AN EVALUATION OF GOVERNMENT POLICIES IN THE PROVISION

OF LOW INCOME HOUSING IN

BENIN CITY, NIGERIA

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ABSTRACT

This research evaluates the existing housing provision and Government housing policies in Benin City, Nigeria. It evaluates subsidized public housing, sites and services, and upgrading schemes; and the low income groups' level of affordability, through the application of economic demand models - hedonics and the present value techniques. While the hedonics is used as a predictive technique for policy evaluation, the present value technique is used to evaluate and assess the Government's low income housing policies and the target population's (low income group) level of affordability respectively.

After the evaluative and the assessment exercise, it was found that the sites and services is the preferred policy option, although its successful implementation would not be possible unless Mortgage Financing is introduced and the bottlenecks and constraints inherent with the low income housing market is removed. Through the Mortgage Financing Model constructed by the researcher, it was possible to determine the amount of mortgage grant affordable by households on different income grades.

It was also found that, apart from the SPSSX computer package hitherto used for the analysis of hedonics, a micro software package modified by the researcher from Davis (1973) Fortran Program developed for Geological and Engineering Surveys could be used for analysing the hedonics technique. This is an advantage to most developing countries where a large SPSSX computer package may not be easily accessible. The research was concluded by highlighting areas for further investigation.

ACKNOWLEDGEMENTS

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GLOSSARY

ASCON	Association of Social and Economic Organisation of Nigeria
BDPA	Bendel Development and Property Authority
CBD	Central Business District
CBN	Central Bank of Nigeria
FMB	Federal Mortgage Bank
GLSS	Ghana Living Standard Survey
NBRPI	Nigerian Building and Road Research Institute
NIM	Nigerian Institute of Management
NISER	Nigerian Institute of Social and Economic Research
PV	Present Value
UNCHS	United Nations Centre for Human Settlements (HABITAT)
U.N.	United Nations

SECTION I

INTRODUCTION AND REVIEW OF LITERATURE

CHAPTER 1

INTRODUCTION

1.1　　　　STATEMENT OF THE PROBLEM

In the world at large there is a widening gap between housing supply and demand mostly in the urban areas. This has resulted in a severe housing crisis of unmanageable dimensions. Large numbers of families are homeless and living in conditions of extreme poverty in unhealthy as well as unsafe dwellings and neighbourhoods (UNCHS, 1986). The unauthorized settlements of Lusaka, Bangkok, Jakarta, Mexico, Peru and Kingston; the slums of Lagos, Nairobi and overcrowding and housing blight in Kumasi, are manifestations of these poor housing conditions. In spite of conscious efforts being made by both national and international organisations to eradicate this problem, they seem not to have made any impact. About one fifth of the world's population is estimated to have inadequate shelter while one million people have no shelter at all. And if the statement that about half a million people, mostly children, die daily due to inadequate housing is true (United Nations, 1987), it does further indicate the magnitude of the housing problem which is more pronounced in developing countries where about one third of the population are homeless; and in some cases a greater proportion of the population of some larger cities.

This poor and inadequate housing is due to the fact that urbanisation is increasing faster than the economies of the cities, making job opportunities in urban areas more limited and incomes becoming eroded to very low levels. In developing countries as a whole, economic growth rates had fallen as low as 0.3 per cent per annum by 1982. The consequence is that population has grown faster than output, and this in turn has kept GNP per capita at a standstill (UNCHS, 1987). Africa has been the worst hit in this issue. Per capita GNP annual increase fell from 4.7 per cent in 1983 to 1.6 per cent in 1984 and 1.3 per cent in 1985. The true picture of Africa's economic situation can easily be perceived from tables 1.1 and 1.2 in which the economic indicators for developing

Table 1.1   Economic Indicators for Developing Countries, 1980-1986

	1980	1981	1982	1983	1984	1985a	1986b
All Developing Countries	3.5	1.3	0.3	0.8	2.0	2.4	3.0
Non-Oil Producing Developing Countries	5.0	1.7	0.6	1.9	3.8	3.3	4.5
Growth of per Capita GDP^C							
All	3.0	0.2	-0.8	-1.3	1.4	0.9	0.4
Non-Oil Producing	2.4	0.8	0.3	0.6	3.1	2.7	2.3
Growth of Exports^C							
All	-4.0	-5.0	-8.1	2.9	7.1	0.4	3.8
Non-Oil Producing	9.1	6.5	0.7	8.3	11.7	3.4	4.3
Growth of Import^C							
All	8.5	7.1	-4.2	-3.2	2.2	-0.3	-0.6
Non-Oil Producing	6.5	1.5	-5.5	1.6	5.2	3.3	5.1
Terms of Trade^C							
All	16.1	3.0	-1.2	-3.9	1.2	-2.2	-11.7
Non-Oil Producing	-5.9	-5.3	-2.6	0.2	1.5	-1.2	3.6
Balance of Payments^d							
All	27.9	49.2	-90.9	-58.9	-35.1	-34.1	-69.3
Non-Oil Producing	-67.1	-80.2	-65.3	-44.1	-26.5	-27.6	-20.3
Consumer Prices^C							
All	27.1	26.0	24.5	32.7	37.4	39.3	25.9
Non-Oil Producing	32.2	30.6	28.0	37.1	47.6	53.0	30.6

a-Preliminary, b-Forecasts, c-Percentage change for Proceeding year, d-Billions of US dollar

Source: IMF, World Economic Survey (Washington DC, 1986), United Nations, World Economic Survey, 1986 (New York, 1986).

Table 1.2   Debt Indicators for Developing Countries

	1970	1975	1980	1981	1982	1983	1984	1985
Total debt outstanding and disbursed (billions of dollars)	68.4	168.6	431.6	492.5	552.4	629.9	674.1d	711.2
Ratio of total debt of export earnings	99.4	76.4	90.1	97.5	116.4	134.3	130.4	135.7
Debt service ratio (ratio of interest payments and amortization to exports)	13.5	11.1	16.1	17.7	20.7	19.4	19.4	21.9

Source: World Bank, World Development Report 1986.

countries between the period of 1980-1986 and the debt indicators for the period of 1980 - 1985 are clearly shown. Because of this poor economic situation, basic services and infrastructure such as roads, water supply and housing for the poorest in the society cannot be provided. In some cases, nutrition levels are inadequate because of low income or no employment. Consequently, over 50 per cent of the population of the most developing countries, particularly Africa and South East Asia, live in abject poverty.

In spite of these poor living conditions, urban centres have continued to grow at an alarming rate. Between 1920 and 1980, the urban population in developing countries grew from 100 million to well over 1,000 million. Of the 4.5 billion world's population, 40 per cent were living in urban areas (UNCHS, 1987). Once again, Africa is in the forefront. Africa is one of the World's continents where population doubles much more rapidly. The estimated population for Africa in 1976 was 350 million and this is expected to double to 700 million by the year 2000 (U.N. 1987). Kenya and Libya have a population growth rate of 4 per cent while most other African countries have a population growth rate of above 2 per cent.

Nigeria is the most populous country in Africa with a population estimate of about 103 million (Federal Republic of Nigeria, 1988) and this is expected to increase to 150 million by the year 2000 (fig. 1.1). Of this number, about 30 per cent live in urban areas. The population of Lagos grew from 1,122,733 in 1963 (Federal Republic of Nigeria, National Census, 1963) to an estimated figure of 7,600,000 in 1988 (Federal Republic of Nigeria, 1988). Bauchi had a population of 38,014 in 1963 (National Census, 1963) but by 1986 it had grown up to about 202,000 (Federal Republic of Nigeria, 1987). Benin City, the pivot of this study, grew from 100,694 in 1963 (National Census, 1963) to about 509,000 in 1988 (Federal Republic of Nigeria, 1988), and an estimated figure of about 1,017,100 by the year 2000. Cities such as Ibadan, Kano, Kaduna, Port Harcourt and Enugu are also growing very rapidly.
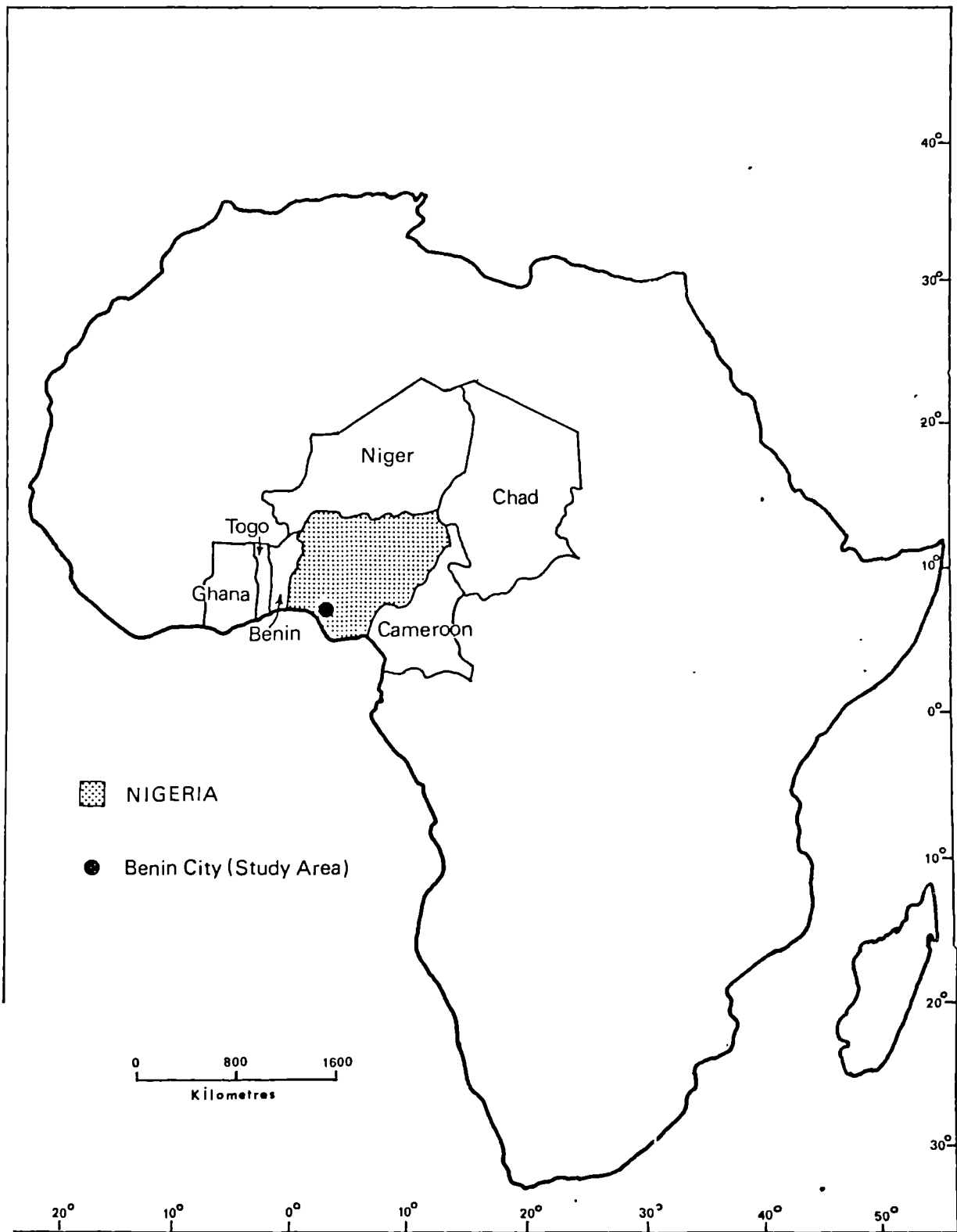
Fig. 1·1   AFRICA SHOWING THE LOCATION OF NIGERIA AND THE STUDY AREA

1.2   JUSTIFICATION FOR THE STUDY

The situation described above has resulted in immense pressure on housing services, traffic congestion, inadequate waste disposal, drainage and general sanitation as well as acute shortage of housing (Abiodun, 1974 as cited in Shitta-Bey, 1988). Apparently, the lack of housing facilities became the most acute of these problems (Fourth National Development Plan, 1980-85). In spite of all these problems, the housing market mechanism seem not to have been able to cope with the above situation and moreover it has been poorly studied and analysed. Even though Nigeria's housing market behaviour would have provided a better base for projections for the rest of the Sub-Saharan Africa than using market behaviour from other parts of the world (Megbolugbe, 1989), the paucity of data on the market activities, coupled with the complex and unique socio-cultural and political institutions, have perhaps made this important analysis impossible. Similarly, irrespective of the housing shortages and inadequacies, in the low income housing provision, Government housing policies and programmes are formulated without studying the target population, their level of affordability; and without evaluating the feasibility and desirability of such policies. It is the view of the researcher that these issues be adequately considered in housing policy formulation especially these days when a lot of emphasis is being placed on cost recovery in project design and implementation. Based on these premises and the unique circumstances notwithstanding, the author feels justified in, and inclined to, investigate these problems of imbalance and imperfection of the housing market mechanism by evaluating the exiting housing policies. Through this investigation, it may be possible to have a better housing policy analysis, especially as regards proposals towards solving the housing problems for the low income groups in Benin City.

1.2.1   **Housing in Nigeria**

An acute housing shortage is a fundamental urban problem in Nigeria (fig. 1.2). The major urban towns such as Lagos, Kano, Kaduna, Port Harcourt, Ibadan, Benin City, and so on has doubled their population in the inter-censal period of 1953-1963; and by 1989 most of these cities had, again, more than doubled their populations (Federal Office of Statistics, Lagos, 1989). This unprecedented growth is an indication of great numbers of people migrating to the cities. The result has been an immense pressure on housing accommodation, infrastructure and services. There is, therefore, a great deficit of urban housing throughout the country, especially now that about 30 per cent of the population of 103 million live in urban areas (Federal Office of Statistics, Lagos, 1988). This has created a wide gap between supply and demand, causing a huge unmanageable crisis in the housing market. Important housing components such as land, finance and building materials have also been affected. Invariably, this rapid urbanisation, associated with the accelerated tempo of socio-economic development, has contributed remarkably to the acute housing shortage mentioned above, especially for the low income households to such an extent that family dwellings fail to satisfy certain minimum standards of safety and sanitation (Federal Republic of Nigeria, Fourth National Development Plan, 1981-1985, Wahab, 1974 and Okpala, 1974). Even where dwellings do meet these standards, they are not affordable by many people especially the low income households. Consequently, overcrowding and squatter settlements are visible features of the urban scene throughout the country. Irrespective of official rent control regulations, high rent levels seem to be rampant (Okpala, 1978).

The poor housing condition in the Nigerian urban centres was clearly reflected in a survey conducted on some selected cities. According to that survey, it was found that

REPUBLIC OF BENIN

NIGER REPUBLIC

UNITED REPUBLIC OF CAMEROON

PORT HARCOURT

Fig 1.2

MAP OF NIGERIA
SHOWING BENDEL STATE

- State Capitals
- Proposed Federal Capital
- Bendel State

ABEOKUTA
LAGOS
IBADAN
AKURE
BENIN CITY
ILORIN
MINNA
SOKOTO
KATSINA
ENUGU
OWERRI
UYO
CALABAR
MAKURDI
KADUNA
KANO
JOS
BAUCHI
YOLA
MADUGRI
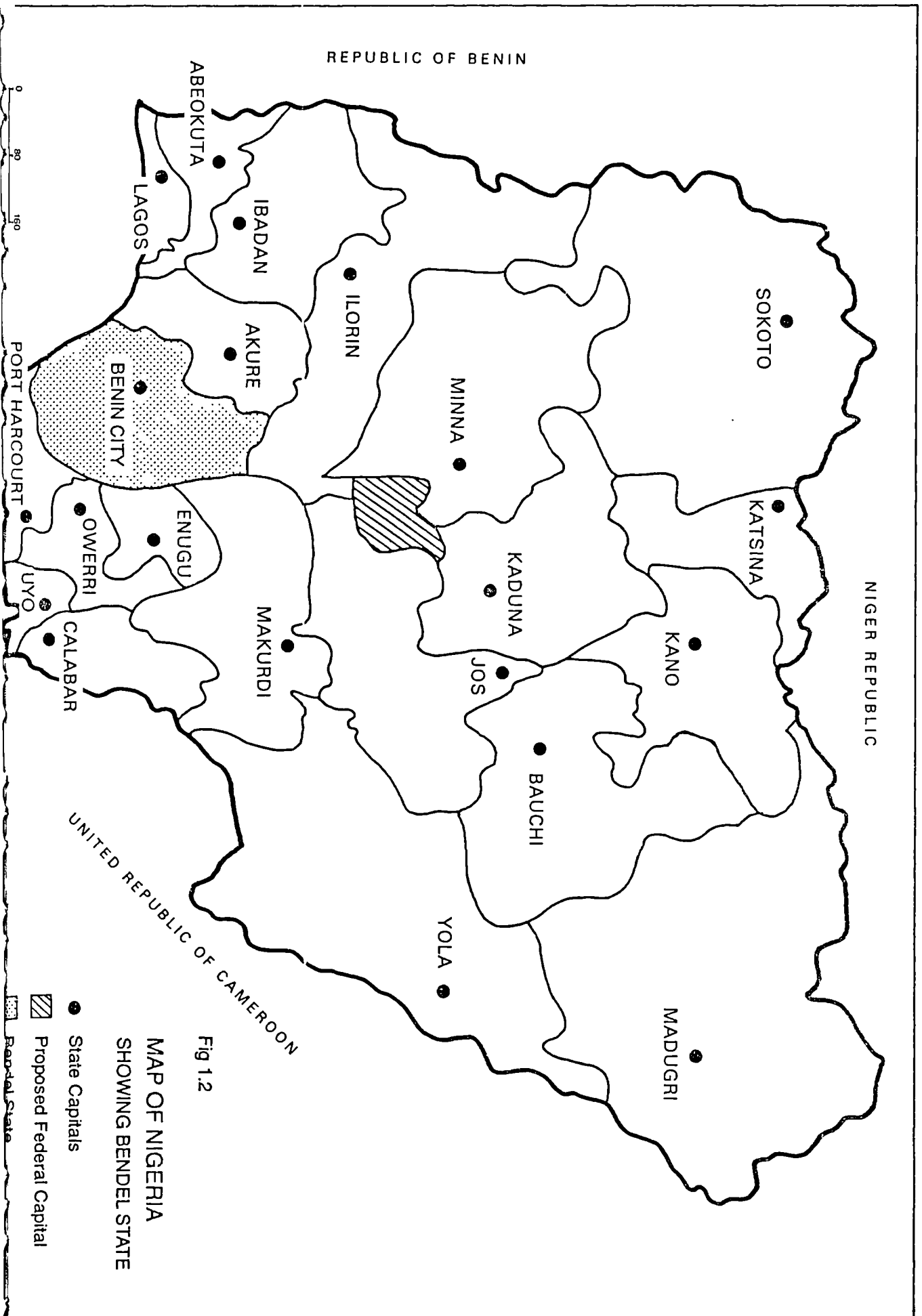
most houses in Ibadan had electricity while in Ilorin only about a quarter did. About two fifths of Lagos' houses and about a quarter of those in Ibadan had flush toilets, while only 4 per cent of those in Benin and 2 per cent of those in Kano did. Three quarters of the houses in Lagos and Port Harcourt had tap water, while in Benin City, Ibadan, Ilorin and Kano only a third or less of the houses had tap water (Housing Survey, 1971 as cited in Peil and Sada, 1984). Examining other housing components, another study conducted in 1978 taking into account building materials, age, maintenance and services (piped water, latrine, bathroom, kitchen and electricity) found that only 37 per cent of the houses in Zaria, in northern Nigeria, were 'standard'; another 34 per cent substandard but 'fair,' and 2.5 per cent in a dilapidated condition and requiring immediate replacement (Seymour, 1978 as cited in Peil and Sada, 1984). In Port Harcourt in the south, the same proportion was found to be 'substandard' although 28 per cent were seriously dilapidated, requiring immediate repairs or replacement (Ogionwo, 1979 as cited in Peil and Sada, 1984).

Seven to ten years later, the continuous deterioration of the Nigerian urban centres was equally reflected in the 1983/84 household survey conducted by the Federal Office of Statistics, Lagos. According to this survey, 85 per cent of the urban households lived in single rooms, 8 per cent lived in whole buildings, while 7 per cent occupied flats and duplexes. The average number of persons per room is about 3.8. Poor housing conditions are further worsened by the lack of basic utilities, services and facilities. For example, it was revealed that about 9 per cent of the urban households had no kitchen, 67 per cent shared their kitchen, and only 24 per cent of the households had exclusive use of their kitchen. As regards bathrooms, 7 per cent had none, 69 per cent shared and 24 per cent had exclusive use of theirs. Toilets were no better; 17 per cent had none, 56 per cent had pit toilets, 13 per cent had pail toilets, and 14 per cent had water closets. These figures indicate the low level of sanitary facilities in the country.

In spite of the magnitude of the housing problem in Nigeria, the role of the government tends to be limited as far as housing provision for the low income households is concerned. This is because the government finds it difficult to cope due to the needs of other sectors of the economy on the one hand and such other needs as nutrition, education and health on the other. Where efforts were made and housing schemes were undertaken by the Government, the projects normally ended up with high standards which the low income households could not afford. The government's low housing investment is clearly reflected by the National Development Plans. The 1970-74 Development Plan revealed that Nigeria allocated less than 2 per cent of the GNP on housing, while in 1975-80 it went up to 2 per cent of the GNP (Third National Development Plan, 1975-1980) as against 7.5 per cent spent by Britain. Although no figures were available for the 1980-85 Development Plan, other available sources revealed that the figures were staggering between 1.7, .3 and 1.2 for 1986, 1987 and 1988 respectively (Central Bank of Nigeria, 1988).

In the 1990-1992 Rolling Plan, housing was not directly allocated any amount; although under social sector, after education and health, 4.65 per cent was allocated to what was regarded as others. Assuming housing is one of the components of others which is made up of four main sectors, it then means that about 1.21 per cent has been allocated to housing (National Rolling Plan, 1990-1992 and 1990 Budget, Federal Republic of Nigeria); although no data exist as to the GNP allocation to the informal sector. While most industrialized nations allocated more than 6 per cent of GDP, most developing countries allocated just above 3 per cent of GDP to residential construction, (United Nations, 1975a as cited in Hardman and Midgeley, 1982). The above data reveal that Nigeria has not actually allocated enough funds to housing especially since 1986 (table 1.3), and particularly when compared with the industrialized nations. The U.K., for example, which has a total stock of 23 million, equally allocates about 7.5 percent of GDP to housing (Central Statistical Office, Social Trends 21, 1991, U.K.).[1]

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[1] The 7.5 per cent GDP allocation to housing is derived as follows:
    (a)   Actual allocation approximately 4 per cent.
    (b)   Indirect allocation through Tax relief 3.5 per cent.

Table 1.3: GDP Allocation to Housing between 1970 and 1992

YEARS	FIGURES
1970-1974	>2%
1975-1980	<2%
1981-1985	not available
1986	1.7
1987	.3
1988	1.2
1989	not available
1990	.4
1991	.4
1992	.4

Source: Federal Republic of Nigeria 1970-1990

With a population growth rate of about 5 per cent, Nigeria requires about 500,000 to 800,000 dwellings annually: at the United Nations standard of 10 dwellings per 100 inhabitants annually, to cope with the increase in population (United Nations, 1975a as cited in Hardman and Midgeley, 1982). In fact, one estimate of the shortage at the end of the 1980-1985 Plan period was 867,316 dwellings (Wahab, 1983). Although the figures are not available for 1985-1990, from the allocations above it is very obvious that the required need would have significantly increased. Therefore, the fact that the country is already in a chaotic situation and the housing shortage has reached an uncontrollable dimension cannot be overemphasised, unless something positive starts to happen.

1.2.1.1 Housing in Bendel State

Bendel is one of the 21 states in Nigeria. It is strategically located and is a focal point between eastern and western states on the one hand and a stop over link between Lagos and the new Federal territory, Abuja, on the other (fig. 1.2). By 1989, its population estimate was about 5,330,400 (Federal Office of Statistics, Lagos, 1989). Its locational uniqueness has given rise to a tremendous development impetus and as such the state witnessed a very rapid growth of certain urban centres; for example, Benin City, Warri, Sapele, Ughelli, Agbor, etc. The role of Benin City as the state capital resulted in an influx of people from all parts of the Federation which created a considerable housing demand. The oil boom particularly in the 60's and 70's facilitated the growth of Warri. Also the ports of Warri, Sapele and Koko equally contributed to the population increase mainly through migration. The resultant effect of this influx of people into Bendel State, especially the urban centres, is that the increasing pressure on housing and the huge housing shortage became apparent. The level of housing shortage will be discussed in greater detail in chapter 3.

1.3   THE AREA OF STUDY

The main focus of this study is Benin City, the capital of Bendel State (fig. 1.3). It is predominantly a traditional city (until the advent of the Europeans) whose history dates back to the 12th century. Although it is currently an administrative city, it is a focal point for economic activities between the North, West and Eastern states. A brief discussion of the historical background of the city may throw more light on the housing problem.

1.3.1   Historical Background of Benin City

Benin City is located in the midwestern portion of southern Nigeria. Geographically the city lies within the limits of latitude 6 26' north, and longitude 5 35' and 5 41' east. This area measures 13.4 km by 8.4 km or 112.5 sq. km. (Ikhuoria, 1984). The history of Benin City dates back to the 12th century and the rule of Oba Oguola; when it was the headquarters of the Benin Kingdom and the main seat of the Portuguese foreign mission. It was also the centre of slave trade and a focal point for international commerce (Sada, 1975, Adams, 1823). As the pivot of monarchy, social and trading activities in the then old kingdom, all the people who currently comprise the tribes in today's local government areas of Bendel State used Benin City as their centre of interaction, especially as they originally migrated from Benin. Thus, they were strongly influenced by the Benin monarchy, government, customs and economic activities. The main market was built adjacent to the palace. The nearness of this market to the palace is not unconnected with the fact that the Oba has to appease the gods on behalf of his subjects in times of economic recession and, in times of economic boom, he offers sacrifices of thanksgiving. All these rituals were performed in the market.

The Oba equally supported a large collection of craft workers of various industries. Through his patronage, a very strong craft guild comprising wood carving, drumming,

| BENDEL STATE |

| Location of Benin |

AKOKO-EDO

OWAN

ETSAKO

OKPEBHO

AGBAZILO

OVIA

ORHIONMWON

BENIN ■

OREDO

IKA

OSHIMILI

ANIOCHA

OKPE

WARRI

ETHIOPE

NOOKWA

ISOKO

BURUTA

UGHELLI

BOMADI

0   20   40   60   80 Km

Fig I-3   MAP OF BENDEL STATE SHOWING THE LOCATION OF BENIN
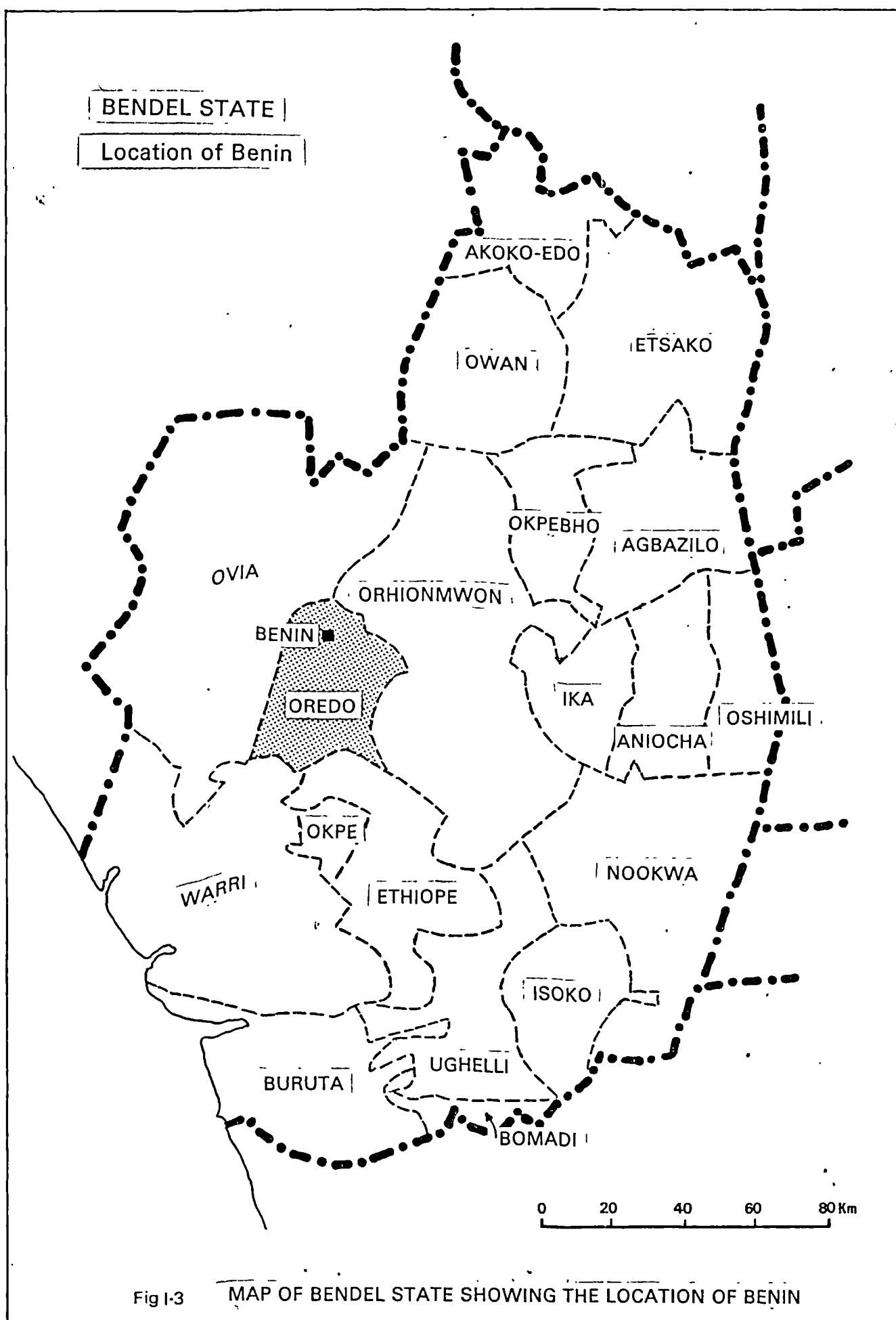
weaving and bronze casting, was developed. All of these craft workers exclusively served the oba. Because they served him, each of them occupied a street and this formed a concentric ring round the palace, which is a centrally located dominant feature of the city. The oba's palace, the home of the king's dependents called the ogbe quarters, the concentric ring of streets where his craftsmen live, and the oba market, were then regarded as the inner core of the city. This inner core was linked with the rest of the city, as well as the empire, by a network of ten major roads radiating from the centre through the walls at ten gates (fig. 1.4). These include Akpakpava, Ugboton or Gwato, Udo or Siluko, Sakpobo, Uselu or Ifon, Irhuassa or Ogba, Imose, Okhoro, Ugbo or Ugben and Uhumumdumwmun (Egbarevba, p.12 as cited in Sada, 1975; Adams, 1923), had meticulously documented this plan. Invariably by the 12th century, the oba of Benin had created a city plan which was very similar to radio-centric plans of Paris under Louis XIV and Karlsruhe under Prince Karl William of Baden-Durlach in 1915 (Johnson, 1975 as cited in Sada, 1975).

With the layout already described, a significant framework for land use development in Benin City was created (Sada, 1975). Next to the core is the intermediate zone occupied by the chiefs and their dependents. The chiefs lived in traditional compound type houses with very large compounds and semi-palaces which covered a very large expanse of land (fig. 1.4a). The chiefs' palaces had various chambers and apartments and were surrounded by walls. The dependent members of the family built their houses within the compound, while non-members of the family built their dwellings outside but around the chiefs' palaces. The outer zone was then occupied by the common people who were in most cases strangers and slaves. The houses as well as the households within the core and intermediate zones were often large; while at the outskirts the households were smaller and the houses were ramshackle, smallish and makeshift. The occupiers of the outskirts were mainly farmers. This is perhaps one of the reasons why the

Fig. 1.4   BENIN CITY — LAND USE PATTERN

Low Density

High Density &
Area of Study

Medium

Government Departments

Educational Institutions

Enda

NOTE :

1 ROOM
2 LOBBY
3 CORRID
4 KITCHEN
5 PORCH
6 COURT YARD
7 SHRINE
8 PRIVATE COURT YARD

FORBIDDEN ZONE

Scale 1:200
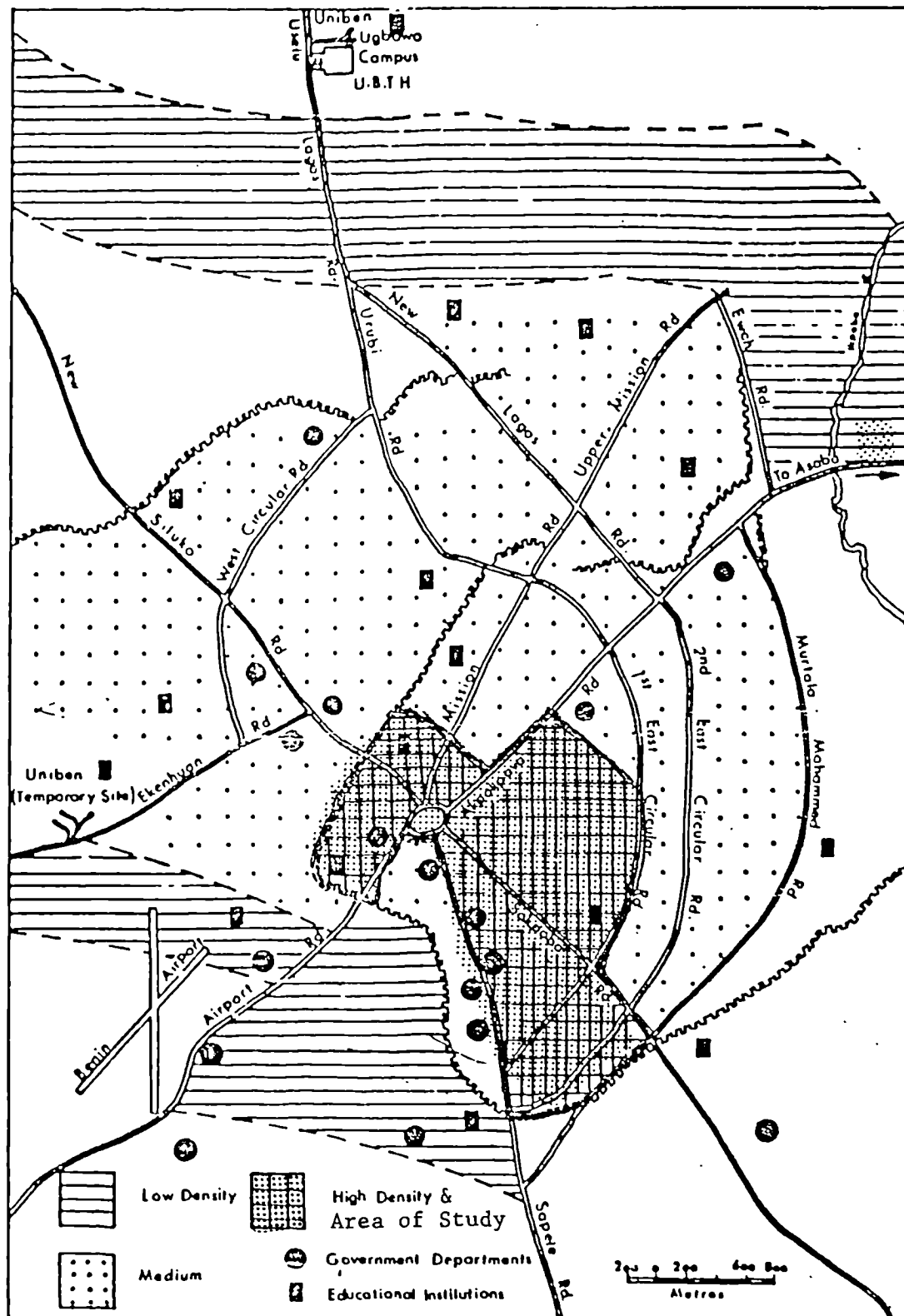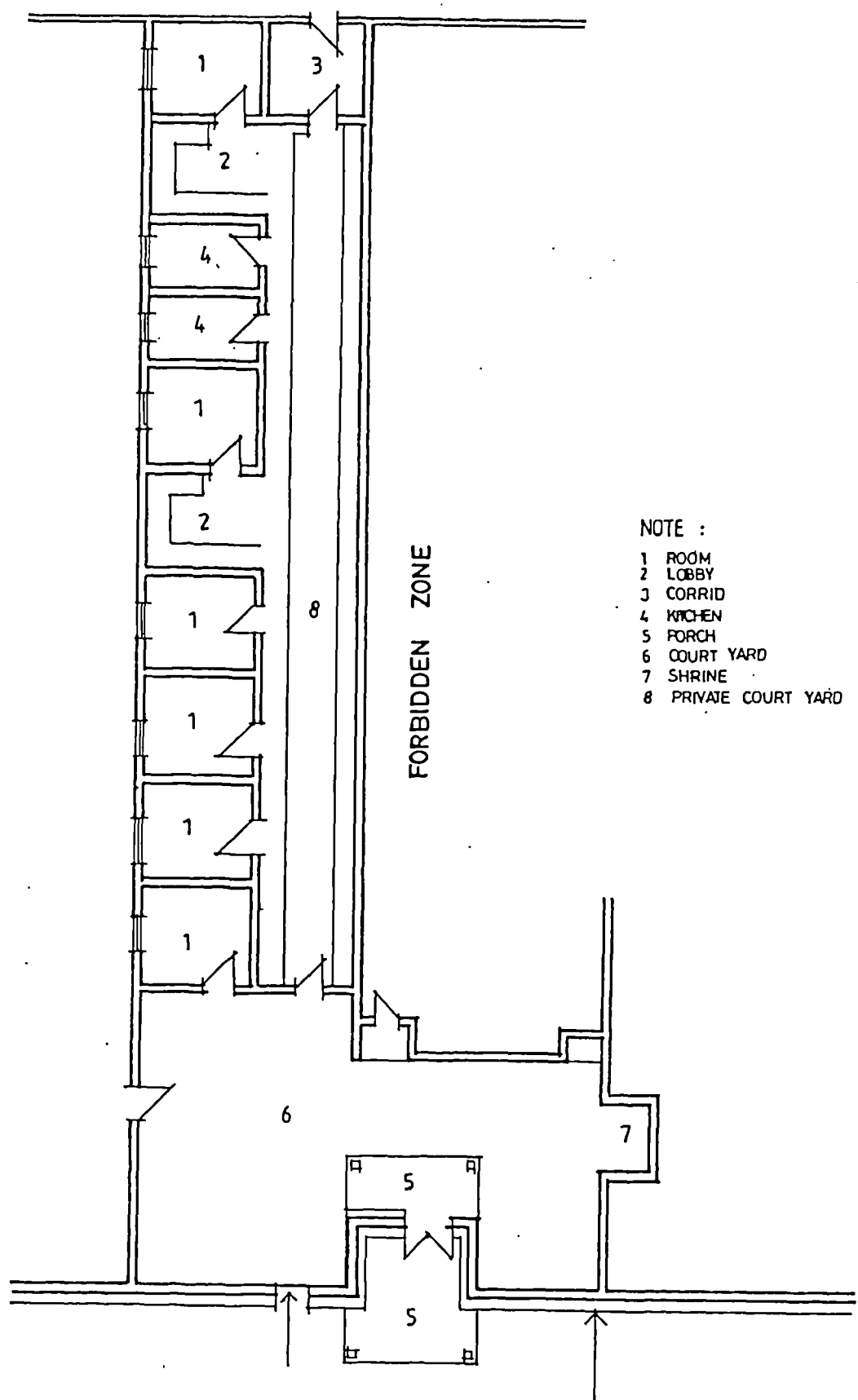
Figure 1.4a   Ground Plan Ogiamien Palace.

FRONT ELEVATION
SCALE 1:200

LEFT SIDE ELEVATION
SCALE 1:200
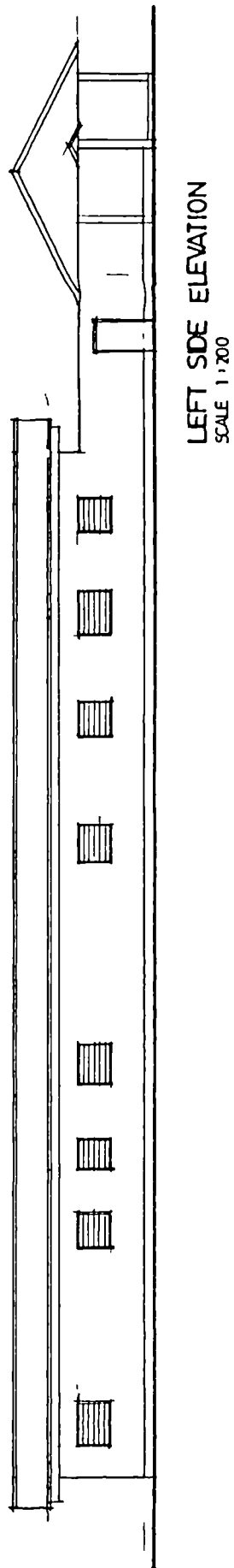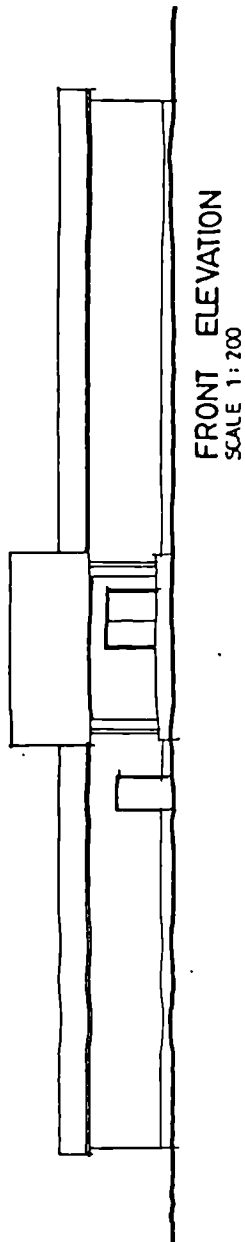
Figure 1.4a (contd)

households interviewed in case study II have very large family sizes as traces of their traditional traits still exist within the area.

It is, therefore, not surprising that Benin City was one of the most prosperous and best organised cities south of the Sahara when it was first visited by the Europeans in 1845 and 1846 (Adams, 1923). By this time the city was divided into internally self-governed wards, each occupied by members of the specific guilds who were directed by titled chiefs. The principal buildings in Benin City then contained a rectangular impluvia or sunken courtyard, open to the sky, some of which have survived up to the present date. The roofs of the most important buildings were wood shingled. Walls were constructed of mud but embellished with surface designs in relief. Entrances to the Royal palaces were adorned with designs of large snakes and birds (Adams, 1923). The palace compounds was a city within a city, consisting of workshops, warehouses, bedchambers, halls and shrines.

The colonial impact on Benin City was immense, as it affected not only the administration but also the city plan and land use pattern which was remarkably altered. After the conquest of Benin in 1897, the Ogbe quarters: the core of the oba's home or palace and those of his dependents, were reorganized. A completely new residential area, referred to as Reservation Area and now called Government Reservation Area (G.R.A.), emerged. This new residential area (G.R.A.) was a well laid out area of about 30 sq.m. The layout is in a grid iron pattern with well dimensioned streets for vehicular transportation and easy circulation. These changes affected the spatial form as well as the entire socio-economic environment of the city. This could be described as a period of decadence as these changes were rather negative (Sada, 1975, Ikhuoria, 1984).

However, with the creation of Bendel State (formerly Midwest State) in 1963 and the choice of Benin as the state capital, the city acquired a new lease of life. It became a focal point for inter-state marketing activities between the villages and towns in the local

government areas. As a seat of administration and a pivot of economic, commercial and

social activities in Bendel State, the economic and demographic growth of the city became

rapid. Other factors which have greatly attributed to this growth include the massive

improvement in social services, especially between 1967-1975, when Ogbemudia was the

Military Governor of the state for the greater part of that period. During this period, all

the major streets, for example, Mission Road, Akpakpava, etc., were widened, the plaza

was converted into a central business district, and Bendel Line (the state owned

transportation company) which provided easy mobility within and without the state, was

established.

Another contributing factor for the rapid growth economically, demographically, and

spatially, is the role the city played as an economic and interstate nodal point between the

North, West and Eastern states. Also the oil depot and refinery, the steel mill, fishery

facilities and the sea port at Warri, Sapele and Okoko have all contributed to the growth

of Benin City especially as it is also the gateway for air and land communications as well

as the flow of goods between the West and East.

1.3.1.1   Population and Areal Growth of Benin City

Between 1786 and 1800, the first population of Benin City was put at 15,000 (Roth, 1972).

The British expedition of 1897 as well as the influenza of 1918 resulted in a large out-

migration and this caused a remarkable decline in the population size. Immediately after

this period, peace was restored. Medical facilities were improved. Benin City became the

primate city of Bendel State through its function as a centre of economic, social and

political activities. There was a noticeable disparity between the city and rural

environments particularly in the distribution of social, educational and infrastructural

facilities. Thus, economic opportunities were unilaterally located in Benin City and this

resulted in the influx of migrants to the city (Makinwa, 1981). The population growth of

Benin became very rapid; it almost doubled within inter-censal decade 1952/53-1963 when the figures rose from 53,753 to 100,694 (Nigeria Census). The annual growth rate within this period was 5.5 per cent. By 1972, the population of Benin was estimated at 201,000 (Doxiadas Associates, 1972) and by 1976 it rose to an estimated figure of 314,219 (Sada, 1976). These estimates indicated that there was an 8.5 per cent growth rate between 1963 and 1976. And by 1980, the population estimate had gone up to 425,000 (Omorogiuwa, 1982). The rate of change in the population growth of Benin is clearly shown on table 1.4. It is, however, important to mention that this rapid population growth of Benin City is largely attributed to in-migration.

As the population size continued to increase from year to year so did the areal expansion of the city which greatly affected the pattern of land use. Olfer Dapper, (1968, as cited in Roth, 1972) first described the areal size of Benin to be "about five or six miles (Dutch miles) in circumference...and...has thirty very straight, broad streets, each about 120ft wide". From these accounts and available maps and records, Benin has an area of about 384.2 hectares enclosed in the first wall built before the 15th century. As the population grew rapidly, there was simultaneously a highly significant increase in the built-up area of Benin City between 1938 when it was 486 hectares, to 1972 when it increased to 3000 hectares. By 1979, the total built-up area had reached 7,413.7 hectares (or 6091.2, excluding vacant but already incorporated land within the city) (fig. 1.5). While these expansions were taking place, in-filling of the existing built-up area was also taking place.

According to Ikhuoria (1984), a quite remarkable feature about Benin City is that there is a significant correlation between the areal growth and population growth (fig. 1.6). By 1972 when the population rose to 201,000, the built-up area of the city had simultaneously increased to 3000 hectares. By 1979, when the population rose to 371,432, the areal growth had reached 7413.7 hectares (fig. 1.7 and table 1.4). The 1979 figure represents about 10.3 per cent annual rise in land consumption which correlates with 8.6 per cent

Table 1.4 Population/Areal Growth of Benin City 1800-1979.

YEAR	POPULATION	AREA IN HECHARES
1800	1500	384.2
1938	-	486.0
1952	53,753	949.5
1963	100,694	2217.6
1972	201,000	3000.0
1976	314,219	-
1979	371,432	7413.0

Source: Ikhuoria, 1984.

Fig. 1.5   BENIN CITY: Historical Growth Patterns

Ikhuoria, 1983

a. (1938)

Built-up area / Moat / Village

Uselu
Uzebu
Idumwun Owina
Uhunmwun Idumwun
G. R. A.
Idumwun Ivbioto
Ikpoba River

2 km   Source: Min. of Lands & Housing, Benin City.

b. (1952)

Built-up area / Moat / Village

Ikpoba
Idumwun Owina
Uhunwun Idumwun
Government Reservation Area (G R A)
Idunwun Ivbioto
Ikpoba River

2 km   Source: Onokerhoraye, (1977c)

c. (1972)

Built-up area / Moat / Village

Uselu
Ikpoba
G. R. A.
Ugbeku
Ikpoba River

2 km   Source: Ministry of Lands and Housing, Benin City, 1972

d. (1982)

Built-up area / Moat / Village

Ugbowo
Ogida
Uselu
Ihinmwin
G. R. A.
Ugbeku
Ikpoba River

2 km   Source: Ikhuoria, 1981, up-dated in the field 1982.

Note: There is evidence indicating the 1972 map was a reduced un-updated compilation from a 1966 edition
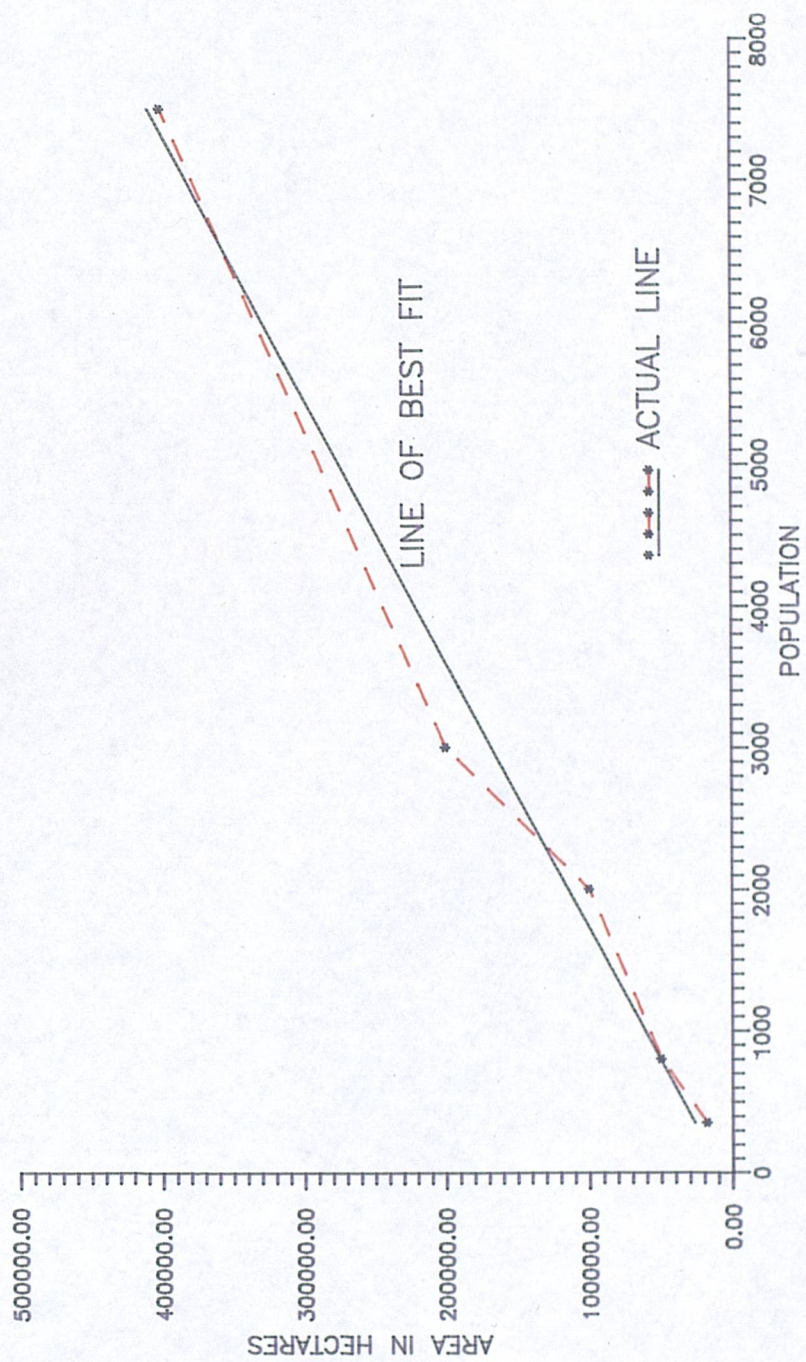
FIG.1.6. CORRELATION OF AREA/POPULATION GROWTH IN BENIN CITY
1800 — 1979.

Pre-1982 Benin City and Environs

Source: Federal Surveys, 1978

Note the Villages which have been swallowed by urban growth by 1983.

Figure 1.7

annual population growth rate for the same period. Although no data exists for 1982-1990, experience shows that this trend of growth in both demographical and land expansion has not really changed. Indeed, the population growth was estimated at 1,017,100 by 1989 (Federal Office of Statistics, Lagos, 1989).

This correlation between the population growth and the areal growth indicates a very heavy demand on urban and rural land in terms of great pressure exacted on superstructure and infrastructural services as well as on agricultural lands respectively. As relates to urban lands, the problem of housing shortage became apparent while at the same time the extension of services to all the areas newly occupied became a problem. There was an increase in the room occupancy rate and more substandard houses were occupied around the core of the city. On the other hand, those areas that have remained in low density had slow extension of community services such as water and electricity and in some cases were completely neglected. All this created serious health, sanitation and environmental quality problems, although the most acute of all these is the housing shortage.

1.4   THE MAIN PROBLEM AREAS IN RELATION TO LOW INCOME HOUSING IN BENIN CITY

a)   The housing problem in Benin City has been created by a combination of complex factors which are difficult to assess accurately. Often both quantity and quality are involved and are used as scales for measuring the living environment. Because the qualitative assessment of housing is difficult to pursue in a study of this nature, it is the intention of the researcher to concentrate on the quatitative problem of housing . which is of paramount importance in the urban context. However, the housing needs and supply and the inbalance within the housing

market system equally constitutes a major problen in low income housing provision in Benin City.

b)   Another basic problem which is very obvious in Benin City in the provision of housing is the complex issues of urban development such as the population structure and composition as well as the socio-economic system in which housing exists. These factors affect the housing environment, the housing standards, and the housing affordability; while the Peoples' preferences as against government provision equally affect affordability and the target population.

c)   Affordability is fundamental and of special importance to housing provision and creates another dimension in the housing problem as it affects the entire concept of standards as well as the provision rate. As in most developing countries, affordability is the core to the problem of low income housing provision. This becomes more apparent when the cost of house building is related to the average income of the users (Karn, 1973 as cited in Onyeacholem, 1979). It is, therefore, essential to relate affordability to the standard of houses provided by the government for the low income households. Ironically, the question of affordability and the target population has received very little consideration in government housing projects for the low income groups in the past.

d)   However, since housing and its related facilities act as vital elements in determining standards of living and as they are also an integral part of the socio-economic development process, their role in and importance to human existence cannot be over-emphasized. Consequently, it is essential that the imbalance in the market mechanism should be studied in depth. The role played by the government in the housing market mechanism, both directly and indirectly through intervention, should be equally studied and analysed especially in a fast-growing

city such as Benin. Through such analyses, the role and impact of government intervention in the provision of low income housing and the housing market performance in general will be assessed. Also, this type of investigation will enable us to understand peoples' preferences and their affordability as well as the role the people themselves are playing and are willing to play for subsequent programmes. With such a review of the housing market mechanism and a thorough understanding of the target population and their level of affordability, more desirable, affordable and realistic housing policies and programmes might be proposed or formulated. It is, therefore, on these premises that this study is based.

1.5 GOAL

The goal of this study, therefore, is to investigate the housing market mechanism, evaluate the current housing policies and survey the low income housing problems and provisions with a view to suggesting appropriate policy formulation and implementation for improving low income housing supply in Benin City.

1.5.1 Objectives

The objectives are as follows:

(a) To investigate Government's intervention in the housing market and its role in the provision of low income housing.

(b) To establish the level of housing affordable by the low income households.

(c) To evaluate the existing housing policies in order to determine the most appropriate policy that would deliver housing which would be affordable by the low income households.

1.6   **HYPOTHESES**

(a)   The basic hypothesis of this study is that inappropriate housing policies are the major cause of Benin's inability to provide shelter for the low income households.

(b)   The second hypothesis is that, since housing demand is a function of affordability, i.e. household income, price of housing, price of all other goods, etc., low income households have no effective demand for the housing which is being provided under the current policies.

1.7   **SCOPE AND LIMITATION**

Housing and its provision covers a wide range of the entire housing package; from land policy, housing finance, planning and design, construction, occupancy, and management on the one hand, and its provision, which involves the complex issues of the housing market, both by private and public sectors and the actual delivery system, on the other. All these issues are equally essential when discussing housing development. In a study of this nature, however, it is an impossible task to tackle all the areas mentioned above. Consequently, the central concern of the study will be twofold:

(a)   Firstly, to attempt to investigate the role of Government as a regulator of the Market,

(b)   Secondly, to examine the Government's role in providing housing for the low income and the latter's ability to afford them. Although, affordability calculations could be based on two types of income:

(i)   Cash Income,

(ii)   Income In Kind;

The affordability calculations in this research are strictly based on cash income only.

Empirical studies are carried out on a Government-owned low-income housing estate and on a private sector development located at the core of the city, with a view to studying the target population especially as related to affordability, level of facilities and amenities accessible to them, and the Government's level of achievement in providing housing for the low income groups. The core in this study denotes the central area of Benin City where the indigenes concentrate and where deteriorated and substandard houses are most common. It should be mentioned here that because of incremental renovation which takes place in Benin from time to time, the core of the city is not a slum area as such, although there are patches of substandard and deteriorated houses. The central business district is also located at the core. In Nigeria, similar to most developing countries, the private sector operates at two levels. One is the formal and the other one the informal sector. All the low income groups operates at the informal sector level. Therefore, in the Benin situation, private sector housing does not exist as such. What exists is individuals who develop housing at a small scale level for renting either as an absentee landlord or a landlord occupying a part of the same building while renting the remaining parts. Thus, for the rest of the study, the popular sector which equates with the description above would be used in place of the private sector. Through these studies, the housing need of and demand by the low income groups might be   determined using certain economic demand models. It is hoped that in conducting this kind of study, there may emerge a new direction in housing policy strategies and formulations which could lead to more realistic housing policies and programme identification.

1.8   ORGANIZATION OF THE STUDY

This study, has been organized into 3 sections. Section I - Introduction and the Review of Literature. This section is comprised of 4 chapters. Chapter I is made up of the introductory part which sets out the problems, objectives, hypotheses, scope and limitations. Chapters 2 and 3 consist of the review of existing housing conditions both in

the public and popular sectors; while chapter 4 carries an in depth theoretical framework as regards the research techniques and sets out basic methodology. Section 2 - The Case Studies: This comprises of chapters 5 and 6 which deals with the details of public and popular sector study areas respectively. Section 3 - Analysis, Synthesis and Recommendations. This section is comprised of 3 chapters viz: in chapter 7, a multiple regression model based on hedonic techniques developed on the grounds of the hypotheses is used to analyse the housing market mechanism in Benin City, while chapter 8 then uses the present value model to evaluate in depth the various policy options being operated in Benin City and also assesses the level of affordability by the target population using the same technique. The study is summarized and concluded with policy recommendations in chapter 9.

CHAPTER 2

REVIEW AND ASSESSMENT OF BENDEL STATE LOW
INCOME HOUSING

2.1 INTRODUCTION

The magnitude of the acute housing problem which exists in Benin City cannot be ascertained until the role of the government in the provision of low income housing in particular is examined and until a general review of the housing conditions in Benin City is carried out. The present chapter is an attempt to investigate and evaluate in detail the role played by the government, both at Federal and State levels, in housing provision for the low income households. The aim of the investigation is to determine the magnitude of the housing shortage in Benin City by assessing the actual level of the Governments's achievement. Also, through this investigation and evaluation process, it will be possible to highlight reasons for failures, if indeed the government has failed in its policy of conventional housing for the low income households. Before going into a detailed investigation and evaluation exercise, it is necessary to review the National Development Plans and the Housing Policies as they currently exist in Nigeria in order to have a clear insight of the system as it relates to housing provision in Benin City.

2.1.1 National Development Plans and Housing Policy

In Nigeria, the Federal as well as the State Governments have been concerned about the poor housing situation in the urban centres (especially for the low income households) and as such have made various efforts towards solving the problem. It is perhaps worthy of mention here that this awareness did not actually receive adequate attention until the 1975-80 National Development Plan - The Third National Development Plan. For instance, in the first National Development Plan, 1962-1968, no direct reference or allocation was made to housing. Housing was tackled under Town and Country Planning. The housing problem in the Federation was equated to the problem of housing in Metropolitan Lagos. There was, therefore, a lack of adequate definition of housing problems in the National context and this led to a gross under-estimation of the required

need. The 24,000 housing units proposed at that time were supposed to cater for the need of the entire population and this was distributed thus: 60 per cent for the low income groups, 30 per cent for middle income groups and 10 per cent for upper income groups. On the whole, a total of £14 million was spent by the Town and Country Planning Department. Subsidies were not granted and housing was completely neglected although the policy could perhaps claim to have emphasized the reduction in the cost of shelter indirectly through land lease and sales of houses; neither of which is accessible to the low income groups.

In the Second National Development Plan, 1970-74, housing was still treated under Town and Country Planning which had a total expenditure of about 1.3 per cent (or 19 million Naira[1]) of the public capital expenditure. Perhaps the civil war had accorded housing a better recognition and, in 1972, a sum of 160 million Naira was allocated for over 5,000 housing units for the Federal Government. It was also proposed that 4,000 housing units should be constructed in each state.

In the Third National Development Plan, 1975-1980, the need for effective housing policy had started to filter through, and, for the first time, housing was considered under a separate sector. During this Plan Period, the Government launched a vigorous housing development programme; and increased the allocation to 1500 million Naira for 50,000 housing units for middle and low income households. In other words, in the 1975-1980 Development Plan, special concern for the low income groups was explicitly stated thus:

> "The Government now accepts it as part of its social responsibility
> to participate actively in the provision of housing for all income
> groups and will, therefore, intervene on a large scale in this sector
> during the Plan period. The aim is to achieve a significant increase
> in supply and bring relief especially to the low income groups who
> are the worst affected by the current acute shortage. It is the

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[1]   During the 1962-1968 Plan Period Nigeria was using the British Pound Sterling.
By the 1970-74 Plan Period the monetary system was changed from Pound Sterling
to Naira. Thus for the rest of this thesis Naira shall be used. During this period
N1.00 was equivalent to £1.00.

objective of the policy to employ a combination of measures to achieve within the next decade a housing situation in which the average urban worker would not be required to pay more than 20 per cent of his monthly income in rent. The measures include direct construction of housing units by both the Federal and State Governments for letting at subsidized rates, increased construction of quarters for government officials and an expansion of credit facilities to enhance private housing construction" (Third National Development Plan, 1975-1980, p.32).

With the advent of politicians in 1979-83, this target was further increased to 202,000 units and 80,000 units proposed for each state. Although these plans seemed over-ambitious and the performance rate was extremely low due to lack of a clear-cut, well-defined and articulate housing policy, it does indicate the Government's awareness of the housing shortage and deliberate efforts made towards a solution. However, since the Military administration (1983 to date) the emphasis has completely changed. There has been a gradual shift from direct construction to other methods of housing provision, the policy of which has not been officially adopted.

2.1.2   Housing Policy in Bendel State

Bendel as a state did not have a separate housing policy. Whatever existed was a derivation from the National Housing policy and programmes, if such ever existed at all. From 1963, when the Bendel State was created up to 1968, the policy on housing was patterned along that of the Western Nigeria Housing Corporation whose policy, in turn, followed strictly from the National Housing Guideline, mainly restricted to the provision of housing for the upper and middle income groups. By 1968, housing policy was extended to low income groups. In an attempt to increase the housing stock in Bendel State, especially for the low income groups, the Bendel Development and Planning Authority (otherwise referred to as BDPA) was set up by the then Midwestern State by Edict no. 3 of 1969 (BDPA Law Cap. 16). The Authority was then charged with systematic and co-ordinated planning, improvement and development of the state including other functions as set out under sections of the principal Law. By the provision of the Edict No. 11 of

1979, the Authority became known as Bendel Development and Property Authority charged with the following functions:

(a)   The operation of the public officer's housing scheme.

(b)   The operation of mortgage loans and savings scheme.

(c)   The construction and management of shops, public and private buildings.

(d)   The operation, purchase, and maintenance of block moulding and allied industries.

(e)   The acquisition, construction and maintenance of dwelling units, offices, educational, commercial, and industrial buildings.

