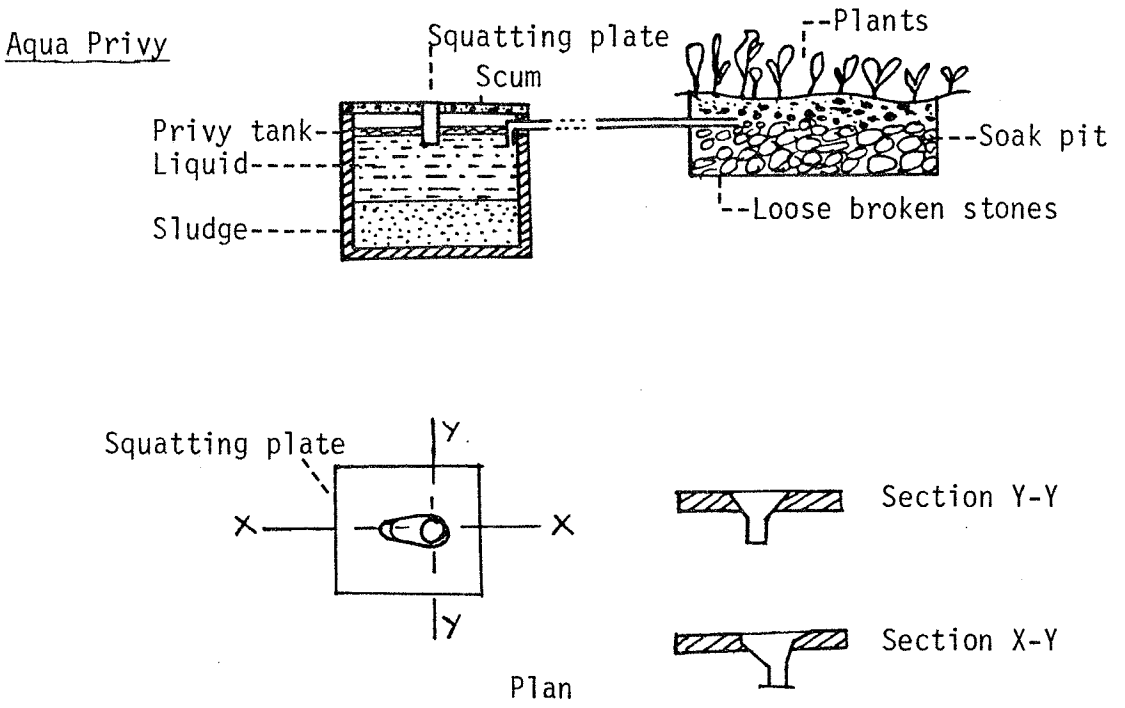
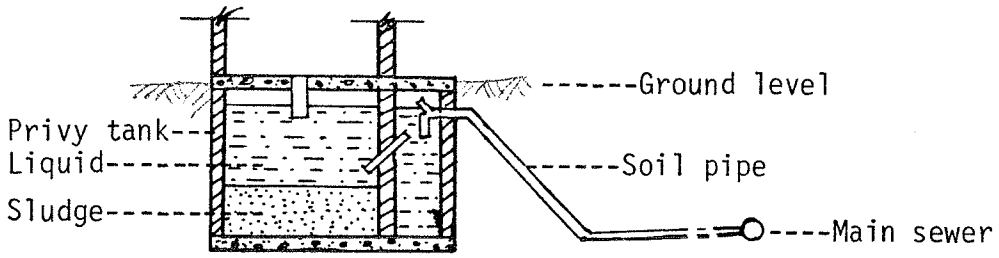
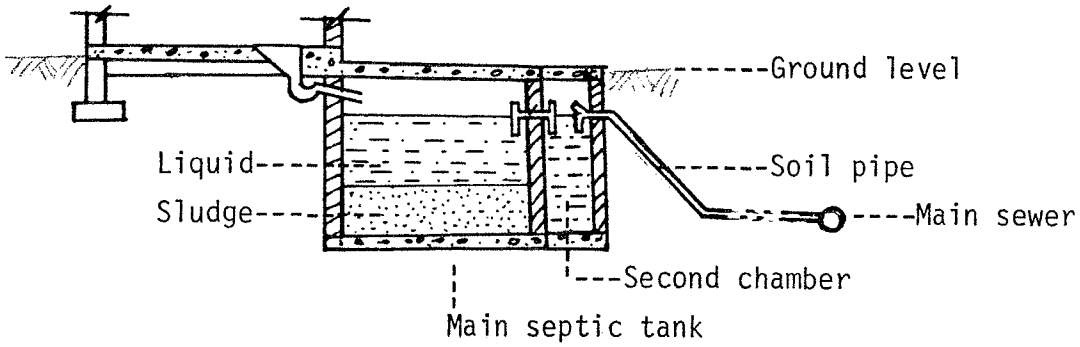


Figure 8 Aqua Privy and Pour Flush Toilets Connected to the Sewer System

Aqua Privy Sewer Connection



Pour Flush Toilet Connection



that the sewered aqua privy and the sewered pour flush toilets have high cost advantage over the conventional sewerage currently in use in Kenyan urban areas (see Table 3.6).

Table 3.6 Average Total Cost Per Year Per Plot Occupied by 18 Persons, 1979 (Sh.)

	Capital Cost	Water Cost	Total
Conventional Sewerage	2664	602	3266
Sewered Pour Flush	1584	150	1734
Sewered Aqua Privy	1553	--	1553
Pit Latrine (Contractor built)	954	--	954
Pit Latrine (Self-help built)	477	--	477

Source: HRDU, Sanitation for Site and Service Schemes, 1980.

The foregoing figures in Table 3.6 show clearly that conventional sewerage systems are very expensive when compared to the other systems discussed in this section. A saving of 47% is realized if a project adopts the sewered pour flush toilets, and 53 percent of the total annual cost is saved if aqua privies are used. The pit latrines offer the cheapest solution of human waste disposal. Compared to the conventional sewerage, a self-help housing development served with pit latrines costs 85 percent less for sewage disposal.

3.7 Effects of Standards on Self-Help Housing Output

It is misleading to assume that indiscriminate lowering of housing standards will automatically lead to an increased production of self-help housing or any housing for that matter. On the same note it is also wrong to assume that maintaining 'minimum standards' at present levels will do any good. What is required in this complex subject of housing standards

that determine the quantity and quality of officially recognized housing, is a review of these standards in order to encourage private sector resources into the production of housing in the urban areas. By review we mean the adjustment of 'minimum standards' requirement to a level that matches the capacity of individuals, private institutions and public authorities to produce housing.

Our investigations have revealed that nearly all of the capital financing for self-help housing programs in Kenya is provided by public authorities. The private institutions such as commercial banks, mortgage companies, and insurance firms have not played any significant role in these programs. We associate this lack of interest by the private sector partially to the mismatch between the standards and the household incomes. A case in point is the minimum size of a residential plot required by the legislation which is set at 260 m^2 for all residential sub divisions (smaller plots are only possible if the Commissioner of Landsgives express approval, and such approval is not granted to private institutions and individuals), and a plot coverage of 25 percent. By applying these two standards, private investors would rather build high cost buildings, whose value would be enhanced by the spacious greenery around the building (the building takes only a quarter of the plot). For private investment to be attracted to low cost housing, self-help or otherwise, sub divisions with smaller plots are needed and also a higher plot coverage is necessary.

We have shown earlier in chapter two that a 100 m^2 plot can accommodate a self contained four roomed house in a project served with waterborne sewerage, if 50 percent plot coverage is allowed. To require a 260 m^2 plot as the minimum for private sector sub divisions is being too generous to low

income people and is tantamount to a waste of expensive land if only 25 percent of the land is used for the dwelling. Using a pro-rated price, the cost of buying and servicing a 260 m^2 plot is at least double that of 100 m^2. Self-help builders will find it easier to buy and service smaller plots and a policy that recognizes small plots can be beneficial to the low income self builders. It is also common knowledge that a sub division with smaller plots will accommodate more participants.

Just as the minimum size of plots allowed for low income housing development requires a reduction to match the stipulated capital financing, the servicing of low income housing also requires adjustment to a level that compares well with the quality of the housing being produced. As an example, in a site and service project that will take the self help builders 10 years to consolidate, a waterborne sewerage designed for the ultimate population resident in the site after 10 years, is subject to problems of sewer blockages (due to dry sewer pipes) during the initial period of house consolidation. Intermediate solutions of sewage disposal such as the aqua privy and pour flush toilets may prove appropriate during the early stages of housing development. With a similar argument gravel roads may be allowed in the interim period, with local authorities establishing a levy to pave them after the sites are fully developed.

We do not see any justification to lower the material standards to allow self-help builders to construct dwellings of temporary materials like thatch, mud and wattle in high density, low income residences because of several reasons. First the thatch and wattle are easy prey to fire and termites and also thatching materials are in most cases used as animal feed making them less available and more expensive. Earth floors have problems of draining and cleaning where piped water is supplied to the dwelling.

3.8 Conclusion

In this chapter we have largely dealt with standards that affect the production of low cost housing generally. But we have gained a lot to learn how some of these standards inhibit the production of housing by self help builders. We have found that the minimum plot size required by the legislation is too large for a low income family and the plot coverage requirement of 25 percent reflects the middle class mentality of the back-yard concept in residential development, an expensive luxury for low income people. From our investigation we have concluded that lowering of planning standards to allow 100 square metres for private sub divisions can increase private investment in self help housing development because of the following three reasons:

1. More low income people can afford to pay for the smaller plots;
2. More plots become available for development as private developers sub-divide their land into smaller plots;
3. Self financing self-help housing projects can be designed where the beneficiaries are charged with all the cost of development.

