

DECLARATION

ARCHITECTURE FOR THE URBAN POOR

A Case study in Nairobi - Kenya

M.Arch Project Report

2006

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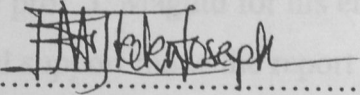
DECLARATION

ACKNOWLEDGEMENTS

This project report is my original work and has not been presented for the award of degree in any other University

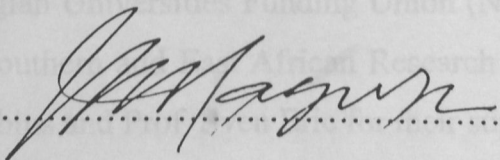
I feel indebted to thank:

My supervisor, Prof. J. Magutu for his encouragement and insightful inputs. His constant guidance

Signed 

Joseph S. Mukeku -B/50/8348/2002

This project report has been submitted for examination with our approval as the university supervisors.

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1.0 INTRODUCTION

1.1 Introductory background

The urban poor form a greater part of the overall urban population in third world cities. This urban poor population lives in an appalling built environment characterised by poor housing conditions, lack of basic sanitation, health and social amenities. According to current United Nations estimates¹, there are 924 million people in the world living in slums and unauthorised settlements, and this is expected to increase to 1500 million by 2015 unless urgent action is taken.

The population of the urban poor continues to soar due to the high rural-urban migration together with some aspect of natural population growth from within the urban areas. This high demographic occurrence coupled with a lack of resources and tools, not to mention pervasive land and property speculation has resulted in the deplorable state of the built environment of the urban poor.

"The destiny of migrants is usually not to go back. They do not see the journey to the city as readily reversible The family, and the move see going to the city as a success as a kind of commitment. These people are intelligent and their choices are rational. But they are rational choices taken at very near the right margin of existence, a margin that has been ever-present for the great bulk of humankind through out their history"²

Un-employment, polarization of the poor and the rich and a looming ecological collapse has further aggravated the living conditions of the urban poor. The urban poor are faced with a myriad of challenges, some intrinsic to their own setting while others are external and beyond their control. Even though these challenges facing the urban poor are multifaceted and of a complex nature, their built environment stands out as one area that needs to be streamlined. The existing regulatory framework of planning regulations, planning standards and administrative procedures by which governments seek to manage the process of urban development and growth have been cited as being inadequate towards

¹ Payne G K.,(2004), *The Urban Housing Manual: Making Regulatory Frameworks Work for the Poor*, Cromwell Press Ltd, London

² Hall P.,(1992) *Urban and Regional Planning*, London.

addressing the plight of the urban poor built environment³. Hence, the urban poor have always evolved their built environment without professional involvement. This has resulted in what one author calls architecture without architects. *"The true builders and planners of Third World cities are the urban poor."*⁴

Previous efforts to combat the situation have mostly been spearheaded as policies at international forums, with little work happening on the ground. Such efforts as supported by the United Nations Organization entail the Agenda 21 of 1992, the Habitat Agenda of 1996, Cities Alliance of 1999 and lately the Millennium Development Goals of 2000. Specifically, in the Millennium Development Goals, Goal 7, Target 11⁵, seeks to improve the lives of at least 100million slum dwellers by the year 2020.

The few practical initiatives towards slum upgrading have usually been localised and isolated in nature. They have also been inconsistent and unsustainable, resulting in some sorts of gentrification and the eventual displacement of the target poor group by more affluent ones. Hence, their impact has been insignificant compared to the magnitude of the challenge.

Specifically, slum interventions in Kenya have been carried out under different themes as indicated below:

- (i) the slum clearance and provision of public housing of 1960s and early 1970s
- (ii) sites and service schemes of the 1970s,
- (iii) tenure and physical upgrading of the 1980s
- (iv) Enabling approach of the 1990s

It is worth to consolidate the lessons learnt from the good practices in these initiatives and use them to scale up to combat the wider challenge. In this regard, the search for a sustainable way of realising architecture for the urban poor can draw from the lessons

³ Payne G K.,(2004), *The Urban Housing Manual: Making Regulatory Frameworks Work for the Poor*, Cromwell Press Ltd, London

⁴ Mc Auslan P.,(1985), *Urban Land and Shelter For the Poor*, Earthscan

⁵ World Bank Group (2003) 'Millennium Development Goals', Target 11, www.developmentgoals.org/Environment.htm#target11

learnt from these initiatives. Such entails reviewing the design process, the delivery method and the post construction management process of the urban poor architecture.

1.2 The problem and its setting

1.2.1 Problem statement

The urban poor do not have an established way of realising a sustainable decent architecture. The conventional system of architectural practice has not been able to deliver a sustainable built environment for the urban poor. Hence, they live in squalid and unhealthy conditions.

1.2.2 Statement of sub problems

1. There is a need to understand the peculiarities in the built environment of the urban poor that distinguish it from the greater urban environment. This understanding has to unravel the complex reality of the social economic and physical environmental issues of the urban poor.

2. Interventions made with a view to realising a sustainable built environment for the urban poor have gone without a proper review. Such a review would bring to the fore the strengths and weaknesses of these interventions and allow recommendations to streamline and scale them up.

1.2.3 The hypothesis.

A sustainable architecture and planning for the urban poor can be achieved through the scaling up and streamlining of the small and incremental interventions as opposed to a large scale and instantaneous intervention. This entails understanding the built environment as an integral part of the other facets of the totality of life of the urban poor and allowing it to grow in pace with them.

1.2.4 Objectives of the study

This study seeks to review an intervention done towards improving the state of the built environment for the urban poor and make recommendations on how this process can be made more sustainable. It looks at the technical issues that are peculiar to the architecture for the urban poor and equally establishes the delivery process with other pertinent issues such as the financing options and the social process.

1.2.5 The scope of the study and delimitations.

Whereas the term urban poor can be perceived broadly, this study will be limited to the situations facing people who are directly resident in temporary structures squatting on land and without a secure land tenure system.

In as much as some social-economic issues will be studied, they will not be analysed independently. They will essentially seek to inform the state of the physical built environment.

1.2.6 The definition of terms.

Besides their ordinary dictionary definition, the following terms have been accorded some operational definition.

1. Architecture herein refers to the entire process of realizing environmental justice for a people through decent secure housing and the provision of the pertinent services.

2. The *Urban* poor refers to that marginalized group of people in urban areas who live in deplorable conditions characterized by insecure land tenure, poor housing conditions, inadequate or no service provision at all. Though low-income levels are prevalent in people of this category, it can not be held to be a general quality for defining the urban poor. Some people live in these environments more out of choice than due to income limitations.

3. Slum upgrading or slum improvement as it is also called, can mean many things, but at its simplest, it implies the provision of a package of basic services which might include access to clean water supply, adequate sewage disposal, legal title to the land occupied by the slums and the construction of permanent houses.

1.2.7 The importance of the study.

In the search for a sustainable process for carrying out architecture for the urban poor, this study will consolidate the gains of the previous interventions and be a reference point for upgrading slums. The review of the current situation of the built environment of the urban poor will form a basis on which future discussions regarding the socio-economic and physical-environmental issues in the slums can be based.

1.3 The data, their garnering, analysis and documentation

1.3.1 The data

a. The primary data

This comprises of documentation in the form of note taking, photographs and sketches of existing situation of the urban poor architecture.

b. The secondary data

This entails the extraction of the relevant material encountered in the process of referencing to books, journals and reports.

1.3.2 The criteria governing the admissibility of data

The data is selected based on its close relevance to the architecture of the urban poor as the subject matter. Statistical data is taken as the most current, preferably having been established within the last three years.

1.3.3 The research methodology

The method of carrying out the research entails both literature review and direct observation.

1.3.4 The specific projected treatment of each sub-problem

a. Sub-problem 1

i. Data needed

Current socio-economic and environmental information on the urban poor including demographic statistics, densities, land occupation, income levels, state of the architecture.

ii. Where the data are sourced

These data is gotten through literature review at the University of Nairobi's ADD library and the United Nations-Habitat Library at the UN complex in Gigiri, Nairobi. Other sources will include the ITDG regional offices in Nairobi, Pamoja Trust (a local NGO based in Nairobi), and CBOS working in the informal settlements as well as assessment of the actual situation on the ground in the said settlements.

iii. How the data will be secured

The data is sourced through the extraction of the relevant literature from written materials and notes taken during direct observations of situations on the ground in the informal settlements. Interviews with the urban poor as groups or individuals are documented as well.

iv. How the data will be treated and interpreted

The data is analysed for relevance to the subject matter. Qualitative and quantitative comparison is done on such data to establish the most appropriate data while at the same time assisting in drawing conclusions.

b. Sub-problem 2

i. Data needed

The data for this sub problem entails the information on a local intervention that has been undertaken in realizing appropriate architecture for the urban poor.

ii. Where the data are located

These data are got from the United Nations-Habitat Library at the UN complex in Gigiri, Nairobi. Other sources are ITDG regional offices in Nairobi, Pamoja Trust (a local NGO based in Nairobi), and CBOS working in the informal settlement as well as the situation on the ground in the said settlement. Kambi Moto in Huruma serves as the basis for these data.

iii. How the data is secured

The data is sourced through the relevant literature review of written materials and direct observations of situations on the ground in the selected informal settlements. Interviews with the urban poor, other involved groups and individuals are also carried out.

iv. How the data is analysed and documented

The data is analysed for relevance to the subject matter. Qualitative and quantitative comparison is done on such data to establish the most appropriate data while at the same time assisting in drawing conclusions. Critiques on the attempted initiatives are done based on how their sustainability, their possible replication and their post-occupancy performance.

2.0 THE URBAN POOR AND THEIR BUILT ENVIRONMENT

2.1 Defining the urban poor

The urban poor comprises of that marginalized group of people in urban areas who live in deplorable conditions characterized by insecure land tenure, poor housing conditions, inadequate or no service provision at all. Though a low-income level is the most glaring aspect of the urban poor, yet it may not be the only criterion for their definition. In addition to the poor income status, these people are also subjected to some amount of social and spatial segregation in the urban environment.

Urban poverty is largely held to be synonymous with living in the slums. However, some people prefer to live in this environment more out of choice than due to their economic limitations. Other than those having structures and inhabiting them because of poor financial disposition, there are those who own structures in the slums as an investment. These are either resident or absentee 'slum-lords' who rent the structures to tenants for a daily, weekly or monthly rent. Some of the absentee slum-lords are politically influential wealthy people living in the middle and high income areas of the city⁶. They have their representatives renting out the structures and collecting rent from the tenants on their behalf.

Globally, there are no fixed national economic performance standards of gauging the vulnerability of the urban poor. Comparative studies on housing show wide variation in quality between countries with equivalent per capita incomes, indicating that non-economic factors have a strong influence on how people live, and that yard sticks of housing adequacy and acceptability are to some extent culture specific.⁷ In this regard, the definition of the urban poor also embraces their social cultural conditions. The rules of urban building are so diverse and culture specific that no one group of people can claim

⁶Mitullah W., (2003) '*The case of Nairobi Kenya*' in UN-Habitat (2003) *Global Report on Human Settlements 2003, The Challenge of Slums*, Earthscan London.

⁷Yahya S., Agevi E., Lowe L., Mugova A., Nyamayaro O., (2001), *Double standards, single purpose, Reforming housing regulations to reduce poverty*, Cromwell press Ltd, Trowbridge, Wiltshire.

to have the best system, only the best system for their local needs.⁸ The following analysis examines the state of the urban poor based on their built environment, social and economic contexts.

Built environment context

Despite the above variances, the most overarching aspect in defining the urban poor is the nature of the built environment in which they live, often referred to as slums. The United Nations – Habitat describes a slum as a contiguous settlement where the inhabitants are characterised as having inadequate housing and basic services⁹. Alluding to the same, article 11 of the Millennium Development Goals describes typical slums in developing countries as unplanned informal settlements where access to services is minimal to non-existent and where overcrowding is the norm.¹⁰ A slum is often not recognised and addressed by the public authorities as an integral or equal part of the city.

The challenge posed by slum settlements continues to weigh heavily on third world cities where the rate of demographic and physical growth far much outstrips the economic growth. The situation is further worsened by the existing planning regulations, standards and administrative procedures and urban development policies which are not in synch with the current realities. Such were formulated at a time when urban populations were relatively small, affluent and urban population growth rates were modest. They have not been reviewed to reflect the impact of the burgeoning urban population and the dwindling economic conditions.

The houses inhabited by the urban poor are of a substandard nature in lieu of the existing housing policy guidelines and are largely described as illegal. The temporary and disorderly nature of these houses can be partly attributed to the lack of security of tenure.

⁸ Ibid

⁹ UN –Habitat (2003) The challenge of slums: Global Report on Human Settlements 2003, Earthscan, London.

¹⁰World Bank Group (2003) 'Millennium Development Goals', Target 11, www.developmentgoals.org/Environment.htm#target11

*'Someone has to guarantee security of tenure for orderly development to take place.'*¹¹

The houses are made of material that is either cheap or can easily be reused again on a new site in the event that the settlement is demolished. These materials comprise of discarded metals and plastics previously used to package chemicals and pesticides, which poses a health risk. The houses often lack structural integrity and could easily collapse in the event of a natural catastrophe such as earth tremors, heavy downpours or strong wind gusts. The houses are insufficient to protect the occupants from extremes of weather elements.

These houses are also characterised by overcrowding and lack adequate ventilation and lighting. Hazards such as fire and airborne disease outbreaks are prevalent in these settlements owing to the overcrowding. The inadequacy of windows for ventilation results in a damp indoor ambience that constitutes a health hazard. Where solid fuel is used for cooking and heating, the smoke from this fuel is not efficiently extracted from the indoor of the slum house and the consequent inhalation of the same results in respiratory diseases.

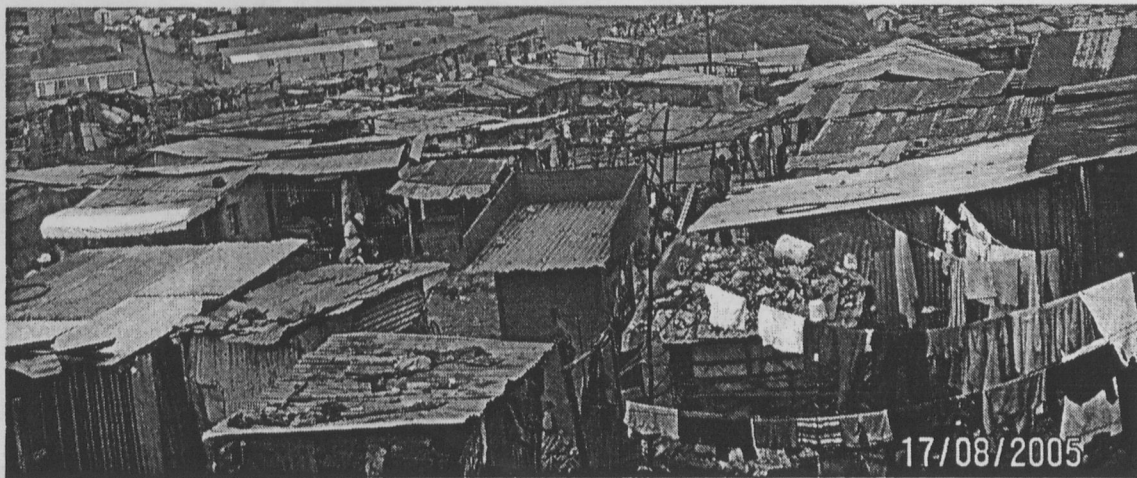


Fig2.1 Unplanned, overcrowded temporary character of housing structures in the Kibera slums, Nairobi.

Picture by author

¹¹Yahya S., Agevi E., Lowe L., Mugova A., Nyamayaro O., (2001), *Double standards, single purpose, Reforming housing regulations to reduce poverty*, Cromwell press Ltd, Trowbridge, Wiltshire.

In the slums, there is always a conflict between the pursuit of personal good and that of the public good. Not much attention is given to the facilities which would serve the public good, entailing public health and safety. Ostensibly, people living in the slums strive to meet their individual needs amidst the limited resources. Hence it becomes difficult to apportion any available meagre resources to meet the common needs for all. In this sense, slums lack crucial facilities which are intended to meet certain needs at a community level. Such facilities lacking in slums include open community outdoor spaces, meeting halls, children play spaces and adequate infrastructure. Most of the activities that would have otherwise occurred in these spaces end up being undertaken on the spaces left out for roads and circulation.