Although the housing policy was extended to the low income groups in 1968 and the B.D.P.A. was established as the main state organ for housing provision in 1969, not much was done in the area of low income housing provision by the Bendel State Government until 1972 when a few low income dwelling units (216 units) were developed at Effurun near Warri. Following the housing policy, therefore, the State Government in 1972 also proposed the construction of 1,000 dwelling units to be limited to the Administrative Headquarters. By 1975, when the Federal Government increased the number of dwelling units being proposed, the Bendel State Government also increased her target number to 4000 units. We shall see later in this chapter how successfully this gigantic Government Policy and programme of direct construction of housing for the low income groups has turned out.

2.2   THE SCHEME (1973-1988)

In fulfillment of the 1972 policy, the Bendel State Government, under the directive of the Federal Government, in 1973 planned and awarded contracts for phase I for Benin City Low Income Housing Estate at Ikpoba Hill - popularly known as Federal Low Cost

Housing Estate Ikpoba Hill[2]. There are a total of 250 dwelling units in the estate; and 16 other layouts at the local government headquarters totalling 633 dwellings awarded for construction as well. Still in keeping with the same policy, 948 dwelling units were proposed in 1976 but for financial reasons only 232 units were actually awarded in 1977, some of which are still not completed to date. Figure 2.1 presents the layout of the estate. The number of plots or buildings in the layout are clearly shown in table 2.1.

From table 2.1, it can be seen that only Phase I of the Benin City low income estate (for the low income households) Ikopba Hill has been properly completed and occupied. Although Ekpoma and Afuze are equally completed and occupied the use has been radically changed from the low income groups occupying it to University and College of Education Staff. Abudu, Sapele and Ughelli are partially occupied illegally. The occupation is described as illegal because the buildings were not properly allocated to people. Instead, people mainly moved in and provided as much of the missing infrastructure as they could afford.

Among the estates inhabited, Benin, Ekpoma and Afuze had electricity and water supply, Sapele and Ughelli had electricity only and Abudu had no electricity or water, and, like all the other estates, had neither paved roads nor drains. The rest, such as Agbor, Asaba, Auchi, Igarra, Iguobazuwa, Kwale, Ogweshi-Uku, Oleh, Orerokpe, Ubiaja and Warri were never completed and have not been occupied. Although the award of contract for the buildings took place and the contractors started, most of the buildings were not completed, and even the few that were completed had no infrastructure to make their habitation possible.

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[2] This is because it was a Federal Government planned Housing project for the low income households throughout the Federation but to be executed by the State Governments.

Table 2.1: Number of Plots or Buildings in Various Locations within Bendel State Low Income Housing Estates.

Serial Number	Location	Number of Units	Remarks
1	Benin City (a) Phase I (b) Phase II	250 948	Completed by 1977 (occupied). Proposed in 1976 but reduced to only 232 awarded in 1977. 224 completed while 8 units (flats) in one block are still at DPC level.
2	Abudu	32	No units yet to be completed.
3	Afuze	70	Completed and occupied by College of Physical Education, Afuze.
4	Agbor	76	21 units destroyed by fire. Extensive looting of fittings.
5	Asaba	10	None completed.
6	Auchi	55	19 units uncompleted, 15 razed by fire.
7	Ekpoma	15	All completed. Occupied by Bendel State University Staff, Ekpoma.
8	Igarra	75	39 not completed.
9	Iguobazuwa	28	Not completed.
10	Kwale	50	43 destroyed by fire. Fittings and fixtures not burnt were stolen. 3 units at DPC level.
11	Ogwashi-Uku	43	42 units razed by fire. Fittings and fixtures not burnt were stolen.
12	Oleh	10	Unoccupied. Electrical and sanitary fittings, louvre blades and jambs and door furniture stolen.
13	Orerokpe	20	20 completed but fittings removed by unknown persons.
14	Sapele	49	Completed - no infrastructure. Partly occupied illegally.
15	Ubiaja	30	None completed.
16	Ughelli	60	53 occupied illegally. No infrastructure.
17	Warri	10	Not completed.

Source: Field Survey, 1988.

38
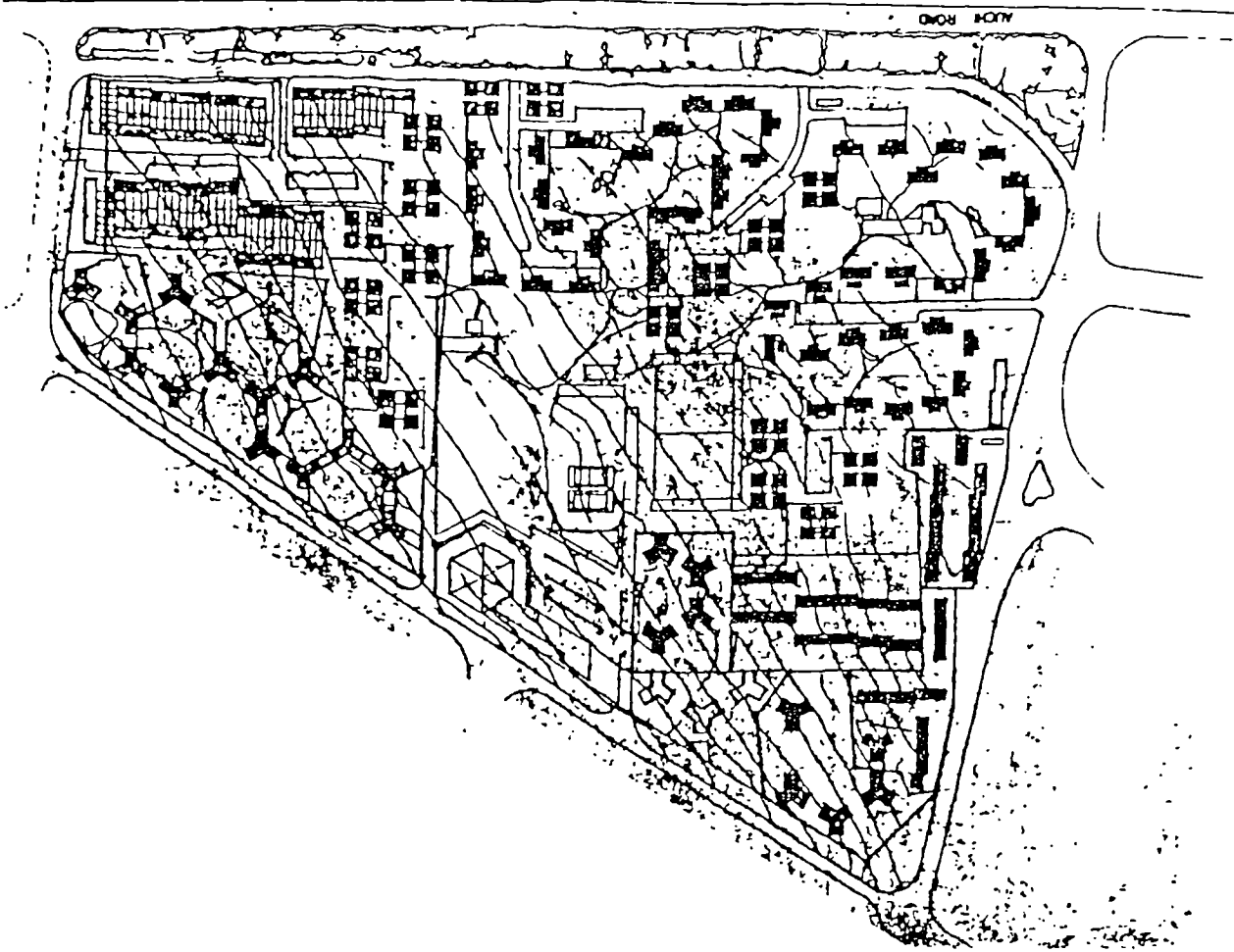
PROJECT
FIRST PHASE FEDERAL
LOW COST HOUSING
ESTATE
SITE KPOBA HILL BENIN CITY
DESCRIPTION OF DWG
SITE PLAN
DRAWN
SCALE 1:2500
DATE
DA-MEN KONSULT
ARCHITECTS & PLANNERS
6 IKPOBA CLOSE
P O BOX 4244
BENIN CITY
TEL 240820
DWG NO

AUCHI ROAD

Figure 2.1   Federal Low Cost Housing Estate.

Two significant incidents are associated with the estates that are not inhabited, viz.

      (a)   fire,

      (b)   theft.

Agbor, Auchi, Kwale and Ogwashi-Uku were razed by fire; while Oleh, Orerokpe, Ogwashi-Uku, Agbor and Kwale had all the fittings removed from the completed houses and houses nearing completion. These unfortunate incidents took place because these estates were totally abandoned. The reason for their abandonment we shall see later in this chapter.

2.2.1   Evaluation of Each Estate

To thoroughly understand the problems associated with this scheme, it is essential to examine briefly each location.

2.2.1.1   Benin City - Ikpoba Hill

Phase I of the low cost housing scheme started in 1973, and thus happened to be the only location that has been successfully completed and occupied. Electricity and water supply were extended to the estate while roads were opened but not tarred as yet. Other facilities such as social amenities, churches, schools and play areas for children were not built even though space was allocated for these purposes in the layout plan (fig. 2.1). However, it is important to note that the houses constructed for this phase have been completed and properly allocated to the occupants.

Unlike Phase I, Phase II of the Ikpoba Hill Federal Low Cost Housing Estate, though side by side with the first phase, still has not been completed. Out of the initial target of 948 units only 232 units amounting to 22 blocks were awarded for construction in 1977 and to date, 8 flats are still at D.P.C. level. The house types, which are equally different from

phase I, are comprised of terrace maisonette/block buildings containing 4, 8, 12, 16 and 20 units of two bedroom flats each (table 2.2). The blocks completed were only serviced with water and electricity supply in 1987. Meanwhile, the Nigerian police and the Former Nigerian security organization are occupying 7 blocks containing 88 flats. At the moment, there are 15 blocks containing 140 flats plus 4 flats in Block L not occupied by the police bringing the total number of flats for disposal to 144. Nevertheless, some of these flats are being illegally occupied.

Some of these buildings are totally completed and are either partially or fully occupied, while others though roofed are in various finishing stages. Some of the completed ones have had their roofs blown off by wind or their electrical and sanitary fittings including the louvre blades and jambs removed by thieves.

Each unit of accommodation has 1 or 2 bedroom(s), toilet and bathroom on the ground floor and the kitchen, stores, sitting/dining room located on the ground floor as well (fig. 2.2). For the completed blocks not yet allocated, discussions in respect of which category of people and amount to pay are still going on between Ministry of Works and Housing and Bendel Development and Property Authority. No one can actually say when the allocation would take place.

2.2.1.2   Iguobazuwa

This particular estate has turned into a thick bush. There isn't even a single access road discernable and electricity and water supply are totally absent. The absence of tenants and thus the abandonment has encouraged the nearby villagers to turn the estate land into farm land. The buildings are in a general state of disrepair. Some of them are completely burnt down while the electrical and plumbing fittings have been totally looted. In most buildings even the doors, louvres and window frames have also been stolen. As

Table 2.2: **Showing the Blocks and the Corresponding Flats**

	Blocks	Number of Flats
	N & P	4
	H, I, M, O, Q, R & S	8
	J, K, L, U, V, W, X & Y	12
	D & E	16
	F & G	20
Total	22	232

Source: Field Survey, 1988.
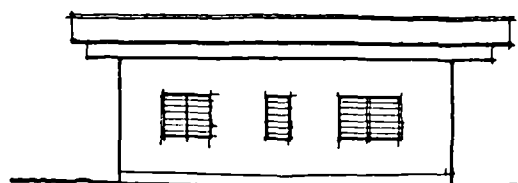
RIGHT SIDE ELEVATION
SCALE 1:200

LEFT SIDE ELEVATION
SCALE 1:200
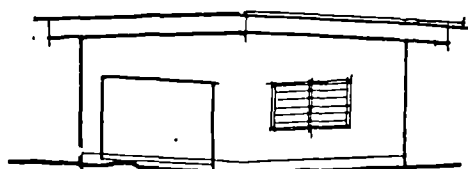
FRONT ELEVATION
SCALE 1:200
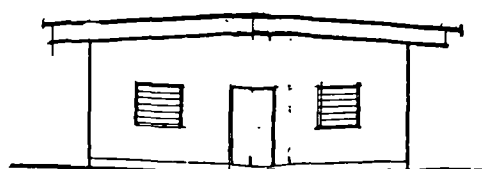
BACK ELEVATION
SCALE 1:200

GROUND FLOOR PLAN
SCALE 1:200
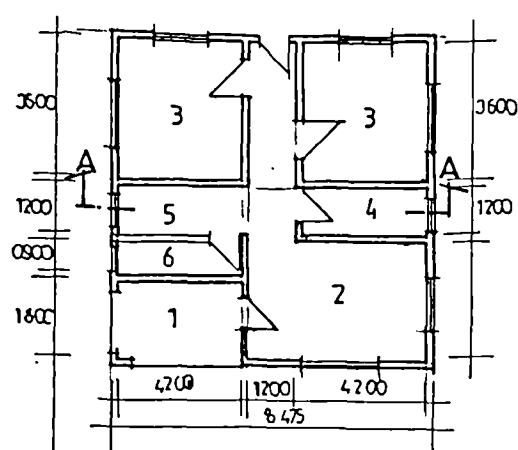
SHOWER   KITCHEN

SECTION A
SCALE 1:200
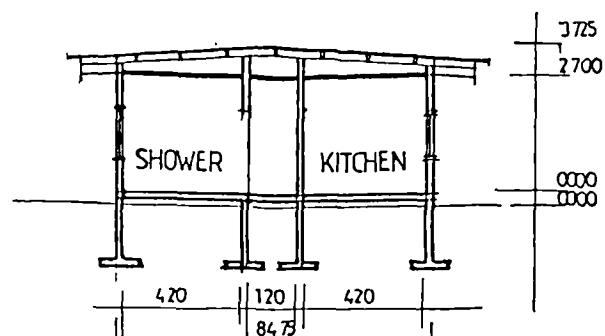
NOTE :
1 TERRACE
2 LIVING AREA
3 BED ROOM
4 KITCHEN
5 SHOWER
6 SQUAT

FIGURE : 2.2   BENDEL STATE LOW - COST - HOUSING
SOURCE : Field Survey

shown on table 2.1, there are 28 flats or units in this estate and all of them require repairs and rehabilitation, if they are still to be used as residential units. The financial implication is enormous. From a recent costing carried out, a total sum of N407,520 (1988 prices[3]) with a breakdown as follows is required to actually rehabilitate this estate:

(a)   cost of repairs and rehabilitation of the buildings - N206,400

(b)   cost of providing infrastructure

       (i)   water   -   N21,600

       (ii)   electricity   -   N38,400

       (iii)   roads   -   N80,640

       (iv)   drains   -   N60,480

                         Total   -   N407,520

Throughout this study N represents Naira (the Nigerian currency).

The financial burden created by the abandonment of these estates for over 10 years without completing them will not be fully appreciated unless one examines the value of the property. For instance, there are two house types in this estate viz:- Types B_1 and B_2. The value of type B_1 is N22,880, while that of type B_2 is N23,400 (1988 prices). Approximate amount of rent to be paid if rented out at the moment is

       (i)   Type B_1 -   N72.92 per month

       (ii)   Type B_2 -   N75.00 per month

The Iguobazuwa case analysed above is not unique (table 2.3). All the other locations that were either totally abandoned or partially occupied have similar problems in terms of physical structure of the buildings, the general environmental conditions, lack of infrastructure and financial involvements. In fact, some locations, particularly those larger in size and thus having more buildings, have definitely greater financial involvements. Examples of such locations are Igarra, Ubiaja and Ogwashi-Uku. From the Iguobazuwa situation discussed above, it is very obvious that any organization, Government or Private, faced with this sort of problem is definitely in a dilemma. Should

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[3]   By 1988, the exchange rate was N5.00 to £1.00.

TABLE 2.3 SUMMARY OF SITUATION REPORTS

#	TERMS OF REFERENCE			Iguobazuwa	Abudu	Ubiaja	Ekpoma	Afuze	Igarra	Auchi	Asaba	Ogwashi-uku	Agbor	Sapele	Overo-kpe	Kwale	Oshi	Ughelli	Warri	TOTAL	REMARKS
																					LOCATIONS
1	Number of houses in each location			28	32	30	15	70	75	55	10	43	76	49	20	50	10	60	10	633	
2	Number of houses that require rehabilitation/repairs and renovation			28	32	30	1	66	75	55	10	43	76	41	20	50	10	42	10	589	
3	Cost of such rehabilitation N(thousand)			172.00	207.80	227.00	0.850	224.10	475.70	352.50	72.00	339.90	571.80	107.00	135.40	395.10	61.60	107.90	102.00	3549.65	
4	Number of houses vacant/occupied			All/Nil	23/9	All/Nil	All/Nil	14/56	All/Nil	All/Nil	All/Nil	All/Nil	All/Nil	15/34	All/Nil	All/Nil	All/Nil	7/53	All/Nil	481/152	
5	Cost of providing infrastructure: N(thousand)		Light	32.70	19.30	33.50	Nil	Nil	52.40	58.50	16.30	42.50	56.40	Nil	25.20	40.80	33.60	Nil	18.40	429.60	
			Water	18.204	14.209	24.042	Nil	Nil	49.501	48.755	18.667	32.867	53.39	33.92	23.515	45.536	22.636	60.631	20.161	457.337	
			Roads	67.20	50.40	210.00	67.20	126.00	159.60	193.20	33.60	126.00	210.00	119.60	55.20	136.40	55.20	230.00	55.20	1914.80	
			Drains	50.40	37.80	157.50	50.40	94.50	119.70	175.14	25.20	94.50	157.50	81.90	37.80	107.10	37.80	157.50	37.80	1422.540	
6	Value of each type of property: N(thousand)	Type A		16.20																	
		Type B1		19.00																Existing amount paid as rent	
		Type B2		19.50																	
7	Appropriate amount of rent to be paid (per month) N(thousand)	Allocated houses	Type A	N62.50																	In compliance with a tenancy agreement
			Type B1	N72.92																	
			Type B2	N75.00																	

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the estates be completely abandoned and forgotten or what should be done? This becomes a more acute problem when the amount of money required to revitalize these estates is not commensurate with the value of the buildings. In the meantime, housing shortages, especially for the low income households, has continued to be on the increase. Perhaps, a positive option would be for Government to provide basic infrastructure and allocate the dwelling units to the people in their present physical state of disrepair.

A question which readily comes to mind at this juncture is: Why were these estates abandoned for a period of more than 10 years? In order to adequately answer this question it may be necessary to first of all examine certain fundamental factors which pose great constraints on housing development and housing construction. These factors include:

(a)   Land tenure system,

(b)   building codes and standards,

(c)   building design and house types,

(d)   building materials,

(e)   buildings techniques and construction methods,

(f)   finance and

(g)   implementation strategy.

2.3   HOUSING COMPONENTS AND THEIR CONSTRAINTS

Housing development is comprised of various components and constraints enumerated above. Each of the components acts in one way or the other to either increase or reduce the cost of housing depending on how they are operated. To fully understand the impact of these housing components, it is essential to examine them individually.

2.3.1   Land Tenure System

Land tenure is the bundle of rights capable of being exercised by an owner or occupier of land. Such rights vary in form and content from place to place. In Bendel State of Nigeria, the land tenure system could be said to be predominantly customary with variations in tenure imposed on the major tenurial system due to the importation of foreign ideas and cultures (James, 1973). As a result of the influence of the British Tenurial system, especially on the Southern States of Nigeria, the following tenurial system can be identified in Bendel State prior to 1978, when the Land Use Decree came into effect.

    (i)   Customary Tenure

    (ii)   Freehold Tenure

    (iii)   Other inferior Tenures such as:

        (a)   Pledge

        (b)   Kola Tenancy and Showing Tenancy.

The details of these various tenure systems and the problems they have encountered are not within the scope of this study.

However, prior to the Land Use Decree of 1978, availability of land for housing development was based on the land tenure system of the area concerned, i.e. on one of the types listed above depending on the area. Thus, in Benin City there was a system of communal ownership (customary) which was administered by wards that are responsible to the Oba of Benin for approval of any land allocation recommended by them. In Warri and Sapele there were in existence the Communal Land Trustees set up by Government and family holdings. Applications were made to these bodies for allocation of land for development. In the other towns in Bendel State land ownership was either by the community or the family from whom individual developers applied for allocation, subject to the land tenure system of the area. No doubt these various land tenure systems have

resulted in the prohibitive cost of land, especially with the present trend of rapid urbanization.

Since the Land Use Decree of 1978, all land in the state is now vested in the State Governor for the benefit of all Bendelites in particular and Nigerians in general. Under the Land Use Decree, application by individuals and organisations are made in the first instance to the Land Use and Allocation Committee who considers them and makes its recommendation to the Military Governor. Allocations are made on the approval of the Governor only, where approved layouts exist. In the case of a Housing Authority such as BDPA or a large organisation requiring large parcels of land for housing development, it involves the revocation of rights of occupancy existing in the area affected and the vesting of the land in the authority after the completion of all the formalities of acquisition; while the individuals are allocated land in Government layouts.

However, since the Land Use Decree of 1978, the acquisition of land for housing has not been an easy task. Under the Public Land Acquisition Laws, compensation was payable for land acquired by Governments for both the land and any structures or crops on the land. Even though this was the case, it is pertinent to state that in Bendel State both the Federal and State Governments are owing the sum of about N50,000,000 (fifty million Naira) for compensation on acquired lands for public purposes. Consequently, the people have now become hostile to any acquisition notices published by Government, more especially when acquisition involves the taking of land from one and allocating it to another for development. Secondly, the acquisition of certain parcels of land regarded by the owners as 'sacred and stool land' is not easily accepted by the people.

The Land Use Decree seems to have worsened the situation by its provision that compensation will only be paid for the improvements on land. In other words, where land is acquired and has not got any structures nor economic crops, no

compensation is payable. This situation does not seem to have helped in the acquisition of land for development, particularly when a parcel of land in the urban areas is very expensive. It is, therefore, not surprising that some of the low income housing estates are remotely located. Even those located within the cities end up with very high costs of constructing the houses especially when the prohibitive cost of land is included. Since the Land Use Decree is creating more problems than it is solving, especially in the acquisition of land for housing developments, it may be necessary to review the Decree to enable Government to obtain peaceful possession of the acquired land. Under the Land Use Decree, it is envisaged that any application for allocation of land should be handled by Government by allocating land to people from the existing layouts.

Nonetheless, this has not been the case as the Government has only 5 layouts in the State (between 1979 and 1988) since the Land Use Decree (Ministry of Lands & Surveys, Benin City, 1988). The major constraints is lack of funds to acquire and prepare the necessary layouts. The outcome of this situation is that people have engaged in illegal dealings on land and back-dating such transactions to give it legal backing. The Land Use Decree did not specify any time period for people to hand in their unregistered conveyance and other title documents in exchange of Certificate of Occupancy from Government. As a matter of fact, it is not compulsory for any one to obtain a Certificate of Occupancy under the Decree.

2.3.2   Building Codes and Standards

These are bye-laws and regulations posed by the Town Planning Authorities all over Nigeria in order to regulate the quality and standard of housing and the environment. Unfortunately, these standards and codes are often inordinately high and thus make housing prohibitively expensive. Moreover, they cover a wide range of areas in relation to housing. For instance, density control regulations are set in order to provide for

adequate spaces in houses and adequate areas around buildings for outdoor use -

recreation and other domestic uses.

> "Vertical density controls or building height controls are aimed at ensuring safety through ensuring adequate structural stability for such buildings..." (Okpala, 1978, p. 252).

These density controls include housing density per hectare, building plot coverage and

floor area per room or per person.

2.3.2.1 Housing Density Per Hectare

In Nigeria, where much of the standards are derived from Britain, the public authorities

(Housing Corporations, Housing Authorities and Town Planning Departments) tend to

emphasize low density residential developments. As Okpala (1978, p.253) rightly pointed

out,

> "emphasis on excessively low densities in the face of the increasing urbanization of the population simply means that huge areas of land and huge amounts of other resources are being consumed in a very uneconomic and anti-social manner."

2.3.2.2 Building Plot Coverage

This also tends to inhibit the production of dwelling units in Nigeria. For instance, plot

coverage is usually set at 50 percent in high density areas and 45 percent for low density

areas in Bendel State, while in some states the approved building coverage is as low as

30 per cent. Thus, Nigerian Building and Planning regulations generally stipulate that

> "no person shall build or erect any dwelling house, so that the area covered by the building together with that of all out-houses appertaining thereof shall exceed one half of the total area of the site." (Bendel State Building Bye-law, 1969, p.5).

In terms of this regulation for a high density plot of 15m x 30m or (50' x 100'), the

permitted number of rooms would be eight as it has to maintain a 50 percent coverage.

Whereas the number of rooms could be about 11 to 12 if the coverage is increased to 70

percent. In Kenya for instance, where plots in sites and services are only 7 x 20m, coverage is 75 percent to allow for 8 rooms (United Nations, 1983; Syagga, 1989).

2.3.2.3.   Floor Area Per Room or Per Person

The stipulated standard regarding floor area per room or per person is that

> "no living room in any building shall have less than one hundred and twenty square feet of floor area, an average height of less than nine feet, and width of less than eight feet" (Bendel State Building Bye-law, 1969, p.10).

The Planning Authority will not approve any building with less than 11.5 sq.m. (120 sq. ft.). The required maximum number of persons per habitable room is one person in low density developments and at most two persons per room in the highest density areas. These standards appear unrealistic because, as we shall see in chapter 3, the average number of persons in one room in Benin City is 3.2. Again in comparison with Kenya, where the minimum room area is 100 ft^2 for a maximum of 2.5 persons, the Bendel State standards are fairly high.

The Bendel State Government, therefore, attempted to develop the estate discussed above in accordance with the guidelines of the building codes, regulations and standards and this made the buildings more expensive than earlier anticipated which has caused financial problems. Table 2.4 presents the details of the standard specifications for the public housing and other buildings not exceeding one storey.

2.3.3   Building Layout, Design and House Type

The Bendel State low income houses, otherwise known as the Federal low cost houses were built according to the standards discussed in the preceding paragraphs. The layout of these housing estates was generally controlled by health or building regulations framed to provide sufficient light and air for health (fig. 2.1) (Atkinson, 1961). Consequently, the

Table 2.4: Standard Specifications for Public Housing or Buildings not exceeding One Story

TYPE OF DWELLING	FOUNDATION	WALL STRUCTURE	ROOF STRUCTURE
Low Income	Standard Strip concrete foundation	Solid sandcrete blocks below DPC level. Hollow sandcrete blocks to superstructure	Lightweight super seven asbestos roof covering on timber frame
Medium Income	"	"	"
High Income	"	"	"

FINISHES

TYPE OF HOUSING	CEILING	WALLS	FLOORS
Low Income	Flat asbestos ceiling panels and one coat priming and two coats emulsion paint	12 mm rendering both internal and external. One coat priming and two coats emulsion paint	12 mm screeded bed
Medium Income	Flat asbestos ceiling panels and one coat priming and two coats emulsion paint	"	Ditto plus 6 mm asbestos based PVC tiles
High Income	Flat asbestos ceiling panels and one coat	12 mm rendering both internal and external	12 mm screeded bed plus 6 mm asbestos based PVC tiles

BATHROOMS, TOILETS AND KITCHENS

TYPE OF HOUSING	CEILING	WALLS	FLOORS
Low Income	Flat asbestos ceiling ceiling panels painted or 12 mm rendered soffit	12 mm rendering both internal and external. plus 1 coat priming and 2 coats gloss paint. For kitchen and bathroom an additional provision of tiles on splash back to sink is recommended	37 mm thick screeded bed finish on concrete slab
Medium Income	"	1.8 m wall tiling and gloss paint to rendering walls above	18 mm screeded bed with 18 mm terrazo finish
High Income	"	"	"

SERVICES

TYPE OF DWELLING	SERVICES	GENERAL
Low Income	Electrical surface wiring Plumbing - water bourne system Drainage - septic tank and soakaway pits located in individual houses	Naco louvre windows with gloss and asbestos blades. Timber flush doors
Medium Income	Electrical- conduit wiring Plumbing - water bourne system Drainage - as above	"
High Income	"	"

Source: BDPA

Note: The standards stated above are virtually the same as in Shitta-Bey (1988) for L.S.D.P.C. This is not surprising as Bendel State used to be in the same region as Lagos State and also L.S.D.P.C. was the first housing corporation in Nigeria.

design, especially for the block of flats, tends to be too rigid. There is not enough flexibility although there is a great deal of consideration regarding density. There are three different house types:

(a)   the detached house or bungalow, mainly the 2 bedroom type. These are more flexible as more rooms could be added as the occupants' finances improve and the family increases. They normally have 2 bedrooms, a sitting/dining room, a toilet, a kitchen and a bathroom (fig. 2.2, p.42).

(b)   the second house type is the semi-detached which also occurs as 2 bedroom flats.

(c)   the third type is the block of flats "storey" buildings with 4 to 16 flats as the case may be. They contain 1, 2 and in very few cases, 3 bedroom flats. The plans of these blocks of flats are really very rigid and have no room for extension of any type. There is also the problem of land allocation which is not always easy, especially for those on the 2nd floor. The occupants always feel detached from the ground and their surroundings because it is not in accordance with the traditional Nigerian housing system.

The design specifications for the materials are shown on table 2.5.

Although these design standards described above are according to the specifications discussed on table 2.4, they appear rather rigidly high and expensive, especially with the high import content of the materials, so that implementation posed many problems both on the part of the Government and the contractors.

Table 2.5: Design specification

Area	Material Specification
Foundation	Standard strip, concrete foundation.
Walls	The buildings are constructed of vibrated standcrete block walls, well plastered, rendered and painted internally and externally (for those buildings completed).
Roofs	Gable roofing, covered with asbestos roofing sheets over a good framework of timber carcassing.
Ceilings	Asbestos ceiling boards.
Floor	Sandcrete finishing.
Doors	Wooden flush doors.
Windows	Adjustable louvre blades set in narco frames.
Staircase	For the block of flats, an internal staircase provides access from the ground floor to the first floor.
Services	Water and electricity are already provided to the estate at Ikpoba Hill. For Phase I this has already been extended to the block of flats. Not all the blocks of flats in Phase II has electricity and water extension.

Source: Field Survey, 1988.

2.3.4   Building Materials

The complex problem of building materials in a way contributes greatly to the problem of housing production in Benin City. Not only are the cost of building materials prohibitive, also the kind of materials specified by the Planning Authorities through the building codes and regulations are not easy to obtain. For instance, in Benin City thatch and mud are cheap and easy to obtain but they are not acceptable for roofing and walling respectively.

About 70 per cent of the materials used for construction are imported. Such materials include cement blocks, corrugated iron sheets, galvanized pipes, electrical materials, etc. This, in fact, corresponds directly with Okpala's (1983) findings in which he discovered that about 70 percent of materials used for construction of housing in urban centres in Nigeria are imported. Consequently, the high cost of housing (even in government housing projects) is accounted for by the very high import content of building materials.

It is, therefore, not unlikely that the high cost of imported building materials as well as difficulties in obtaining these materials immediately after the civil war when there was very high demand for them, have contributed to some of the reasons why the constructions were abandoned. Nonetheless, it is essential to mention here that the high import content of building materials is not unique to Nigeria. While in Ghana import content of building materials is 70 per cent (Republic of Ghana, GLSS, 1989), in Kenya, which is relatively better than most African countries, import content for Umoja II project in Nairobi (4600 units) was found to be 34 per cent. Even though the proportion is higher for high cost buildings, the Kenyan situation appears to be very much under control (Republic of Kenya - Development Plan, 1989 - 1993).

As indicated on tables 2.6 and 2.7, the prices of the building materials appear very high and the rate of increase is equally alarming. There is, therefore, an absolute need to seek for such building materials that would make housing affordable by the low income households.

2.3.5 Building Methods and Techniques

As a low income scheme, a number of measures were adopted in order to reduce the cost of the building. But, unfortunately, the Bendel State Government did not apply the kind of techniques used by Lagos State Government in order to achieve a significant success. Thus, in Bendel State, about 50 per cent of the dwellings are still not completed to date. As in Lagos State (LSDPC), the Bendel State Government (Ministry of Works and Housing) had a fixed contract sum to avoid unnecessary claims by the contractors and variations were only accommodated on certain issues, for example unexpected increase in the cost of cement within three months of the commencement of the contract. Unlike the Lagos State (LSDPC) types of contract, the Bendel State had only one type of contract. Registered contractors with the State Ministry of Works and Housing whose tenders were successful were awarded 1-5 buildings/blocks depending on the contractor's category of registration (the contractors are categorized from A-E, depending on contractor's experience and ability to undertake works). Thirdly, and also unlike Lagos State, Bendel had a mobilization fee amounting to 30 per cent of the total contract sum paid to the contractors as down payment on the signing of the contract agreement. There is no wonder, therefore, that many of the contractors abandoned their projects even at DPC levels after obtaining such large sums of money.

Finally, similar to the Lagos State, Bendel State did not use external consultants. All designs, costing, site preparation and supervision were carried out by both the Ministry of Works and Housing and the Bendel Development and Property Authority was involved

Table 2.6:   **Trends in the Prices of Building Materials in
Nigeria 1974-1985.**

ITEM	UNIT PRICES IN NAIRA				Percentage Change Between
	1974	1979	1984	1985	1974-1985
Sand	15.0	18.0	25.0	30.0	100.0
Gravel	35.0	55.0	147.5	145.0	314.0*
Cement	63.0	100.0	206.25	190.0	201.5*
Iron rods	225.0	333.0	649.0	900.0	300.0*
Louvre blades	0.95	1.3	5.50	5.0	426.0
Water closet	40.0	52.5	147.5	150.0	275.0
Concrete blocks	0.6	0.6	0.85	1.15	91.6
Galvanized corrugated iron sheet	24.0	32.5	122.5	140.0	483.3

Source: Poju Onibokun et al. - Urban Housing in Nigeria, 1986

* Although these Figures appear not to be correct, they were written
in this way from source.

Table 2.7   Price of Some Selected Building Materials in 1989 and February, 1991.

S/No.	Items	Unit Price in Naira		
		1989(June)(a)	1991(Feb)(b)	% Change
1	Sand (sharp sand per tippper load)	150	260	73
2.	Gravel (granite gravel per tipper load)	750	850	13
3.	Cement (per 50 kg. bag)	45	52	15.50
4.	Iron rods (mild steel per tonne ¼ diameter 447 pieces)	6,200	6,200	-
5.	Louvre blades (2' length per piece)	8	8.50	6
6.	Louvre jambs (8 blade per pair)	50	70	40
7.	Water closet			
	a) locally made-kano complete set	230	740	94
	b) imported complete set	850	1300	53
8.	Concrete blocks	3.5	4.0	14
9.	Galvanized corrugated iron sheet (bundle of 20 sheets)	620	540*	-13

Source: (a) Field Survey, 1990.
(b) The Guardian's monthly building material review (Feb 1991)

* The only building material with reduced price.

with the scheme after the contracts had been awarded; mainly to help with the supervision. In connection with this issue, the Lagos State Government acted differently, as LSDPC - the State Housing Corporation was involved with the project from the planning to the execution stages. Shitta-Bey (1988), in a similar study found that this is one of the reasons why the Lagos State low income project similar to that of Bendel State was a huge success. The outright contracting method adopted by Bendel State Government actually backfired as many of the contractors, particularly after collecting the mobilization fee, abandoned their sites at the slightest inflation or fluctuations in prices of building materials. Another loop-hole inherent with the Bendel State method and technique is that it was absolutely unwise to award up to 5 blocks or buildings to a small contractor with very low credit rating, e.g. a borrowing capacity of perhaps only N30,000 (about £20,000 by 1973). Equally attributable and a fundamental problem to the Bendel State unsuccessful project is the fact that two organizations - Ministry of Works and Housing and Bendel Development and Property Authority (the State Housing Corporation) - were handling the same project. For instance, the B.D.P.A. staff were responsible for the supervision, job evaluation and thus the issuance of payment certificates. But the actual payment was being made by the Ministry of Works and Housing. In a dual system of this nature, the problem of delay created by bureaucracy and red tape between two large Government organisations was enormous. No doubt, this dual system equally made way for fraudulent activities of some unscrupulous officers and contractors as one officer in one organisation could easily pass blame to another officer in the other organization. In fact, one could safely conclude that one of the major reasons why the Bendel State low income housing scheme was a disaster is the poor administration of the contracts.

Arising from some of the factors in the preceding paragraphs,it is obvious that the 1973-88 Housing scheme in Bendel State was a failure because of the following:
a) Poor administration/management;
b) Contractors' greed;
c) Inappropriate building methods and techniques;
d) Lack of adequate funding.

2.4   FUNDING AND CASH FLOW PROBLEMS

In most housing schemes of this nature, finance is one of the most fundamental factors that make for its success or failure.   According to the Federal Housing Authority Guidelines,

"the Federal Military Government through the Federal Housing Authority shall be responsible for fully financing 4,000 dwelling units in each state. Payment shall be made by the Federal Housing Authority for both infrastructure and superstructure. The State programme consists of the remaining 4,000 dwelling units.   The Federal Government shall be responsible through the Federal Housing Authority for financing the infrastructure in the estates in which these houses shall be located. Each State Government shall finance the superstructure."

A few paragraphs after the above quotation it was stated that ...

"the State Government shall be responsible for the cost of perimeter survey and the cost of survey plan demarcating the area conveyed to and vested in the Federal Housing Authority. The State Government shall also pay for all cash crops and be responsible for the evacuation of the inhabitants of the area." (Federal Housing Authority - Guide Lines on the implementation of the National Housing Programme of the Federal Military Government, 1973, p. 56).

Although these statements seem to have clearly identified the Federal Government's financial role as well as that of the State, when it actually came to the question of implementation, the statements became mere words. This confirms the observations that

"there is always that wide gap between policy statement and implementation" (late Kenneth Onwudike, 1970 in one of his speeches as a Vice Chancellor of University of Benin)

cannot be more appropriate than in this situation.

First of all, there was inadequate assessment of what the State Governments could afford in terms of housing financing. Secondly, the Federal Government did not perform according to her pledge. The infrastructural services include roads, storm water drainage, electricity cables, water supply distribution, sewerage and sewage disposal, refuse disposal systems, telephone cables and street lightings. Except for the refuse disposal system, telephone cables and street lights, all the other services are supposed to be provided

before superstructure. But the Federal Government did not provide funds for these infrastructures. Neither was the State Government able to finance the 1st phase of the low income housing estates which was estimated to cost over 5 million Naira at 1973 costing and pricing. By today's pricing, the cost will be more than double the above figure. Consequently, the Government was not able to finance the Bendel State low income housing scheme. A cash flow problem was created as contractors waited for their payment for over 6-12 months to enable them to continue with the construction work.

To conclude, therefore, there were many factors responsible for the failure of the Bendel State low income housing provision of 1973. They ranged from inadequate design and house type, imported and expensive building materials, high standards and unnecessary adherence to building codes and bye-laws, poor construction methods, to lack of proper implementation strategy and inadequate funding arrangements. The fact that the policy was oversimplified and over-ambitious cannot be overemphasised. With all these problems, Government could not actually achieve much in the area of low income housing provision. This impression will become clearer in the next section when the figures of dwelling units constructed by the Government are shown.

2.5 THE TARGET POPULATION, ALLOCATION METHOD AND THE RENT COLLECTION SYSTEM

The terms of reference for the development of Federal Low Income Housing Estate, Ikpoba Hill is to provide such accommodation for the low income households for which they would not pay more than 20 percent of their monthly income. The effect of this statement was that the dwelling units developed at the Federal low income housing estate were very heavily subsidized for the low income households. Low income in this context refers to all households whose annual income ranges within salary grade levels 01 to 07 (N1500-N5000) or below the 30th percentile (Appendix 2.1). For the businessmen and women or the self-employed the same income level applied. Therefore, as far as the allocation of the

dwelling units at the Federal low income housing estate, Ikpoba Hill was concerned, no applicant outside the income level described above was eligible to apply. Whether this was actually implemented accordingly is another question. The main principle used for the allocation of the flats is a ballot system. Before the balloting took place, the Government as well as the applicants were meant to fulfill the following conditions and procedures:

First of all, the 250 units in the first phase of Ikpoba Hill were advertised in the newspapers to inform the public about the existence of such flats. This advert took place 12 months after the award of the contracts when most of the flats were supposed to be completed, although they were really not completed until 2-3 years later. Applicants who were within the income levels described above and who resided in Bendel State had to pay a non-refundable fee of N50.00 to obtain the forms. Completed forms were returned before the stipulated closing date. Since these units were going to be allocated to households on rental basis, no further deposit was demanded on the return of the completed form. Nevertheless the following documents were to be attached to the completed form:

(a)   Evidence of payment of the three years income tax which should be payable to the State Government, and evidence of which is in the form of a tax clearance certificate,

(b)   Evidence of employment and income level,

(c)   Evidence of state of origin,

After the ballot, the successful households were expected to pay N500 or N1000, depending on whether the allocation was for one bedroom or two bedroom flats as an indication of acceptance and this would eventually form a part of the rent. Unfortunately, some of the units were allocated when they were not completed and allottees had to wait

for years to actually take physical possession of their flats. In fact, most of the units were completed and occupied in 1977 even though the allocation took place in 1975.

It is, however, important to mention the drawbacks associated with the ballot system. For instance, the fact that a household is eligible and can afford these units is not a guarantee of allocation; time of request notwithstanding. Secondly, the method does not consider household size which is bound to have far reaching consequences in terms of individual space allocation. Thirdly, it is an odious task to prove the household income levels irrespective of the documents attached as possibilities of fraudulent, dishonest and corrupt practices cannot be ruled out.

Other systems such as 'first come, first served' principles were used by LSDPC in Lagos State but this method also has its disadvantages. Favoritism, tribalism and dishonesty are equally likely to distort the entire system in such a way that even the middle and upper income households could be allocated the flats. On the whole, it does appear that none of these methods are perfect and the success of any one method depends largely on the type of people executing it.

As these flats were allocated on rental basis, households did not have to go through the cumbersome process of down payment and seeking for mortgage loan for the full payment of the flats. However, the rental system is not without problems. In spite of the fact that an Assistant Estate Valuer was deployed to the estate mainly for the purposes of rent collection, there was a very high percentage of rent defaulters. Consequently, the Government was forced to change the rental policy in 1986 to owner occupier through mortgage. We shall see in chapter 5 the details of this new policy and how it has been functioning.

2.6   GOVERNMENT LEVEL OF ACHIEVEMENT

From the descriptions and analyses above, we have seen that Bendel State Government has actually contributed very little to the provision of low income housing. Although much effort seemed to have been made towards the provision of housing for the low income groups, it does appear from this study that very little impact has actually been made. This could easily be seen by summarizing the number of dwelling units constructed by the State Government between 1973 and 1988; and also by examining the success of the mortgage loan system. The story could easily be told when the figures derived from this summation is compared with the required need as stated in chapter 3 for the same period. Table 2.8 shows the total number of dwelling units constructed by the Bendel State Government through Ministry of Works and Housing and Bendel Development and Property Authority. While table 2.9 shows the total number of dwelling units constructed by Bendel Development and Property Authority as the main organ responsible for the Bendel State Housing provision or delivery system.

Out of a total housing stock of 902 units constructed by BDPA since inception, only 216 units or 23.9 percent are for the low income groups and these are not located in Benin City. Although the BDPA was set up by the Government, the same Government has directed that the BDPA has to be self-sustaining which means that apart from the initial grant allocated to the authority in the 70's, the establishment no longer receives grants and therefore has to be profit orientated like the private developer. Consequently, the few units that exist at Warri for the low income households as indicated above do not really go to the low income households as such. Only about 40 percent of the total low cost dwelling units are actually allocated to those households on salary grade level 07 and below. This is because most low income households cannot afford a down payment of N3,000 for a dwelling unit that is supposed to cost between N8,000 and 15,000 sale price as at 1986, depending on the house type.

Table 2.8   Number of Low Income Dwelling Units Constructed through Ministry of Works 1973 - 1988.

Location	Number of Dwelling Units Middle/High Income	Low Income	Total
Benin Phase (1)	-	250	250
Benin Phase (2)	-	224	224
Abudu	-	16	16
Afuze	-	70	70
Ekpoma	-	15	15
Igarra	-	36	36
Sapele	-	49	49
Ughelli	-	53	53
TOTAL		713	713

Source: Field Survey, 1991:
          (a)   BDPA Files
          (b)   Ministry of Works and Transport Files.

Table 2.9: **Number of Dwelling Units Constructed by Government Through B.D.P.A.**

ESTATE	LOCATION	Middle/ High Cost	Low Cost	Total
Oregbeni	Benin	112	-	112
Ugbowo	Benin	295	-	295
Ugborikoko	Warri/Effurun	188	216	404
Igbudu	Warri	40	-	40
Okwe	Asaba	51	-	51
TOTAL		686	216	902

NUMBER OF DWELLING UNITS

Source: Bendel Development & Property Authority, Benin, 1987.

In addition to the total number of dwellings constructed by government shown on tables 2.8 and 2.9, are 17 dwelling units for Judges and magistrates, 48 for doctors and para-medical staff and 250 for teachers. These were constructed as staff quarters most of which were actually inherited from the then Western region in various Government Reservation Areas located at the State capital and local Government headquarters. Otherwise, it is not the Bendel State Government policy to provide quarters for public servants. Hence the few mentioned above which exist are restricted to a few top Government functionaries and not for low income households.

As far as the low income households are concerned, therefore, the Government achieved about 17.8 per cent out of the target set at 4000 dwelling units constructed between 1973 and 1988. We shall see in chapter 3 that about 2,100 dwellings was the minimum number required annually to meet the housing shortage between 1975 and 1985. At the rate of constructing 1930 dwelling units in 15 years (1973-1988) which amounts to approximately 129 dwelling units a year or 6 per cent level of achievement by the government, obviously it is clear that direct construction by government as a policy is virtually always a myth rather than a reality. The situation is better described in Awotona's words

> "solving Nigeria's housing problems by just building more houses is not only an over-simplification of the central issue, but is also easier said than done" (Awotona, 1977, p. 101).

2.6.1 Mortgage Loans

Apart from direct construction of dwelling units, there is also a federal mortgage bank and the Bendel Development and Property Authority Mortgage Scheme which are two organs open to Bendelites to obtain loans to construct houses of their choice at 7 and 8 percent interest rates respectively (1988 figures). The requirements for eligibility include:

(i) Possession of a piece of land which must have Registered Deed of Conveyance, in the case of Freehold, a land certificate or a certificate of occupancy for leasehold.

(ii) Satisfactory evidence of income.

(iii) Satisfactory evidence of ability to make a down payment of 10 percent of the amount being requested or the cost of construction of the property being proposed.

(iv) Submission of approved building plan by the planning authority.

On the other hand, the mortgage conditions include:

(i) Loan grant must not be more than 90 percent of the cost of proposed construction subject to a limit of N65,000 for FBM and N40,000 for BDPA.

(ii) Amortisation period of not more than 20 years.

(iii) Interest rates of 9 and 8 percent respectively.

(iv) Mortgage repayment of 25 percent for owner occupier, and

(v) Mortgage loan insurance which may require collateral and security to back up the loan especially for non public servants.

To be eligible for a loan therefore a low income household intending to borrow N10,000 for a 2 bedroom house, for instance, is expected to have saved about N4000 approximately (Ozo, 1986). From this amount saved, he would acquire land, prepare a building plan and get it approved (the process of which is cumbersome and expensive), and make a down payment of 10 percent of the amount being requested. This amount which he has to save is about 2.7 times the average annual income of the low-income households in the public sector and up to 3.6 times the average annual income of the self-employed. With a current interest rate of 7 percent for instance, the monthly repayment (capital plus interest) on a mortgage loan of N10,000 is N90 for 15 years and N77 for 20 years. Even at 20 years, the monthly repayment constitutes about 51 per cent of the low income

worker's income for the public servants and up to 67 percent of the average earnings of the self-employed as against 20 per cent which Government has recommended that should be spent for housing or rent. Consequently, with the poor savings conditions of the low income households, and the lack of suitable collateral, the mortgage system as it is being operated in Nigeria is completely inaccessible to the low income households.

The following example serves to illustrate the above dilemma. Apart from the 97 cases inherited from the defunct Midwestern Housing Corporation, the Bendel Development and Property Authority has so far received 1863 mortgage loan applications between 1973 to 1988; out of which 695 have been duly processed and approved as follows:

B.D.P.A.'s Loan's Scheme	-	287
Staff Housing Scheme	-	408
Total	-	695

Total number approved for low income households is 20 for both cases which, in fact, is about 2.9 per cent of the total number of persons granted loans. Although the actual figures for the federal loan scheme are not available, from personal experience the total grant given to Bendelites is likely to be below 10 during the period under study. The reason for this low figure is that it is exceedingly cumbersome for even the high income group to get this Federal Mortgage loan at Enugu, which is about 250 kilometres away, acting as the zonal headquarters for Bendel State.

It goes without saying, therefore, that as far as low income housing provision is concerned, the Government both at the Federal and the State levels have failed in the operation of direct construction policy. What then will be the best approach? This we shall attempt to determine by studying the target group and actually finding out what

they really want and can afford. Before that, it is essential to examine the general housing conditions in Benin City, especially the private sector.

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CHAPTER 3

SOCIO-ECONOMIC CHARACTERISTICS AND HOUSING CONDITIONS IN BENIN CITY

In chapter I, a general overview of housing problems in Nigeria was briefly discussed; at the same time the goal and the main objectives were equally highlighted. Chapter 2 has an in-depth discussion of Government policy and its role in housing provision for the low income households. In this chapter, therefore, the population and demographic structure, the socio-economic situation and the existing general housing conditions are discussed as a clear understanding of these factors will contribute to a better understanding of Government role in the provision of housing for the low income group, the target population and their income range. Also these factors are quite important in the housing delivery system and therefore their effect cannot be underestimated in a study of this nature.

It is essential to mention here that most of the data used in this chapter is drawn from Sada (1984), Household Survey in Benin City, Federal Office of Statistics, Lagos/Benin as well as Omokhodion Associates (1981) Household Survey in Benin City. This Architect-Planning Consulting firm was commissioned to prepare a master plan for Benin City in 1981 and this prompted the survey.[1]

3.1   POPULATION AND DEMOGRAPHIC STRUCTURE

Benin City, which is predominantly a traditional city and dates back to the 12th century, has a large core of traditional population (this core is the centre of the city where the indigenous people concentrate). Although Benin has long been recognised as an urban centre, there was nothing unusual about the growth until 1963, when it became the state capital and assumed a new administrative role. This status brought in fundamental changes which are as a result of the urbanization process; and this has greatly affected the demographic structure, socio-economic system and the housing situation.

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[1]   The Master Plan has still not been completed to date.

3.1.1   Population in Benin City

Considering the fact that census reports available are obsolete and generally deficient in detailed demographic information; and in the absence of demographic records such as migration records, birth and death registers, a greater proportion of what is available on the population of Benin City, as in most Nigerian Cities, is based on estimates. Nonetheless, the available figures revealed that between 1952/53 to 1962/63, when Nigeria had her last reliable census, the population of Benin rose from 53,753 to 100,694. In the 1953-1963 inter-censal period the population figure had nearly doubled (1952, 1963 National Census). The annual growth rate at this time was 5.5 per cent. Since 1963, there has been an unprecedented influx of people from all parts of the state into Benin City at such an alarming rate that by 1976, the estimated population (based on 8.5 per cent annual growth rate) was about 314,000 (Sada, 1984). Perhaps it is noteworthy to mention at this point that, out of the 8.5 per cent annual growth rate, in-migration was estimated to account for 5.6 - 6.1 per cent (Nigeria, Office of Statistics, Benin, 1965, 1969). Using this in-migration rate, an estimate of about 1,100 annual transfer rate of population has been recorded for Benin City up to 1982. The population had been estimated at about 510,000 by 1982.

Significantly, the figure of 8.5 per cent annual growth rate indicates that Benin City has a relatively higher rate than most urban centres in Nigeria. The average annual growth of most Nigerian urban centres has been estimated at 5 per cent; and this ranges from 13 per cent for Lagos, 10 per cent for Port Harcourt, 9.6 per cent for Warri, 8.6 per cent for Kano, 6 per cent for Kaduna, 7.4 per cent for Onitsha to 4 per cent for Ibadan (table 3.1) (Federal Republic of Nigeria, Office of Statistics, 1965, 1969).

For purposes of projection and in order to arrive at a fairly reliable figure, population estimates by a number of demographic researchers are reviewed and the population trend in Benin since 1952/53 is shown on table 3.2 and fig. 3.1 and 3.1a (see appendix 3.1 for

Table 3.1   **Population Growth in Major Urban Areas**

	GROWTH RATE	CENSUS PROJECTION 1963	1970
Lagos	13.0	665,246	875,417
Port Harcourt	10.0	179,563	213,249
Kano	8.6	295,432	387,633
Kaduna	6.0	149,910	178,207
Benin City	8.5	100,694	192,883

Source: Federal Office of Statistics, Lagos, Nigeria

Table 3.2   **Population Trends in Benin City**

YEAR	POPULATION ESTIMATE	SOURCE
1952/53	53,753	National Census
1963	100,694	"
1966	160,000	Poulson & Prtners
1975	246,000	Doxiads
1976	314,219	Sada
1982	509,025	Omokhodion Associates
1992	1,098,947	Projections
2002	2,161,795	"

Source: Federal Office of Statistics, Lagos, Nigeria

$$P \cong 3.729 * 10^{-6} * EXP(0.0757*Y)$$
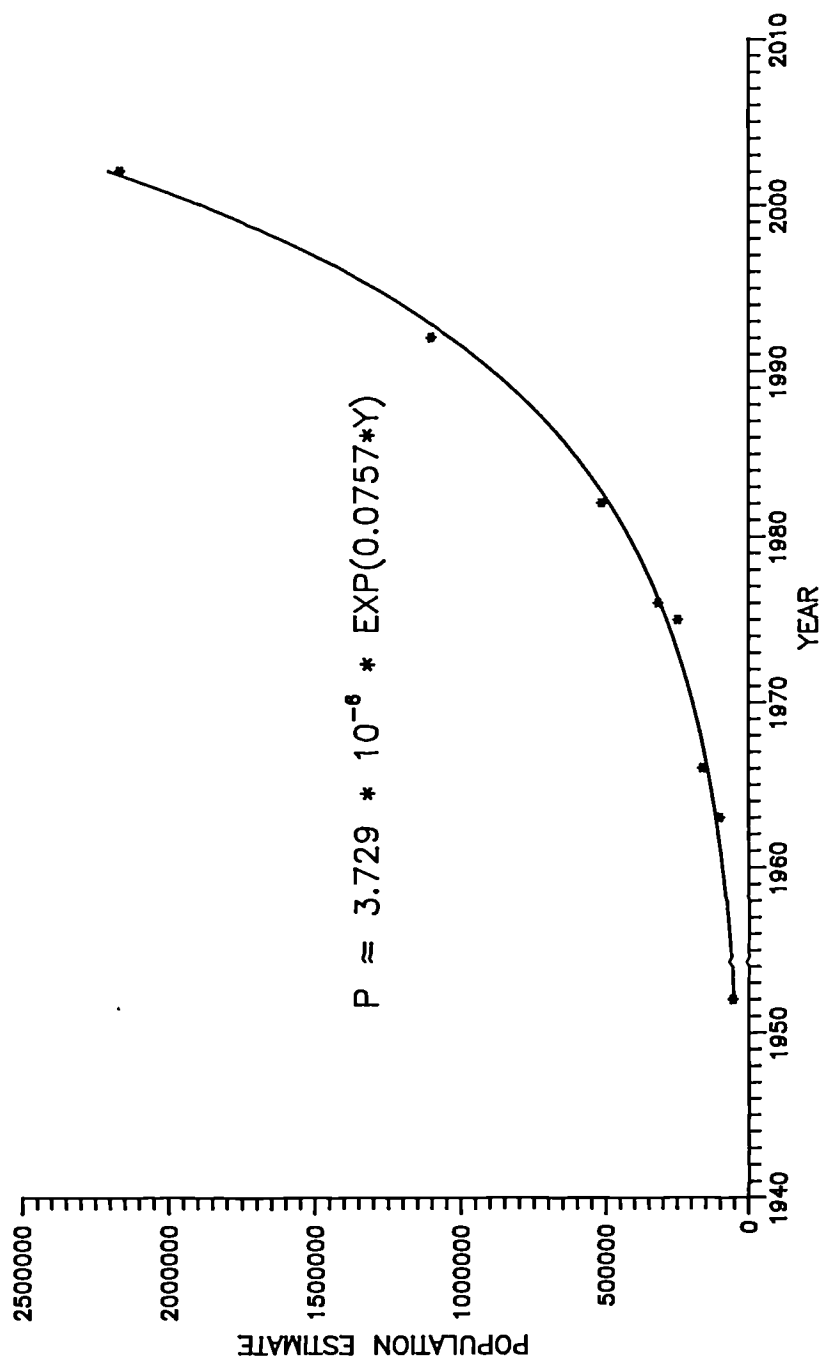
FIG.3.1. POPULATION TREND IN BENIN CITY.
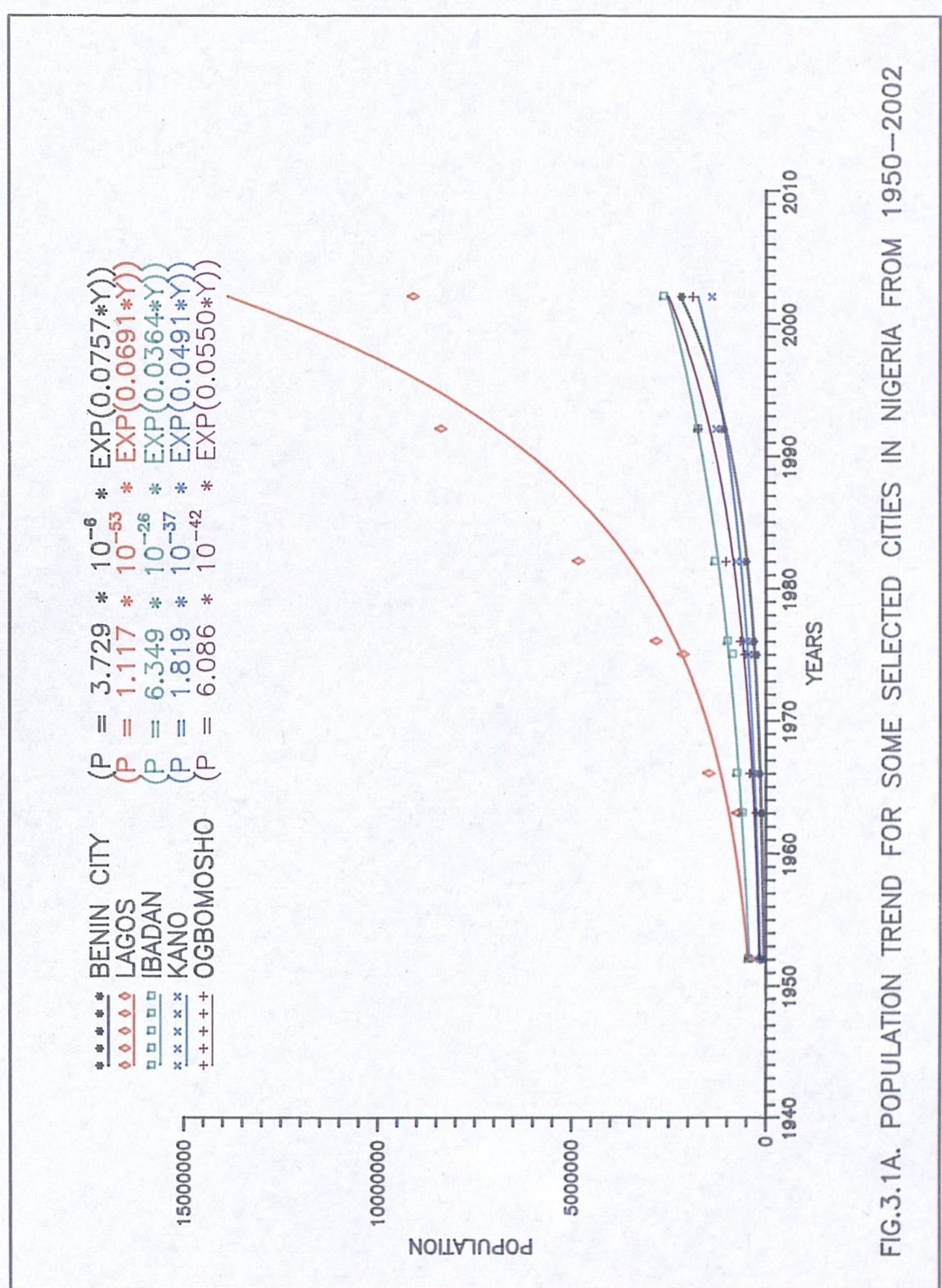
FIG.3.1A. POPULATION TREND FOR SOME SELECTED CITIES IN NIGERIA FROM 1950−2002

the base data used for the extrapolation). From this table, it is very obvious that there is a steady increase of population in Benin City. As already mentioned, this high rate of population growth is partly attributed to the high rate of in-migration which accounts for a large proportion of the growth. In other words, there is a steady increase of population especially due to population shifts from rural to urban areas with its attendant problems such as pressure on housing services, infrastructure and, of course, unemployment.

3.1.2   Age & Sex Structure

Females exceed males in Benin particularly in the age group range of 20-30 and 55-60. Females account for 51.1 per cent of the total population and males account for 48.9 per cent. In line with the general practice in Nigeria, the majority of females marry around the age of 20 and it is, perhaps, not unusual that many young girls come to join their husbands in the city. The fact that women out-number men in the age of 60 and above indicates a high female survival rate (Sada, 1984). Figure 3.2 illustrates the age-sex composition of the population in Benin City. The age structure reveals that 47.2 per cent of the population falls under the age of 15 years while only 48.4 per cent are within the economically active age group of 15-60 years (Appendix 3.2 and fig. 3.2).

3.1.3   Sex and Age of Household Head

The majority of the household heads are males. According to the household survey carried out by Sada (1984), 91.7 per cent of the households are headed by males while only 8.3 per cent are female. This situation appears remarkably different from that of Kumasi, Ghana where about 27 per cent of the households are single person households and as high as 30 per cent of all households were headed by females (Republic of Ghana,

Figure 3.2 Benin City Age/Sex Composition -1982
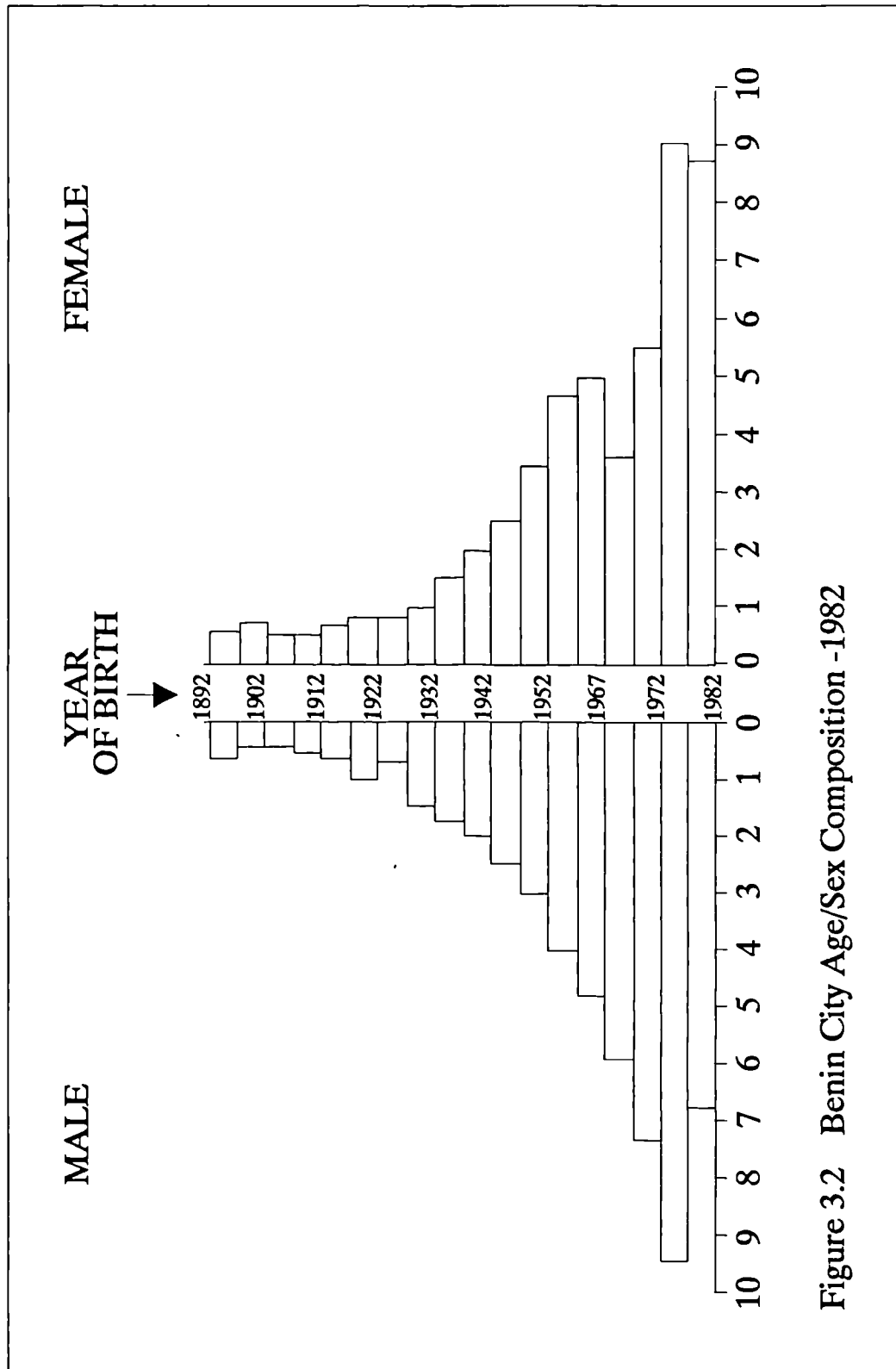
1970 Census). This is not surprising, however, as females rarely head households particularly among the people of Bendel State origin who incidentally form a majority of the population. A great proportion of the heads of female headed households are working class women. Only about 12.1 per cent of the heads of households are below the age of 25 years while about 63 per cent are between the ages of 25 and 45 (table 3.3. and fig. 3.3). The age bracket reflected here has perhaps confirmed the contention that most people return to their home towns on retirement.