The problem with lowering of standards to accommodate the means of low income people is that such a provision is subject to be abused by rich landlords who can circumvent the authorities on the pretence that they are poor or that they are constructing dwellings for poor people. Never-the-less, in Kenya where an acute shortage of housing exists a policy that increases housing construction even if the housing produced is below the 'acceptable standards' by developed countries' standards, is a step towards the right direction. Possible areas of standard reduction to promote the production of self-help housing by low income people are: smaller lot sizes;

a thinner distribution of services; and application of intermediate technology in sewage disposal systems to allow aqua privies and other similar conveniences that can be connected to the sewerage system of the urban centres at later stages of project consolidation.

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14. Ibid., p. 16.

15. Ibid., p. 153.

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57. For the purpose of design a capacity of 1.2 cubic metres has been found to suffice two persons per year for dry pits. But for wet pits a capacity of 0.04 cubic metres per person per year should be allowed because the digestion of excreta proceeds more rapidly than in dry pits.

58. H. T. Mann (1980), p. 313.

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CHAPTER IV

APPLICATION OF SELF-HELP HOUSING IN KENYAN URBAN AREAS

Having explored in the previous chapters the various situations around which self-help housing production can function, and also having set the circumstances that surround low cost housing production in Kenyan urban areas, we now direct our focus to the housing systems that utilize self-help labour and management skills. As a prelude to the analysis of these systems we will start by investigating the logic of supporting the self-help concept of housing production in the country. This will be followed by an analysis of the various types of housing systems embodied in the Kenyan national housing program that apply self-help techniques. To sum up the chapter we will examine the reaction of the 'performers' in self-help housing programs. The 'performers' are classified into three levels: the central government; the local authorities and the beneficiaries.

4.1 Rationale for Self-Help Housing in Urban Areas

In Chapter II we have examined the various factors that can be used to support the use of self-help in housing development in Kenyan urban areas. On the demand side, we find that the majority of the urban residents earn very low incomes which barely suffice the daily basic needs of food, clothing, health and education that little is left to pay for shelter. The high growth rate of urban population exerts a lot of pressure on existing housing stock, already considered to be far below what is required to satisfy the housing need.

The combination of the large housing deficit and the low income levels of the majority of families in urban areas necessitates the need for housing programs which maximize the number of affordable dwelling units entering the housing market. Self-help housing has shown to have a substantial contribution at lowering the development cost of low cost housing in many countries of the developing world, including Kenya.

We have also observed that a high proportion of urban residents in Kenya live in housing that have been 'informally' constructed through self-help means. This confirms Turner's observation that self-help construction largely contributes to the alleviation of housing shortage for low income workers in the towns. The fact that most of the urban poor presently live in informal settlements justifies the need to promote self-help methods of housing construction and management in the formal sector of urban areas. According to Leland Burns, where there is acute housing shortage, second best solutions provide a realistic approach of redressing the housing problem.[2] Production of housing that utilize self-help techniques can be regarded as the second best solution where conventional contractor-built housing has failed to produce housing for low income urban residents.

On the supply side we find that the resources which can be allocated to housing at both individual and national levels are largely inadequate. In such circumstances it is impossible to produce enough houses, both for buyers and renters that satisfy the housing need.

Past experience has shown that the few houses produced every year are priced beyond the reach of 70 percent of the urban population. Thus, there is a need to increase the number of dwelling units produced every year, at

prices affordable by the majority of the population. This notion is shared by Charles Abrams when he notes:

> The great number of poor people makes it impossible to meet the demands of all in a short time. A large expensive program for the poor will cost more than the government can pay .....But a country can make some progress by adopting a housing program that produces the greatest number of houses at the least cost and uses as much local materials as possible.[3]

Like Charles Abrams (1964), John Turner (1969, 1972, 1976, 1980), a strong supporter of self-help housing construction,maintains that the key to low income housing problems lies in intermediate solutions where the owner improves his house at a pace dictated by his financial capacity of acquiring construction resources of labour and materials. While self-help does not provide all the answers to low income housing, its constribution to urban housing production is worth some credit. Self-help is a way to an end but not an end by itself within the struggle for better living conditions for urban residents.

4.1.1 The Filtering Process

The filtering process 'assumes that new housing tends to be added to the housing stock at higher value levels for middle and upper income groups'.[4] It includes two distinct processes of housing market activities. One is the "filtering up" of households to high economic status which results in a substitution of dwelling units to newer or better housing at certain points in the life cycle of households. The other is the "filtering down" of dwelling units to lower market and price, resulting in changes of occupancy from higher to lower income households.[5] The poor are of course at the end of the line and they have to wait for everybody else to move to create a vacancy for them.

Because of the great shortage of new housing and the large number of households awaiting to be housed, the filtering process cannot succeed in the Kenyan situation. Bourne even questions the functioning of the filtering process. He puts his observations as follows:

> The principal criticism of filtering in housing from a normative point of view is precisely that housing, at least housing of reasonable quality does not filter down to those of lower incomes. Either it is not available because it is still occupied by middle and upper income households or it may be converted to other uses (such as offices) or some other form of tenure for investment purposes.....Even if it becomes available, restriction to access to that housing, in terms of the lack of mortgage availability, high rents or discrimination, may prevent households from occupying such units.[6]

The filtering process falters where demolition of older housing occurs and acute shortage of existing low and moderate income housing exists. At the same time migration of the jobless from rural areas to the cities increases the demand for low income housing.[7] We have observed that housing in Kenyan urban areas appreciates with time towards the prices of new equivalent housing in the same location. The high rate of inflation especially after 1972 has resulted in a "filtering up" of dwellings rather than the expected "filtering down".[8]

To illustrate the filtering up of dwellings we will compare the rent trends of Buru Buru Estate, a middle income housing in Nairobi, and the government salaries for 'fresh university graduates'. In 1976 a two bedroom house in Buru Buru rented for an average of Sh. 750 per month.[9] Fresh university graduates entering the government service in 1976 were paid a salary of Sh. 2,250 per month. In 1982, the monthly rent for a two bedroom house in Buru Buru had risen to Sh. 1,250 and the government salary for 'fresh graduates' had been adjusted to Sh. 2,410. Comparing the trend

of rents and that of incomes, we see that while the graduate occupying a two bedroom house in Buru Buru in 1976 was spending 33 percent of his income on rent, in 1982 to occupy a similar house he had to spend over 50 percent of his salary income on rent. A selective field investigation by this author in August 1982 found that fresh university graduates who could easily afford to rent a house in Buru Buru estate in 1976 had to strain their incomes if they chose to stay in Buru Buru in 1982.[10] Many of the 'fresh graduates' presently rent accommodation in a lesser attractive estate called Umoja, which was dominantly occupied by clerical staff (in the Sh. 1,000 to 2,000 income range) in 1976. This is a clear indication of the "filtering up" of dwellings, contrary to accepted norms of the filtering process.

If housing does not filter down to low income groups it stands to reason that the housing needs for the urban poor can only be catered for if new housing projects are designed to accommodate low income people at the outset. One of the advantages of self-help housing programs is that they strive to serve the needs of low income urban residents from the start.

4.2 Self-Help Housing Systems in Kenya

Nearly all of the low cost housing programs in Kenya are implemented through self-help construction processes. The construction processes fall under four distinct categories:

1. Site and Service housing development
2. Core housing
3. Squatter upgrading schemes
4. Peri-urban low cost housing

The common feature of all four types of housing developments is that the plot owner adds improvements to his or her plot and dwellings by employing self-help methods.

4.2.1 Site and Service Housing Development

Site and Service schemes have been recognized as a viable approach to low income problems of shelter. They spread the benefits of housing to a relatively lower income category of urban population (Turner et. al. 1972, Ward 1980).

The implementation of site and service schemes is basically a joint process involving the government and the plot allottees. The government or its agency prepares an overall development plan for an area of housing which includes the definition of the plots, design and layout of the roads, provision of schools, health centres, open space, shopping areas, local market, recreational open space, sewerage and water reticulation. Normally the National Housing Corporation or the local authority that is to benefit from the project, is responsible for the preparation of the development plan. After the project is approved by the council and the relevant government authorities, contracts for setting out of plots, and installation of basic public services that usually consist of roads, sewerage, water supply and electricity, are commissioned to private firms. Space is also set aside for community facilities such as schools, markets, health clinics, community centres and public open space which are built later by public authorities.

The plots are allocated to pre-qualified applicants who meet the allocation criteria determined by the public authorities. Guidelines for

allocation criteria are normally provided by the Ministry of Works and Housing and modified to fit the local conditions of the urban centre the project is located.[11]

To ease the approval process of design plans for dwellings, the allottees are in most cases provided with several house type-plans already approved by the local authority. Where the allottee is using his own design plans, the procedures normally followed in the approval of design plans for new construction projects are applied. In some cases, the type plans supplied to the allottees are inappropriate leading to long periods of delays, unfinished dwellings or undeveloped plots.[12]

In addition to providing serviced plots to allottees, public authorities are also responsible for the provision of materials loans to allottees and supervision of construction during the first 18 months after allocation when the allottee is expected to finish building the first two rooms. The materials loan is supposed to assist the allottee purchase building materials necessary to construct a dwelling of acceptable standards in accordance with a suitable type plan.