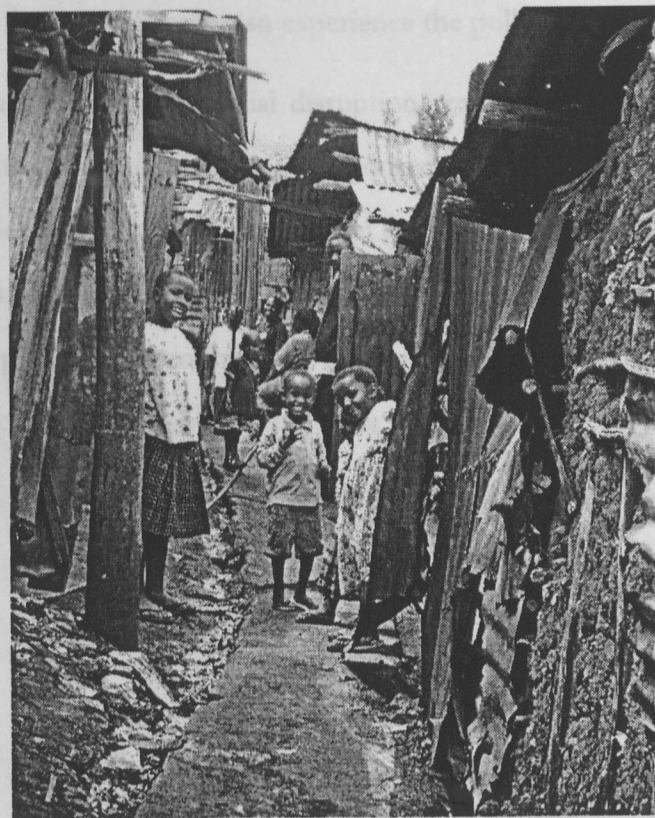


Fig.2.2 Narrow passages doubling as children play spaces in the Kibera slums, Nairobi.

Picture by author

In most cases, informal settlements occupy land that was initially left out when other areas were being planned for. Such land may be characterised by difficult topography, as is the

case of reefs or by poor drainage and soil conditions as is the case of river valleys. Majority of informal settlements tend to follow the natural drainage basins along river valleys. These were not planned for due to their high development costs associated with poor drainage. Often, they are not adequately connected to the entire network of services that exists in the wider urban environment.

Slum settlements show high levels of environmental pollution. This results from poor handling of solid waste and sewage within the settlements. There is not a functional sewer network in most of these settlements and the only system of handling such waste is through pit latrines which in addition to being inadequate are prone to poor maintenance.

Solid waste generated in these settlements is not properly handled and ends up making piles of garbage next to the dwelling structures. Occasionally, the waste ends up polluting the rivers nearby when it is swept downstream. Where they are located adjacent to industrial sites, these settlements also experience the pollution from industrial effluent.

The psychological impact and social disruptions caused by overcrowding in the slums, though difficult to quantify, can not be ignored. For instance, there are occasions of extended families living together in cramped positions and violating social distances that are culturally upheld by different people. This breach of cultural taboos and the accompanying physical discomfort, not to mention the physical health risks makes the slum environments a challenge to those living in it.



Fig.2.3 Environmental pollution (Kibera slums, Nairobi) from solid waste and raw sewage

Picture by author

Economic context

Human capital is a major asset that the urban poor possess. A substantial population in the informal settlements offer their services in the formal sector. For instance, they provide semi skilled labour in the construction and manufacturing industries. They also offer other crucial services in the urban economy such as domestic work in the formal residential neighbourhoods.

There thus exists some symbiotic relationship between the formal and the informal areas of the city. To this extent, informal settlements tend to occur next to a source of livelihood. Such entails large industries that provide opportunities for unskilled labour and market centres that offer opportunities for small-scale and often informal businesses. The close proximity of the settlements to work places and business opportunity areas ensures the convenience of short walking distances, as the urban poor are not in a position to meet high transportation costs.

Most of the urban poor earn their livelihoods through informal sector income generating activities. These activities usually comprise of small-scale home-based enterprises that service the market demand within the informal settlements and the surrounding areas. The informality of these businesses inhibits their dynamic linkage with the greater urban and national economy. The businesses are not subject to basic economic regulatory procedures as registration, taxation or quality control. They have low growth thresholds owing to their inaccessibility to credit and finance from established financial institutions as they lack acceptable collaterals and guarantee mechanisms.



Fig.2.4 Small scale informal businesses as done outdoors in the Kibera slums, Nairobi.

Picture by author

For those renting, the unit cost of housing and the associated services is deemed to be higher in the informal settlements than in the formal ones. The rent per unit area on the ground relative to the capital investment (and by implication the quality of the built environment) in the informal settlements is far much in excess that of the formal settlements. The unit cost of services such as water and electricity is also higher in these settlements than in the formal ones. This is exuberated by the fact that the houses within

these settlements are not formally connected to services and hence intermediaries exploit the residents by hawking the services to them at exorbitant prices.

Social context

The urban poor are not socially integrated with the rest of the urban population. There is usually a strong social stigma towards those living in the slums. They are usually looked down upon by the other social classes and often associated with vices such as urban crime and a threat to urban security and sanitation. Within the urban poor community, there are strong social networks formed to address both internal and external challenges facing them. This social organisation finds application in resolving internal conflicts, fighting insecurity, attaining environmental sanitation, and generally the provision of basic services.

Broadly, the social organisations form a front for addressing other greater issues such as forced evictions, natural calamities and political machinations. The same social organisation is used for linking the urban poor with the authorities and the wider city population. The social relations within the slums are governed by extralegal norms which to some extent regulate the day to day running of issues in the community. 'It is the law that has been created by informals to regulate and order their lives and transactions, and as such is socially relevant.' (De Soto 1989) This unwritten form of law is a major tool when mobilising people for action in the slums.

Another striking aspect of social situation in the slums is the amount of urban-rural interfaces that is not to be found in the formal estates in the city. Many slum dwellers keep strong ties with their places of origin up country. They often relocate the little income that they get to go and develop their up country homes. As such, the sense of ownership in the slums is weakened and the residents see it as more of a transitory situation on their way to eventually retiring upcountry.

Despite the above analysis, that shows the inadequacies in the slum environment, it is worth noting that such conditions of the built environment fits in to a certain priority

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scale of the urban poor¹². This priority scale is determined by their needs and incomes, which are different from those of other income groups. For instance, the urban poor do not prioritise on modern standard shelter, but puts proximity to means of livelihood, ownership, and other aspects at the fore. This differs from the middle-income group who prioritise on modern standard shelter and put less consideration on proximity to work places. A comparative representation of these priorities as set by the different income groups is shown below.

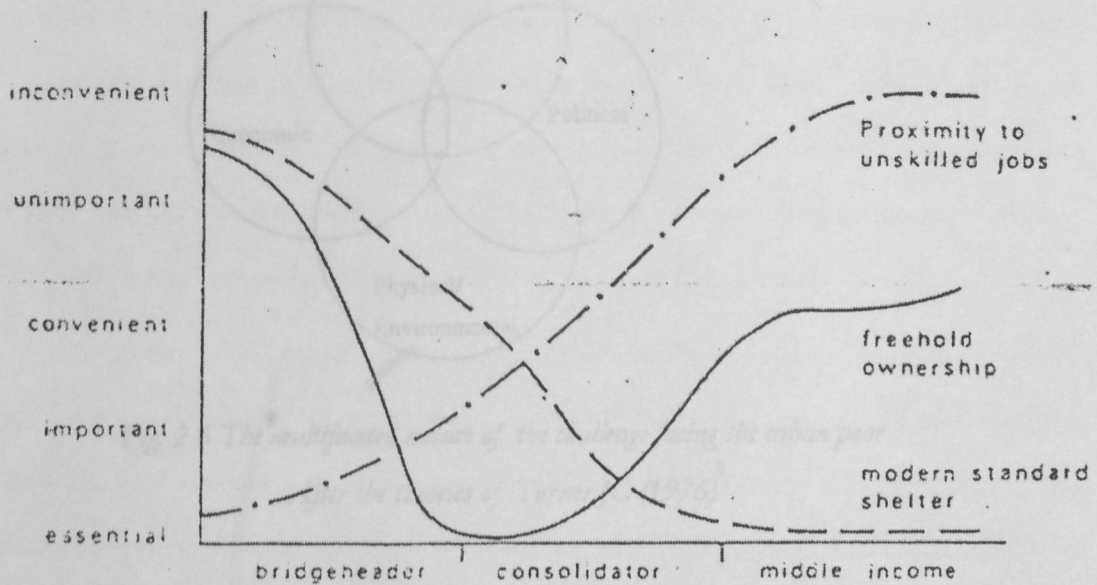


Fig.2.5 The housing priorities of different income groups

From JFC Turner (1972)

Pertinent to the above prioritisation of the state of the built environment among other needs is the view that housing is a process and not a product¹³. As such, housing can not be tackled in isolation but needs to be handled together with other aspects of urban life. The built environment ought to evolve incrementally as the income levels of the residents

¹² Turner J.C, (1976), *Housing by people*, Marion Boyars, London

¹³ Ibid

improve, a process often referred to as consolidation of spontaneous settlements.¹⁴ This would ensure that the residents can sustainably meet the maintenance and servicing expenses associated with the improved built environment.

The nature of challenge facing the urban poor can be seen as one at the centre of the above economic, social, political, physical and environmental conditions as shown in the schematic illustration below.

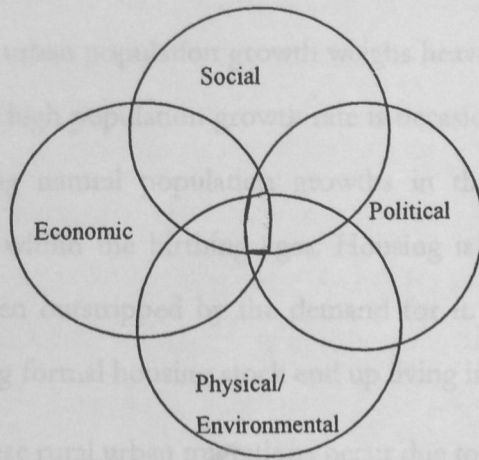


Fig. 2.6 The multifaceted nature of the challenge facing the urban poor

After the theories of Turner JC (1976)

It was in line with the above understanding that during Habitat I, the United Nation's first international conference on human settlements, held in Vancouver in 1976, it was suggested that a 'national policy for human settlements and the environment should be an integral part of any national economic and social development' (UNCHS 1980). It states that 'standards for shelter and infrastructure and services should be compatible with local resources, be revolutionary, realistic, and sufficiently adaptable to local culture and conditions and be established by appropriate government bodies'.

¹⁴ Ibid

2.2 The causes of slums

The plethora of factors contributing to the deplorable state of the built environment in the slums is diverse, ranging from political to socio-economic in nature. That notwithstanding, it is necessary to isolate the pertinent practical issues that contribute to this state. Key among these is the high population growth rate, the prevailing regulatory framework governing urban development as well as urban poverty.

The high rate of urban population growth weighs heavily on the meagre resources in the urban areas. This high population growth rate is occasioned by rural urban migration and the accompanying natural population growths in the cities since majority of those migrating in are within the birthing ages. Housing is one such urban resource whose provision has been outstripped by the demand for it. Those who can not find shelter within the existing formal housing stock end up living in the slums.

Since most of these rural urban migrations occur due to the concentration of resources in urban areas as compared to rural areas, it would be more prudent to argue that a redistribution of resources to rural areas would curtail this problem. In this regard, the relocation of some industries to the rural areas would serve as opportunities for livelihood and thus discourage the rural urban migration. Such is what was initially tried in Kenya through the Back to Land Policy.

Another factor that has contributed to the growth of slums is the nature of the existing regulatory framework. This has a significant bearing on urban development in general and in particular on planning, zoning, land use and plot development, space standards and infrastructure services. In most third world countries, there is a legacy of urban development and management inherited from the colonial past. These planning regulations, standards and administrative procedures were formulated at a time when urban populations were relatively small, affluent and urban population growth rates were modest. This legislation has not been reviewed to reflect the effects of the burgeoning urban population without a corresponding increase in the urban resources.

The fact that a sizeable proportion of the urban population live in unplanned spontaneous settlements is a clear indicator that the regulations is superfluous, and at best an impediment to investment and development. It is the present concentration of resources on excessively high standards of housing which prevents the utilisation of the same resources for the construction of affordable housing for the majority of the population. For instance, such legislation insists on industrialised materials and design practices. These standards are prescriptive and rarely performance based. This is a major constraint to innovation, which would otherwise enable the use of alternative materials affordable by the urban poor.

Standards for shelter and infrastructure and services should be compatible with local resources, be revolutionary, realistic, and sufficiently adaptable to local culture and conditions¹⁵. In many cases, the modest slum houses go through an evolutionary process and eventually reach official standards eventually. Attempts to impose such standards initially at the outset raise the bottom rung of the housing ladder too high and exclude people from participating in the legal housing market. Ironically, therefore standards designed to ensure good quality urban development are partly responsible for the growth of unauthorised and substandard development¹⁶.

In view of Kenya's level of wealth, the concentration of public and private sector resources on goods and services of a standard adopted in much richer countries amounts in practice to a policy of high quality for the few and little or nothing for the many. To redress this situation, more relevant standards for housing products, health and transport must be adopted¹⁷.

Planners, architects engineers, surveyors and so on are trained to regard themselves as upholding what they consider to be minimum acceptable standards in developing or upgrading urban areas. However, if they prove to be inconsistent with what the poor need or can afford, it is essential that they are willing to compromise on aspects not essential to

¹⁵ United Nations Centre for Human Settlements (UNCHS) 1980

¹⁶ Payne G K., (2004), *The Urban Housing Manual: Making Regulatory Frameworks Work for the Poor*, Cromwell Press Ltd, London

¹⁷ *Employment, income and Equality – A strategy for Increasing Productive Employment in Kenya*, ILO. Geneva, 1972.

the wider public interest and they adapt the regulatory framework so that the poor can conform¹⁸.

The lack of a sustainable housing policy has also contributed to the proliferation of slums. Over the years, the few projects undertaken for the urban poor have been ineffective at reaching them. They prove to be expensive, often being usurped by higher-income or politically connected people. This results in some gentrification effect where the urban poor get displaced from their improved environment only to put up more new slums elsewhere. In this way, the poorest continue to be marginalized from the little state assistance that exists.

On the other hand, the provision of housing by private developers is not regulated and remains largely driven by the market forces. Consequently, the range of affordable and appropriate housing options is too limited, reducing the possibility of households with different needs being able to find the form of housing they need at a price they can afford¹⁹. Groups controlling the restricted range of options have no incentive to adapt what they provide since they enjoy an effective monopoly.

Urban poverty is a major cause for the mushrooming of slums. This has led to the increasing gap between land and housing prices and household incomes. Largely, urban poverty is a self-perpetuating phenomenon in that the urban poverty begets more urban poverty. In this sense, it has been argued that the poor are poor because they are poor²⁰. The urban poor are trapped in a vicious circle that is determined by internal as well as external factors beyond their control. They pass the baton of poverty to their children as they can not afford quality education as a means of breaking the vicious circle.

Even with the huge magnitude of the challenge of life in the slums, very little sustainable intervention has been done to alleviate the problem. There have not been substantial initiatives from either the concerned authorities, professionals or the slum dwellers

¹⁸ Payne G K., (2004), *The Urban Housing Manual: Making Regulatory Frameworks Work for the Poor*, Cromwell Press Ltd, London

¹⁹ Ibid

²⁰ Gilbert A. and Josef G.,(1981), *Cities poverty and Development*, Oxford University Press.

themselves. On their part, the slum dwellers have not held the authorities accountable to improve their living conditions. The much that has been done has come from the top down to the communities, without direct participation of the beneficiaries in the planning and the implementation of such projects. The slum dwellers have hence viewed the projects as charity, thereby heightening the dependency syndrome as they fail to care for what is provided while anticipating more assistance. It ends up entrenching the problem further rather than solving it. There has also been very little professional attention towards solving these urban conurbations.