3.1.4 Household Size

One of the most important variables vital for housing estimation and provision is the household size and its changing structure. The household in an African context is a complex entity which involves the general attitude to marriage, the economic effect of the on the phenomenon of dependents and, of course, the nuclear family. Each of these components of the household size has its own socio-economic implications and, therefore, the household size is a summation of the effect of the component elements. The above notwithstanding, household in the context of this study means a group of people who normally live together and share the same housekeeping arrangements.

There are a total of 70,500 households in Benin City and the average number of persons per household is 7.2 (Omokhordion Associates, 1981). The average size of household in Benin City is rather large compared with 6.85 for Warri, 4.50 for Kumasi, Ghana (Tipple, 1986), 4.5 for the world and 3.4 for the developed countries (United Nations, 1976, p.116). Even though all developing countries share in this characteristic of large household sizes, Benin's household size is significantly larger. For instance, all developing countries have an average size of 5.2, Africa 5.0 and Latin America 5.1 (table 3.4). The predominant traditional social systems in Benin City

Table 3.3   **Age of Household Head**

AGE	FREQUENCY PERCENTAGE
Under 20	.5
20 - 25	11.6
26 - 30	13.9
31 - 35	17.8
36 - 40	18.3
41 - 45	12.9
46 - 50	11.2
51 - 55	12.2

Source: Sada, 1984
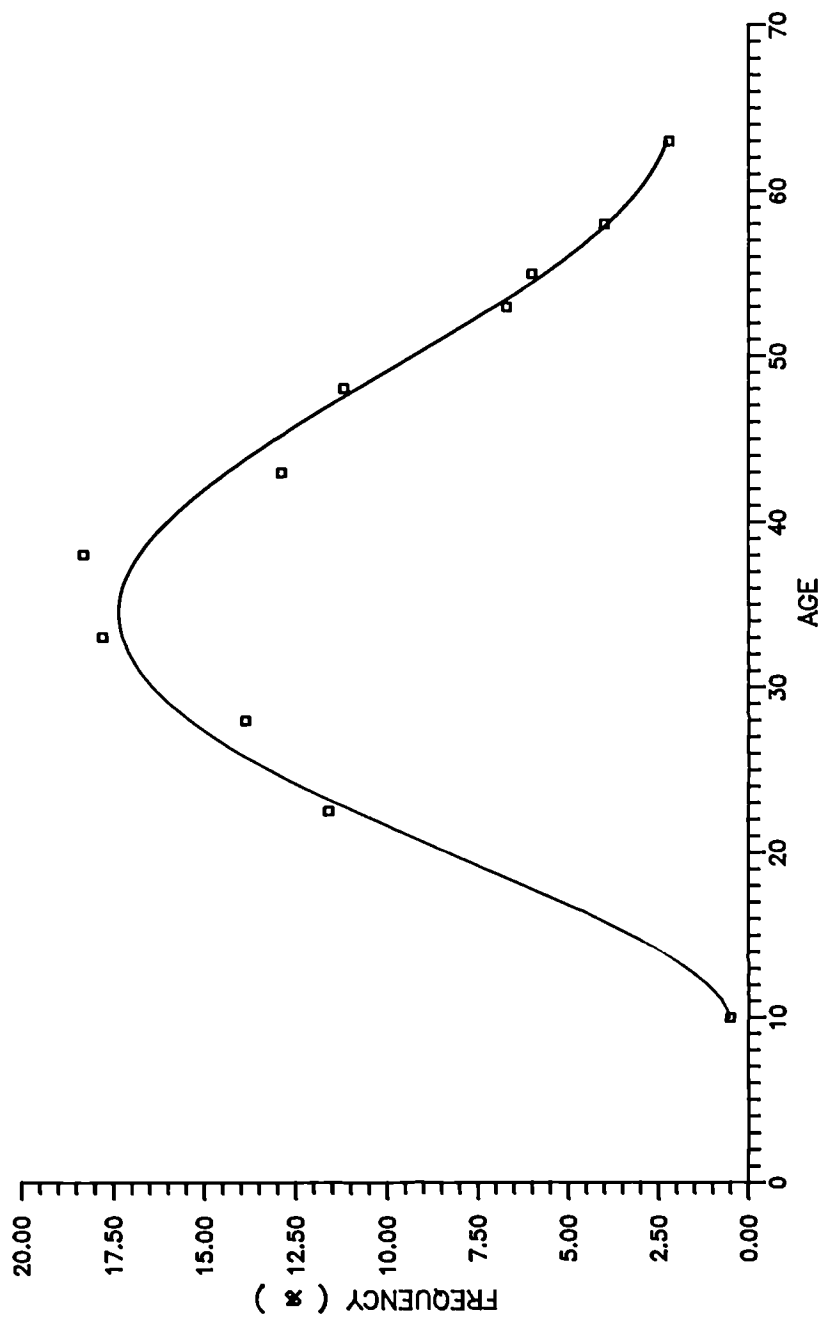
FIG.3.3 AGE FREQUENCY

Table 3.4   **Average Household Size for Selected Areas of the World.**

AREA	AVERAGE HOUSEHOLD SIZE	
Developed Countries	3.4	
The World Average	4.5	
Kumasi, Ghana	4.5	(b)
Africa	5.0	
Latin America	5.1	
Developing Countries	5.2	
Warri, Nigeria	6.9	
Benin City, Nigeria	7.2	(a)

Source: United Ntions, 1976

(a) Sada, 1984

(b) Tipple, 1986

give rise to many traditional families which have large extended family households in addition to having many wives and children. Consequently, about 75 per cent of the population are in households having 5 or more persons and about 16 per cent have more than 15 persons. These large household sizes have many housing and employment implications as we shall see later in this chapter.

3.1.5 Significance of Demographic Variables on Housing

The demographic characteristics of Benin City has been discussed to some detail in the preceding sections. This is because the importance of demographic variables to housing studies are invaluable. Housing predictions and estimates cannot possibly be conducted if we do not have detailed demographic variables. For instance, the age and sex of head of households are essential in some parts of the world for planning purposes while the size of the household is extremely essential for forecasting the house type and perhaps the quantity of housing demanded by households. Therefore, the significance of fairly detailed demographic variables in a study of this nature cannot be overemphasized.

3.2 EMPLOYMENT

Similar to many cities in developing countries, the ability of the urban centres in Nigeria in general and Benin City in particular to absorb their populations into employment is a major problem. This problem is often partly attributed to rapid population growth and partly to the quality of the labour force. The labour demand in Benin City is largely influenced by the fact that it is a state capital. As the seat of administration, a large amount of funds are allocated and invested in the development of infrastructure and social amenities such as water supply, electricity, sewage disposal facilities and housing on the one hand. On the other hand, the industries and commercial enterprises are sited in the city to take advantage of the supply of these amenities. Consequently, a considerable

number of industrial, commercial and financial enterprises have developed in the city. Side by side with these establishments are small scale enterprises and petty business concerns which have simultaneously emerged. There are seven local markets in the city which are fully occupied by petty traders and all the major streets are lined with small scale shopping activities.

Of high significance is the fact that Government and its agencies still remain the chief employers of labour in Benin City. For instance, Federal and State Governments employ 49 per cent of the labour, public corporations and local Governments 8.5 per cent, the private firms or individuals employ 16 per cent and 19 per cent are self-employed. However, most of the self-employed are in petty trading, crafts and contract businesses. Apart from the market men and women who appear to be working virtually round the clock, there are many within this category of workers who are underemployed or periodically unemployed. The bricklayers, plumbers and carpenters, the drivers and the roadside mechanics, etc. are employed only part of the time and sometimes have no job at all. Most of them are to be found in the special "labour posts" such as Iyaro, Sakponba, Costain, Adesuwa Grammar School via Sapele Road, East Circular by Biwak and Siloko Road. They converge at these points every morning in search of employment (daily paid jobs) and could visit these posts for weeks without success. It is therefore not surprising that the labour force sample survey of 1984 put the unemployed labour in Benin at 13.1 per cent as the great proportion of those classified as self-employed are actually unemployed; and this has far reaching effects on housing.

3.2.1 Occupation and Income of Head of Households

A strong linkage exists between levels of education, occupation and income. Craftsmen and allied service workers (this includes most of the self-employed) comprised 41.8 per cent of the labour force in Benin, 30 per cent civil servants (clerical/administration), 11.2

per cent professionals, 9.0 per cent sales workers and 8.0 per cent are farmers. The farmers are the lowest paid, earning less than N1,200 per annum (1984 figures). The estimated labour force of Benin City is 207,514 persons which is 40.8 per cent of the total population. The median income of those households earning below N1,600 and which comprises about 70 per cent of the working population in Benin City in 1984 is N1,000 per annum while the mean is N1,500, suggesting a highly skewed income distribution (Ministry of Economic Development, Bendel State, 1984). It may be possible to observe recent changes, if any, when analysing the survey conducted in two parts of the city as case study areas. From table 3.5 it is revealed that about 15 per cent of the population earn less than N1,000 per annum and this is below the poverty line; while more than 50 per cent of the population earn below N1,800 per annum. This compares favourably with the findings from Sada's survey (1984) in which 68.1 per cent of the 48 per cent of workers covered in the survey earn less that N1,600, i.e. the lowest income class, 22 per cent earn between N1,600 and N6,000, the middle income class and only 3.9 per cent earn more than N6,000 and therefore a high income class. However, as at 1989, these figures had increased to N1,500 for the lowest income earners (below the poverty line) to around N8,000 and above for the high income (Appendix 2.1). As low as these figures seem, the Benin situation is much better than that of Warri and Auchi, both of which are in Bendel State (fig. 3.4). These figures indicate that about 68.1 per cent of the working population in Benin City earn less than N1,600 (1984 figures) and this definitely has far reaching effects in terms of housing provisions, services and housing demand. Although the salary structure has slightly changed, this change is not likely to make a great impact, especially when it is realized that both the cost of living and inflation have equally increased.

3.3   GENERAL HOUSING CONDITION

There are a number of interacting factors (social, economic, government intervention, traditional and technological) which have influenced housing development in Benin City.

Table 3.5   **Benin City Employment - Income Per Annum**

INCOME RANGE	EMPLOYMENT
N	%
400 - 800	14.8
801 - 1200	23.6
1201 - 1600	29.6
1601 - 2000	14.9
2001 - 4000	7.2
4001 and above	10.9

Source: Economic Development, Bendel State of Nigeria, 1984
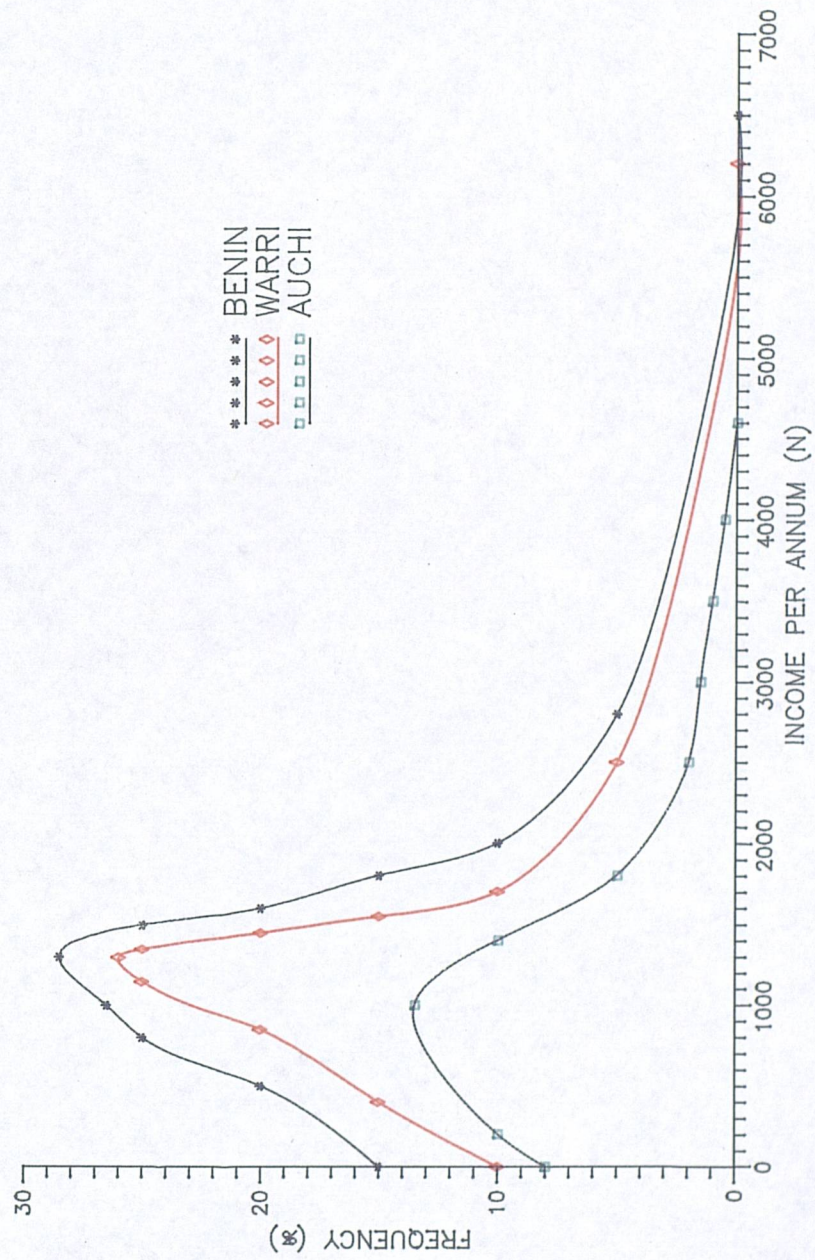
FIG.3.4. INCOME DISTRIBUTION PROFILE.

These factors have not only affected the housing quality and the environment but also to a great extent the general spatial pattern of housing development. According to the 1981 household survey conducted by Omokhodion Associates, 84 per cent of the houses in Benin City are used for residential purposes; although mixed uses are equally noticeable especially within the core area of the city. These include traditional houses originally constructed for residential purposes, but due to the changing socio-economic situation, the frontage of the buildings were converted into commercial stores giving way to mixed use within a single building.

The same survey further revealed that 12.3 per cent of the buildings are independent bungalows, 7.4 per cent detached two storey buildings, 4.4 per cent semi-detached houses, 2.3 per cent maisonettes, 13.7 per cent flats, 47.3 per cent rooming houses and 12.6 per cent the traditional compounds. The central corridor or rooming type (see fig. 3.5), both of which are traditional in design, accommodate about 75 per cent of the low-income households in Benin City. The semi-detached, detached two storey buildings and bungalows, and the maisonettes which account for 26.4 per cent of the total housing stock accommodate about 15 per cent of the population mainly middle and high income households (fig, 3.5a). From the same survey, it was discovered that about 45.7 per cent of the traditional housing stock has been partially renovated while 16 per cent has been brought to modern standards. However, about 38.3 per cent of the traditional housing stock is still in a dilapidated condition.

3.3.1   Age and Structure of Dwellings

The household survey carried out by Omokhodion Associates in 1981 revealed that 70 per cent of the houses in Benin City were developed in the last two decades. The average housing development rate, therefore, would come to 3.5 per cent annually. While in the past ten years 46.6 per cent of the houses were constructed, about 8.1 per cent of the

LIVING ROOM

LIVING ROOM

BED ROOM

BED ROOM

CORRIDOR

LIVING ROOM

LIVING ROOM

BED ROOM

BED ROOM

KITCHENS

BATHS TOILETS
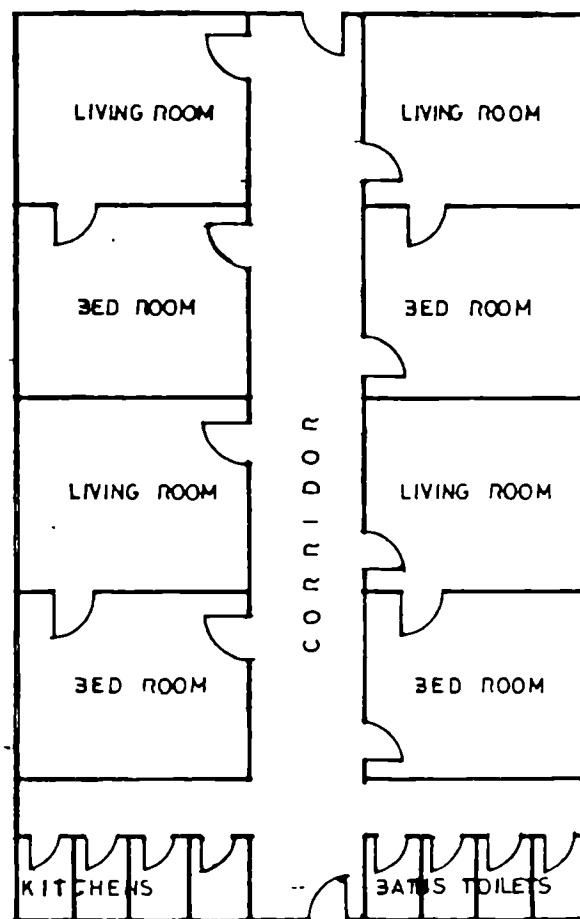
Fig. 3.5 PLAN OF ROOMING ACCOMMODATION TYPE
OF DWELLING IN BENIN

90
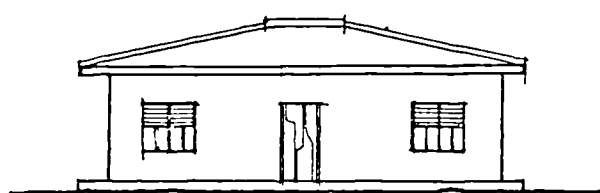
FRONT ELEVATION
SCALE 1 : 200
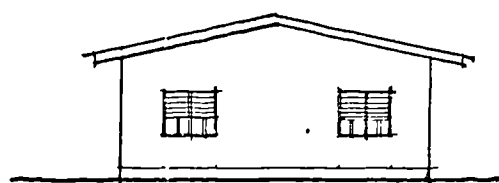
RIGHT SIDE ELEVATION
SCALE 1 : 200
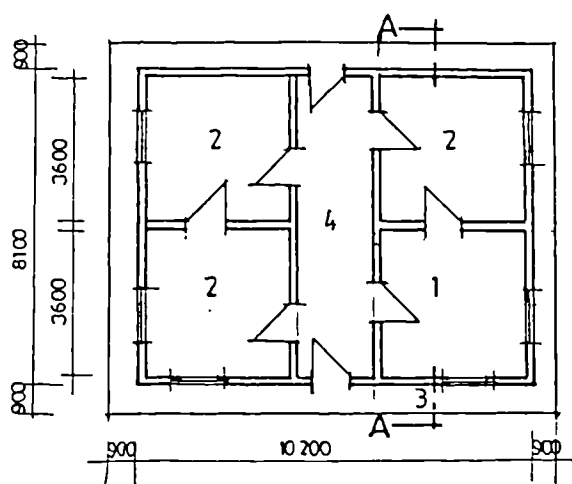
GROUND PLAN
SCALE 1 : 200
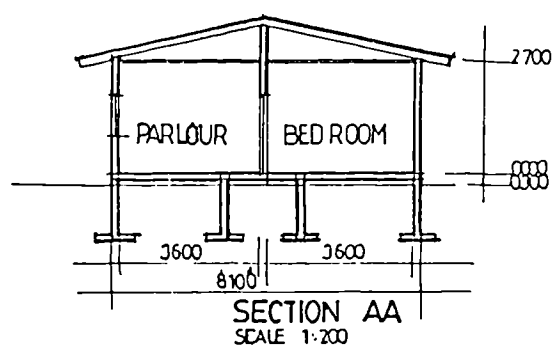
PARLOUR   BED ROOM

SECTION AA
SCALE 1 : 200

1. PARLOUR
2. BED ROOM
3. PAVEMENT
4. CORR

Figure 3.5a   Four-Room, Veranda type of Rooming Accommodation.

houses were found to be over 40 years old. To fully understand the housing development pattern, it is worthwhile examining the area in neighbourhoods. The survey under reference showed that the peripheral neighbourhoods of Ugbowo, Okhoro, Uselu, New Benin, Oregberni, Ogida, etc. excel in modern housing development as well as being the most active housing development areas. In the core areas including Uzebu, Ibiwe, Exoti, Ogbelaka, Ogboka, Iwegie, Adesugbe, Iyekogbe, etc. (fig. 3.6) it was recorded that about 85 per cent of the houses were above 40 years old. Consequently, the very old housing, i.e., traditional housing developed before the advent of the colonial administration, is concentrated in the core of the city.

A very significant factor about housing development in Benin City which has to be mentioned here is the change in the rate of housing construction. From table 3.6, it is revealed that the 1955-1965 decade witnessed the highest expansion in the housing industry. One of the possible reasons could be because of the Nigerian Independence in 1960 which gave so many cities in Nigeria a new lease of life. And of course the new role assumed by Benin in 1963 as the Capital of Mid-West (now Bendel) State, resulted in an influx of civil servants from the then Western Region. In order to urgently provide additional dwelling units, government encouraged and granted mortgage loans to workers. This enabled many of the civil servants to build their own dwelling units. The private developers equally increased the housing stock by both building new dwelling units and improving existing ones for the low income households. This provided rented accommodation for the civil servants who could not possibly construct their own dwelling units. On the other hand, there has been a steady decline in the housing industry's rate of expansion between 1965 and 1985 (the period for which data is available). In the words of Sada (1986, p.3)

> "the housing industry in Benin is expanding at less than a replacement level and is thus operating at zero or negative growth rate".
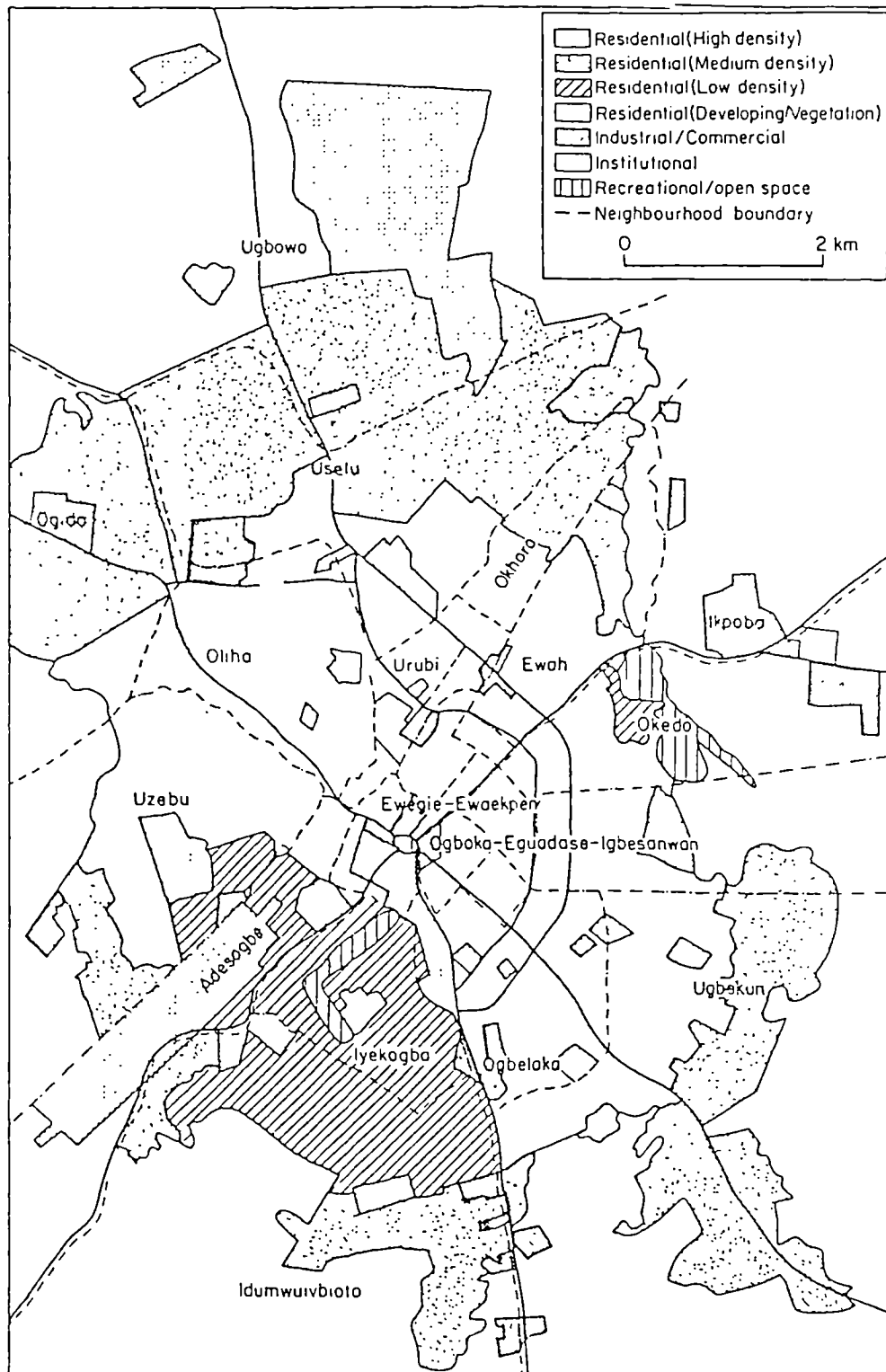
Fig. 3.6 Map of Benin Showing the Different Quarters

Source: Odemerho and Chokor, 1991

Table 3.6   **Growth of Housing Construction**

Year	% Increase	Annual Growth Rate	Source
1945 -1955	51	4.2	Sada (a)
1955 -1965	49	4.9	"
1966 -1975	47	3.5	"
1976 -1985	46.6	3.5	Omokhodion (b)
1986 -1989	17	1.2	* Field Survey (c)

Source: (a) Sada, 1974.

(b) Omokhodion, 1989

(c) Field Survey, 1989. (Based on records from BDPA and City Planning

Office).

*   This decline in the growth of housing construction is not unconnected with

the economic recession.

Figure 3.7 shows the decline in the number of plans approved within the period indicated. Although data is not available, the current trend seems to have remained the same, if not worse. The reasons for the decline in building construction between 1966-1985 are not easily obtainable. While the reasons for the current trend are possibly attributable to the global economic recession in which Africa has been worst hit. This situation is really unfortunate because while production of new dwelling units was shrinking the rate of population growth was expanding from 5.8 per cent per annum in 1963 to 8.6 per cent per annum in 1975 (National Census, 1963). Further evidence from literature (Sada, 1986) tend to indicate that the population growth trend has remained the same up to 1985 when the figure significantly increased; although the housing industry's growth rate has declined from 3.5 in 1975 to 1.2 in 1988. This decline seemed to be one of the major reasons for the huge housing shortage which this study is investigating amongst other things.

3.3.2   Type of Building Materials

Out of a total number of 3,714 households surveyed by Omokhodion Associates (1981), 2.5 per cent used mud walls. These are probably the traditional types of dwelling units. More details of the building materials used according to this survey is shown on figure 3.8. Roofing materials are varied although corrugated iron sheets tend to dominate with 73.8 per cent of the buildings using them, 13.6 per cent corrugated asbestos sheets, 11.2 per cent aluminum sheets, 0.6 per cent concrete slab and .6 per cent mud and thatch slab. It is essential to note here that the high percentage use of corrugated iron sheets is not unconnected with the advent of the colonial administration which introduced their use. Since their performance is better than thatch, this encouraged most developers to change their roofs to use corrugated iron sheets even on mud structure.
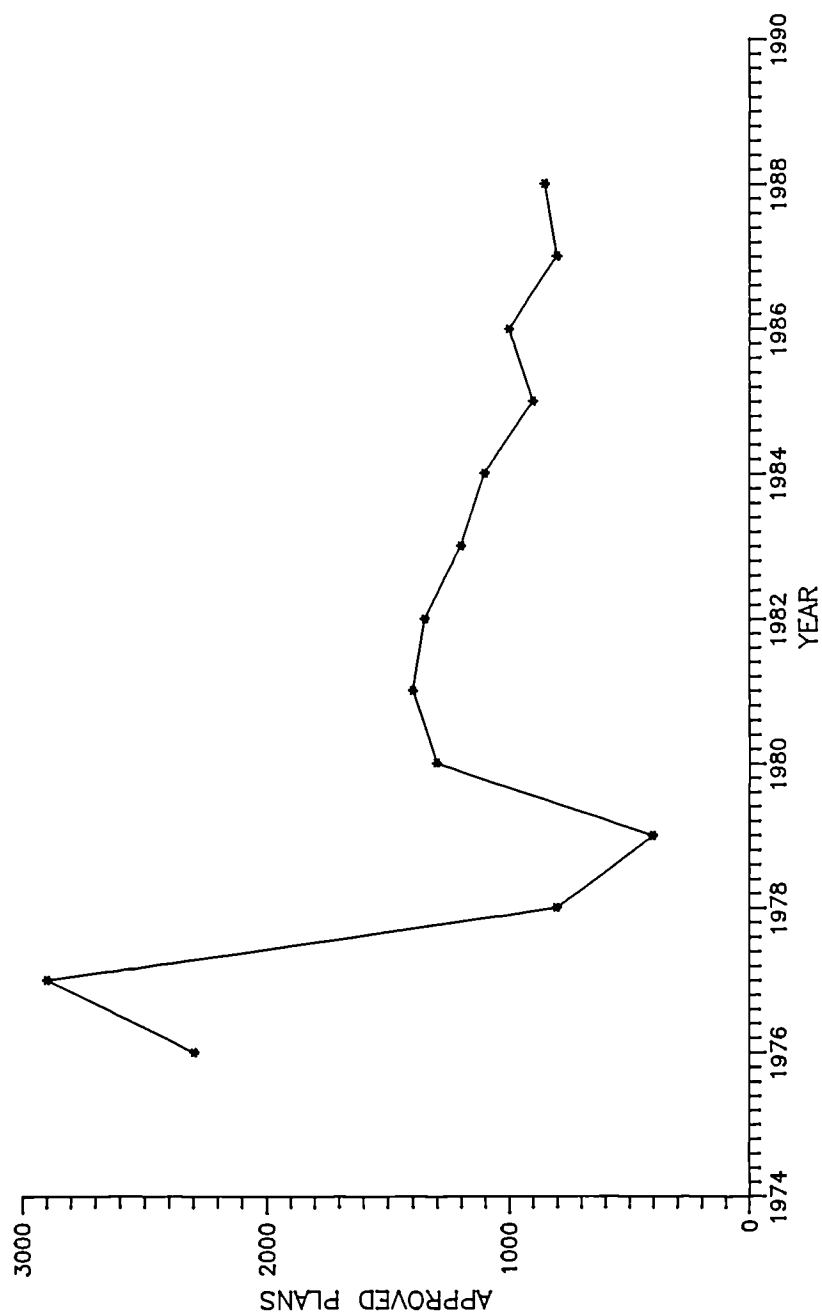
FIG.3.7. BUILDING PLANS APPROVED IN BENIN CITY, 1976–1988.
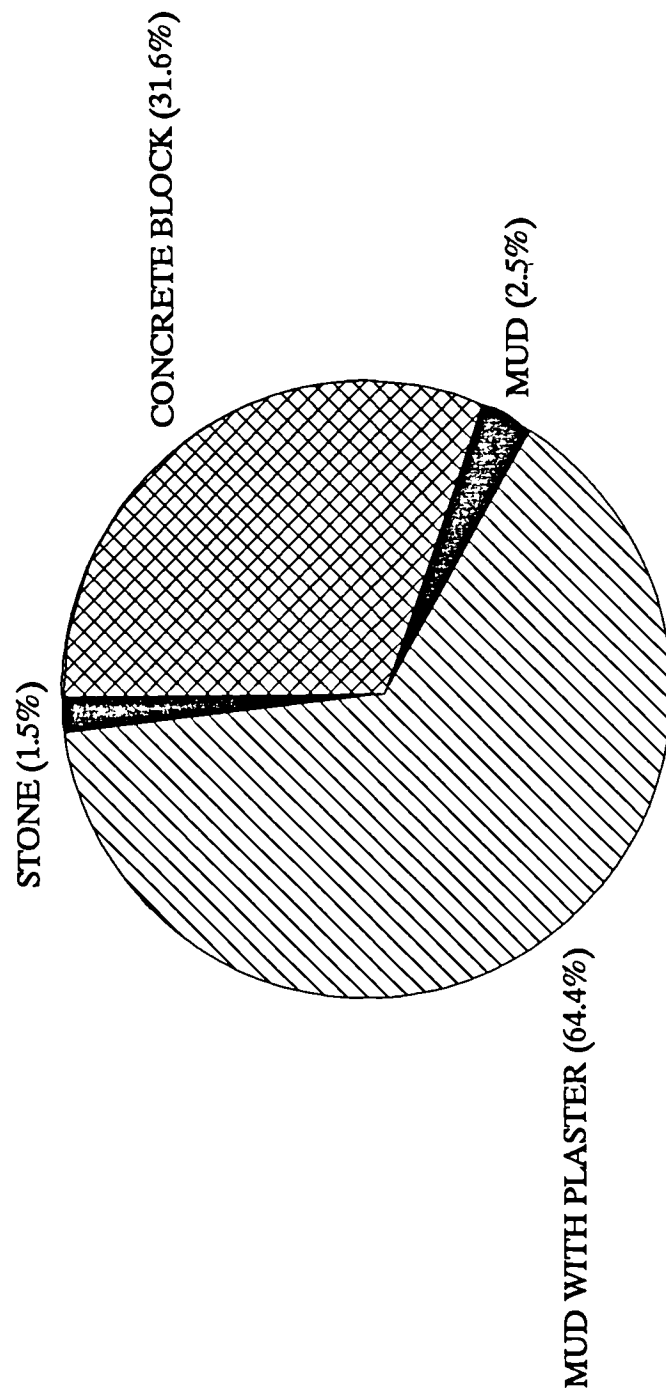
Fig. 3.8   Building Materials used for Wall

3.3.3 Availability of Services and Amenities

Most building especially those for the low income households, are poorly serviced with facilities such as water supply, electricity, toilets, etc. The inadequacy of access to these facilities lead to high incidence of sharing. This can in turn lead to the spread of diseases, environmental pollution and deterioration of housing conditions. The available statistics indicate that 39 per cent of the dwelling units have adequate pipe water supply, 43.3 per cent get water from the nearby street, 16.6 per cent from another neighbourhood, while 1.7 per cent still get water from the stream. However, it is essential to mention that this statistic could be misleading as most of the pipes could be dry for more than five days in a week and in other instances the water mains bursts easily, thereby depriving neighbourhoods of their water supply. This phenomenon is very common in Benin City.

In terms of electricity supply, 91 per cent of the households are connected while 9 per cent are not. The data also revealed that 41.7 per cent of the households had independent kitchens, 43 per cent shared kitchens, 12.5 per cent had outdoor kitchens (these are kitchens erected outside the building which could be covered or uncovered), and 1.9 per cent no kitchen at all. An examination of the bathing facilities from the same data revealed that 36 per cent of the households had independent bathrooms, 38.4 per cent shared bathrooms, 23.8 per cent had outside bathrooms and 1.7 per cent had no bathroom at all. Consequently, 62.2 per cent of households share or have outside bathrooms. By implication, using households having bathroom facilities in the house in the city as the only parameter for measurement (assessment) one can conclude that a high degree of substandard dwellings exist in the city.

The same survey also revealed the following toilet system;

(a)   58.1 per cent use pit latrine

(b)   1.0 per cent use bucket latrine

(c)   0.6 per cent use no latrine

(d)   40.3 per cent use water closet (shared and independent)

The fact that pit latrines are prohibited by current planning legislation cannot be ignored. The problems associated with the kind of pit latrines provided are numerous and they include unhygienic conditions, environmental pollution, hazards to children and epidemic outbreaks. Similarly, many dwellings have either none or inadequate drainage, refuse disposal and street lights. For example, only 41.5 per cent of the dwellings have drainage connections, 9.7 per cent have refuse disposal and 33.0 per cent of the dwellings have street lights. Further examination of the dwellings revealed that the adequately covered drainage comprise of 16.7 per cent, while the rest are either lined or unlined open drains. The availability and non-availability of these services and amenities can be used to classify the housing stock in Benin into standard and substandard dwelling units.

3.4   MEASUREMENT OF HOUSING QUALITY

Already, the housing stock in Benin has been classified as standard and substandard using age of the building and the availability of amenities as parameters. This classification could, however, be further categorized into sub-groups and, for this purpose the weighting system and the scoring method developed by the researcher in an earlier study (Onyeacholem, 1979) was adopted. To adequately determine the quality of a dwelling, it is essential to assess the habitability and the degree to which the habitability is dependent on the quality of construction in terms of the building materials used. Other important factors to be considered include the age of the building and availability of services discussed in the earlier paragraphs and, of course, the level of maintenance. Since assessment based on part of these criteria would not give rational information for the grouping, it is therefore essential to use a combination of quality criteria such as

(a)   physical conditions

(b)   age of structure

(c)   general appearance of building and

(d)   availability of services (piped borned water, latrine, bathroom,
       kitchen and electricity)

to achieve a fairly rational grouping. Despite this, the possibilities of subjectivity in this
type of method cannot be totally eliminated as individuals' perception of well maintained
dwellings may differ.

These criteria are then assigned weights ranging from 4 to 2 in order of importance and
for each quality criteria marks 0 to 5 are assigned to different value classes. The
cumulative score is given by multiplying the weight by the mark (Appendix 3.3). The
marks awarded are as follows:

(a)   building materials - 20 marks

(b)   condition of maintenance - 15 marks

(c)   availability of services - 15 marks

(d)   age and structure - 10 marks

The quality index classification is therefore used to further group the housing stock in
Benin City into the following categories (table 3.7). Significantly, the areas with standard
buildings or good quality houses according to the table correspond with the socio-economic
groups (middle and upper income) which reside in them.   They also match very
adequately with the areas which Onokerhoraye (1977), through multi-dimensional
analyses and using socio-economic factors for explaining the emerging pattern, classified
as good quality and average quality areas. The substandard areas - poor quality, very
poor quality and dilapidated quality areas on Table 3.7 correspond with his poor quality
and the central area which is mainly concentrated with substandard housing stock (fig.
3.6).

Table 3.7   **Housing Quality and Estimated Life Span**

Estimated Life Span in Years	Condition of Structures	% of Total Housing Units
	Standard	
40 and above years	very good quality	8.5
30 years	good quality	27.3
20 years	average quality	18.2
	Substandard	
10 years	poor quality	29.0
5 years	very poor quality	11.8
Obsolete	dilapidated quality	5.2

Source: Field Survey 1991

Interestingly, in a more recent study of environmental quality of Benin by Odemerho and Chokor (1991), in which they used the aggregate index of quality comprised of professional and lay viewpoint for environmental assessment, findings are similar to our classifications and Onkerhoraye's grouping of the city as well. Odemerho and Chokor (1991) found that the traditional/core neighbourhoods, which correspond with the central area where substandard housing stock are mainly concentrated have lower quality environment than the suburban neighbourhoods. According to them and using their aggregate index of quality, the suburban environment comprised of Iyekogba, Adesogbe, Ogida and Ugbowo scored 62 per cent, 60 per cent, 51 per cent and 50 per cent respectively. While those areas around the core, for example Ewegie, Ogbeka and Uzebu scored 42 per cent, 42 per cent and 34 per cent respectively (figs. 3.6 and 3.9, Appendices 3.4 and 3.5).

Other surveys such as that conducted by Omokhodion Associates (1981) and Sada (1984) equally have similar classifications or groupings of the housing stock in Benin City. This pattern of housing development in Benin City is mainly due to:

(a)   the advent of the colonial and post-colonial Governments by whom land was acquired and developed for top Government functionaries in the areas with the good quality houses often referred to as the Government Reservation Areas (G.R.A.) and the suburbs in the other parts of the city.

(b)   the market factor which compelled private developers to concentrate their development in the suburbs which are quite attractive to tenants especially the middle and high income groups.

(c)   the socio-economic life of the city which is a very important factor in the land tenure system and the difference in purchasing power among different households have made it difficult to improve or replace the substandard houses (at a faster rate) which are concentrated at the core of the city.

Figure 3.9: Spatial Variation in Environmental Quality in Benin City

(a)	Dimension I	<u>Professional assessors</u> (i) building features (ii) planning standards <u>Lay assessors</u> (i) architectural design (ii) planning standards
(b)	Dimension II	<u>Professional assessors</u> (i) environment design <u>Lay assessors</u> (i) drainage
(c)	Dimension III	<u>Professional assessors</u> (i) land use compatibility <u>Lay assessors</u> (i) community feelings
(d)	Dimension IV	<u>Professional assessors</u> (i) social status <u>Lay assessors</u> (i) street erosion
(e)	Dimension V	<u>Professional assessors</u> (i) street flooding/erosion <u>Lay assessors</u> (i) pest infestation

Source: Odemerho and
Chokor, 1991

Note: The variables used
by both professional and
lay assessors are
summarized above.
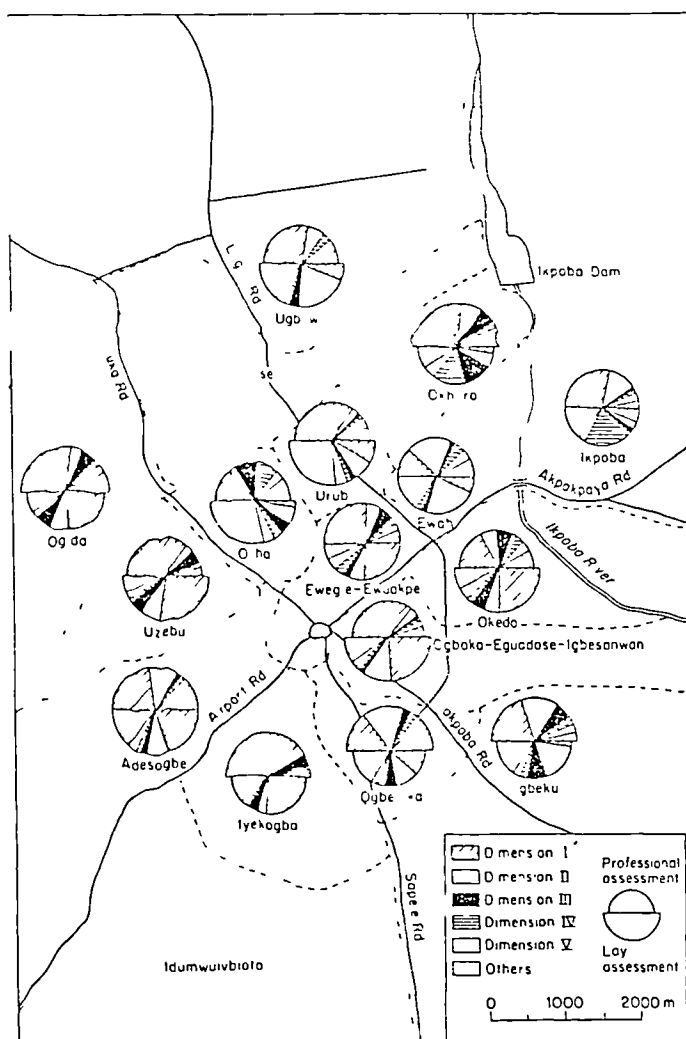
3.5   **HOUSING SHORTAGE**

Similar to most urban centres in many developing countries, there is an acute housing shortage in Benin City. This housing shortage problem is intensified by the fact that there are no reliable data on the existing housing stock and the actual number of people to be housed. This notwithstanding, a few isolated surveys conducted mainly by private professionals and the Government at different times provide some estimates on the population and the required housing need; and these give indications of the degree of housing shortage in Benin City. However, to further understand the level of housing shortage, it is essential to examine the following:

       (a)   Housing Density

       (b)   Slum Development

       (c)   Occupancy Rate or Ratio

       (d)   Overcrowding

       (e)   Housing Need.

3.5.1   **Housing Density**

The city is characterized by a cluster of compactly built low rise houses mainly juxtaposed at very high density (plate 3.1). The average density is about 32 compounds per hectare. Average number of persons per compound is about 29. Consequently, there are about 1,018 persons per hectare. The low rise buildings are arranged in such a way that there is no room for free air circulation, while privacy between buildings is almost non-existent. The areas or neighbourhoods with very high densities fall within the core of the city. In line with the classification already made in the earlier paragraphs, the low density areas include the Government Reservation Areas, their new extensions, Etete and Ugbowo Housing estates. (fig. 3.6)
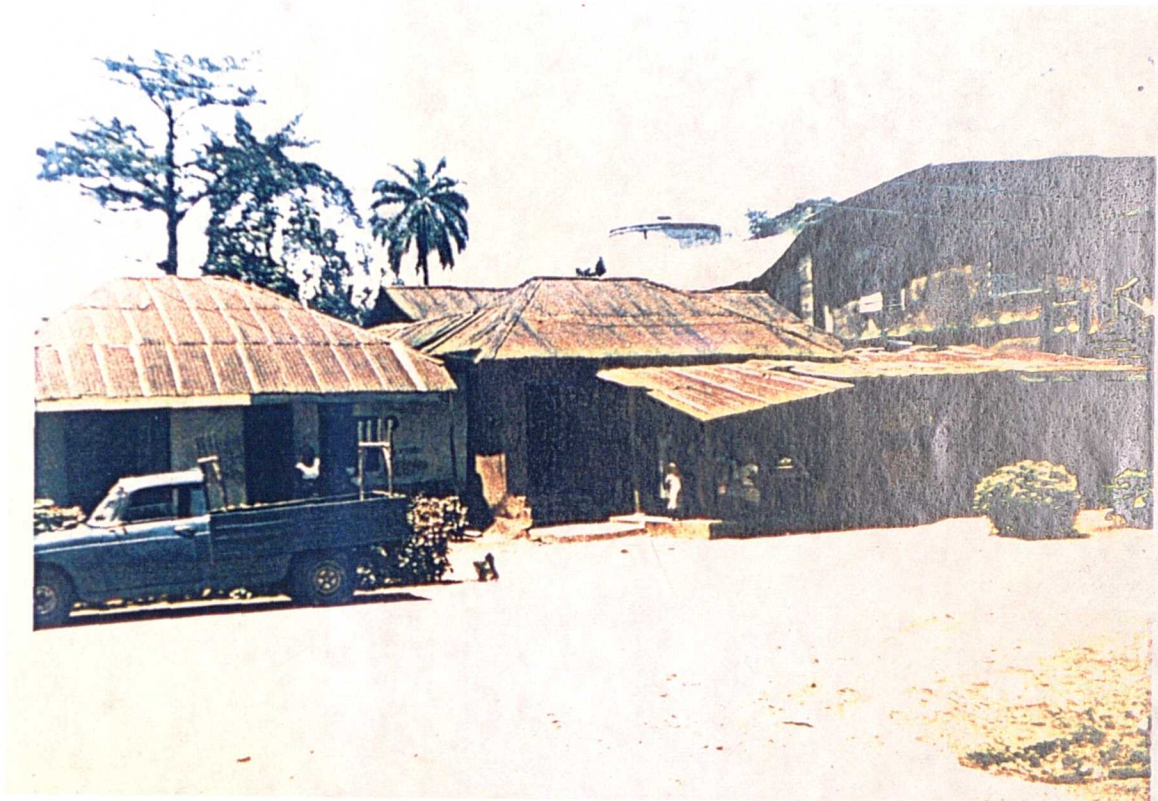
Plate 3.1   Compactly built low rise houses

3.5.2   Slum Development

A fundamental issue which has already been mentioned in this study is the fact that there has been a population explosion since the late 60s, while there is great decline in housing provision. Consequently, substantial numbers of people, especially the migrants, live within or on fringes of the city in what may be called spontaneous or unplanned developments. These spontaneous developments consist of dwellings of extremely flimsy construction, absolutely lacking in services and facilities and in some cases having up to 7 people in a room. At the core of the city, deteriorated and dilapidated (substandard) houses equally exist. The problems described above are likely to give rise to overcrowding and health hazards and could perhaps be a source of social friction and crime. These cannot be confirmed unless a survey directed to these aspects are conducted and this is outside the scope of the present study.

3.5.3   Occupancy Rate

The occupancy rate is defined as the number of persons per room. Perhaps, due to the traditional nature of most of the housing stock, sharing of one room by more than two persons and sharing of a dwelling unit by several households is a dominant feature in Benin. Thus, a great proportion of the households in the low income groups especially those with large families are overcrowded. It is equally likely that the occupancy rate could serve as a measure of poverty as well as an index of social problems in the city (Sada, 1984). From available statistics, the average occupancy rate per room in Benin City was 2.2 persons and 2.6 persons per room in 1971 and 1981 respectively. While that of the low income group is about 3.2 persons per room (Federal Office of Statistics, Lagos, 1971, 1981). Although the most recent figure is not available, it is likely that these figures may not have changed much. However this fact shall be confirmed when the case study areas are examined. Table 3.8 presents the average number of persons per room in

Table 3.8:   Occupancy Rate of Selected towns in Nigeria between 1970-1981

Town	% of Households Occupying One Room	Average No. of Persons	
		(a)	(b)
Lagos	72.5	3.8	4.4
Warri	59.9	2.6	4.4
Benin	48.0	2.2	3.2
Kano	69.1	2.4	2.4
Ibadan	67.0	2.6	2.3
Enugu	-	-	3.8

Source: (a) Federal Office Of Statistics, Lagos, 1970-1971

(b) Adeniyi (1980) as cited in Shitta-Bey, 1988.

selected towns in Nigeria. The occupancy rate in Benin City may perhaps become clearer if compared with some cities in Africa (table 3.9). Occupancy rate could be further examined by assessing the area of room in relation to the average number of person per room. At a time when the average room area in Benin was 13.1 sq.m. and the average persons per room was 2.6, the area per person was 5.3 sq.m. (Federal Office of Statistics, 1974). However in 1986, the Association of Housing Corporations of Nigeria, increase the area per person to 9 sq.m. and this was to be adopted as standard by all the States of the Federation. In view of the standards above the average room space which has hitherto existed in Benin appears to be small although it does not specify whether auxiliary spaces (kitchen, bathroom, corridors, etc.) are included. The figures on table 3.10, tend to indicate that there is a positive correlation between type of construction and the average size of rooms.

3.5.4   Housing Need

Housing shortage can further be assessed by housing need (detailed definition of housing need shall be presented in the next chapter). The Government was prompted in 1972 to set a target in terms of housing due to outstanding housing requirement in not only Benin City but in other urban centres in Nigeria. From table 3.11 the actual situation in 1972 and the likely situation by 1980 is highlighted.

From table 3.11, 27,000 dwelling units were required by 1980 assuming that all the existing stock are good and in habitable condition. This means that between 1972 and 1980, an average of 3,350 dwelling units would be required each year to meet the housing need. Through a sample survey of the building plans approved by the planning authority in the Department of Lands and Surveys, Governor's Office, Benin for a period of 1976-1986, conducted by the author, it was discovered that about 1,500 building plans are approved yearly (fig. 3.7). Assuming that about 1,200 of these buildings approved are

Table 3.9   Comparison of Benin Occupancy Rate with Selected African Cities.

Selected African Cities	Date	Persons per Room
Lagos, Nigeria	1978	4.1
Benin, Nigeria	1981	3.2
Oyo, Nigeria	1979	2.9
Kumasi, Ghana	1980	3.6
Freetown, Sierra Leone	1981	2.5
Banjul, The Gambia	1976	1.9
Harare, Zimbabwe	1982	1.8

Source: Peil and Sada (1984, p. 285) and 1986 Kumasi data as cited by Tipple (1987).

Table 3.10   Average Area per Room by Construction and Type of Dwelling in sq.m. approximately.

	Type of Construction	Size of Rooms
1.	Mud, plant and bamboo wall pitched thatch roof	10.4
2.	Mud, cement, plaster wall and corrigated iron sheet roof	12.4
3.	Cement blockwall, corrugated iron sheet or asbestos	14.4

Source: Federal Office of Statistics, Lagos, 1984.

Table 3.11   Targets for Housing Units 1972-80

Town	Dwelling Unit	New Units Required	Average No. of Units Needed	% New to exist. Units to 1972	Average Annual % of New to exist. Units
Benin	28,950	26,857	3,350	93	7.5
Warri	11,400	25,801	3,300	222	17.0
Sapele	9,333	11,620	1,450	125	10.0

Source: Federal Republic of Nigeria, Third National Development Plan, Vol.1, 1975-80.

started and completed each year; and assuming that each building is a dwelling unit, it then means that 2,100 dwelling units have not been constructed as proposed by the Government during the period under review. By a simple calculation, it then means that by 1986, a total of 37,300 dwelling units would be required to meet the existing need, without including projected need as a result of population increase through migration and household increase and the dilapidated dwellings that require replacement. Through extrapolation, over 50,000 units would be required by 1992. We shall see in the following chapter that neither the Government nor the private sector was able to achieve the set target. During the Fourth National Development Plan - 1981-85, the Bendel State Government was to construct 8,000 dwelling units in Benin City for the five years. This appeared very laudable but unfortunately the State Government did not achieve up to 5 per cent of this target (details were discussed in chapter 2 section 2.6). This enormous housing need therefore gave rise to overcrowding, slum development, pressure on existing services and, of course, high occupancy rates and prohibitive rents. In fact, this brings up the whole question of the efficiency of the housing market.

3.6 HOUSING MARKET

A large imbalance exists between housing demand and supply which the housing market mechanism has not been able to rectify. The housing market has not adequately satisfied effective distribution of housing in terms of the needs of the people, price and rent, type of accommodation and tenure. Until recently, about 95 per cent of the total housing stock in Benin was provided by private, and mostly individual, developers whose aim is profit making. Private sector activity in the housing market is essentially a response to effective housing demand which is usually only one aspect of the total housing requirements.

> "In other words, given the profit motivation of private sector investors and the limited supply of capital resources, housing construction activity has been largely guided by the ability-to-pay criterion, which tends to marginalize a sizeable proportion of the population and create a mounting

backlog of unmet housing need" (Agunbiade, A.O. 1983 p. 45).

This quotation is particularly true of the Benin situation. With rising inflation and cost of construction, private developers gradually became discouraged from investing in residential construction but where it did occur, attention was focused on detached and semi-detached bungalows or multi-storey buildings in flats suitable for the middle and upper income groups as these house types are likely to yield more dividend.

Consequently, fewer dwelling units for the low income groups have meant soaring rent. The low income households apparently spend about 30-40 per cent of their monthly earnings on housing (Fourth National Dev. Plan, 1981-85). Table 3.12 speaks for itself. This high rent level forced the Government to introduce a Rent Control Edict which states that no household should spend more than 20 per cent of its annual income on housing. This however, was counter productive as many private developers became discouraged and investments were channelled to other sectors. Increased housing shortage and halted residential mobility were the immediate consequences of the Rent Control and thus the Edit could not be implemented. In fact, the Edit could be described as a myth; as house rent has continued to soar irrespective of the Rent Control Edict.

Another important issue worthy of mention here is that even though most of the housing is on rental, it is only the high income group that can comfortably afford the kind of housing provided by the private investors. According to Wakely et al (1976, p. 5) the households who belong to this category have permanent jobs, security, opportunity and access to credit facilities. The private housing market is open to them because they can afford it and society has confidence in them. The middle income group can afford to pay about 20 per cent of their monthly earnings for house rent, thus putting them marginally on the private housing market. Theoretically, it is possible in such a situation that the low income groups or households would be totally outside the private housing market because, even if they are subsidised, they cannot afford accommodation with minimum standards. Therefore the private market provided substsndard accommodation for the low income people who have no choice other than to patronize the private market. However, the private developers cannot really be blamed

Table 3.12   Average Rent Paid by Income Groups, Benin City.

Income group	% of population	Average Rent per month	Average Rent per annum	% of income
1 - 1800	56	50	600	33
1801 - 4200	35	100	1200	24
4201 - 7800	9	120	1440	18
Above 7800	3	140	1680	12

Source: Derived from the Household Survey conducted by Omokhodion Associates, 1981.

for the high cost of housing or the soaring rents. Many other factors such as the escalating cost of building materials, the complex land issue, and the prohibitive cost of obtaining land as well as the strict material specifications imposed by the planning authorities through the Building Codes and Regulations, contribute to the high cost of housing construction. As a result of this problematic housing market system, the low income households are forced to live in substandard houses.

3.6.1   Tenure and Mobility

The percentage of rental accommodation is still remarkably high. For instance, 43.4 per cent of the total stock is rented, while 40.8 per cent of the dwelling units are owner-occupied, 13.8 per cent family accommodation- and this last one includes nominal rental and free accommodation (Omokhodion Associates, 1981). When compared with the 1974 figures by the Federal Office of Statistics, Lagos, the above figures indicate that there has been great increase in economic rental accommodation (table 3.13), although this has not made any impact as far as the housing provision for the low income households is concerned, and the increase is not unexpected because of the time dimension.

The population of Benin could be regarded as a fairly mobile one since above 29.9 per cent of the households have changed residence in the last five years.

The mobility is likely to be attributed to the following reasons:

(a)   seeking proximity to place of work;

(b)   seeking for cheaper rent;

(c)   change of job;

(d)   seeking for housing with better facilities

        (e)   larger families

        (f)   family ties

        (g)   landlord's disturbance, etc.

It may perhaps be possible to actually know the reasons why people move after analysing the data from the empirical surveys on the case study areas.

3.7   SOURCES OF HOUSING SUPPLY

There are three main housing supply agents in Benin City. First, are the private developers who build dwelling units for rent. Second, are family owned houses which may either be inherited or built by the owner occupier and the third category is Government or its agencies. The provision of low income housing is mainly in the hands of absentee private developers, with contributions from a few owner-occupiers and, lately, Government (Sada, 1984). On-site services are provided by Government. The middle income housing is provided by absentee private developers too, but this supply is heavily supplemented by owner-occupiers. The high income housing is largely provided by owner-occupiers, with a substantial contribution from Government and its agencies for its senior staff employees. The provision of on-site and off-site services remain the responsibility of government in all the areas.

The first and second groups of housing developers are more or less responsible for the supply of about 90 to 95 per cent of the total housing stock in Benin City. While Government role in housing is still marginal as it is responsible for the provision of only 5 to 10 per cent of the total housing stock. This is very unlike most developing countries where Government is now responsible for a large proportion of housing provisions. Despite this small quantity which Government provides, it was shown in chapter 2 that Government's level of achievement in terms of housing provision in Benin in particular and Bendel State in general is relatively low in terms of meeting the needs of the low income groups.

In summary therefore, so many problems are associated with the current housing policy being operated in Benin City. Government subsidized housing or conventional housing policy has not been able to provide housing for the low income households. The reasons for the failure were highlighted in chapter 2. Therefore, Government provides for very little proportion (about 1 per cent) of the huge housing demand by the low income households. The consequence of this ineffective policy is massive housing shortage and poor and deteriorating housing conditions. Low income households, therefore, live in very high overcrowding, deteriorated dwelling units with very poor housing facilities for which they still pay more than 20 per cent of their income. These facts were revealed through the review of literature on general housing situation in Benin City by the public and the popular/private sectors.

In the face of these many housing problems facing the Government and the people under very scarce resources and economic recession, it then becomes more necessary than ever to find techniques through which policy options can be evaluated and affordability levels assessed. This has led us to introduce the concept of some economic demand models, a tool which would enable us to rationalize and evaluate policy options. Before we can actually begin to develop and apply these economic demand models, let us first of all present a detailed analysis of the theoretical concepts underlying the housing demand models. Thus, chapter 4 which is the last chapter on section 1, presents an analysis of the theoretical framework for this study, and an outline of the methodology for empirical research.

CHAPTER 4

THEORETICAL FRAMEWORK AND EMPIRICAL RESEARCH
METHODOLOGY

GENERAL THEORETICAL BACKGROUND OF HOUSING

Apart from food and water, shelter ranks highest amongst basic human needs. Moreover, housing services extend beyond simple shelter. They include community services and utilities such as water supply, sewerage and refuse disposal facilities, energy, access roads, nearness to employment opportunities as well as education and health facilities. Hence, the standard of a dwelling and the environment reflect the quality of life as well as the health, welfare and productivity of an individual. Consequently, housing and its related facilities act as vital elements in reflecting the standard of living; and in part, form integral components of the social and economic development process. The personal security and emotional stability engendered by housing are not the only benefits accruing from it. In addition, investment in housing has a significantly positive impact on economic development by generating both employment and income. When viewed in such broad terms the place of housing in the complex of factors determining the general well-being of society becomes apparent (Federal Republic of Nigeria, Fourth National Development Plan, 1981-1985, World Bank - Basic Need Series, 1980). It is not surprising, therefore, that governments pay great attention to the problem of housing although their impact is not always fully felt particularly in the developing countries, due to the magnitude of the problem. However, the governments' role in this vital aspect of development varies from country to country and from locality to locality within the same country. Therefore, to formulate realistic housing policy and programmes for any society, these facts have to be fully and intimately considered.

In most developing countries, there is an unprecedentedly high rate of population growth and rapid urbanization which has resulted in huge unmet housing needs in the urban centres. Most of the families, especially the low income households who form the majority in these countries, cannot afford shelter commensurate with their needs, (the concept of need is discussed in detail later in this chapter), although the minority of well-to-do

households have no problem in obtaining comfortable homes. This situation has forced many Governments, for example, the Nigerian Government, to intervene although their intervention is yet to make remarkable impact. Instead, housing need and demand have continued to out grow housing supply and the living conditions of the low income groups have equally continued to deteriorate.

Nevertheless, the new awareness towards a more dynamic housing strategy, including sites and services, settlement upgrading and other self-help programmes being adopted in many developing countries, would probably offer solutions to housing problems for the low income groups. Some of these new strategies have their origin through Turner's (1968 & 1979) perception of allowing the 'informal sector' to thrive as it appears to offer a more realistic approach to the whole question of low income housing provision.

However, there are diverse views regarding the interpretation of low income housing problems and provision in developing countries. Conceptually, there has been, and there may continue to be, controversies and uncertainties especially when discussing low income housing provision and the mode of delivery (Syagga, 1987). Consequently, there are two schools of thought: the popular view of John Turner and that of the Marxists. John Turner's school of thought strongly holds the view that the low income housing problem could be solved through the mobilization of the informal sector through squatting or informal development, and as such the authorities should recognize and encourage this mode of development. Such a recognition would then enable the authorities to grant property rights to the informal settlers. Thus, the use of self-help and self-build as well as community participation, is recommended by this school of thought as a means of solving housing problems for the low income groups (Turner, 1983 & 1985). This mode of housing provision is best implemented in upgrading projects where people's motivation could easily be tapped.