The primary objective of site and service schemes is to enable low income families to construct their own houses that they can sublet to supplement their incomes. By reducing the average development cost for the plot, the amount of loan to be recovered from the allottee is lowered. As a result eligibility for site and service programs is extended to families with fairly low incomes. For instance, in Dandora Site and Service Project, families earning as low as Sh. 280 per month have been allocated plots.[13]

All costs incurred in the development of site and service projects are recovered from the plot allottees over a period of 15 to 25 years at 8.5 percent annual rate of interest. Normally the government lends the money to the implementing agencies at 6.5 percent interest and the agency adds on 2.0 percent to cover administrative costs.[14]

The terms of credit for these schemes seem favourable to low income allottees. Nevertheless the allottees are subjected to a lot of hardships during their early months following allocation. During this time they are required to repay the loans and at the same time construct the houses. Thus, they must work elsewhere to earn enough income to repay the loan in addition to their normal household expenditure. At the same time if they do not continue with the construction, they cannot qualify for additional materials loans, and risk eviction from the plots on default, either because of failing to pay the monthly charges, or being unable to complete the house within the scheduled period. This defeats the principle of self-help advocated by the program financiers as it is difficult to fulfill the two requirements at the same time. To overcome this problem a grace period is necessary during which the allottee is not required to repay the loan, and he can concentrate all his energies and savings to the construction of the dwelling. The grace period should coincide and be equal to the time necessary to construct the minimum shelter by self-help techniques.

4.2.2 Core Housing

Core housing schemes apply a similar principle as site and service schemes except that the public authority provides a core unit in addition to the serviced plot which the allottee can be using while constructing the other rooms. The core may take the form of a toilet and shower unit, a

slab, a structure consisting of a toilet, shower and kitchen or a complete habitable room. Like in site and service schemes the allottee constructs the additional rooms with the help of materials loan. The total cost of servicing the plot and constructing the core unit is recovered from the allottee over a period of 15 to 25 years at a nominal rate of interest (normally lower than the market rate).[15]

4.2.3 Squatter Settlement Upgrading Schemes

The squatter upgrading option is designed to improve existing squatter (or unapproved) settlements inhabited by low income families.[16] The main objective of squatter upgrading schemes is to provide the residents of squatter settlements with modest public services and community facilities. The occupant is assisted to improve the dwelling.

The implementation of squatter upgrading projects is faced with more problems than site and service projects. Difficult decisions have to be made to justify and minimize demolitions of existing buildings in order to accommodate access roads, sewerage and water supply pipework, and to provide sites for community facilities. In densely populated squatter settlements a relocation of some of the residents is necessary to create space for service networks and community facilities. An empty site has therefore to be found and subsequently serviced to accommodate the displaced population.

The squatter settlements requiring upgrading are not necessarily more populated than the resultant planned settlements created by settlement upgrading programs. A recent study of squatter settlements in Kisumu Town found that in Nyalenda, a low income settlement of 27,000 people with a gross density of 300 persons per hectare, would accommodate the same number of people after the area is replanned and upgraded to contain access roads,

public services and community facilities. Pandipieri, another squatter settlement in the same town, would accommodate a higher gross population density after upgrading.[17]

One of the most undesirable side effects of squatter upgrading schemes is gentrification, i.e. the displacement of the poor residents by the 'better-offs' from the other parts of the city or town, after an area has been improved. Generally this occurs if residents are tenants paying their rents to absentee landlords. One merit of adopting low standards for upgrading projects is to avoid making the upgraded areas too attractive to the higher income groups. But local councillors resent the adoption of low standards partly because some of them own plots in these areas and also because they do not want to advocate small improvements which are not strikingly visible to the public eyes in order to win political points. In an ongoing housing project for the improvement of the Mathare Valley, the largest squatter settlement in Nairobi, standpipes and collected wet cores (an ablution block serving 12 plots, each plot having its own lockable toilet and bathroom) recommended by the consultants for the project study[18], were rejected by the council. Reasons for the rejection varied, but among city councillors the often cited justification of individual water and sewerage connection to every plot in the project,was that the collected wet cores symbolized the creation of another slum which they were not prepared to support.[19] Such lack of insight to pertinent squatter problems leads to amplification of these problems after the settlements have been upgraded.

4.2.4 Peri-Urban Low Cost Housing

In the event of extension of urban boundaries, predominantly agricultural areas lying on the outskirts of the old city boundaries are incorporated into

the jurisdiction of the urban local authority.[20] In these areas the local authority is responsible for the overall planning and the provision of public services and community facilities. Unlike town plots which are held under a leasehold title, land in peri-urban villages is often held under a freehold title. Thus the sub-division of land and the construction of houses is a private responsibility that does not require approval of the local council.

Having been transformed from rural agricultural villages, the forms of housing construction in peri-urban settlements resemble those in squatter settlements. A good example is the Riruta Satellite settlement in the Dagoretti area located to the western outskirt of the city of Nairobi. The settlement was incorporated into Nairobi and rezoned residential from agricultural land use after independence in 1963.[21] Two thirds of the buildings are constructed of permanent materials. With the exception of piped water, other public services like paved roads, sewerage and street lighting are lacking in this settlement and community facilities are far below those enjoyed by other parts of the city.[22] To improve the level of services, the city is presently installing service networks in Riruta under an upgrading project sponsored by the World Bank.

Improvement of settlements similar to Riruta Satellite follows similar lines as squatter upgrading schemes as long as the provision of public services and community facilities are concerned. However, an owner of a plot in peri-urban villages has some advantages over squatter settlers in that he can acquire development capital from private money institutions using the title of his plot as collateral for the loan. The fact that owners of plots in peri-urban villages do not require approval from the

local authority for sub-division of their plots and also for housing construction, the process of improving their housing is relatively quicker than that of squatters. Since they have security of tenure they are not threatened by evictions from their plots by local authorities during the period of housing consolidation. Because of these and other reasons, the housing conditions in most peri-urban villages is of superior quality than that found in squatter settlements.

4.2.5 An Evaluation of the Housing Systems

Although all of the four housing systems described previously in this section apply self-help construction methods, each one of them has it own distinct characteristics. Generally the four systems can be grouped into two categories. One category is involved with the development of new sites and the other deals with improvement of dwellings and infrastructure in existing low income settlements.

In the first category are placed the Site and Service schemes and core housing developments. Their implementation have many characteristics similar to any new housing development, whether for low, middle or high income residential. Just like any new sub division, the layout plans are drawn in accordance with the overall master plan of the urban centre and the level of infrastructure provided is calculated to suffice the ultimate population after the site is fully developed. The level of servicing i.e. provision of roads, water supply sewage disposal and electric power fairly compares with the rest of the city or town although some slight adjustments are made to reduce the project costs.

The second category encompasses the squatter upgrading schemes and the the peri-urban low cost housing. Both aim at improving the housing

and living conditions of existing settlements. Unlike core housing and site and service schemes where the beneficiaries are selected from the general population by applying the allocation criteria, in these schemes the participants are not selected. As long as they own plots in the area selected for upgrading, they will benefit. Where residents in an area selected for upgrading are tenants, the upgrading has two effects: 1) it makes the area more attractive forcing the rents up; and 2) it improves the standard of living of those tenants whose rents are not consequently increased. In most cases gentrification occurs if the extra services provided introduce an abrupt significant change to the quality of the settlement. As an example if a settlement is without piped water, sewerage and electricity supply, a program that installs these services in a time-phased sequence is likely to experience less gentrification than a program that installs all these services at once. Our observation of the upgrading projects in Kenya suggests that they lean towards the latter. But the fact that there are many low income settlements in urban areas which do not have the basic public services, project packages which include the provision of all the lacking services in a settlement, have higher social and economic impacts at the national level. There seems to be few alternatives, and gentrification should be accepted as unavoidable offspring of upgrading schemes which can only be reduced by having more upgrading schemes.

We are convinced that the main reason why the low cost housing programs have managed to reach low income urban residents, is because self-help offsets some of the labour and administrative costs involved in conventional housing development. Site and Service projects remain the most viable option to reach low income tenants, squatter upgrading uplifts the living

conditions of plot owners living in the upgraded settlements and peri-urban housing has a positive effect of reducing the housing and servicing disparities that exist between the city and the periphery.

4.3 Perception of Self-Help Housing by its Providers and Recipients

In order to make a composite evaluation of the successes and failures of self-help housing, it is necessary to regard the perception of those who provide the finance for these schemes, namely the central government; the implementers and managers of the housing produced, viz the local authorities; and the households who benefit from such programs, i.e. the participants.

4.3.1 Perception at Central Government Level

The central government has been the major supporter and financier of self-help housing in Kenya. Through its housing policy that heavily invests in settlement upgrading and site and service programs, the central government has shown its commitment to the self-help approach of housing improvement and development for low income urban families. This commitment is reflected in the 1979-83 Development Plan as follows:

> One proven method of reaching the majority of all urban families is through the development of site and service schemes. In these schemes the bulk of the construction work will be done on an individual or collective basis to keep the costs as low as possible.[23]

The Ministry of Works and Housing (formerly Urban Development and Housing) has provided guidelines which require local authorities and the National Housing Corporation to design projects that maximize the occupants' inputs in the development of urban housing. It is estimated that 90 percent of government funds earmarked for low cost housing development during 1979-83 Development Plan period is being used to finance site and service housing projects and settlement upgrading schemes.[24]

An explanation why the government favourably supports self-help housing has been presented earlier in Chapter II. Since the government is aware of the large proportion of urban population that is poorly housed it is trying to spread its capital financing for housing development to as many families as possible.

