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INTRODUCTION

In 1980, the world's population was 4.4 billion with an average growth rate of 1.7%. Of these 3.3 billion (74%) currently live in inadequate housing characterized both qualitatively and quantitatively by an utter inadequacy which can be attributed to demographic and socio-economic factors (AID: 1984). This housing problem is more pronounced in the developing countries of Africa, Asia and Latin America where provision of new buildings has not kept pace with the increasing population growth. The majority of these populations living in developing countries therefore live in sub-standard housing characterized by overcrowding, poor sanitation etc. which is also accompanied by malnutrition, unemployment and generally a low level of living (Mabogunje: 1978).

However the housing problem is more pronounced in the urban areas which have experienced very rapid population growth. This has led to a strain in the urban services and housing is among the worst hit. Despite the attempts made to solve the housing problems in the third world in the 1960's and 1970's the housing problem seems to be getting worse. These attempts seem to have failed due to the housing need being too great for the available resources and the cost of individual resources of the vast majority of those in housing need. Attempts in the 1970's and 1980's to spread the capital outlay so that more and more people would benefit encouraged ideas such as site and service schemes and a self-help housing but such schemes also have a high rate of failure (Moughtin: 1985).

Current conventional wisdom would still want us to believe in self-help schemes given security of tenure for the builder but this may lay it more open to the affluent to buy the plot. At the same time the concept of autonomous housing which maximises the owners participation in construction and his degree of self government while minimising government or sponsor expenditure is seductively simple, but this could also lead to failure such as being bought by the wealthy.

This paper will therefore try to understand the socio-economic conditions of the urban poor, those who are hard hit by the housing problem. It will also attempt to examine their present housing conditions against the backcloth of what attempts have been done to improve their housing situation. Policy and programme failures will be examined so as to make policy suggestions as to what should be done so as to make decent housing more available for the urban poor.

THE URBAN POOR

Currently the urban population in Kenya is categorised into low, middle and high income groups. The low income group comprise 69.2% of the urban population earning less than Shs. 2,300/= per month ($1500 per annum), the middle income group comprising 25.6% and earn upto Shs. 8,000/= per month ($6000 per annum), and the high income group comprising 5.2% but earn 55.6% of the total income. The low income group includes drivers, clerks, typists etc. in formal sector employment; and those in the informal sector such as street hawking, metal artisantry, shoe shining, etc. The majority of these people spend more than 56% of their income on food leaving a smaller portion for rent, transport and house utilities. They cannot therefore afford to pay very much for housing. In fact, on average this group spends 14.2% of their income on rent in the informal sector housing in comparison to 20.4% and 17.08% for the middle and high income groups, respectively (Kenya, Republic of: 1984). In this paper we will only be concerned with the 69.2% of the urban population who can be termed as the urban poor.

In terms of income distribution 60% of the population of Nairobi earn less than KShs. 2,300 per month, 20% earn upto

KShs. 3,700 per month and the remaining 20% have a monthly income of over KShs. 10,000. Those who earn less than KShs. 2,300 per month account for only 23.6% of the total income in the city whereas those in the next income group account for 20.8% and the last group accounts for 55.6% of the total income. Thus although the low income group are the majority, they indeed have a low share of the urban income.

Housing Need

Table 1 shows the estimated urban housing needs in Kenya between 1983 and 2000. It can be seen that in 1989/1990 all urban areas in Kenya will need a total of 117,652 housing units and that out of these units 50,454 of these units will be needed by the city of Nairobi alone. With respect to Nairobi, the housing need necessitated by additional population will account for 65% of the housing requirements, whereas depreciation will account for 21% and inadequate housing will account for 14% of the housing requirements between 1989 and 1990.

When looking at Nairobi as a whole, the case may not look very desperate but when specific low income residential areas are examined, the plight of the poor becomes clear. This paper purposes to illustrate this by considering the case of Pumwani residential area in Nairobi.

The growth of the urban poor in Nairobi can be seen to be synonymous with the rapid growth of the city since it was founded by the IBEA Company in 1895 (Amis:1983). In 1901 the population was 8,000 and by 1948 it had grown to 118,976. In 1962 the population was 343,500 and by 1979 this had risen to 827,800 and this has now risen to an estimated population of 1,230,200 in 1988. This rapid urbanization has had an impact on the provision of city services including housing, sometimes with negative results which are manifested in poor housing conditions especially in the areas of Nairobi where the poor live. There has therefore been rapid growth of slum and squatter settlements which now accommodate about 40% of Nairobi's population.

Urban housing stress zones in the city are not new. They date back to the first decade of the 20th Century when Nairobi was still at infancy. It is only the intensification and fast spread of the poor housing conditions which has reached high rates in the last two to three decades. These housing stress zones are characterized by:

1. Except for the few planned housing estates, most of them are unplanned settlements with uncontrolled developments. More living space is being produced through vertical and horizontal extensions without control by the local authority.