On the other hand, the Marxist school of thought, particularly that of Burgess, criticises Turner and puts forward the argument that self-help or community approach to housing provision is as a result of the failure of capitalism to absorb labour and provide forms of production which include the working class as a whole (Burgess, 1977, 1978, and 1982, Amis, 1983). According to this school of thought, self-build is a form of exploitation in which the capitalists make away with resources without actually putting in anything. In their view programmes such as upgrading are a measure of integration in the capitalist system and they are repressive. Therefore, they totally condemn the policy of upgrading and self-help housing. To them, the one million house programme which was successfully implemented in Sri Lanka is a mere capitalist propaganda (Tolba, 1987). Similarly, they will dismiss the Lusaka, Zambia squatter upgrading programme (Schlyter, 1984). They are of the view that it is the duty of the state to provide conventional housing. Turner's views as well as that of the marxists could be summarized as presented on table 4.1. However, the structuralists are of the opinion that although, state intervention in self-help housing seem to be disappointing, it has not generally worsened the situation of the poor (Gilbert, 1986) and therefore seem to advocate a mid-way approach between these two extreme views.

According to Syagga (1987), these controversies have arisen as a result of the different views on housing problems held by different scholars. The nature and magnitude of housing problems vary from country to country in accordance with the socio-cultural, political and economic situations of each country. Thus neither capitalism nor socialism per se can solve such problems unless solutions are prescribed according to the country's need

Having highlighted these two main different ideas in relation to low income housing provision, where do we go from here? Which direction do we adopt or do we require a new direction altogether? For instance, it has been shown that the urban poor still require

Table 4.1   Two main different ideas made up of the same reality

	TURNER'S PERCEPTION	MARXIST'S PERCEPTION
1	People using their own initiative	Cheap Reproduction of Labour force
2	Autonomy of Action	Lack of any other option
3	Mobilization of Personal Savings	Government and Rich Elites getting away without giving any resources
4	Towards more just and equitable development and distribution of resources	Spreading the thin butter thinner

Source: Summarized from Literature Review.

help such as mortgage loans in obtaining construction funding even with the site and services schemes. If they are unaided with subsidy, the poor will be unable to construct and therefore could sell their plots to higher income groups. Also Turner presupposes that the people have enough money for food. This is not necessarily the case. In Africa, the men especially go out to seek for employment and therefore hire labour to carry out the construction while women do the supervision. Thus, housing policy strategies have to take cognisance of the urban poor's circumstances.

This study, however, considers that a form of intervention is probably necessary, but it may not be essentially the form proposed by the Marxists. In other words, it is likely that a third approach may well be necessary. A third approach in the researcher's opinion, which is likely to provide optimum welfare for the low income households, is probably the neo-classical economic system. The neo-classical economic approach attempts to achieve efficiency and equity within the economy. It attempts to achieve equilibrium even within a market failure. The neo-classical economic approach, among other things, presupposes a general system of economic organisation which freely functions under capitalist economies. Apparently,

> "under such a system the uncompromising pursuit of profit
> acts to serve the public interest, provided that all effects
> relevant to the welfare of the individual are priced through
> the market and perfect competition prevails in all economic
> activities" (Willis, 1980, p.30).

Incidentally, such an ideal world does not exist, therefore social welfare cannot be achieved in the free market economy. Consequently, Government intervention is often recommended in such situations. However, Government intervention can only be productive, in a free market system, if all agents are faced with a fixed price; in which case, the agents become price takers (Tullock, 1986). Unfortunately, monopolists are price sellers and not price takers (Culyer, 1973). There is, therefore, a justification for intervention where monopoly is present (Willis, 1980). In housing provision in Benin, Nigeria, for instance, land is a fundamental component. But land is subject to

monopolistic control by potential sellers of land; thus Government is justified to intervene

in the provision of housing for the low income households particularly to make land

available for housing construction. A basic problem associated with this system is that

it is very difficult to maintain the assumption that every agent is a price taker

particularly if there are increasing returns to scale. This is because increasing returns

to scale lead to monopoly. Therefore an efficient free market economy depends largely on

a situation in which increasing returns to scale are completely exhausted before

equilibrium levels of output are reached. Otherwise, if returns to scale are increasing,

equal proportional increase in all inputs are likely to lead to a more proportional increase

in output (Willis, 1980). The effect is that the average cost of output falls as output rises

so that bigger companies can always undercut the smaller ones. This then would give the

bigger companies monopolistic control. A probable means of solving this sort of problem

is to adjust output so that there is neither excess demand nor supply. In which case,

subsidy is necessary for the enterprise to enable it to function at equilibrium. Figure 4.1

is a simple illustration of the relationships between average or marginal cost and output.

It is generally assumed here that the relation between output and cost is not only

technically efficient but also most cost effective. Therefore, the main assumption is that:

> "at each rate of output the operation is being carried out
> with technical efficiency and with cost-effectiveness."
> (Culyer, 1980, P.18).

However, the nature of intervention suggested here is completely different from the

intervention which the marxists advocated in the preceding sections. This is because the

marxist approach would require that Government bears the entire cost of providing

dwelling for the low income households without the target population themselves

contributing anything. The principle which the marxist approach advocates is what

economists refer to as "Pareto Optimum". In other words, the low income households'

welfare can only be improved at the expense of the tax payers (Culyer, 1980); who in this

case will probably be forced to pay more tax. Moreover, the economic " concept of

MARGINAL COST

AVERAGE COST

RATE OF OUTPUT OF X

MARGINAL OR AVERAGE COST

0
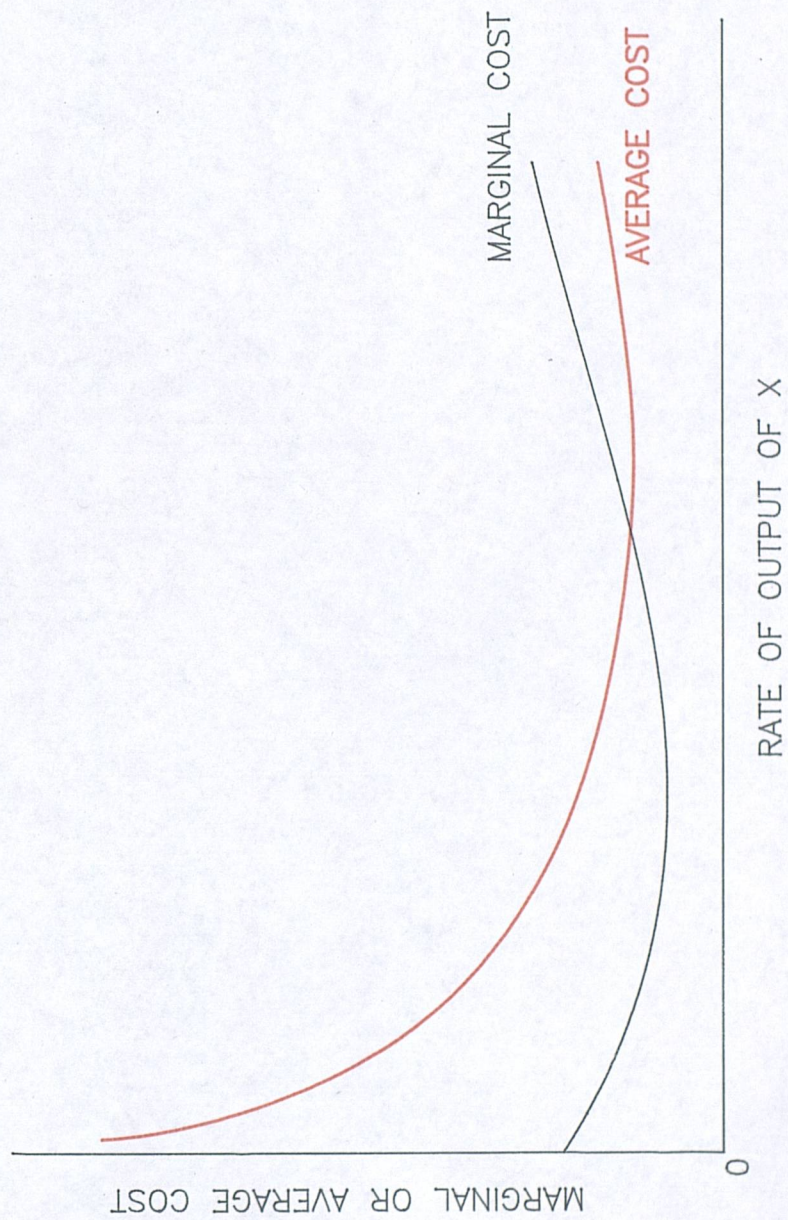
FIG. 4.1. CHARACTERISTIC SHAPES OF MARGINAL AND AVERAGE COST CURVES
SOURCE : AFTER CULYER (1980)

efficiency"[1], would be completely overlooked. The alternative therefore is that with the neo-classical approach, "Pareto improvement" rather than "Pareto dominated" would probably be the end product. In this case, one person's or group's welfare is raised without harming anyone else even though the national optimum may not be achieved. This implies that the low income households have to contribute to their housing provision. Moreover, housing services are expensive to provide and maintain and if the marxist approach is adopted the target population would have no incentive whatsoever to contribute to the support and maintenance of these services. There are a host of other disadvantages such as moral hazard, free rider problems, issues associated with the effect of externalities, etc. (Culyer, 1980).

Similarly, problems would arise in adopting Turner's theory without modification. While it is essential to encourage the low income households both in formal and informal sectors to construct their dwellings, it is equally unacceptable to encourage unplanned developments. This would have far reaching effects on property rights and it would be Pareto dominated rather than Pareto improvement as well. In as far as it is essential to distribute Government resources which could be in the form of social welfare such as health, education and housing or in the form of actual income through taxation etc., a radical distribution would equally have a far reaching effect and would not achieve efficiency and equity with the economy.

---

[1] Economic concept of efficiency implied that "a society has allocated it's resources efficiently when no input and no output can be transferred to some alternative use without making at least one person worse off, even if the welfare of others is improved" (Culyer, 1980, p.22). Economic efficiency exists only when the marginal values are equal.

4.2 **HOUSING DELIVERY MECHANISM**

Housing delivery will be better understood if housing is viewed as a product as well as a process. It is therefore essential to discuss the distinction between housing as a product and housing as a process.

4.2.1 **Housing as a Product**

A house is primarily a functional shelter. It is a source of identity and recognition to the dweller (Turner, 1976). In this sense, owning a house in the Nigerian context does not only relate to economic or commercial interpretation but to the individual's status. Hence in Nigeria, it is the ambition of everyone or every household to own a house mainly as a source of identity either inherited or purchased (Sajo, 1987). It is prestigious to own a house and it places the individual in a high status in the society.

On the other hand, the government in most developing countries tends to regard housing more as a social service or basic need rather than as a productive investment (Malpezzi, 1988). When housing is so perceived, quite often it affects the mode of delivery because it is seen by the Government as a physical facility, unit or structure, as a package or bundle of attributes or services and as a social or collective good such as health (Bourne, 1980). When it is defined as a collective good, it loses all the incentive both by the Government and the people to actively develop a good system of housing delivery. For instance, this means that the Government sees housing as a unit and not a beneficial good. It is, however, the considered view of this study that even when housing is viewed as a product, it does play a very important role in human and economic development. It should be realized that housing covers not only shelter but other basic issues such as satisfaction and status, a set of environmental characteristics which provide a level of accessibility to place of work, shopping and friends.

4.2.2   Housing as a Process

Housing should be viewed as a process which possesses all the attributes described above as well as an economic good or commodity. It should, in fact, be regarded as a sector of the economy and as such a package which involves demand and supply, input, production process and output mechanism. While housing supply deals with the physical stock of dwelling, housing demand concentrates on housing services (Quigley, 1982). The relationship between input and output components of housing touches on the market transaction or mechanism while housing status acts as a symbol in the society (Smith, 1976). All these are unified through the housing delivery mechanism. The housing delivery system, therefore, is the production mechanism through which administrative and regulatory devices are brought together in the provision of housing services to the consumers. The efficiency of any housing policy depends largely on the effectiveness of the housing delivery system. The entire process of housing delivery can only function adequately if efficient and effective institutions are set up. Fundamental to the concept of a housing delivery system are some basic parameters which act as functional components in the process of housing delivery; and these include land and infrastructure, housing finance, building materials, construction technology, labour and management (Lemer, 1982). In order to produce a dwelling unit and have this unit occupied by one or more households, it has to pass through a number of processes or different steps in the housing delivery system (fig. 4.2). Housing delivery processes do not end with the completion of a dwelling unit. As the dwelling ages, it may be necessary to rehabilitate or renew the building in order to extend its lifespan. In fact, it could be said that the housing delivery process is a continuous one.

Figure: 4.2   THE HOUSING DELIVERY SYSTEM
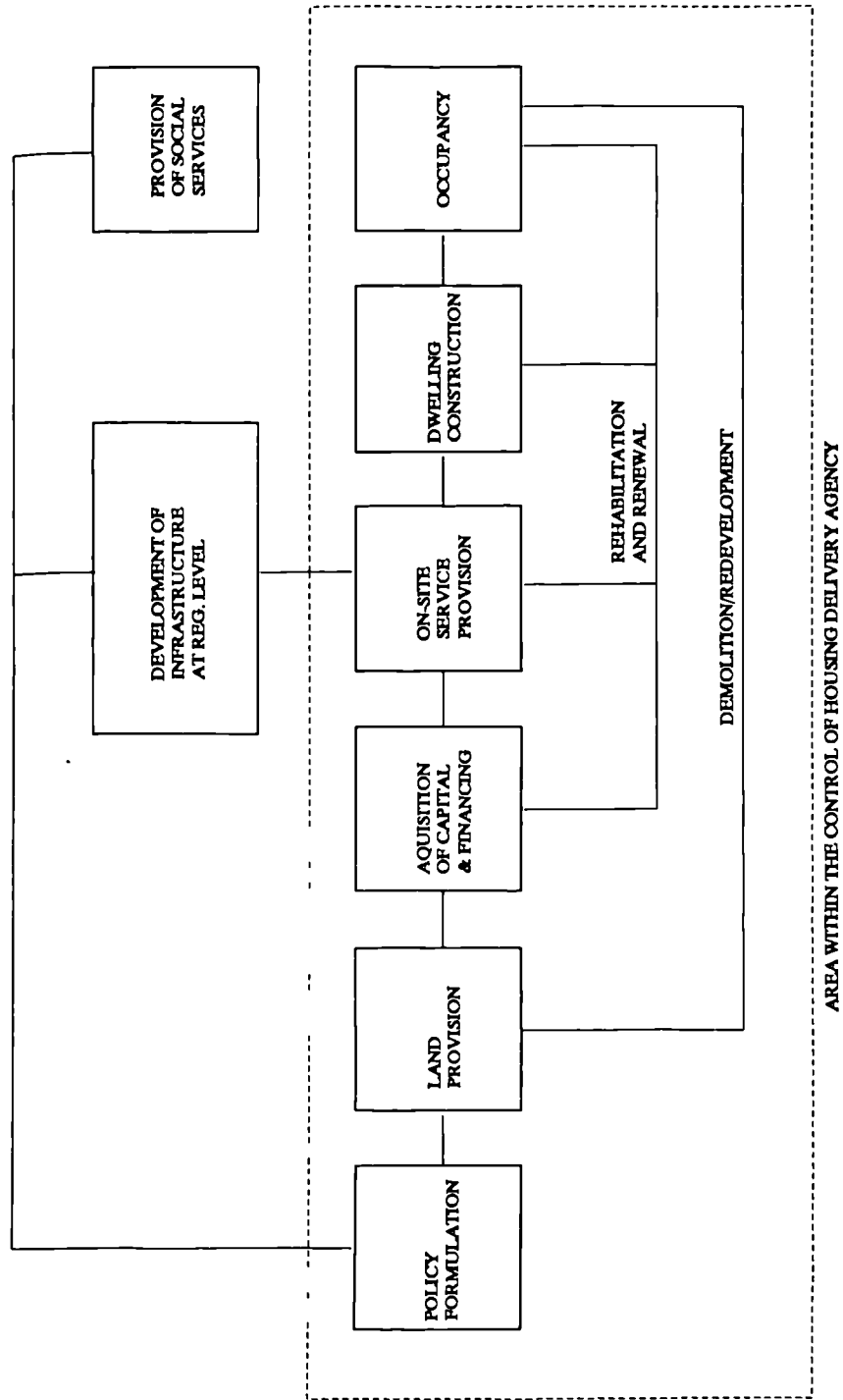
Source: Adapted from Lemer A.C., 1982

Associated with the housing delivery system and a necessary tool for successful housing policy are some activities which are completely outside the housing operation. These activities include the provision of infrastructure at regional levels, (in Nigeria it is both at Federal, State and local levels) e.g. roads, water, electricity and sewerage, some housing- related social services such as education and health care. The provision of these facilities and services are normally performed by separate organisations (mostly public sectors or parastatals) completely different from those providing housing and over which housing agencies have no control. They are, in fact, outside the scope of housing policy. Nigeria is not alone in this situation. For example, in the Western Countries, separate institutions equally provide these facilities. But this has created many problems with housing delivery in many developing countries, such as lack of provision of infrastructure (roads, water, electricity, adequate refuse collection, etc.).

In addition to the above, are other problems and weaknesses which could be identified with the Nigerian housing delivery system:

(a) Difficulties in obtaining land by low and medium income households.

(b) High cost of construction causing decline in effective demand for affordable housing.

(c) Lack of access to housing finance for low and medium income households.

(d) Poor quality of structure of dwelling units and related infrastructural services.

(e) Gross inadequacy in the total quantity of housing resulting from a very low level of production.

These problems associated with the housing delivery system in Nigeria are as a result of the inefficient housing market mechanism the problems of which will be discussed in

detail later in this chapter. The failure of the housing market is perhaps due to the fact that public agencies in Nigeria undertake to build houses, when in fact they can make the greatest contribution to the supply of housing through the input market rather than the production process and the output mechanism. Whereas improving the efficiency of the housing market will actually improve the various modes of housing delivery by both the government and the private sectors as well as the individual households. In this way, the Government delivery modes, such as site and services, upgrading, rehabilitation and the various methods used by the private sectors, will equally become more efficient.

4.3   THE CONCEPT OF THE HOUSING MARKET

Like many other goods and services, the housing market is mainly an economic market set within a given political framework. It could be defined as institutions and processes whereby builders and consumers, landlords and tenants, buyers and sellers are brought together for housing supply and demand for the purposes of exchanging resources (Bourne, 1980). In terms of economic theory, the market acts as a medium for allocating scarce resources in an efficient manner so as to maximize output or social well being, while minimizing costs. In this case, the mechanism of allocation is the price which is paid for the property at the time of purchase or renting. The urban housing market has no single market place, instead buyers move to the goods rather than the reverse. But unlike other markets, the urban housing market deals with the exchange of rights to property as affected by tenure, land-use and other restrictions, as well as consumption attributes of the house itself such as number of bedrooms, structural and decorative conditions of the property (Charles and Webb, 1986)

The structure and operation are fundamental issues to the entire concept of the housing market. Thus it is essential to analyse the housing market structure and mechanism as well as the influence demand and supply has in determining the production, allocation

and price of a dwelling (Cullingworth, 1979, Stafford, 1978). According to Stafford (1978) such analysis would require that the housing market be viewed as a central and complex aspect of the entire process of urban development and its effects on human life. The quality and quantity of housing demanded is often determined by income, family size, taste and financial circumstances of the individual household (Malpezzi & Mayo, 1985) while the stock and standard achieved is a measure of the society's welfare.

(a)   The structure of the housing market

There are essentially two main types of housing markets.

(i)   The macro-level housing market - this is concerned with the national economy of the housing sector and the interaction between supply and demand at the national level. However, at this level, the housing market equally focuses on aggregate levels of production and consumption of housing although little or no attention is paid to the composition of stock and its distribution amongst households and places. Additionally, the housing market is essentially defined by the relationships between the rate of investment in housing supply and aggregate expenditures; in which case housing competes with other sectors in the national market for scarce income and productive resources. While studies of this nature may not focus much attention on this level, it is essential to understand the housing market at macro-level as this is primarily where the parameters for the local housing transactions are dictated.

(ii)   The micro-level housing market - this focuses on the behaviour of consumers and individual producers at a more local level. At this level, the effect or reflections on individual regions or urban areas are dealt with. In other words, we are concerned here with the spatial expression of matching supply and demand, i.e., the actual

functioning of the allocation process; how housing is produced and exchanged; how rents and prices are determined and how they vary among different types of housing at particular locations. Also the roles played by local institutions and governments are usually assessed (Bourne, 1980).

Nevertheless, numerous other criteria could be used to define the housing market. For example, the location of control (privately or publicly owned) or type of tenure (owner occupied or rental), age of housing and position in the market (new or existing stock) and the quality (formal, informal, derelict, etc.). For the purposes of this study, however, the meaning attached to the housing market will be twofold, the location of control as well as the type of tenure.

(b)   The operation of the housing market

The housing market like any other market has two sides, namely, the housing stock on the supply side and the household on the demand side, in a given market area (Bourne, 1980, Stafford, 1978, Malpezzi & Mayo, 1985). This situation involves the flow of housing services from the stock which will be needed or demanded by particular households that have acquired a given housing status. It is the market transaction which acts as a link between the two. During this market transaction, the consumers or households could be prepared to trade off one service in place of another in order to derive the best package of services at a given price (Follain and Jimenez, 1986a). Competition among these processes produces a set of outcomes (fig. 4.3). Change is a very crucial ingredient in the market as it is a dynamic process. Thus, changes occur internally in the housing stock and services as well as in the inventory of households. Changes in housing stock come about through the ageing process as well as some exogenous factors. The determinants of external change mostly alter the