According to officials of the Ministry of Works and Housing, Department of Housing, Site and Service housing schemes have positive effects of improving the social and economic status of the beneficiaries who are selected from low income urban residents. The allottees in these schemes are allowed to sublet some of the rooms while they occupy the others. As a result they gain extra income by being participants in site and service projects, in addition to having a shelter of their own.

One negative aspect of the government policy guiding low cost housing programs is that it does not recognize one room dwellings. According to the Ministry of Housing guidelines low cost housing (low cost housing is used to refer to the housing for low income people) have to consist of two habitable rooms in addition to a kitchen, toilet and bathroom. The same guidelines suggest that house type plans used for low cost housing schemes such as site and service projects have to allow for subletting. Since most of the sublet units are one roomed, and it is well known that low income families cannot afford to rent two roomed units, it can be beneficial to both government and the people if one roomed units are accepted as the minimum solution to low income housing.

4.3.2 Perception at Local Authority Level

Generally there is a lack of enthusiasm among administrators and politicians at local authority level on the promotion of site and service

schemes in their areas of jurisdiction. Many reasons are used to explain why this phenomenon prevails within municipal and town councils. The major point of contention is the level of standards of new housing earmarked for low income people. In the minds of local politicians and administrators, low cost housing in the form of site and service projects do not ultimately benefit the poor. This supposition is supported by a survey by Saad Yahya in 1981 who found that over 50 percent of the plots in site and service projects are sold within the first year of allocation.[25] In Thika Town, approximately 75 percent of the plots in site and service schemes developed since 1968 have been sold to non-allottees. This seems to contradict the views of officials from the Ministry of Works and Housing who believe that as long as the applicants for these schemes are properly screened and plots allocated to the intended income group, plot transfers do not constitute a significant number compared to the total plots allocated. However, they agree that where plot allocation is done unfairly resulting in wealthier people being allocated plots, there have been cases where the councils willingly or otherwise have been unable to repossessthe plots.

In Nairobi the Council demands the use of higher standards in site and service schemes than what is stipulated in the legislation governing the construction of low cost housing in urban areas.[26] In a recent low cost housing scheme in Nairobi financed jointly by the central government and the World Bank, (normally referred to as Second Urban Project) Nairobi City Council rejected core housing, because of disagreement on the issue of standards. The council was of the opinion that the allottee could build a better superstructure at lower cost than a large scale contractor.

Table 4.1 representing the housing output from site and service projects in Thika Town since 1968, demonstrates the poor performance of these schemes in some towns. Between 1968 and 1976 the Council and the National Housing Corporation managed to service 2,246 plots. Out of these, only 45 percent of the plots were developed by 1980.

The low level of plot consolidation in these schemes can largely be blamed on the council. The council does not encourage progressive development for housing consolidation in these schemes. If anything it discourages it in that, it refuses to issue occupation certificates (an occupation certificate legalizes the occupation of a plot by an allottee) until it is certified that the housing unit is completed in accordance with the approved design and to standards stipulated by the council. The estimated cost of a house that fulfills the council requirements is about Sh. 130,000 (U.S. $9,560).[27] The high cost in itself discourages the construction of housing even to middle and high income individuals. With lost hopes of ever developing the plot the allottee sells the plot to wealthier individuals who may decide to hold the plot for speculation purposes.

4.3.3 Perception at Participant Level

> Traditional assumption about families only willing or able to spend up to 25 percent of their monthy income on housing have proved to significantly underestimate the willingness to pay. Many families have been willing to spend up to 40 percent of their income on housing.[28]

Many of the poor households regard housing in the urban areas as an investment as well as a place to live in. For this reason they are willing to invest larger than expected amounts in the building or upgrading of their houses. They receive substantial income transfers from their extended

Table 4.1 Site and Service Schemes in Thika Town

Project No.	Period	Developed Plots	Undeveloped Plots	Total Units
1-3	1968-73	207	0	207
4	1973-80	150	329	479
5	1973-80	103	97	200
6	1973-80	170	66	236
7	1973-80	140	77	217
8	1973-80	95	0	95
9	1968-80	152	253	405
10	1976-80	0	412	412
Total	1968-80	1,017	1,234	2,251

Source: Republic of Kenya, Third Urban Housing Project Draft Final Report, 1982.

Note: Site and Service No. 9 was developed as a rental scheme by the Council

families as well as borrowing from friends, co-operative societies and employers to help cover monthly repayments and cost of housing construction.[29] In self-help housing projects they also receive labour inputs from friends and relatives while constructing their dwellings. The cohesiveness and determination of these households enable them to produce housing of higher quality than what their money can buy in the market in terms of the hiring of labour and purchasing of building materials.

An indication of the investment motive is the high proportion of households who sublet some of the rooms in their plots. According to a survey done by Senga, Ndeti & Associates on behalf of the City Council, 80 percent of the structures in Dandora Site and Service Project in Nairobi are partially rented.[30]

Of course there are some allottees who are not interested in developing their plots. They negotiate quick deals with wealthier people entering into agreement to transfer the plot after 5 years, the minimum period required by the 'site and service agreement' before the allottee can sell the plot. In such transactions the allottee surrenders the plot to the buyer, immediately he receives the payment and the new owner goes ahead with the development of the plots. An allottee intending to sell his plot views the plot as a vehicle to improve his overall economic situation and not as an asset he can use to improve his housing conditions. This is more so if he is convinced that his resources are inadequate to develop the plot to the standards required by the public authority.

4.4 Conclusion

We have surveyed the housing programs applying self-help methods in Kenya and the reaction such programs receive from the parties involved in

their production. In the first instance it is evident that there is a commitment by the central government to use possible methods that can lower the unit cost of housing. It is commendable that it is government policy to support self-help construction processes in low cost housing programs in order to reach a wider segment of the population.

We have observed that nearly all of the low cost housing programs utilize self-help techniques in construction and management of urban housing. However we have noted that there is a lack of supportive measures to assist the self-help mode of housing development. A negative aspect of housing policy despite the emphasis on reduction of costs in housing production, is the definition of the housing unit that can qualify for program financing. It is futile to require people to build two rooms as the minimum necessary for official recognition when each of the finished rooms is sublet to a separate household. A housing policy that guarantees an official recognition of one room dwellings can reduce the financial strain on allottees during the early stages of dwelling construction.

The strongest attraction for low cost housing programs is that land, an expensive component in urban housing development, is provided free. At individual level a participant allocated a plot in these programs will struggle hard to construct the best house possible in order to gain maximum returns from subletting. One of the factors that make land in low income housing projects attractive for higher quality housing than that envisaged, is that the level of services installed is more or less equivalent to the rest of the urban centre. The servicing normally includes the provision of tarmac estate roads, road frontage for every plot, and water and sewer connection to all plots. In this regard local authorities (and

rightfully so) cannot see the justification for allottees to build relatively low quality dwellings whose value is a small fraction of the vacant plot when the same plot can attract other unhoused residents who are prepared to invest in a house costing several times the value of the plot. The allottees are also aware of the high value of land they have acquired free of charge. Owing to the high cost of urban land an allottee can realize a financial gain even if he sells the plot. To curb wide spread sale of plots by plot allottees, some form of control that forces the allottee to build and remain on the plot is necessary. A requirement that the allottee has to build his dwelling within a stipulated time and on default face an eviction from the plot, is one of the relevant steps to encourage and at times force the plot allottees to allocate most of their labour and financial resources on the development of their dwellings. Other measures that can reduce the sale of plots to non allottees include the outlawing of all plot sales or reducing the quality of servicing to make the serviced land less attractive to higher income groups.

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CHAPTER V

SELF-HELP HOUSING PRODUCTION IN A SITE AND SERVICE PROJECT IN KENYA: A CASE STUDY OF DANDORA COMMUNITY DEVELOPMENT PROJECT IN NAIROBI

In the preceding chapters we have analysed the various factors which influence the production of self-help housing, and low income housing in general, in Kenyan urban areas. In this chapter we are focussing our discussion on the forms of self-help processes applied in one of the "show piece" self-help housing projects in Kenya.

The data used in this chapter was collected by the author during his field research in Kenya in July and August of 1982. A lot of the information was acquired by way of interviews with officers in the Housing Development Department (HDD) of Nairobi City Council, which is responsible for implementing the housing project being studied in this chapter. The name of the project is Dandora Community Development Project. At the time of the field research the author also held useful discussions with project allottees, sub-contractors employed by the allottees and the various groups and institutions involved in this project.

The primary objective of Dandora Community Development Project is to provide affordable housing to low income families in Nairobi. The income category selected consists of families whose head of household earned between sh. 280 and sh. 650 per month. The Ministry of Works and Housing defines low income people as those earning between sh. 300 and sh. 1200 per month.

5.1 Introduction

The notion of self-help is adopted in the site and service approach of residential development for low income inhabitants of urban areas. This chapter examines the operation of self-help housing processes in the first housing project in Kenya that utilized the concept of self-help as a measure to reduce overall financing requirements for plot allottees. The plot allottees are given some incentives and assistance in the form of materials, loans and technical advice in order to mobilize their own resources in the construction of their dwellings. The principal actor involved in the construction ranges from the head of the household who does all the job by himself, to a joint venture in which he works with a paid labourer or in a building group; or it may involve total dependency on hired labour. The degree of participation by the allottee in each case is mainly dependent on his financial resources and the spare time he has from his regular employment.