2.3 Design principles in the slums

Despite the rundown physical state of the built environment of the urban poor, it has some positive design and planning principles. These principles can be utilised to inform the design of any intended intervention and hence ensure that the spirit of the place, the so called the 'genius loci', is allowed to thrive beyond the intervention. Alluding to the design richness of the informal settlements, Hassan Fathy observed;

Indeed the same evidence of imagination, ingenuity and enthusiasm can be seen in many a shanty town where homeless people have constructed delightful buildings out of packing cases, gasoline cans and other such rubbish. Of course, these districts have no drainage, no paved streets and the houses themselves are leaky, noisy, overcrowded and prone to catch fire. But the buildings do look nice, because the people in their irrepressible artistry have made each one different, have seized on the only possible decoration – bright colour wash and flowers, - and because the materials impose an overall harmony on the sites²¹

These design and planning constants in the slums are as a result of many years of interaction between the slum dwellers and the space. As such, their totality provides a certain distinct ambience that is only to be experienced in the slums. By preserving such an ambience when upgrading, it would ensure continuity and retention of the identity of the place. These design principles are as discussed below.

²¹ Fathy H. (1973), *Architecture for the poor*, The University of Chicago Press, Chicago and London.

Organic layout

The organic nature of slums stems from the individuality of both the housing structures and the accompanying open spaces. This offers diversity as the design of each structure differs from the next. Although the individual houses tend to be based on geometric shapes, the resultant composition of all the houses is rather amorphous and non-geometric. The layout of the houses follows an irregular pattern, with spaces that interweave every so often to form a rich meshwork. It provides an inherent rhythm more derived from a harmonised variety rather than from repetition of similar structures. The entire environment is quite unpredictable as each turn reveals a totally different experience compared to the preceding. The spaces, both external and internal are pretty varied and defy any standardisation. Despite the individuality, the environment has a resilient ambience, resulting from use of similar materials, a mix of both natural and industrial materials.



Fig.2.7 An aerial view of a section of the Kibera slums showing the organic layout of structures

From the department of survey of Kenya

Incremental growth

One unique characteristic of the slums is their method of growth. This is marked by spontaneity and incremental development. The initial structures in these settlements are usually laid out to meet the needs as at that time. Eventual additions and extensions to these settlements is done as need arises and as resources become available. It grows more incrementally as opposed to being instantaneous. Incremental development meets the needs and budgets of the urban poor. This incremental growth is sanctioned by financial limitations and the unpromising sense of insecurity of tenure.

Despite the housing structures being of a temporary nature, they depict different levels of completion. This is a reflection of the financial situation of the structure owners, who keep improving their houses as funds become available. It also indicates how the structures owners view their security of tenure, as the investment in the houses is influenced by how secure the settlement is from demolition by the authorities.

The initial structures in these settlements are very temporary in nature, often being made of cartons and polythene papers. At such a stage, the settlement also lacks the basic infrastructure services. The circulation paths are bare earth and of no regular sizes. Other services like water, sewer, drainage and electricity are also non-existent.

Occasionally, there are threats of eviction by the authorities as the slum dwellers equally put up resistance. Eventually, the paper structures pave way for less temporary ones in the form of earth, timber and metal sheets and structures. With more finances and a perceived sense of security of tenure, more or less permanent stone structures begin to emerge.

Due to limited space on the ground, storied structures eventually come up to take care of the pressure from the rising population. This way, the settlement becomes permanent despite the lack of official recognition. Consequently, services begin to trickle in from initiatives by the residents themselves, humanitarian organisations and the local authorities.

This method of development, first from a more to a lesser temporary situation is sustainable and more entrenched within the culture of the residents as echoed in the

below quote;

*'Such a jump from the modelled house to the engineered one is a natural stage in the evolution of building, following an increase in wealth; if the change takes place naturally, the new architecture will grow in to a tradition.'*²²

Flexibility

Spaces in the slums are optimally utilised. Both the internal and external spaces are multifunctional, serving a multiplicity of functions at the same time or in different timings. External spaces are simultaneously utilised for pedestrian and vehicular circulation, children play as well as for social gatherings.

Given that most structures in the slums are single-roomed, the same internal spaces serve different functions at different times. They defy the conventional coding of lounge, cooking, business or sleeping quarters. By day, the space serves for both cooking and resting purposes. In some instances, the same space is utilised as a shop with the window serving as a counter for customers walking on the streets. In the evening, the cooking gear is scuttled to a corner and beddings spread.

In this regard, the design of a room in the slums is simple and non-differentiated. The rooms do not have fixed fittings, which would otherwise hamper their conversion for the different modes of habitation.

Multifunctional and non-differentiated space

At the overall settlement level, the functions within the settlement are not zoned. Residential, commercial, administrative and social functions coexist within the same space without any differentiation. Other than for the business premises that tend to intensify close to the circulation routes all these functions exist next to each other, some times sharing the same rooms. This works for the economic convenience of the residents who do not have to move either far to operate their businesses or to purchase their groceries.

²² Fathy H. (1973), *Architecture for the poor*, The University of Chicago Press, Chicago and London.

Strict zoning of functions would otherwise lead to high operational costs through transport expenses. Simply, their economic disposition can not support a zoned environment.

Temporary

Structures in the slums are generally of a temporary nature. The materials utilised in putting them up as well as the inadequacy of the services provided evidence this makeshift character. The materials used for putting up the houses are cheap and of a short lifespan. The lack of a secure tenure discourages the investment in permanent houses and inhibits the connection of essential services.

Most institutions charged with providing the services insist on documents to prove the land ownership before connection, something that the slum dwellers do not have. Even where some of these services are connected, the overcrowded nature of the houses does not leave humble space for installing all the services.

As the risk of being expelled from the settlement diminishes, the structures are gradually transformed in to a more permanent form. After many years, even without the official formalisation, they might be converted in to more permanent and multi-storey structures impossible to be demolished.

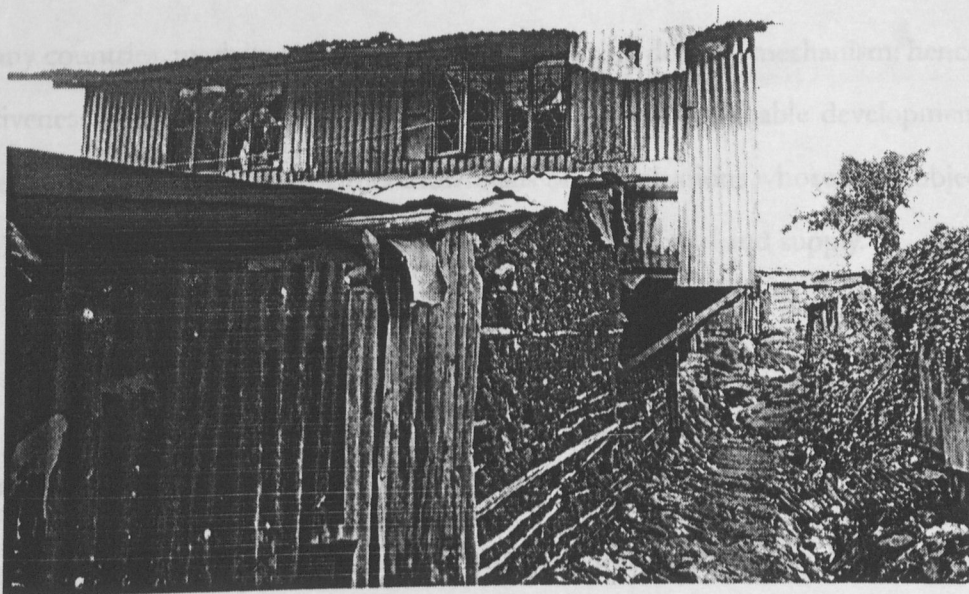


Fig.2.8 Temporary nature of structures made out of earth, wood and iron sheets (Kibera, Nairobi).

Picture by author

3.0 UPGRADING THE URBAN POOR'S BUILT ENVIRONMENT

3.1 Established housing delivery methods

There are a number of methods that have been applied to deliver built environments to urban residents generally. It is worth reviewing them to examine their efficacy with regard to the situation of the urban poor. These methods are government provision, market driven, cooperatives or self-help.

Government provision

Generally, in this model the government undertakes to provide housing to its citizens either through established agencies or through certain departments in the concerned ministries. The resultant housing is either meant to benefit a target group of civil servants or even the general public. This mode of housing provision results in mass production and makes use of mechanised systems of technology.

Market driven

In many countries, markets serve as the primary housing delivery mechanism; hence, their effectiveness and efficiency are important to the goal of sustainable development. The market approach is serviced by either individuals or organisations whose main objective is to make a profit based on the prevailing conditions of demand and supply.

Self-built

In many countries particularly developing countries, more than half the existing housing stock has been built by the owner-occupier themselves. These serve mainly the lower income population. This is accomplished through the efforts of people either individually

or collectively as a group. The process is financed through individual savings, community mortgage programmes, savings and credit cooperatives, credit unions or cooperative banks. This approach is usually labour intensive and generally makes use of local materials and resources. The informal sector activity was first perceived as being part of the housing solution, not the problem in Latin America. (Turner 1982)

3.2 Local history of slum upgrading interventions

The current state of housing in Kenya has its roots to the colonial times. The planning of the city at that time was racially segregated with different zones for the Africans, the Asians and the Europeans. Africans were allocated the least amount of land and yet had the highest density of people per hectare. On the other hand, the Europeans had the highest amount of land and the least density of people per hectare.

After independence, this situation persisted but in a different form. The segregation of the different zones in the city was based on socio-economic conditions where the most affluent people moved over to occupy the areas initially held by the Europeans. The urban poor remained occupying the areas initially designated for the Africans. The densities in these areas inhabited by the urban poor kept rising with the post independence influx of people in to the city. This has had serious implications in that a significant proportion of these immigrants, particularly those coming to the city with nothing other than their labour to offer were, at least for some time after their arrival, unable to afford conventional housing of any kind.²³

The disparity in the densities between the different socio-economic groups has continued with the high income households constituting 10% of Nairobi's households yet occupying 64% of all residential land. On the other hand the low-income households make up 55% of the population and occupy 6% of the residential land in the city²⁴. This has resulted in the mushrooming of slums being fuelled by the high population growth rates, poverty,

²³ Ng'ang'a JA(1973), *Nairobi Metropolitan Growth Strategy*, Volume two, Nairobi Urban Study Group, City Hall, Nairobi, Kenya.

²⁴ Syagga P., Mitullah W., Gitau S., (2001), *Nairobi Situation Analysis: Consultative Report*, Nairobi: Government of Kenya United Nations Centre for Human Settlements (UN – HABITAT)

unemployment, spatial segregation and resettlement and the inadequate provision of housing.

The land policy in Kenya has further complicated the situation as most of the land occupied by slums was initially designated as crown land. This land has been a target by the political establishments for allocation to politically connected people for political machinations, putting the urban poor at great risks of being evicted and losing the only place they know as home in the city. Access to affordable, habitable housing, let alone basic rights such as security of tenure has continued to be an impossible dream for the slum dwellers.²⁵

Previous efforts to combat the situation have mostly been spearheaded as policies at international forums, with little work happening on the ground. Such efforts as supported by the United Nations Organization entail the Agenda 21 of 1992, the Habitat Agenda of 1996, Cities Alliance of 1999 and lately the Millennium Development Goals of 2000. Particularly, the Millennium Development Goals, Goal 7, Target 11²⁶, seeks to improve the lives of at least 100million slum dwellers by the year 2020.

The few practical initiatives towards slum upgrading have usually been localised and isolated in nature. They have also been inconsistent and unsustainable, resulting in some sorts of gentrification and the eventual displacement of the target poor group by more affluent ones. Hence, their impact has been insignificant compared to the overall magnitude of the challenge.

Specifically, slum interventions in Kenya have been carried out through four different themes. These include; the slum clearance and provision of public housing of 1960s and early 1970s, sites and service schemes of the 1970s, tenure and physical upgrading of the 1980s and the enabling approach of the 1990s.

²⁵ Alder G. (1995), Tackling poverty in Nairobi's informal settlements: developing an institutional strategy. *Environment and Urbanisation*, Vol. 7(2), 85-107.

²⁶ World Bank Group (2003) 'Millennium Development Goals', Target 11, www.developmentgoals.org/Environment.htm#target11

Slum clearance and provision of public housing

The slum clearance and provision of public housing was mooted after independence to meet the short supply in housing by providing subsidised public housing. The main idea was to ensure that every family lived in an acceptable urban housing comprising of two rooms, a separate kitchen and a toilet, accommodating a maximum of five people. All the houses that did not meet these standards were to be demolished. Only a few houses were realised for so much demolitions. Consequently, many slum dwellers were displaced, only to pitch tent elsewhere thus multiplying the slum settlements.

The situation was further aggravated by the middle-income groups encroachment on the housing meant for the low-income group. This approach was also widely criticised for being insensitive and unrealistic. 'In view of this, attempts to improve housing conditions by clearing existing slums, setting standards achievable only at costs several times what the lower fifth of the population could possibly afford, and depending upon government financing alone, are futile exercises'²⁷

Sites and services schemes

Sites and services schemes were initiated to correct the pitfalls of the preceding slum clearance and provision of public housing. They were intended to benefit the target low-income group by introducing the aspect of cost recovery, which was envisioned to promote sustainability. The approach entailed the provision of a basic services core comprising of the kitchen and sanitation facilities, which the residents would build up on gradually to attain full houses.

The Dandora Community Development project in Nairobi as funded by World Bank was done under this theme and aimed at creating 6,000 serviced plots. The cost recovery concept did not succeed and again the target group got displaced as most beneficiaries were bought out by the middle income group.²⁸ The unfinished nature of the houses

²⁷ Ng'ang'a JA(1973), *Nairobi Metropolitan Growth Strategy*, Volume two, Nairobi Urban Study Group, City Hall, Nairobi, Kenya.

²⁸ Syagga P., Mitullah W., Gitau S., (2001), *Nairobi Situation Analysis: Consultative Report*, Nairobi: Government

done under sites and service schemes also makes them look less attractive. As an immediate solution for housing, the site and services schemes were also felt to be most suited for the higher income groups who could more easily afford to develop the site²⁹. By and large, the sites and services schemes are no longer being realised because of lack of funding both locally and from donors and also the lack of government's goodwill.

Tenure security and physical upgrading

Tenure security and physical upgrading was a re-look at the failures of the preceding themes where the target group had been missed from benefiting. The main focus was to give security of tenure to slum dwellers, plan their settlements and provide the physical infrastructure. It was envisioned that the residents in the slums would then proceed to improve their houses on their own. However, the main shortcoming with this approach was the lack of community participation in the very initial planning of the settlements, much like the failures associated with the previous approaches.³⁰

Enabling approach

The enabling approach was pushed for by international agencies and spearheaded by the World Bank. Instead of playing the basic role of providing housing to the slum dwellers, the government was encouraged to put in place structures that would enable the slum dwellers to upgrade their houses by themselves.

This called for the revision of building standards, the provision of a secure tenure and the easing of the bureaucratic process associated with urban development. Under this theme two major projects were conceived and executed locally, namely the Mathare 4A project in Nairobi and the Tanzania-Bondeni Community Lands Trust project in Voi.

of Kenya United Nations Centre for Human Settlements (UN – HABITAT)

²⁹ Housing department, Ministry of Works, Housing and Physical Planning, (1986), Kenya Low Income Housing By-Laws Review.

³⁰ Syagga P., Mitullah W., Gitau S., (2001), *Nairobi Situation Analysis: Consultative Report*, Nairobi: Government of Kenya United Nations Centre for Human Settlements (UN – HABITAT)

3.3 Regulatory frameworks for urban poor housing

Alongside the above slum upgrading approaches has been a number of housing policy reviews aimed at facilitating the realisation of decent housing for the urban poor. This is based on the understanding that the existing standard by-laws and housing policy framework are incapable of delivering sustainable housing for the urban poor. The most significant of these was the 1986 Kenya Low income housing by-laws review, which also looked at alternative prototypes of low-income housing.

Kenya's reformulation of the legislation governing the built environment was prompted by conflict between the existing legislation and the government's efforts to promote low cost housing. Despite local awareness, the pressure to review the legislation was to a large extent from external actors, particularly the World Bank and the United States Agency for International Development (USAID) who were then key players in the country's large urban shelter projects.³¹

The focus has been to go for Performance based as opposed to prescriptive standards. In 1968, barely four years after independence, what are now known as Grade II By-laws provided a simplified code for use in the rural-urban fringe. The application in Kenya of the 1985 Low Cost By-Laws to the Umoja II project allowed for the construction of houses with the lowest price achieved ever since independence³².

First housing policy in Kenya was developed in 1966-7, creating several institutions; Housing ministry, housing corporation, housing research and development unit, housing finance company. National housing strategy for Kenya of 1987-2000 entailed the 'enablement approach'³³ where the government shifted to working with and facilitating housing development by private entities from being a direct developer of low income housing.