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                    ┌─────────────────────┐
                    │     S U P P L Y      │
                    └─────────────────────┘
                             │
                    ┌─────────────────────┐
                    │ EXISTING HOUSING STOCK │
                    └─────────────────────┘
```

SUPPLY

EXISTING HOUSING STOCK

CHANGES IN USE & QUALITY THROUGH REHABILITATION AND CONVERSION

VACANCIES - RELEASED BY OUT-MIGRANTS AND CONTROL- LED VACANCIES

NEW CONSTRUCTION

EXTERNAL DETERMINATION
INTEREST RATES
ECONOMIC GROWTH
PRODUCTION FACTORS
POLICY CHANGES
LEVEL OF DEMAND
ANTICIPATED INCOME
LEVELS CREDIT AVAILABI-
LITY
LEVEL OF VACANCY

LACK OF EMERGENCE

REVISED HOUSING SUPPLY

MARKET TRANSACTION

OUTCOMES
REVISED VACANCIES
LEVEL PRICE (REAL)
CHANGES IN OCCUPANCY
HAVING IMPROVEMENTS
DETERIORATION
NEIGHBOURHOOD CHANGE
CHANGES IN COST

EFFECTIVE DEMAND

CHANGES WITHIN HOUSEHOLD INCOME STATUS, PREFEREN- CES, INCREASE IN HOUSEHOLD SIZE

EXTERNAL CHANGES OF NEW HOUSEHOLDS FORMATION

EXTERNAL DETERMINATION
DEMOGRAPHIC TRENDS,
ECONOMIC GROWTH,
RATE OF IN-MIGRATION,
INCOME LEVELS,
DEMAND RELATED POLI-
CIES, ETC.

HOUSEHOLDS WITH - EFFECTIVE DEMAND

D E M A N D

FIGURE :   4.3

URBAN HOUSING MARKET AND ITS COMPONENTS
(Adapted from BOURNE, 1980).

rate of new housing construction. Similarly they affect the size, geographic structure and income of the households thereby giving rise to the demand for housing (Bourne, 1980). In some cases, for instance, increase in household income may raise demand for housing and alter the nature of that demand. This may, in turn, stimulate new housing construction and encourage institutions and individuals to invest in the improvement of the existing stock. This interrelated process or chain reaction is what is regarded as a housing system.

In spite of the above, the quantity of housing stock supplied is supposed to be positively related to the price of housing. Thus, if the price of housing services rises, suppliers will increase the stock of housing over the long run. Developers and builders will then relate the expected selling price of dwellings to the current and future costs of houses which include actual building costs, materials, wages, land and the cost of short term capital. It is from the above that the producers of housing have what is regarded as an 'asking price'. Even in the case of equivalent units, asking prices vary from place to place. Similarly, the consumer has a 'bid price' which is put forward for the same unit. Normally, these transactions take some time and it is expected that the asking and bid prices will converge; that is the sale price (fig. 4.4). In dynamic market situations, i.e. where there are very few vacancies, and prices are rising, the 'bid price' may exceed the asking price. Whereas where the market is slow, the convergence may not take place (fig. 4.5).

In the Nigerian situation, the above model operates as indicated in figure 4.5 above. For instance because of market imperfections, at the moment, there are many vacant middle and upper income houses while there is great pressure on low income housing in Benin City. Consequently, the bid price is always lower than the replacement value of similar properties and the convergent point described in fig. 4.4 as the sale price is almost
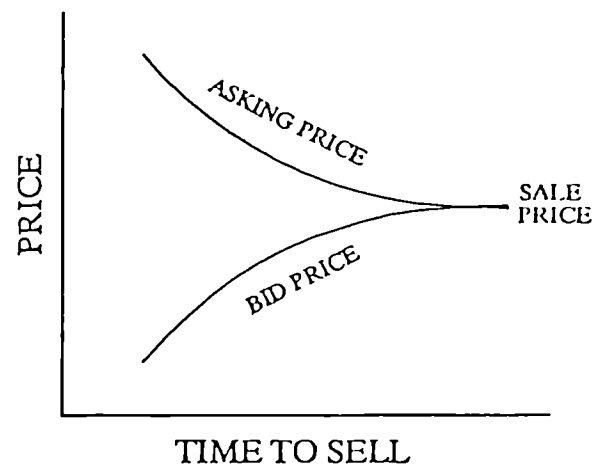
Figure: 4.4

CONVERGENCE OF ASKING
PRICE AND BID PRICE

TIME TO SELL
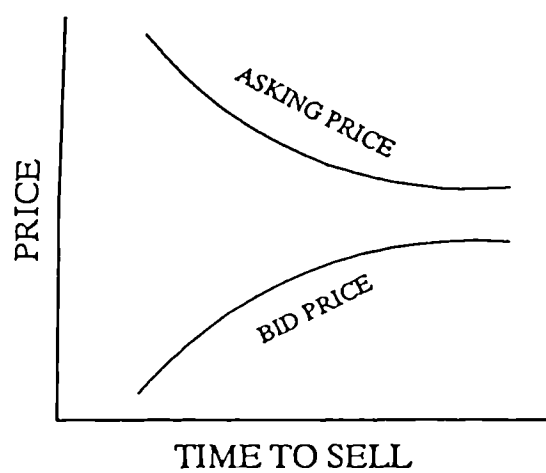
Figure: 4.5

NON CONVERGENCE OF ASKING
PRICE AND BID PRICE

non-existent. One of the reasons for this poor situation is because of what Lowry (1960) and Carigsh (1963) referred to as the 'filtering effect'. In the Benin case at the current time, it is 'filtering down' rather than 'filtering up'. So many middle and upper income dwelling units are therefore left vacant and according to Cullingworth's (1979) description, houses exist which do not meet the need of the people. Under-supply of low income housing once again reflects the market imperfection in Benin City, for instance, as many investors neglect the low income housing because it is not profitable (Agunbiade, 1983). This situation is aggravated by the fact that the low income households cannot afford the middle income dwelling units and have no access to the dwelling units provided by the government. Thus, asking prices and bid prices never converge (fig. 4.5). In other words, although theoretically this model is applicable to the Benin situation, in practice it is not because of the local circumstances which exist within the market system. Therefore in drawing up a policy, these local situations have to be considered carefully. As Megolugbe (1989) stated, the Nigerian housing market is surrounded by unique socio-cultural and political institutions. Therefore it is doubtful if common assumptions of the western market models could be applicable without adequate modifications. For example, the method of mortgage administration in the West may not necessarily be the same in developing countries in general and in Nigeria in particular. Therefore, assumptions surrounding mortgage grants and repayment in Nigeria has to take cognisance of this, rather than adopting the Western market system which is not quite the same.

This discussion would be incomplete if the group of participants involved in the entire process is not mentioned. These could be referred to as the actors which comprise of landowners, mortgage lenders, speculators, administrators, professionals, consumers and developers. In practice, the actual operation of the housing market involves all these participants and they operate within a system of institution. According to Pahl (1976, 1977), the entire spectrum of administrators, politicians, and technicians in the housing field are gate-keepers who effectively determine who gets what from the housing market

and where the allocations are obtained. However, the functioning of all these sections and institutions is to a very large extent directed by the government through its various decision makers, rules and regulations, which no doubt complicate issues some times.

4.3.1 Government Intervention in the Housing Market

The market mechanism has three sectors, viz: the input market, production processes and the output market (Malpezzi & Mayo, 1985). These three sectors are interconnected by price. The input market involves land, infrastructure, finance, materials and labour, which interact to produce housing services by developers, landlords and construction companies, and firms (the production process). The output market is composed of home buyers and renters who are interested in the consumption and purchase of housing services. However, the output market is sometimes involved with the production process through certain activities such as maintenance, rehabilitation or upgrading of services in the house.

In most developing countries, there are many problems associated with the input market which, in turn, affect the production process and the output market. Such problems include difficulties in obtaining land and finance for housing construction, especially for the low income groups who have no access to land, mortgage loans and other credit facilities due to lack of collateral (U.N., 1987). Inadequate, and lack of, infrastructure in most urban centres is common in developing countries. Because infrastructure has large economies of scale, not all the private developers or the individuals cannot afford to provide them. According to Malpezzi, et al (1987), the major obstacles which befall the supply of housing often lie in the availability of critical inputs especially land, infrastructure and financing. Hence they stated that:

> "a variety of bottlenecks tend to make it difficult or extremely expensive for producers to acquire some or all of these inputs, which are essential to building shelter." (Malpezzi, Mayo & Gross, 1987, Urban Edge 1987, p. 1)

These problems sometimes develop to very serious dimensions in such a way that the production process is poorly affected resulting in insufficient housing production. For instance, the failure of the Bendel State housing scheme of 1973-1988 discussed in chapter 2 was mainly due to the problems in the input market.

Often, instead of Governments (especially in developing countries) tackling these problems from source, i.e., the input market, they intervene in the production process by direct construction and/or manipulate prices through subsidies or allocation of finance, while rules and regulations, for example rent control, are imposed as a measure of control in the output market (fig. 4.6). These measures worsen these problems instead of solving them. Very often these interventions are counter-productive and the low income households are marginalised. In Kumasi, Ghana for instance, the imposition and enforcement of rent control has resulted in low rent but very poor quality housing especially for the low income households. Also the remarkable decline in housing investment has affected housing supply generally, especially as people invest in taxis, light engineering, etc., instead of housing (Willis and Tipple, 1988).

In Nigeria, when the rent control was introduced in 1983, there was a drastic decline in the number of housing starts in most cities (Department of Lands & Survey, Benin City, 1984). Figure 3.7, chapter 3, clearly reveals this situation.

The effect of this unstable market on the low income households is an enormous increase of housing shortage and, with economic depression; this situation is at its worst at the moment. Because the market is not competitive, only a well-to-do few are in control of land in spite of the Land Use Decree of 1978. This, therefore, enables them to fix the prices arbitrarily; in most cases they are very prohibitive. The provision of water and electricity is monopolized by the Government (especially in most developing countries),

INPUT MARKET   PRODUCTION PROCESS   OUTPUT MARKET

P
R
I
C
E

LAND

FINANCE

MATERIAL

INFRASTRUCTURE

LABOUR

CONSTRUCTION
FIRMS

DEVELOPERS

LANDLORDS

P
R
I
C
E

HOME BUYERS

AND RENTERS

WHO PURCHASE

HOUSING SERVICES

BY DIRECT
CONSTRUCTION

THROUGH   GOVERNMENT INVOLVEMENT   THROUGH

PRICE
MANIPULATION

RENT CONTROL
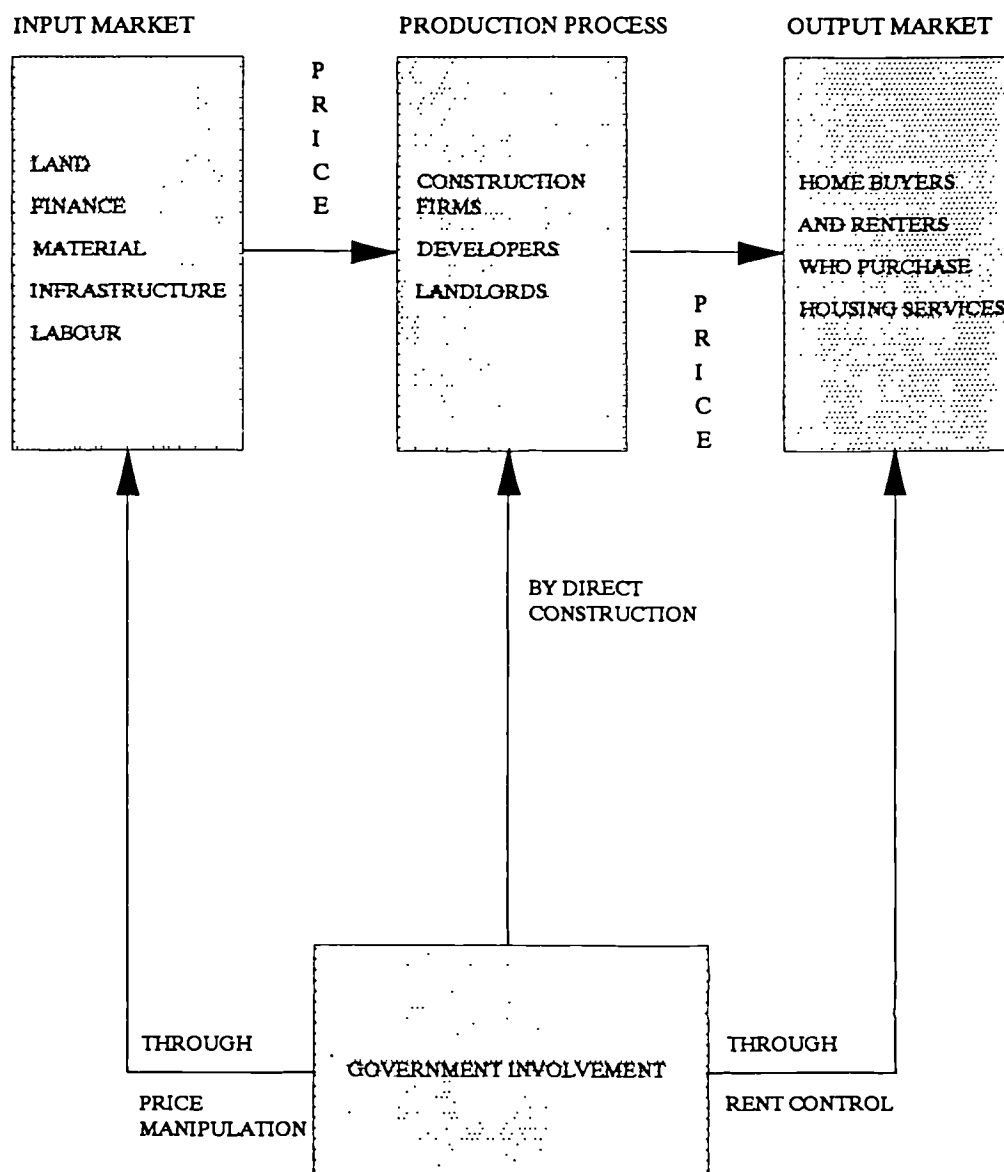
Figure: 4.6

THE MARKET FOR HOUSING SERVICES AND INPUT
(ADAPTED FROM MAYO, MALPEZZI AND GROSS, 1986)

their supply is inadequate, therefore the low income groups are always disadvantaged as they cannot afford them and their areas are often neglected.

Having identified the basic problems inherent in Government intervention and the distortion of the market mechanism, a very pertinent question we should ask at this point is: How best can housing policies be formulated in order to reduce this market distortion and yet provide housing for the people? First of all, this question can be examined through a thorough analysis of the concept of need and demand.

4.4   THE CONCEPT OF NEED AND DEMAND

The concept of need is very widely used in social policy and yet no consensus exists as to the definition; neither does it seem to have a coherent meaning. Simply put, need may be stated as any or all of the following:

(a)   a situation which requires some course of action,

(b)   the necessity to possess,

(c)   emergency, crisis, time of difficulty, destitution, lack of essentials, poverty.

In other words, it could be said that need arises where there is some objective to be fulfilled (Barry, 1965, Williams, 1978). A pertinent question which may be considered at this point is: what is the nature of this objective and whose objective is it? This brings in the issue of the parties involved when discussing housing need, for instance, society, individuals, professionals, etc. (Williams, 1978). All the parties have to agree or have a consensus on a particular issue (for example, housing) which is said to be needed. In the context of this research, the objective is to provide adequate housing for the low income households in Benin City. This could be regarded as the objective of the three parties (society, professionals and the individual). However, the level of need in which a

consensus has to exist will vary, especially as the parties have to answer the following questions:

> (a)   Is the household lacking housing supply?
>
> (b)   Is the household in need of housing?
>
> (c)   Does the household demand public housing?

According to Bradshaw (1972), there are four levels of need:

> (a)   Normative Need:- When a desirable standard is laid down and is compared with the standard that actually exists. If a group or individual's current situation is lacking in any way from this set standard, then the society regards them as being in need. The drawback in using a normative definition is that the middle class norms are used to assess need in a working class context. Also different professionals may lay down different and conflicting standards sometimes. The source of data for this sort of need is normally taken from norms, rules and regulations laid down by the government such as planning regulations and building codes and these may be flawed.
>
> (b)   Felt Need: When need is equated with want. During the process of assessing need for a particular service, say housing, people are asked whether they actually feel that they need it. Thus felt need is a very important component of need although it is an inadequate measure of 'real need' because it is limited by the perception of the individual alone without actually considering the views of society and the professionals. Data on felt need is normally collected from household survey.
>
> (c)   Expressed Need: This is felt need translated into action. From this definition, 'real need' would be referred to as those people who demand a service. People do not demand a service unless they

actually feel a need for it. Based on this, it could be argued that all forms of demand are forms of need, but not all forms of need are forms of demand. This point will be further explained later in this chapter when examining the relationship between need and effective demand. Through the local authority housing waiting list, the required data for this definition could be obtained; though using waiting lists has many weaknesses as many households in need could be excluded from the list for one reason or another and many on the waiting list have already found an alternative supply and have not been removed from the list.

(d)   Comparative Need: A measure of need is determined by studying the characteristics of those already enjoying certain services; in this case it could be the recipients of public housing in Benin City. When households with similar characteristics are not recipients of public housing, then they would be regarded as being in housing need. However, this definition seems to be more complex as the fact that one area B is in need, in comparison with another area C, does not necessarily mean that C is not in need.

According to Bradshaw (1972), the point where all these definitions overlap when presented graphically could be regarded as the 'real need' (fig. 4.7). Nevertheless, Bradshaw's taxonomy did not seriously consider the role of the society, rather it concentrated more on the individual and the professionals. However, the above definitions of need have demonstrated that need is used in different ways in different contexts. Therefore, it is possible to reconcile the concept of need with the economic analysis of demand. According to Taylor (1959 as cited in Williams, 1978), need can be categorized into:

(a)   something that needs to satisfy a rule of law

Point of overlap
of all the defined

KEY:

++++   Normative need

————   Felt need

– – – –   Expressed need

··········   Comparative need
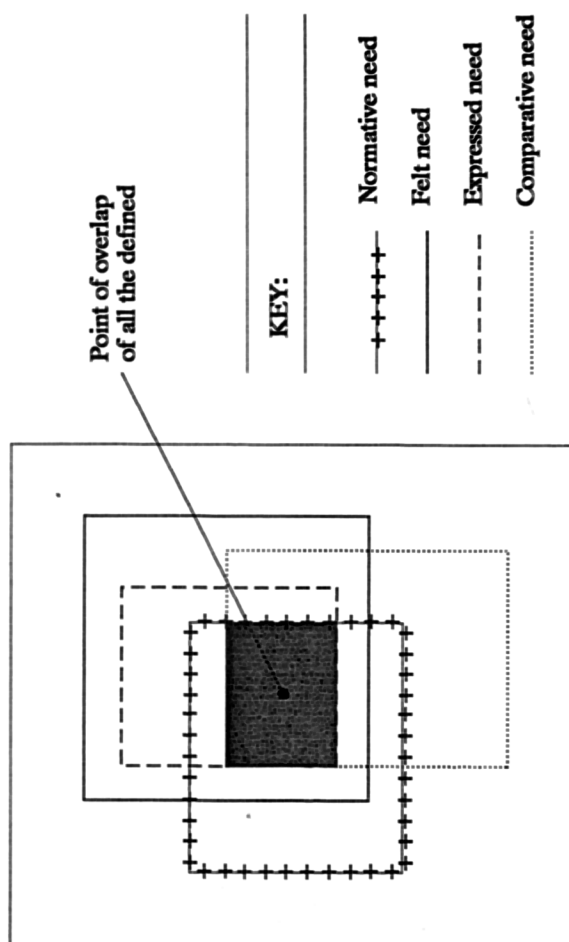
Figure: 4.7

A Taxonomy of Social Need

Source: Adapted from Bradshaw, 1972

       (b)   a means to an end

       (c)   motivations, e.g. wants, drives, desires, etc.

       (d)   recommendations or normative evaluations.

This classification tends to fall in line with the four definitions above. While Bradshaw (1972) highlights the major distinction between professionally defined normative needs and individually defined felt needs, (Smith, 1976) developed the following typology which involves variations in three dimensions:

       (a)   the unit of need (e.g. individual-family-Committee)

       (b)   the cause of need (e.g. material circumstances versus personal inadequacy);

       (c)   the assessor of need (particularly individual versus professional).

In other words, definitions in practice differ on all these dimensions according to ideology. From all these it could be inferred that need is a concept which, at best evokes limited and uneven degrees of consensus according to the circumstances, or at worst evokes a general lack of consensus.

In the circumstances, a pertinent question that readily comes to mind is how far can the concept of need be expressed by using economic demand models or microeconomic analysis of demand? Although this may seem an irregular way to examine need, we believe it may be helpful in illuminating some of the interactions between need and demand in particular situations such as in provision of housing where services have to be rationed. To adequately relate need and demand, it is essential to know the meaning of demand.

Demand is a measure of what people want and need, and have the ability and are willing to pay for at the going price in relation to their incomes. It is also affected by prices and availability of alternative goods and services. It is generally believed that goods and services can be assessed and measured in some ways and that quantity can be varied. A very crucial issue in demand is its dependence on both willingness and ability to pay.

If a good is not marketed, demand cannot be directly observed. Demand is normally expressed not as a single value but as a relationship with another variable, especially price, holding other factors such as income constant (Culyer, 1980, Gordon, 1984). What then is the meaning of need in the context of demand theory? This question brings in the definition which equates need with want (Weale, 1978) which draws very closely to the economic concept of demand. In the context of demand theory, therefore, need means four things:

(i)   When based on client preference - need is inelastic or demand that does not vary when either price or income varies.

(ii)   When based on client income - need means ability to pay.

(iii)   When based on others' preferences - need means externality, i.e. those things that are required but not absolutely essential like the inelastic goods. Externalities are often referred to those goods which are elastic. Housing is a merit good.

(iv)   When based on supply/cost - need is where treatment is worthwhile in cost-benefit terms. The link between need and demand is presented on figure 4.8.

Having defined need and demand, the next task is how to relate it to the present study. In other words, which of these definitions shall we apply in this research? In the past, housing need in Benin City has been derived from estimates of the requirement to bring the total housing stock into a desirable relationship with the number of households (demographic requirement) and an estimate of the replacement (Federal Republic of Nigeria Fourth National Development Plan, 1981-1985). This could be regarded as the normative approach to need. In this case, Government tries to cope with need without limiting it by the ability to pay. Under this type of notion, housing policies were based on the 'Rule of Thumb'. For instance, there is always an assumption that low income
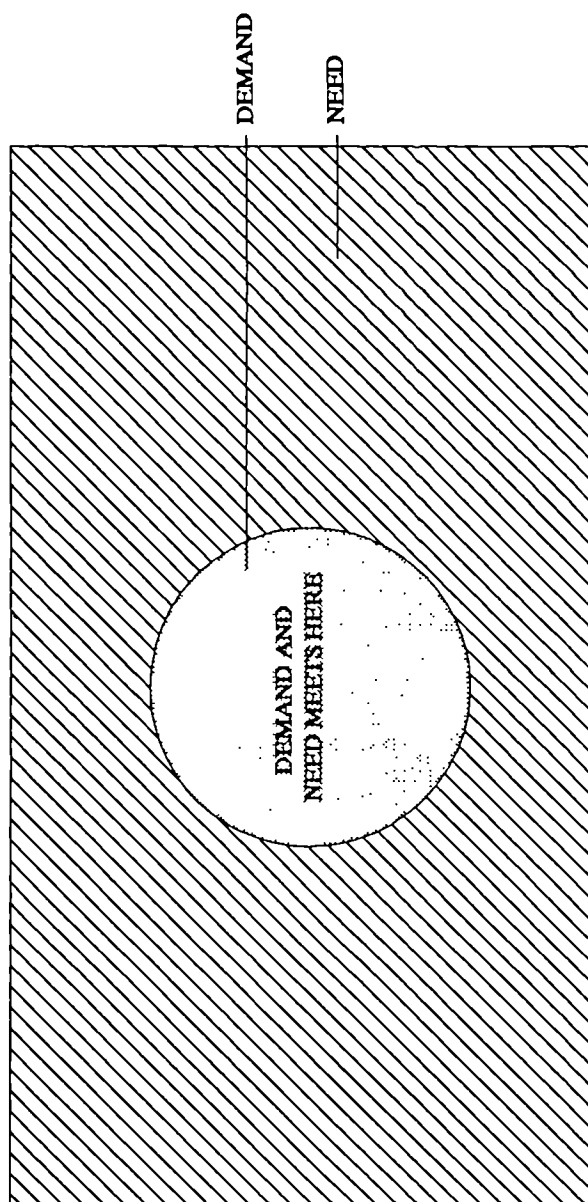
Figure: 4.8

CASES OF NEED WHICH REQUIRE EXTERNAL INTERVENTION

households would be willing to pay between 20 and 25 percent of their monthly income on housing. This did not mean that they were able, this depends on their levels of income and rents expected from housing projects. Because incomes were in many instances very low, the projects ended up being heavily subsidised or alternatively taken over by higher income groups.

In the light of the above issues, Governments, especially in developing countries, have recently realised that they can no longer continue with the provision of housing for the low income households at subsidized rates. The implications here are that costs have to be recovered from beneficiaries. Therefore, cost recovery strategies have to be re-examined and housing provision would need to be reviewed in a cost-benefit framework. Perhaps as a result of this realization, a number of social analysts and housing specialists have concluded that need is best regarded as a cost-benefit judgement (Culyer et al, 1972; Davis, 1978;) especially in view of the following reasons:

(a) Because cost-benefit analysis utilizes consumer surplus measures, it is potentially sensitive to the link between need and demand.

(b) Cost-benefit analysis is intended to incorporate private and external benefits as well as costs.

(c) To some extent, cost-benefit analysis can handle issues of risk and uncertainty. Because cost-benefit analysis has the potential weakness of handling inequalities of income distribution at the conceptual level, it may be desirable to discount for differences in ability to pay in order to fully use an economic approach to assess need.

It is in the context of the above that the author has decided to use some economic demand models such as the hedonic indices, the present value method and the willingness to pay approach for the estimation of required housing for the low income households in Benin

City and their level of affordability. In addition to this, the concept of need should equally be used in the housing estimation but to a certain limited degree. While the demand models are used to a certain cut off point, the concept of need would be applied thereafter (figs. 4.8 & 4.9). This is, in fact, where all the four definitions of need above overlap (fig. 4.7). Those below the poverty line will probably fall within this category which means that they may not be able to pay for housing, and in that case, something has to be done for them. This will, therefore, match the expression by some social analysts who feel that the consumption of specific services should not relate to ability to pay in relation to minimum standards of services in cases such as education, health and housing (Sen, 1972, Webb and Sieve 1971 and Weale 1978) while the neo-classical economic approach being suggested by the researcher would be applied to those above the poverty line but still on low income.

4.4.1 Conceptual Assessment of Housing Consumption Requirement

In order to achieve an effective housing policy formulation aimed at solving housing problems, it is essential to analyse the present housing situation and future housing prospects of the population of any given city or country for which estimates are required. Then the time period for which the policy has to address has to be defined. This is because it is difficult for policies to make impact within a short period of time, while projections could become obsolete and misleading to rely upon if the time scale is too long.

When these initial problems of definition are sorted out, the two main aspects of housing policy formulation are:

      (a)   the actual analysis of the current operation of the housing system

      (b)   evaluation of required need.

These should be thoroughly understood. While the former has been tackled under section 4.2, the latter involves a clear understanding of:

NEED

AN INDIVIDUAL'S SITUATION WHICH IS BELOW THE SOCIETY'S DESIRED STANDARD THIS INDIVIDUAL CANNOT NECCESARILY AFFORD THIS WANT

DEMAND

A GOOD WHICH AN INDIVIDUAL WANTS AND IS WILLING AND ABLE TO PAY FOR

DEMAND & NEED MEETS

WHEN THE NEED OF THE INDIVIDUAL COULD BE MET THROUGH SOMEONE ELSE'S WILLINGNESS TO SACRIFICE RESOURCES FOR THE INDIVIDUAL TO HAVE IT

FIG. 4.9. BASIC DIFFERENCE BETWEEN NEED & DEMAND

(i)   the number of dwellings required over the planning period to house the population adequately;

(ii)   the level of investment required to bring the entire housing stock to a minimum level of quality commensurate with projected requirements (Gray and Richardson, 1985);

(iii) projection of demographic trends;

(iv)   the minimum housing standard required with a detailed understanding and analysis of the market mechanism as it affects housing supply and household demand for housing the entire population. Processes described above will become easily integrated and well related to each other. Through a social and household characteristics survey, the effect of each parameter upon the entire socio-economic system affecting the housing supply and consumption patterns will be revealed. Fig. 4.10 shows the relationship between these processes.

If these conceptual classifications and logical relationships are observed, the formulation of a housing policy should be based on the following five concepts (Merrett, 1984).

(a)   Effective Demand (affordability, willingness to pay, etc.).

(b)   Housing Consumption Requirement (housing need).

(c)   Popular Aspiration or User Preference.

(d)   Actual Standards

(d)   Targeted Minimum Standards.

Through these the housing requirements would be adequately assessed.
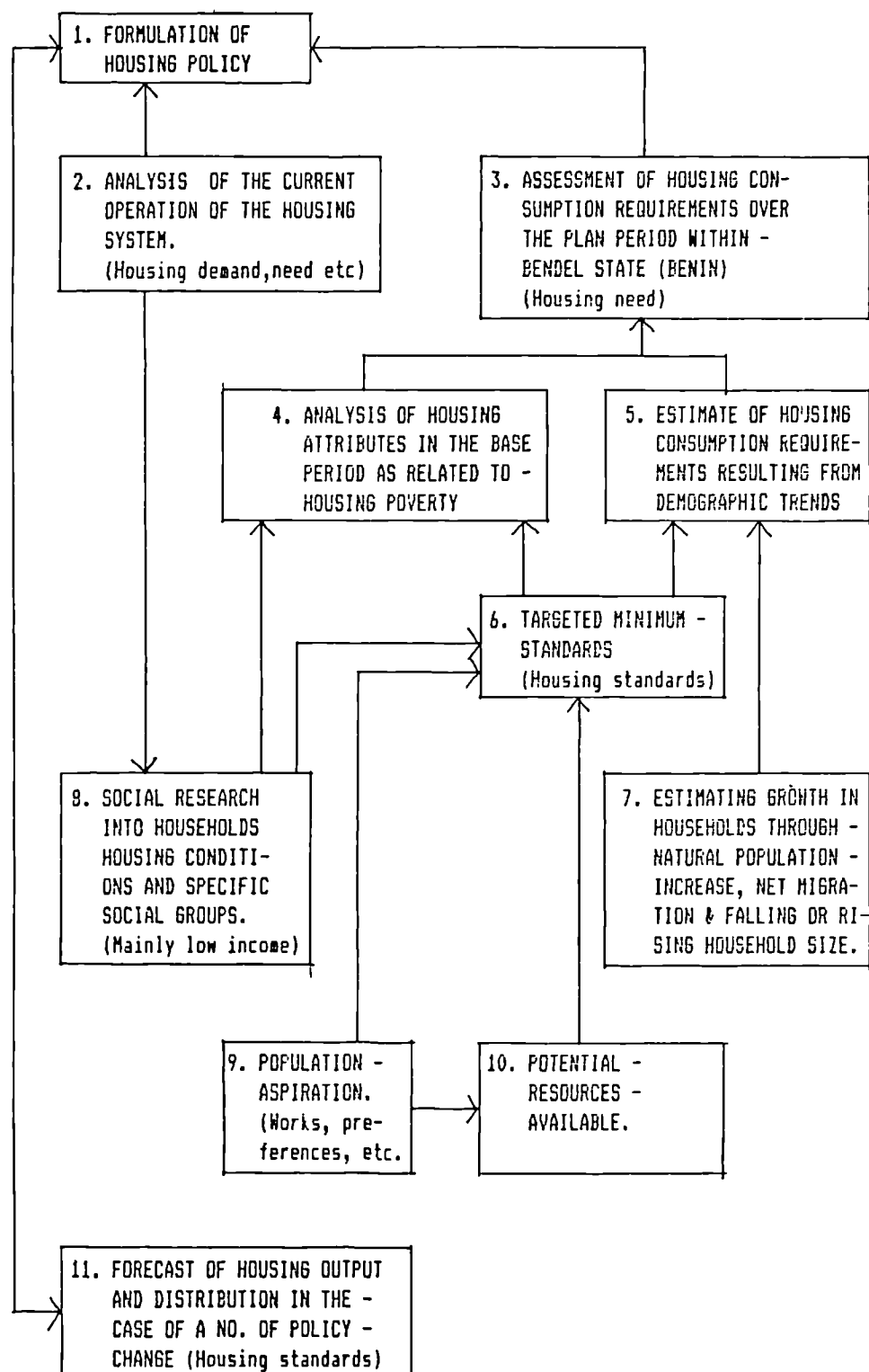
FIGURE :   4.10

THE ASSESSMENT OF HOUSING CONSUMPTION REQUIREMENTS.
(After Merret. C. 1984).

4.5   THE CONCEPT OF AFFORDABILITY

One of the fundamental problems associated with low income housing provision is the misunderstanding of the concept of affordability. Recently the issue of cost recovery is gradually making an impact on the minds of policy makers and project financiers as resources are generally dwindling particularly in developing countries, as governments can no longer continue to subsidize housing. Therefore housing programmes can only be suitable if the cost of development is fully or partly recovered. At the same time, most projects are designed in a way that they tend to ensure that the target population or beneficiaries are not prevented from spending what they can afford on housing, neither are they induced to spend beyond their capacity and what they are willing to spend on housing (Lee, 1985; Keare & Jimenez, 1983). Coupled with these are the questions of accessibility and replicability (U.N., 1986); none of which can be possible if the project is not affordable to the target populations. Consequently, the appropriateness of a housing project to low income households depends on whether or not the project is affordable. Thus the concept of affordability is important for urban development projects because of some of these basic issues. For instance, replicability should be possible with little or no subsidy, while housing projects for the low income groups should be generally accessible to a large proportion of the low income households. These can only be possible if the complex issue of affordability is properly understood and housing policies formulated and projects designed accordingly.

Having explained the basis for the present concern for affordability, what then is the meaning of affordability? In its simplest form, affordability could be described as the extent to which households can afford to pay for housing goods and services. According to Keare and Parris (1982), affordability can be defined as a certain level of urban services which is affordable to a low income beneficiary household if the amount from monthly income that a household is willing and able to pay for shelter-related expenditures is

sufficient to cover the monthly costs of providing these services. According to them, affordability can symbolically take the form of:

$$C \leq ay$$

where C = monthly project cost

Y = monthly family income

a = the proportion of income the household is willing and able to spend on housing.

In other words, "if 'a' represents the average propensity to consume housing (the proportion of monthly income 'y' a household is willing to spend on it) then a unit of project housing with service level 'i' and monthly costs 'c', is estimated to be affordable down the i_{th} percentile of the income distribution if the following is true: $ay \geq c_i$" (Keare & Jimenez, 1983).

However, in affordability calculation, it is important to examine the parameters 'a', 'y' and 'c' carefully as the measurement of these parameters could be problematic. It is obvious that considerable variability exists in the value of cost, income and affordability; therefore it is particularly crucial to know if the parameters have been accurately measured and also if the assumptions made by the decision makers in carrying out their affordability calculations are valid. Also the effect of external factors (such as inflation) on projects should be considered as these parameter measurements are being conducted especially where it is thought to be necessary. For instance, inflation is often taken into account when calculating cost of services, depending on how long construction takes, while inflation after allocation and occupation cannot be considered in the calculation. Following from this therefore, inflation should be taken into account on the Bendel State low income schemes (1973-1988) discussed in chapter 2, especially as construction commenced in 1973 and most of the units were not completed until 1978.

To further examine affordability, it is essential to first analyse the issue of willingness to pay which is an important aspect of the whole concept of affordability.

4.5.1.   Willingness to Pay

This term 'willingness to pay' refers to the ability and willingness of households to pay for services and goods. In the context of this study, it means the ability and willingness to pay for housing consumption. Willingness to pay for housing is not a fixed proportion of income. Rather it varies with total household income, type of tenure (ownership versus renting), the package of the services being purchased, perceptions about the investment potential of the shelter package (for instance, through sub-letting), quality, cost of other competing needs (i.e. cash expenditure on housing versus consumption of other goods) and certain household characteristics. For instance, Grimes (1976) found in his studies of some developing countries that the average percentage of household expenditure devoted to housing across the cities is between 11.7 percent in Kingston to about 20 per cent in Mexico City and Seoul; while in Britain it is between 15-22 per cent (Nicholson & Willis 1991). When Grime assessed the expenditure pattern of various income groups, he discovered that low income households spend a larger share of their expenditure on housing than other income groups. It is therefore not surprising that as income rises and other demands are met, the amount devoted to housing may remain constant or fall. Other studies conducted in Santa Ana, El Salvador, Senegal and Zambia showed similar results. Nevertheless, these results are subject to various interpretations among project managers, researchers and institutions involved. These diverse interpretations are not unconnected with the great difficulties associated with the issue of measurement in affordability calculations. Consequently, the various interpretations could be traced to the fact that some housing specialists believe that the propensity to spend on housing does not vary with income while others feel that it varies with income.

In Britain for instance, the prosperity to spend on housing is income elastic and it is about 7 per cent (Cameron, Nicholson & Willis, 1991). Although empirical data is not available for Benin, Nigeria, experience shows that it is equally income elastic. These divergent views notwithstanding, to estimate 'a' the measure of income 'y' and actual housing expenditure or rent 'R' must be used. In which case

$$a = R/y$$

and this could be viewed as the average propensity to consume housing services over a given period. However, the delicate issues of the non-homogenous nature of housing, the uncertainty and variability of the population itself, which create many problems in estimating these values, should not be overlooked.

A very fundamental issue in the measurement of the propensity to consume housing 'a' or willingness to pay for housing services is income. Often it is difficult and ambiguous to actually define the income that should be included in affordability calculation. More especially as Keare and Jimenez (1983, p. 19) put it "whose income and what sources?" Quite often there is the temptation to think that the monthly income of the head of household should be used as the component of total household income particularly as it is viewed as the only stable income. However, this has been proved to be incorrect as it could lead to serious underestimation and distortions of household incomes. Income is differently defined from place to place.

In Nigeria, for instance, the 'nuclear household model' is a colonial legacy and does not necessarily apply in practical life (Fapohunda, 1987). According to her, this is because most Southern Nigerian spouses do not have a joint account and thus a common budget. Often, they have separate allocative priorities, irrespective of the fact that both spouses contribute to the financial up-keep of the households. In most cases, their contributions are clearly defined. Rents, the purchase of relatively fixed consumer durables, for example, furniture or refrigerators, and children's school fees are the responsibility of the

husbands, while wives primarily finance expenditures personal to them and their children. While agreeing with these findings, Fapohunda (1987) did not, however, state whether this situation applies to all income groups in the urban areas. Although no empirical evidence exists, it is common knowledge that the urban low income household financing is quite different from the medium and high income groups. This is because most low income wives are either petty traders or full time housewives. In such a situation, the urban low income households have no choice other than to have joint accounts. It must ^{be} admitted, however, that this equally differs from the rural areas where the low income wives are farmers and still manage to run separate accounts as Fapohunda (1987) pointed out.

Nonetheless, because this study is mainly focused on the urban low income households, income is therefore regarded as the sum of all members' income from all sources. In other words, household income based on the income of all household's members from all sources would be used in this study. Although there are two kinds of income: cash income and income in kind, this study is strictly based on cash income. This is because housing demand is determined by the economic notion of permanent income (Friedman, 1983). It is important to mention here that income fluctuates during the year and over the family life cycle. This affects household's perception for housing investment.

Strongly associated with income measurement is the problem of distortion by the families or households. Some of the families either claim that their incomes are less than they really are, in order not to be considered too well off to join a project, or others may claim a higher income in order not to be considered financial risks. Yet another group, such as some families in Nigeria, may conceal their actual income for fear of taxation and in some cases out of ignorance.

Another problem associated with measurement is that some project definitions of affordability tend to limit participants to income earnings only. In fact, in some developing countries, the transfer of income greatly augments the incomes of families. For example, one third of the families living within the informal housing sector in Santa Ana, El Salvador, have their incomes augmented with income transfer (Grime, 1976). In Ghana, over 30 per cent of new housing starts are financed through income transfer (Diko, 1991). Even in Nigeria, income transfer from the Western Countries, the Gulf, for example Saudi Arabia, is becoming popular although no research has been conducted to assess the actual contribution this makes to the economy and household income. Nevertheless, it could be dangerous to rely upon income transfer for planning purposes and policy issues as it may not be constant and, moreover, is not easy to measure.

Recently, many researchers, economists and housing specialists are beginning to think that decisions on consumption should not be based on current income, rather that the permanent income should be used. In other words, households should calculate what they believe to be the component of their income which is stable or permanent and base their consumption decisions on that. In spite of the foregoing, policy makers are still faced with two major problems, namely:

(a)   the estimate of 'a' using current income and apply it to current income measures or estimates;

(b)   the estimate of 'a' using permanent income and apply it to consumption expenditure, as a proxy for permanent income or even to estimate 'a' using this proxy as has been done by some analysts.

The most appropriate approach could only be determined after accumulating empirical evidence and this is outside the scope of this study.

Having carefully analysed some of the main issues involved in affordability calculations, the obvious question which is of direct relevance to this study are: In what ways will the entire concept of affordability affect the urban poor or the low income households?

(a)   in terms of accessibility to housing services of minimum standard?

(b)   will it reduce their overall consumption or utility of housing services?

(c)   if the poor, for instance those below the poverty line, can hardly afford food, how then can they afford to pay for housing?

(d)   or should they be completely neglected in the entire development?

In other words, housing policy formulation strategies in developing countries have to specify or answer the question: "affordable by whom" (Gray & Richardson, 1985, p.199) especially when the issue of affordable policy or programmes are raised. As shown in fig. 4.6, section 4.4 above, those who fall within the category where all the four different types of need overlap definitely cannot afford to fulfil their need. Similarly, in the area of study, those below the poverty line which comprise about 40 percent of the population of Benin City cannot afford to pay for the housing which is being provided by the government using the present policy in operation (Sada, 1985, Ozo, 1986). It is therefore not surprising that this study has earlier proposed the following:

(a)   a form of intervention which should not essentially be that being advocated by the marxists.

(b)   that a combination of economic demand models and the concept of need be used for the estimation of housing requirements in Benin City.

On the contrary, assuming those households above the poverty line can afford and are willing to pay some amount, will the amount they are willing to pay cover the long run marginal cost of construction or the total cost of construction including capital investment

costs? When applied to conventional housing, is what people are willing to pay meant to recover total cost of construction including salaries, maintenance, etc.? These and many such issues should be investigated especially as the affordability concept cannot be easily understood unless these issues are clearly defined and well explained.

4.6 ECONOMIC DEMAND MODELS

In the preceding section we have seen that the Government in many developing countries cannot continue to subsidise housing projects without fully or partially recovering the costs. Furthermore, costs cannot be recovered unless the projects are affordable. These can only be possible if projects or programmes are appraised, evaluated and housing demand adequately estimated. In addition to the above is the complex and unique circumstances of the housing market situations in most developing countries in general and Nigeria in particular, which complicates the provision of housing for the low income groups. In search of a technique, therefore, through which the above problems could be realistically tackled, the use of some economic demand models such as the hedonic indices and the present value method have been proposed.

In the United States and Britain, housing market analysis using the economic demand technique has been very widely studied (Malpezzi, Mayo & Gross, 1985). Among such authors are Quingley (1979) and Weicher (1979) who have concisely summarized the housing market analysis; while Deleew (1971) and Mayo (1981) have reviewed the literature on demand. Others include Olsen and Barton (1982), Clemmer (1984), Box and Cox (1964), Malpezzi (1988), Cobb (1983), etc. who have actually developed different formulae for different economic demand models. On the other hand, there has been relatively few housing demand studies conducted in developing countries. The few studies of this nature that have taken place in developing countries have concentrated on Latin American cities probably because this is where data is available, and a few other areas

such as Korea, Malaysia and Egypt. Authors such as Howe and Musgrove (1977), Luch et al (1984), Ingram (1984) conducted studies on some Latin American cities such as Ecuador, Caracas, Central Chile, etc., while Follain et al (1980) and Mayo et al (1982) worked on Korea and Egypt respectively. Quite recently, Malpezzi, Tipple & Willis (1989) and Megolugbe (1983) have conducted studies on the effect of rent control on housing in Ghana and the housing market situation in Jos, Nigeria respectively, and, of course, the studies conducted by Malpezzi, Mayo and Gross (1985) on housing demand in developing countries based on sixteen cities. They proposed the cross country model after their studies. While it is not within the scope of this study to discuss the results of these housing demand studies in various countries, it is worthy of mention that most of the studies did have common findings:

(a) Generally demand is relatively income inelastic as most income elasticities in most cities investigated are between 0.5 and 1.0.

(b) Price elasticities are below income elasticities in absolute value. In other words demand is very inelastic with respect to price and medians for owners and renters equal to -0.2 and -0.3 respectively (Malpezzi, Mayo and Gross, 1985).

The fact that the above findings and many others have been found to be common in these areas investigated have given credence to the use of these economic demand models, their weakness notwithstanding.

The main objectives in which the use of the economic demand models is proposed, therefore, are:

(a) To attempt to use a housing hedonic index for housing market policy analysis.

(b) To investigate the benefits and costs of public housing programmes in Benin City both to the participants and the developers.

(c)   To estimate housing need and demand through a more realistic
means of understanding what is feasible as well as desirable.

4.6.1   Hedonic Indices

The hedonic indices are used in a multi-regression analysis which enables analysis of
'treatment' and 'control' groups which are not identical (Willis & Tipple, 1988). It
attempts to sort out the influence of housing and non-housing factors in determining the
market value of units (Murrill, 1983). The hedonic price index is, therefore, mainly used
to estimate the implicit prices of measurable housing characteristics in the private sector
(Megbolugbe, 1989); while the coefficients derived from these measurements are used to
estimate market rent for particular components of housing in the public sector.

Hedonic studies are based on an understanding of the complex and heterogenous nature
of the housing product. The theoretical foundation and econometric procedures used in
the application of the hedonic technique to estimate housing demand is clearly stated in
Follain and Jimenez (1985a). According to them, housing is defined by a bundle of site
and residential attributes. Hedonic price theory presupposes that households differ
regarding the amount of these attributes they want to consume. The hedonic technique
is therefore used to identify the schedule of prices or rents which clear this implicit
market (Megbolugbe, 1989).

The theoretical base for the construction of a hedonic price model presumes a relationship
between housing prices or rent and the characteristics. These characteristics could be
classified into three categories:

(a)   Structural characteristics of the dwelling (such as age of building,
building materials, plumbing fixtures, etc.) denoted "S".

(b)   Neighbourhood characteristics (such as availability of electricity and water) including the spatial location within the housing market and city (Cobb, 1982) denoted "N".

(c)   Characteristics which affect the price (such as utilities included in rent, for example mode of ownership, length of tenure, etc.) and other factors that could affect the contract term denoted "C".

Thus market prices or rents denoted by P or R (it is important to note that some authors use Rent as surrogate for Price; in other words, rent is actually price for flow of housing services; the purchase price represents capitalized rent) are expressed as:

$$R = F (S, N, C) \dots\dots\dots\dots\dots\dots\dots(i).$$

The variables that will be used later in this study will be drawn from the above three categories and, as much as possible, those deemed relevant to the Nigerian circumstances will be chosen. In the same manner, the part hedonic functions will play in index number construction will depend upon the relationship between the characteristics and the goods or commodities ultimately being consumed (Cobb, 1982), in this case, housing.

4.6.2   Present Value Method

The present value model is one of the techniques used for project appraisal. It works on the simple principle that a dollar (or Naira) today is worth more than it would be in a year's time. This arises because of people's preference for the present over the future, which is taken into account through the discounting process. Therefore, for project evaluation and decision making regarding a particular project, this technique predicts that an investment is worth undertaking if the financial return is equal to or greater than the amount put into it. In other words, if a project investment has a zero positive net value

(which means that the financial return is either equal to or greater than the cost of the project) then that project should be undertaken and should be accepted (Lumby, 1988). As a matter of principle, an evaluation exercise using the present value technique has to convert all the parameters to the same measurement unit. Therefore the compound interest used for the calculation of the process described above is:

$$A (1 + r)^n$$

where:

A   is the initial amount invested or deposited

r   is the (annual) rate of interest

n   is the number of years for which A is left deposited

Generally, $A (1 + r)^n$ is therefore the terminal value of an amount 'A' that has been placed on deposit for 'n' years at an annual compound interest rate of 'r'. Similarly $A/(1 + r)^n$ is the present value of an amount 'A' received in 'n' years time where 'r' is the annual compound interest rate. To calculate for the terminal value we have to 'compound forward', whereas in the case of the present value calculation, we 'discount backwards' through time. Hence the present value could be easily expressed as $A (1 + r)^{-n}$ (Lumby, 1989) or reciprocal of compound forward.

However, the net present value of an investment project can be expressed as the sum of its net discounted future cash flows:

$$\sum_{t=0}^{n} \frac{A_t}{(1 + r)^t}$$

where A^t =   the project's cash flow (either negative or positive) in time

             t   =   takes on values from Year 0 to Year n.

             n   =   the point in time when the project comes to the end of its lifespan.

             r   =   annual rate of discount or time value of money.

When this expression has a zero or positive value, the project should be undertaken but when it has a negative value, the project should not be undertaken. Through this calculation, decision makers could be advised as to which project would pay back faster among various alternative projects.

The present value technique could be used to compare the efficiency of alternative Government interventions in the housing market using a set of common and comprehensive market (Malpezzi, 1988). In such a way, it will help to clarify the structure of incentives in a given market in a regulatory framework, and will also attempt to predict the consequences of the changes in those incentives.

Government interventions such as regulations, taxes and subsidies have costs and benefits which are not often estimated explicitly. Even where costing takes place, some of these interventions are studied in isolation and therefore their effects cannot be properly perceived. This technique is therefore capable of giving explicit calculation and presentation of the financial cost-benefit of each investment from the point of view of each market participant such as developers, landlords, tenants and homeowners; more especially as costs and benefits accruing from different interventions have various effects on the different participants mentioned above in the market. This is because one participant's subsidy will not always cancel another's cost.

Therefore, in order to ensure that shelter and infrastructure investments are productive in such a way that cost will be recovered over a certain time period and benefits will reach a certain category of society (the low income groups), it has become necessary to use this cost-benefit analysis technique. According to the operation of the present value technique, if a housing project is evaluated and the present value of the benefits to the society exceeds the present value of its costs, the investment in such a project or unit is efficient (Malpezzi, 1988). In other words, the returns to such an investment exceeds the

opportunity cost of capital and this is measured by the discount rate. Although the present value technique cannot set society's distributional goals, it can demonstrate the cost of reaching alternative goals. When properly modelled on demand, it may be possible to predict who will benefit and by how much (Malpezzi, 1988).

Nonetheless, this technique is not without limitations. How, for instance, can we place monetary value on regulations and such other inventions? Subsidies, taxes and market imperfections have to be costed as they are inputs to the model. These are not easy to do and we may have to end up with mere estimates. Unlike other cost-benefit models, risks and uncertainties are not built into this model. This is a very great drawback. Thirdly, the model is oversimplified. For example, it only uses fixed rates of mortgage lending that are currently used in its present form.

In spite of these limitations, the researcher has chosen to use this technique because it offers the opportunity to compare various government programmes. Moreover, with this technique it will be possible to assess the effect of various interventions on different programmes thereby making it possible to predict the general effect of certain programmes depending on the kind of interventions applied by the government. Finally, this technique will enable us to predict who will benefit from government programmes, what kind of programmes to undertake, and by how much they will benefit.

4.6.3 General Criticism on the Use of Economic Demand Models for Housing Estimation and Policy Analysis

The use of an economic approach to need and housing market policy analysis had been heavily criticised as follows:

(a) These economic techniques normally fail to recognise any priority for needs.

(b) They totally neglect the non-material dimensions of welfare.

(c)   There is heavy reliance on individual preferences, especially in the case of willingness to pay.

Arising from these criticisms and the fact that most of these techniques have mainly been developed and applied to the developed countries, efforts will be made to modify them as much as possible to suit the local circumstances of the area of study.

Throughout this chapter, effort has been made to explain in as much detail as possible the various concepts and models which we will come across in the rest of this study. They include the concepts of housing delivery, housing market, need and demand, affordability and willingness to pay and some economic demand models such as hedonic indices and the present value technique. These concepts and models have been explained in the way that they will affect this study. Later on in this study each one of them will be applied whenever necessary. It is hoped, that by attempting to briefly describe and define these basic housing concepts and economic models which will be constantly used in this research, we may be able to easily understand some of the analytical processes and methodologies which we will come across throughout the research.

The next section will describe the proposed method of collecting the empirical data to be used in this study. It is recognized that, without an appropriate survey method, it will not be possible to show the validity or otherwise of the previous concepts as they relate to the case study areas.

4.7   EMPIRICAL SURVEY METHODS

The objective of the empirical survey methods for this study are:

(a)   To identify the household characteristics in the study area

(b)   To identify the nature of households' dwelling and general housing environment in the area of study.

(c)   To ascertain the households' housing needs and priorities particularly in terms of affordability

(d)   To explore the relationship between the above and what the government is providing with a view to making recommendations.

4.7.1   Survey Methods

A number of survey methods were used and these include:

(a)   Respondent household survey: Family composition, age, sex, marital status, income levels, occupation, education levels, etc. were among the variables investigated. When analysed and examined in relation to other surveys, the households variations and trends were illustrated.

(b)   Observation of respondents and their environment: This was carried out in order to document and observe alterations especially extensions to and change of use of dwelling units. It is hoped that this would enable us to assess the suitability of the house types being provided for the low income households especially by the government. Also, we observed the suitability of the house types in relation to the social structure, cultural patterns and human relationships.

(c)   Opinion Survey: The main aim of this method is to ascertain the respondent household attitudes regarding their housing need. Opinion on such matters as type of unit, method of construction, site and services, self-help, location, amount households are willing to pay for rent or mortgage etc., were obtained.   Such surveys cannot only give a better understanding of what the households believe they want and can afford but can also highlight the degree of importance which they attach to these needs.   Two areas of survey cover this:

(i)   the satisfaction survey

(ii)   direct trade-off games.

Although both techniques have drawbacks, those associated with direct trade-off games are likely to be more acute. Therefore the satisfaction survey method is used.

Instruments:

The instruments include

(a)   a questionnaire

(b)   a schedule

(c)   a scale.

The questionnaire was structured as simply as possible. A schedule is necessary to save resources. What is referred to as the instrument here was discussed with Dr. Graham Tipple, Mr. Shitta-Bey in Lagos, and Dr. Ken Willis, and then a test-run was conducted on some friends. After these preliminaries, a pilot study in Bendel Development and Property Authority was conducted. Then a number of modifications were made as necessary; thereafter the instrument was divided into four:

(a)   a household characteristics survey

(b)   a housing environment survey

(c)   a household satisfaction survey

(d)   a dwelling plan survey.

4.7.1.1   Sampling Methods

Although there are two types of sampling:

(a)   Quota Sampling,

(b)   Probability or Random Sampling;

A stratified random sample method was used.

The random sample selection is a sampling procedure in which the units of households are chosen individually and directed through a random process in which each unselected household unit has the same, above zero, chance of being selected as every other unit. However, for the private sector survey area, stratification sampling was first of all applied to the city in order to select an area and thereafter the random sampling method was used to select the houses or compounds to be interviewed. It is essential to mention that the weaknesses and limitations associated with the stratification sampling method are bound to affect the results especially as selectivity bias is likely to create a problem. Moreover, estimates derived from field surveys are not as accurate as a complete enumeration or census especially given the heterogenous character of the Nigerian environment in general and Benin City in particular. The difference between the household estimates from different samples and the household value is called 'the sampling error' and is usually expressed in terms of a standard error. The standard error is therefore a measure of the variability (around the household value) of the household estimates from a repeated sample. In simple terms, it gives a clear notion of how and with what probability an estimate based on a sample departs from the value that could have been obtained with a complete census (Bulmer and Warwick, 1983).

Since, in practice, the author has only one sample to work from, the standard error is in fact the key to the measurement of the reliability of the estimate of a population statistic.

4.7.2 Collection of Primary Data

An empirical survey was conducted by a team comprised of the author as the team leader, a senior Town Planning Officer, two Senior Assistant Town Planning Officers, one Senior Technical Officer (Engineering), two Administrative Officers (graduates of psychology and sociology respectively), all of whom are members of staff of Bendel Development and Property Authority, Benin City. In addition to the team were five industrial training students from the Departments of Town Planning and Architecture at the University of Benin, Bendel State University, Ekpoma and Auchi Polytechnic, who at the time of this survey were attached to the Architecture and Planning Division in B.D.P.A. of which the author is the head. This high calibre composition of the team is made possible because the author is a Deputy Chief Town Planning Officer in Bendel Development and Property Authority. The Authority also helped the researcher by providing a vehicle and a driver for easy movement of the survey team. Because the Bendel Development and Property Authority manages the Federal low income housing estate, Ikpoba Hill, where one of the surveys of 127 households took place, it was quite easy to summon a meeting of the residents and inform them about the survey. Also because one of the members of the Board of Directors of B.D.P.A. is a local Chief and the next person to the Oba of Benin, it was equally easy to summon a meeting of the residents' representative of the core of the city where the popular sector housing survey of 387 households took place. All these made the entire survey exercise of a total of 514 households possible as it was very easy to secure the people's co-operation in both cases.

Nevertheless, it must be stated here that in spite of all this assistance, the survey was not without problems and difficulties. For example:

(a)   About 40 percent of the households surveyed had either a wife or relation to the head of the household interviewed instead of the head of the household himself. After visiting some of the randomly selected flats several times without meeting the head of the household, the wife or any other mature relative was interviewed. This is bound to affect the sample as certain details only known by the head could not be disclosed. A very good example of such a detail is his income. In spite of this drawback which is apparent if any person other than the head of the household is interviewed, the researcher had to continue the survey since time and finance allocated for the survey were very limited.

(b)   Although the people were generally friendly, it was not easy to obtain information in relation to income. Where the question about income was freely answered, the actual figures earned were not known, especially if the person answering the question was neither the head of the household nor the wife. The difficulty was more pronounced with those who were businessmen or self employed. They either deliberately did not disclose their income for fear of taxation or they were simply ignorant of their total income. Since it is not possible to actually assess how biased this is, expenditure is used as proxy to income, as this would reduce the effect this discrepancy would have on the analysis.

(c)   Information on expenditure was equally difficult to obtain as most households honestly did not know how much they spent on health, food eaten outside the house, etc., per month. Most of the figures obtained were approximations. These problems notwithstanding, our analysis and results were found to be adequate when compared with similar studies in other countries or cities.

(d) Another area of difficulty was on details about household members, especially children. This is not unconnected with the superstition that children should not be counted for fear that some evil may befall them if they are. A similar problem was encountered in sample surveys in Kumasi, Ghana, which suffered from an under-enumeration of small children (Tipple, 1984, 1987; Malpezzi, Tipple & Willis, 1989).

4.7.3   Other Sources of Data

In addition to the empirical survey conducted by the researcher, a household survey conducted by Omokhodion Associates on Benin City as a whole for the preparation of Benin City Master Plan, and that carried out by Sada in 1981 and 1984 respectively, formed good sources of information on the Benin City housing situation, employment and occupation as well as the demographic trends. Other documents such as the House Count conducted by the Federal Office of Statistics, Lagos, and such other publications by renowned scholars whose fields are equally related to housing development, were also used.

Finally, information was gathered directly from Government establishments such as the Department of Lands and Survey, Governor's Office, Benin City, Ministry of Works and Housing, Bendel Development and Property Authority, Ministry of Finance and Economic Development, and Central Bank of Nigeria. While concentrating on the field surveys conducted by the author, these other sources will be referred to from time to time.

4.7.4   Data Analysis

The SPSSX computer package, the Modified Davis' Fortran Program, Lotus 1, 2, 3 are used to analyse the data collected from the field. The Hedonic Index and the present value method are used as techniques to analyse the data. The choice of these economic models is to enable the author to assess the costs and benefits of public housing to both the beneficiaries and the developers, thereby making it possible to carry out housing policy market analysis. Moreover, the costs and benefits of projects or programmes of various types will be evaluated thereby aiding the decision maker to decide which type of programme to undertake. The multiple regression analysis inherent within the hedonic index will reveal relationships between variables while the present value technique will evaluate different programmes. These techniques have been discussed in detail in the previous sections.

4.7.5.   Data Presentation

The results obtained after the statistical analysis are to be presented in the form of tables, graphs and written text. Whenever it is possible, photographs and plans will be used for illustrations.

4.8   SUMMARY

This chapter has reviewed the extreme views of John Turner and the Marxists (Burgess) on the low income housing question. The structuralists advocate a mid-way approach between the two extremes; while the researcher proposes an application of the neo-classical economic theory in finding a solution to low income housing provision. Also, some basic housing concepts such as the concept of housing delivery system, the concept of need and demand, and economic demand models (hedonics, present value method and

willingness to pay approach) were also discussed. The usefulness and weaknesses associated with these concepts were highlighted; while the chapter was concluded with a brief discussion of the research methodology.

The next section which is comprised of chapters 5 and 6 will discuss in detail the findings on the case studies for the public and popular sectors' housing respectively.

SECTION II

CASE STUDIES

CHAPTER 5

CASE STUDY I

From the foregoing chapters, it has been revealed that the Bendel state Government managed to complete a few housing estates for the low income groups. The extent to which these dwelling units actually went to the target group is one of the issues which this chapter would attempt to investigate. Secondly, although the dwelling units were highly subsidised by the Government, doubts were expressed in previous chapters on the level of affordability by the low income groups for dwelling units which turned out to be expensive. A dwelling unit in the context of this research is referred to as a room or suite of rooms and its accessories in a permanent building or structurally separated part thereof which is intended for habitation by one household and not used for other purposes at the time of the survey. In other words, a room, a flat and a house are all defined as a dwelling unit if they are intended or used by one household. The size of the households in the completed housing estate would be determined through the survey and this would be compared with 7.2 persons per household assumed by the consultant commissioned to prepare a master plan for Benin City.

The household occupancy and the level of satisfaction in relation to the amenities and facilities are other important issues which this chapter investigates. In order to rationally examine these issues and some other matters such as relationship with the head of household, the household income and expenditure etc., an empirical study, was essential. Consequently, a household characteristic survey and housing conditions survey was conducted on Ikpoba Hill low income housing estate (popularly known as Federal Low Cost Housing Estate Phase I) (fig. 2.1, p. 38) The questionnaire administered for this area and the popular sector, the core is presented as Appendix 5.1. The SPSSX computer package was used for simple statistical analysis. The survey method, problems and constraints encountered during the survey were all discussed in chapter 4. The analysis that follows in this chapter and that of chapter 6 are mainly to provide data for the detailed analysis and evaluation process conducted in chapters 7 and 8.

5.1   THE CASE STUDY AREA

The phase I of the low income housing estate is located along Benin-Auchi express highway at Ikpoba Hill, Benin City (fig. 1.4, p.16). Ikpoba Hill is a fast developing area within the periphery of the city. Within the vicinity of the estate are various establishments like the Federal Court of Appeal, Nitel Headquarters Office, Federal Secretariat, Bendel Brewery, Guinness Ltd., Oregbeni Housing Estate etc. These establishments have immense growth potential and attract the vast majority of the middle and low income workers, who work and live within the area and for whom this scheme is principally designed.

5.1.1   The Housing Stock

The federal low cost housing estate, Ikpoba Hill comprises of 250 dwelling units, out of which 127 or 50 per cent of the households were interviewed. This phase is mainly composed of two house types, viz:-

1.   type MD/1:   these are one bedroom dwelling units. A high proportion of this house type is a semi-detached bungalows while a few of them are within a block of flats.

2.   Type MD/2 (fig. 5.1) are two bedroom dwelling units in two storey blocks of flats. The blocks contain 4,8,12 or 16 flats.

Type MD/2 (fig. 5.2) are also two bedroom detached bungalows.

By 1973 when the contract was awarded each one bedroom flat cost N5,000 while two bedroom flats cost N12,500.00. It is important to note that there are no three bedroom flats in this phase and that the one bedroom flats are two room accommodation and two bedroom flats are three room accommodation.

FIRST FLOOR PLAN
SCALE 1:200

NOTE :
1 VERANDAH
2 SITTING AREA
3 BED ROOM
4 KITCHEN
5 BATH
6 W C

GROUND FLOOR PLAN
SCALE 1:200
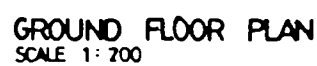
Figure 5.1 Two-bedroom dwelling units in two-storey blocks of flats.

RIGHT SIDE ELEVATION

BALC STAR HALL KITCH

KITCH

2700

2700

1400 6450 3150

SECTION AA
SCALE 1 : 200

BACK ELEVATION

FRONT ELEVATION

Figure 5.1 (contd)

BACK ELEVATION

RIGHT SIDE ELEVATION

FRONT ELEVATION

LEFT SIDE ELEVATION

SECTION AA
SCALE 1:200

+1725
+2700
±0000
-0100

BED ROOM   BED ROOM

3000   1200   3600
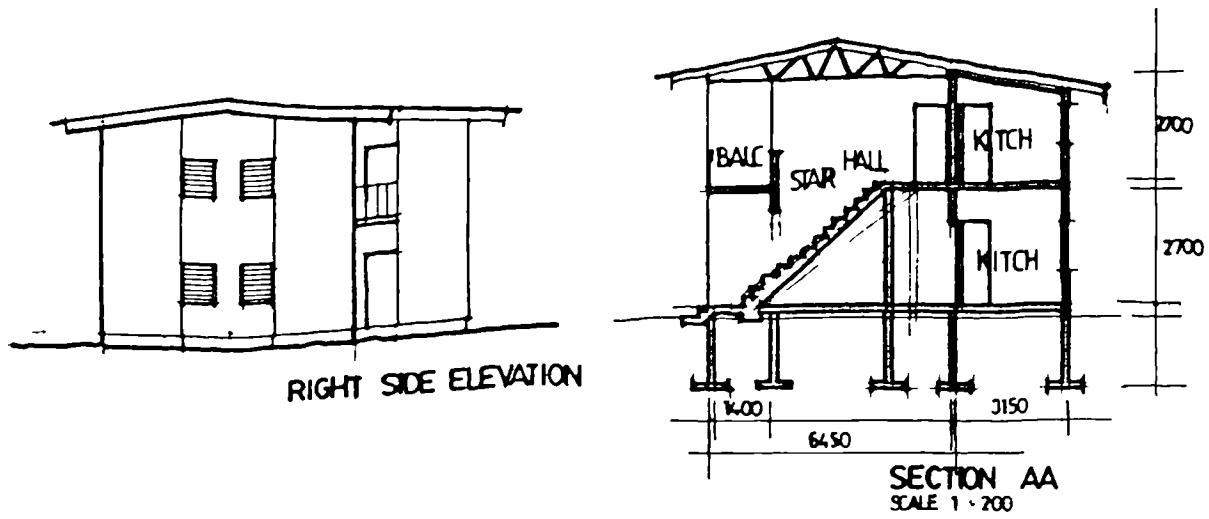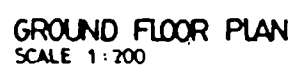
NOTE :

1 LIVING ROOM
2 BED ROOM
3 KITCHEN
4 PANTRY
5 SHOWER
6 WC

GROUND FLOOR PLAN
SCALE 1:200

3000   1200   3600

3150   4800
8400

Figure 5.2   Two-bedroom, detached dwelling unit.

Very much similar to Shitta-Bey's (1988) findings in similar developments in Lagos, most of the buildings have been altered externally and internally. While the external alterations are remarkable and in various forms and shapes the internal alterations are limited to conversion of use of space as the load bearing nature of most internal walls could not allow structural alterations. No physical measurement took place but the observed alterations include:

a) the extension of the kitchen area to include a store for the sale of beer or provisions. This occurred mainly on the one bedroom duplex bungalows.

b) Generally, burglar proof bars are not fitted in Government low income housing for financial reasons. Therefore there was a general installation of burglar proof iron bars of various shapes and designs on doors and windows by the occupants. However, this is not surprising as virtually every building in Benin City has this installation on windows and doors as a form of protection against thieves.

c) Some of the households who have become owner-occupiers have replaced their doors and windows for better quality carved wooden doors and steel or glass doors, while some have changed the wooden shutters to louvre blades and jambs.

d) Residents of three flats were observed to have changed their kitchen to bedroom by extending backwards. These are equally found among the one bedroom semi-detached

e) Two flats were observed to have converted their verandas to a store. There are likely to be more flats in this category especially those within the block in which we had no access. Unfortunately, it was not possible to enter some of the flats especially where the head of the household was not at home.

5.2   **HOUSEHOLD PER DWELLING UNIT**

A household is a group of people who normally live together and share the same housekeeping arrangements. As Sada puts it,

> "the heads of the households in an African city are a special class. They are generally an established class, usually with a permanent job, old enough to be independent and with enough income from within the household to provide for the family's minimum needs" (Sada, 1984, p.39).

In most cities in Nigeria, especially among the indigenes, marriage is the most common means of assuming the headship of a household even though this is slightly different among the migrants as the married ones immediately assume the headship of their household as soon as they arrive in the city, especially if they already have a job. The single men, particularly those without jobs, have to depend on some relations or friendly households until they get a job.

The above notwithstanding, and perhaps due to the size of the flats and design type, 87.4 per cent of the dwelling units sampled have one household, and 2.8 per cent two households, while there was no response from 10 per cent of the households interviewed. There are a number of reasons for this trend which is contrary to the typical traditional Bini (Bini refers to the indigenes of the city) dwelling units where there may be one to three households in a dwelling unit. The reasons for this trend are as follows:

a)   the modern design with one or two bedroom flats or semi-detached bungalows;

b)   the traditional compound type of design and the rooming accommodation which characterizes the typical traditional Bini area are not found in this estate. Therefore it is not surprising that the number of households in a dwelling unit is limited to 1 and 2 as shown above;

c)   Married children tend to live with their parents especially among the Binis for a very long time before moving out to their own dwelling unit. This trend is equally not found in this area of the city;

d)   Although 86.6 per cent of the households interviewed are Bendelities, from personal observation, a considerable proportion of the number are non-Binis, i.e. they are migrants from other parts of Bendel state and a very small proportion of the sample population are Binis by origin.

A very peculiar characteristic of the sampled population is the high percentage of nuclear family households which is about 75 per cent of the total population under survey. This finding is very similar to Anikantamo, the federal low cost housing estate at Lagos where about 72 per cent of the households are nuclear families (Shitta-Bey, 1988). The Benin and Lagos cases slightly differ from the findings in Warri, Bendel State where 52 per cent are nuclear family households. However, this is not surprising as the Warri survey was based on the entire town which is likely to have influenced the result. As regards the heads of the households of the sampled population, 88.9 per cent are between the ages of 30 and 60 years (table 5.1). It is not unexpected that only 7.9 per cent of the heads of the households are below 30 and only 1.6 per cent are above 60. An interesting observation to be made here is that heads of households are usually middle-aged persons. Usually in the Nigerian society the successful heads of households among the urban low income class construct their dwelling unit around the age of 60 or above even though a lot of households in the middle and upper classes achieve this role in their middle age.

Nigeria being a patrilineal society, it is not unexpected to find that 93.7 per cent of the head of households of the sampled population are male while 5.5 per cent are female heads. This is very similar to the findings found in Warri in which 94.3 per cent are male

Table 5.1   **Age Frequency of Household Head.**

Age	Freq. %	Cum %
21 - 30	7.9	7.9
31 - 40	36.2	44.4
41 - 50	37.0	81.7
51 - 60	15.7	97.6
61 - 70	1.6	99.2
Above 70	.8	100.0

Mean Age 44   Median 47

Source: Field Survey, Sept. 1988.

heads and only 5.7 are female (Sada, 1984). This notwithstanding, it is essential to plan for both spouses as both are entitled to own properties in the Nigerian society (Fapohunda, 1988).

5.3   HOUSEHOLD SIZE: NUMBER OF PERSONS PER DWELLING UNIT