2. They are overcrowded and have the highest densities in Nairobi's residential areas. Room occupancy is high averaging 4 persons per room in Pumwani and 3.8 persons per room in Kibera.

3. Small dwelling units ranging from one room to two rooms, moreover, the rooms are usually small and they lack separate kitchens and bathrooms.

4. Poor sanitation facilities while they lack other social, health and community facilities.

5. They lack adequate support infrastructure such as roads, electricity, telephone services, etc.

6. Most of the housing structures are in poor condition besides being of largely temporary and or semi-permanent material.

7. The areas have a high degree of insecurity e.g. thuggery and theft.

In Nairobi these zones consist of the Dagoretti zone, Industrial area zone, Nairobi River/Mathare River zone, the Northern zone and the Kamukunji zone (see Map no. 1). The section below will discuss one of the slum settlements in the city.

PUMWANI/MAJENGO RESIDENTIAL AREA: A CASE STUDY

Pumwani/Majengo is located about 2.5km from Nairobi's CBD. It is situated in the Eastlands section of the city, along Digo Road. It is bordered by Nairobi River, Gorofani and Bondeni Estates to the South and West; to the East by New Pumwani and Biafra Estates; to the North by Pumwani Maternity Hospital. (See Map 2).

It was started as a location for African urbanites who were to be consolidated from numerous locations within Nairobi, to form a planned settlement. Its construction started in 1922 and continued upto 1923 when it was declared an official African location (Majale, 1985).

Most of the people who settled there came from Mji wa Mombasa, Maskini, Kaburini, Kileleshwa and Pangani squatter settlements. Although the area was originally planned to accommodate 4,130 people, by 1931 the population stood at 7,143 persons, consequent to which the residents undertook unplanned extension to the existing housing structures in order to provide for the additional population. The population continued to grow and by 1964 it was 9,000 people and in 1987 it has risen to 14,960 at a growth rate of 5% per annum (DURP: 1987).

Socio-Economic Profile

The current population of Pumwani-Majengo is estimated at 14,960 forming about 1.03% of the population of Nairobi. Given an area of 0.2km², the population density stands at 6,300 persons per km² which is well above the Nairobi figure of 1,788 persons per km². The average household size is 4.0 persons, while the figure for Nairobi is 3.2 persons per household, further demonstrating the need for special attention for Pumwani-Majengo.

The population structure of the area is relatively balanced with a sex ratio of 0.93:1 compared to the ratio of Nairobi which is 0.73:1 (1979 Census). However the dependency ratio is relatively high at 52% compared to Nairobi's 47.4%. 69% of the inhabitants have lived in the area for over 10 years while 49% have lived there for over 20 years and 28% were born in Pumwani and have stayed there since then implying a very stable population (see Table 2).

Field surveys revealed that 51% of the population in Pumwani were christians, 48% and 1%, others. This kind of composition has had quite some influence on the character of the study area - predominance of Swahili culture. Finally 60% of the respondents were found to be married, 21% single and 13% divorced or widowed.

Employment

In Pumwani 61.5% of the respondents were employed and the remaining 38.4% were unemployed. 19.3% of the employed were in casual and temporary employment, 45.3% were self employed and the remaining 35.4% were employed on permanent terms of service by both the public and the private sector.

The 38.5% of the population who have no employment and therefore no income constitute a special problem because they have nil effective demand for housing and as such are excluded from the competitive housing market. This is also true of those in casual and temporary employment.

The average income was found to be KShs. 1,060 with 14% of the people earning less than KShs. 500 or less and only 11% earning KShs. 2000 or more (see Table). So 89% of the residents of Pumwani are in the low income category (earning less then KShs. 2000). This is best illustrated in Table 3.

The <u>expenditure</u> pattern reveals that there are numerous competing uses of household income with food taking the highest share, 42.9%; education 17.4%, 12.3% fuel; health

10.2%; leisure 8%; clothing 6.1% and transport 3.1% (due to proximity to the CBD and the Industrial Area work places).

House Ownership

It was established that 78% were tenants, 15% sub-tenants and 7% landlords. 94% of the respondents lived in two rooms, 1.3% in 3 rooms and 0.6% in 4 rooms. The average occupancy rate was four persons per room and the average room size was $100ft^2$. The average rent per room was KShs. 80/= per month.

On improvement of the houses or dwelling units the respondents' ability and willingness to pay varied as it is clear in Table 4. Most of the households, 81% felt that the rent should not exceed KShs. 100, that is prior to improvement. But on improvement of the structures 56.4% were willing to pay up to KShs. 200 and 43.6% willing to pay over KShs. 200/=.