The National plan of action created in 1995 had specific roles for the enabling approach of the government. In 1979, the government commissioned a survey of low-cost housing

³¹ Yahya S., Agevi E., Lowe L., Mugova A., Nyamayaro O., (2001), *Double standards, single purpose, Reforming housing regulations to reduce poverty*, Cromwell press Ltd, Trowbridge, Wiltshire

³² Ibid

³³ Ibid

legislation after it became apparent that the Dandora Phase I project was going to be expensive for the target group³⁴. The main statutes governing building standards, design and materials today are the Building code and the Public Health Act.

4.3 Informal settlements

This chapter examines a major informal settlement in the greater Nairobi area, Huruma, within the Huruma area. The general background to settlement development in colonial days when labour was scarce, there was an influx of people and was established as a reserve camp for the natives coming to the city without a place of work.

Owing to the limited housing for the employed people then, the unemployed were huddled in to this valley and denied entry into the formal city. Over time, this settlement went through several stages of evolution as the city expanded, engulfing it with developments that are more formal. However, a good portion of the area has remained inhabited by the poor, without formal housing and the provision of basic services.

The areas examined in the settlement under study reveal analysis of their physical setting, the design principles, the delivery methods and the construction process of the project.

The Kambi moto settlement is part of four other informal settlements found in the greater Huruma area to the North-East of Nairobi city. The other villages are namely Gitathuru, Mahira, Redwood and Shetia. In total, all these settlements are estimated to cover an area of 3.187 hectares. They have a resident population of 6564 people, which is made up of 2309 households³⁵, with an average household density of 604 persons per hectare.

The informal settlements in Huruma have been in existence for as long as 26 years. The common structure seen in these informal settlements is a 12 by 10 foot shack built with an iron sheet roof, mud & wattle walls and a mud floor. Like most other informal settlements, the basic services in Huruma like water, sewage, road access, and toilets are inadequate and sometimes non-existent.

As shown below (Fig 4.2), the five villages in Huruma have varying socio-economic and even spatial-layout profiles. There are variations in the number of women headed

³⁴ Ibid, *Kenya Times*, NCC construction survey October 2001

CHAPTER FOUR

4.0 CASE STUDY

4.1 Introduction

This chapter examines a slum-upgrading project carried out in the North Eastern zone of Nairobi, within the Huruma area. The general history of this settlement dates back to the colonial days when Mathare valley, which then was on the fringes of Nairobi city was established as a reserve camp for the natives coming to the city without a place of work.

Owing to the limited housing for the employed people then, the unemployed were huddled in to this valley and denied entry into the formal city. Over time, this settlement went through several stages of evolution as the city expanded, engulfing it with developments that are more formal. However, a good portion of the area has remained inhabited by the poor, without formal housing and the provision of basic services.

The areas examined in the settlement under study entail; analysis of their physical setting, the design principles, the delivery methods and the construction process of the project.

The Kambi moto settlement is part of four other informal settlements found in the greater Huruma area to the North East of Nairobi city. The other villages are namely Gitathuru, Mahira, Redeemed and Ghetto. In total, all these settlements are estimated to cover an area of 3.187 hectares. They have a resident population of 6564 people, which is made up of 2309 households³⁵, with an average household density of 604 persons per hectare.

The informal settlements in Huruma have been in existence for as long as 28 years. The common structure seen in these informal settlements is a 12 by 10 foot shack built with an iron sheet roof, mud & wattle walls and a mud floor. Like most other informal settlements, the basic services in Huruma like water, sewage, road access, and toilets are inadequate and sometimes non-existent.

As shown below (Fig.4.2), the five villages in Huruma have varying socio-economic and even spatial-layout profiles. There are variations in the number of women headed

³⁵ Pamoja Trust/ NCC enumeration survey October 2001

households, economic activities, population age and densities.



Fig 4.1 Map of Nairobi showing the location of Kambi moto settlement

From the Department of Survey of Kenya

The most significant variation in regard to the upgrading though is the number of tenant households as opposed to structure owner households. This variation is significant because it raises (especially among the Huruma residents), the question of who the beneficiaries of the upgrading ought to be: tenants or structure owners. The variation is well illustrated in two of the five villages, where only 18% of the households in Gitathuru are occupied by structure owners and in Mahira where structure owners occupy 68% of the households. These disparities among the villages have a significant effect on how a village reconciles the issue of beneficiaries and distribution of resources among their residents.

Village	Area	Households	Density hse/ ha	Population	Tenant H'holds	Structure Owner H'holds
Kambi Moto	0.4 ha	275	1347	1241	203	72
Mahira	0.43ha	384	899	1174	102	260
Redeemed	0.96 ha	259	269	798	88	153
Ghetto	0.28 ha	813	2309	2365	303	452
Gitathuru	1.75 ha	314	177	986	237	58
Totals	3.82 ha	2309	604	6564	1105	1002 ³⁶

Fig 4.2 Demographic statistics of informal settlements in Huruma informal settlements

Source: Pamoja Trust/ Nairobi City Council (NCC) enumeration survey October 2001

For the last five years, all these informal settlements in Huruma have been planning to upgrade their settlements through community led initiatives. However, only Kambi moto settlement has been able to attain physical results in this direction, mainly owing to its

³⁶ The number of tenant and structure households shown on Fig 1 adds up to 2107. A further 96 houses were found to be vacant and the status of occupiers in 106 houses could not be conclusively established by the enumeration exercise conducted in October 2001.

more cohesive nature and unity of purpose.

The greater number of tenants vis-à-vis the landlords in Kambi moto has greatly assisted in ensuring progress as higher number of the landlords in the other settlements has resulted in resistance since the landlords feel threatened by the upgrading as they stand to lose their incomes once the upgrading is done. The other settlements are at different levels of preparation. The following study examines both the process and the product of the undertaking by the Kambi moto community.

Location

The Kambi moto settlement is located in Huruma area, on the North Eastern part of Nairobi City. It is close to the junction of Juja road and the Outer Ring Road. It is located within a formally planned area and surrounded by council housing developed in the seventies.

There are a number of institutions around the site including the Ndururuno Primary School and the Mathare Nursery School. Further to the West of the settlement is the Huruma shopping Centre. The Huruma Sports Ground borders the settlement on the Northern side. To the East and West of the settlement are formal single storey council housing developed in the seventies as part of the entire Huruma settlement upgrading initiative.

The settlement site was initially designated as a car park space to serve the formal houses around it. However, the people who inhabited the formal houses did not have cars to park there. The space thus underwent a series of use transformations as explained in the history below until it eventually became a slum settlement.

Given the formally planned settlements around it, the site is surrounded by a services network of water, Sewer network, electricity and storm water drainage. However, these services are either inadequate or in a poor state of disrepair.

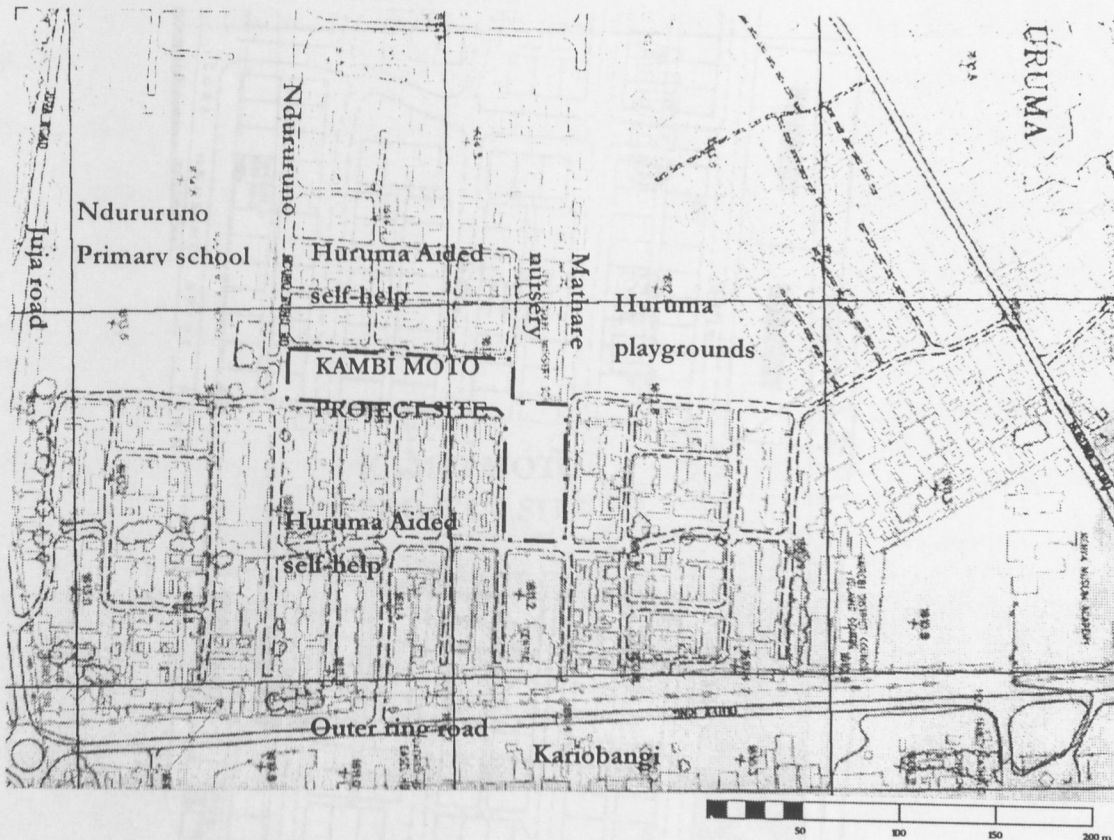


Fig.4.3 The location of Kambi moto within Huruma

From the Department of Survey of Kenya

The individual shack structures on the site were however not connected to these services due to their illegality and lack of formal recognition. The method of human waste disposal comprised of pit latrines and the infamous flying toilets. There is also a clear road network around the site, although some of the minor roads linking the site to the surrounding row housing have been blocked to provide security.

History of the settlement

(As narrated by Peter Chege, a resident of Kambi moto and a leader in the community. He has lived in the settlement since its formation)

Kambi moto was established in 1975, as a market for vegetables and charcoal within the city council estate. The business stalls were allocated by the chief, the district officer and village elders mainly to people who had done some work for them, like the traditional dance performing groups and some political youth groups.

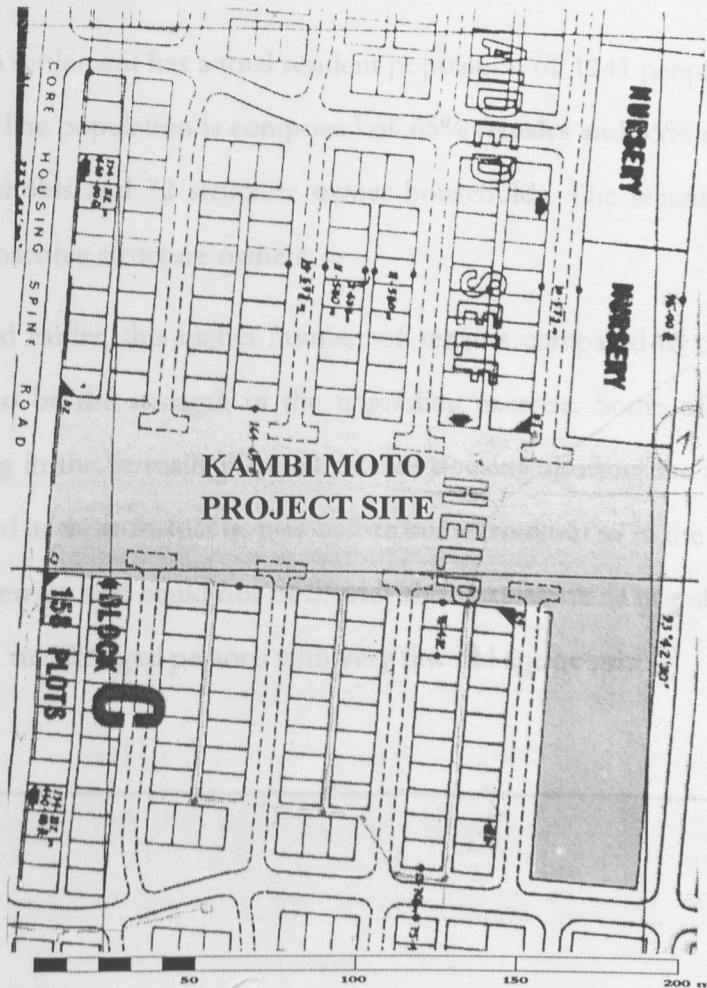


Fig.4.4 The plan of the formal self help housing done in 1974 around the Kambi moto site

From the Planning Department of the City Council of Nairobi.

By 1978 the population in this area had increased to around 100 people and they decided to construct low cost structures to live in. Up to 1986, the new business and residential village had a population of over 600 people. On December 20th 1995, a fierce fire swept almost all the houses, causing a lot of problems for the residents. However as a result, more residential houses were built in the area. Subsequently there were two other serious fires in 1997 and 1999; hence the site was named Kambi moto, which translates to a camp of fire.

Demographic and acreage factors

Kambi moto settlement has a total resident population of 1241 people constituted of 275 households. The population is comprised of 65% females and 35% males. There are 203 tenant households and 72 structure owner households. The tenants pay rent to either resident or absentee structure owners.

As mentioned earlier, this higher number of tenants compared to the structure owners has proved to be the strength in the upgrading exercise. Some of the residents have relatives living in the formally planned council housing abutting the informal settlement. They had lived in these formal houses before but moved out in to the informal settlement when they grew up and could not fit in with their parents. The population is thus mainly comprised of middle aged persons with very few old age people.

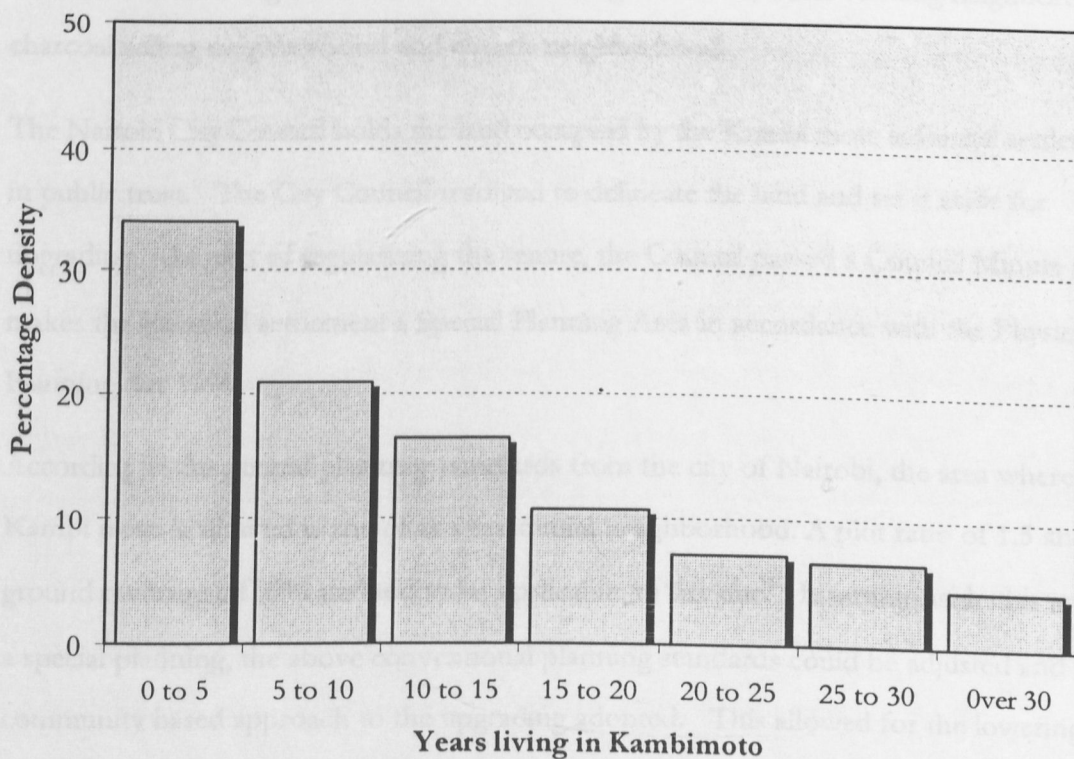


Fig.4.5 Distribution of households by duration of residency in Kambi moto.