5.1.1 Background of the Project

Dandora Community Development Project (DCDP) is the first urban housing project to be financed jointly by the Government of Kenya (GK) and the World Bank (WB) with its affiliated institution, the International Development Agency (IDA). It is a multi-sectoral, two-phased residential project located in the eastern part of Nairobi.

The project package was prepared by Nairobi City Council, its preparation stretching between January 1973 and April 1974. Negotiations for its financing and implementation schedule were concluded in May 1975 between the Bank, the government and the Council. Project implementation commenced in May 1975 and the buying of services for phase 1 of the project consisting of 1029 plots was finished in November 1976.[1] Allottees started moving to

the site in the same month but delays in the approval of house type plans held up the start of construction up to February 1977.[2] Servicing of Phase 2 started in May 1978.

The administrative and coordinative tasks and the actual implementation of the project are being undertaken by the Housing Development Department (HDD) of Nairobi City Council. HDD was formed in 1978 to replace Dandora Community Development Department (DCDD) in order to bring the responsibility of implementing low cost housing projects for the entire city under one department.[3]

5.2 The Project

The project consists of 6,000 residential plots with individual water and sewer connections and related public services and infrastructure including roads, security lighting and refuse collection. The 6,000 plots are laid in varying sizes of 100, 120, 140 and 160 square metres. About 1,800 plots have an area of 100 square metres, and the other 4,200 plots are comprised of 2,100 plots of 120 square metres, 1,800 plots of 140 square metres and 300 plots of 160 square metres. The gross population density of the project is 32 plots per hectare. Assuming an average of four rooms per plot and an occupancy of 2.5 persons per room the gross residential density after the project is fully developed works out to be 320 people per hectare. This compares well with other populous low income areas in Nairobi.[4] The project covers an area of 218 hectares out of which 33 hectares are not suitable for development because of excessive slopes, quarries, etc. Development on the remaining 185 hectares is well balanced, with residential units taking 48 percent, roads 24 percent and community facilities 28 percent of the area.[5]

5.2.1 Levels of Servicing for Residential Plots

All the 6,000 residential plots are provided with basic infrastructure up to the plot boundary. This includes water and sewer connection to each plot and vehicular access to approximately 50 percent of the plots. In order to accommodate a significant range of income levels within the low income brackets three levels of "on site" development are provided. The three levels are described here under as Type A, Type B and Type C plots.

5.2.2 Type A Plots

There are 3870 Type A plots in Dandora Project. Each plot is provided with a contractor built "wet core". The wet core consists of a water closet, a shower room and a store. Every plot allottee is entitled to a materials loan amounting to sh. 5760 for the development of his/her dwelling. The allottee is expected to construct his shelter through self-help methods. The project administrators allow the hiring of labour if the allottee so desires especially where the allottee has a full time job and cannot complete the minimum shelter (two habitable rooms) within eighteen months of allocation. Allottees who fail to finish the minimum shelter within eighteen months are evicted and the plot repossessed by the council and reallocated again to eligible applicants on the waiting list.

5.2.3 Type B Plots

1800 plots fall under this category. In addition to the "west core" provided in Type A plots, a Type B plot has a kitchen and store constructed by a contractor before the plot is handed over to the allottee. Plot owners are offered a materials loan amounting to sh. 2880 in order to complete the minimum shelter. Owners are expected to use self-help in the construction of the additional rooms. They are also free to hire labour and artisans during the construction process.

One advantage of Type B plots over Type A plots is that they provide a room that the plot owner can use as a living room and/or for storage of the building materials during the initial period of housing consolidation.

5.2.4 Type C Plots

The remaining 330 plots are laid on 160 square metre plots. They have a contractor-built dwelling consisting of one living room in addition to the sanitary unit and the kitchen. These plots were offered for sale at market prices. The development cost of Type C plots was estimated at sh. 16,500. The first 54 Type C plots in Phase 1 of the project were sold in 1976 at sh. 2800, at a profit of sh. 11,500 to the Council.[6]

5.2.5 Temporary Shelters

One problem that had to be addressed by the project administrators was the necessity of storage space for tools and construction materials for Type A plots. Concern over the theft of materials by allottees and project officials persuaded the council to allow temporary structures on Type A plots. Allottees turned this provision to their advantage.

One of the advantages of the temporary structure was that it was used by the allottee as shelter as well as a store for construction materials. Thus during the construction period the allottee saved on rent that he would be paying if he was staying in rented accommodation.

The temporary structures were constructed of the cheapest materials the allottees could lay their hands on. The most common materials used for walls were mud and wattle, corrugated iron sheets and timber. Single pitch roof construction dominated most of the structures. The roofs were constructed of timber purlins with galvanized iron roof covering. There were no finishes to the walls and floors. Floors were tramped earth or murram,

sometimes compacted to an even surface.[7]

It can be argued that the temporary structure when used as a dwelling is a good example of a self-help housing unit. The allottee uses his ingenuity to set up and construct the structure without outside help. According to Yahya Report, the general standards of these structures are crude, the walls are not aligned properly, the door is crudely fixed and there is no adequate natural lighting or enough air circulation; a reflection that the allottee used his own skills to put up the structure.[8]

The erection of such a temporary structure takes approximately one to two days. In Dandora the average size of the temporary structures was 12 square meters. It was located at one of the corners of the plot to avoid obstruction during the construction of the permanent shelter. The cost of the structure amounted to between sh. 250 and sh. 300.[9]

The agreement between the Council and the allottees required the temporary structures to be demolished after completion of the first two rooms in each plot. But observations confirm that they often continued to be used for residential or commercial purposes such as a food or vegetable kiosks, long after the permanent shelter had been completed.[10]

5.3 Allocation Process

We have mentioned in the preceding chapters that self-help housing projects in Kenya are designed to benefit low income families who, because of their low incomes cannot qualify for contractor-built complete housing units. The criteria for allocation are therefore to ensure that the plots in these projects benefit the target population.

In terms of family incomes, the Ministry of Works and Housing requires that beneficiaries of low-cost housing programs sponsored by the government

must be earning between sh. 300 and sh. 1200 per month. The ministry assumes that families earning less than sh. 300 cannot manage to repay the loan and develop their plots, while the families earning more than sh. 1200 can afford to buy or rent housing offered in the market through their own arrangments.[11]

The income criteria used for allocating the Dandora plots aimed at reaching the bottom end of the low income groups in Nairobi. On the lower side, those families with a total monthly income of sh. 280 per month could qualify. The ceiling on the upper side on monthly income basis was lowered from sh. 1200 to sh. 650. Approximately 40 percent of Nairobi families fell under the sh. 280 to sh. 650 income range in 1977.

In order to qualify for the plots applicants were also required to have lived in Nairobi for a continuous period of two years immediately prior to his application; be a head of a family; not be owning another residential property; and would upon allocation of a plot reside on the plot.[12]

The advertisement of the project in the local media attracted 20,949 applicants who were sold application forms at sh. 20 each. Out of the total application forms sold, 16,018 were filled and returned. Some of the applicants did not fulfill the allocation criteria and were disqualified, leaving 9,308 of eligible applicants to be ballotted for the 6,000 plots. The ballotted applicants who were not allocated plots were put on a waiting list. In the event of an eviction of one or more of the allottees on default, a replacement is sought from the waiting list.

During the first year of the project 55 allottees were evicted and their plots allocated to the next successful applicants on the waiting list.[13]

The major reason for eviction was that further scrutiny of the successful applicants revealed that some applicants had given wrong information on the application forms and were therefore disqualified when their cheating was discovered. But on the whole HDD was satisfied that their thorough examination of the allottees who after qualifying through the ballot had to be interviewed by HDD officers, removed all applicants who did not meet the allocation criteria.

5.4 Self-Help Operations in Dandora

The initial occupation facing the plot allottees in self-help housing programs is to decide the form of housing consolidation he is to follow. In Dandora Project the choice of self-help methods of housing production varies between allottees, depending on their technical knowhow, financial capabilities, type of employment and the attitude of the allottee towards the project, the project administration and his fellow allottees. The project requirements such as the maximum limit on the period of construction and adherance to construction and material standards lured the allottees to hire semi-skilled labourers and manual workers in order to satisfy these requirements.

The procedures followed for the release of materials loans add an extra burden on the poor allottees. In addition to the initial deposit of sh. 400 for the plot and sh. 200 for water connections, allottees have to make their own arrangements to pay for initial costs of construction. Project administrators assume that allottees have to use their own labour preparing the site and digging the foundation trenches. Consequently the first payment of materials loan is withheld until the allottee has completed the foundation trenches for his dwelling.

The schedule of materials loan disbursements to plot allottees is shown in Table 5.1. Since the materials loans are released retroactively after construction costs have been incurred, allottees have to secure bridging finance from their own sources.[14]

In order to control and guide development on individual plots the Housing Development Department (formerly Dandora Community Development Department), has provided the allottees with several house type plans (Figure 8) which they can choose from, depending on the sizes of their plots and individual tastes. The plans show an already placed "wet-core" on every plot (shaded black). By providing plans already approved by the City Council, individual application of plan approvals, which is normally a lengthy process that takes up to 2 years,[15] is avoided making it possible for allottees to start construction immediately after plot allocation. However allottees have experienced problems of visualizing the house type plans as complete dwellings. This problem can be overcome in future projects by providing pictorial sketches of complete units that an allottee can compare with, and cross check his work, at the time of construction.