Household size and its changing structure is one of the most fundamental variables necessary for development planning, more especially for housing provision estimation. In an African setting, the household is a complex entity because of the component elements such as female fertility, cultural attitude to marriage and socio-economic responsibilities regarding the dependents. Each of these elements of household size correlates differently in terms of socio-economic features and, therefore, the household size is a consequence of the behavioural pattern of all these components put together. The above factors often make it difficult to compare countries on the basis of household size. Nonetheless, comparison will be made where possible. Although the survey revealed a high percentage of nuclear families among the households sampled, yet the fact that there is only 3.1 per cent of one person household and 2.4 per cent of two person households (table 5.2) show that most of the households have dependents. For married couples, their dependents are mainly their children, brothers and sisters. The field work experience actually reveals that most of the single young men and women have brothers and sisters who are either going to school in the city or looking for work. Perhaps of greater significance to this study is the mean household size which is 6.3 among the sample population of 127 households. Although this figure appears high, especially when compared with the average household size in other parts of the world (table 3.4, chapter 3) it is very close to, but lower than the figure of 7.2 mean household size for the whole city in similar surveys and being proposed for the master plan. The fact that a mean household size of 6.30 for the population is equally high when compared with similar developments in Lagos, 6.03,

Table 5.2   Number of Persons in a Household.

Household Size	Freq. %	Cum. %
1	3.1	3.1
2	2.4	5.5
3	3.9	9.4
4	4.7	14.2
5	8.7	22.8
6	17.3	40.2
7	12.6	52.8
Above 7	47.2	100.0

Mean   6.3   Median 6.0

Source: Field Survey, 1988.

and Abuja 6.15 is also remarkable. Nevertheless, since the figure obtained above is close to the Benin City mean household size of 7.2 and this is the figure proposed for future planning, it is therefore an indication that estimations based on these findings would be rational for planning purposes assuming that other factors such as mean occupancy rate are within the accepted standard.

On further consideration between household size and income, there is a positive relationship between the two and this tends to confirm the hypothesis that household size generally increases with increasing income. However, this relationship between household size and income does not show a clear relationship to the income of the head of household. This is not surprising as the income of the head of the household in most urban centres in developing countries is often added to by the earnings of the other working members of the household. Consequently, while the income of the head of the household may fall within a certain range, the total household income may not be in that same range. Occupancy of the dwelling units has not rigidly followed in accordance with the household size. For instance, a household of two persons could have been allocated a two bedroom flat while a household of 7 could get a one bedroom flat. This is because allocation was strictly based on 'first come first served' through a balloting system; although the initial qualification to be included in the ballot in the first instance was income. Other factors which were equally considered included:

a)   state of origin,

b)   length of stay in Benin,

c)   ownership of other property.

Due to the traditional nature of Benin City and the people, household size was carefully excluded for the allocation exercise. However, how wise it was to have excluded such a vital issue in housing allocation is a question which this study cannot directly address.

5.4   **HOUSEHOLD SIZE AND OCCUPANCY RATE**

The Association of Housing Corporations of Nigeria, of which LSDPC (Lagos State Development and Property Corporation) and Federal Housing Authority are founding institutions, use 2.5 persons per room as a standard for the measurement of overcrowding. In other words, a dwelling unit is said to be overcrowded if there are more than 2.5 persons per room. Note that this standard is supposed to be adopted by all the states in the country. Even though a child under 15 is regarded as half for the above standard, we have regarded a child as a whole in this study since this would take care of frequent updating of records from time to time as children become adults. As a matter of fact, the housing estimation for Benin being planned in the proposed master plan counted a child under 15 years as a whole and this is similar to that obtained in the Lagos state master plan (U.N.1980).

From table 5.3, it could be seen that only 12.5 per cent of occupants of one bedroom flat live at about 2.5 persons per room, 4.2 per cent live in conditions between 3 and 3.9 persons per room, while as high as 83.3 per cent of occupants of one bedroom flats live in a very high level of overcrowding (i.e; above 4 persons per room). Of greater significance is the fact that 83.3 per cent of the occupants of one bedroom flats have between 4 and 5 persons per room. This figure indicates an alarming level of overcrowding for a government housing estate. When compared with the two bedroom flats, there appear to be great disparities. Up to 49.5 per cent of the occupants of two bedroom flats live in good conditions (i.e; between 2 and 3 persons per room), while those of one bedroom flat is 83.3 per cent per room. This in fact confirms the earlier claim that allocation of flats did not take into consideration household size.

In examining both one and two bedroom flats, it could be observed from table 5.3 that about 55.7 per cent of the households interviewed live under a high level of overcrowding.

Table 5.3   Occupancy rate by flats.

Occupancy	One-Bed Flat (2 Room Unit) freq. (%)	Cum. %	Two-Bedroom Flat (3 Room Unit) freq. (%)	Cum. %
0 - 0.9	0	0	1.9	1.9
1 - 1.9	8.3	8.3	6.8	8.7
2 - 2.9	4.2	12.5	40.8	49.5
3 - 3.9	4.2	16.7	22.3	71.8
4 - 4.9	83.3	100.0	28.2	100.0

Source: Field Survey, 1988.

Table 5.4   Level of Services and Utilities as Assessed by the Households

Level of Adequacy	Distribution of Services: Kitchen	Bathroom (Shower)	Toilet	Water	Electricity
Very Adequate	5.5	4.7	4.7	4.7	4.7
Adequate	55.9	64.6	66.9	66.1	63.0
Inadequate	36.2	28.3	26.0	27.6	29.9
Very Inadequate	2.4	2.4	2.4	1.6	2.4
Total Percent	100.0	100.0	100.0	100.0	100.0

Source: Field Survey, 1988.

This figure compares favourably with Sada's figures for Benin in which 58 per cent of the households live in overcrowded accommodation (Sada, 1984). It is interesting to observe that as many as 45 per cent are aggrieved and agreed that they live in overcrowded conditions, 45 per cent do not think they are overcrowded, while 9.4 per cent are happy with the occupancy and feel it is ideal.

From the above, therefore, the high level of overcrowding at Ikpoba Hill is not surprising. The mean occupancy rate for Benin City is 3.2 persons per room. While the mean occupancy rate for two bedroom flats is 2.25, that of one bedroom flats is 3.15. With the foregoing analysis and the figures above, a number of vital issues have emerged:

a) Government has failed to reduce overcrowding (through direct construction) which is one of the major targets of the state policy.

b) As regards the one bedroom flats, it does seem as if the wrong house type has been provided. In fact, this was clearly evident in many parts of the country when the low income households rejected the 'Shagari' popular one bedroom flats in 1981. To date, some of those houses are still vacant. This is a direct consequence of projects developed by the Government without previously finding out what the target population wants. Perhaps, this situation will change with the present day economic situation. We shall see whether this situation is true or not and what the people want later in this study.

c) The great disparity between the mean occupancy rate for one and two bedroom flats indicates that some allottees in the two bedroom flats perhaps got more space than necessary for them while those in one bedroom flats have very little space.

d) Using 2.5 persons per room for planning purposes in a city where the mean occupancy rate is 3.2 and the greater proportion of the low income households live in very poor conditions of overcrowding would result in

under-estimation of the housing need. It is therefore of absolute necessity to reappraise the figure proposed for projections.

The high level of overcrowding in Federal low income housing estate, Ikpoba Hill becomes more apparent when compared with similar developments such as Anikantamo with a rate of 1.89 for 2 bedroom flat and Festac Town with 2.2 for the same house-type while Ikpoba Hill has 3.15 and 2.25 for one bedroom and two bedroom flats respectively. This becomes more astonishing, considering the fact that the Lagos rate of overcrowding is higher generally than other cities in Nigeria.

5.5   DWELLING SPACE PER PERSON

In Benin City, the minimum space requirement per person is 9 square metres (where space does not include verandas, toilets and kitchens), and the same standard (9 square metres) was used for the low income housing at the new capital city of Nigeria, Abuja. While the Lagos Master Plan had recommended 8.4 square metres per person. In spite of these standards, fig. 5.3 reveals that the mean dwelling space per person in one bedroom and two bedroom flats at Ikpoba Hill are 5.68 square metres and 9.63 square metres respectively.   Figure 5.3, Appendix 5.2$^{A\&B}$ and Appendix 5.3 present the distribution of space in the estate.

The poor dwelling space which exists at Ikpoba Hill becomes clearer when compared with the dwelling space in similar developments in Lagos (fig. 5.4). From figures 5.3, 5.4, and the foregoing analysis, four important issues have been re-confirmed:

a)   The allocation method did not bring into consideration household size hence the very poor dwelling space per person in the one bedroom flats (although these dwelling units were initially allocated
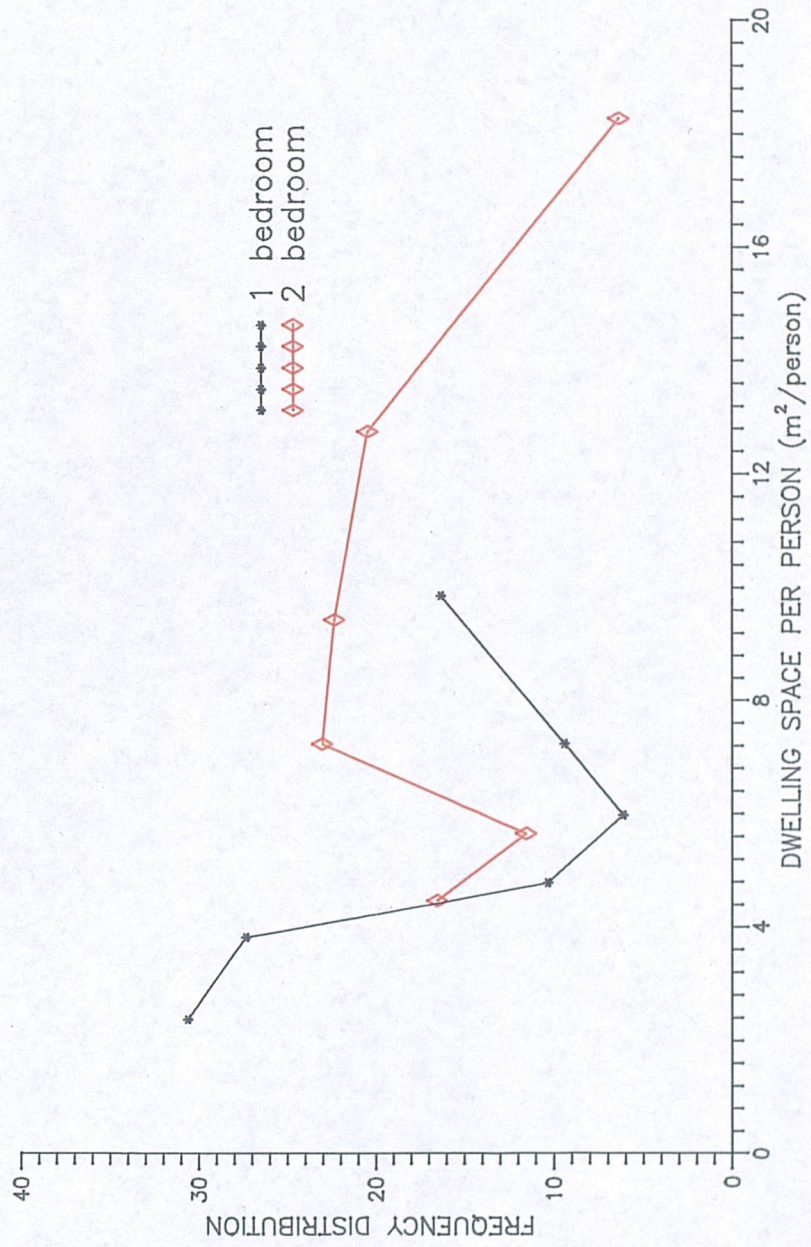
FIG. 5.3. DWELLING SPACE PER PERSON
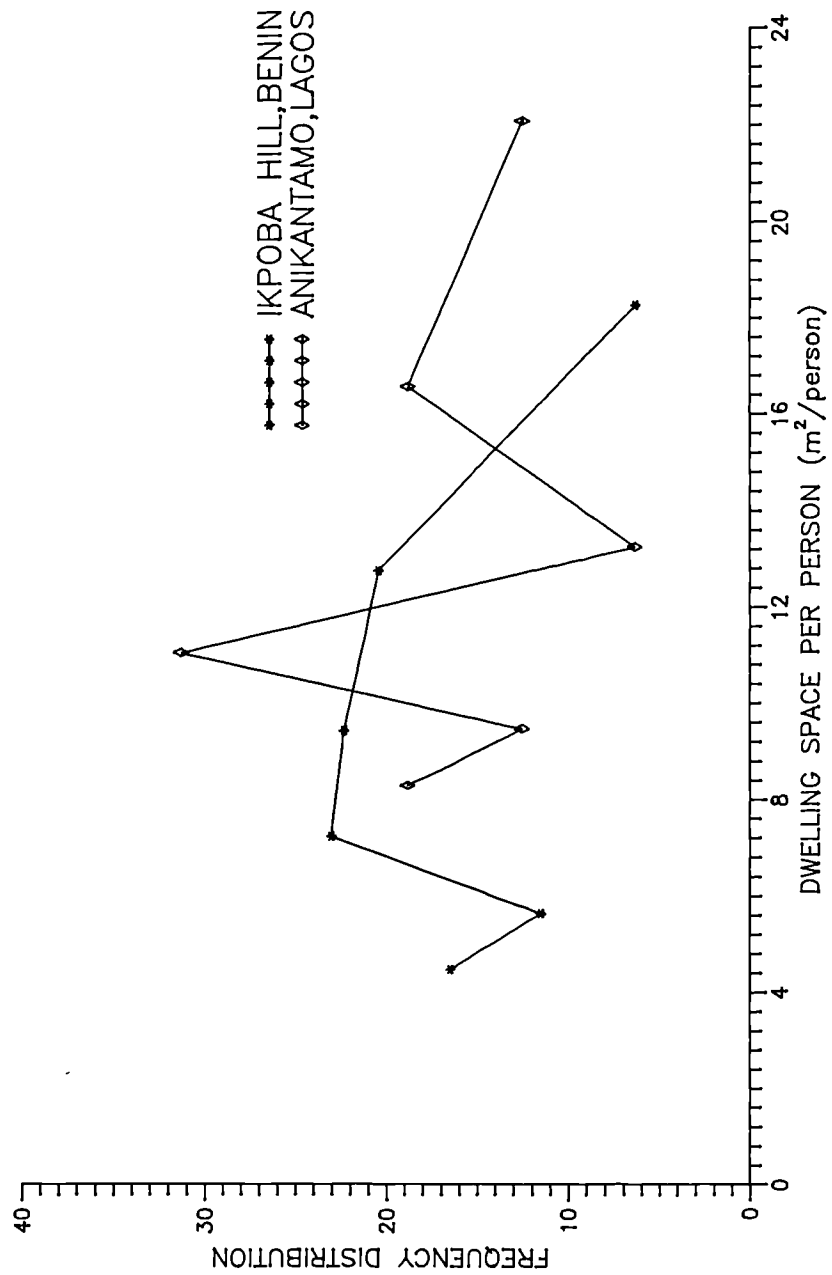
FIG.5.4. COMPARISON OF SPACE ALLOCATION OF FEDERAL LOW COST HOUSING
IKPOBA HILL WITH ANIKANTAMO, LAGOS FOR TWO BEDROOM FLATS

in 1977, most of the present occupants were re-allocated the units

in 1986 when the tenancy policy was changed).

b)   It is very likely that the one bedroom house type is inadequate for

a traditional city such as Benin.

c)   The high level of overcrowding in a Government housing estate has

been re-emphasised.

d)   Since household size increases with increase in income as has been

observed earlier, the very poor dwelling space tends to point to the

fact that a greater proportion of the occupants of this estate are not

necessarily low income households.

Even at the Lagos Master Plan standard which recommended 8.45 sq. metres per person,

the Ikpoba Hill housing estate still did not measure up to standard. Among the

households interviewed 99.2 per cent are willing to pay more rent or mortgage provided

they have more space. When asked whether they required more space, 98.3 per cent

indicated that they required more space but at the present rent. Even those households

who only wanted to pay less rent still required more space or bigger space. All these are

clear indicators that the space allocation is grossly inadequate.

5.6   AVAILABILITY OF INFRASTRUCTURE AND LEVEL OF ACCESSIBILITY

Generally, every dwelling unit has a kitchen, bathroom (shower) and toilet (water closet).

At the initial stage of development water mains are extended to every street and the flats

were adequately provided with galvanised iron pipes, while the occupants were expected

to connect to their individual dwelling units. Similarly, overhead mains for electricity

were extended to the streets and all electrical wiring was done including the installation

of meters and the occupants or households were to connect to their dwelling units.

Apparently, all households have treated water and electricity although the level of

accessibility and satisfaction could vary from one household to another. The data

presented on table 5.4 (see page 188) summarizes the people's perception of the level of services accessible to them.

With respect to electricity and water supply, it is not surprising that over 31 per cent and 29 per cent of households respectively found these services inadequate in a city where a blackout is a frequent occurrence and where taps would be dry for weeks without water; even in the Government Reservation Areas (G.R.A.) which are supposed to be the best part of the city in terms of services and standards. This has actually confirmed the earlier statement in this study that data on availability of water supply could be misleading because most of the taps could be dry for weeks. Because these dwellings were planned by the government, there is a very high level of exclusive use of these facilities which confirms the claim that every flat is provided with them. Nonetheless, the fact that there is a small percentage between 1.6 and 3.1 of the households sharing these facilities indicate that there are one or two flats with more than one household. The fact that also 87.4 per cent, 88.2 per cent, 87.7 per cent and 87.4 per cent of the households have kitchen, bathroom, toilet, water and electricity respectively located inside the flat further reinforces the fact that there is a high level of accessibility to these services at household level. But in terms of individual accessibility, the services seem adequate for households with 1 to 4 persons while accessibility to households with 12 persons having to share one bathroom and toilet, for instance, is bound to be difficult.

Equally noticeable is the fact that about 3.9 per cent of the households have their kitchen, toilet and bathroom located outside. This confirms:

a)   the conversion of kitchens into rooms and the consequent extension
        outwards mentioned earlier;

b)   the use of one flat by more than one household; and

c)   in some cases, the poor maintenance of the kitchen and toilet which

has led to a state of disrepair and the consequent erection of these

facilities outside the house

From field experience, we actually observed one or two households cooking outside and

this was because of very large vertical cracks around the area of the kitchen and toilet.

Since the people were frightened it might collapse on them, they preferred to cook outside.

However, it is difficult to see the rationale in this action since they are still sleeping in

the dwelling unit in spite of the cracks.

5.6.1   OTHER INFRASTRUCTURE

The roads are not tarred, although roads or streets exist to every block of flats yet some

of them are impassible due to erosion or flood especially during the rainy season. Most of

the households that have cars park them far away from their flats. There are no refuse

disposal points or bins and no incinerators were built. Refuse collection is grossly

inadequate and consequently the estate is filthy. However, the filthy state of the estate

is uncalled for if the people had cared, as people take some initiative in cleaning and

burning the refuse in some other parts of the city.

5.6.2   Other Facilities and Amenities

As regards the provision of public facilities and amenities, nothing seemed to have taken

place. Although a number of public amenities such as nursery school, primary school,

public open space and childrens' playground etc., were provided in the layout, none of

them was developed. The lack of development of these amenities is not unconnected with

the delay in the construction of the buildings. At the time the buildings started in 1973

cost was reasonable, but these buildings were only completed in 1977 - 5 years later, by

which time all the initial estimates had become outrageously high for anyone to be able to afford, even the Government.

5.7 OCCUPATION AND INCOME

Tables 5.5 and 5.6 present the occupation distribution and employment of the heads of the households. The fact that 68.3 per cent of the heads of the households are civil servants is not surprising particularly as it has been stated earlier that the federal low income housing estate, Ikpoba Hill, was mainly developed to house civil servants and other workers in Government owned companies and firms. Since this is one of the terms of reference for the development of this estate, the allocation was in favour of Government employees. This was made feasible by allocating the flats on rental basis and this was easy on civil servants who would have otherwise found it difficult to raise the lump sums always required as down payment for mortgages. However, the tenure was changed in 1986 when a new policy for the management of the estate was established. This new policy shall be discussed in greater detail later in this chapter when examining the allocation system and the eventual conversion to mortgage through owner-occupation. The low unemployment rate shows the strict allocation policy which emphasised that an allottee must have employment and thus an income. In fact, it is not unlikely that the 1.6 per cent of the unemployed are retired people. The mean income of the civil servants is N627 while the per capita income is only N116. Similarly, while the mean income for company workers and businessmen was N663 and N748 respectively, the per capita income was N99 and N127 respectively. The wide disparity between mean income and per capita income shown on tables 5.7 and 5.8 indicates that there is a very strong relationship between household incomes and their size. Mean household size is usually an increasing function of household income; while household size is a decreasing function of household per capita income. The effect is that there is no correlation between size distribution using household incomes and household per capita income.

Table 5.5   Occupation Distribution of Household Heads and Mean Household

Income.

Occupation	Freq. %	Mean Income (N)	Mean per Capita Income (N)
Administration (Managerial)	25.1	849	162
Finance	5.5	770	213
Traders	21.3	735	108
Professionals	2.4	633	212
Contractors	.8	600	150
Clerical	38.5	454	67
Driver/Mechanic	.8	400	44
Forest Workers	1.6	365	53
Joinery/Plumbers	1.6	256	25
Transporter	.8	-	-
No Occupation	1.6	-	-

Source: Field Survey, 1988.

Table 5.6   Employment Distribution of Household Heads

Employment	Freq. %	H/H Mean Income (N)	Per Capita Income (N)
Civil Servants	68.3	627	116
Private Business	18.9	748	128
Private Films/Comp.	10.2	663	99
No Employment	1.6	-	-

Source: Field Survey, 1988.

Table 5.7   Distribution of Household Total Monthly Income

Income	Frequency %	Cumulative %
0 - 150	1.9	1.9
151 - 300	13.2	15.1
301 - 450	17.0	32.1
451 - 600	19.8	51.9
751 - 900	12.3	82.1
Above 900	17.9	100.0
Mean = N644		Median = N600

Source: Field Survey, 1988.

Table 5.8   Household Per Capita Income

Per Capita Income	Frequency %	Cumulative %
0 - 50	21.7	21.7
51 - 100	40.6	62.3
101 - 150	21.7	84.0
151 - 200	7.5	91.5
Above 200	8.5	100.0
Mean = 113.00		Median = 85.00

Source: Field Survey, 1988.

Although the household income per capita has been calculated and is a better measure of welfare, it fails to consider the effects of the age composition of the household as well as economies of scale in the operation of households (Datta & Meerman, 1980). On examination of household monthly income (table 5.7) and household monthly expenditure (table 5.9) as well as per capita expenditure (table 5.10) it is found that there are many inconsistencies between them. This is because there are other sources of household income that are not always accounted for. For example the mean ratio of household expenditure and household income is 1:0.8 while it is found to be 2.95:1 and 2.4:1 in Lagos, Nigeria, Kumasi, Ghana respectively (Shitta-Bey, 1988, Tipple, 1984). Consequently, expenditure shall be used for purposes of estimation and planning in this study rather than income. The shortcomings associated with using expenditure are likely to be less than that of using income; although income will still be discussed for purposes of classification of the households into different income groups.

While table 5.6 shows the household total income, table 5.8 presents the per capita income. Table 5.6 reveals that only 32.1 per cent of the households are low income and only 1.9 per cent are below the N150 poverty level; 50 per cent of the households are middle income while 17.9 per cent were in the N900 plus and high income group. This indicates that perhaps a very great proportion of the households are not within the target population; even though it could be argued that the household income could have greatly improved since 1977-78 when these flats were completed, allocated and occupied. Nevertheless, the fact that the flats were only allocated to households in 1986 on owner-occupier basis through mortgage could have greatly influenced the time lag as only the very good tenants were retained. Even if it is assumed that about 32 per cent of the middle income group were within the target population at the time of initial allocation, about 59 per cent of the households were still in middle and high income groups. This tends to confirm the statement that Government housing estates originally developed for low income groups very often go to middle and high income households for whom they

Table 5.9   Total Household Expenditure.

Expenditure	Frequency %	Cumulative %
Up to 150	1.0	1.0
151 - 300	2.1	3.1
301 - 450	12.4	15.5
451 - 600	18.6	34.0
601 - 750	20.6	54.6
751 - 900	19.6	74.2
Above 900	25.8	100.0
Mean = N728		Median = N730

Source: Field Survey, 1988.

Table 5.10   Per Capita Monthly Expenditure

Expenditure	Frequency %	Cumulative %
Up to 50	5.2	5.2
51 - 100	50.5	55.7
101 - 150	28.9	84.5
151 - 200	7.2	91.8
Above 200	8.2	100.0
Mean -122		Median -97

Source: Field Survey, September, 1988.

were not initially intended. This finding is not unique to this estate. It is equally true of most Government housing estates in many developing countries, for example Ghana (Tipple,1987).

5.8   MORTGAGE AND RENT REPAYMENT

At the initial completion of this scheme, the dwelling units were allocated to households on rental basis. The economic rent originally calculated by the Government was N25 and N45 for the one-bedroom and two-bedroom flats respectively (i.e. 2 room and 3 room accommodation). This is because the rent was very heavily subsidised as the appropriate rent would have been N65 and N75 for the one-bedroom and two-bedroom flats respectively. The aim of Government at the time was to ensure that the low income households did not pay more than 8-15 per cent of their monthly income on housing. At that time this objective would have been achieved if the target population had been allocated these dwelling units as originally planned; and if all the estates planned were developed. Unfortunately this objective seemed not to have been achieved.

On the other hand, this laudable policy was abused by the households occupying the dwelling units. Available records from Bendel Development and Property Authority showed that by 1984 the rate of rent defaulters had reached about 40 per cent of the households occupying the dwelling units. Efforts at rent collection were intensified by Government by setting up task forces and by 1985 the rate of rent defaulters dropped to 30 per cent (BDPA, 1985). As a result of this unco-operative attitude on the part of the households to rent payment, in spite of the heavy subsidy, the tenure policy was then converted to owner-occupier through mortgage loan. The tenants who had large arrears were requested to pay off their arrears and where they were unable, they were ejected and new tenants were allocated the dwelling units. The tenants of good standing were given priority and the total amount they had paid up till that time became a part of the

mortgage loan repayment. The new allotees were expected to pay N1000 or N3000 deposit depending on whether the flat was one-bedroom or two-bedroom.

From the data, it could be seen that the new system has taken off effectively as 89.5 per cent of the households now own the flats through owner-occupier system by mortgage loan, while only 10.5 per cent of the households are still renting. Those who were renting, were no longer renting from the Government rather they were renting from those who have been allocated the flats on owner-occupier basis through mortgage but perhaps have other properties and could rent out their flats. Here again is another abuse of the new system. Nevertheless, our data shows that 89.5 per cent of the renters would rather buy the flats. This is not unexpected as there is a great deal of prestige and self-esteem attached to home ownership in the Nigerian culture.

It was found from the field survey that while 75.2 per cent of the households paid rents between N1 and N50 when it was heavily subsidised by the Government, 77.5 per cent of the households now pay between N51 and N100 under the new system. The 20.4 per cent of households who now pay between N101 and N150 must have been those households who have constantly rented from other allottees and not from the Government. This is because subletting is normally more expensive.

Even though payments have gone up, now that it is through mortgage loan repayment, 63.4 per cent of households stated that they were still satisfied with the mortgage/rent, 17.1 per cent stated that they were very satisfied with mortgage/rent, while 18.7 per cent said that they were not satisfied with the mortgage/rent. The 18.7 per cent of households who said they were not satisfied are likely to be among the 20.0 per cent of households who were renting from households who got the allocation from government and were paying between N101 and N200 per month. This amount is definitely more than 20 per

cent of their monthly income especially if they are within the low and middle income households.

5.9   WILLINGNESS TO PAY

When the households were asked the amount they would be willing to pay as rent or mortgage for the same or similar flat 78.3 per cent said they would be willing to pay only between N1 and N50, 17.2 between N51 and N100 and none would be willing to pay above N100, while 4.5 per cent had no response. The results of this survey tends to indicate that willingness to pay approach is likely to suffer from 'strategic bias' (Birdsall & Chuham, 1983). Although Whittington et al (1991) tend to indicate in their study of contingent valuation, that strategic bias may not pose a problem in willingness to pay approach, it is the researcher's view that the problems associated with strategic bias in developing countries cannot be easily dismissed. The households may have concealed the true amount they would be willing to pay as rent/mortgage perhaps for fear of being asked to pay more than they are presently paying, an amount which has been heavily subsidised. This notwithstanding, the willingness to pay approach appears to be one of the reasonable guides which could be used to assess what households are willing to pay for a dwelling unit.

5.10   OWNERSHIP OF LAND, OTHER PROPERTIES AND LUXURY GOODS

Out of the 127 households interviewed, 59.8 per cent have acquired land. Out of this, 17 per cent have acquired land and commenced with the construction of their dwellings; 22 per cent have their land located elsewhere which is likely to be their home towns without commencing construction; while 20 per cent have acquired farm land and not for immediate construction. When the 127 households were asked if they had alternative plans such as constructing their dwelling units and moving out of the estate, about 89 per

cent indicated the willingness to stay rather than move. According to most of them, they would like to keep what they have at the current time as the gloomy economic situation does not promise any positive progress in the area of home ownership through individual construction without aid.

The number of households that have acquired some luxury goods is equally outstanding. Out of the 127 households interviewed, 95.6 per cent, 96.4 per cent and 89.9 per cent have radios, fans and black and white televisions, while only 29.5 per cent, 10.1 per cent and 27.9 per cent have cars, videos and cookers. The acquisition of land and certain luxury items such as cars and videos equally indicates that apart from the low income households there are also middle and high income households living in the estate originally planned for occupation by low income households.

Chapter 6 shall discuss in greater detail the household survey conducted on the core (the study area II) - the popular sector housing. Such a detailed description of the popular sector housing is important particularly as it is going to form the basis for prediction of market rent in the public sector.

CHAPTER 6

CASE STUDY II - POPULAR SECTOR HOUSING

Chapter 5 presented household characteristics and housing condition surveys conducted on a Government low income housing estate. Similarly, this chapter investigates a popular sector housing development which houses renters and owners. One of the main reasons for conducting an empirical survey in the central area of the city, where popular housing sector is predominant is because the data derived from this area is used for the evaluation and assessment of policy options and levels of affordability respectively in the later chapters. In addition, because the low income households are likely to concentrate in this area, it is important to understand their living conditions and household characteristics. Thus, this area referred to as the core, is located at the centre of the city (fig. 1.4, p.16). The choice of the core is based on the fact that it represents the most central rental area of the city, where low income households are likely to be concentrated.

Consequently, among other things to be investigated in this chapter are the household size and composition, the occupancy rate, the house type and the tenure system so as to discern any similarities or differences with case study I (the public housing sector). The socio-economic characteristics of the households, housing consumption pattern as well as their perception of the amenities and facilities available to them would equally be examined. Although rental levels would be discussed, it is outside the scope of this study to examine in details who lets accommodation and the economics of landlordism. This is because emphasis is more on the tenants affordability rather than the landlords' economy. A total of 387 households comprised of both owners and renters were interviewed. The questionnaire administered to households in both case study areas is shown in appendix 5.1.

6.1   THE CORE (CASE STUDY AREA II)

The core is located within the central business district (CBD) where most of the commercial enterprises and businesses as well as a greater proportion of the Government

offices are located. The Oba's Palace, a very significant feature of the city, discussed in chapter 1, is also located within this area. The core is dominantly a popular sector housing area characterised by small scale ownership. Most landlords are owner-occupiers who are merely supplementing their income with renting, while absentee landlords are relatively very few. Our survey result indicates that 69.1 per cent of the landlords own only one property while 29.9 per cent own more than one. Most of the landlords occupy 2 to 3 rooms or what is usually referred to as a flat while subletting the remaining rooms to tenants. This is quite similar to Gilbert and Varley's (1990) findings among the Mexican landlords for similar areas of the city. The majority of such tenants are low income households.

6.1.1   Housing Stock

The housing stock is predominantly the traditional multi-family compound house mainly in a pitched-roofed style of single storey accommodation arranged around a courtyard. They are called multi-family rooming house types (Dark,1973). The typical traditional ones have between 6 and 15 rooms arranged in a rectangular form facing inwards. The majority of these house types have kitchen, bathroom and toilet (if water closet) located on the fourth side of the courtyard. While others build different structure for the kitchen, toilet and bathroom usually located at the back of the compound. The second house type is normally referred to as the veranda type of rooming accommodation. The design of this house type varies from locating the veranda at the side of the building to a centrally located veranda where the rooms appear opposite each other (plate 6.1, fig. 6.1). Mixed with these two house types are a few multi-storey buildings ranging from two to four floors. Over the years, incremental renovation has been taking place, with a resulting fourth house type which is normally the modern bungalows (only about 5 per cent of the total stock in this area) or renovated two storey buildings (plate 6.2) which have been modernised by installing modern facilities, e.g. water closet (WC), kitchen and shower
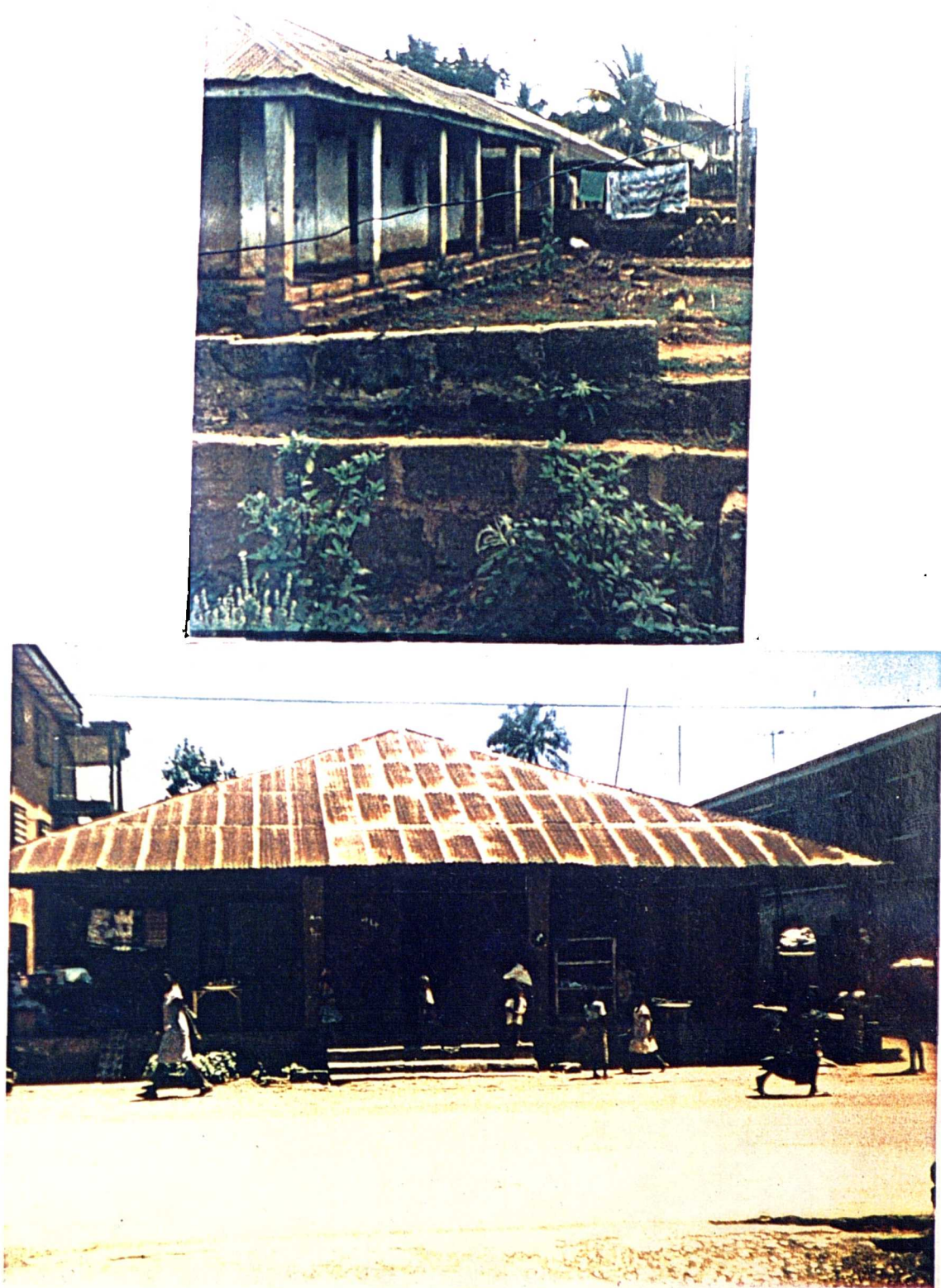
Plate 6.1 **The veranda or rooming type**
of accommodation or house type

FRONT ELEVATION
SCALE 1 : 200

SECTION AA
SCALE 1 : 200

2700

0000
0000

3600   3600
8100

1200 1200   1200 1200

6 6   5 5

2400   2400

4 4

A —   3

1

2   2   2

1   1   1

A

900   12000   900

EXISTING GROUND PLAN
SCALE 1 : 200
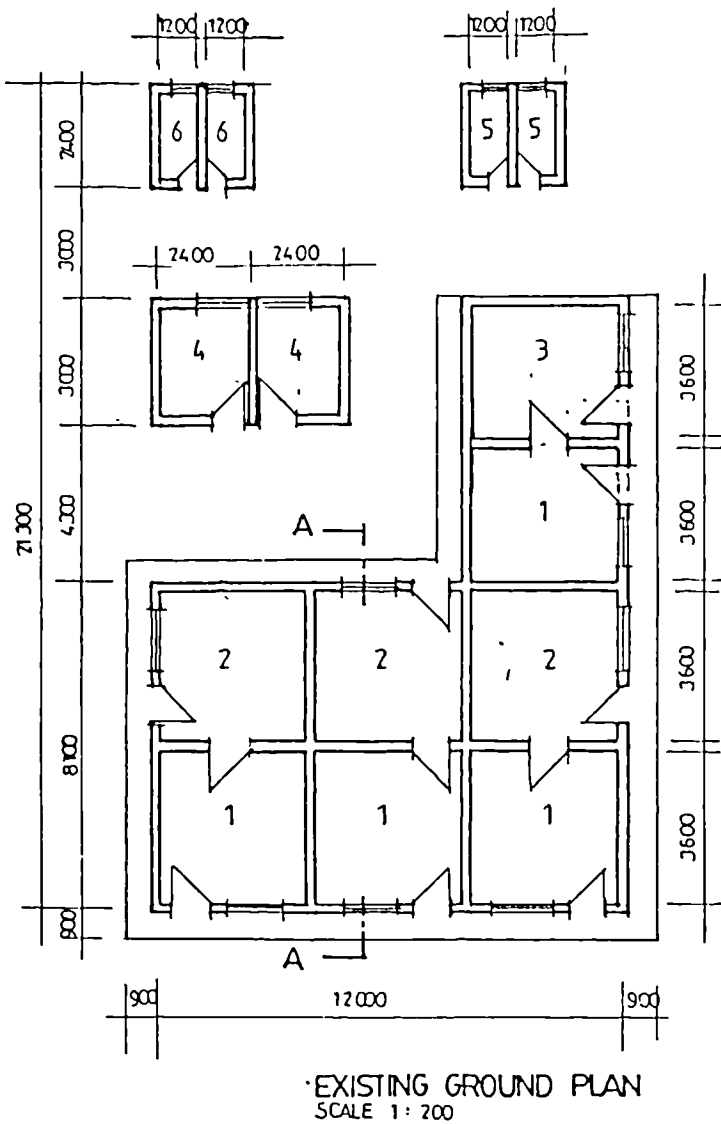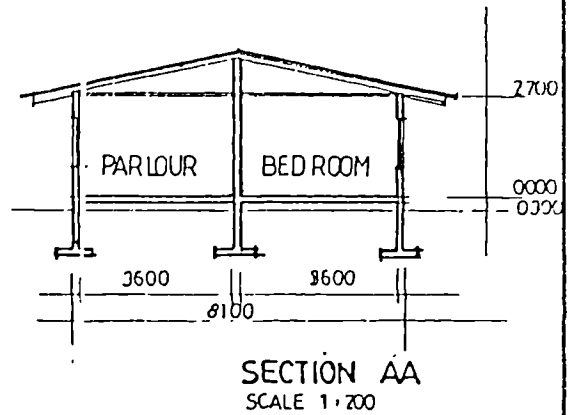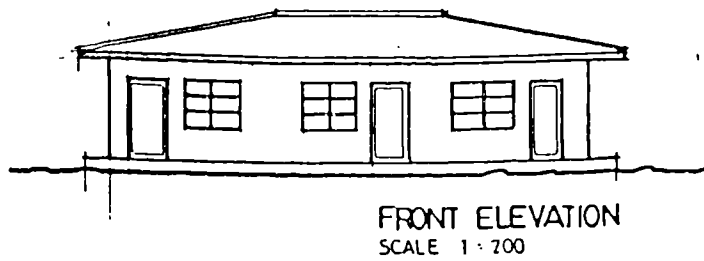
NOTE
1. PARLOUR
2. BED ROOM
3. ROOM
4. KITCHEN
5. BATH
6. EC

Figure 6.1 A Plan showing the Veranda type of rooming accommodation.
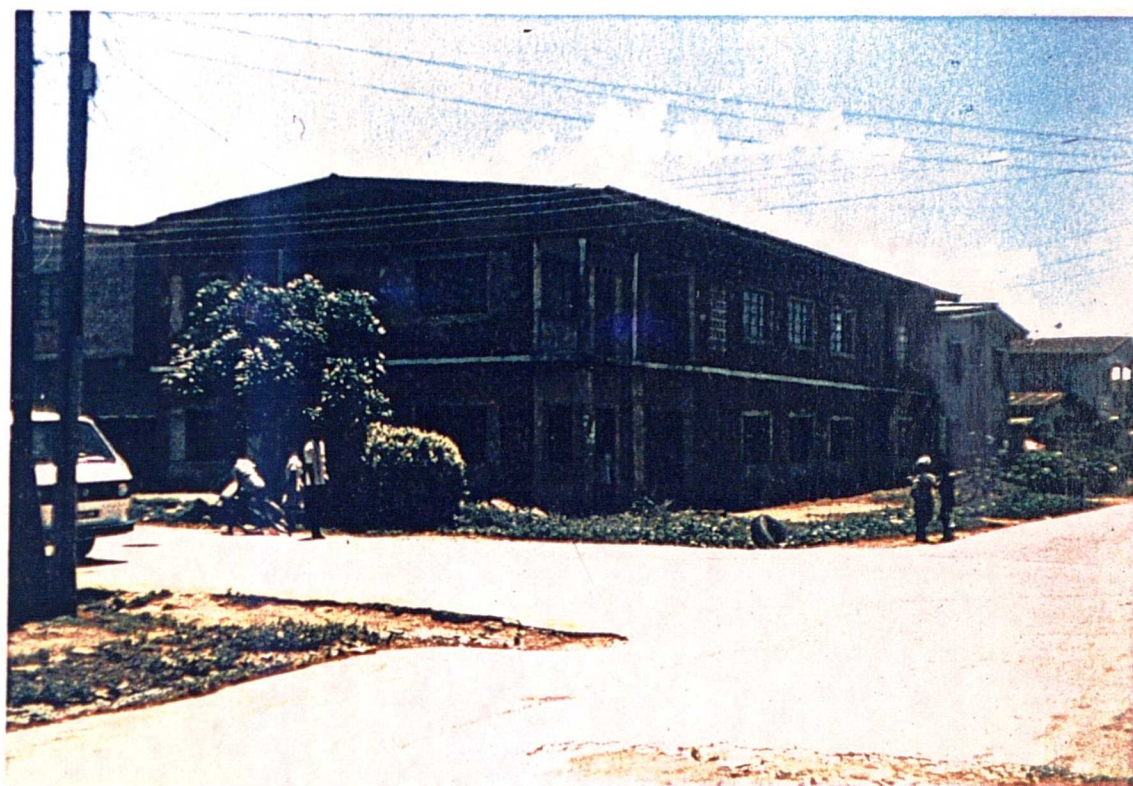
Plate 6.2   Renovated two-storey building

inside the buildings. As the years pass, the traditional compound type and the typical rooming accommodation both tend to be renovated incrementally. Nonetheless, our survey results indicate that 74.7 per cent of the buildings in this area are built of mud with cement plaster (fig. 6.2). Considering the type of building materials used, incremental renovation notwithstanding and poor maintance culture, houses which are over 50 years old by now should have been outdated and a good proportion of them would have become substandard. This notion is supported by our data which reveals that 45.9 per cent of the dwelling stock is above 70 years old (table 6.1). The present condition of these buildings is further shown by the presence of cracks, broken soakaway and septic tanks (plate 6.3), broken floors and ceilings. Our data indicates that 58.2 per cent of the dwelling units in this area are in poor condition. In the midst of these very poor housing conditions are located some very modern buildings (plate 6.4), used for commercial purposes.

Apart from the structural elements, the quality of the dwellings were also assessed by the location and degree of exclusiveness of the use of electricity and water supply, toilet, bathroom and kitchen. According to the figure 6.3 and (appendix 6.1) only 23.8 per cent, 19 per cent and 21.4 per cent of the 387 households interviewed have exclusive use of kitchen, bathroom and toilet respectively; while only 14.2 per cent of the households have exclusive use of water and electricity supply. Evidence from other cities for example, Kumasi in Ghana (Tipple & Willis, 1989) would suggest that sharing of services is a common urban feature for the low income households in most developing countries especially for those residing in the poorly serviced parts of the city.

The survey results presented on table 6.2 have further indicated that 71.6 per cent, 77.5 per cent and 79.5 per cent of the households interviewed have their kitchen, bathroom and toilet located outside their dwelling units. The equivalent figures for water supply is 78.1 per cent. Even though most of the dwelling units have water pipes installed inside the house and within the compound (see the definition of compound in section 6.1.1), yet these
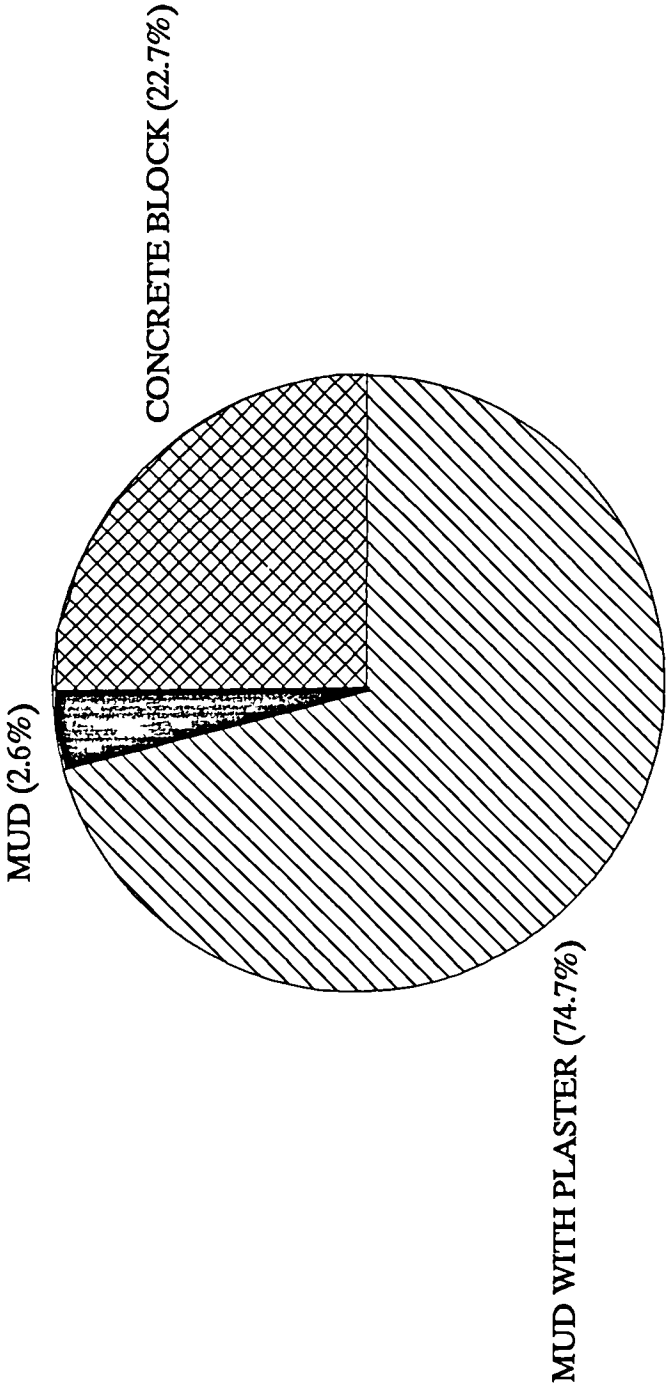
Fig. 6.2   Building Materials used for Construction

Table 6.1   Age of Building.

Years	Freq. %	Cum. %
1 - 20	15.9	15.9
21 - 40	20.8	36.7
41 - 60	14.0	50.7
61 - 70	3.4	54.1
Above 70	45.9	100.0

Source: Field Survey, 1990.

Plate 6.3   Broken septic tank

Plate 6.4   **A modern building located within the core**

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FIG 6.3 EXCLUSIVE USE OF SERVICES.
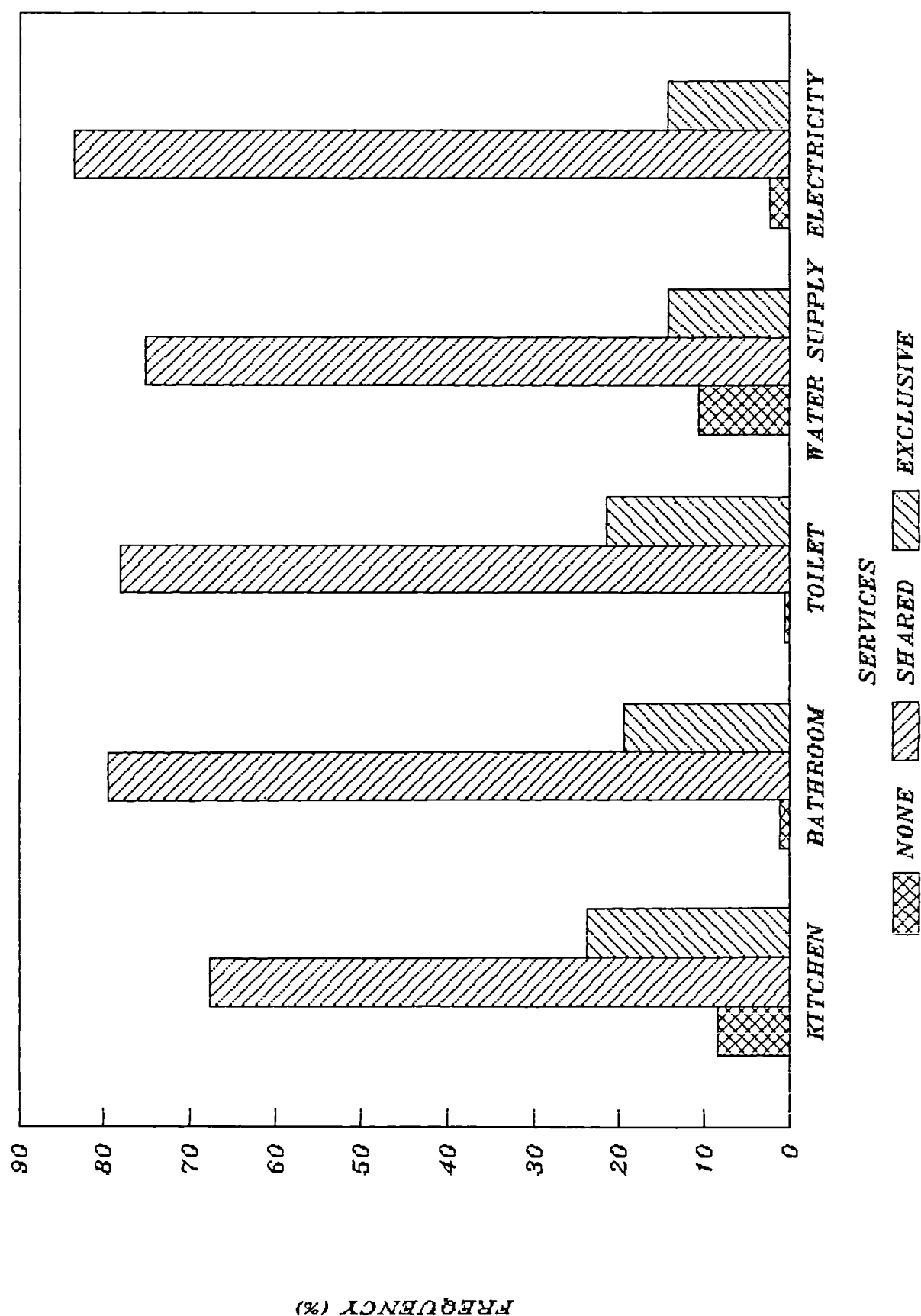
Table 6.2   Location of Services.

Services	Inside	Outside	Outside but covered
	%	%	%
Kitchen	23.0	71.6	5.4
Bathroom	17.4	77.5	4.9
Toilet	16.4	79.5	4.9

Source: Field Survey, 1990.

taps run dry for months at a stretch. Thus, the households are often forced to go outside their compounds and dwelling units to collect water from public taps. Occasionally, city shortage sometimes forces households to fetch water from the river but this practice is fast diminishing as households now buy water from both private and Government water tankers.

6.2   HOUSEHOLDS PER DWELLING UNIT

The typical traditional Bini dwelling unit (see the definition of a dwelling unit in chapter 5), even though intended for one household is normally occupied by more than one household especially in the core, where the indigenous people are concentrated. Our data (table 6.3) reveals that only 28.5 per cent of the dwelling units investigated among owners have one household and 71.5 per cent have more than two households. As stated in chapter 5, section 5.1, the high rate of multi-occupation of dwelling units is because, among the Binis, married children continue to live with their parents for some years before moving out to form their own homes. Experience has shown that young married children currently stay with their parents indefinitely or until they are able to build or acquire their own dwelling units which does not happen easily these days because of the economic recession.

Contrary to this high multi-occupancy of dwelling units among owners, and similar to the situation in the public sector, is a very high proportion of one household to a dwelling unit among the renters. This rate which is 92.7 per cent as against 28.5 per cent of owners is not surprising as most renters occupy one or two rooms. Moreover, a high proportion of the renters are migrants who can not possibly accommodate another household for a long period of time. Finally and the most crucial reason is that private landlords frown on tenants taking on other households. This is because in Benin City, private landlords are very conscious of pressure exacted on services and utilities if more people than

Table 6.3   Number of Households in a Dwelling Unit.

Number of Households	Freq. %		Cum. %	
	Owners	Renters	Owners	Renters
One	28.5	92.7	28.5	92.7
Two	13.9	2.6	42.3	95.3
Three	15.3	1.6	57.7	98.4
Four	13.1	-	70.8	-
Five	9.5	1.6	80.3	99.0
5 or More	19.0	1.0	100.0	100.0

Source: Field Survey, 1990.

necessary occupy a dwelling unit. In fact, a tenant who indulges in accommodating other people or households for a long period stands at risk of losing his tenancy. In most big cities in Nigeria, e.g. Lagos, Ibadan, Port Harcourt, etc., similar situations prevail (Federal Office of Statistics, Lagos, 1983/84 Housing Survey).

Among the owners, the household structure is different. This is because apart from the owner's children, other relations such as brothers, sisters, cousins and other individuals connected by lineage could be accommodated by the owners. However, this is not similar to the situation in Kumasi, Ghana (Tipple & Willis,1989) where lineage members have a strong claim to live in family houses rent free. In the Bini culture, the inheritance of a property such as a dwelling unit is by the most senior son of the family; and therefore ownership does not involve members of a lineage as such. The individual who inherits the property is however, conscious of the extended family ties which characterizes the owners' households; especially as polygamy is a common feature among the Binis. Contrary to this but similar to what was found in the public sector, the renters exhibited a high rate of nuclear family households. Perhaps this is because of the reasons advanced earlier in this chapter.

Ages of the heads of households, presented in table 6.4 are very similar to the findings in Chapter 5 on the public sector households (fig. 6.4). For instance, while 88.9 per cent of the 127 public sector households interviewed have household heads within the age bracket between 30 and 60 years a comparable figure for the popular sector housing, among which 387 households were interviewed, is 80 per cent. Similarly, while only 7.9 per cent are between 21 and 30 years and 1.6 per cent above 60 years in the public sector housing, 10.5 per cent are between the age brackets of 21 and 30 years and 3.2 per cent above 60 years among the popular sector households under investigation. The fairly high percentage (10.5) of household heads between 21 and 30 age brackets in the popular sector housing reflects on the concentration of clerks and semi-skilled artisans who live in this

Table 6.4   Age of Head of Household.

Age	Frequency %	Cumulative %
11 - 30	.5	.5
21 - 30	10.5	11.0
31 - 40	32.3	43.3
41 - 50	30.2	73.5
51 - 60	17.5	91.1
61 - 70	5.7	96.8
Above 70	3.2	100.0
Mean -43		Median -45

Source: Field Survey, 1990.
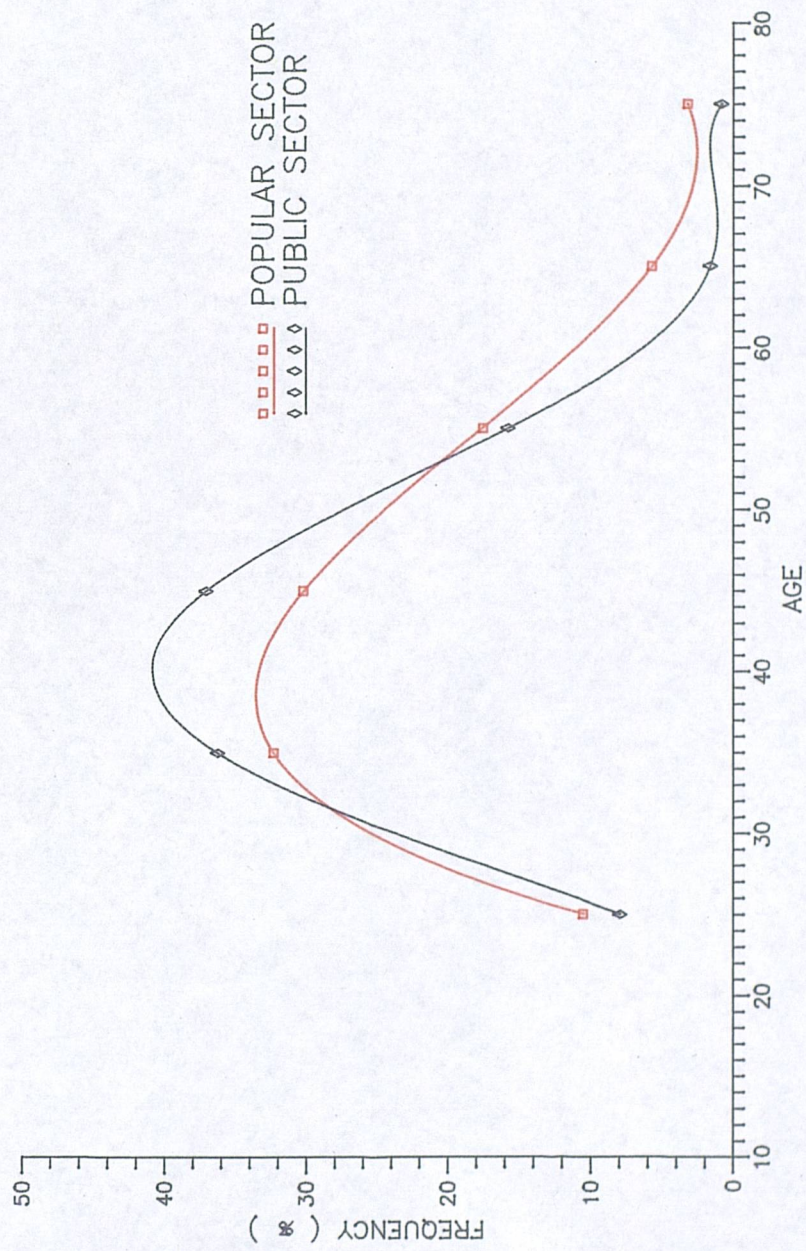
FIG.6.4 COMPARISON OF AGE FREQUENCY BETWEEN POPULAR AND PUBLIC SECTORS

area. In most Nigerian cities, people with this kind of employment are often between the ages of 21 and 30 years. Sada (1984), had similar findings on Warri and Auchi and Williams (1974) in Ibadan. Also similar to the households in the public sector, the heads of households in the popular sector are middle-aged persons. Their mean and median ages are 43 and 45 respectively. It is equally interesting to observe that the mean and median for renters is 39 and 35 while that of owners is 51 and 55 respectively.

Out of our total sample of 387 households interviewed, 88.0 per cent and 12.0 per cent have male and female headed households respectively. This is comparable with 93.7 per cent and 5.5 per cent male and female headed households respectively found in the public sector. The higher percentage of the female headed households in the popular sector as against that of the public sector is a likely indication of the traditional nature of the core. Secondly, this is a manifestation of the likely presence of a widowed population who have survived their husbands. Finally, the age range of female headed households is mainly concentrated between 60 and 70 years which indicates a higher female survival rate.

6.3   HOUSEHOLD SIZE

The mean household size found among 387 households interviewed is 6.9 and the median is 6. However, the multi-occupancy system found among owners in the preceding section has been reflected on the household size. For instance, the mean and median household sizes for owners are 9.9 and 9 respectively. This is indeed a very large household size by any standard. Nevertheless, it is not surprising as we have found from our survey that married children continue to live with their parents until they are able to build their own dwelling unit. Moreover, a typical Bini man does not marry only one wife. The effect therefore is that the indigenous households normally have very large families. The family members are comprised of children, grandchildren and great-grandchildren. Also, among

owners, there is a higher probability of relatives such as sisters, brothers, cousins, etc., coming to live with them.

On the other hand, the household sizes for renters are much smaller, with a mean and median of 5.1 and 5 respectively. This is because most renters are poor and live in one or two rooms which automatically limits the number of relatives they can accommodate apart from their own children. However, renters who are bachelors and spinsters have other dependent relatives such as sisters, brothers, etc., who are either going to school or seeking employment. It is important to mention here that the mean household size for this area is comparable with the public sector area which is 7.3 and some public sector developments in Lagos (see chapter 5).

Table 6.5 presents the distribution of household size. While only 5.7 per cent of the households interviewed are one-person households, over 35.8 per cent of the households are 7 and above person households. Similar to the findings on the public sector in chapter 5, household sizes increase with income (table 6.6 and fig. 6.5).

6.4   TYPE OF TENURE

Although housing specialists have concentrated on owner-occupation which have been prompted by the work of Turner (1976) and Abram (1964), rental housing has dominated the tenure system in Benin City. It is very likely that this situation is further encouraged by large contribution of the popular sector housing towards the accommodation of the low income households Moreover, rental housing has continued to dominate the tenure system in Benin City with the recession which has made home ownership more difficult for the low income households. Evidence from other developing countries' cities (Gilbert

Table 6.5   Number of Persons in a Household.

Number of Households	Freq. %	Cum. %
1	5.7	5.7
2	7.5	13.2
3	6.2	19.4
4	12.7	32.1
5	11.9	44.0
6	9.3	53.4
7	10.9	64.2
Above 7	35.8	100.0

Source: Field Survey, 1990.

Table 6.6   Number of Persons in a Household as Related to Income.

Income	Number of Persons in a Household	
	Mean	Median
0 - 150	4.5	4.5
151 - 300	5.35	5.0
301 - 450	5.6	5.0
451 - 600	7.16	7.0
601 - 750	6.76	6.0
751 - 900	8.08	7.0
Above 900	9.89	8.0

Source: Field Survey, 1990.
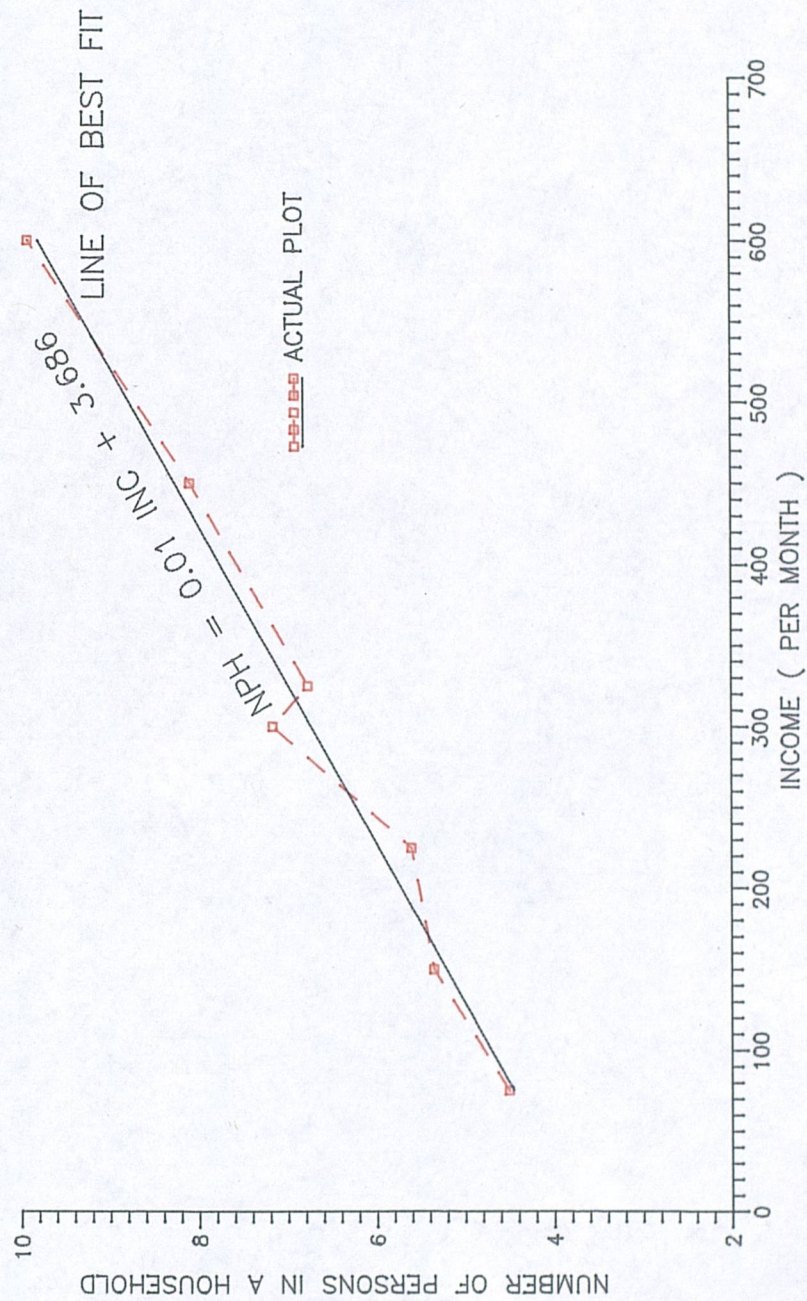
FIG.6.5. NUMBER OF PERSONS IN A HOUSHOLD IN RELATION TO INCOME

and Varley, 1988; Tipple and Willis, 1989) would suggest that the number of tenants households is on the increase in spite of conscious efforts to encourage owner-occupation. Our findings on the tenure system in this part of the city very much correspond with our detailed description of the tenure system in the entire city (see table 3.13, chapter 3). Although data do not exist as regards details on economic rent and nominal rent, our data indicates that 20.4 per cent of the households interviewed are owner occupiers while 79.6 per cent are renters.

6.5   HOUSEHOLD SIZE AND OCCUPANCY RATE

Chapter 5, section 5.4 clearly sets out the required standards for the measurement of room overcrowding in the area of study. The mean and median occupancy rates for these areas is 2.7 and 2.5 respectively (table 6.7). This is currently the city's general average Ozo (1990). Although this figure has increased from 2.2 (Federal Office of Statistics, 1983/84), when compared with other urban centres such as Ibadan 3.2, Kaduna 3.8 and Lagos 4.1 (Federal Office of Statistics, Lagos, 1989), the occupancy rate for Benin is comparatively low. Interestingly, the mean and median occupancy rate for owner occupiers is 2.27 and 2 respectively; while a corresponding figure for renters is 2.82 and 2.50.

The analysis so far shows that owner occupiers and renters have different housing conditions even though they may physically occupy the same building or compound. This is because owner-occupiers occupy more rooms than renters. Thus, although owner-occupiers' household sizes may appear larger than those of renters, owner-occupiers have better living conditions and space allocation. For instance table 6.8 indicates that while 69.9 per cent of the owners' households have an occupancy rate of between 1 and 2.5 (the standard), among the renters' households, a comparable figure is 55.6 per cent. The same table equally reveals that about 30 per cent of the owners and over 50 per cent of renters'

Table 6.7   Mean and Median Occupancy Rate* for Owners and Renters.

No. of Rooms	Occupancy Rate			
	Owners		Renters	
	Mean	Median	Mean	Median
1	-	-	3.3	3.0
2	2.6	3.0	2.8	2.5
3	2.5	2.5	2.4	2.3

Source: Field Survey, 1990.

*This rate continues to reduce as the number of rooms increases.

The mean and median for this area is 2.7 and 2.5 respectively.

Table 6.8   Number of Persons per Room by Tenure.

Rates	Owners	Renters
	%	%
1.0	3.3	14.3
1.5	23.3	8.0
2.0	13.3	22.7
2.5	30.0	10.6
3.0	10.0	12.7
3.5	10.0	15.8
4+	10.0	15.9

Source: Field Survey, 1990.

households in this area live in overcrowded conditions. In other words, these households live in conditions where the occupancy rate is above 3. In the totality of the analysis, the living conditions of the renters are worse than those of the owner occupiers.

6.6 TENURE AND RENT

Generally, it is claimed by renters and some housing experts in Benin City that rent levels are high. On the other hand, most landlords claim that rent levels are low especially when considered in relation to the cost of the dwelling units. These conflicting claims tend to correspond with the situation in Mexico as highlighted by Gilbert and Varley (1990). Although, it is not within the scope of this study to conduct a detail analysis of the economics of landlordism, it is essential to examine the rent levels in relation to international standards.

The mean and median rent paid per room in this part of the city is N45.00 and N30.00 respectively. Table 6.9 presents the percentage share of income and expenditure on various needs. The rent/income share for Benin is 21 per cent, while that of expenditure is 12 per cent. Gilbert and Varley (1990) found that in Guadalajara and Pueba a relative mean proportion of rent/income share is 13 per cent. The World Bank estimate for 13 cities in developing countries reflects that an average rent/income shares vary from 7 per cent in Cairo (Egypt) to 22 per cent in Seoul (Korea); although the rent/income shares of those earning less than $50 range between 10 per cent in Cairo and to 77 per cent in Seoul (Malpezzi and Mayo,1987a) (Appendix 6.2).

The minimum wage per month in Nigeria is N125.00, (Government approved salary grade, 1989, appendix 2.1) and the mean minimum wage is N183.00 per month. Based on these figures, it apparently means that households on a monthly minimum wage of N125.00 are spending as high as 36 per cent of their income on rent, while households on a mean monthly minimum wage of N183.00 are spending about 24 per cent of their

Table 6.9   Amount Spend on the Various Needs as a Percentage of Total
Household Income and Expenditure.

	Percentage of Household Total Income	Percentage of Household Total Expenditure
Food	50.0	50.6
Fees	13.0	18.4
Rent	21.0	12.0*
Health	11.0	11.0
Transport	5.0	8.0

Source: Field Survey, 1990.

*   The fact that the amount spent on Rent under income and expenditure are
different tends to indicate that there are some hidden income which are not
disclosed. Secondly, most owners were unwilling to diclose rent figures.

income on rent. When these figures are compared with the international figures on appendix 6.2, the rent/income shares for Benin City is low. But in terms of national policy which states that no household should spend more than 20 per cent of their income on rent, the rent paid in Benin is high. According to Mayo (1985, p. 5) average rent/income shares increase as the cites become more prosperous. Thus, "as income increases from Cairo to Manila (Philippines) to Bogota (Colombia), and then to Seoul- so too does the average fraction of income allocated to housing." This statement could only be applicable to cities where the household expenditure allocation to various needs are evenly distributed. In the Benin case, where over 50 per cent of the household expenditure is allocated to food the rent/expenditure share is likely to be high in relation to other needs.

On the part of the landlords, rents are considered low because of the very high cost of the building materials (see tables 2.6 and 2.7 in chapter 2). The landlords claims become more apparent (as we shall see in appendix 8.1) which indicates that the price of most goods increased more than 8 per cent between 1986 and 1987 while that of housing (accommodation,fuel and light) increased with only 4.3 per cent for the same period. For the period of 1987 and 1988 the price of food increased with over 50 per cent while housing decreased with -5.5 per cent. These figures notwithstanding, the tenants as well as the general public hold the view that rent levels are high particularly in a situation where most of the dwelling units are poorly serviced.

The rent indicated in the preceding paragraphs of this section would be used for the prediction of the market rent in the public sector. This sector has been chosen for the predictive and evaluative exercise in the following chapters because we have been able to establish the following:

(a)   that the same type of building materials (especially the most important ones, e.g. roofing, ceiling and to some extent walling materials) are used in both housing sectors;

(b)   that since the households are mostly low to medium income, with a concentration of low in both cases, we felt that the core is the most appropriate area to use for forecasting rent in a public housing sector purposely built for low income households;

(c)   finally, there are parameters (housing characteristics) which are present in the core area but lacking in the public sector area, for example tarred roads, availability of neighbourhood facilities etc., which tend to balance out for those parameters which the core does not possess.

6.7   WILLINGNESS TO PAY

In chapter 4, it was pointed out that strategic bias often affects the results obtained from asking households how much they would be willing to pay for housing. The results on appendices 6.3[A, B, C & D] confirm that those who are presently paying between 0 - N20 rent per room per month, and are earning between 0 - N150 per month, are willing to continue with the same rent. While 20 per cent, 20 per cent and 40 per cent of the households earning N151 - N300, N301 - N450 and N601 - N750 respectively are willing to pay 0 - N20 per month per room. Even among households who are presently paying between N21 - N40, for income ranges between N151 and N300 up to those households earning above N901 per month, 8.2 per cent are willing to pay between 0 - N20 and only 11.9 per cent are willing to continue paying their present rent (N21 - N40) per room per month. While the mean and median rent per room at the moment is N45 and N30 respectively, over 60 per cent of the households out of the 387 households interviewed are only willing to pay N20 per room per month.

The argument that willingness to pay approach does have a problem in assessing what households can afford to pay for housing seem to have been reflected in the preceding

discussion. This notwithstanding, the researcher however shares the view that it is a reasonable guide to policy makers as this would pose a task of reconciling what the people want, what they can afford and what they are willing to pay for as well as the sort of minimum standards which meet health and safety measures that should be imposed. Also, these two aspects have to be reconciled with what the Government can afford in terms of resource allocation. However, evidence abounds that households' reaction to housing payment or rent after the actual provision of housing is quite different (as most of them are likely to be willing to pay more when a dwelling unit is available for occupation), from their reaction during pre-planning survey when they are requested to say what they can afford and are willing to pay. Another important point which has emerged from this survey (Appendix 6.3[B]) is that the upper-lower and middle income brackets, i.e., 20th to 50th percentiles of the households are more willing to spend on housing than those below the poverty line and the upper income bracket. This finding is not unique to Benin as the World Bank research conducted in many developing countries' cities which concentrated on people's willingness to pay rent has shown that poorer households pay a higher proportion of their income on rent than higher income groups (Malpezzi et al, 1985). For those below the poverty line, it could be argued that they do not have enough for food and therefore cannot really afford anything for housing. But for the upper income brackets, It is possible that, at this level, most of the households have achieved the sort of housing of their dream and taste and would not bother to spend more. Alternatively, it could be that these high income households now have different preferences. Whichever be their reason, it is essential to note for planning purposes how little the upper income households are willing to spend on housing.

6.8   DWELLING SPACE PER PERSON

In chapter 5, section 5.5 the detailed standard for dwelling space per person for Benin City showed that even the public subsidized housing provided by the Government does

not meet the required standard. In this area (the core), the mean dwelling space for renters and owners is 6.4 sq. metres and 7.9 sq. metres respectively. From these figures, two main issues have emerged:

a) the dwelling space per person for owners is larger than the dwelling space per person for renters. This finding corresponds with what Ozo (1990) also found in his study of rented accommodation in Benin, Tipple and Willis (1990) in their study of Kumasi, Ghana; and Gilbert (1983, 1987) in most of his studies in Latin America.

b) Similar to Ozo's findings, we have equally discovered that the dwelling space per person in the public sector development is slightly larger than the dwelling space per person in the popular sector. While the mean dwelling space per person in the public sector development is 7.65 sq. metres, that of the popular sector development, owners and renters combined, is 7.1 sq. metres. In both areas, space allocation is small, reflecting the problem of overcrowding which we have discussed in detail earlier in this study which further reveals the level of housing shortage in Benin City.

6.9   TENURE, MOBILITY AND ETHNICITY

Our findings have once again confirmed the mobile nature of some of the population of the core as already stated in chapter 3. We found from our survey results that about 45.9 per cent of the 387 households interviewed have moved houses within the last five years. This mobility is mainly among the renters. The reasons advanced for moving are presented on table 6.10. Movement to locations close to place of employment seem to be the most common reason for moving and this confirms our earlier assumption in chapter 3. Further interviews with the households confirmed that some movement was mainly prompted by economic reasons as they have to move to smaller dwelling units. For

Table 6.10   Reasons for Mobility.

Reason	Freq. %
Seeking Proximity to Place of Work	31.3
Problems Generated from Landlord/ Landlady	29.1
Financial Reasons	20.3
Built or Allocated a House	19.4

Source: Field Survey, 1990.

instance, one of the interviewees said "I have to move to my present accommodation not only because it is close to my place of work but because it is smaller and cheaper. With the 'SAP'[1] one has to cut one's coat according to one's cloth". This sort of remark was received from a good proportion of the households whom we had the opportunity to interview in addition to filling in the questionnaire.

A very vital issue has been raised here and that is the 'filtering down' effect which we discussed in chapter 4, section 4.3. This is because this sort of downward movement equally affects the middle income households thus putting pressure on low income housing. Our data, however, has not established a relationship between ethnicity and mobility but there is a strong relationship between mobility and renters. This is because most migrants keep a close contact with their home town and villages and would prefer to build a house (whenever that dream comes true) in their home village rather the town where they are residing. Moreover, while owners are committed to permanent residence in the city some renters are temporary although they may have the intention to stay until retirement; and others become owners as they get absorbed into the city system depending on choice constraint (Gilbert, 1983).

In the Nigerian society this is not unusual. Nevertheless, among the 387 households interviewed in this area, we found that 87.5 per cent are of Bendel State origin while 12.5 per cent hail from the other states in Nigeria. The implication of this is that while planning for housing and other services, it should be recognized that most people in this area are Bendelites and as such, as much as possible every household has to be catered for. If a good proportion of the inhabitants of this area were non-Bendelites, it would follow that some of them would return to their state of origin with time.

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[1]   SAP - means structural adjustment Programme introduced in Nigeria since 1986 as
       a strict economic measure imposed towards the recovery of the economy.

6.10   AVAILABILITY OF INFRASTRUCTURE AND LEVEL OF
        ACCESSIBILITY

In the popular sector development, one of the most fundamental housing problems for the

low income households are inadequate housing facilities and services. In some dwellings,

housing facilities and services are non-existent. Facilities including kitchen, toilet and

bath as well as services including water and electricity supply, are grossly inadequate.

Access to the services is laborious and tedious. This is because there is a very high level

of sharing as against the existing situation discussed in chapter 5, section 5.5 in the

public sector area. The poor housing conditions identified in this area are not unique to

the core of Benin City. In fact, the core of most urban centres in Nigeria such as Lagos

(UN, 1987), Ibadan, Kaduna, Port Harcourt, Kano etc. (Federal Office of Statistics

1983/84) exhibit very high levels of sharing of housing facilities and services. Table 6.11

shows the level of adequacy of the housing facilities as perceived by the consumers. The

consumers' assessment of housing facilities and services appears to be fairly subjective.

About 50 per cent of all the services are said to be adequate. From personal experience

and the data, this assessment seems to be over generous. Nonetheless, we should not

overlook the fact that some of the poor households may be willing to accept certain

conditions as adequate even though the conditions may not necessarily meet the set

standards. Moreover, some respondents are very dissatisfied with the Government and

as such are very reluctant to criticise their private landlords. For example, when some

respondents were asked why they feel that the dwellings were adequate in spite of the

high level of sharing, the following was the reply: "why should I say that the facilities

provided in the dwelling are not adequate? Can I build? Or is the Government prepared

to help us?" Another respondent said "why should I criticise a man who is able to build

when I have none and there is no hope to own one. The government has done nothing to

help us. Even if the condition is poor, what can we do?" People with these sorts of views

can hardly complete the questionnaire to reflect how they actually feel about the

conditions of the dwellings. However, the fact that table 6.2 shows that about 70 per cent

Table 6.11   Level of Housing Infrastructure as Perceived by the Consumers.

Level of Adequacy	Distribution of Services:				
	Kitchen %	Bathroom %	Toilet %	Water %	Electric %
Very Adequate	4.2	1.7	1.9	3.1	3.3
Adequate	52.5	56.6	49.6	50.4	64.6
Indifferent	11.2	12.3	10.9	6.7	7.5
Not Adequate	27.4	27.6	30.1	30.8	20.3
Very Inadequate	4.7	1.9	7.2	9.0	4.2
	100.0	100.0	100.0	100.0	100.0

Source: Field Survey, 1990.

of all the services are shared tend to indicate that the housing facilities are inadequate. The tenants are poor and therefore cannot afford to rent dwelling units in better areas. So they continue to live in this area with poor housing conditions.

Another important feature associated with facilities and services in this area is their location. Contrary to the situation in the public sector area, our data shows that more than 70 per cent of the housing facilities and services are located outside the house. Although shared kitchens may be provided outside the house, most renters cook at the veranda during the rainy season and outside during the dry season. When some housewives were asked why they preferred to use the veranda and outside for cooking, some of them said that it helps them maintain a certain level of privacy with their cooking. According to some of them, "cooking outside reduces the amount of interference and other tenants no longer have the opportunity to scrutinize what another tenant is cooking." Another respondent said "the way we are being crammed in a small kitchen is horrible. We are living in this areas because we have no choice." These statements have, no doubt, reflected the level of dissatisfaction among renters about sharing certain facilities especially kitchens. We discovered from our survey that housewives are willing to accept a kitchen located outside the dwelling more than they would accept sharing of a kitchen no matter where it is located.

Our data indicate that about 77.1 per cent of the toilets in the compounds in this area are pit latrines, while only 22.7 per cent are water closets. These figures are comparable with findings by Sada (1984) and Ozo (1990) in similar surveys in Benin City. A significant observation from our survey is that the housing conditions for the owner occupiers are very different. In most cases, the owners have exclusive use of facilities and services and quite often W.C., pipe borne water and kitchens are installed within their 'flats' irrespective of the fact that they (owners) are living in the same buildings or compounds with their tenants. The preferential treatment which the owner occupiers enjoy is clearly

reflected in table 6.12. These conditions notwithstanding, the water supply situation is almost the same. As stated earlier most taps run dry for weeks and months and every household, whether renters or owners, are forced to buy water or fetch from other areas.

6.10.1   Other Infrastructure

In comparison with the situation of roads and streets in the public sector area, the popular sector area under investigation has better roads and streets. Perhaps due to the location of this area, i.e., within the core from where all the major roads leading out of the city radiate, about 50.7 per cent of the roads and streets servicing the dwellings are tarred. The remaining 49.3 per cent which are earth roads are well maintained. Refuse disposal points are created and locally constructed bins are located almost at every halt a kilometer. Unfortunately, the local council seems not to be able to cope with the clearing of these refuse points frequently. The resultant effect is that some of the areas are badly littered with waste. This presents some of the ugly scenes in this part of the city. The market areas are generally worse.

Storm drainage is very poor. Although a drainage scheme was prepared for the whole city, it has been quite inefficient because it has only been partially executed. This partial execution has made some parts of the city totally impassable especially during the rainy season as heavy flooding is always rampant. The drainage scheme was prepared with good intentions but, unfortunately, the State Government has not managed to find funds to execute the project. Partial execution means very heavy flooding for most areas that lie within the core. When the downpour is really heavy, some dwellings are flooded.

Street lighting is non-existent. In some parts of the city where it exists, it is non-functional as the poles have been standing along such streets for years without the bulbs

Table 6.12   Exclusive Use of Services by Owners and Renters.

Services	Kitchen		Bathroom		Toilet	
	Owners	Renters	Owners	Renters	Owners	Renters
Exclusive	40.9	12.6	60.0	10.0	75.0	8.0
Shared	54.7	77.0	39.0	88.0	15.0	91.5
None	4.4	10.5	1.0	2.0	-	.5

Source: Field Survey, 1990.

and the actual electricity connections to make them function. Street furniture is equally lacking.

6.10.2   Public Utilities and Services:

Unlike the public sector area surveyed, the popular sector area is well serviced with public utilities and amenities such as nurseries, primary and secondary schools, markets, hospitals, clinics, etc. For example about 97.4 per cent of the households live within a 2 kilometre radius of most of these facilities. From personal observation, it could be said the dwelling units are located within 1 kilometre or less to most of these facilities. The reasons for this nearness to public amenities are not difficult to find. The location of the core (study area II) is right at the C.B.D. - Central Business District -and the centre of the city where most utilities are concentrated. Consequently, public utilities are more easily accessible to a greater proportion of the households in this part of the city (the popular sector area) than to the households in the public sector area, why one may have expected the reverse to be the case.

6.11   EMPLOYMENT AND INCOME

In chapter 3, a detailed description of the employment situation in Benin City was presented. The employment situation of the households in the core (study area II) is not different from the picture already presented in Section 3.2 of chapter 3. Table 6.13 presents the various employment sectors and their percentages. The striking thing about this table is that 43.9 per cent of the dwellers are employed in private business, which is likely indication of a concentration of petty traders and semi-skilled self-employed artisans who live in this area (fig. 6.6). It is also important to mention here that clerks form a considerable percentage of the 32.6 per cent of the civil servants. These figures are confirmed by the figures presented on table 6.14 on occupation. The low percentage of

Table 6.13   Employment Status of Head of Household.

Employment	Freq. %	Cum. %
Civil Servants	32.6	32.6
Private Company/Firm	7.8	40.3
Private Business	43.9	84.2
Pensioner	8.5	92.8
No Employment	7.2	100.0

Source: Field Survey, 1991.

FIG 6.6 EMPLOYMENT STATUS OF H/H HEAD
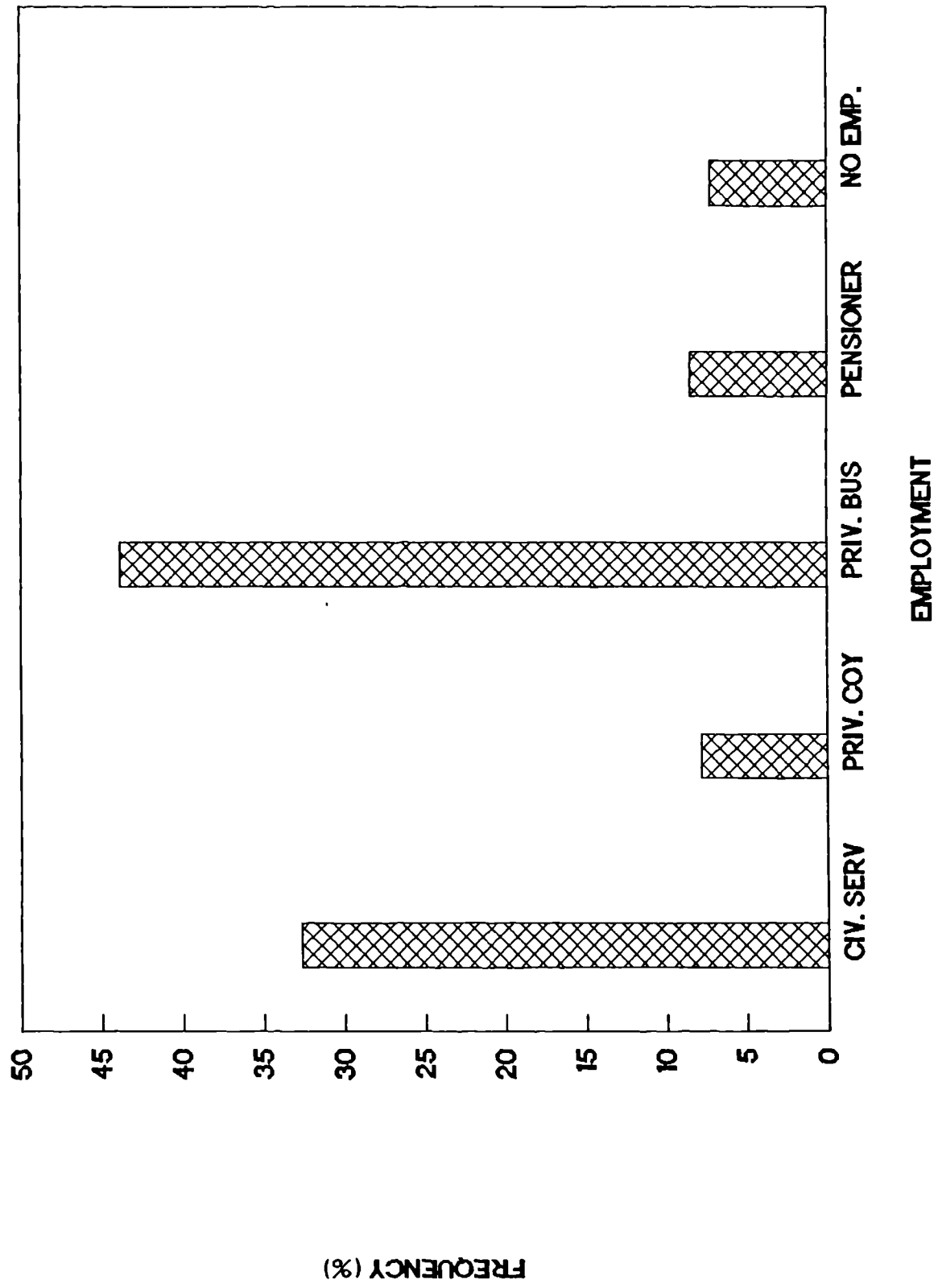
Table 6.14   Occupation of Head of Household.

Occupation	Freq. %	Cum. %
Administration	30.7	30.7
Finance	3.8	34.5
Professionals	2.2	36.7
Teachers	3.6	40.3
Contractors	10.1	50.4
Transporters	.3	50.7
Traders	14.2	64.9
Nurse/Midwife	1.9	66.8
Driver/Mechanic	8.2	75.1
Craftsmen	7.9	83.0
Farm/Forest Worker	4.4	87.4
Retired	9.0	96.4
No Occupation	3.6	100.0

Source: Field Survey, 1990.

professionals seem to reflect on the fact that the low income households are concentrated in this area; while the fairly high percentage (8.5) of pensioners could equally reflect the fact that the indigenous population concentrate in the core since it is usual for most non indigenes to return to their home towns after retirement. It has also been observed that a large proportion of the population in the core are self-employed (table 6.14). However, we have earlier on commented on the problem of self-employment and the incidence of disguised unemployment (see section 3.3, chapter 3).

The income was examined at two levels:

    a)   Household level

    b)   The head of the household level

Distribution of household total monthly income is presented on table 6.15, The mean monthly household income is N806.0 and a median of N695.0. Although, the mean household monthly income appears high, it is not necessarily so when it is realized that the mean and median household size is 6.9 and 6 respectively.

About 42.3 per cent of the households have a total monthly income of below N600.0, while about 24.8 per cent of the households have a monthly total income of more than N900. The reason for this high percentage of those households earning more than N900 is because of the high proportion of pensioners who are in most cases landlords. In addition to their pensions and the income realised from rent, they also have other sources of employment which yield revenue. When all these are added together in addition to what their children and wives earn, the household income normally becomes a large amount. Incidentally, this is not the situation with the renters who are generally poor. When the head's monthly income is assessed, the situation is quite different as well. Table 6.16 and figure 6.7 present heads' monthly income for owners and renters. The mean monthly

Table 6.15 Distribution of Household Total Monthly Income.

Income Range	Freq. %	Cum. %
0 - 150	0.9	0.9
151 - 300	9.8	10.7
301 - 450	13.2	23.9
451 - 600	18.4	42.3
601 - 750	15.8	58.1
751 - 900	17.1	75.2
Above 901	24.8	100.0
Mean = 806.00		Median = 695.00

Source: Field Survey, 1990.

Table 6.16   Head Monthly Income for Owners and Renters.

Head Monthly Income	Freq. %		Cum. %	
	Owner	Renters	Owners	Renters
0 - 150	1.8	13.1	1.8	13.1
151 - 300	19.8	35.5	21.6	48.6
301 - 450	18.9	27.4	40.5	76.0
451 - 600	22.6	14.7	63.1	90.7
601 - 750	5.4	3.3	68.5	94.5
751 - 900	9.9	.5	78.4	94.5
Above 900	21.6	5.4	100.0	100.0

Owner's Mean = 643.0   Owner's Median = 500.0

Renter's Mean = 389.0   Renter's Median = 350.0

Source: Field Survey, Jan. 1990.
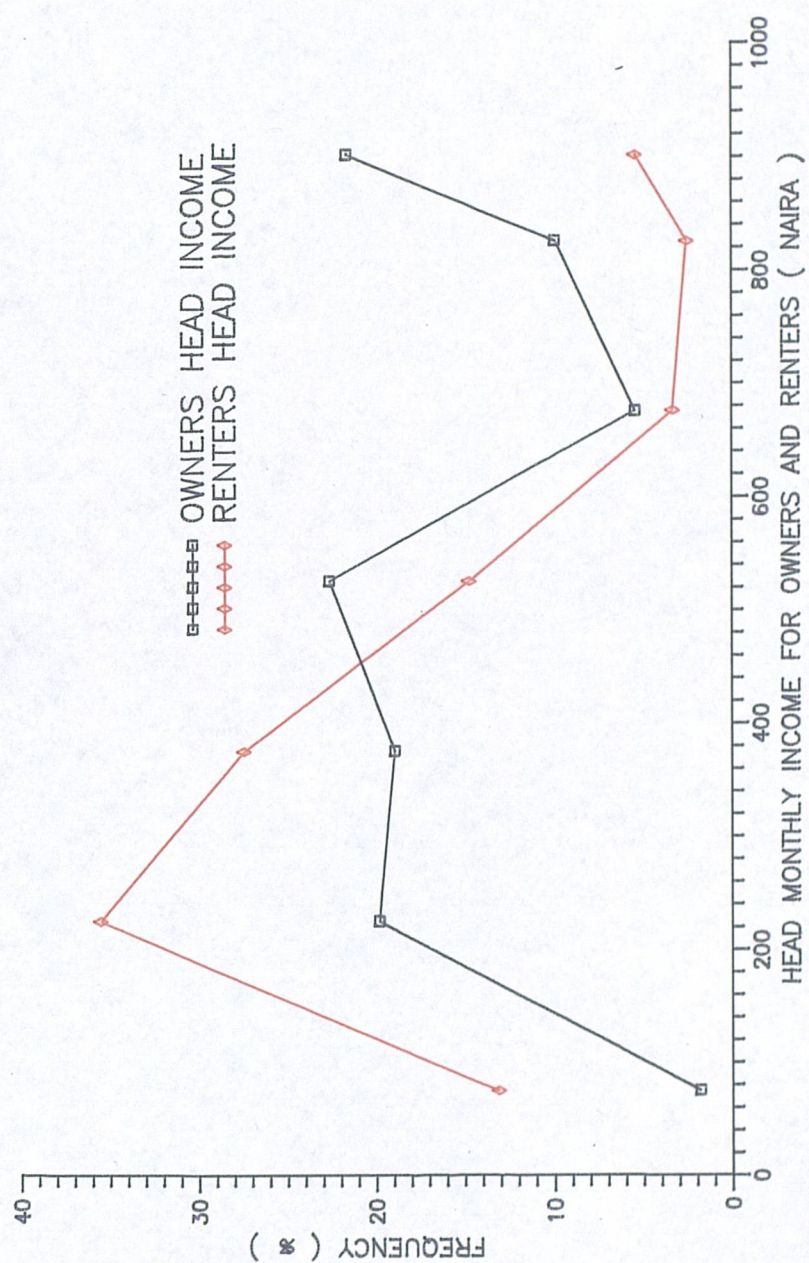
FIG.6.7. HEAD MONTHLY INCOME FOR OWNERS AND RENTERS

income for owners is N640 while that of the renters is N389; the median is N500 and N350 respectively. Comparatively, the renters are poor. Among the renters, 61.7 per cent of the heads of households earn below N300 monthly. A comparative percentage for the owners' head of household who earn below N300 is 21.6 per cent. Following from the above, there is no doubt, that the considerable proportion of the residents of the core are low income households. This is confirmed by the fact that over 70 per cent of our interviewees are renters and they are generally poor as we have seen above.

Because we have earlier stated that we are using expenditure as a proxy for income in all of our calculation in this research, we then went further to evaluate the total household monthly expenditure. Table 6.17 clearly reveals the picture which is not very different from the income situation. For instance, while the mean household total monthly income is N806, the mean household total expenditure is N870.0. The median values are N695.0 and N654.0 respectively. Similarly, the per capita expenditure is presented on table 6.18. It should be stated here anyway, that expenditure patterns are often affected by household's total income in a system where households operate joint accounts. But in the Nigerian situation where spouses operate separate accounts as has been shown in chapter 4, this may not necessarily be the case. All the same, since it was equally mentioned in chapter 4 that the urban low income households tend to operate differently because of their very low incomes, it has been decided in this study to use household total expenditure assuming that the spouses operate joint accounts. The details of the expenditure situation in relation to other needs has been discussed in section 6.6.

6.12 MEASUREMENT OF AFFLUENCE BY THE ACQUISITION OF SOME LUXURY GOODS

To further assess the level of affluence or poverty of the households who reside in the core we decided to evaluate their ownership of some luxury goods such as cars, coloured

Table 6.17 Age of Head of Household.

Expenditure	Frequency %	Cumulative %
0 - 150	1.0	1.0
151 - 300	6.0	7.0
301 - 450	21.9	28.9
451 - 600	16.6	45.5
601 - 750	15.5	61.0
751 - 900	11.2	72.2
Over 900	27.8	100.0

Mean = 870.50   Median = 651.00

Source: Field Survey, 1990.

Table 6.18   Household Per Capita Expenditure.

Per Capita Income	Freq. %	Cum.%
0 - 50	5.9	5.9
51 - 100	40.5	46.9
101 - 150	39.1	85.5
151 - 200	14.0	99.5