Source: Pamoja Trust/ Nairobi City Council enumeration survey October 2001

Majority of the residents in Kambi moto have lived there for between one to ten years, although some residents have been living there ever since the settlement was formed. In

this sense, Kambi moto has a less transitory nature compared to most urban residential zones where people keep moving in and out every so often.

The residents either work in the near vicinity of the Dandora light industries or travel to other parts of the city for work or run small scale businesses in the settlement. It is from these meagre earnings that the members are able to save on a daily basis towards meeting the cost of their houses.

4.2 Community participatory process

Land use, tenure and planning parameters

Just like other informal settlements, Kambi moto settlement has mixed use functions with the shacks on the main roads being commercial and serving as micro landmarks. The clustering or definition of the neighborhoods is characterized by the predominant vocation of the residents living there such as car wash neighborhood, water vending neighborhood, charcoal selling neighborhood and church neighborhood.

The Nairobi City Council holds the land occupied by the Kambi moto informal settlement in public trust. The City Council resolved to delineate the land and set it aside for upgrading. As part of regularizing the tenure, the Council passed a Council Minute that makes the informal settlement a Special Planning Area in accordance with the Physical Planning Act 1996.

According to the general planning standards from the city of Nairobi, the area where Kambi moto is situated is zoned as a residential neighborhood. A plot ratio of 1.5 and ground coverage of 50% are held to be applicable to this site³⁷. In setting aside this area as a special planning, the above conventional planning standards could be adjusted and a community based approach to the upgrading adopted. This allowed for the lowering of city planning standards that to be tested on the ground in order to correspond to the social – cultural, economic and political realities of the residents.

Tied to the setting aside of the settlement as a special planning area was the need to find the most appropriate forms of alternative legal land tenure that may be applied to it. This

³⁷ Nairobi City Council Building By-laws.

is based on the concern that conventional land title systems may fail to protect the upgraded settlements from market speculation and therefore make the targeted beneficiaries of the initiative vulnerable to strong market forces. Broadly, the Kambi moto approach was going to be a test ground to measure the possibility of replicating such an experience in other form settlements.

4.2 Community participatory process

Several organizations have been involved in this process. Pamoja Trust³⁸, a local Non-Governmental organization and the Nairobi City Council have been providing the leading role. While Pamoja Trust mobilized the community members and provided logistical support for the meetings, the City Council provided the policy and technical support.

The Council further facilitated for a favorable political environment by rallying for support of the civic leaders and the Provincial Administration through the Nairobi Informal Settlements Consultative Committee (NISCC) forum. In the same forum, several organizations were enlisted and contributed in the process. Intermediate Technology Development Group (ITDG) provided technical support during the house modeling. Others included Coopi International, Slum Dwellers International, Shelter Forum, University of Nairobi, Jomo Kenyatta University among others.

The overall upgrading initiative is based on the Nairobi Informal Settlements Development Strategy on Slum Upgrading. The approach developed by the Nairobi Informal Settlement Coordination Committee (NISCC) provides broad guidelines for upgrading while stressing the importance of community involvement at all stages.

Besides focusing on the physical upgrading of the settlement, another paramount outcome of this process is to ensure that the community develops an institutional framework that is able to manage, sustain, and deal with issues concerning the settlement. Therefore, the

³⁸ Pamoja Trust is a local NGO formed in the year 2000 at the height of slum demolitions and evictions. It was formed in order to build capacity in the slum dwellers, deal with urban land issues on a policy level and be involved in upgrading, provision of services and secure tenure.

approach of the upgrading effort, from the outset, has been to ensure that the communities' capacity to manage their own development process is strengthened. This has entailed a comprehensive, if lengthy, process that is anchored on the community's participation in all activities including: awareness creation, community organization, enumeration and planning surveys, negotiation with local authorities, urban planning and the eventual construction.

There were three key chronological social process events that preceded the commencement of the physical upgrading exercise. These were the formation of the saving groups, the carrying out of enumerations and the process of community house design as explained below.

a) Formation of saving groups

Within the informal settlement, the basic social organization structure supporting the upgrading process comprises of saving groups. These saving groups serve as tools for mobilization to bring people together to plan for their settlement. They serve as a forum for deliberating local concerns, airing and discussing them. They also act as a means of pooling resources together to meet their short-term financial needs as well as eventually harnessing some capital base for part financing of the house upgrading costs.

The saving groups attract a membership of tenants and structure owners, both resident and absentee structure owners. They have a structure comprising of rotational weekly collectors who go out every evening and visit the members in their houses to collect their savings. These collections recorded in their collection books as well as in each individual member's contribution book.

At the end of the week, the records are audited by a group of auditors drawn from the saving group and the money is then taken for banking. These daily savings accumulate over time to form some sizeable savings base. The members then started to borrow from this common pool, initially to meet their short term financial commitments such as opening small-scale businesses or offsetting emergency financial commitments. Eventually when

the time for upgrading the settlement came, the members had saved enough money to finance 20% of the total cost of the upgrading.

As part of scaling up the financial base of the savings schemes operating under the “Muungano wa Wanavijiji” banner, Pamoja Trust as the facilitating NGO supported the slum communities in forming a grassroots revolving fund called AKiba Mashinani Trust. This fund acts as a central account where any money got from donors and well-wishers would be channeled and made accessible for borrowing by the different saving schemes.

For purposes of upgrading their settlements, the Kambi moto saving group were able to apply for funds from this account. However, the loaning conditions from this revolving fund require that the borrower has to meet twenty percent of the total cost of the loan.

There are similar saving schemes in the other informal settlements in the city which coalesce together to form a network code named Muungano wa Wanavijiji. This network was created in the 1990s during the volatile moments for slum dwellers marked by rampant demolitions and evictions.

b) Undertaking enumerations

Between the months of May and October 2001 the Nairobi City Council in conjunction with Pamoja Trust facilitated the residents of Kambi moto to carry out an enumeration³⁹ and mapping exercise as a step towards the regularization of the settlement. The enumeration was born out of the need to get basic information on the number of people residing in the informal settlements and their profiles. This information is critical for assessing and addressing the needs and priorities of the communities. The city council could not have undertaken such a micro-scale survey before as it lacked the resources and its relationship with the informal settlement communities had been adversarial.

The people undertaking the enumeration exercise were drawn from the community and trained on how to do it by their peers from other communities who had carried out this exercise before.

³⁹ Enumeration herein refers to some sort of census that is done directly by the community members themselves to establish their demographic, socio-economic and spatial profiles

The enumeration process had five key elements to it. This entailed the numbering and identification of the parameters of the settlements and the measurement of the area occupied by them, the numbering of each house in the settlement, the administering of a questionnaire to each household, the analysis and sharing of an initial report with all stakeholders, and finally the verification of the information obtained. The verification involved a display of the information gathered during the process in public for scrutiny by the community members to ascertain that everybody gave the right information about himself or herself.

The enumeration also took note of household size, the age profiles of the household members, the nature and size of shacks occupied by the households, and their location in the settlement. This information from each household member was matched with his or her passport size photographs for visual identification.

This process of participatory enumeration process led to a number of outcomes for the upgrading process as explained below:

- Firstly the information created a better understanding of the settlements for the community who were then empowered to deal with their issues and to negotiate with development partners from an enlightened position.
- Secondly, the enumeration leveraged the capacity of the community to come together and undertake the survey, while also strengthening and legitimizing the community's leadership structures.
- Thirdly, the development partners were able to better plan their intervention for upgrading purposes. This was essential for identifying potential problem areas and taking measures to ensure a smooth process. Overall, the information got during the enumeration assisted in the community's needs assessment for infrastructure planning and social services provisions. It formed part of the analysis towards formulating the design.

From the enumeration survey, it also emerged that mixed-use functions were a prominent feature.

c) Community house and settlement design process

Part of the social engagement also entailed undertaking a community design process. With the help of professionals comprising of social workers and designers, the community was able to concretize their housing expectations through a process of discussion, building consensus and then building a cloth house model.

Eventually, they undertook a house modeling which entailed the construction of a sample life-size house that represents the shelter aspirations of a slum community. The community had an opportunity of clearly perceiving both the spatial and formal configuration of their desired house even before they finally did their permanent houses. After walking through the model, the community was able to make further suggestions towards improving their houses.

At some point, students from the Department of Architecture at the Jomo Kenyatta University carried out an urban design studio for the informal settlement. The exercise involved fifth year architecture students doing settlement plans for each settlement, with corresponding house typologies and a proposed integration of the village into the entire Huruma area. The results of this research were incorporated in to the community design process.

Apart from making a physical representation of the house they would like to own, the house modeling exercise was also aimed at developing a community plan and consensus on the sharing of the land in the settlements. Using simple relations between the area of each house and the acreage of their entire plot, the community was able to understand the adverse implications of going for huger houses. This would mean that only a few of them were going to fit there and yet one of the key consideration was to ensure that none of them was displaced away from the settlement. This plan also informed the infrastructure development processes.

From the design process, the community made certain key design decisions. These guided the professional involved in polishing up the typical house and settlement layout designs. Among these decisions was the standard size of each house, the nature of the planning and the implementation process. The house size was decided to be 4.5 meters by 4.4

meters square. This would then allow for vertical increment of each individual's house as when his or her financial situation allows. The community was particular that they would rather have their houses small on the ground than be organized to live one on top of the other as allowed for in the sectional property's act. Again this had the convenience of each person doing his or her houses at his or her own pace.

The houses modeled were therefore an attempt to reconcile several issues that affect sharing of land and that could only be ideally dealt with at the community level. The questions then that the house modeling exercise was geared to offer answers for were:

- *what kind of house and services are sufficient for the settlement?*
- *how much space would the houses and service lines occupy? and consequently*
- *how many residents would fit within the settlement if the community built such houses and what would happen to those residents left out?*

Another outcome of the house modeling exercises was that it created the space for policy makers, the private sector, and politicians to explore alternative options for investment and new concepts for planning and building standards.

The above social process events were facilitated by community work specialists from Pamoja Trust. As part of informing this process, the Kambi moto community went for exchange visits to other informal settlements, both locally and internationally. These peer exchange visits were opportunities of learning from precedent setting activities or model accomplishments that have inspired solutions or alternative ways of doing things to suit a community's upgrading needs. This ensured effective participation of the slum dwellers as it is a process of learning through experience of the poor from within the poor themselves.

The Kambi moto community acquired not only community organization skills but also practical upgrading skills and cheap and affordable construction systems. Among the key places visited were South Africa and India where the community process of upgrading informal settlement has gained good successes.

The social process was aimed at forming a critical mass in the community that would form a force to support the activities undertaken in the community. The different activities in

this process acted to empower the community with the collective means to and accurate information with which to negotiate legitimately and credibly with the government.

Besides, engaging in this process over time and securing ongoing successes in various activities created confidence among the community. It also fostered a sense of ownership of both the process and the product. The incremental nature of the achievements builds trust in the process and was integral to promoting the community's participation and empowerment.

4.3 Typical housing unit and settlement layout design

The basic unit for the Kambi moto housing project is a three-storied house comprising of a single room on the ground floor and some other two rooms upstairs, each on top of the other. A small lobby space is located at the entrance to the ground floor. The ground floor room intended to be used as a lounge measures 3.95x4.2 meters internally. It has a kitchenette attached to it and a storage space tucked under the staircase leading to the first floor. To ventilate the kitchen, there is a chimney positioned right above the cooking space, which goes all the way up and terminates some 300mm above the top of the roof terrace. The staircase space also serves to ventilate the house vertically as it connects all the spaces in the house.

The first floor has a room designed to function as a bedroom, with a dry wall partition between the bedroom space and the corridor leading to the second floor. Next to the bedroom on the first floor is a toilet cum a shower and washing room. This wet area is located right above the kitchenette space downstairs. The dimensions of the room on the first floor are equal to those on the ground floor. For those houses facing the street, a balcony is attached to the bedroom space on the first floor.

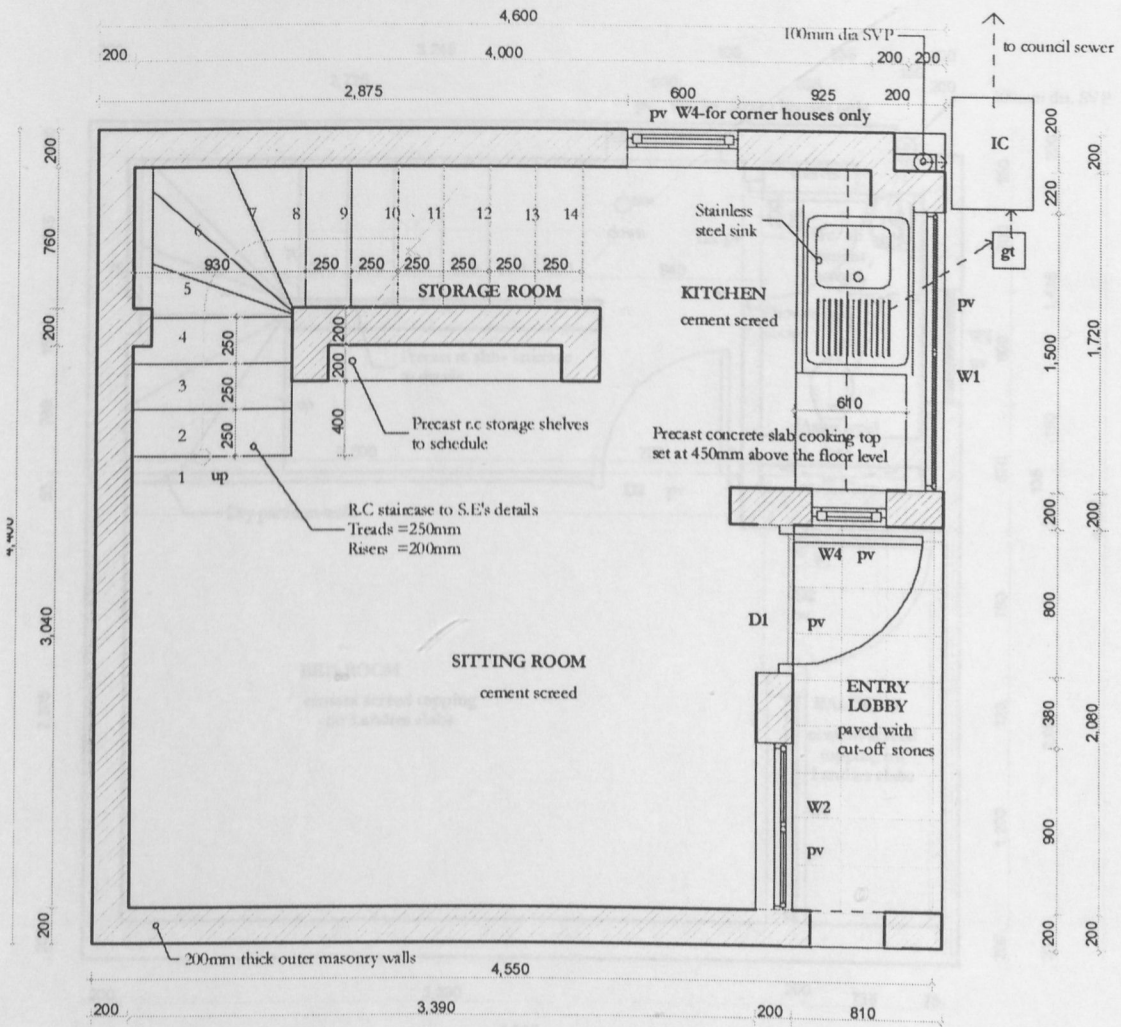


Fig.4.6 Typical Ground floor plan of the upgrading houses
 Source: Tecta Consultants - Architects