Infrastructural & Community Facilities

Toilets:

97% of the Pumwani residents use 13 communal toilets, the fourteenth one being out of use. Only 3% of the residents have toilets inside their houses. The communal toilets are not properly maintained in terms of cleaning and availability of some accessories such as wash basins, toilet bowls, etc. They were in such a state that it could take a lot of courage to venture into them.

Bathing facilities are virtually absent to the extent that despite the appaling state of the toilets, most of the residents use the toilets as their baths and the rest bathe outside/or inside houses.

Water Supply & Waste Disposal

There were 14 communal water points serving 83% of the residents as sources of domestic water supply. On average people spend 30 minutes to draw water. Some have tried to solve this problem by buying water from the 'water boys' who brave queing and later sell the water to the residents at their houses. 17% of the respondents buy water from the hawkers.

Waste water disposal and drainage facilities are also a problem. 78.5% of the respondents claimed that they experience the problem of waste water disposal. 38% identified the blockage of drains as being an area requiring attention; 23% identified stench from the stagnant water as a problem which leads to a good breeding place for mosquitoes and flies.

Generally the drains are shallow and poorly maintained. 68% of the households dispose their waste water into these drains, while 32% do their waste water disposal just outside their houses. This poses a health hazard.

72% of the respondents identified solid waste disposal as a major problem. Infrequent collection of garbage led to this environmental deterioration in the area. Apart from the infrequent collection of solid waste there was lack of dustbins on the plots and the points of garbage disposal were found to be too near to the dwelling units - a health hazard.

Other Facilities

Only the secondary streets are tarmacked; access roads are made of murram. Electricity services are available but most of the residential houses do not have them and so is only common in the public facilities e.g. Divisional headquarters, social hall, Mosque, shops and a few dwelling units.

There are 4 social and community centres one of which is meant for the Muslim community in the area. There is a Mosque and a library. The population depends for health, mainly on Pumwani Dispensary and the Islamic clinic. There is only one nursery school and so the community depends on educational facilities in the neighbourhood.

Housing Structures

80% of the structures have mud and wattle walls and 14% mud and wattle and mortar screed. The remaining are made of other materials such as timber and cartons. The roofs are made of corrugated iron sheets and flattened tins which are rusty with age, most of which are leaking.

In the above discussion about Pumwani it can be seen that the area is inhabited by the poor and that the majority of them live in very poor housing characterized by lack of services, lack of community facilities, overcrowding and generally poor sanitation. However, the Government together with Nairobi City Commission has adopted some housing strategies to try to solve these problems. The next section will therefore address itself to the various attempts made to house the poor.

CURRENT HOUSING STRATEGIES

In Kenya, upto early 1970's slums and squatter settlements were often demolished for they were seen as an eyesore. However, this was later stopped in the mid 70's due to political sensitivity, practical considerations and intervention by some international agencies such as the World Bank and USAID. The authorities have now accepted that slum areas are inevitable, but could be made more habitable.

To reduce their growth the Government has accepted to provide low cost housing through various conventional and non-conventional housing delivery mechanisms.

In the current 1984-88 Development Plan period it is planned that 48% of the planned housing output will be in the form of conventional housing for the middle and low income groups through formal sector mortgage schemes, public rental schemes and employer housing. The remaining housing output would be in the form of site & service programmes (30%) and settlement upgrading (22%). However, in the city of Nairobi, 80% of the total housing output will be provided through sites & services programmes (Kenya, Republic of: 1984). These include projects such as Umoja, Dandora, Mathare North and Kayole. More recently high rise blocks of flats have been proposed for Kibera and Pumwani for both purchase and rental.

The site & service schemes are based on the cost recovery principle, but the schemes that have been developed in Kenya have been very expensive and outside the affordability of the target groups. If these are not subsidised "the majority of the beneficiaries have such low incomes that they simply cannot afford the cost of the houses even with the "Stipulated Minimum Standards" (HRDU: 1979). Subsidies are, however, not encouraged by the international agencies, and even if they did, the facts are that they cannot be supported with our thin capital vase. It therefore remains an issue to adopt a cost recovery principle from the beneficiaries of both housing and related infrastructure at costs which are affordable.

We shall illustrate the dilema in the housing scene in Kenya with the example of two of the site & service schemes in Nairobi.

Dandora Site & Service Project

The first site & service scheme developed in Kenya was the Dandora Project implemented between 1975 and 1978. The project which was financed jointly between the World Bank and Kenya Government consisted of 6000 services plots of 100-160m² each, with individual water and sewer connections, access to roads, security lighting, and refuse collection services. The estimated cost was Shs. 211 Million ($13 Million at current rates). The project included community facilities including primary schools, health centres, multi-purpose community centres, market stalls, etc. the cost of which was to be recovered through user charges and site value rates. Similarly trunk access roads had to be recovered through user charges and site values. The units to be allocated included plots with wet cores (toilet and shower), wet cores with kitchen and store and wet cores with kitchen, store and one room. The beneficiaries were to be in the income range of Shs. 280-

650/= per month ($18-41 per month), and the plots would be repaid for over 20 year period at 8.5% p.a. interest rate on the plot costs.