5.4.1 Forms of Self-Help Construction

Basically three distinct forms of self-help construction processes are found in Dandora. They conform with the various sets of actors participating in the construction process viz., the individual allottees, the building groups, and the hired sub-contractors locally called "fundis".[16] Corresponding to these actors the three forms of self-help construction processes are:

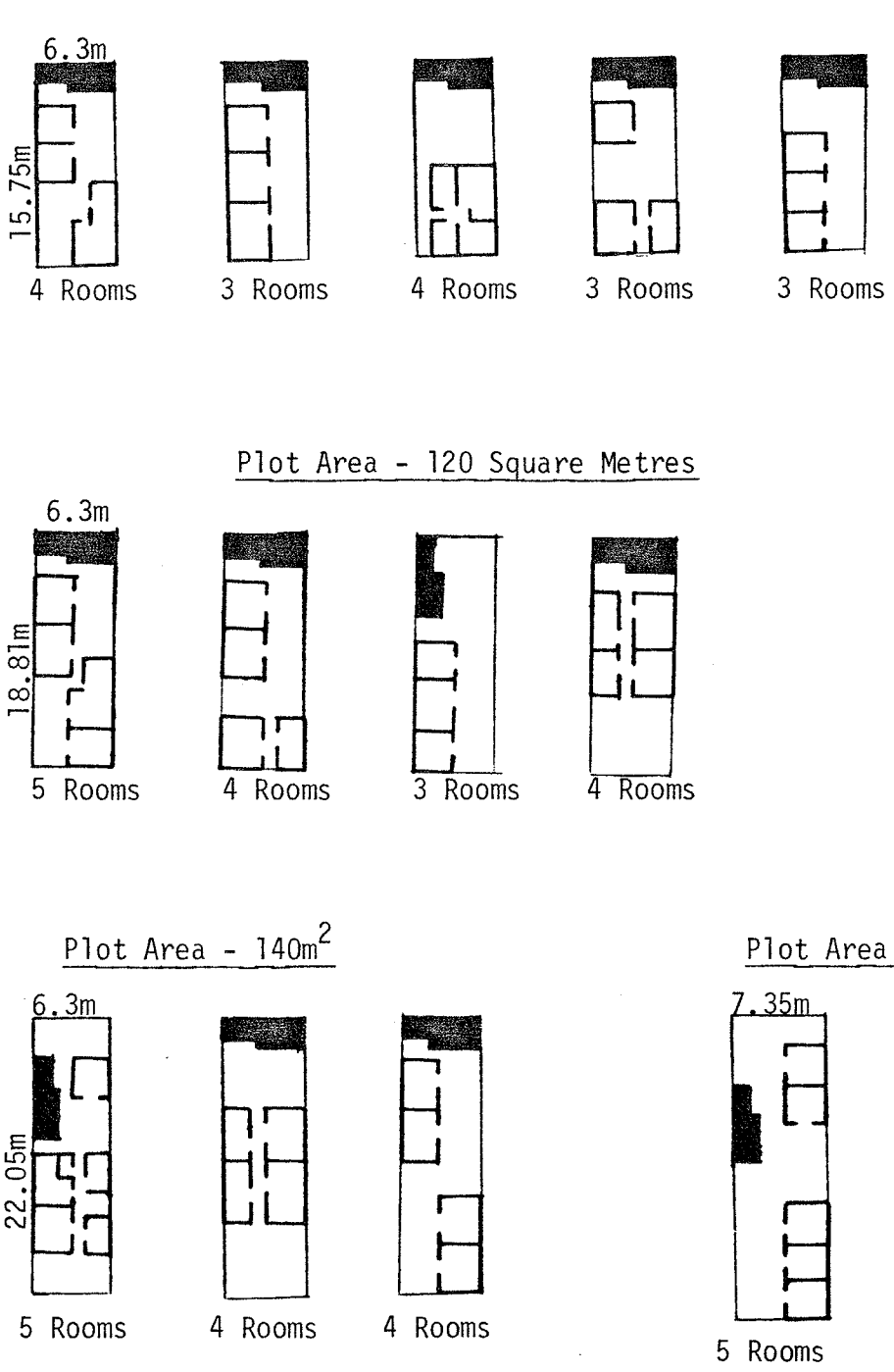
1. Self-help construction by allottees;
2. Self-help construction by building groups; and
3. Self-help construction by use of sub-contractors.

Table 5.1 Stages of Materials Loans Disbursement to Plot Allottees (shillings)

Installment Stages	Level of Construction Completed	By Stage		Cumulative	
		One Room	Two Rooms	One Room	Two Rooms
Stage 1	Foundation Trenches	400	400	400	400
Stage 2	Foundation and floor slab	600	1,200	1,000	1,600
Stage 3	Walls	1,200	2,400	2,200	4,000
Stage 4	Roof	680	1,360	2,880	5,360
Stage 5	Finishes - Floor Screed & Plaster	0	400	2,880	5,760
Total Materials Loan		2,880	5,760	2,880	5,760

Source: Nairobi City Council, Housing Development Department.

Figure 9 Typical House Type Plans
Used in Dandora Project



Source: Housing Development Department, Nairobi City Council

There are instances in Dandora project where allottees have applied two or all of the three forms of self-help construction processes.

5.4.2 Self-Help Construction by Plot Allottees

In this form of "owner-built" self-help the plot allottee undertakes all responsibilities regarding the planning, construction and management in the building process. The ability to apply his skills, and other human resources in construction, supervision and purchasing of building materials, is realized through a learning process throughout the building sequence. The pace of housing consolidation depends on the amount of time and money the allottee can allocate to the construction, as well as the resources he can tap from friends and relatives.

In order to maximize savings on labour and materials costs an allottee utilizing "owner-built" self-help, works on his plot during his spare time from regular employment during the weekends, public holidays and after work in the evenings, and seeks cheap materials from nearby locations. Some of the building materials are transported by hand-pushed carts to the building site.

One of the major problems facing "owner-built" housing consolidation is compliance with the rules set out by the City Council. For instance the quality of construction, use of materials and placing of finishes tend to require higher skills than those possessed by the allottee. Lack of adequate finance and commitment towards the allottee's regular employment has a retarding effect on the overall speed of construction of the dwelling units.[17]

Despite the hardships experienced by the plot allottees, financial or otherwise, "owner-built" self-help has many advantages. The allottees

utilize their spare time after work, public holidays and weekends in building their own dwellings. The use of leisure time to promote production of housing units increases the overall productivity of allottees giving the public authorities an opportunity to increase the amount of total investment in low income housing. Lack of alternatives lures the allottees to use appropriate local materials and technology to their own advantage.

5.4.3 Self-Help Construction by Building Groups

Among the fundamental qualities of self-help techniques in housing production is that low income individuals assist one another in the production of housing. Each individual benefits reciprocally from an amount of work equal to that he contributes. In other words low income residents help themselves by helping others, making use of individual and collective efforts in the process of housing construction.

In theory each plot allottee in Dandora can build his dwelling through his own efforts, with the financial and technical assistance provided by the project administration. But the requirement by the council that all plots must be developed to a minimum of two habitable rooms within the first 18 months after allocation puts pressure on the allottees to seek extra assistance from friends and relatives in order to comply with the time schedule to avoid eviction.

For allottees who find difficulties in getting labour and/or financial help from friends and relatives, they turn to fellow allottees in similar hardships and form building groups. Members of each group assist each other to build the "minimum" shelter as required by the council, through the collective use of group labour, skills, and financial and material resources. Group labour is best utilized in the clearing of the site and digging of foundation trenches.

In Dandora Project, the main bond of building groups is poverty.[18] Building group members are usually the lowest income earners in the project and have limited financial resources to supplement the materials loans. According to a survey undertaken by Senga Ndeti and Associates, the construction expenses per plot are as high or higher than the total incomes of individual members.[19] They have difficulties getting the bridging finance necessary to put up construction up to the level required in order to qualify for the retroactive release of materials loans.

There are fifteen building groups in Dandora Project, with an average membership of ten allottees per group (Table 5.2). Each group has its own organization pattern, working procedures, working rosters and rules governing its operations. Typically the members of a group elect a committee that is responsible for deciding on most matters relating to the operations of the group activities such as calling meetings, keeping accounts and delegating responsibilities to the members. A ballotting system is used to allocate serial numbers to determine whose plot is to be constructed first, and the sequence of construction of the others. Owing to the general lack of skills among members, the membership provide unskilled labour while the allottee whose dwelling is being constructed hires a "fundi" (artisan) to direct construction. A common practice is for the members in each group to contribute towards a "group fund" that is used to pay for any fixed labour, skilled or manual, as found necessary (see Table 5.2). The "group fund" is also used to purchase building materials in bulk. e.g. a truck load of walling stones.

An analysis of the performance of the building groups shows that the collective effort of members both in labour inputs and financial contributions has made it possible for very poor households to build their

Table 5.2 Composition and Performance of Building Groups in Dandora

Name of Group	Starting Date	No. of Members	Rooms Planned	Rooms Built Oct.'78	Monthly Contributions (sh.)
Mwireri	March '77	12	18	12	100
Giikaro*		11	11	11	550*
Komo Rock		16	16	16	50
Mwako		8	16	16	120
Baraka		13	13	13	100
Mwangaza	April '77	6	12	12	100
Subira		13	26	24	100
Kugeria**		10	19	16	2500**
Upendo	July '77	10	20	14	150
Muungano		11	11	9	150
Bahati	August '77	10	20	14	150
Umeme		13	26	14	100
Mwenge		10	20	11	110
Rumwe	Sept. '77	7	14	8	100
St. John	Nov. '77		15	6	100
Total		158	257	134	

Source: Housing Development Department of Nairobi City Council.