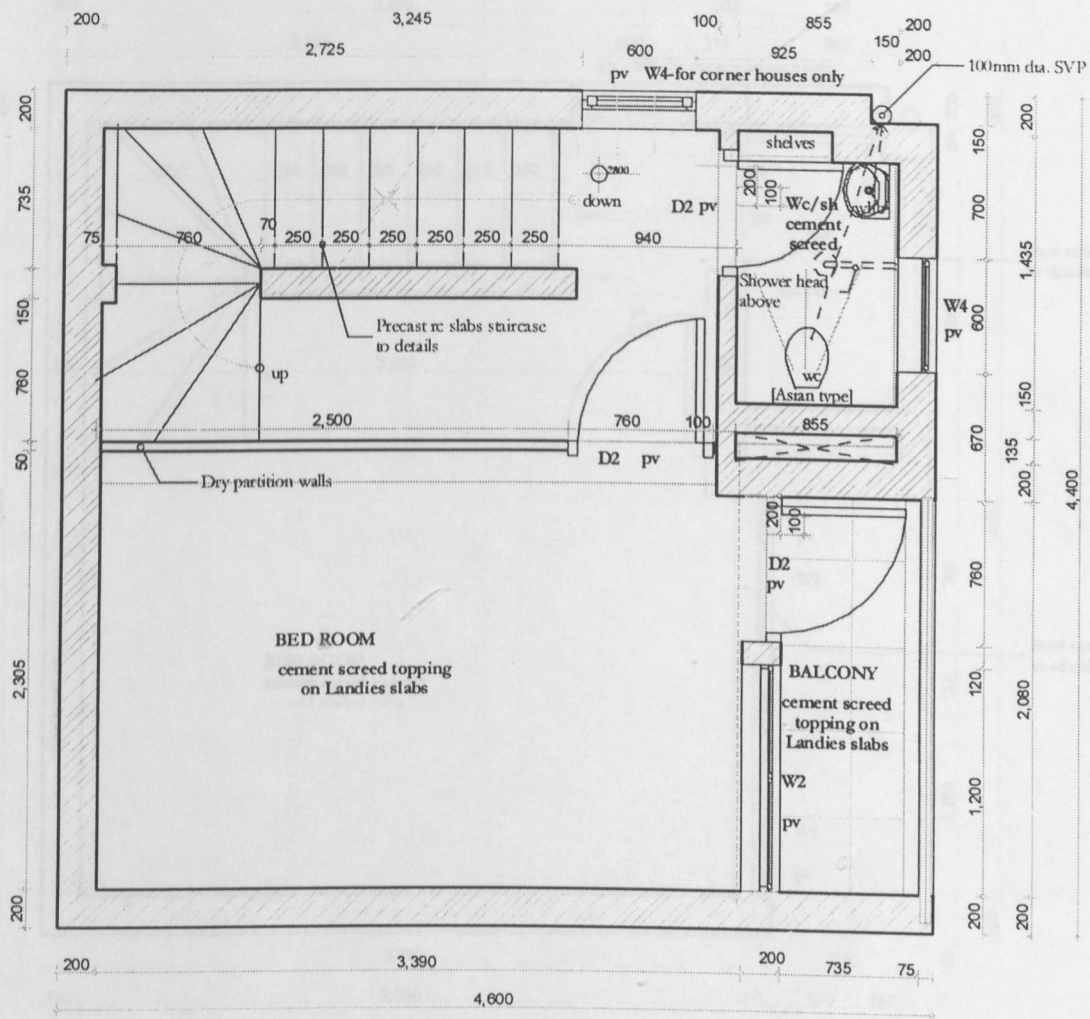


Fig.4.7 Typical First floor plan of the upgrading houses
 Source: Tecta Consultants - Architects

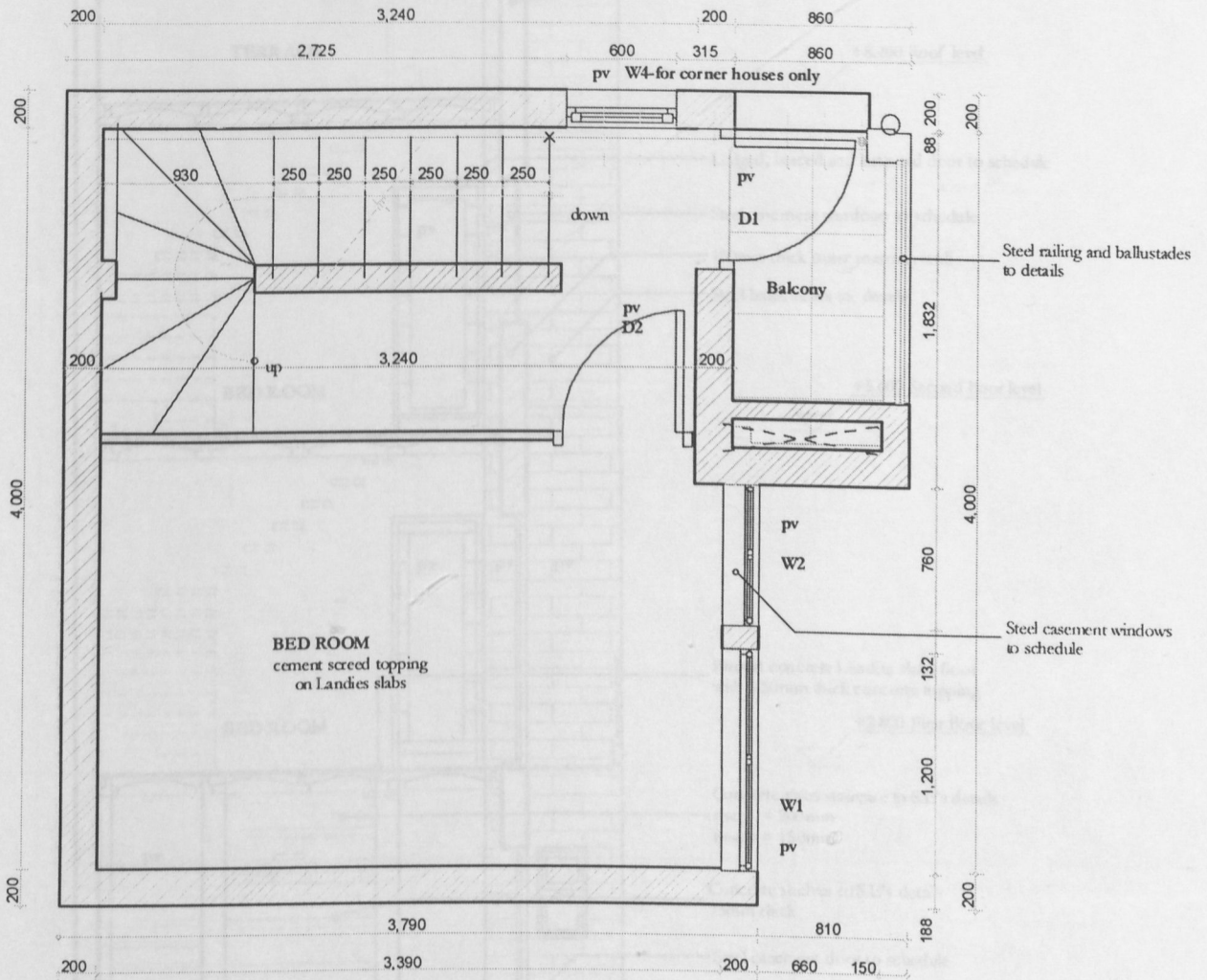


Fig.4.8 Typical Second floor plan of the upgrading houses
Source: Tecta Consultants - Architects

Fig.4.9 Typical Section of the upgrading houses
Source: Tecta Consultants - Architects

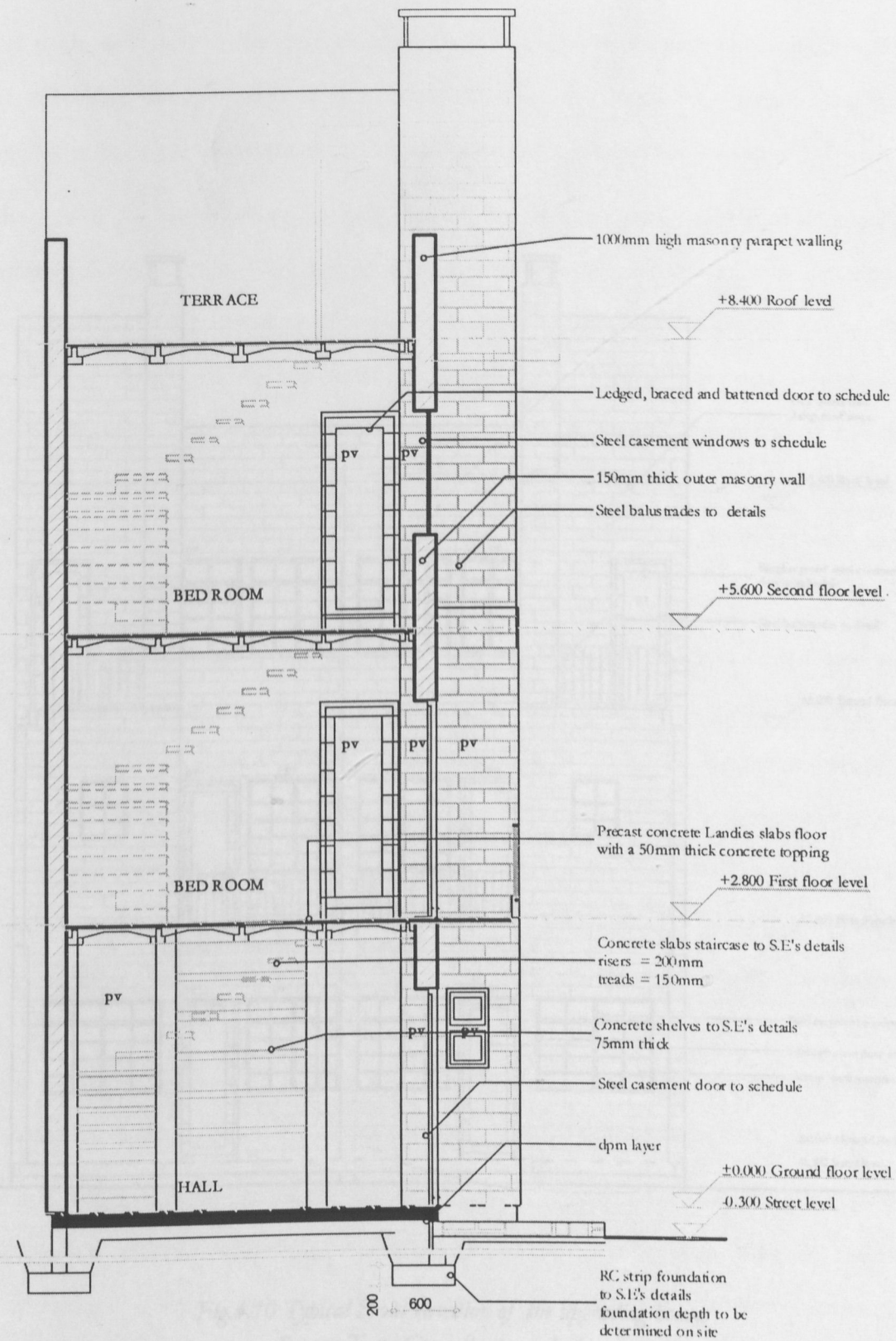


Fig.4.9 Typical Section of the upgrading houses
 Source: Tecta Consultants - Architects

On the second floor, a bedroom takes up the entire space, other than for the space above the toilet that is used as a balcony for placing the water storage tanks. The dimensions of this room are equal to those of the room below it. The roof space is designed to be a terrace where the occupants of the houses can relax in convenient weather, hang their laundry or even practice some urban agriculture using containers as planters.

The size of the houses was principally derived out of a comprehensive consideration of different design factors. The basic of these factors was the need to accommodate all the resident households that had previously occupied the land. To a greater extent, this determined the size of the individual unit, which as highlighted above was suggested by the community to be 4.5meters by 4.5 meters. The construction modules of pre-cast concrete floor slabs of a square configuration measuring 760mm also further influenced the size of each unit, making the final area covered by each house on the ground to be 4.5meters by 4.25 meters.

The house has a simple structural design. It comprises of a concrete strip foundation whose depth goes to just over a meter owing to the shallow stable rocky ground. The structural walls are made of 200mm thick stone. The first floor slab is primarily made of pre-cast concrete elements whose detail entail a 50mm thick insitu concrete topping on convex slabs resting on inverted T-beams. There is literally no reinforcement in the concrete slabs, other than the ring reinforcement around them. This is due to their convex shape, which has structural advantages. Concrete works well under compression conditions that are effectively presented by the convex shaped slabs. The convex shaped slabs transmit any loading placed on top of them to the supporting beams, which in turn transmit the same load to the walls for onward transmission to the ground.

At the overall settlement layout level, the houses are aligned back to back to form small clusters. The clusters comprise of a number of houses, often between three and five that open into and share a common outdoor space. At the very least, the space between the sides of the houses with openings is 2.4 meters. A system of interlinked internal streets connects these clusters to form a neighbourhood at different scales. The services are designed to fit in the space between the houses.

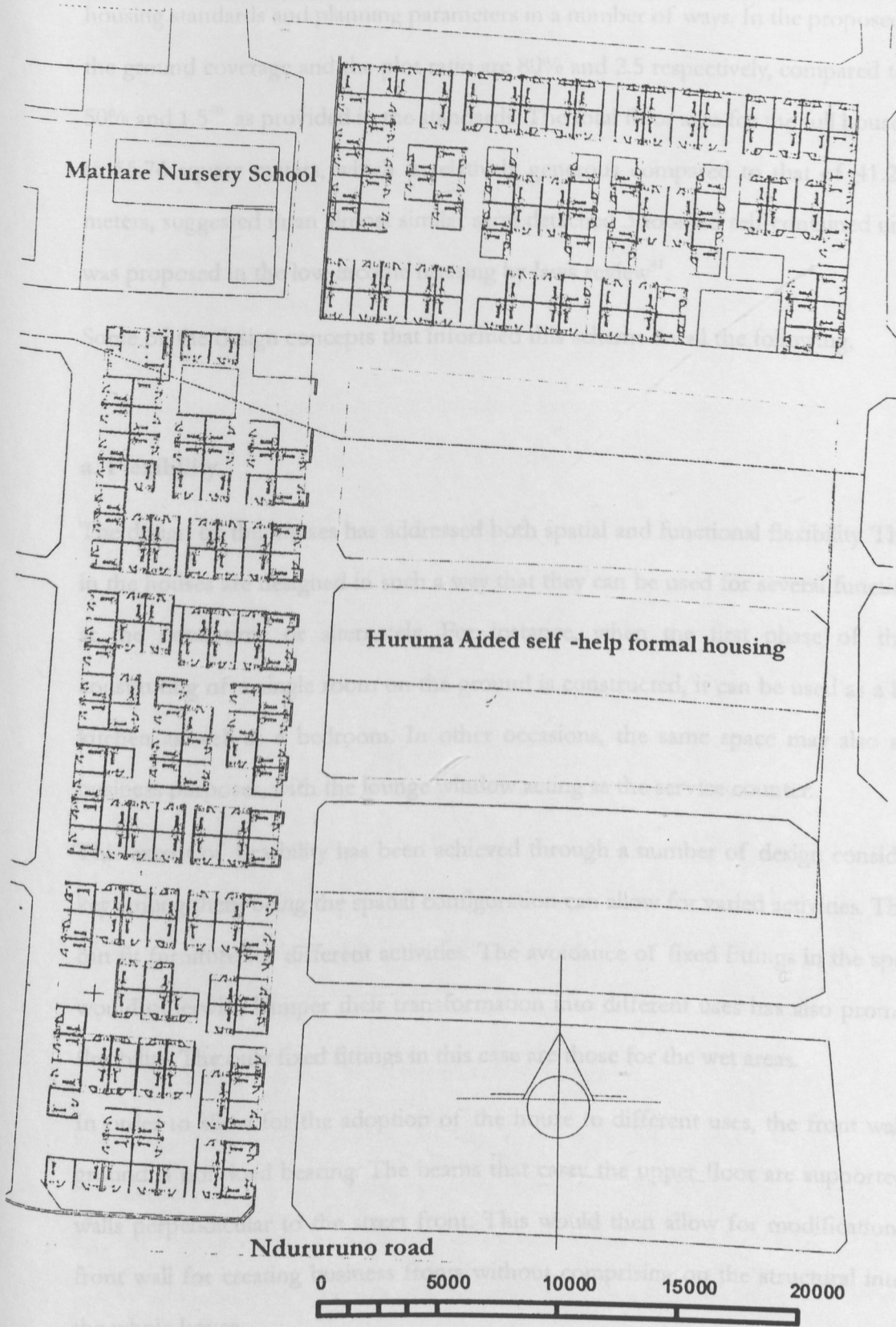


Fig.4.11 Proposed layout-plan of the Kambi moto settlement, with implemented highlighted

Source: Tecta Consultants- Architects

The design of the new houses and the settlement layout deviates from the existing housing standards and planning parameters in a number of ways. In the proposed project, the ground coverage and the plot ratio are 80% and 2.5 respectively, compared to that of 50% and 1.5⁴⁰ as provided in the standards. The total floor area for the full house adds up to 55.76 square meters, which is relatively generous compared to that of 41.25 square meters, suggested in an almost similar semi detached 3 roomed self-contained unit which was proposed in the low-income housing by-laws review⁴¹.