From an anlysis of figures obtained at the Nairobi City Council offices at Dandora for Phase I of the project comprising 1038 serviced plots, the following cost contributions were obtained. The plots were allocated in 1976.

Without considering the trunk infrastructure and community facilities, the allotees in Dandora were subsidised at the reate of 40.8% by the Nairobi City Commission. In fact, the cost of the core alone for which the allotees were wholly responsible was 37.7% of the total on site costs before they constructed the houses. When the public facilities are taken into account then the subsidy that was passed on to the Dandora allotees amounted to 63.8% of the total development costs. Given the ever escalating costs of development and the low capital base of the developing countries this level of subsidies cannot be sustained. The need for subsidy arises because of the very high design standards adopted in Kenya. Apart from the concept of incremental housing the project had modern designs and even the alloptees had to use conventional durable materials. The project if repeated today cannot be afforded by nearly 70% of urban population in Nairobi. At the time of the development, the unit costs were 32,000/= ($2000), for which the repayments without subsidy would have amounted to Shs. 400/= per month ($25). The allotees formed themselves into building groups and therefore embodied most of teh concepts of self-help and community participation, at least during the consolidation stage. It is, however, only the sibsidy which enabled them pay less. The later phases of Dandora after the first 1000 units, have, however, had problems of consolidation.

Umoja II Project

In a later scheme at Umoja II financed by a loan from USAID, it has been decided to provide condomoniums instead of housing units on individual plots. This project which started in 1985 is intended to provide 4406 housing units.

Five to six people will share communal facilities (toilets, showers, compound), and each allotee will be provided with a room and an option to extent another. About 2500 units have been allocated from this project. Again apart from the concept of condominiums, most of teh design standards have remained high. However, the element of subsidy was tremendously reduced in comparison to Dandora. The allotee paid for 96.3% of the development with the Council being responsible for only off-site infrastructure and land. The contributions are shown in Table 6.

The results of this high overloading of the contributions on teh beneficiaries is that each condominium now costs Shs. 40,000 ($2500) and the mortgage repayments vary between Shs. 421 and 600 ($26-42) per month. These repayments are certainly beyond the affordability of teh 60% who are in the low income group, and particularly because the project does not allow for extension of more rooms that would compensate from sub-letting. Several newspaper corerspondents have expressed the feelings of the allotees who have benefitted from the Umoja II project describing it as "unfair and expensive project" (Daily Nation Newspaper, May 23 & June 7, 1987). No other correspondence has appeared in praise of the project with which to contradict these sentiments. The sentiments exprexsed by the cornrespondents are not because they did not participate in the design, construction and management of the development, rathery they are complaining about the cost implications of teh project. This in our view is more a question of standards, although the centralized mode of production with inherent bureaucracy and hierarchy could also have contributed to the high costs. We are not sure that early participation by beneficiaries would have lowered the costs very much if the standards were not appropriate.

Unfortunately teh above standards which have proved unworkable in teh site and service projects are also incorporate in the squatter upgrading projects. In the upgrading situation it is not always feasible or desirable to apply specific arbitrary standards in order to achieve a "better quality of life" for the inhabitants (Waweru: 1978). The level of existing development, topographic constraints, and social and economic factors may be so entrenched that the application of imposed standards may cause severe disruptive effects on the community. In upgrading situations therefore, specific space standards may be impractical to impose, and they can only serve as general guidelines for improvement rather than as specific objectives to be met (Syagga; 1987).

Apart from the above projects, other low cost housing schemes in Kenya include the followng:

i) Umoja Phase I comprising 2400 units financed by USAID and completed in 1976.

ii) Second Urban Project financed by the World Bank comprising 14,409 serviced plots and some upgrading. The project in its final stages of completion covers the major towns of Nairobi, Mombasa and Kisumu. No upgrading projects are being carried out in Nairobi.

iii) Third Urban Project comprising 25,000 site & service and squatter upgrading programmes in Eldoret, Nakuru, Kitale, Nyeri and Thika towns, sponsored by World Bank.

iv) Small towns Shelter and Community Development Projects of 2700 low cost housing units and municipal improvement sub-projects in 15 towns sponsored by USAID.