Above 200	.5	100.0

Source: Field Survey, 1990.

television, radio, radio cassette, refrigerator, fan, cooker, etc. Our contention is that this could enable us to rely more on our data. As very few households inherit cars from their late parents, it would be absurd, for instance, to discover that a considerable proportion of those who earn below N450 had cars. In that case, we would be forced to investigate their other sources of income if the figures they have given us above are reliable and correct. Goods such as refrigerators and fans are widely owned among the wealthy and the poor alike. This is because these two items are more of a necessity than a luxury as the climate makes their constant use imperative. It would not be surprising, therefore, if most families have refrigerators and fans. Black and white television is equally commonly owned while the coloured television is owned only by the wealthy households as it is a very expensive commodity. Table 6.19 gives a summary of what the situation is like regarding the acquisition of luxury goods by the households. It is important to point out that those goods which are really luxury goods such as a car, video and cooker are not acquired by many households, while those which we have identified as necessities are widely owned by the households. For those items which have no substitute, most households endeavour to acquire them irrespective of their cost. However, low income households in most cases go for the smallest size and the cheapest as well. On the other hand, items such as cookers have many other substitutes, thus *low income households* only purchase cookers if their finances actually improve and then they usually purchase the very small and cheap ones. However, preferences and choice still affect ownership of luxury goods irrespective of households' income grade.

6.13   RELIGIOUS AFFILIATION

Bendel State in general and Benin City in particular is Christian dominated. This has been confirmed by our findings on table 6.20 which presents the proportion of christians to moslems and other religions. The effect of these findings is that designers do not necessarily have to be conscious of the moslem religion which advocates segregation

Table 6.19   Ownership of Luxury Goods.

Goods	Yes %	No %
Cars	26.7	73.3
Television	75.4	24.6
Radio	91.5	8.5
Video	8.0	92.0
Cooker	23.1	76.9
Fan	92.0	8.0

Source: Field Survey, 1990.

Table 6.20   Religious Affiliation

	Freq. %
Christian	76.8
Other Religion	15.4
Moslem	7.8

Source: Field Survey, Jan. 1990.

between male and female in their design types. In addition to the above the occupation of the dwelling units has no special relationship with religion.

6.14   SUMMARY

In summary therefore, efforts have been made as much as feasible to highlight the problems inherent with the core (the study area II). The dwelling units, their characteristics and neighbourhood factors have been discussed, while comparing and contrasting with the public housing sector (study area I), within the limits of available data. The rents paid and the income and expenditure of the households were all examined. It was possible to identify areas of similarity in the two study areas as far as the housing characteristics are concerned (see next page).

This comparison is necessary because the next chapter has to use the existing characteristics of the popular sector to predict the market rent for the public sector housing. The proposed prediction exercise will be conducted through the application of the hedonic technique.

Summary of Findings for section II

Public Sector Housing (Chapter 5)	Popular Sector Housing (The Core, Chapter 6)
1. Standard of the Dwelling Units is higher.	Standard of the dwelling Units is lower.
2. Physical Characteristics - size of rooms, provision of electricity and water supply are similar.	Physical Characteristics size of rooms, provision of electricity and water supply are similar.
3. Housing Facilities - sharing is common.	Housing Facilities - sharing is virtually universal.
4. Location of Housing Facilities e.g. kitchen, bathrooms etc - within the dwelling units.	Location of Housing Facilities e.g. kitchen, bathrooms etc - outside the dwelling units.
5. Public Amenities - poorly serviced.	Public Amenities - well serviced.
6. Roads and Streets - good access roads exist but poorly maintained and not tarred.	Roads and Streets - very good roads exist and are well maintained with about 50 per cent tarred.
7. Employment Status - greater proportion (about 68 per cent) of households are civil servants.	Employment Status - considerable proportion (about 44 per cent) are petty traders and contractors. Only about 32 per cent are civil servants
8. Income Groups - over 50 per cent are low income.	Income Groups - over 50 per cent are low income.
9. Rent - heavily subsidised by Government. Mean - N25.00 per room. Median - N22.50 per room.	Rent - not subsidised. Mean - N45.00 per room. Median - N30.00 per room. (Because rent is not subsidised in the popular sector it is used to predict market rent for the public sector)

SECTION III

ANALYSIS, SYNTHESIS AND RECOMMENDATIONS

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CHAPTER 7

HEDONIC PRICE DEMAND ESTIMATES OF SUBSIDIES IN
PUBLIC HOUSING

This chapter investigates the subsidized public housing policy through the application of the hedonic techniques. By applying series of multiple regression analyses, (through the use of the SPSSX computer software, and the modified Davis' (1973) Fortran program), to the data generated from the empirical survey; it became possible to identify the physical characteristics which have significant domonace on rent. Having identified these characteristics, it was possible to predict the market rent for the public sector housing; and also to identify the demand factors that determine the quantity of housing services demanded by households. This analysis enabled the researcher to assess the costs and benefits of the subsidized public housing to the consumers and the developers; and the general effect this policy has on low income housing supply. Before the detailed analysis begins, it is essential to examine the Benin City housing market and the consumer models.

7.1   BENIN CITY HOUSING MARKET MODEL

A microeconomic theory of a housing market presupposes that housing and its services are physically different among localities. Similarly, consumption of housing services varies among households. It is these differences that give rise to the housing market value. The process which attempts to bring a linkage between these differences is often referred to as a competitive market. Unfortunately, in most developing countries, the housing market mechanism is imperfect. Consequently, this situation lends itself to government intervention which include rent control, rent subsidy, and other public policies which make it possible for some households to occupy dwelling units for which they pay higher or lower than the market rent. Housing preferences equally differ among households in a housing market and this makes it possible for a household to occupy a dwelling unit at a rent which may be less than their maximum willingness to pay.

Although many housing market policy options exist, it is often difficult to know the most appropriate for a country especially with very limited resources. In some housing markets, policies that focus on increasing the rental stock may seem more appropriate, while in others it may be more profitable and desirable to focus on and increase homeowner stock. In an attempt to arrive at an appropriate policy which is desirable, affordable and feasible, this research evaluates the policy of subsidized public housing within the context of urban housing market behaviour.

Under subsidized public housing, government undertakes the payment of a fraction of the rent for dwelling units constructed for the low income households (refer to chapter 2 for detailed discussion). The amount of subsidy varies from government to government as well as country to country. Within the same country, it can also vary from state to state or amongst localities as the case may be. In the context of this research, the government is responsible for about 45 percent of the rent while the beneficiaries only contribute 55 percent. Similar to rent control in Kumasi, Ghana (Willis and Tipple, 1988) prices move from P_s to P_r in Fig. 7.1, simply because rents are subsidized. As a result of the heavy subsidy, the government cannot construct more dwelling units as resource constraints limit subsidies. Therefore the number of dwelling units now being produced by the government for the low income households is fixed at S_1 in the meantime and thus creating excess demand (Q_u-Q_n) at P_r. Eventually, this creates huge shortages of housing stock as the government does not have enough money to construct more dwelling units.

This leads us to ask some basic questions relating to subsidy:

(a)   To what extent are subsidies limited to those who really require them particularly the poorest households including those below the poverty line as earlier defined in chapter 3?

(b)   What cost is incurred by the government in providing the subsidy?
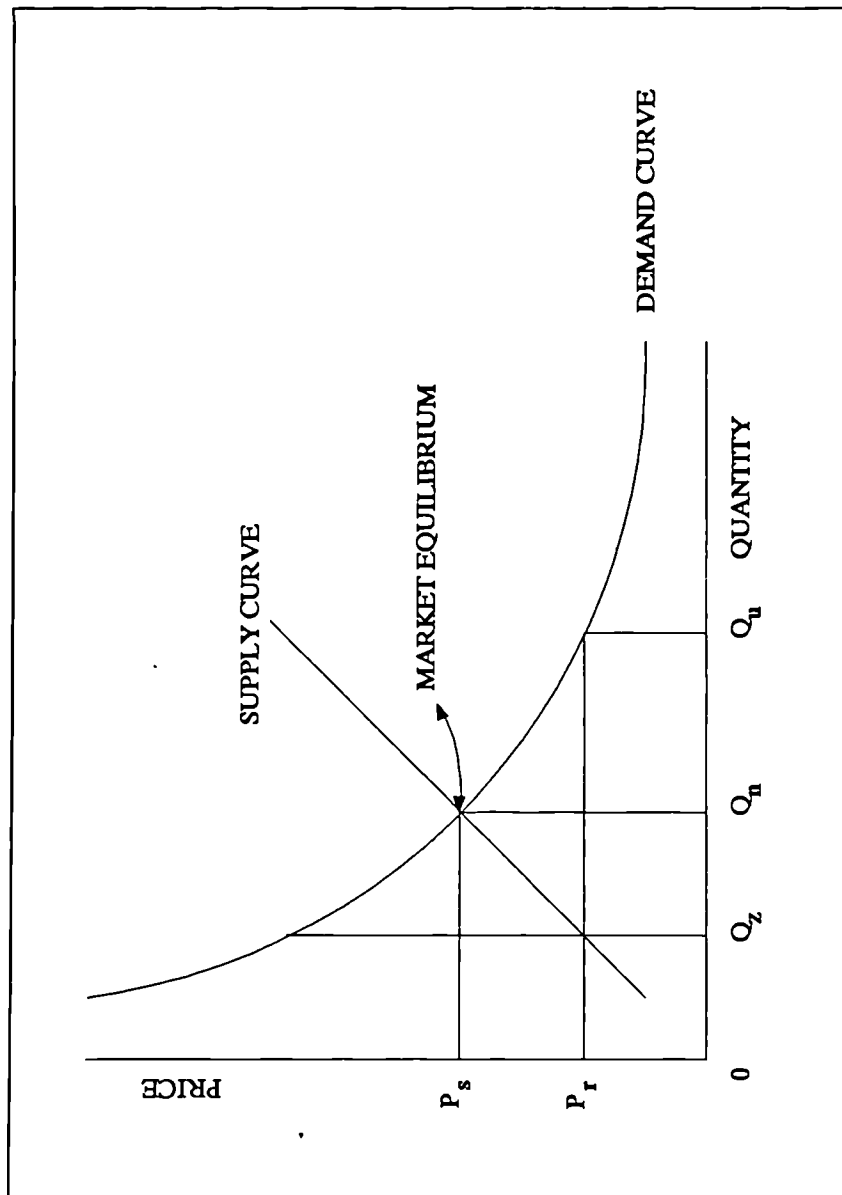
Fig. 7.1   Rent Subsidy as a Means of Government Intervention

(c)   What are the actual monetary values of these public housing

programmes to the beneficiaries?

(d)   How far does subsidized public housing actually provide a solution

to low income housing problems?

The answer to the above questions will become clearer when hedonic models are developed

and applied to the field data collected for this area.

7.2   CONSUMER MODEL

The theoretical background adopted for the evaluation of consumer behaviour in this

research is based on Olsen (1972), Neary and Roberts (1980), Schwab (1985), Malpezzi

(1986) and Willis and Tipple (1988); all of whom used a similar method to calculate

benefits of in-kind transfers on public housing at subsidized prices determined by the

government or in some cases price controls e.g. rent control. However, the dwelling units

produced and provided under these conditions are under restriction. Under the subsidized

housing policy, the consumer pays less than the market price for housing, i.e. $P_r \langle P_s$ in

figure 7.1 A number of reactions follow: because price (P_r) is now lower than the market

price, the consumers demand more housing services (Q_u). On the other hand, the quantity

of housing units produced by the government may be restricted to say Q_x. This downward

filtering in government production of dwellings occurs because supply has to respond to

price change as the government cannot provide more housing due to the heavy subsidy

burden. Those households who are fortunate to benefit from this subsidized programme

can afford to spend more of their money (income) on other goods instead of housing.

Therefore, the amount now spent on housing is equal to $P_s Q_n - P_r Q_u$.

Nevertheless, we have assumed that the benefit of this consumption pattern makes the

consumer better off although certain factors could equally make the consumer have a

completely different attitude to the entire system. For example:

(a) An imposed condition which forces the consumer to remain in this subsidized house for a certain period of time.

(b) Eligibility to a cash subsidy grant of a certain amount which could make a consumer prefer to live in unsubsidised or private housing.

The benefit from this rent subsidy can easily be calculated by $P_s Q_n - P_r Q_z$ which is the difference between market and subsidized rent. Incidentally this simple calculation does not consider the following issues which could have positive or negative effect on the benefits to both parties (landlord and tenant):

(a) how household values change in simple housing consumptions

(b) the effect of change in disposable incomes

(c) loss or gain as a result of restrictions imposed by the subsidy.

The net benefit is approximately equal to the excess of the consumer surplus at $Q_z P_r$ over the consumer surplus at $Q_n P_s$. In other words, the value of rent subsidy to the consumer is composed of two parts:

(i) the excess money which is now diverted to non-housing goods, i.e. $P_s Q_n$.

(ii) the height of the demand curve multiplied by the change in quantity, i.e. the amount of benefit lost. This is because the consumer consumes Q_z instead of Q_n of housing services for a given period. When both (i) and (ii) are added together the sum is approximately the net tenant benefit.

For the households or consumers to have received this benefit, someone has to pay for it. This is what the government pays. In the absence of rent subsidy, the consumer would be required to pay $P_s Q_z$ for the housing unit, but with the rent subsidy, the consumer pays $P_r Q_z$.

The costs and benefits of the rent subsidy and the economic model discussed in the preceding paragraphs can only be estimated if the following information is available:

(a)   estimated demand rent without subsidy, i.e. estimated consumption in the absence of the programme.

(b)   cost of subsidy or housing consumption for the programme beneficiaries.

(c)   market rent for the current units under the programme

(d)   current subsidized rent

(e)   price elasticity of demand

These varied data can only be useful in calculating the costs and benefits of public housing if the monetary values of items (a) - (d) are known. while items (c) and (d) can easily be calculated directly from the field survey, items (a) and (c) have to be mathematically derived by using some economic models. And this is precisely what brings about the application of the hedonic modelling.

7.3   THE CONCEPT OF HEDONICS

In chapter 4, the concept of hedonics was briefly introduced as a multi-variate model which is often used to investigate housing market policy. A basic feature commonly associated with a hedonic model is its quality of being 'locality specific'. In other words, it is not easily transferable to other localities which are unidentical or localities that do not possess similar characteristics. Additionally, the hedonic price model makes it possible to compare rent of different dwellings. Thus the hedonic price technique provides a satisfactory condition which enables us to analyse public policy benefits as it affects the beneficiaries and the developers and in some cases the economy at large. We therefore believe that such a dynamic mathematical model used not only for the prediction of rent but also for illuminating feasible and desirable policies is likely to aid the allocation of scarce resources for shelter and urban services. This makes it possible to redistribute the

cost and benefits of urban growth to meet the needs of the people, particularly the low income households. This is the premise upon which we have decided to use this model for this research. The main aim, therefore, is to use the hedonic model to estimate market rent for the subsidized public housing by comparing rents for different kinds of dwellings in the public and popular sectors.

However, a basic problem often associated with the use of hedonic techniques is how to choose a reference group which is uncontrolled. This problem becomes difficult to tackle as it is common knowledge that households in the reference group, in this case the popular sector and the control group (the subsidized public housing sector), could be systematically different in their demand for housing. Moreover, choosing the reference group could be a problem as distortions in rent resulting from rent control and, in some cases, rent subsidy could make the result unreliable. Fortunately, the latter situation does not apply to Benin City as rent control is not effective (see section 3.6, p.111).

In fact, the rent control in Benin City could be described as non-existent. Relating to the former, it is hoped that what Malpezzi (1986) found in Cairo, in which selectivity bias did not make much difference, would be similar in this research. Based on these reasons and of course, personal experience, we have assumed in this research that the households in the reference (popular sector) and control (subsidized public housing sector) groups have similar housing demand.

In a similar assumption, gross rent is calculated to be equivalent only to net rent plus cost of electricity and water supply where the cost of these services are differently costed from the contract rent (net rent). This is because issues such as advance payment and key money do not really make impact among this category of households under investigation. As a matter of fact, key money does not exist in Benin City. Nonetheless, because of the unique situations which exist in Benin City, net rent is used for the rental model that follows.

7.4 MATHEMATICAL DEVELOPMENT OF HEDONIC MODEL

7.4.1 Basic Approach

A hedonic price presumes a relationship between rent and the physical characteristics which are classified into three categories (fig. 7.2.) in which

(a) structural characteristics represent building materials, plumbing fixtures, etc., herein referred to as "S".

(b) neighbourhood characteristics denote availability of electricity and water, condition of the access roads and some other spatial locational factors within the housing market and the city, referred to as "N".

(c) rent contract characteristics represent factors which affect the contract terms such as mode of ownership, length of tenure, etc., referred to as "C".
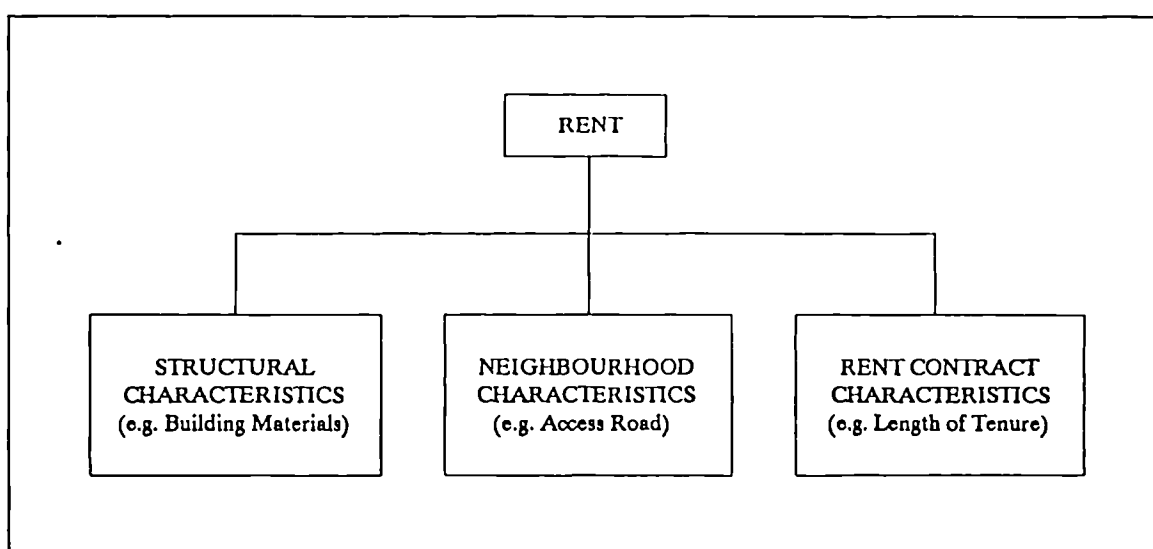
Fig. 7.2 Relationship between Rent and Physical
Characteristics

The market rent R is generally expressed as a function of the physical characteristics:

$$R = F (S,N,C,)................(1)$$

The independent variables (S,N,C) are in turn comprised of many characteristics which are summarized as follows:-

   (a)   Structural Characteristics

   (i)   Number of rooms normally used by the household:- MNR: This refers to number of rooms normally used by a household in a dwelling. Because of accessibility problems to many households during the field survey, room measurements were difficult to conduct. Thus all rooms including a sitting room are herein referred to as rooms with an average size of 12' x 14' (3.6m x 4.2m). This figure has been estimated from public housing estate plans as well as plans submitted to the planning authorities for approval. From these two sources it was discovered that an average room size in Benin City is generally of the figure (7.2) quoted above.

   (ii)   Ceiling - XXC

   The climatic condition of Benin makes it important for dwelling units to have a ceiling but some private landlords' rooms do not. It has therefore been assumed that the presence of ceilings in a dwelling may probably influence rent.

   (iii)   Building Materials:- XXM

   This variable refers to materials used for constructing the wall of a dwelling: i.e. whether the wall is of concrete block, mud with plaster or mud only. This variable is necessary not only for aesthetics but more importantly for the

structural stability of the dwelling. It is therefore likely to affect rent.

(iv) Condition of Building:- XXB

This refers to whether a dwelling is in good condition, in which case there are no cracks, broken septic tanks and soakaways, broken floors, broken ceilings, leaking roofs, etc. If in bad condition, all or some of these faults listed are present. The structural condition of a dwelling unit is likely to affect rent.

(v) Type of Toilet:- TTOIL

This variable refers to the type of toilet: whether water closet, pit latrine or bucket latrine. Although the bucket latrine has virtually been eliminated in Benin City, there are still some isolated places where it exists. It is assumed that the type of toilet is likely to influence rent positively or negatively, depending on the type that exists.

(b) Neighbourhood Characteristics

(i) Adequacy of Water Supply:- SERWAT

This variable refers to water use; i.e. if water is exclusively used, shared or not available. It is assumed that all dwelling units in this part of the city use pipe borne water whether it is exclusively used or not and this should have some influence on rent.

(ii) Adequacy of Electricity supply:- SERLET

This variable equally refers to exclusive use of electricity which is assumed to have effect on rent.

(iii) Other Services Available in the Dwelling Unit:- XXS

This variable specifically refers to availability of water within the dwelling, within the compound or outside the compound. Although this variable appears to be similar to the first variable (SERWAT), it is different in the sense that it helps us to know exactly the location of water supply as opposed to use of water by the household. It is equally likely to affect rent.

(iv)   Adequacy of Bathroom:- SERBATH

As noted in SERWAT, this variable simply refers to household use of bathroom; exclusively, shared or none. As one of the vital services in a dwelling unit, it is possible that it affects rent.

(v)   Adequacy of Kitchen:- SERKIT

This variable refers to the use of kitchen, exclusively, shared or none. It is assumed to be adequate if it is exclusively used. It is within the same category as SERBATH and it is possible that it affects rent.

(vi)   Adequacy of Toilet:- SERTOIL

Although types of toilet have been discussed with respect to TTOIL, adequacy of toilet is taken to be different from types of toilet, as adequacy of toilet stands for exclusive use, shared or none. A dwelling unit could have a pit latrine but if it is exclusively used, it could be more efficient than if it were a water closet that is shared by many households. Therefore, it is assumed that this variable is likely to affect rent.

(vii)   Other Neighbourhood facilities:- XXF

These refer to the presence of market, school, hospital or clinic within a two kilometre radius of a dwelling. Those facilities are neighbourhood as well as local factors and are likely to affect rent.

(c)   Rent Contract Characteristics

(i)   Length of Tenure:- YMOVE

This variable is directly related to the period of time a tenant or owner has stayed in a dwelling unit which is likely to affect rent either positively or negatively. It is assumed that in some circumstances (i.e. in situations where the landlord and tenant become very friendly) the longer a household stays in a dwelling unit, the smaller the amount of rent; while the reverse is the case with new tenants. Therefore, it appears that length of tenure affects rent.

It is possible to rewrite equation (1) with the introduction of the 14 independent variables:

$$R = K_o + \sum_{i=1}^{14} K_i X_i \dots\dots\dots(2)$$

where

R   represents Rent,

X_1 denotes the various characteristics (independent variables) under S,N, and C.

K_o, K_1 are the constants

Equation (2) is an example of linear multi-variate regression model, which can be analysed using the SPSSX programs. Apart from the linear multi-variate regression model, a non-linear model can be constructed out of rent and the 14 independent variables. One basic approach begins with the following expression:

$$R = a S^b N^d C^e \dots\dots\dots(3)$$

or in the expanded form:

$$R = K_o X_1^{K1} X_2^{K2} X_3^{K3} ..... X_{14}^{K14} ....(4)$$

Equation (4) exemplifies a typical hedonic model that will be used in rent predictions.

For the application of SPSSX or similar programs to equation (4), we need to linearise it, and thus the solution approach follows that of equation (2). However, the resulting values of the constants, K_1 are not the same for equations (2) and (4). And this undoubtedly accounts for the difference in the mathematical structure of both models (linear versus non-linear). Linearisation of equation (4) may proceed to the right-hand side (RHS) only or on both sides by taking natural logarithms:

$$R = K_o + K_1 LnX_1 + K_2 Lnx_2 + K_3 Lnx_3 + ... + K_{14} Lnx_{14} ....(5)$$

(for RHS transformation only)

or

$$LnR = K_o + K_1 Lnx_1 + K_2 Lnx_2 + K_3 Lnx_3 + ... + K_{14} Lnx_{14} ....(6)$$

(for LHS and RHS transformation).

Analysis of the multi-variate regression runs resulting from equations (2), (5) and (6) will be made for selection of one that best represents the data of the study area. Major statistical parameters such as the square of regression coefficients - R^2 or Goodness of Fit, F-Test, etc., will be considered during model selection.

7.4.2   Regression Analysis

The 14 independent variables theoretically chosen are likely to manifest some degrees of influence at different levels of significance over rent. Therefore, we are concerned with the measurability of these effects by quantifying them. Using such statistical parameters

as the Coefficient of Regression (R); Goodnes of Fit (R^2); F-Test, etc., the variable that shows the largest value for these parameters obviously is the most dominant. The least dominant apparently gives the smallest value for the same parameters. This measurement process involves four methods, three of which are run on the SPSSX program while the last one is run using the modified Davis Fortran Program (Davis, 1973).

For the four methods, 10 and 5 percent levels of significance for R^2 or Goodness of Fit respectively are used as criteria for the variable selection. In the case of the SPSSX program, when these percentages are applied the elimination exercise is performed within the program and the output lists dominant variables only. This is called step-wise regression analysis. In contrast, the modified Davis Fortran programme outputs the values of R^2, etc., from which the prescribed percentages are applied for variables selection.

7.4.2.1   SPSSX Program: Variable selection with SPSSX

The preliminary analysis of the data using SPSSX is tailored to the use of the linear multi-regression component. This involves the use of Stepwise methods (for details of these methods refer to SPSSX User's Guide 3rd Edition for the SPSSX Program and). Table 7.1 contains the definitions of the regressors included in the hedonic price function. These 14 independent variables are defined in the preliminary regression equations categorized under S,N and C (fig.7.2). In the final equation, all utilities (refers to rent contract characteristics) and locational variables are eliminated. This is because there is a very clear collinearity between the locational variables and the neighbourhood variables; while the rent contract characteristics variables perhaps do not make much impact on rent as had been anticipated in the area of study. Consequently, both the locational and rent contract characteristics were eliminated in the preliminary regression runs. As

Table 7.1   Definition of Variables for the SPSSX Program

S/No.	Variables RP		Definition Rent
1.	SERWAT	= 1	If water supply is adequate
		= 0	Otherwise
2.	SERLET	= 1	If electricity supply is adequate
		= 0	Otherwise
3.	YMOVE		Length of tenure (years)
4.	XXS	= 1	If water is available within the dwelling
		= 0	Otherwise
5.	TTOIL	= 1	If toilet is watercloset
		= 0	Otherwise
6.	MNR		Number of rooms normally used by the household
7.	XXC	= 1	If dwelling has a ceiling
		= 0	Otherwise
8.	XXM	= 1	If material used for the wall is concrete block
		= 0	Otherwise
9.	XXT	= 1	If access road is tarred
		= 0	Otherwise
10.	XXB	= 1	If dwelling is in good condition
		= 0	Otherwise
11.	XXF	= 1	If neighbourhood facilities such as market, school, hospital are within 2 km of a dwelling
		= 0	Otherwise
12.	SERBATH	= 1	If bathroom is adequate, i.e. used exclusively by a household
		= 0	Otherwise
13.	SERKIT	= 1	If kitchen is exclusively used by a household
		= 0	Otherwise
14.	SERTOIL	= 1	If toilet is exclusively used by a household
		= 0	Otherwide

Source: Field Survey, 1990.

shown on table 7.2, the preliminary runs displayed a very high F-value (significance) with significant R^2 and only 4 out of the 14 variables have significant regression coefficients. Thus, it is only these 4 variables as follows:

(a)   Adequacy of water supply - SERWAT;

(b)   Adequacy of electricity supply - SERLET

(c)   Number of rooms normally used by a household - MNR;

(d)   Condition of access road to dwelling - XXT;

that were eventually selected (table 7.2) and included in the final equation.

7.4.2.2   Modified Davis Fortran Program

Although SPSSX seems to be commonly in use for the analysis of hedonic modelling, the researcher feels that there are other programs which can analyse hedonic models equally efficiently. Three main reasons underline the choice of the second computer program, namely:

(a)   running a set of data using two different programs one will expect to get similar results. Any difference in the results may be attributable to the input data. Apparently, the two computer programs serve to reveal errors in the input data.

(b)   Applying the two programs in the variable selection exercise, for instance, is likely to give much credence to the variables eventually selected.

(c)   The accessibility of small packages such as the Davis programs relative to the SPSSX to housing analysts in developing countries adds to its attractiveness. Such programs are readily available (from the textbooks) and easily adaptable to microcomputers. On account of the reasons stated above, a program developed by Davis

Table 7.2   Results of Preliminary Runs with SPSSX Program.

METHOD	VARIABLES SELECTED	COEFF B	SE B	BETA	SIG.F	SUMMARY	
1.STEPWISE	MNR	.5994	.0801	.3710	.0000	Multiplier R	= .76804
	SERLET	1.3950	.2599	.3153	.0000	R Square	= .5898
	XXT	.5060	.1390	.1615	.0003	Adjusted R	= .5820
	SERWAT	.7344	.1943	.2284	.0002	Standard Error	= 1.0147
	(CANSTAT)	-3.6276	.4583			F	= 75.5135
						signit F	= .0000
2.FORWARD	SERBATH	.4466	.3111	.1008	.1527	Multiplier R	= .7706
	MNR	.5626	.0839	.3482	.0000	*R Squared	= .5938
	SERLET	1.2226	.2857	.2764	.0000	Adjusted R	= .5841
	XXT	.4992	.13877	.1594	.0004	Standard Error	= 1.0121
	SERWAT	.62818	.2075	.1953	.0028	Signit F	= .0000
3.BACKWARD	XXT	.5060	.1390	.1615	.0003		
	MNR	.5994	.0801	.3710	.0000		
	SERLET	1.3950	.2599	.3153	.0000		
	SERWAT	.7344	.1943	.2284	.0002		

COEFF(B)	-	Partial Regression Coefficient.
SE B	-	Cumulated standard error of the slope and intercept.
BETA	-	Coefficient of independent variables when all variables are expressed in standardized form.
SIG F	-	Value for Change in R^2.
*	-	This variable is not selected because any number above .05 F-value is inadequate and of no significant dominance to the dependent variable.

Source: Field Survey, 1990.

(1973) for data analysis in Geology and Engineering was modified and applied to this research (Appendix 7.1).

The data for the regression analysis using this programme was specially prepared from the total sample of 387 households interviewed from the popular sector. Applying a very strict screening exercise, only 220 households or 57 percent of the total sample size were used for this program as these were the households that completed all the 14 independent variables. Using equation (3) from Section 7.3.1, a number of runs were conducted, adding the independent variables one after the other until the 14 variables were entered into the equation. The variables were then ranked in accordance with their level of dominance using our present criteria (Table 7.3). To determine the order of dominance, each one of the variables which had been initially selected is regressed against rent individually. The result is shown on table 7.4.

In table 7.4, variables 1-4 have been selected based on the fact that any variable with less than 0.05 goodness of fit or 95 percent confidence level is regarded as not having significant dominance. This is because we are assuming 5 per cent margin of error or 95 per cent level of confidence on the data. However, to further ensure that the selected variables are those with the greatest dominance on rent, another regression analysis was performed by selective addition of the key variables and noting the value of the resulting coefficient of regression. The results are as presented on table 7.5. The resulting R^2 from the third (3) run on table 7.5 does not pass the 5 per cent significance test over and above the second to the last run. In other words, there is little or no difference (0.0010) on the R^2 for the second and third runs when the variable XXC (ceiling) was added to the run and therefore the independent variable XXC is dropped.

On the basis of the variable selection procedures presented in the preceding paragraphs, the following variables were selected:

Table 7.3   Ranking Variables in Terms of Dominance.

S/No.	Variables	Rent VS Other Variables	Goodness of Fit (R^2)	Added Effect on New Variables
1	RENT	-	-	-
2	SERWAT [+1]	1, 2	0.3528	0.3528
3	SERLET [+]$_2$	1 - 3	0.4391	0.0863
4	YMOVE	1 - 4	0.4420	0.0029
5	XXS	1 - 5	0.4420	-
6	TTOIL	1 - 6	0.4451	0.0031
7	MNR [+4]	1 - 7	0.4614	0.02
8	XXC [+5]	1 - 8	0.4734	0.012
9	XXM	1 - 9	0.4767	0.0033
10	XXT [+3]	1 - 10	0.5047	0.028
11	XXB	1 - 11	0.5047	-
12	XXF	1 - 12	0.5047	-
13	SERBATH	*1 - 13*	*0.5082*	*0.0035*
14	SERKIT	1 - 14	0.5106	0.00024
15	SERTOIL	1 - 14	0.5107	0.0001

Source: Field Survey, 1990.

+   Dominant Variables.
         Those without + sign are of no significant dominance.
1 - 5 Ranked variables in order of dominance.

Table 7.4   Ranking the Selected Dominant Variables.

S/No.	Variables	Coeff.	Goodness of Fit
1.	Rent Vs SERWAT	0.5939	0.3528
2.	Rent Vs SERLET	0.5823	0.3391
3.	Rent Vs MNR	0.3785	0.1433
4.	Rent Vs XXT	0.2543	0.0647
5.	Rent Vs XXC	0.1532	0.0235

Source: Field Survey, 1990.

Table 7.5   Combined Effects of Selected Variables on R².

S/No.	Variables	Coeff.	Goodness of Fit R²
1.	Rent Vs SERWAT,SERLET,MNR	0.6725	0.4523
2.	Rent Vs SERWAT,SERLET,MNR		
	& XXT	0.6939	0.4815
3.	Rent Vs SERWAT,SERLET,MNR		
	XXT & XXC	0.6949	0.4825

Source: Field Survey, 1990.

(i)   Adequacy of water supply - SERWAT

(ii) Adequacy of electricity supply - SERLET

(iii) Number of rooms normally used by the household - MNR

(iv) Condition of access road to the dwelling - XXT

It should be noted that the above four variables were selected following two different regression analyses - the runs with the SPSSX program (see Section 7.2) and that with the modified Davis Program (refer to section 7.4.2.2). Three out of the four independent variables selected (i.e. items (i), (ii) and (iv)) are neighbourhood characteristics, mainly services. This perhaps reveals that neighbourhood factors are very strong rent indicators and that they have very great impact on rent predictions in Benin city. Megbolugbe (1983) had similar findings in Jos, Nigeria.

The exclusion of rent contract characteristics and locational factors (variables) in the final equation is likely to be as a result of;

(a)   The location of the study area II which is situated at the core of the city (CBD), where most employment centres are located. Consequently, most public facilities such as markets, schools, hospitals, etc., are located within 2 kilometres of most dwellings sampled.

(b)   The main mode of transportation within this area is the motor vehicle (taxi and mini-bus). However, people walk most of the time particularly as they are low income households and distances to various facilities and establishments are very limited. The taxis and minibuses are used to commute to other parts of the city, in rare cases. This is, however, consistent with Grigsby (1975) in which he argued that only in large cities (SMSAs) where a significant distant barrier starts to emerge, does the issue of locational choice become crucial (as cited in Megbolugbe 1983, p.68).

(c)   The rent contract characteristics have a rather negative influence on rent and are, moreover, not as important a parameter as we had originally thought.

7.4.2.3   Choice of Functional Form

On the transformation of non-linear models in the preceding section of the type exemplified as equation (4) to linear equivalent equations (5) or (6) were earlier obtained. With this detailed transformation exercise, it should be borne in mind that it is only the dependent variables (R) and the third variable X_3 (number of rooms) among the 4 independent variables that could be transformed as the remaining 3 independent variables are treated as dummies. Using the linearised equations, a number of runs were conducted with rent as dependent variable and four independent (but dominant) variables leading to the selection of the best functional form which fits the data. Although several runs (for example table 7.6) were actually performed, only four different functional forms have been chosen to illustrate the processes that took place. Based on the above the first run was then attempted by linearising the equation on the right hand side through the transformation of X_3 (number of rooms) into logarithm and squaring it as well. The resultant equation is as follows:

$$R = a_0 + a_1 x_1 + a_2 x_2 + a_3 Lnx^2_3 + a_4 x_3 + a_5 x_4 \dots\dots\dots\dots\dots(7)$$

The resultant Goodness of Fit = 0.5570.

This equation was then tried in a slightly different form thus:

$$R = a_0 + a_1 x_1 + a_2 x_2 + a_3 Lnx^2_3 + a_4 x_4 \dots\dots\dots\dots\dots(8)$$

and the resultant Goodness of Fit = 0.5233.

Table 7.6   Selection of Functional Form.

Option R^2	Functional Form	Goodness of Fit
1.	Rent, log of rooms squared and the other variables in their original form	0.5570
2.	Rent, log of rooms cubed and the other variables in their original form	0.5568
3.	Rent, log of rooms squared without including the coefficient multiply by number of rooms while the other variables are left in their original form	0.5233
4.	Log of Rent, and log of rooms squared and the other variables in their original form	0.4556
5.	*Log of the 4 independent variables leaving the rent in its original form	0.4917
6.	*Log of Rent and log of the 4 independent variables	0.3834
7.	Log of Rent leaving the 4 independent variables in their original form	0.3402

Source: Field Survey, 1990

*Although these included dumies which are not supposed to be transformed, these runs were performed just to see their reaction under transformation.

Thirdly, it was decided to transform the X_3, i.e. the number of rooms by not squaring this time but cubing it while retaining the logarithmic function. The equation that resulted is:

$$R = a_o + a_1x_1 + a_2x_2 + a_3Lnx^3_3 + a_4x_3 + a_5x_4 \ldots\ldots\ldots\ldots\ldots(9)$$

The resultant Goodness of fit is 0.5568.

Finally, the equation was then transformed by linearising it both on the left hand side and on the right, i.e linearising both the dependent variable and the third (X_3) independent variable. The resultant equation is:

$$LnR = a_o + a_1x_1 + a_2x_2 + a_3Lnx^2_3 + a_4x_3 + a_5x_4 \ldots\ldots\ldots\ldots(10)$$

The Goodness of Fit = 0.4556.

Because the Goodness of Fit or R^2 is being used as the measurement parameter, I then decided to rank equations (7) - (10) in order of preference; particularly as the higher the Goodness of Fit or R^2, the better the fit:

(1)   Equation (7) <u>0.5570</u> most preferred

(2)   Equation (9) <u>0.5568</u> more preferred

(3)   Equation (8) <u>0.5233</u> preferred

(4)   Equation (10) <u>0.4556</u> least preferred

Based on the ranking above and also the runs on table 7.6, equation (7) was then selected as the best functional form that fits the data. Therefore on account of the summary on table 7.6 and the above ranking both of which are based on the Goodness of Fit (R^2) and other statistical parameters presented in table 7.7, the best functional form is option 1 (table 7.6) and can be expressed as:

$$R = -60.80603 + 17.34164x_1 + 25.01584x_2 + 20.74989Lnx^2_3 -$$
$$10.4299x_3 + 8.368454x_4 \ldots\ldots\ldots\ldots\ldots\ldots(7^A)$$

in which

R = Actual Rent

$X_1 =$ SERWAT

$X_2 =$ SERLET

$X_3 =$ MNR

$X_4 =$ XXT

The number of independent variables which appear in equation (7^A) is only 4, this is not unusual. For instance, Malpezzi, Tipple and Willis (1989) in their study of rent control in Kumasi, Ghana had only 3 independent variables with significant dominance on rent. Follain and Malpezzi (1979) proved that 5 to 10 structure variables (rooms, baths, etc.) produce about as good a fit as 40 variables. The model that has been developed (equation 7^A) has a coefficient of determination (R^2) of 0.56 (table 7.7) which is considered adequate. Fifty six percent of the variance in rent is accounted for by the regression equation while 44 percent is unaccounted for. In other words, the regression of the number of rooms, log of number of rooms squared, adequacy of water and electricity supply and the condition of access road account for 56 percent of the variance in rent in Benin City. Obviously, there are other variables which influence rent in Benin City which account for the remaining 44 percent. In this type of research, it is practically impossible to include all parameters which influence rent. And moreover, the parameters included are not free of measurement errors. Nonetheless, the percentage change in gross rent can be explained by interpreting the coefficient of Ln $(MNR)^2$ given a percentage change in the variable itself. While the coefficient of the dummy variables can be interpreted to explain the change in rent when compared with the variables which have been omitted.

The coefficients are generally positive and as expected. It is important to note the high coefficient which adequacy of water and electricity supply have exhibited; while length of tenure, type of toilet and adequacy of toilet are variables with no statistical significance on rent. This could perhaps be explained by the fact that a few neighbourhood services tend to explain the others. Also the fact that building materials did not have much

Table 7.7   Hedonic Index

Source of Variation	Sum of Squares	Degree of Freedom	Mean Squares	F-Test
Regression	101740.75	5	20348.15	53.8057
Deviation	80930.19	214	378.18	
Total Variation	182670.94	219		
Goodness of Fit	0.5570			
Correlation Coeff.	0.7463			

Source: Field Survey, 1990.

statistical significance on rent is surprising. Perhaps, the homogenous nature of this variable as it appears in the area of study may have affected its significance. Alternatively, it is likely that it is really not as significant on rent as it appears to be.

7.5   APPLICATION OF HEDONICS

The application of the hedonic model is made using equation (7^A) of the preceding section, representing a non-linear prediction model. Evaluation of the model is achieved by direct substitution of the median values of the independent variables (table 7.8) and the predicted value of rent, R is N31.82. The value of R compares favourably with the median rent value of N30.00 (table 7.8). The error accruing from the predicted rent as compared with the median value of rent is 6 percent, which is considered adequate. Figure 7.3 presents the graph of both values (actual and predicted).

The hedonic model of equation (7^A) thus serves a useful purpose in estimating rent values, given values of the independent variables in the model. In Benin City, the calibrated rent model, equation (7^A) will continue to find greater application in future rent estimates. The confidence, however, lies on the margins of error of estimate. From our test results, the error is minor.

7.5.1   Market Rent for Subsidized Public Housing

The estimated market rent for a room is N31.815 approximately N31.82. Invariably this means that those households occupying a 1 bedroom flat, which is equivalent to a 2 room unit according to our definition in this research, are supposed to pay approximately N64.00 (or N63.63 to be precise). While households occupying 2 bedroom flats or 3 room units are supposed to pay N95.00 (table 7.9).

Table 7.8   Dominant Variables and their Median Values.

S/No.	Variables		Median Values
	Dependent	Independent	
1.	R (actual)		30
2.		SERWAT: X_1	2
3.		SERLET: X_2	2
4.		MNR: X_3	2
5.		XXT: X_4	1

Source: Field Survey, 1990.
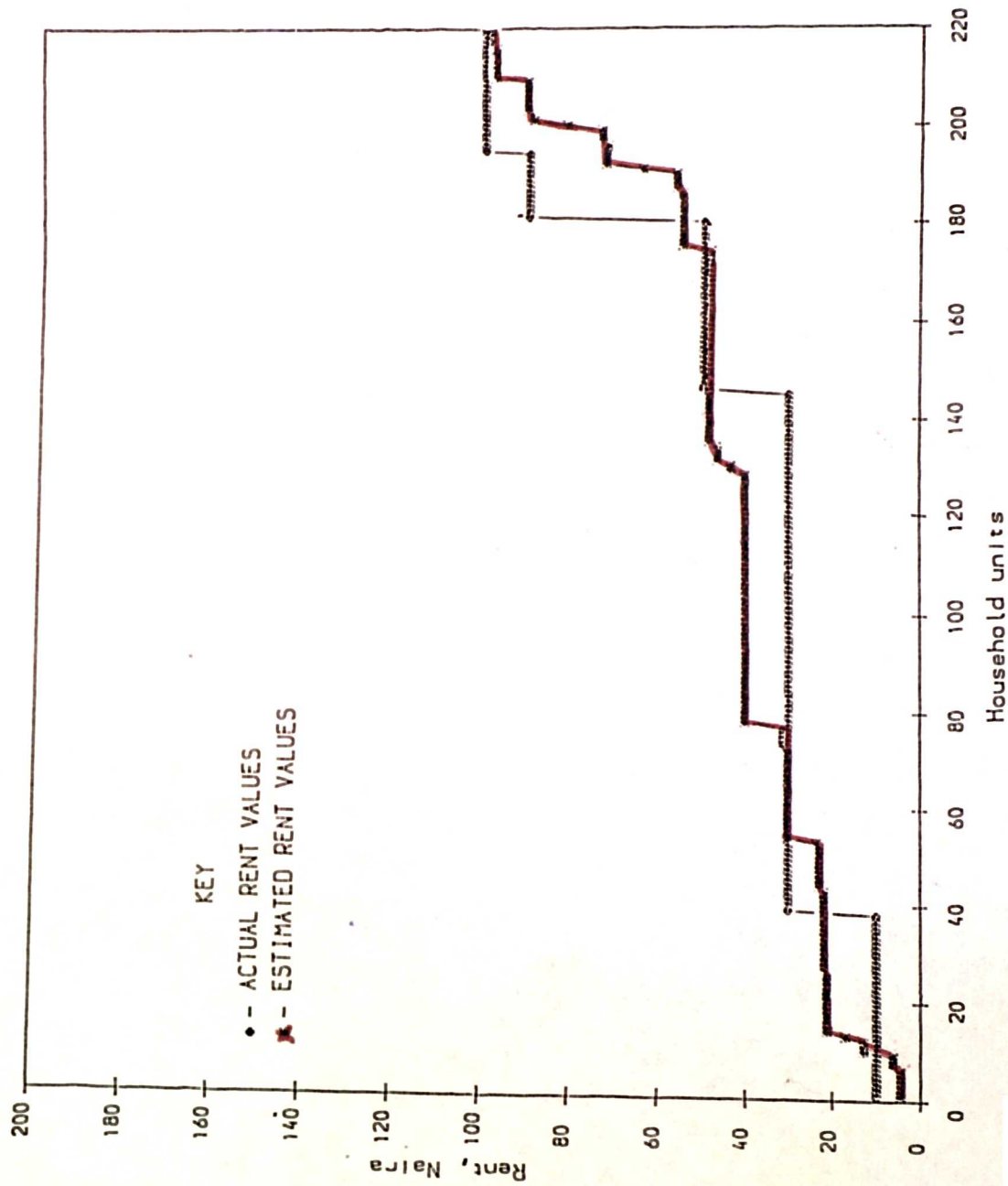
Figure 7.3 Graph showing Actual and Estimated Rent.

Table 7.9   **Actual and Estimated Rents for the Subsidized Public Housing.**

No. Rooms	Present Rent (N)	Estimated Rent (N)	Subsidy (N)	Percentage of Subsidy on Estimated Rent
(1)				
1 bedroom flat (2 room unit)	25	63.63*	38.63*	60.71*
(2)				
2 bedroom flat (3 room unit)	45	95.45*	50.45*	53.10*

Source: Field Survey, 1990.

* All figures are rounded to two decimal places.

For the households who benefitted from the 2 room units and those in 3 room units, the subsidies cost N39.00 (or 60.71 percent) and N50.00(or 52.85 percent) of the market rents respectively. From the calculations on table 7.9, those households who occupy 3 room units seem to incur greater cost to the government in terms of the subsidy. We shall see later in this chapter whether the occupants of 3 room units, indeed, receive greater benefits or not.

7.6   COST AND BENEFITS CALCULATED FROM HOUSING DEMAND EQUATION DATA

A housing demand function is used for the calculation of costs and benefits based on the field data. Hypothesis no. 2 in chapter I , states that the quantity of housing demand is a function of income of a household, price of housing, of other goods, etc. This hypothesis is tested partially through a demand equation by which the rent at equilibrium demand is calculated. Therefore, the rent consumers are willing to pay, assuming that they are at their equilibrium demand at market prices, is calculated using a sample of private sector consumers.

A typical household demand equation is expressed as:

$$R = F(Y,D) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (11)$$

where

R = Housing expenditure (rent, cost of services if different from rent, etc.)

Y = Household income (expenditure is used as proxy to income)

D = Households demographic variables (for example, age of head of household, household size, sex of head of household, religion, tribe, length of tenure, etc.); and

F = function.

In demand analysis, it is often postulated that there is a relationship between the quantity of housing demanded, the relative price of housing, the income of the household, and other demographic characteristics enumerated in the preceding paragraph. This can be expressed similar to equation (11) with the addition of P (relative price of housing) on the right-hand side.

The dependent variable for this demand equation is the equilibrium market rent (i.e. the Gross Rent). The Gross Rent in this case is calculated by adding the amount paid for rent to the amount paid for water and electricity supply as these services are differently charged in Benin City. In most cases advances are only for a very short duration of about 3 months. In some cases no advances are charged at all particularly in this part of the city. It should be noted that units rented for commercial purposes normally attract advances of one year or more. Maintenance and repair expenditures are rarely incurred by the tenants. Where they do occur, the type of maintenance and repairs are mostly restricted within the limit of the monthly rent so that tenants can easily deduct the amount spent from the next monthly rent. We have therefore assumed that maintenance and repair expenditures have very little significance on demand rent. This becomes more apparent in this research particularly as no emphasis has been laid on owners in the model construction. Therefore the effect of the maintenance carried out by owners is equally insignificant to the total sample as their number is very limited.

The independent variables comprise of household income (total expenditure used as proxy for income), price of housing and other demographic factors. In developing countries, it is always difficult to collect data on income; and as such total household expenditure is used as proxy for income. The reasons for choosing expenditure rather than income have been explained in chapter II section 2.5.1. The price of housing is a very important piece of information on housing demand and at the same time extremely difficult to obtain. This is so because private landlords find it difficult to supply the information as they fear

giving themselves away to the authorities and incurring higher property rates. Moreover, most of the buildings in the area of study are more than 10 years old and the few landlords willing to respond to our questionnaire gave very unrealistic figures. Nonetheless, we shall see later how we derived the price elasticity of demand which was used in this research. The other demographic characteristics include household size, age and sex of head of household; and a non-demographic factor: length of tenure. Including all these independent variables, equation 12 can be mathematically expressed as:

$$R = a_o + a_1(Y) + a_2H + a_3A + a_4S + a_5M + u \dots\dots\dots\dots\dots\dots\dots (12)$$

where

R	=	market rent at equilibrium price
a_o, a_2 to a_5	=	constants (partial regression coefficient)
$a_1(y)$	=	Income elasticity of demand which can equally be denoted as Ey.
Y	=	Expenditure (consumption) as proxy for income
H	=	Household size
A	=	Age of head of household
S	=	Sex of head of household
M	=	Length of tenure
U	=	Error term.

Religion has been completely excluded from the equation because Benin is a predominatly Christian society. Tribe is a very sensitive issue in the area of study due to the heterogenous nature of the state. We therefore decided to avoid direct questions on tribe and concentrated on whether respondent households were from Bendel State or not. This has thus compelled us to exclude tribe from the equation as well.

Using a procedure similar to that applied in section 7.4.2.2 for the selection of variables, each variable was regressed on rent and the result is presented on table 7.10. Due to the nature of demand equations, a higher margin of error than what was used in the rental model has been allowed. This is the reason why all the variables have entered into the equation.

Based on this higher margin of error, rent was regressed with options 2-6 on table 7.11. On the strength of the result of the run presented on table 7.10, no variable has been dropped as all of the independent variables appear to have some range of incremental effect on rent.

7.6.1 The Expenditure Model or the Demand Equation

For the functional form, a number of trials were conducted similar to the analysis carried out on the Rental Model. Various equations, both linear and non-linear models were evaluated. Eventually, it became necessary that a transformation which involved linearisation to both right and left hand sides were carried out. On account of this, equation 12 can be rewritten as:

$$LnR = a_0 a_1 (L_n y) + a_2 H + a_3 H^2 + a_4 A + a_5 A^2 + a_6 S + a_7 Y_m \ldots\ldots\ldots\ldots(13)$$

The theoretical framework for this non-linear model of expenditure is based on the work of Malpezzi and Mayo (1985). This model is, however, based on the assumption that consumers will maintain constant taste and that household size, age and sex of head of household dominate demographic factors.

Table 7.10   Ranking Variables for Demand Equation.

S/No.	Variables	Goodness of Fit (R^2)	Correlation Coefficient
1.	Rent Vs Y	0.1973	0.4442
2.	Rent Vs NPHH	0.0380	0.1948
3.	Rent Vs Age of Head	0.0617	0.2485
4.	Rent Vs YMOVE	0.0249	0.1579
5.	RENT Vs Sex of Head	0.0088	0.0938

Source: Field Survey, 1990

Table 7.11   Ranking Variables in Terms of Dominance.

S/No.	Variables	Rent Vs Variables	Goodness of Fit (R^2)	Added Effect on New Variables	Regression Coefficient
1.	Rent	-	-	-	-
2.	Expenditure (Y) 1*	1, 2	0.1993	0.1993	0.04821
3.	Household Size 4*	1 - 3	0.1993	-	-0.0795
4.	Age of Head of Household 2*	1 - 4	0.2073	0.0008	0.43379
5.	Sex of Head of Household 3*	1 - 5	0.2125	0.00052	6.43608
6.	Length of Tenure 5*	1 - 6	0.2125	-	0.0097605

Source: Field Survey, 1990.

* 1 - 5: Ranked variables in order of dominance.

Note: When the equation was tranformed by linearization the Regression Coefficients as well as the R^2 reflected different levels of influence by the individual variables. Household size in particular behaved differently when squared (see table 7.14).

When the coefficients of the independent variables are substituted in equation (13), the resulting non-linear expenditure model is as follows:

$$LnR= 1.4368420 + 0.5479717(Lny) + 0.1205871S + 0.0115994H - 0.0007807H^2 + 0.0867645A - 0.0010552A^2 + 0.0069379Ym............................(14)$$

LnR = 3.2891

R = Antilog (3.2891)

R = 26.82

By substitution of the median values of the independent variables on table 7.12 to equation (14) the median demand rent households will pay at their equilibrium demand is calculated as 26.82. The predicted N26.82 stands as rent per room per month. For the consumers of 2 room units and 3 room units, the demand rent is N53.64 and N80.46 respectively (or 26.82 per room). This actually reveals that consumers are willing to pay more than the subsidized rent in both house types.

7.6.2 Empirical Results

The demand results appear good. The R^2 is 0.3 (table 7.13) which is higher than 0.18 which Malpezzi, Tipple and Willis (1990) achieved in a similar survey in Kumasi, Ghana. The estimate for the consumption elasticity is 0.55. This estimate is very high and comparable with what Malpezzi and Mayo (1985) found in their cross-country model in which most of the estimates for the sixteen cities in eight developing countries clustered between 0.4 and 0.6. We have equally observed that consumption elasticity reduces as R^2 increases which means that the higher the number of other variables, for example demographic factors, which are included in the equation, the lower the consumption elasticity becomes. The high relationship and correlation between expenditure and rent indicates that expenditure (consumption) used as a proxy for income is a very strong

Table 7.12   **Variables and their Median Value.**

S/No.	Variables	Median Values
1.	Rent (R) Actual	33.5
2.	Expenditure (Y)	163.50
3.	Sex of Head of Household (S)	2.00
4.	Household Size (H)	13.5
5.	Household Size^2 (H^2)	13.5^2
6.	Age of Head of Household (A)	30.0
7.	Age of Head of Household^2 (A^2)	30.0^2
8.	Length of Tenure (YM)	3.5

Source: Field Survey, 1990.

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Table 7.13   Demand Equation.

Source of Variation	Sum of Squares	Degree of Freedom	Mean Squares	F-Test
Regression	32.05	7	4.58	
				13.1123
Deviation	74.02	212	.35	
Total Variation	106.07	219		
Goodness of Fit	.3021			
Correlation Coefficient	0.5497			

Source: Field Survey, 1990.

demand determinant. There is a very weak relationship between household size and rent. This indicates that number of persons in a household does not necessarily determine housing demand. A weak relationship also exists between rent and age, and rent and sex of head of household. The weak relationship between rent and demographic variables included in the equation indicate that there are perhaps other demographic factors which equally influence housing demand. Also weak is the relationship between length of tenure and rent. It is therefore not a very strong demand determinant. Instead, rent decreases with length of tenure perhaps due to the following reasons:

(a)   Generally, landlords grant discounts to long-term renters.

(b)   Lower rent is an incentive to stay longer.

(c)   It is generally easier for landlords to increase new rents as new tenants move in.

In spite of these reasons for rent decrease with length of tenure housing demand does not necessarily increase simply because a consumer has stayed in a particular house for a long time. Evidence exists to show that older tenants pay less rent than incoming tenants for similar accommodation. Housing demand is likely to increase as a result of increase in income, household size and perhaps age; but the most dominating factor as we have seen in the preceding paragraphs is consumption used as proxy for income.

7.6.3   COST AND BENEFITS DERIVED FROM HEDONIC AND DEMAND EQUATIONS

7.6.3.1   Price Elasticity of Demand

In sections 7.2 and 7.5.2, it was stated that the price elasticity of demand is an essential item of data in order to calculate consumers' benefits from subsidized public housing. This calculation could not be done because of the difficulty of obtaining data on price of housing. Thus, the calculation of costs and benefits are constrained because the price

elasticity of demand is not known. The share of the land in housing cannot be estimated because the price of the house is not known and therefore equally constrained to make this calculation. However, in the work of Malpezzi and Mayo (1985) in which similar surveys were conducted in sixteen cities in eight developing countries which were reviewed, this essential parameter was estimated. They found that most estimates are between -0.5 and -1.0. In the absence of comparable data, it is proposed to adopt these values in this study as the lower and upper limits for the measurement of elasticity of demand in calculating costs and benefits for the subsidized housing in the study area.

Using a model similar to that of Olsen (1972) which he applied to the econometric analysis of rent control in New York, the cost benefit, for the subsidized housing discussed in the preceding paragraphs and referring to figure 7.1, can be calculated thus:

Benefit =

$$\left(\frac{1}{P_s Q_n}\right)^{\frac{1}{b}} \left(\frac{b}{b+1}\right) \left[(P_s Q_z - P_s Q_n)^{\frac{b+1}{b}} - (P_s Q_n)^{\frac{b+1}{b}} \right] + P_s Q_z P_r Q_z \quad \text{.............. (15)}$$

where:

Benefit represents the cash equivalent value, which is a measure of change in the consumer surplus.

$P_s Q_n$ = Estimated Demand Rent without subsidy, i.e estimated housing consumption in the absence of the programme.

$P_s Q_x - P_r Q_x$ = Cost of subsidy of Housing Consumption for the programme beneficiaries.

$P_s Q_x$ = Market Rent for the current units under the programme.

$P_r Q_x$ = Current subsidized Rent.

b = Price elasticity of demand.

The programme efficiency can be calculated from the ratio of benefit to cost. Equation 15

is only used for the calculation of cost-benefit when the elasticity of demand is assumed

to be -0.5. This is because it is difficult to evaluate $\left(\dfrac{b}{b+1}\right)$ if the price elasticity of

demand is -0.1. Therefore a non-linear equation is formulated to take care of this

difficulty as:

Benefit =

$$P_s Q_n \left[\log(P_s Q_z) - \log(P_s Q_n) \right] + P_s Q_n - P_r Q_z \quad \ldots\ldots\ldots\ldots (16)$$

According to the results of the calculations from equations 15 and 16, participants of 2

room unit benefit N32.62 and N38.48 when price elasticity of demand is -1.0 and -0.5

respectively. For consumers of 3 room units, the benefit is N41.42 and N50.03

respectively (table 7.14).

7.7   THE PROFITABILITY OF SUBSIDIZED HOUSING AND SUPPLY

It is apparent from the calculations on table 7.14 that consumers of subsidized public

housing benefit from the scheme. The benefit is large in relation to both the rent and

their consumption. Those households who consume 1 bedroom flats (2 room units), pay

only 39 per cent of the estimated market rent and a comparable figure for those

households that consume 2 bedroom flats (3 room units) is 47 per cent. Secondly, the

participants of subsidized public housing consume better housing services than they would

have otherwise consumed. The consumers of 2 room units have increased their spending

on housing service consumption by about 18.62 percent while consumption on other goods

was greatly increased by 86.77 per cent (table 7.15). Comparable figures for consumers

of 3 room units are 18.63 per cent and 41.72 per cent respectively assuming that both

households are on the same income level.

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Table 7.14   Cost-Benefit Measure Derived from the Demand and Hedonic Equations.

	Type of Unit	
	1 Bedroom Flat (2 Room Unit)	2 Bedroom Flat (3 Room Unit)
Current Subsidized Rent (N)	25.0	45.0
Market Rent for Current Units under the Prog. (N)	63.63	95.45
Estimated Demand Rent (N)	53.64	80.46
Cost of Subsidy (N)	38.63	50.45
Tenant Benefit (N)		
(a) $a_1 = 1.0$	32.62	41.43
(b) $a_1 = -0.5$	38.48	50.03
Programme Efficiency (Benefit/Cost)		
(a) -1.0	0.84	0.82
(b) -0.5	0.99	0.99

Source: Field Survey, 1990.

Table 7.15   Effect of Public Housing on Expenditure.

S/No.		2 Room Unit Median	3 Room Unit Median
1.	Monthly Housing Expenditure of households in absence of Rent subsidy	53.64	80.46
2.	Market Rent of public housing units	63.63	95.45
3.	Percentage increase of housing consumption	18.62%	18.63%
4.	Monthly Expenditure on other goods with no Rent Subsidy	N310.00	N525.00
5.	Monthly Expenditure on other goods under Rent Subsidy	N579.25	N744.00
6.	Percentage Increase on consumption of other goods by housing subsidy beneficiaries	86.77%	41.72%

Source: Field Survey, 1990.

The median cost of the subsidy to the government is N39 and N50 for 2 room and 3 room units respectively. When assessed in relation to the consumers' income and the actual rent, the benefit is large for both house types, but in terms of the cost to the government, the benefits are small but perhaps could be said to be what they could have under market conditions. This is because the costs of subsidizing the units for both house-types are more than the benefits accruing to the households (tenants). Moreover, the cost of the benefit calculated above does not include a number of costs from which the government is either exempted when undertaking a project or for which the government is charged a small fraction of the full cost. Such items which are likely to carry a hidden cost to the government are:

(a) Financing of the construction of the dwelling which carries some interest burden.

(b) Extension of overhead electricity cables and water mains for which the government is exempted from taxation.

(c) Acquisition and financing of the land; as well as all legal and administrative charges. Acquisition cost is at times reduced to half while all the other charges are free.

(d) The government does not pay full charge of property rating.

These hidden costs make government capital cost of production lower than that of private developers. In order to have a clear idea of the cost of total input to the production of subsidized housing we have to calculate the resource cost. For the purpose of these calculations, we have assumed that (a) - (d) above will increase the cost of subsidy by about 45% allocated thus:

(a) Interest burden on financing of the construction - 10 per cent

(b) Full cost on improvement on land (e.g. opening up of roads, servicing, etc.) - 10 per cent

(c) Cost of acquisition and financing of land - 10 per cent

(d) full payment of property tax - 15 per cent

On table 7.16, therefore, is the calculation of the total input into the production of the subsidized public housing.

The implication of the calculations on table 7.16 is that for every one Naira (N1.00) worth of housing services provided by the government, an equivalent cost of N1.80 and N2.30 for 2 room and 3 room units respectively are spent by the government. This is because the market rent is supposed to be equal to the resource costs (Olsen and Barton, 1982). But with our calculations resource costs are N56.55 and N72.50 for 2 room and 3 room units respectively, and the market rent is N31.80. Simply dividing the resource costs by the market rent, gave the above figures. Through this calculation we could infer that the programme is inefficient as far as cost of providing subsidy is concerned.

Alternatively, the efficiency of the subsidized public housing can be further assessed by calculating the benefit to cost ratio. Using the figures on table 7.13, when price elasticity of demand is assumed to be -0.1, a ratio of 0.84 or 84 per cent and 0.82 or 82 per cent for 2 room and 3 room units respectively resulted. While a comparative figure for price elasticity of -0.5 is 0.99 or 99 per cent for both house types. These figures have further confirmed the inference above that the programme (Subsidized Public Housing) is inefficient as far as the cost is concerned. Interestingly, the ratio of benefit to cost calculated above is comparable to 100 percent inefficiency estimated by Mayo et al (1980) in a similar survey.

Some relevant issues have, however, emerged from the analysis so far. Consumers are spending less than the market price for the subsidized units though the standards of the services are high. This is apparently one of the reasons why the government cannot produce more dwelling units. A very pertinent question which arises at this juncture is: who actually benefits from this programme? Public housing accounts for a very small fraction of the total housing stock in Benin City. Although about 70 percent of the

Table 7.16 The Total Cost of Subsidy Normally Referred to as Resource Cost.

S/No.	House Type	Description of Activity	H	K
1	2 Room Unit	Resource/Cost: (a) Cost of Subsidy (b) 45% of Cost of Subsidy	39 17	00 55
		Total	56	55
2.	3 Room Unit	Resource/Cost: (a) Cost of Subsidy (b) 45% of Cost of Subsidy	50 22	00 50
		Total	72	50

Source: Field Survey, 1990

Note: The assumptions made on the percentages above are based on the personal experience of the researcher who is a top Government functionary in Benin, Bendel State, Nigeria.

population of the city is eligible to participate in the public housing, less than 1 percent is served by the programme (Ministry of Works and Housing, Benin City, 1987). In the first instance, the government is producing very few dwelling units and to reveal the depth of the problem, it was mentioned in chapter 5 that about 44 percent of the few units are allocated to those who do not belong to the target population. Interestingly, Olsen and Barton (1982) found in their study of benefit and costs of public housing in New York that only 7 percent of those eligible in the 1975 programmes were actually served. Shitta-Bey (1988) in his study of low cost housing in Lagos equally had a similar finding in which 56 percent of the beneficiaries are within the middle and upper income groups.

Table 7.17 is an affordability table which shows a calculation of the percentage of income households can afford for housing based on the United Nations (1978) recommendations. This has equally indicated that the poor households require the public subsidized housing most as they can only afford between a minimum of 5 per cent and a maximum of 10 per cent depending on their income. On account of the foregoing, one may ask: what then is the impact of the government in housing provision for the low income households? The evaluation in this chapter has shown that the policy of subsidized public housing has not really made much impact in housing provision for the low income households. The reasons for this unimpressive contribution are not difficult to find. For instance, the government is still responsible for the maintenance (structural and environmental) of the subsidized units constructed in 1973. Secondly, rent defaulters are many in spite of the heavy subsidy. These problems added to the current economic recession have virtually paralysed the government in the area of housing supply. It is therefore not surprising that huge shortages exist as discussed in chapter 3. The Government has spent a great deal on subsidizing public housing which only a very small fraction of the population enjoy. Thus it is difficult to supply more units. The consequence is that the popular sector is virtually responsible for the provision of low income groups. It is therefore not surprising that poorly serviced dwelling units attract high rent.

Table 7.17 Low-Income Groups' Capacity to make Monthly Payments.

Annual $US	Gross N	Monthly $US	Gross N*	Monthly Proportion of Family Income Proportion Possibly Available for Housing				
				5%	8%	10%	15%	
100	700	8.33	33.32	.42 1.68	-	-	-	The standard poor can only afford 5% of their income for housing.
200	1400	16.67	66.68	.84 3.36	-	-	-	
300	2100	25.00	100.00	1.25 5.00	-	-	-	
400	2800	33.33	133.32	-	2.66 10.64	-	-	The hopeful poor can afford between 8% - 10% of their earnings for housing.
500	3500	41.77	167.08	-	3.34 13.36	-	-	
600	4200	50.00	200.04	-	4.00 16.00	-	-	
700	4900	59.33	237.32	-	-	5.93 23.72	-	
800	5600	66.66	266.64	-	-	6.66 36.64	-	
900	6300	75.00	300.00	-	-	7.50 30.00	-	The middle income group can only afford between 10% - 15% of their income for housing.
1000	7000	83.00	232.00	-	-	-	12.50 50.00	
1100	7700	91.33	365.32	-	-	-	13.70 54.80	
1200	8600	100.00	400.00	-	-	-	15.00 60.00	

Source: United Nations (1978) (modified to suit the Nigerian Situation)

* 1 $US = N7 (Nigerian Currency)

Based on the problems highlighted in the preceding paragraphs, it is therefore necessary that other policy options be evaluated along with Subsidized Public Housing in order to identify such policies and programmes which are not only beneficial to the consumers, particularly the low income households but also to the developers who in this case is the Government, while providing a solution to low income housing problems. In the next chapter therefore, we shall use a present value model to evaluate and assess some policy options and the level of affordability by the low income households respectively. Through such an evaluatory exercise, it may be possible to identify the most feasible, viable and affordable policy option.

CHAPTER 8

HOUSING SUPPLY AND POLICY IDENTIFICATION

8.1 THE EFFECT OF SUBSIDIZED PUBLIC HOUSING ON SUPPLY

Chapter 7 expounded on the government's inability to supply enough dwelling units for the low income households. One of the main reasons for this inability is because the government spends a lot of money to provide a few high standard dwelling units for a very few households, most of which are not even low income households. Consequently, housing provision has been left to the play of market forces in which the popular developers are out to make profit. Thus, the greater proportion of the low income households are faced with acute housing shortage as identified in Chapter 4. On housing supply, the Government is equally faced with financial problems. Even though resources are lean and there are various competing needs, Government cannot remain indifferent while a greater proportion of its population languish from lack of accommodation. Therefore a solution which will strike a balance between Government's ability to cope financially and the target population's ability to afford whatever is provided has to be sought. In order to assist in this process of decision making, the concept of the present value method is introduced to enable a comparison to be made of various policy options; the result of which it is hoped will provide the decision makers the most appropriate and affordable housing policy.

One of the main objectives of applying the present value model in this research is to determine among the three policy options being investigated, the most viable and beneficial to both the end users and the developers. The second objective is to determine the policy option which is most affordable by the target population.

Finally the chapter investigates and identifies the most appropriate policy option in terms of affordability to the target population and viability in terms of the developers.

8.2 THE PRESENT VALUE MODEL - A TOOL FOR POLICY IDENTIFICATION

The concept of the present value model was discussed in detail in chapter 4, section 4.6.2. Figure 8.1 presents a summary of the present value model and the policy options which were investigated. In part, the present value model has the capability of documenting the costs and benefits of government policies. This is simply because this model has the advantage and potential of directly comparing the costs and benefits of various policies and interventions. Thus a cash flow model has been constructed for the three policy options (on housing investments) as presented below.

With this technique, the national cash flows from the investment in efficiency (market) prices is analysed. The present value of the cost (at market prices) is the real cost of the investment, and the present value of the benefit (at market prices) is the market value of the unit. If the market value exceeds the costs, the unit should be built. The present value model is a summary of the cash flow and its components. It is computed by adding a stream of net costs and benefits from an investment after discounting them to account for the fact that a Naira today is worth more than a Naira tomorrow.

For example, consider an investment of N400.00 at 15 per cent discount rate, with N200.00 returns per annum for four years. A simple 5 year period investment can be assessed thus:

$$PV = A_o + A_1 / (1 + r) + A_2 / (1 + r)^2 + A_3 / (1 + r)^3 + A_4 / (1 + r)^4$$

where

A = Costs and Benefits in each of the five year periods

r = Discount Rate

PV = -400 + 173.91 + 151.23 + 131.50 + 114.35

NPV = + 171
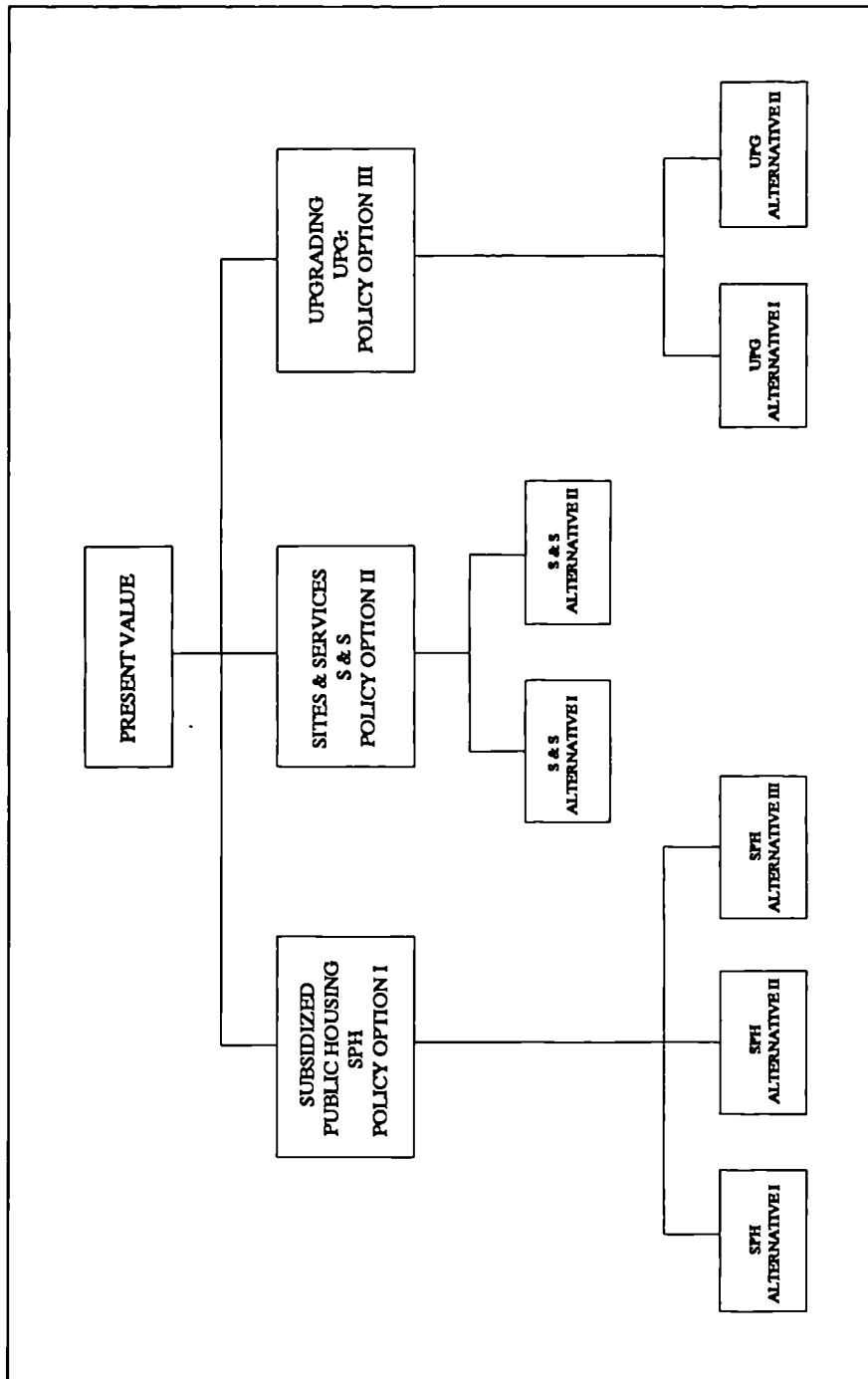
NOTE: Selection criteria for the best alternative for each policy option are tied to evaluation Parameters:
(a) benefit-cost ratio
(b) affordability-cost ratio
(c) affordability income for dev. and end-user
(d) amount to rent through affordable income

Fig. 8.1 Housing Supply and Policy Options

Following the present value rule, this investment should be undertaken because the Net Present Value is greater than Zero.

In applying present value in this research, each policy option is analysed in turn by examining how the policies change the prices and the corresponding present values. While some interventions such as land subsidy and financial subsidy, where applicable, offer benefits to developers and end users, other interventions, such as building regulations, exact costs on developers, end users and government. The three policy options, subsidised public housing, sites and services and upgrading being investigated in this research are evaluated from two approaches:

a)   Housing suppliers/developers

b)   Households which consume housing (housing consumers).

The analysis has not considered the point of view of the economy as this appears very broad and outside the scope of this research; particularly as affordability is the key objective of this present value model.

The model can be constructed in various forms:

a)   Renter's model

b)   Owner's model

c)   Owner's and renter's model

d)   Lease with option to buy model

e)   Sales model

For the purposes of this study, we have concentrated on lease with option to buy model which has been chosen because the current housing policy in Bendel State is very similar to lease with option to buy (refer to Chapter 2, Section 2.1.2)

8.2.1   Input Data

The input data (table 8.1) used for the construction of the present value model can be grouped into two:

(a) General input data

(b) Specific input data.

8.2.1.1 General Input Data

The general input data are those data which are common to the three policy options. For such data a number of assumptions have been made. Also in pricing and costing the parameters, real data have been used where possible while estimates are made where the real data are not available. This is because of the imperfection in the economy as well as the economic recession. Price of goods, interest rates, etc., are very unstable and rapidly changing in Nigeria at the current time. Prices which were collected in December 1989 have significantly changed. This notwithstanding, most of the costing and pricing are based on figures obtained from Bendel Development and Property Authority and the Ministry of Works and Housing. Therefore the real prices have been used as much as possible in places where they exist and where they are not available or are overtaken by inflation, estimations are made.

(a)   Discount Rate

We have assumed a single discount rate for the present value model construction in this research. According to the Central Bank of Nigeria's Annual Report (1988) the current discount rate (December 1988[1]) was 13.5 per cent. In 1987, the annual discount

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[1]   As at the time of survey, the available report from the CBN was prepared in December 1988

Table 8.1   **Input data for the present value model**