Some of the design concepts that informed this scheme entail the following,

a. Flexibility

The design of the houses has addressed both spatial and functional flexibility. The spaces in the houses are designed in such a way that they can be used for several functions both at the same time or alternately. For instance, when the first phase of the house constituting of a single room on the ground is constructed, it can be used as a lounge, a kitchen as well as a bedroom. In other occasions, the same space may also serve for business purposes, with the lounge window acting as the service counter.

This extent of flexibility has been achieved through a number of design considerations, key among them being the spatial configuration can allow for varied activities. The spaces can fit furniture for different activities. The avoidance of fixed fittings in the spaces that would otherwise hamper their transformation into different uses has also promoted the flexibility. The only fixed fittings in this case are those for the wet areas.

In order to allow for the adoption of the house to different uses, the front wall on the ground is non-load bearing. The beams that carry the upper floor are supported on the walls perpendicular to the street front. This would then allow for modifications of the front wall for creating business fronts without comprising on the structural integrity of the whole house.

⁴⁰ Nairobi City Council Building By-laws.

⁴¹ *Kenya Low Income Housing By-Laws Review*, 1986, Housing department, Ministry of Works, Housing and Physical Planning.

b. Incremental growth

The design of both the individual houses as well as the overall settlement layout is designed to allow for incremental growth. Depending on the financial preparedness of the residents, they have a choice to phase out their construction and enjoy part of the house without having to wait and do the full house.

The basic of these phases would comprise of an upgraded ground floor slab with the fresh water and drainage services connected. The affected residents would then make the walling and the roof out of the same temporary material that had been used for the shacks before the upgrading. With improved incomes, the temporary walling and roofing would then give way to more permanent materials.

The other possible phase for those with slightly stable incomes would be a starter house comprising of the ground floor room and the wet space on the first floor. The residents of such houses would then make a choice to either roof the houses using the Ladhis slabs or use an iron sheet roof, which would eventually be transferred to cover the floors above when they are constructed.

For those with more stable incomes, then they can do their construction up to the first floor, in which case they will have a living room on the ground floor and a bedroom above. The final phase would then be the complete house comprising of the lounge on the ground floor and two bedrooms, one on the first floor and the other on the second floor.

*Fig. 1.12 The upgraded house under construction
Picture by author*

c. Spatial maximisation and cost effective design

The design of the typical housing unit has ensured that all the spaces in the house are fully functional. Even under the staircase, this space has been utilised for storage next to the kitchen. The servant spaces like the horizontal circulation space have been integrated into the functional spaces. As such, the main functions can overflow in to the servant spaces and thus ensure that they (servant spaces) don't merely serve a secondary function. This idea is further advanced in the use of multifunctional elements like the concrete shelving in the lounge space on the ground floor. Besides offering storage space, these shelves serve a structural function in that they form the main structural buttress on which the

staircase and the beams are anchored.

At the settlement layout level, the houses were aligned back to back as a way of maximising on the space as well as cutting down costs by sharing party walls between houses. In addition, the supply of services is through a shared network. For instance, two housing units share a common soil vent pipe and manhole.



*Fig.4.12 The upgraded houses under construction
Picture by author*

At its core, the typical house-design addresses only the basic shelter requirements and hence keeps the initial cost of the house at its lowest and hence affordable by the majority if not all. Other improvements to the house can be done gradually as the economic situation of the owner improves. Substantial savings have also been achieved in the adoption of the pre-cast concrete slabs that avoid the use of reinforcement bars.

There is also some cost cutting made by avoiding the use of formwork since the pre-cast elements only require few moulds that are repetitively used for fabricating them. At the

price of six thousand shillings per square meter, this was like a third of the lowest prevailing costs of eighteen thousand shillings per square meter.

The costing of the different phases of the house was done by taking in to consideration the lowest available costs of materials and the skilled labour without incorporating the element of sweat equity. Unskilled labour was provided by the community members themselves and hence was not factored into the total cost. Below is a schedule showing the feasible project phases, their total floor area and the accompanying costs.

The system of financing the project was a collaborative exercise between the community

d. Simple and replicable design

The design of the houses was simplified to ensure that the communities could replicate it with ease. This was achieved by going for standard materials in the market and adopting easy construction techniques. Where new concepts like the prefabricated floor slabs were used, the community went through an extensive training on how to make and install them. These prefabricated elements were also made of convenient sizes for manual handling. For instance, the standard floor slab would weigh about fifty kilograms which can be comfortably lifted by two people. The idea of prefabricating the elements makes the construction process a bit faster since the floor elements are done when the walling is going on.

to have saved in the scheme at least an equivalent of ten percent of the total cost of the house.

e. Low maintenance costs

During their use, the houses are designed to require very little maintenance at all. This has been achieved by limiting the number of replaceable elements. For instance, the shelving in the lounge space downstairs is made out of concrete which has a relatively longer lifespan compared to other shelving alternatives like timber. In the same consideration, the natural stone finishing on the outside will not incur any maintenance cost since it does not require constant repainting. Even on the inside, the cement wash finish requires little maintenance compared to other interior finishing choices like painting.

4.4 The construction process

The process of constructing the houses in Kambi moto was centrally managed by the community itself. By the time of starting the construction process, the community had been mobilised in to a coherent structure that was able to undertake the different construction tasks. Part of the strength of this upgrading has to do with the total control of the community over all the activities.

Project financing

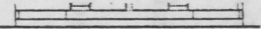
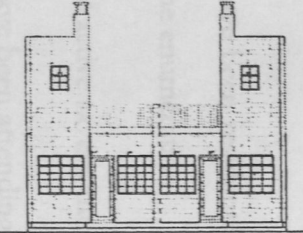
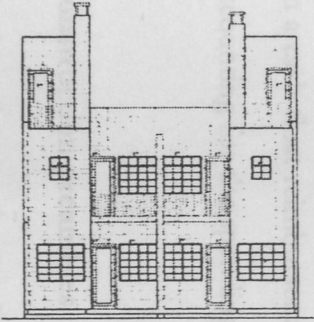
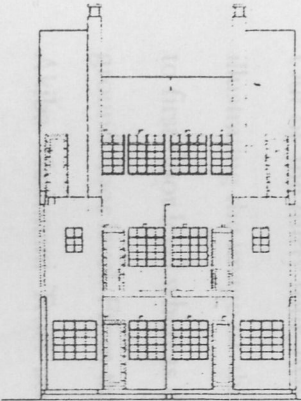
The system of financing the project was a collaborative exercise between the community and Pamoja Trust. As indicated earlier, Pamoja Trust raised funds from donors and put the same in to a central revolving account codenamed Akiba Mashinani Trust. It is from this account that the community were able to borrow up to eighty percent of the cost of each house.

At the onset, the community audited the savings in their own account in order to establish the number of houses they were able to finance through a deposit of twenty percent of the cost of each house. The twenty percent deposit was partly shared between the group and the would-be individual beneficiaries. Whereas the savings group would support the would-be beneficiary of the house with ten percent of the total cost, the beneficiary was expected to have saved in the scheme at least an equivalent of ten percent of the total cost of the house.

The loan repayment terms for the money from the revolving account were rather convenient and way below the prevailing market conditions. An interest rate of ten percent per annum surcharged on this loan was merely meant to cater for the inflationary rates and not for any profits at all.

After the audit of the group and individual savings, the community found out that they were able to finance thirty four houses based on the projected cost of each house. The thirty four houses were not all going to be complete houses due to the inadequacy of the member's savings and again the theme of the upgrading was based on an incremental upgrading as opposed to one of finished houses.

*Fig. 4.13 The different construction phases and their respective costs and loan repayment schedules
Adapted From Pamoja Trust project documentation*

Phase and description	 <p>[1]</p> <p>Foundation , ground Floor slab and water connection</p>	 <p>[2]</p> <p>Ground floor room, kitchenette, first floor slab toilet and sewer connection</p>	 <p>[3]</p> <p>Ground and first floor rooms, kitchenette, toilet, second floor slab</p>	 <p>[4]</p> <p>Full house: Ground, first and second floor rooms, kitchenette, toilet, roof terrace</p>
Total floor area (m ²)	19.1 (Un enclosed)	24 (Enclosed), 14(Un enclosed)	38 (Enclosed), 17(Unenclosed)	55(Enclosed), 17(Unenclosed)
Total cost (Kshs.)	45,000	120,000	160,000	210,000
Loan amount	40,500	108,000	144,000	189,000
Repayment period	4 ½ years	10 years	12 years	14 years
Monthly instalments(kshs)	825	990	1,100	1.237.50
Interest rate/annum	10%	10%	10%	10%

Out of the thirty four, two houses were going to be done to completion for purposes of illustrating the image of the complete houses. Some other two out of these were done up to first floor level whereas the remaining twenty eight houses remained as starter houses at ground floor level. From this breakdown, the community then applied for a loan from the Akiba Mashinani Trust account equivalent to eighty percent of the total cost of the houses. The release of the loan money from the Akiba Mashinani Trust account was done on a cash float reimbursement basis, the payment of each instalment being based on the accounting for the spending of the money from the preceding instalment.

Construction preambles

The beneficiaries for the first set of houses were selected based on criteria that required them to:

- have been residents in the settlement for five years and above, as well as part of the enumeration
- be active savers, measured by frequency of savings
- have been attending meetings and community activities
- have saved at least seven thousand five hundred shillings, the equivalent of twenty percent of the total cost of the house
- be a saver, regardless if a tenant or structure owner
- give priority to absentee structure owners, followed by the enumerated tenants living there

After getting the beneficiaries, a construction programme was set out. Since the community was going to undertake the construction themselves, there was need to equip them with the necessary skills required in the construction process. While a number of skills had been acquired during the peer exchanges to other communities, other skills needed to be shared out with the other community members.

A workshop for training in these skills was organised by Pamoja Trust and through the

support of the Intermediate Development Group (ITDG) and the then Housing and Building Research Institute (HABRI) at the University of Nairobi. Some fifty four community members were trained in the prefabrication of the concrete elements, masonry, welding and carpentry. Though the training workshop was done in a week, it was imperative that the polishing up of the skills was going to be done during the actual construction. This by implication meant that the actual construction itself was a further training process. Hence, the trainer from the Housing and Building Research Unit was retained to be the site manager and carry on with the training.



Fig.4.14 The construction site with the pre-cast concrete elements in the foreground

Picture by author

There were a number of conventional construction requirements, which could not be implemented. Among this was the requirement for a site office and sanitation facilities. There was no space on the ground to put up these facilities. It was not possible to acquire insurance for the site activities since the insurance companies did not have such a policy that would service this kind of construction process.

Procurement system

The next phase towards the commencement of the construction process was the putting in place of procurement procedures that would be used for the project. A construction committee was constituted comprising of community members. This committee was mandated to undertake responsibilities pertaining to the running of the construction project ranging from the procurement of materials and making payments to overseeing the day-to-day operations on the construction site.

The committee was directly answerable to the rest of the community members reported on the progress on a weekly basis during community meetings held every Sunday. The committee also formed the upward link with the other external organisations and individuals involved in the upgrading exercise.

The system of procurement entailed a three-check system. The construction committee would first invite or go for quotations from different suppliers of the specified materials. They would then proceed to analyse these quotations to get the most qualified quotation. This would be used to raise a local purchase order of sorts, outlining the materials required on site, their cost and the preferred supplier. This would then be forwarded to the site manager for his approval after which the purchase would be effected and the payments made.

Once the materials were delivered on site, a storekeeper appointed from among the community members would take charge of the inflow and outflow of these materials. The store keeping records would be presented to the community during their weekly meetings for scrutiny in order to establish if they tallied with the material usage on site.

There were negotiations with the Bamburi cement company to offer discounts on bulky supplies of cement to the community. They supplied the cement at four hundred forty shillings compared to the then prevailing outlet prices of five hundred shillings.

Site operations

In order to ensure minimum inconveniences to the residents being displaced from the sites used for the upgrading, the clearance of the existing shacks was done gradually rather than instantaneously. This ensured that the community only cleared those shacks for which they were ready to erect houses and avoided clearing a large site and leaving it idle at the inconvenience of the former residents. The first site to be cleared was for eight houses which were then done up to the concreting of the ground floor slab. This created more confidence in the community members who were then able to demolish more shacks and create space for the reset of the houses. In total, 22 structures were demolished to create space for the first 34 houses.

The construction committee with the assistance of the site manager undertook the organisation of the labour on site. Skilled labour was sourced from those trainees who had shown keenness during the training sessions. This was compensated for at the rates prevailing in the other informal construction sites. The community members organised a duty rota for the unskilled labour whereby each member in the saving scheme was scheduled to be working on site on a particular day of the week. No payments were to be made for the unskilled labour. Those members who could not attend their allocated working days would hire other available community members to stand in for them.

The management of the site was done directly by the community construction committee under the guidance of the site manager. In addition to the usual community meetings held every week, there were project review meetings held every fortnight that brought together the community members and the other stakeholders. It is over these meetings that all the technical and financial issues relating to the project were discussed. The meetings were convened and chaired by the consulting project architects.

A workshop was set up within the settlement for the fabrication of the pre-cast concrete elements. The community members who had been initially trained in carpentry and ironmongery also made other elements like the doors on site. Through out the works on site, women were the majority, constituting about 75% of the total work force.

5.8 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary and conclusions

There have been quite a number of results from this process. The houses have not viewed as a means to an end in itself, but as a way of building a community.

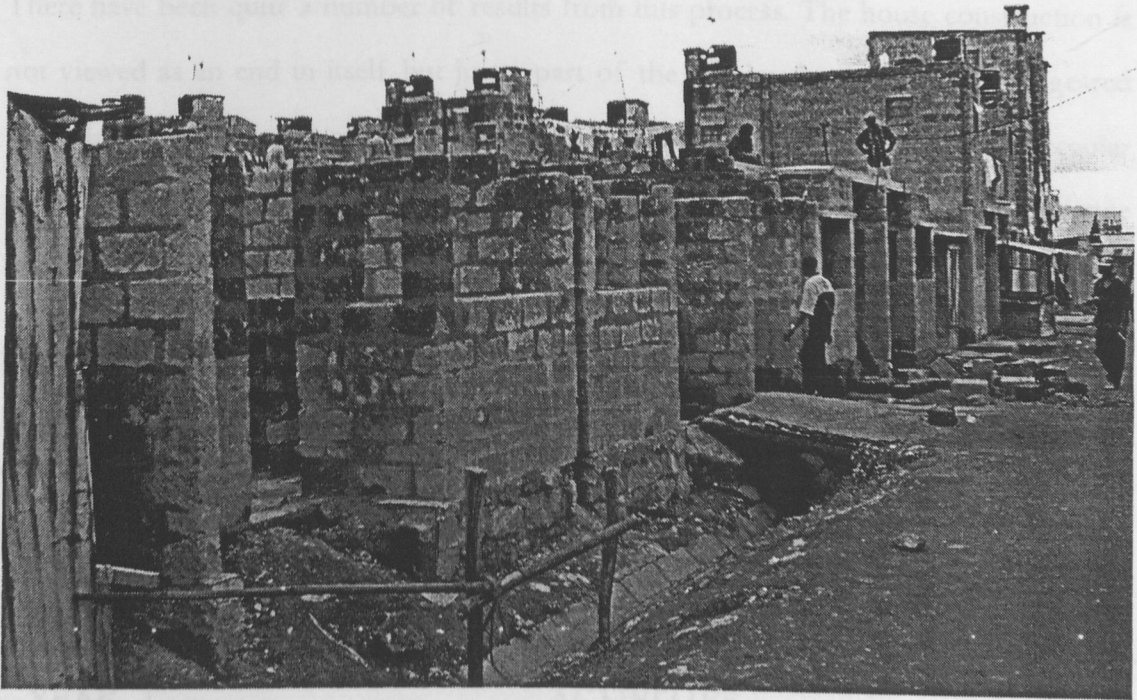


Fig.4.15 The emerging street front with the houses under construction others completed and occupied

Picture by author

2] 2001

- Group of young adults to 46 members. Opening of bank accounts
- Documentation
- Verification process
- Permission of construction to city council
- Cooperative building activities with all stakeholders
- Upgrading negotiations begin (Continuous process)
- Exchanges, both local and international begin
- Community house modeling and drawing process begin. This year on until 2003

5.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary and conclusions

There have been quite a number of results from this process. The house construction is not viewed as an end in itself but just a part of the previously outlined process geared towards negotiating for secure tenure. This process has relied on small but regular activities, not only to move the process along towards its goal, but to maintain confidence in a process that can often be difficult and discouraging.