In all these programmes the element of improving squatter settlements is very small. In the case of Nairobi, despite the famous Mathare Valley and Kibera slum areas, no upgrading schemes have been proposed. This is possibly because in the eyes of the political elite, the administrator and the professional, upgrading is not attractive for political display. The upgraded areas are of too low a standard to be good show pieces. This is because of the concept of environmental determinism with the mistaken assumption that the Council can only maintain the infrastructure facilities constructed to its adoptive standards. Even the houses themselves can only be improved using conventional building materials. If however, the site & service schemes have proved expensive to beneficiaries what about hith rise flats? There may therefore be a strong case for subsidy.

The development funds for all these programmes are from external donor agencies which have to be paid for in foreign exchange. Ironically, the allotees pay at higher rates and shorter periods than local funds from National Housing Corporation which could be lent for high income housing at 7% over a period of 40 years. Why therefore use expensive money for the low income groups who need greater sympathy and yet avail cheaper money to the high income group? These anomalies may not exist in other countries, but those countries may still have other problems. Sierra Leone, for instance, depends on imports to the extent of 65% for building materials, and nearly all African countries including Nigeria depend on external funding for housing programmes. Above all, nearly all countries depend on Government to implement housing programmes. No intergrated solutions are possible through the efforts of the state alone.

RECOMMENDATIONS

In the discussion above, it can be clearly seen that the majority of the urban poor in Nairobi still live in poor housing. This cannot be solved by make-shift arrangements, but through long term planning. The following suggestions are made as possible policy issues that need long term strategies.

1. Slow Down Rural-Urban Migration

Housing problems in Kenya are intimately wrapped up with urbanization process and this has its roots in the rural areas. Young men and women, particularly school leavers trek annually to urban areas for opportunities unavailable in the rural areas. It therefore makes little sense to embark on massive development of low income houses and upgrading of squatter settlements in the urban areas if the population influx from rural areas would turn these houses into slums due to overcrowding.

A modest attempt is being made in Kenya to redistribute the population from the metropolitan areas through "District Focus for Rural Development". This is based on the principle of a complimentary relationship between the Government ministries, representing a sectoral approach to development, and the districts where the various sectors are joined in common support of rural development activities. The objective is to broaden the base of rural development and encourage local initiative that will compliment the central government's role in order to improve problem identification, resource mobilization and project implementation at local level. This strategy augurs well for new opportunities for employment and consequently cuts down on the need to travel to Nairobi in search of employment. Though only a recent innovation, it is reported that population growth in the major towns of Nairobi and Mombasa have dropped from 7.1% per annum to 5.0% per annum (National Development Plan, 1984).

Under this strategy, employment generation will be achieved by laying emphasis on further growth and diversification of industries with labour intensity such as sugar, textiles and woodworking. Intermediate technology will be promoted and self employment supported through the encouragement of the informal sector.

2. Define Appropriate Housing Policy

In Kenya today housing policy is never clearly defined and may be full of contradictions. There are no specific guidelines as to the roles of both public and private sectors. The policies are also discriminatory in so far as they concentrate only on the low income groups and ignore another 40% of the urban dwellers who fall between the low and the very high income groups. The non-conventional housing approaches are meant to benefit only the low income groups and because the middle income groups are ignored, they pirate on the housing meant for low income groups. The poor are in fact in many cases the tenants of the beneficiaries of the site and service programmes in Kenya. It is therefore here suggested that a housing policy should be fair when it apportions development programmes between all income groups. Thus the concept of site & service schemes should be broadened to embrace the provision of serviced plots to all income groups and households, so that private resources would be released for house-building. The public funds would be reserved for provision of infrastructure facilities and services in housing schemes. Conventional staff housing provision should be restricted to institutional housing such as hospitals, army barracks, prisons, etc. where there is a likelihood of frequent transfers of the personnel. Many local authorities in Kenya are not very successful in meeting housing needs, and from experience even the few houses they have built are very poorly maintained (Syagga; 1979). It is therefore considered that local authorities should concentrate on catalytic role of making it possible for people to build houses through land use planning and provision of infrastructure and services. They may also concentrate on provision of hostels for single workers and students in their areas of jurisdiction. Whether they should also provide rental housing for the upper 40% of urban population requires further justification.

3. Provide for Supportive Financing Systems

Shortage of finance to acquire land and service land for housing is one reason why many urban centres can hardly meet their housing requirements. With respect to individual households, there are few mortgage institutions dealing with housing development and where they exist, they are only for the very high cost housing. It is almost impossible to obtain funds for the non-conventional housing programmes without the aid of international agencies. People in Dandora, Mathare North and Kayole have problems of finance for development. The building loans are insufficient.

The above difficulties could be overcome through creation of a revolving fund to be established by a financial institution created solely for self-help housing schemes. This money should be used in the provision of infrastructure and services, as well as for lending to individuals or groups.