Notes:

* Amount shown as monthly contribution is for one room built.

** This amount is the total amount contributed by each member for the construction of two rooms.

dwellings. The rotational system of dwellings construction among the group members produce a progressive development where every stage of development is a complete room. The lump sum amount collected each month from a group of 10 members is equivalent to ten months savings for one allottee, assuming the monthly contribution is the maximum the allottee can save in one month. Consequently an allottee can finance in one month an equivalent of ten months purchases and then wait until the eleventh month when he makes the next bulk purchase from the next round of contributions.

Another major advantage of the building groups is that members learn through their own mistakes. The technical advice they receive from project officials is applied on subsequent similar operations. As an example during the construction of the first house the members may not know how to set a square room. The technical staff of the project would show them how to use the "right angled triangle concept" where the sides making the right angle measure three and four units respectively with a five units diagonal. When setting the second and subsequent rooms, they apply the advice they received on the first room and set these rooms without seeking assistance from the technical staff, a process which would have been repeated for every member if they were not in a group.

A group has higher political power than individual allottees and can therefore influence decisions affecting its members. For instance the allottees are required to repay their loans on monthly installments. Those who fall into arrears are liable for evictions. In the event of a group member falling into arrears due to genuine financial hardships, the group negotiates with the project administrators on behalf of the allottee for an extension of time to repay. Since the project administration encourages the formation of building groups, it is reasonable to assume that problems

presented by groups are better attended than those of individual allottees by HDD staff.

The building groups also have their share of problems. Some of the members fail to pay their contributions on time leading to long periods of waiting and frustration.

Discipline is maintained through a mutual understanding between the members and penalties for individual cases are decided by the whole group. But if a member is consistently on default the group has no power to enforce the fine except to evict the defaulter from the group. However such cases are not common in Dandora.

5.4.4 Self-Help Construction by Use of Sub-Contractor

This form of self-help is the most common. The main actor is the "fundi". A fundi is the local name for an artisan or a semi-skilled labour in any or all of the construction trades. One wonders why a project like Dandora whose plot allottees were selected from very low income groups has most of the construction work being undertaken by sub-contractors. The answer is simple and straightforward. In order to satisfy the construction standards required by the council allottees who do not have construction skills have to seek the services of artisans during construction to fulfill the wishes of the Council. Another explanation is that where expensive permanent materials (concrete foundations, stone walls, galvanized iron roof covering, etc.) are used in the construction it pays in the long run to spend a little more on labour to get a good final product. The allottees perception of what their dwellings should look like to fetch high rents when sublet after completion encourages them to seek other loans to supplement the materials loan provided under the project.

In this form of self-help most of the technical matters are decided by the "fundi". The "fundi" advises the allottee on what type and amount of materials to buy, and on aspects relating to the organization of the construction team.

The role of the "fundi" in the construction of the dwelling varies depending on the contractual relationship between him and the allottee. On one extreme some of the "fundis" are given total responsibility of all construction matters including buying of materials and supervision of the construction team. In such cases the allottee takes a background role of endorsing the decisions of the "fundi" and keeping accounts. On the other extreme the "fundi" may be hired for a particular task and his services are terminated after finishing the job he has been hired for. For instance a "fundi" may be hired for setting up the foundation, or for fixing the plumbing while all the other work is done by the allottee.

Since the "fundi" knows how to interpret building plans and has a general understanding of construction, dwellings constructed using the services of a "fundi" are in most cases, of superior quality than those built solely by allottees or by building groups.

Owing to the verbal contractual agreements between the "fundi" and the allottee, the "fundi" can forsake the work at the middle of construction especially if he gets a higher paying contract. This leads to unexpected delays while the allottee is searching for a suitable substitute. But it is not only the allottees who suffer from the verbal contracts. When allottees are in financial difficulties they withold the payments due to the "fundis" for services already rendered until their financial situation improves. Sometimes it takes up to two months before the fundi is paid.

5.5 Which of the above three is the best? A Comment

Each of the three forms of self-help discussed in this chapter has its positive and negative qualities. The ranking changes depending on the objectives being fulfilled and the parties concerned. In most cases a mixture of two of the three forms of self-help methods produces the best results.

In terms of building an affordable dwelling, the self-built house best satisfied this objective. An allottee can be working on his dwelling with the help of his family or other relatives and friends. In this case he maximizes the savings on labour costs. However in order to meet the deadline set by the council, he may require more hands than those available to him for free, even though he could have finished the whole construction without paid labour where no limitation of construction period is set.

One of the major advantages of the building groups is to provide collective labour in the construction process. Thus where allottees building their own dwellings have to pay for manual labour, members in the groups provide the labour themselves. By pulling up their financial resources together, members of building groups accomplish what is almost impossible to individual members, e.g. buying a truck load of walling stones enough to complete all the walls of one room.

Allottees who are in regular employment (even if paid low wages) find it hard to form working groups because it is difficult to set a working timetable convenient to all the members. They have therefore to contend with working on their dwelling whenever possible despite the benefits they can get by forming into groups and working together.

Building groups have proved to be very useful when many hands are required in the construction process. Preparing the site and digging of the foundation trenches is a good example. Building groups have also been found to provide a progressive learning process during the construction of the initial rooms. Thus a group member who participates in the first round of construction to put up the first room for every member in the group can rely on the construction skills he has acquired to construct the other three rooms.

One of the recurring problems for all allottees is to satisfy the construction standards required by the Council. All construction in Dandora is of permanent materials. Basically floor bed is a 6 inch thick concrete slab, the walls are made of rectangular natural stones or concrete blocks, the roof structure is made of sawn timber and the roof covering galvanized iron sheeting. One house which does not fit in this description is a two storey house occupying three plots with an expensive tile roof covering.

When allottees have to spend a lot of money buying the permanent construction materials as required by Council, it stands to reason that they would struggle hard to secure the services of a skilled person who would put the expensive materials together. Thus the requirement by city council that allottees must use permanent materials indirectly reduces the participation of the allottees in the construction of their dwellings and increases the involvement of sub-contractors. The dislike of temporary materials by the city council is demonstrated by the way they regard the temporary structures for Type A plots. A temporary structure on a plot must be demolished immediately after an allottee has completed one room and failure to demolish can lead to an eviction of the allottee from the

plot. It may be assumed therefore that the council prefers the use of sub-contractors where allottees do not have construction skills in order to guarantee an acceptable standard of construction.

5.6 Conclusion

The Dandora Project has proved to be a good example where low income households have managed to build their own housing using self-help techniques. The project managed to reach the lowest of the 'low income' bracket who are normally excluded in other low cost housing programs. The fact that families earning as low as sh. 280 per month, who were allocated plots in the project have been able to build dwellings with permanent materials, reveals that one of the government's criteria for allocation that requires applicants' income to be four times the monthly repayment of housing loans, needs to be reviewed because, if this income criterion had been used, many of the allottees in Dandora would have been disqualified solely on the basis of income.

The participants have managed to use self-help construction processes to reduce total construction costs. Reduction in overall construction costs have been possible because allottees apply efficient methods of purchasing building materials, make maximum utilization of their own labour, use of mutual help in building groups and tap financial resources from friends and relatives and also from the formal credit institutions.

The housing produced in this project is of superior quality than what would be expected, given the low level of allottees' incomes at the time of allocation. As stated above the maximum use of self-help labour and initiatives has made this possible.

The retroactive method of disbursing materials loans to the plot allottees seems to be working satisfactorily. It has encouraged allottees who do not have sufficient incomes, to team up into building groups with other allottees in an effort to raise construction finance through group contributions. Mutual help by members of the same building group reduces the need for technical assistance from project officials as group members can learn from one another through their own mistakes.

We have observed that self-help construction utilizing the services of a sub-contractor to direct most of the construction is the most popular. We have found that the use of a sub-contractor is necessary because of two reasons: 1) to assist the allottee who spends most of his time in regular employment and 2) to enable the allottee to meet the quality of construction required by the council.

The fact that subletting is very profitable in Nairobi led us to believe that even if low quality construction materials (e.g. mud and wattle for walls) were allowed by the council there is a high probability that these low quality materials would not have been used in Dandora. The progressive development allowed in this project makes it possible for allottees to build slowly. However since the duration which the allottees are required to finish the minimum shelter is set at 18 months after allocation, some of the poor allottees experience financial difficulties during the initial period of construction. However by forming into building groups such allottees have managed to build their minimum dwellings within the stipulated time limit.

References and Footnotes

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2. Nairobi City Council, 1978 Annual Report of Housing Development Department, Nairobi City Council, Nairobi, June 1979, p. 6.

3. ibid., p. 1.

4. Discussion Paper No. 1, p. 71, Bylaws Study.

5. Ibid.

6. 1976 Annual Report of Danadora Community Development Project, op. cit. p. 6.

7. Discussion Paper No. 1, p. 81.

8. Ibid.

9. Ibid., p. 82.

10. Praful Soni, Self-Help Planning, Construction and Management in a Site and Service Project in Nairobi, Kenya, Ekistics 286 Jan/Feb 1981, p. 59.

11. Ministry of Works and Housing Guidelines for Site and Service Schemes.

12. 1976 Dandora Project Report, p. 3.