At regular intervals, this process produced visible results, such as the houses, which can be theoretically translated in to customary norms and standards. This concurs with Turner's⁴² view that housing is not an end in itself. Below is a chronology of these milestones that were undertaken in the process towards the house construction.

YEAR	ACTIVITIES
1]2000	-Formation of saving schemes in Kambi moto
2] 2001	<ul style="list-style-type: none"> -Growth of saving scheme to 46 members. Opening of bank account -Enumeration -Verification process -Presentation of enumeration to city council -Consensus building activities with all stakeholders -Upgrading negotiations begin (Continuous process) -Exchanges, both local and international begin -Community house modelling and dreaming process begin. This goes on until 2003.

⁴² Turner J.C, (1976), *Housing by people*, Marion Boyars, London

3] 2002	<ul style="list-style-type: none"> -Designation of land in to a special planning area -Urban settlement planning entailing the dreaming and drawing of community plans -Construction of the real size cloth model
4] 2003	<ul style="list-style-type: none"> -Artisan training begins for masonry, carpentry and ironmongery -Finalisation and approval of settlement plans -Development of settlement loaning constitution and system -Data verification and identification of beneficiaries of first housing units. -Signing of the memorandum of understanding outlining the duties and responsibilities of all stakeholders. -Demolition of first structures to create a construction site. -Accommodation of affected residents -Development of a system to manage the community labour in the construction process. -Development of collective material procurement system managed by the community -Construction of first 34 houses begins. This ends in February 2005 after taking 19 months. -Akiba Mashinani Trust, the loan fund for the housing is launched.
5] 2004	<ul style="list-style-type: none"> -Construction of the first 34 houses continues.

6] 2005	<p>-The construction of the first 34 houses is completed and residents begin to move in:</p> <p>-Construction of the second cluster of 50 houses commences</p>
7] 2006	<p>-Construction of the second cluster of 50 houses continues, expected to be completed by the end of June 2006.</p>

Table 5.1 A chronological outline of the events leading to the construction process based on interviews with Pamoja Trust staff, the Kambi moto community members and a review of the project documentation at the Pamoja Trust offices.

Figure 2.1 Perception of perceived sense of security

Adapted from a report on Pamoja Trust's approach to slum upgrading in Nairobi by students from the School of International and Public Affairs, Columbia University

Achievements

From the above analysis of the upgrading process, it is worthy noting the achievements of this particular process which among others include;

i) The sense of increased security against forced evictions or demolitions as initially carried out by city council. The community also feels less threatened by the powerful provincial administration, which initially used to exploit them by demanding bribes to allow for the construction and even repair of the shacks. Below is a distribution of different levels of security as perceived by the Kambi moto community;

ii) The sense of increased security against forced evictions or demolitions as initially carried out by city council. The community also feels less threatened by the powerful provincial administration, which initially used to exploit them by demanding bribes to allow for the construction and even repair of the shacks. Below is a distribution of different levels of security as perceived by the Kambi moto community;

iii) This process has been all-inclusive for both the tenants and the structure owners. This allowed the structure owners to view the tenants as equals since they (structure owners) have no ownership rights for the land. It is a great achievement in that it circumvents the previous exploitative relationship whereby the structure owners would

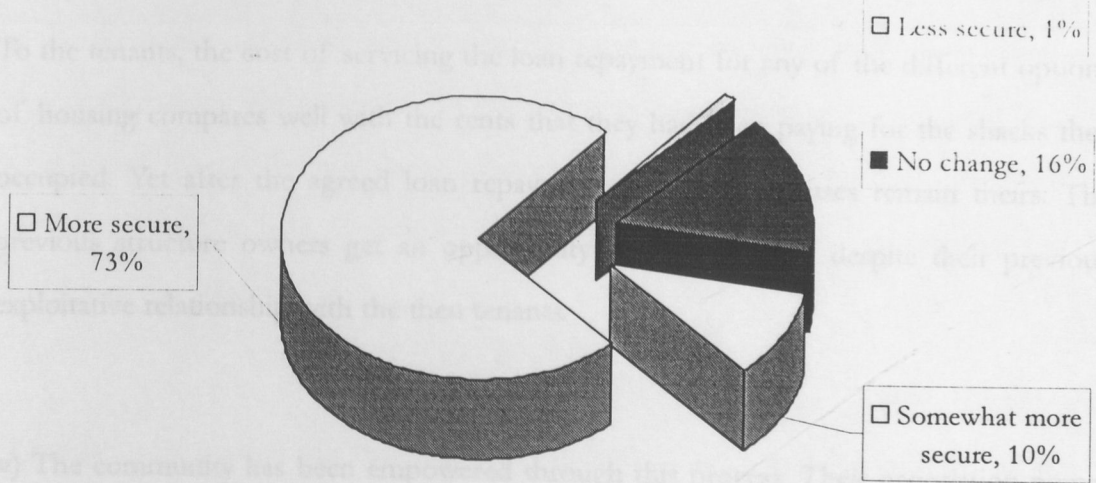


Figure 5.1 Proportions of perceived sense of security

Adapted from a report on Pamoja Trust's approach to slum upgrading in Nairobi by students from the School of International and Public Affairs, Columbia University

ii) There have been some tangible incremental results. Several of these milestone results have come out of this process as outlined in table 5.1. For instance, the community enumeration done in the year 2001 made the local leadership and the City Council authority to recognise officially that there were residents who resided there. This paved way for the setting aside of the settlement as a special planning area in 2001 and the eventual change of the land usage in 2002 from a parking space to residential area.

The signing of the memorandum of understanding in 2003 confirmed the roles of the different stakeholders and gave further assurance to the community on the legitimacy and credibility of the process. The commencement and eventual construction of the first 34 houses to completion concretised the people's conviction that the process is worthy the effort.

iii) This process has been all-inclusive for both the tenants and the structure owners. This allowed the structure owners to view the tenants as equals since they (structure owners) have no ownership rights for the land. It is a great a great achievement in that it circumvents the previous exploitative relationship whereby the structure owners would

charge high rents without even providing the basics of services.

To the tenants, the cost of servicing the loan repayment for any of the different options of housing compares well with the rents that they had been paying for the shacks they occupied. Yet after the agreed loan repayment period, the houses remain theirs. The previous structure owners get an opportunity to own a house despite their previous exploitative relationship with the then tenants.

iv) The community has been empowered through this process. Their negotiation power with the local government, the central government, other institutions and stakeholders has been greatly improved.

Challenges

Despite the overwhelming sense of achievement in the upgrading process, the process has encountered some challenges, which undermined its progress and could all together stall it if not properly addressed. These challenges entail;

i) Inadequate institutional support as most of the stakeholders who had initially showed interest are no longer participating in the process. This could be due to the unfulfilled desire by some of these organisations to take credit for the successes of the project. The participation of all the stakeholders in this process has also been hampered by the collapse of the Nairobi Informal Settlements Consultative Committee whose secretariat was at the Nairobi provincial administration offices. The different institutions were driven by varied philosophies, which were difficult to harmonise. For instance, while Pamoja Trust went for a long term community engagement process, other organisations had short term and instantaneous intervention strategies. Hence, Pamoja Trust has remained as the only organisation pursuing the upgrading exercise in Kambi moto.

ii) Delays in the construction process occasioned by system bottlenecks, cash flow

problems, site labour inadequacies, poor weather and other site incidentals. Whereas some causes of the delays could have been mitigated, others were merely part of lesson learning in precedence setting. The process did not have a previous local experience to learn from; hence a lot of the process was being pioneered from basics. Sustained occurrence of these delays could impact negatively on the community's morale by eroding their confidence in the process.

iii) Time lapse in the process that has made it difficult to properly coordinate all the activities. Some of the decisions made earlier have had to be reviewed because of their inconsistency due to time change. For instance, the initial costing of the houses, which was done well over a year before construction commencement, was inaccurate due to changes in the cost of materials. The initial results of the enumeration were also invalid at the time of commencing construction as some members enumerated then had either moved out of the settlement or passed away.

iv) Resistance to the process by some section of the community. The structure owners had initially opposed the upgrading exercise because they felt they were going to lose their source of income once their shacks were demolished. It took a while for the tenants and the structure owners to arrive at a consensus. Even then, not all the residents in the settlement support the upgrading exercise. Some residents have expressed scepticism and near opposition to the project. Those supporting it only remain hoping that the results of the process will convince their detractors and bring them onboard.

v) The upgrading exercise seems to have excluded and sidelined the very poor in the community. The selection criteria for those to benefit from the upgrading have insisted on the requirement for one to have saved seven thousand five hundred shillings. While this was meant to encourage the members to make their savings, it must be appreciated that it only serves to benefit those who are rich among the poor and excludes the very poor. The idea of phasing out the project to the very basic services is noble but it remains to be seen

how it can be integrated with the rest of the upgrading process. So far, the lowest phase of construction undertaken constituting of the ground floor and the toilet upstairs still remains way beyond the reach of the very poor in the community.

vi) There were a lot of hidden costs in the project that made it look cheap from the face of it. For instance, the component of sweat equity was not factored in to the pricing of the house. The amount of unskilled labour that went into the project was pretty too much in that each member from the saving scheme put in about 80 days of work that were not interpreted as a direct cost. The cost of technical support was also not accounted for in the cost of the house as it was borne by the facilitating NGO, which also met the cost for the social services. In the same way, the project costs excluded the cost of land that was freely offered to the community by the Nairobi City Council. If the community were left to meet all these costs by themselves, the process would have become excessively expensive and hence unviable.

vii) There was an ideological shift in that although the project was touted as a bottom up approach, a considerable amount of initiative came from up. This is evident in the role played by the non-governmental organisation in sourcing for the funds as well as organising the different activities that preceded and included the construction process. Overall, this process can be well described as a participatory process. In the long run, it is anticipated that the community will be empowered adequately to run their own show.

5.2 Recommendations

Quality housing will come faster if production, design, and management are freed to a degree comparable with other industries.⁴³

Subsidies should be encouraged as a way of mobilising resources for the upgrading of slum settlements. This can be done directly through tax waivers on materials meant for slum upgrading, price reductions by manufacturers of materials for slum upgrading (like the Cement meant for the Kambi moto site in Chapter 4), or cross subsidies where formal developments in the city are charged some fee which goes towards meeting the cost of slum upgrading.

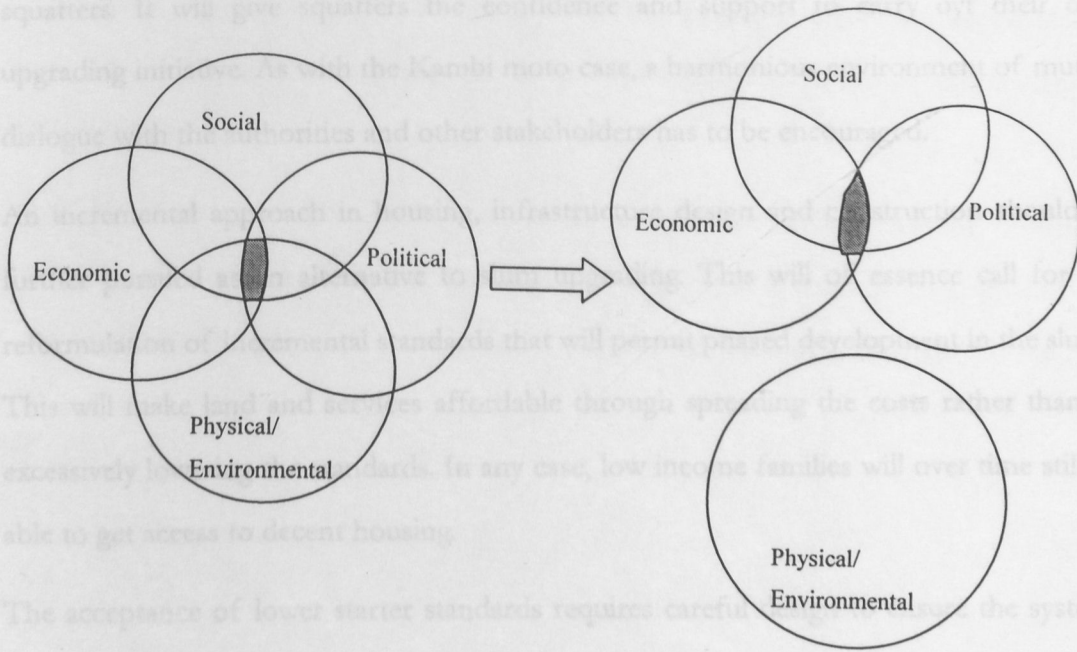
More innovative methods of construction that cut on cost without compromising on the resultant quality should be sought. Research in this direction should be more result oriented, field based and less of office based. It is necessary to encourage construction techniques that allow for gradual growth of the houses, sort of transferring capital costs to lifecycle costs without much of these going to meet maintenance costs.

There should be sustained reformulations of the legislation governing urban development in order to facilitate innovative slum upgrading. The above process would not have been possible without the setting aside of the project area in to a special planning area where the revised housing standards are applied together with the involvement of the civil organisations into housing provision. The existing set of higher standards is meaningless unless resources are allocated to enable people to observe them. The growth of privatisation and the diminishing role of the government will commerce and the civil society assuming greater roles in ordering and facilitating urban development.

The problem facing the urban poor is a multifaceted and complex one. As highlighted above, it has social economic, political and physical-environmental components in its making. A sustainable solution to this problem should address all these components, if not simultaneously in a more coordinated manner. An isolationistic approach in tackling one aspect, in this case the physical environmental, while leaving out the rest would only

⁴³ C.E. Elias Jr., j. Gilles, S. Riemer (1964), *Metropolis: Values in Conflict*, Walsworth Publishing Co. Incl, Belmont, California.

serve to widen the nature of the problem as illustrated below.



*Figure 5.2 Most common but unsustainable approach of dealing with physical and environmental challenges in isolation from the other informal settlement challenges
After the theories of Turner JC (1976)*

To this extent, such an all-inclusive approach in tackling the above challenge has been described as being of an integrated holistic in nature. This calls for the active participation of the different stakeholders in addressing any of the above components of the challenge. Going by the previously mentioned hypothesis, the architect has a contributory role to play in the holistic approach to tackling the slums challenge. The architect's role in modelling the built environment can not just be limited to the conventional area of design and supervision but will be more interwoven with other secondary functions in the social economic realm. It also questions the conventional team leader role played by the professional architect, calling for a more participatory approach where the architect collaborates with the other players, some times assuming a more secondary role. However, the designer's success in this process will still be judged by the resultant quality of the built

environment.

As different initiatives get underway to address the slum phenomenon, there should be squatter tolerance while responding to slum residents. This should protect property rights and public open spaces while supplying regularization and infrastructure for squatters. It will give squatters the confidence and support to carry out their own upgrading initiative. As with the Kambi moto case, a harmonious environment of mutual dialogue with the authorities and other stakeholders has to be encouraged.

An incremental approach in housing, infrastructure design and construction should be further pursued as an alternative to slum upgrading. This will of essence call for the reformulation of incremental standards that will permit phased development in the slums. This will make land and services affordable through spreading the costs rather than by excessively lowering the standards. In any case, low income families will over time still be able to get access to decent housing.

The acceptance of lower starter standards requires careful design to ensure the systems can cope with increased loads without requiring total replacement when the population densities increase. These progressive investments in house improvements may not always result from security of tenure but some times act as a means to obtaining it (Reimers and Portella 1995).

For sustainable slum upgrading, it is important to forsake detailed development control from above and encourage local solutions.

Technology choices for the urban poor should respect the fact that in some countries women traditionally undertook the role of self-help construction. Most of the urban poor households are female headed as well. As found out in the Kambi moto case, the majority of those working on site were women.

Legislation controlling the construction industry remains largely inaccessible to the common man. It is written in a technical language that is difficult to understand and also not freely available for perusal. There is need to come up with a community based regulation. As part of enforcing such regulations, it is necessary to use the already existing informal capacity where there are people on the ground within the settlements that

regulation. As part of enforcing such regulations, it is necessary to use the already existing informal capacity where there are people on the ground within the settlements that ensures the structures meet certain criteria. Otherwise, it would be difficult for the centralised authorities to effectively monitor the construction activities on the ground.

This devolved regulation could however have the negative effect of segregating communities, if the dominant group can keep out members of other groups through prejudice or sanctions

Financial institutions and insurance companies exert pressure against the use of unstable and non-durable materials. They need to come up with product that can be appropriate for the participatory process of self built (the case of Kambi moto site insurance challenge)

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