In view of the generally low incomes of the urban population there is a strong case for Government subsidy to make it less streneous for individuals to construct, finance or acquire housing for their personal use. The method adopted should aim at cheapening the overall cost of a particular type of housing, rather than considering individual persons. The former is called objective subsidy, while the latter is called subjective subsidy. Objective subsidy is easier to operate and is unbiased in the eyes of the public, while the latter is seen as being discriminatory.

Together with housing subsidy there is need for rental legislation which ensures that those who have acquired subsidised housing do not gain at the expense of the public by charging exhorbitant rents. But one has also to be careful about the possible negative effects of rent control on the supply of housing.

4. Provide for Appropriate Administrative Machinery that Encourages Public Participation in Housing Programmes

Experience has shown that administrative structures and procedures may adversely affect the rate of house production. Often where housing activities are spread over a number of organizations within a country the policy tends to be incoherent and the responsibility for action is never very clear. This causes unnecessary delays in house provision, resulting in high costs of production or loss of production. It is possible to shorten inter-agency linkages if a single Government ministry or national housing authority was responsible for planning, surveying and allocation of land whether for housing or any other use in urban areas. In the Kenyan context, for instance, there is only one Government Ministry responsible for health services throughout the country, and so is the case with education and agriculture. In the case of housing, however, there are three ministries (Lands, Works and Local Government), the National Housing Corporation and the respective local authorities. Thus the decision-making process is long and cumbersome.

Once the administrative machinery is sorted out, it is then necessary to provide for flow of information to the target groups, create incentives and a sense of community spirit in the housing delivery systems. To encourage public participation, the machinery should encourage formation of housing co-operatives, whether as producers or consumers, to which the Government would provide serviced land in bulk and channel any construction financing. The machinery should then carry out monitoring and evaluation exercise continuously.

5. <u>Provide Adequate Facilities for Manpower Development</u>

To supplement the major housing policy proposals above, there is need to produce trained manpower at the professional, technical and crafts level to help in the implementation of housing programmes. It has been suggested by the National Council for Science & Technology in Kenya that for every professional graduate there should be five technical supporting staff, and as many craftsmen as possible. Most of the housing programmes for the urban poor are modest projects by individuals or groups requiring the services of small contractors or individual artisans, plumbers or electricians who can build more cheaply than the larger and more heavily equipped building concerns. It is in this light that this paper calls for protracted training locally in each country so that manpower shortages do not cripple development projects.

While it is possible to train professional engineers, architects, planners and quantity surveyors at degree level in one or two universities in a country, there is need for more diploma colleges to train the necessary technical staff so as to maintain the ratio of one to five. Below this level, there should be several crafts training centres for the operative staff with training programmes lasting 2 or 3 years, depending on the level at which trainees have left school. Adequate training has also to be supported by research into the use of lcoal building materials, construction techniques and the user requirements for space and house form and layout.

6. Allow for Innovative Building Technology

With the above measures it is necessary to allow for use of appropriate building materials and techniques. Since majority of the poor live in the distressed housing areas in Nairobi, we should consider how they house themselves. Conventional site and service scheme projects have inherently high cost implications derived from conventional standards of design and construction. The result is that most of the developers in the site & service schemes are not original allotees, but those who have bought the plots using the legal instruments of "power of attorney". This phenomenon needs to be explained and it raises the question whether our selection criteria and policy concerns about site & service programmes are not under the test of time. Thus site & service schemes may be treated as owner-built schemes for those "able and willing" to undertake the development as is often the case when councils advertise plots in the public press for allocation. The site and service schemes should adopt grade II by-laws so as to allow innovative building materials and construction techniques. A lot of research has been done in this area and what is being awaited is opportunity to implement the research findings.

It would also appear that settlement upgrading schemes would most appropriately answer the problems of the low income households. Because the majority of the poor live in these areas it would be a plausible proposition to concentrate on settlement upgrading.

The above suggestions are not in themselves new ideas, nor are they conclusive solutions to housing problems. They are, however, based on weaknesses identified in implementation of many national housing programmes in Kenya. They are open to further discussions and to varying degrees of acceptance and implementation.

TABLE 1: Housing Needs in Urban Areas in Kenya

	1983-1988	1989-1990	1991-2000
All Towns	269,218	117,652	643,837
Nairobi	114,550	50,454	275,241

TABLE 2: Population Characteristics of Pumwani: Pumwani and Nairobi: A Comparison

Total Population	Pumwani	Nairobi
	12,600	1,223,000
Density/km²	6,300	1,788
Household Size	4	3.2
Sex Ratio	0.93:1	0.73:1
Dependency Level	52%	47.4%

TABLE 3: Income Distribution

Amount (KShs.)	Proportion of Population (%)
< 500	14
501 - 1000	36
1000 - 1500	31
1500 - 2000	8
> 2000	14