13. Ibid. p. 11.

14. Senga, Ndeti and Associates, Dandora Monitoring and Evaluation Study, Medis 8 Report, Government of Kenya, Nairobi, 1980, p. 14.

15. Discussion Paper No. 4, p. 54.

16. A "fundi" is the equivalent word for an artisan or semi-skilled sub-contractor in the Swahili language.

17. Allottees have to engage in wage employment in order to secure enough income to pay for the monthly loan repayments, and supplement the materials loan.

18. Senga, Ndeti and Associates (1980), p. 14.

19. Ibid.

CHAPTER VI

CONCLUSION

In this study we set out to investigate the viability of self-help housing production as a possible option of providing housing to the low income residents in Kenyan urban areas. Our hypothesis was that conventional housing, i.e. housing produced by contractors and sold to prospective owners, does not reach the majority of the urban population. Our investigation of the relationship between household incomes and the cost of houses confirmed this hypothesis. We found that at current levels of housing prices, about 80 percent of the urban families cannot afford 'minimum standard' housing presently being produced by real estate developers in urban areas.

The fact that four-fifths of the urban population cannot afford 'standard' housing does not mean that such a high proportion of the urban population is unhoused. In fact there are no people who sleep on the streets in Kenyan urban areas. What it implies is the majority of the urban population live in dwellings whose construction and planning standards do not satisfy the requirements of the local authorities, and others stay in overcrowded conditions in the recognized 'standard' housing.

We have observed that the Kenyan urban areas have been experiencing very rapid population growth within the last two decades. The population growth is a result of natural population increase and a high rate of migration, the latter accounting for over 60 percent of the increase. The migrants are basically poor people and school leavers who leave the rural areas in search of better employment opportunities in the urban sector.

They therefore exert extra pressure on the already squeezed low income housing in the urban areas.

Our investigation on the urban housing conditions in Kenya reduces the housing problem to an income problem. The majority of the urban population receive very low incomes such that it is not possible for them to generate effective demand for housing despite the large number of people who require to be housed. This creates a need for programs which direct their attention to the production of housing that is commensurate with the low level of household incomes. Contrary to this need the majority of housing produced cater to the needs of middle and high income people and even government housing programs, because of the 'minimum house' definitions, fail to reach the majority of people in the low income brackets.

The qualifying criteria for applicants for government-sponsored housing programs is directly related to the cost of the house. Thus a policy that helps to lower the cost of the housing being funded under government programs is beneficial to low income people in that more of them can benefit and the available finances are also spread to a wider segment of the population. One of the main objectives in promoting self-help housing construction and management is to reduce the cost of construction of dwellings by reducing labour and administrative costs, and eliminating contractor's overhead and profits.

There are primarily three dominant external factors that influence the amount and quality of housing produced through self-help processes. These factors are: 1) availability of serviced land; 2) availability of capital financing for housing projects at individual and government levels;

and 3) the type and level of standards required by public authorities for self-help to function.

The total amount of serviced land for housing development generally is in short supply. In a free market economy such as that prevailing in Kenya we find that low income housing takes the last preference in the allocation of available residential land especially in the private sector. We have found that there is tremendous pressure from the unhoused middle and higher income class to buy out plot allottees in low-cost housing from self-help programs and where this is possible both the seller and the buyer end up gaining. The buyer gains because he could not have found a vacant serviced lot due to the acute shortage of serviced lots, and the plot allottee (the seller) gains financially because he was allocated the plot free of charge. Thus for self-help housing programs to succeed a general increase of serviced land for all income groups is necessary to reduce the invasion by upper class citizens on low cost housing projects. Another remedy is to install legal measures that outlaw any sale of plots in low income housing programs.

Our investigations in this study have found that the central government remains the major sponsor of self-help housing in Kenya urban areas. There is a general lack of financial support from the local authorities and the private institutions. Low income individuals on the other hand find it practically impossible to independently invest in urban housing due to the many restrictive rules and regulations that govern housing development in urban areas.

We partially associate the lack of interest by the private formal sector on the financing of self-help housing projects to the prevalent

planning and housing standards which have to be satisfied for a self-help builder to gain access to formal credit. In the first instance standards that define the minimum plot sizes and plot coverage are too high to accommodate low income self-builders. The minimum plot size permitted by legislation for private subdivisions is 260 square metres and the dwelling must occupy a quarter of the plot at the most. According to our judgement such a plot is too expensive to buy and service, that a sub division that satisfies the minimum plot area and plot coverage requirement, attracts middle and high income housing construction. The minimum plot area and plot coverage requirement is therefore not consistent with the promotion of self help housing development by and for low income urban residents. In order to accommodate low income self builders, and to encourage private sub divisions for low income housing, this standard needs to be reviewed to allow smaller plots and higher plot coverage.

Despite the government commitment to assist low income urban families to build their own housing, some of the policies though well intentioned, diminish the possibilities of low income families ever constructing their own houses. One such policy is the insistence by government and local authorities that a minimum standard house must consist of at least two rooms in addition to a kitchen, toilet and bathroom. In government sponsored housing projects especially in the site and service schemes, we find that subletting of individual rooms is endorsed by the government. But houses designed to consist of self contained single rooms cannot qualify for public funding because they fail to satisfy the 'minimum' house requirement of two rooms. This implies that the policy welcomes poor people who rent single rooms but it does not allow the same poor people to construct their

own single room dwellings. The fact that single room dwellings are not included in program funding in self-help housing projects, reduces the number of poor people who can participate in these programs. It increases the cost of the basic house and also forces plot allottees to hire additional labour in order to build the 'minimum' house within the time stipulated by the local authorities.

A policy that accepts self contained single room dwellings has a high probability of increasing self-help participation because:

1. By reducing the size of the basic house, the average cost of the basic house also falls making it possible for more low income people to finance and build their own dwellings.
2. Plot allottees in government sponsored self-help housing programs such as the site and service schemes are less likely to sub contract some of the works as they have smaller units to complete and can use friends and family labour to complete them.
3. It reduces subletting and increases the number of people benefitting directly, hence widening the base of participation during construction period.

Our investigation of Dandora site and service housing project shows that there is a great potential of self-help housing production in Kenyan urban areas. By applying self-help mode of construction and management of building processes, allottees have demonstrated that they can tap otherwise unutilized labour and financial resources to build their own dwellings. A close examination of the performance of the Dandora project shows that

there is a considerable reduction in construction costs in self help housing projects. Factors contributing to the savings in costs include:

1. special sources and informal contacts are used to acquire building materials
2. Specialized labour is hired selectively as need dictates
3. A general reduction of materials used
4. Maximum utilization of own labour and mutual help from friends and relatives.

The major problem encountered by the plot allottees in self help housing projects is the lack of access to reasonable sources of financing to provide bridging credit to pay for construction costs before materials loans are advanced. The vast majority of the participants either finance the dwelling costs themselves or have to turn to usurious informal sector inorder to acquire the required credit, an indication that low income people have to pay higher prices for construction credit than the higher incomes pay in the formal market.

Another point from our observation of self help housing production is that the quality of materials used has an influence on the form of self-help process used. Where legislation requires high quality (expensive) materials to be used it is only logical that participants will go to great financial stress to match the expensive materials with equivalent expensive skilled labour that guarantees that the materials have been properly assembled together.

The fact that a lot of subletting is occurring in site and service schemes is an indication that low cost housing programs are transforming

the beneficiaries into landlords. In Dandora, it is estimated that 80 percent of the dwellings are partially sublet. The reason for the wide scale subletting phenomenon is the high returns accruing to allottees from subletting. It can therefore be argued that applicants for these programs see the finished dwelling as an investment as well as a place to live in.

Though we are not against subletting as such, we are convinced that the lucrative business of subletting dilutes the primary objective of self-help housing programs. Instead of helping the participants to construct their own housing, the programs are creating a sub class of landlords, which is an indication that the housing units constructed under these programs are substantially larger than what the allottees need. Since these programs are intended to assist the low income people improve their housing conditions, and the number of people living in poor housing conditions is immense, it is only fair if these programs are designed to discourage subletting by providing smaller plots and smaller units. This in a way also promotes self help as more low income people will be reached by these programs. In any case where subletting is envisaged, designs that provide larger rooms to accommodate a cooking area and storage space is more ideal.

As regards to standards of building materials that are appropriate for self help housing in Kenya urban areas, we support the use of permanent materials like natural stone, concrete blocks and burnt bricks for walls; concrete slab for floors; and galvanized iron sheeting and equivalent materials for roof covering. Due to reasons discussed earlier in this thesis the use of temporary materials such as thatch, mud and wattle should be discouraged in high density, low income areas. We are convinced that

substantial reduction in construction costs can be achieved through either measures already outlined in this thesis, without necessarily reducing the materials standards.

There is also ample evidence that indicates that low income families are capable of acquiring credit from other sources outside the formal sector inorder to construct their own dwellings after being allocated plots in the urban areas. With small financial support and technical assistance, low income families have demonstrated that they can provide for themselves what the formal institutions fail to provide for them, by applying self help methods of dwelling construction and management of building processes. The key to the success of self help housing is the availability of serviced plots for low income families in urban areas and a review of present housing legislation to allow smaller plots and self contained single room dwellings as a minimum solution. Since there exists an overall shortage of housing in the urban areas, self help programs if extended to include middle income groups can minimize infiltration of middle income groups to housing schemes that are intended for the low income category of the urban population.

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