TABLE 4: Rent Preferences & Willingness to Pay for Improved Structures

Rent per month KShs.	Present Rent (%)	Respondents Willingness to pay on	
		Unimproved (%)	Improved (%)
< 50	32	61	6
51 - 100	46	20	21
100 - 150	11	4	12.8
151 - 200	6	2.4	16.6
201 - 250	2.1	1.2	8
251 - 300	0.4	0.6	7.6
> 301	2.5	2.4	28
	100.0	100.0	100.0

TABLE 5: Cost Sharing Implications in Dandora

	Item	% NCC Contributions	% Allotee Contributions
i)	Site preparation	9.1	90.9
ii)	On site infrastructure	50.1	48.9
iii)	Core Units	Nil	100.0
iv)	Technical Assistance	92.5	7.5
v)	Physical Contingencies	70.5	28.5
	Sub-total	40.0	58.2
vi)	Trunk infrastructure	100.0	Nil
vii)	Community Facilities	100.0	Nil
	Total % Contribution	68.8	36.2

Source: Constructed from Analysis Sheets at the NCC offices at Dandora, Nairobi

TABLE 6: Umoja Phase II Project Contribution (units are in Kenya Shillings)

	Item	NCC Contribution	Beneficiaries
i)	Land	5,308,358 (Shs)	Nil
ii)	Off-site infrastructure: (bus routes, foul trunk sewers)	1,750,658	Nil
iii)	On-site infrastructure		28,253,357
iv)	Basic building cost (including community facilities)		93,301,648
v)	Professional fees (conveyancing & consultancy)		20,113,857
vi)	Administration		40,843,250
	Total	7,059,011	184,512,112
	% Contribution	3.7%	96.3%

Source: Constructed from Umoja II Project Draft Cash Flow, Second Revision, July 1985.

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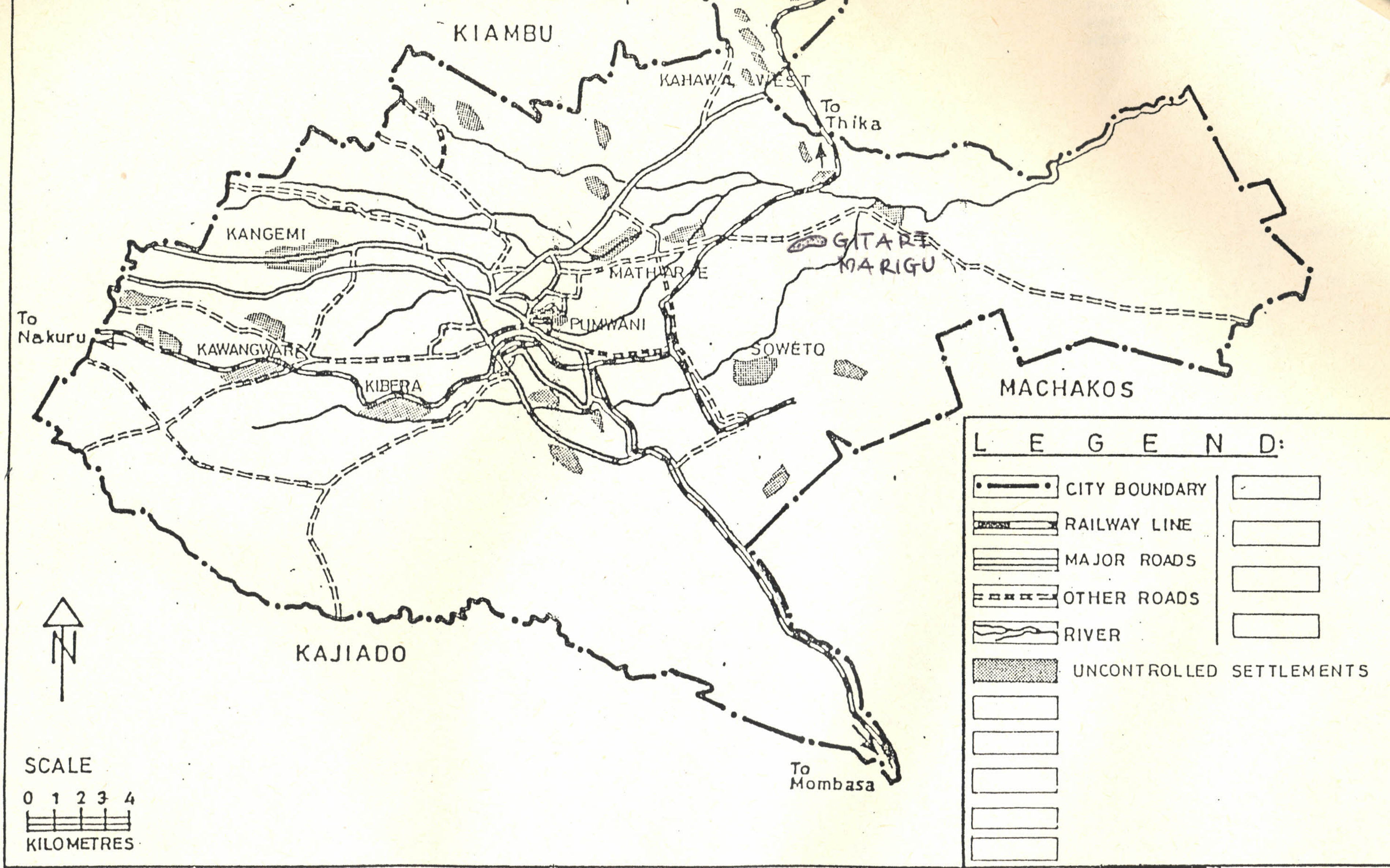
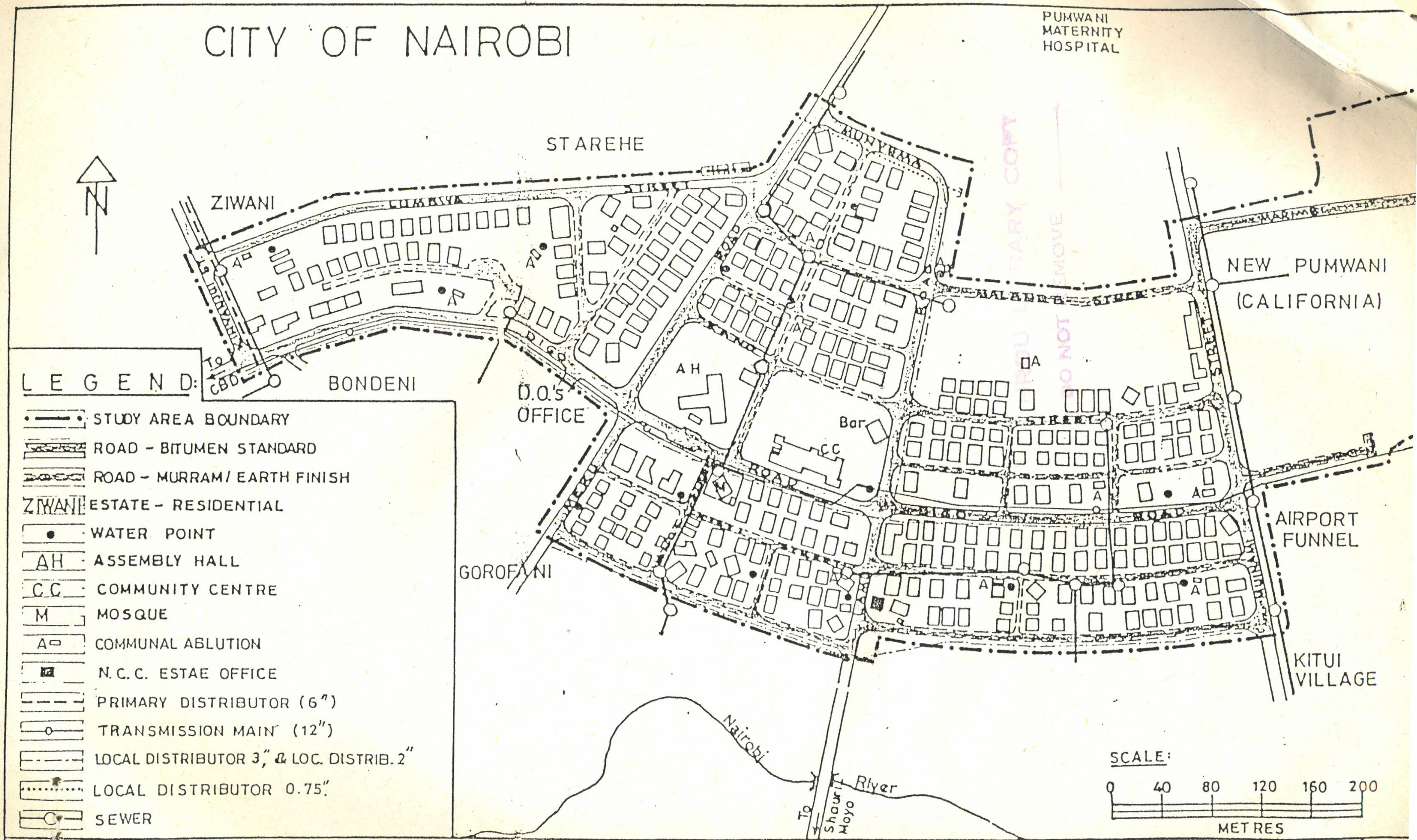


HOUSING STRESS ZONES



PUMWANI STUDY: PUBLIC UTILITIES AND FACILITIES MAP No. 2