```
INPUT   DATA

,DISCOUNT RATE (%)                    0.13
'INFLATION RATE                       0.15
'COSTS
   'Land price                          23
   'Lot Size                           450
   'CONST. COST                        100
'Unit in Structure                      3
'Floor Area Ratio                     0.5
'Number of Years bf Sale               10
'Depreciation Rate   (%k)            0.04
'Maintenance Rate (%k)              0.025

'Extra Tranction (%sp)               0.03
'PRICES
   'Mkt Rent                        31.82
'RELATIVE PRICE CHANGES
   'Wage                             0.025
   'Land                                 0
   'Structure                            0
   'Rent                                 0

'INTERVENTIONS
   'Registration                     0.02
   'Land Subsidy                     0.01
 _ 'Landuse & Blgd.Reg.               500
   'Tax Rate                         0.03
   'Property Tax (%k)                0.03
   'Management Fee (%k)              0.05
   'Financial Subsidy               0.025

'DEMAND
   'Rent/Income                      0.12
   'Elasticity                       0.55
   'Constant                         -1.4

'POLICY OPTIONS
   'Cost of Sub. Housing            22500
   'Selling Price (Mkt V)           24500
    Cost of S & S                   11000
    Selling Price (S & S)           12000
    Mkt Rent ( S & S )                 16
   'Cost of Upgrading                9500
    Selling Price (UPG)              9500
    Mkt Rent (UPG)                     13
```

rate was 15 per cent. By March 1988, this figure was reduced to 12.5 per cent, but increased again to 13.5 per cent by the end of 1988. We have therefore decided to use 13 per cent as a single discount rate for this research particularly after reviewing the frequent changes with the discount rate. Our decision was equally guided by a sensitivity analysis conducted using 12.5 per cent to 15 per cent.

(b)   Inflation Rate

At present the inflation rate in Nigeria is about 20 per cent. But based on the 1988 Central Bank of Nigeria's (CBN) Annual Report, we have adopted an average value of 15 per cent as our inflation rate for this research. The general price index was, therefore, calculated using 1975 as the base year and the above inflation rate (table 8.2. and fig. 8.2). We have equally assumed a constant inflation rate for the period of the model (Appendix 8.1).

(c)   Land Price per sq. metre

The land price used for this research is based on the land price of the low income housing estate, Ikpoba Hill, which is the case study I in Chapter 5. The cost of land per square metre is N23.0. This amount includes the cost of infrastructure. In 1973 when the project was started, the cost of land per square metre was only N2.00 but, as a result of inflation and unstable economy, the cost of land including infrastructure has significantly increased since then. All cost information about land has been obtained from Bendel Development and Property Authority (B.D.P.A.). We have

Table 8.2   General Price Index as Derived from Appendix 8.1

Year	Inflation (15%)	Percentage Change on Housing Price	Inflation Rate (28.%)	Percentage Change in Price on Other Goods
1975	0.01	100.00	0.0100	100.00
1976	0.0115	101.15	0.0128	101.28
1977	0.0132	102.49	0.0164	102.94
1978	0.0152	104.04	0.0209	105.09
1979	0.0175	105.86	0.0268	107.91
1980	0.0201	107.99	0.0344	111.62
1981	0.0231	110.49	0.0439	116.52
1982	0.0266	113.43	0.0563	123.08
1983	0.0306	116.90	0.0721	131.96
1984	0.0352	121.01	0.0922	144.12
1985	0.0905	131.96	0.1181	161.14
1986	0.0965	144.70	0.1511	185.49
1987	0.0535	152.44	0.1934	221.37
1988	0.0615	161.81	0.2476	276.18
1989	0.0708	173.27	0.3169	363.70
1990	0.0190	176.56	0.4056	511.21

Source: Derived from the composite General Price Index:

320a

GENERAL PRICE INDEX

Base Year is 1975 = 100
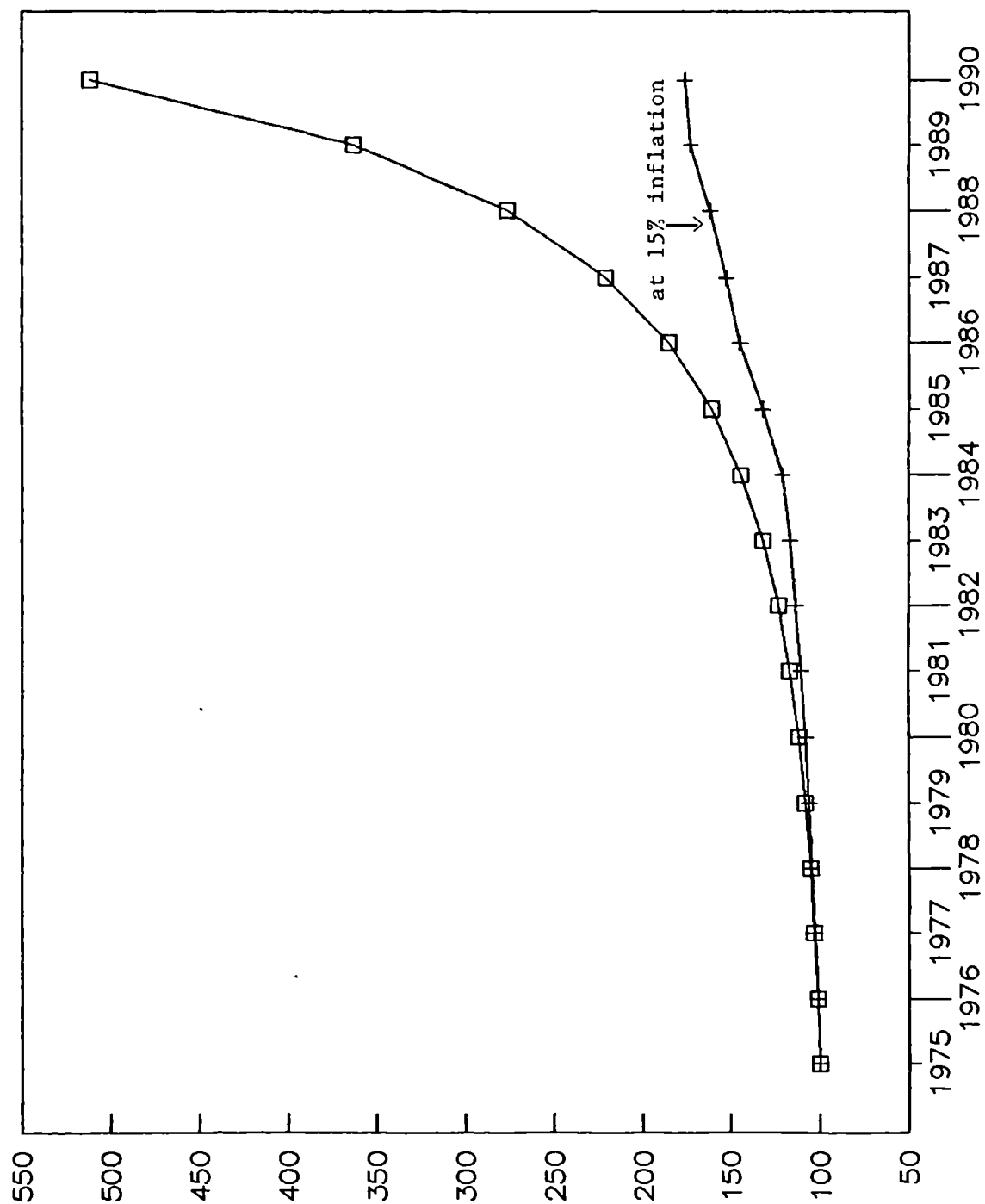
Figure 8.2

assumed a constant real land price throughout the period of the model.

(d)   Plot size

Plot sizes are quite generous in Benin City and so the plot size used for the calculations is 15m x 30m (50' x 100') or 450 sq.m. (4,000 sq.ft.). Generally, plot sizes range from 15m x 30m for low and middle income groups to 20m x 35m (80' x 120') for middle and upper income groups. In some areas such as the Government Reservation Area (G.R.A.), plot sizes are as large as 30m x 60m (100' x 200') or more. For the low income households the size normally used is 15m x 30m which is equivalent to the 450 sq. metres we are using in this model calculations.

(e)   Construction cost per metre

Based on the low income housing estate at Ikpoba Hill under investigation, and information gathered from the Ministry of Works and Housing, Benin City, and Bendel Development and Property Authority, Benin City; the construction cost for 1 sq. metre is one hundred Naira (N100.00) or approximately six pounds (£6.00). Note, however, that in 1973 when the units at the low income housing estate, Ikpoba Hill were constructed, the construction cost was much lower than today's price.

(f)   Depreciation

Bendel Development and Property Authority, Benin City, uses an index depreciation rate of 1.5 per cent per annum for the evaluation calculations. This notwithstanding, a straight line

depreciation has been adopted in this research as this could more easily be related to the lifespan of the building. We are assuming 25 years of economic lifespan of the building starting from the time the property is purchased by the end user. In this case, the depreciation will be 4 per cent. Therefore, in all the calculations made in this chapter we have adopted 4 per cent depreciation rate.

(g)   Maintenance

Generally, the maintenance rate for a building during the first 10 years is very minimal. After this period the maintenance cost increases significantly. In Nigeria, there is a general lack of a maintenance culture not only for structures but also for infrastructure and the like. In such a situation, depreciation is likely to be higher than the maintenance rate. However, based on the data collected from both the Ministry of Works and Bendel Development and Property Authority, Benin City, a maintenance rate of 2.5 per cent has been used for all the calculations performed. It is important to mention here that both the depreciation and maintenance costs are calculated as a percentage of the construction cost.

(h)   Market Rent

The market rents used in the present value calculations are based on the data derived from the hedonic techniques described in Chapter 7. For the calculations under the subsidized housing policy option, the rent predicted from the hedonics was used. In the case of the sites and services option and the upgrading schemes, the market rents have been calculated in proportion to

the predicted market rent for the subsidized public housing. By this method of market rent calculations, the various policy options have rents unique to them. For the purposes of this study, we have assumed no change in rent, although the effect of inflation on rent is reflected through the calculations of real rent.

(i)   Interventions

Included under interventions are registration cost, land subsidy, land use and building regulations, tax rates and property tax. Except land use and building regulations each of the other interventions is calculated as a percentage of structure cost using the rates fixed by the Bendel State Government. The actual amount charged for land use and building regulations is fixed for all structures whose floor area ratio is 50 per cent or 0.5. The amount for low density structures and commercial buildings are completely different and varied.

(j)   Management Fee

The 5 percent management fee used in this research is based on the rate of the Nigerian Institute of Estate Valuers. It is the percentage of the structure cost.

(k)   Financial Subsidy

The financial subsidy adopted for calculation is different from the subsidy granted to the beneficiaries of the subsidized public housing. This subsidy is derived from the amount granted to Housing Corporations at the beginning of a given project which is not refunded at the end. Alternatively, we have an amount

granted to an end user to enable the household to purchase a certain dwelling unit by fixing the price lower than the amount at which the developer, in this case the Government Housing Agent, would have otherwise sold it.

(1)   Demand input

The demand input includes rent/income ratio, elasticity of income and a constant. These input data have been taken from the hedonic analysis carried out in chapter 7 which have not only linked the two chapters but also strengthened the results obtained from the present value technique. The usefulness of these demand inputs cannot be overemphasised when we realize that the entire objective of the present value technique is to select a viable, desirable and affordable policy option. The task of which would be almost impossible without affordability calculations based on reliable data input.

8.2.1.2   Assumptions

Some general assumptions were made for the construction of these models:

(a)   The model was set for a 10 year period. During this period renting would be adopted but the property has to be sold at the end of the 10 years.

(b)   A fixed rent has been assumed. Thus a constant 'nominal rent' was assumed throughout the period, although the effect of inflation was clearly reflected in the calculations of the 'real rent'.

(c)   A life span of 25 years was assumed for the structure and this is one of the reasons why 4 per cent rate of depreciation has been adopted.

8.2.1.3   Input Data on Specific Policy Options

Similar to the input data which are common to the policy options are some input data unique to specific policy options. These input data are discussed in the following sections under each policy option. Often one of the problems associated with the present value model is that every parameter in the model has to be reduced to a monetary unit. The measurement of some government policies is always difficult and cumbersome. A fundamental problem associated with the measurement of some housing policy options is that the households or the target population belong to different income strata. Nevertheless, the monetary measurements of the real situations is conducted where possible while estimates are used in other cases where real monetary equivalents are not available. The three main policy options and their costing are as follows:

A)   POLICY OPTION I:- Subsidized Public Housing

In chapters 3 and 7, a detailed evaluation of the subsidized public housing was carried out. The costs of construction and land including infrastructure are calculated using some of the data discussed under general input data. On the application of hedonic modelling, it was possible to predict the market rent which the beneficiaries would have paid assuming the dwelling units were not subsidized. The predicted market rent which is N31.82 per room was used for the present value modelling of the subsidized public housing policy option.

The cost of dwelling, land and infrastructure cost calculated above are based on the figures obtained from B.D.P.A. and the Ministry of Works and Housing. Both organisations being responsible for the government housing provision in Bendel State. All monetary values are calculated or estimated based on 1989 prices which was the year the survey for the Ikpoba Hill low income housing estate was conducted. Although the said estate was developed in 1973, the current monetary values of the structure and land including infrastructure provision were not difficult to obtain as B.D.P.A. where the researcher works has up-to-date information on the dwelling units.

(B)   POLICY OPTION II:- Sites and Services Scheme

The sites and services scheme as defined in this research involves the provision of 'serviced land' as well as technical assistance and provision of building materials at factory prices. Serviced land in this context connotes a laid out piece of land, with earth roads and extension of electricity overhead cables and water mains. This would make it easy for the households to connect water and electricity to their dwellings when constructed.   In addition to these are technical assistance from Government in the area of manpower training on basic construction methods and provision of simple building plans with about four to five different designs which the end users have an option to modify to suit their need provided the change meets the stipulated minimum health standard.

The objective of this scheme is to assist the low income households in constructing their dwelling units which is assumed to be perhaps

affordable by the target population. Whether or not this assumption is true, we shall find out after modelling one or two policy options along with sites and services and making comparisons. The costing for this policy option is based on the following:

(a)	The cost of land (size 15m x 30m)	N3000.00
(b)	The cost of providing water and electricity	N2000.00
(c)	The cost of land improvement (eg. clearing, layout, etc.)	N1000.00
(d)	The cost of road provision	N1500.00
(e)	The cost of technical assistance	N1500.00
(f)	The cost of subsidizing the building materials	N2000.00
	Total cost	N11,000.00

The selling price is estimated at N12,000.00 because other cost components such as cost of acquisition of land, cost of compensation and management fees are indeed estimated to be much more than the additional N1000.00.

The target population are low income households whose annual income ranges between N1,500.00 and N5000.00 approximately. The main objective and the key word in this policy option is 'affordability'. Therefore, there is need to achieve a delicate balance between what the beneficiaries have to repay as part of their contribution towards various levels of services and infrastructure provided and what they can afford.

The second part of this option is modelled as alternative B. This is because the cost of construction of the dwelling unit estimated to be six

thousand Naira is included. For this alternative, 50 percent of the cost of rent being currently paid for alternative A is assumed to be an investment towards the construction. In other words, apart from the rent being paid currently for alternative A, a further 50 per cent of that amount of rent is set aside as investment towards the construction of the structure.

C)   POLICY OPTION III:- Upgrading Scheme

Generally an upgrading scheme involves the redevelopment of a poorly serviced housing in such a way that infrastructure and community services which are lacking are provided. In addition, the end users are granted some form of security of tenure. The end users are equally encouraged to renovate the actual structure through loans, grants, or building materials provision or even, in some cases, technical assistance. In Nigeria, upgrading also involves the development of village cores according to a redevelopment plan which determines future land use and guidelines to future building activities inside the core. The village redevelopment programme often occurs in situations where villages gradually become engulfed by a large city sprawling well beyond the original city limits. Or in areas where sites and services programmes affect some villages.

Upgrading defined in terms of the above would involve any or all of the following:

(a)   security of tenure,

(b)   provision of common community facilities, e.g. clinic, piped borne water, etc.,

(c)   construction of drainage channels,

(d)   construction or widening of neighbourhood
        streets,

(e)   installation of street lighting in the case of the earlier definition,

(f)   provision of refuse collection point or
        incinerator,

(g)   dwelling improvement, renovation or
        renewal,

(h)   provision of individual water connection and toilet/sewage facilities.

Items (a)-(f) are normally implemented by public effort, while items (g)-(h) are usually executed individually.   As much as possible, public participation in the planning process is solicited in order to achieve a successful upgrading scheme. The costing of the upgrading alternative A model in this research is based on the above general upgrading scheme.

Incidentally, the sort of upgrading scheme which takes place in Benin City is slightly different from what has been described above. What we have in Benin City, which is very much like upgrading, may be called incremental renovation. As the indigenous people concentrate at the core of the city, most of the dwellings are over 30 years old and mainly of the traditional compound type described in chapter 6.   As the people's economic situation improves, they gradually upgrade these dwellings as well as the environment to a fairly modern dwelling standard by installing water closets (WC), shower, kitchen, pipe borne water, etc.. Also the streets are improved by widening and refuse collection centres or points are established. This sort of incremental renovation, therefore, normally costs more to implement than the first type and sometimes these renovations are carried out by the landlords or the owners of the property.

The alternative B on the upgrading policy option was modelled on this second definition. The sum of N9,500 was estimated for the general upgrading, and the estimated cost of alternative B is N15,000.00. It should be mentioned here that in terms of these models, the difference between both alternatives is noticeable in the amount of rent calculated for each alternative.

8.3   THE CONSTRUCTION OF THE PRESENT VALUE MODEL

Three different policy options have been investigated for the purposes of determining the most appropriate policy option in terms of affordability for the provision of housing for the low income households. We have investigated policy option I under three alternatives and policy options II and III with two alternatives in order to explore the most suitable alternative. Thus, we have attempted as much as possible to construct the models in accordance with the definitions and assumptions made in this research.

A lease with option to buy model was constructed for the three policy options being investigated using lotus 1-2-3[2] (See appendix 8.2, 8.3 and 8.4). The cost and benefit of each policy option as well as the affordable income was calculated under each alternative. For every policy option alternative, there were three levels of discussion. The first was to determine the best policy alternative within a particular policy option, by comparing the benefit-cost ratios to both end-users and developers. The second level of discussion was the affordability as related to the income generated from the model. The third level of discussion is the affordability income required by the target population. When the policy options are compared in the light of the above issues raised, the most affordable to the end-users and that with greater benefit to the developer is selected. Even if the developer, who in this research is the government, does not benefit, it should not be seen

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[2]   Details on Lotus 1-2-3, refer to 1-2-3 Manual Release 2.

to be losing heavily and above the level of subsidy she is prepared to bear. The common measurement for this sort of analysis and comparison is the benefit-cost ratio to both the developer and the end-user and the affordability-cost ratio to the end-user.

8.3.1 POLICY OPTION I - Subsidized Public Housing, SPH

The subsidized public housing has been modelled in three different alternatives. The three alternatives, however, share the same objective spelt out earlier in this chapter. The basic differences in the three alternatives are the assumptions related to whom the rent is credited and at what price the property is sold at the end of the period in question.

8.3.1.1 SPH - Alternative A

The model in this alternative A, has been constructed with a basic assumption that the rent being paid for the period of ten years towards the purchase of the property is credited to the developer. While the property is sold at salvage value at the end of 10 years. For this alternative, the developer is responsible for all the property taxes, income taxes and management fees until the property is finally purchased by the end-user.

In evaluating the SPH - Alternative A, four measurement parameters are adopted herein referred to as 'evaluation parameters' namely:

    (a)   Benefit-cost ratio (BCR)

    (b)   Affordability-cost ratio (ACR)

    (c)   Affordable Income (AI) and

    (d)   Amount to rent through affordability (ARAI)[3]

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[3] ARAI means the amount of money which the affordable income can allocate to rent payment per annum.

Each of the evaluation parameters is computed for the developer and/or end-user where applicable (table 8.3). Comparisons of the ratio values in the table show the percentage gains or losses for the developer or end-user with respect to the evaluation parameters. For instance, the developer has a benefit-cost ratio of 65.88 per cent, that is a loss of 34.12 per cent, while the end-user has BCR of 137.98 per cent or a gain of 37.98 per cent, respectively. Table 8.3^A presents the entire model.

8.3.1.2   SPH - Alternative B

In constructing the model on this alternative, we have assumed that the rent paid for the model period of 10 years is credited to the end user. Also the property is sold at selling price or market value at year zero. In this case therefore, the rent paid for the 10 years is subtracted from the market value or selling price of the property. The end-user thus pays the property taxes and income taxes for the 10 year period. For this model, the calculations are slightly different from the preceding one. The cost of the taxes are then added to the amount which initially comprises costs to the end-user. On the part of the developer, his benefit no longer includes the rent paid for the 10 years but he is relieved of the property tax and income tax burden. Similar to alternative I, table 8.4 summarizes the benefit cost ratios to both the developer and the end-user as well as the affordability-cost ratio and the affordable income for the alternative. Table 8.4$_A$ shows the entire model for SPH alternative B

8.3.1.3   SPH - Alternative C

This alternative assumes that the rent paid for the model period is credited to the end-user while the property is still sold at salvage value at the end of the 10 years. Although the developer is equally relieved of the property taxes and income taxes similar to Alternative II, the developer does not get the benefit of the rent paid. In other words, the

Table 8.3: Evaluation Parameters on SPH - Alternative A

EVALUATION PARAMETERS	DEVELOPER	END-USER
Benefit-Cost Ratio (BCR)	65.88%	137.98%
Affordability-Cost Ratio (ACR)	-	24.90%
Affordability Income	-	N6881.12
Amount to Rent Through Affordable Income (ARAI)	-	N825.73

Source: Field Survey, 1990

Table 8.3A SPH Alternative A Model

TITLE - BENIN CITY LEASE WITH OPTION TO BUY MODEL

YEAR	0	1	2	3	4	5	6	7	8	9	10	PRESENT VALUE 11
GENERAL PRICE INDEX	1.	1.15	1.25	1.52	1.75	2.01	2.31	2.66	3.06	3.53	4.05	
LAND COST	-10350.00											
STRUCTURE COST	-22500.00											
MAINTENANCE COST		-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-3033.20
MANAGEMENT COST		-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-6066.40
REGISTRATION COST	-450.00											
LANDUSE & BLDG. REGULATION	-500.00											
LAND SUBSIDY	103.50											
SALVAGE VALUE FOR LAND											10350.00	10350.00
SALVAGE VALUE FOR STRUCTURE											13500.00	13500.00
MKT RENT		31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	171.58
FINANCIAL SUBSIDY											596.25	175.65
EXTRA TRANCTION COST											715.50	210.78
MKT VALUE OF UNIT	24500.00										24500.00	24500.00
POLICY OPTIONS												
SUBSIDIZED PUBLIC HOUSING												
Nominal Monthly HH Rent		31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	171.58
Real Monthly HH Rent		27.67	25.46	20.93	18.18	15.83	13.77	11.96	10.40	9.01	7.86	
Nominal Annual Gross Rent		1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	6177.05
Real Annual Gross Rent		996.10	916.42	753.63	654.58	569.91	495.90	430.65	374.35	324.51	282.84	
Rental Income Taxes		-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-185.31
Property Taxes		-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-3639.84
Developer's Cash Flow	-33696.50	-1251.35	-1251.35	-1251.35	-1251.35	-1251.35	-1251.35	-1251.35	-1251.35	-1251.35	-1251.35	-40444.20
Cost to Developer	-33800.00	-2396.87	-2396.87	-2396.87	-2396.87	-2396.87	-2396.87	-2396.87	-2396.87	-2396.87	-2396.87	-46724.74
Benefit to Developer	24603.50	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	30780.55
Sale Price(Sal. Value)											23850.00	
Afford. @ Nom. Ann. Income of:		6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	37105.42
Amt to Rent thro. Afford. Inc.		825.73	825.73	825.73	825.73	825.73	825.73	825.73	825.73	825.73	825.73	4452.65
Afford.@ Real Inc. of:		5337.03	4586.26	3213.91	2487.55	1933.72	1501.57	1161.84	900.59	694.55	541.00	16670.33
PV of Afford. Real Ann.Inc.		5337.03	4586.26	2227.40	1525.66	1049.55	721.23	493.85	338.77	231.21	159.37	17883.73
Cost to End User												24675.65
Benefit to End User												
B-C Ratio for Developer												65.88%
B-C Ratio for End User												137.98%
Afford. Cost Ratio to End User												24.90%

Table 8.4: Evaluation Parameters on SPH - Alternative B.

EVALUATION PARAMETERS	DEVELOPER	END-USERS
Benefit-Cost Ratio (BCR)	57.35%	147.72%
Affordability-Cost Ratio (ACR)	-	21.32%
Affordable Income (AIN)	-	N6881.12
Amount to Rent Through Affordable Income (ARAI)	-	N825.73

Source: Field Survey, 1990

Table 8.4A SPH Alternative B Model

TITLE - BENIN CITY LEASE WITH OPTION TO BUY MODEL

	0	1	2	3	4	5	6	7	8	9	10	PRESENT VALUE 11
YEAR	0	1	2	3	4	5	6	7	8	9	10	11
GENERAL PRICE INDEX	1.	1.15	1.25	1.52	1.75	2.01	2.31	2.66	3.06	3.53	4.05	
LAND COST	-10350.00											
STRUCTURE COST	-22500.00											
MAINTENANCE COST		-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-3033.20
MANAGEMENT COST		-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-6066.40
REGISTRATION COST	-450.00											
LANDUSE & BLDG. REGULATION	-500.00											
LAND SUBSIDY	103.50											
SALVAGE VALUE FOR LAND											10350.00	10350.00
SALVAGE VALUE FOR STRUCTURE											13500.00	13500.00
MKT RENT		31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	171.58
FINANCIAL SUBSIDY											596.25	175.65
EXTRA TRANCTION COST											715.50	210.78
MKT VALUE OF UNIT	24500.00										24500.00	24500.00
POLICY OPTIONS												
SUBSIDIZED PUBLIC HOUSING												
Nominal Monthly HH Rent		31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	171.58
Real Monthly HH Rent		27.67	25.46	20.93	18.18	15.83	13.77	11.96	10.40	9.01	7.86	
Nominal Annual Gross Rent		1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	6177.05
Real Annual Gross Rent		996.10	916.42	753.63	654.58	569.91	495.90	430.65	374.35	324.51	282.84	
Rental Income Taxes		-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-185.31
Property Taxes		-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-3639.84
Developer's Cash Flow	-33696.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-42796.10
Cost to Developer	-33800.00	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-42899.60
Benefit to Developer	24603.50											24603.50
Sale Price(Mk. Value)											24500.00	24500.00
Afford.@ Nom. Ann. Income of:		6801.12	6801.12	6801.12	6801.12	6801.12	6801.12	6801.12	6801.12	6801.12	6801.12	37105.42
Amt to Rent thro. Afford. Inc.		825.73	825.73	825.73	825.73	825.73	825.73	825.73	825.73	825.73	825.73	4452.65
Afford.@ Real Inc. of:		5337.03	4586.26	3213.91	2487.55	1933.72	1501.57	1161.84	900.59	694.55	541.00	
PV of Afford. Real Ann.Inc.		5337.03	4586.26	2227.40	1525.66	1049.55	721.23	493.85	338.77	231.21	159.37	16670.33
Cost to End User												20885.63
Benefit to End User												30852.70
B-C Ratio for Developer												57.35%
B-C Ratio for End User												147.72%
Afford. Cost Ratio to End User												21.32%

rent paid eventually becomes a part of the selling deal. The property being sold at salvage value means that the developer does not get anything out of the development except the salvage value.

In table 8.5, a summary of the evaluation parameters are presented for SPH - Alternative C while table 8.5ₐ shows the entire model for this Alternative. The results are similar to the two preceding Alternatives.

8.3.1.4 Comparison of SPH Alternatives

Comparison of Alternatives A-C on the subsidized public housing clearly reveals the following points:

(a) the salary grade that could afford this policy option is the same for the three Alternatives examined.

(b) The benefit-cost ratio to the developer for the three Alternatives reflected that the developer is making a loss in all of the three Alternative models. In Alternative A, the developer is making a loss of 35 per cent, while in Alternatives B and C, the developer is losing 42.65 per cent in either case. For the developer, Alternative A appears preferable. This is because the developer's losses are less than in the other two Alternatives.

(c) Regarding the end-user, the project is beneficial in all of the three alternatives to the extent of a gain of 37.98 per cent, 47.72 per cent and 49.43 per cent for Alternatives A, B and C is made respectively. To the end-user, therefore, any of the three Alternatives is adequate although Alternative C appears most preferable.

Table 8.5: Evaluation Parameters on SPH - Alternative C

EVALUATION PARAMETERS	DEVELOPERS	END-USERS
Benefit-Cost Ratio (BCR)	57.35%	149.43%
Affordability-Cost Ratio (ACR)	-	22.00%
Affordability Income	-	N6,881.12
Amount to Rent Through Affordable Income (ARAI)	-	N825.73

Source: Field Survey, 1990

Table 8.5A SPH Alternative C Model

TITLE - BENIN CITY LEASE WITH OPTION TO BUY MODEL

	0	1	2	3	4	5	6	7	8	9	10	PRESENT VALUE 11
YEAR												
GENERAL PRICE INDEX	1.	1.15	1.25	1.52	1.75	2.01	2.31	2.66	3.06	3.53	4.05	
LAND COST	-10350.00											
STRUCTURE COST	-22500.00											
MAINTENANCE COST		-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-3033.20
MANAGEMENT COST		-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-6066.40
REGISTRATION COST	-450.00											
LANDUSE & BLDG. REGULATION	-500.00											
LAND SUBSIDY	103.50											
SALVAGE VALUE FOR LAND											10350.00	10350.00
SALVAGE VALUE FOR STRUCTURE											13500.00	13500.00
MKT RENT		31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	171.58
FINANCIAL SUBSIDY											596.25	175.65
EXTRA TRANCTION COST											715.50	210.78
MKT VALUE OF UNIT	24500.00											24500.00
POLICY OPTIONS												
SUBSIDIZED PUBLIC HOUSING												
Nominal Monthly HH Rent		31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	171.58
Real Monthly HH Rent		27.67	25.46	20.93	18.18	15.83	13.77	11.96	10.40	9.01	7.86	
Nominal Annual Gross Rent		1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	6177.05
Real Annual Gross Rent		996.10	916.42	753.63	654.58	569.91	495.90	430.65	374.35	324.51	282.84	
Rental Income Taxes		-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-185.31
Property Taxes		-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-3639.84
Developer's Cash Flow	-33696.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-42796.10
Cost to Developer	-33800.00	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-42899.60
Benefit to Developer	24603.50											
Sale Price(Sal. Value)							23850.00		24603.50			
Afford.@ Nom. Ann. Income of:		6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	37105.42
Amt to Rent thro. Afford. Inc.		825.73	825.73	825.73	825.73	825.73	825.73	825.73	825.73	825.73	825.73	4452.65
Afford.% Real Inc. of:		5337.03	4586.26	3213.91	2487.55	1933.72	1501.57	1161.84	900.59	694.55	541.00	16670.33
PV of Afford. Real Ann.Inc.		5337.03	4586.26	2227.40	1525.66	1049.55	721.23	493.85	338.77	231.21	159.37	20235.63
Cost to End User												30237.83
Benefit to End User												
B-C Ratio for Developer												57.35%
B-C Ratio for End User												149.43%
Afford. Cost Ratio to End User												22.00%

(d)   The affordability calculations indicated that only the end-users with annual incomes of N6,881.00 or more can afford the subsidized public housing. This annual income of N6,881.00 is much higher than those of the target population (N1,500-N5,000) per annum. Even within the affordable income of N6,881.00, the households would pay up to 24.90 per cent, 21.32 per cent and 22.00 per cent of their income for Alternatives A, B and C respectively.

From the foregoing, it is possible to rank[4] the three alternatives in the order of preference, viz:

(1)   SPH - Alternative A - most preferred

(2)   SPH - Alternative B - more preferred

(3)   SPH - Alternative C - preferred.

8.3.2   POLICY OPTION II - Sites and Services (S&S)

In modelling sites and services as policy option two, the basic assumption made is that price of land does not change throughout the 10 year model period. On account of the above, the sites and services scheme was therefore modelled in two ways referred to as Alternatives A and B. Similar to the policy option I, the two Alternatives share the same objective. The major difference between them is that Alternative A is modelled without structure, while Alternative B is modelled with structure.

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[4]   It is essential to mention that this ranking only applies to the affordable income of N6,881.12.

8.3.2.1   S&S - Alternative A

In constructing this Alternative A model for the sites and services without structure, the rent paid by the end-user is credited to the cost of the serviced land. A similar method to SPH has been adopted - Alternative A, in which rent is credited to the developer but the structure is sold at salvage value. The main difference in this case is that the salvage value of land is still the same selling price or market value as land does not change with the passing of time. In the calculations therefore, the amount paid as rent was deducted from the selling price. Using the same unit of measurement or evaluation parameters as in the earlier models, table 8.6 summarizes the result of the model. While table 8.6^A shows the whole model for this alternative.

8.3.2.2   S&S - Alternative B

Sites and Services Alternative B model assumes that the structure costs N6,000 and that the end-user is prepared to invest as much as 50 percent of the present rent towards the construction of the dwelling. In modelling this alternative therefore, cost to end-user has apparently increased and the annual rent he pays has equally increased. The end-user does not have additional benefit while the developer's situation does not really change from the Alternative A model. This model is therefore constructed exactly as in Alternative A with the changes in the end-user's situation reflected. The summary of the outcome using our evaluation parameters is as shown in table 8.7, while table 8.7^A shows the detailed modelling.

8.3.2.3   Comparison of S&S Alternatives

Comparing Alternatives A and B of Sites and Services with respect to BCR, it is very clear from tables 8.6 and 8.7 that the developer's situation has not changed. The developer is

Table 8.6: Evaluation Parameters on S&S - Alternative A

EVALUATION PARAMETERS	DEVELOPER	END-USERS
Benefit-Cost Ratio (BCR)	78.44%	0.98%
Affordability-Cost Ratio (ACR)	-	14.19%
Affordability Income (AIN)	-	N1971.45
Amount to Rent Through Affordable Income (ARAI)	-	N236.57

Source: Field Survey, 1990

Table 8.6A S & S Alternative A Model

TITLE - BENIN CITY LEASE WITH OPTION TO BUY MODEL

YEAR	0	1	2	3	4	5	6	7	8	9	10	PRESENT VALUE 11
GENERAL PRICE INDEX	1.	1.15	1.25	1.52	1.75	2.01	2.31	2.66	3.06	3.53	4.05	
LAND COST	-10350.00											
STRUCTURE COST	-22500.00											
MAINTENANCE COST		-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-3033.20
MANAGEMENT COST		-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-6066.40
REGISTRATION COST	-450.00											
LANDUSE & BLDG. REGULATION	-500.00											
LAND SUBSIDY	103.50											
SALVAGE VALUE FOR LAND											10350.00	10350.00
SALVAGE VALUE FOR STRUCTURE											13500.00	13500.00
MKT RENT		31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	171.58
FINANCIAL SUBSIDY											596.25	175.65
EXTRA TRANCTION COST											715.50	210.78
SITES & SERVICES												
Nominal Monthly HH Rent		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	86.28
Real Monthly HH Rent		13.91	12.80	10.53	9.14	7.96	6.93	6.02	5.23	4.53	3.95	
Nominal Ann. Gross Rent		576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	3106.00
Real Ann. Gross Rent		500.87	460.80	378.95	329.14	286.57	249.35	216.54	188.24	163.17	142.22	
Rental Inc. Taxes		-17.28	-17.28	-17.28	-17.28	-17.28	-17.28	-17.28	-17.28	-17.28	-17.28	-93.18
Property Taxes		-330.00	-330.00	-330.00	-330.00	-330.00	-330.00	-330.00	-330.00	-330.00	-330.00	-1779.48
Developer's Cash Flow	-11846.50	-896.28	-896.28	-896.28	-896.28	-896.28	-896.28	-896.28	-896.28	-896.28	-896.28	-16679.56
Extra Tranctions Cost											330.00	97.21
Benefit to Developer	12103.50	576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	15209.50
Cost to Developer	-11450.00	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-19389.05
Sale Price											12000.00	
Afford. @ Nominal Ann. Inc.		1971.45	1971.45	1971.45	1971.45	1971.45	1971.45	1971.45	1971.45	1971.45	1971.45	10630.76
Amt. to Rent Thro. Afford. Inc.		236.57	236.57	236.57	236.57	236.57	236.57	236.57	236.57	236.57	236.57	1275.69
Afford. @ Real Inc. of:		1529.07	1313.97	920.79	712.69	554.01	430.20	332.87	258.02	198.99	155.00	
PV of Afford. Real Ann. Inc.		1529.07	1313.97	638.15	437.10	300.70	206.63	141.49	97.06	66.24	45.66	4776.07
Financial subsidy											300.00	88.38
Cost to End User												8991.22
Benefit to End User												88.38
B-C Ratio to Developer												78.44%
B-C Ratio to End User												0.98%
Afford.-Cost Ratio to End User												14.19%

Table 8.7: Evaluation Parameters on S&S - Alternative B

EVALUATION PARAMETERS	DEVELOPERS	END-USERS
Benefit-Cost Ratio (BCR)	78.44%	0.72%
Affordability-Cost Ratio (ACR)	-	10.36%
Affordability Income (AIN)	-	N4,120.52
Amount to Rent Through Affordable Income (ARAI)	-	N494.46

Source: Field Survey, 1990

Table 8.7A S & S Alternative B Model

TITLE - BENIN CITY LEASE WITH OPTION TO BUY MODEL

INPUT DATA

Parameter	Value
DISCOUNT RATE (%)	0.13
INFLATION RATE	0.15
COSTS	
Land price	23
Lot Size	450
CONST. COST	100
Unit in Structure	3
Floor Area Ratio	0.5
Number of Years bf Sale	10
Depreciation Rate (%k)	0.04
Maintenance Rate (%k)	0.025
Extra Tranction (%sp)	0.03
PRICES	
Financial subsidy	
Mkt Rent	31.82
RELATIVE PRICE CHANGES	
Wage	0.025
Land	0
Structure	0
Rent	0
INTERVENTIONS	
Registration	0.02
Land subsidy	0.01
Landuse & Bldg.Reg.	500
Tax Rate	0.03
Property Tax (%k)	0.03
Management Fee (%k)	0.05
Financial Subsidy	0.025
DEMAND	
Rent/Income	0.12
Elasticity	0.55
Constant	-1.4
POLICY OPTIONS	
Cost of Sub. Housing	22500
Selling Price (Mkt V)	24500
Cost of S & S	11000
Selling Price (S & S)	12000
Est. Const. Cost	6000
Mkt Rent (S & S)	16
Mkt. Rent with Const.	24
Cost of Upgrading	15000
Selling Price (UPG)	15000
Mkt Rent (UPG)	20

Projection

Item	0	1	2	3	4	5	6	7	8	9	10	PV
YEAR	0	1	2	3	4	5	6	7	8	9	10	11
GENERAL PRICE INDEX	1.	1.15	1.25	1.52	1.75	2.01	2.31	2.66	3.06	3.53	4.05	
LAND COST	-10350.00											-3033.20
STRUCTURE COST	-22500.00											-6066.40
MAINTENANCE COST		-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	
MANAGEMENT COST		-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	
REGISTRATION COST	-450.00											
LANDUSE & BLDG. REGULATION	-500.00											
LAND SUBSIDY	103.50											
SALVAGE VALUE FOR LAND											10350.00	10350.00
SALVAGE VALUE FOR STRUCTURE											13500.00	13500.00
MKT RENT		31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	171.58
FINANCIAL SUBSIDY											596.25	175.65
EXTRA TRANCTION COST											715.50	210.78
SITES & SERVICES												
Nominal Monthly HH Rent		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	86.28
Real Monthly HH Rent		13.91	12.80	10.53	9.14	7.96	6.93	6.02	5.23	4.53	3.95	
Nominal Ann. Gross Rent		576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	3106.00
Real Ann. Gross Rent		500.87	460.80	378.95	329.14	286.57	249.35	216.54	188.24	163.17	142.22	
Rental Inc. Taxes		-17.28	-17.28	-17.28	-17.28	-17.28	-17.28	-17.28	-17.28	-17.28	-17.28	-93.18
Property Taxes		-330.00	-330.00	-330.00	-330.00	-330.00	-330.00	-330.00	-330.00	-330.00	-330.00	-1779.48
Developer's Cash Flow	-11846.50	-896.28	-896.28	-896.28	-896.28	-896.28	-896.28	-896.28	-896.28	-896.28	-896.28	-16679.56
Extra Tranctions Cost											330.00	97.21
Benefit to Developer	12103.50	576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	15209.50
Cost to Developer	-11450.00	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-19389.05
Sale Price											12000.00	12000.00
Afford. # Nominal Ann. Inc.		1971.45	1971.45	1971.45	1971.45	1971.45	1971.45	1971.45	1971.45	1971.45	1971.45	10630.76
Amt. to Rent Thro. Afford. Inc.		236.57	236.57	236.57	236.57	236.57	236.57	236.57	236.57	236.57	236.57	1275.69
Afford. # Real Inc. of:		1529.07	1313.97	920.79	712.69	554.01	430.20	332.87	258.02	198.99	155.00	
PV of Afford. Real Ann. Inc.		1529.07	1313.97	638.15	437.10	300.70	206.63	141.49	97.06	66.24	45.66	4776.07
Financial subsidy											300.00	88.38
Construction Cost												
Invest. on Const.(# of Ann. Gross Rent)		288.00	288.00	288.00	288.00	288.00	288.00	288.00	288.00	288.00	288.00	1767.53
Nom. Month. HH Rent With Const.		24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	1553.00
Real Month. HH Rent with Const.		20.87	19.20	15.79	13.71	11.94	10.39	9.02	7.84	6.80	5.93	129.42
Nom. Ann. Gross Rent with Const.		864.00	864.00	864.00	864.00	864.00	864.00	864.00	864.00	864.00	864.00	4658.99
Aff. # Nom. Ann. Inc. with Const.		4120.52	4120.52	4120.52	4120.52	4120.52	4120.52	4120.52	4120.52	4120.52	4120.52	22219.29
Amt.to Rent Thro. Aff. Inc.(const.)		494.46	494.46	494.46	494.46	494.46	494.46	494.46	494.46	494.46	494.46	2666.31
Cost to End User												12311.75
Benefit to End User												88.38
B-C Ratio to Developer												78.44%
B-C Ratio to End User												0.72%
Afford.-Cost Ratio to End User												10.36%

losing by 21.66 per cent in both Alternatives. For the end-user, the situation is different. Rather than maintain the low figure in Alternative A for the benefit-cost ratio, it has reduced by 25 per cent, while the affordability-cost ratio dropped by 4 per cent. Therefore the end-user is losing in the case of Alternative B. A very crucial issue which has emerged from Alternative B is that the scheme is no longer affordable by the majority of the target population as in Alternative A. Rather only 17.6 per cent of the target population, i.e., only those within the annual income range of N4,000-N5,000 can afford the sites and services scheme with structure. The preferential ranking for the two S&S Alternatives are as follows:

(1)   S&S - Alternative A: better option

(2)   S&S - Alternative B:

8.3.3   POLICY OPTION III - Upgrading (UPG)

This policy option is modelled with two Alternatives - A and B corresponding to the two definitions given earlier in this chapter. The objectives for both Alternatives are the same while the difference lies on the cost of the scheme.

8.3.3.1   UPG - Alternative A

This Alternative uses the costing for the general definition of upgrading. The modelling of this alternative follows the same pattern as the sites and services scheme Alternative A, in which rent is credited to the developer but the property is sold at salvage value, which in this case is still the cost of upgrading at year zero. Also, using the same evaluation parameters, table 8.8 summarizes the results while table 8.8^A shows the details of the model.

Table 8.8: Evaluation Parameters on UPG - Alternative A

EVALUATION PARAMETERS	DEVELOPER	END-USERS
Benefit-Cost Ratio (BCR)	80.33%	132.91%
Affordability-Cost Ratio (ACR)	-	12.15%
Affordability Income (AIN)	-	N1351.54
Amount to Rent Through Affordable Income (ARAI)	-	N162.18

Source: Field Survey, 1990

Table 8.8A   UPG Alternative A Model

TITLE - BENIN CITY LEASE WITH OPTION TO BUY MODEL

	0	1	2	3	4	5	6	7	8	9	10	PRESENT VALUE 11
YEAR												
GENERAL PRICE INDEX	1.	1.15	1.25	1.52	1.75	2.01	2.31	2.66	3.06	3.53	4.05	
LAND COST	-10350.00											
STRUCTURE COST	-22500.00											
MAINTENANCE COST		-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-3033.20
MANAGEMENT COST		-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-6066.40
REGISTRATION COST	-450.00											
LANDUSE & BLDG. REGULATION	-500.00											
LAND SUBSIDY	103.50											
SALVAGE VALUE FOR LAND											10350.00	10350.00
SALVAGE VALUE FOR STRUCTURE											13500.00	13500.00
MKT RENT		31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	171.58
FINANCIAL SUBSIDY											596.25	175.65
EXTRA TRANCTION COST											715.50	210.78
UPGRADING												
Nominal Monthly HH Rent		13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	70.10
Real Monthly HH Rent		11.30	10.40	8.55	7.43	6.47	5.63	4.89	4.25	3.68	3.21	40.58
Nominal Ann. Gross Rent		468.00	468.00	468.00	468.00	468.00	468.00	468.00	468.00	468.00	468.00	2523.62
Real Ann. Gross Rent		406.96	374.40	307.89	267.43	232.84	202.60	175.94	152.94	132.58	115.56	1461.01
Real Income Taxes		-14.04	-14.04	-14.04	-14.04	-14.04	-14.04	-14.04	-14.04	-14.04	-14.04	-75.71
Property Taxes		-285.00	-285.00	-285.00	-285.00	-285.00	-285.00	-285.00	-285.00	-285.00	-285.00	-1536.82
Extra Tranction Cost											285.00	83.96
Developer's Cash Flow	-10346.50	-1973.54	-1973.54	-1973.54	-1973.54	-1973.54	-1973.54	-1973.54	-1973.54	-1973.54	-1973.54	-20988.52
Benefit to Developer	9603.50	468.00	468.00	468.00	468.00	468.00	468.00	468.00	468.00	468.00	468.00	12127.12
Cost to Devloper	-10450.00	-861.54	-861.54	-861.54	-861.54	-861.54	-861.54	-861.54	-861.54	-861.54	-861.54	-15095.73
Sale Price											9500.00	
Afford. @ Nominal Ann. Inc.		1351.54	1351.54	1351.54	1351.54	1351.54	1351.54	1351.54	1351.54	1351.54	1351.54	7287.97
Amt to Rent Thro. Afford. Inc.		162.18	162.18	162.18	162.18	162.18	162.18	162.18	162.18	162.18	162.18	874.56
Afford. @ Real Ann. Inc. of:		1048.26	900.80	631.25	488.59	379.81	294.93	228.20	176.89	136.42	106.26	
PV @ Afford. Real Ann. Inc.		1048.26	900.80	437.49	299.66	206.14	141.66	97.00	66.54	45.41	31.30	3274.26
Financial Subsidy											237.50	69.96
Management Fee											475.00	139.93
Cost to End User												7200.27
Benefit to End User												9569.96
B-C Ratio to Developer												80.33%
B-C Ratio to End User												132.91%
Afford.-Cost Ratio to End User												12.15%

8.3.3.2   UPG - Alternative B

The modelling in this Alternative is exactly the same as in Alternative A except that the cost of upgrading has changed from N9,500.00 to N15,000.00. The modelling of this Alternative has strictly followed the second definition of upgrading. Table 8.9 summarizes the outcome of the evaluation parameters, while table 8.9^A shows the detailed model.

8.3.3.3   Comparison of Upgrading Alternatives

The developer is losing 19.67 per cent and 11.80 per cent for Alternatives A and B respectively. For the end-user there are corresponding gains of 32.91 per cent and 31.73 per cent for Alternatives A and B, respectively. The affordability-cost ratios to the end-user are 12.16 per cent and 16.68 per cent, respectively. For the target population within an annual income of N1,351.54 and N2,957.92 respectively (for both alternative) can afford the scheme. Nevertheless, we should not lose sight of the fact that Alternative A is mainly for poorly serviced houses and village development which in this case does not apply to our area of study. And it is no wonder, therefore, that the affordable income is so low. Considering this fact, and the fact that the BCR and ACR for Alternative B are more favourable to both the developer and the end-user, UPG - Alternative B is more preferred to UPG - Alternative A.

We must mention here that we are aware of the fact that some policy and housing analysts may wonder why we have not included the cost of the structure. This we have purposely left out as we do not have the intention to change the policy options as they are currently being operated in developing countries. It is the researcher's view in spite of the considerable literature that solicits for the inclusion of the structure cost that it should be left out. This is because the researcher feels that if these policies are modelled

Table 8.9: Evaluation Parameters on UPG - Alternative B

EVALUATION PARAMETERS	DEVELOPER	END-USERS
Benefit-Cost Ratio (BCR)	88.20%	131.73%
Affordability-Cost Ratio (ACR)	-	16.68%
Affordability Income (AIN)	-	N2957.92
Amount to Rent Through Affordable Income (ARAI)	-	N354.95

Source: Field Survey, 1990

Table 8.9A   UPG Alternative B Model

TITLE - BENIN CITY LEASE WITH OPTION TO BUY MODEL

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INPUT DATA

Item	Value
DISCOUNT RATE (%)	0.13
INFLATION RATE	0.15
COSTS	
Land price	23
Lot Size	450
	100
CONST. COST	
Unit in Structure	3
Floor Area Ratio	0.5
Number of Years bf Sale	10
Depreciation Rate (%k)	0.04
Maintenance Rate (%k)	0.025
Extra Tranction (%sp)	0.03
PRICES	
Mkt Rent	31.82
RELATIVE PRICE CHANGES	0.025
Wage	0
Land	0
Structure	0
Rent	0
INTERVENTIONS	
Registration	0.02
Land Subsidy	0.01
Landuse & Bldg.Reg.	500
Tax Rate	0.03
Property Tax (%k)	0.03
Management Fee (%k)	0.05
Financial Subsidy	0.025
DEMAND	
Rent/Income	0.12
Elasticity	0.55
Constant	-1.4
POLICY OPTIONS	
Cost of Sub. Housing	22500
Selling Price (Mkt V)	24500
Cost of S & S	11000
Selling Price (S & S)	12000
Est. Const. Cost	6000
Mkt Rent (S & S)	16
Mkt. Rent with Const.	24
Cost of Upgrading	15000
Selling Price (UPG)	15000
Mkt Rent (UPG)	20

Main model (columns = YEAR; last column = PRESENT VALUE)

YEAR	0	1	2	3	4	5	6	7	8	9	10	PV (11)
GENERAL PRICE INDEX	1.	1.15	1.25	1.52	1.75	2.01	2.31	2.66	3.06	3.53	4.05	
LAND COST	-10350.00											
STRUCTURE COST	-22500.00											
MAINTENANCE COST		-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-3033.20
MANAGEMENT COST		-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-6066.40
REGISTRATION COST	-450.00											
LANDUSE & BLDG. REGULATION	-500.00											
LAND SUBSIDY	103.50											
SALVAGE VALUE FOR LAND											10350.00	10350.00
SALVAGE VALUE FOR STRUCTURE											13500.00	13500.00
MKT RENT		31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	171.58
FINANCIAL SUBSIDY											596.25	175.65
EXTRA TRANCTION COST											715.50	210.78
UPGRADING												
Nominal Monthly HH Rent		20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	107.85
Real Monthly HH Rent		17.39	16.00	13.16	11.43	9.95	8.66	7.52	6.54	5.67	4.94	62.44
Nominal Ann. Gross Rent		720.00	720.00	720.00	720.00	720.00	720.00	720.00	720.00	720.00	720.00	3882.49
Real Ann. Gross Rent		626.09	576.00	473.68	411.43	358.21	311.69	270.68	235.29	203.97	177.78	2247.71
Real Income Taxes		-21.60	-21.60	-21.60	-21.60	-21.60	-21.60	-21.60	-21.60	-21.60	-21.60	-116.47
Property Taxes		-450.00	-450.00	-450.00	-450.00	-450.00	-450.00	-450.00	-450.00	-450.00	-450.00	-2426.56
Rent											450.00	132.56
Extra Tranction Cost												
Developer's Cash Flow	-15846.50	-2139.10	-2139.10	-2139.10	-2139.10	-2139.10	-2139.10	-2139.10	-2139.10	-2139.10	-2139.10	-27381.28
Benefit to Developer	15103.50	720.00	720.00	720.00	720.00	720.00	720.00	720.00	720.00	720.00	720.00	18985.99
Cost to Developer	-15950.00	-1034.10	-1034.10	-1034.10	-1034.10	-1034.10	-1034.10	-1034.10	-1034.10	-1034.10	-1034.10	-21526.23
Sale Price											15000.00	15950.13
Afford. @ Nominal Ann. Inc.		2957.92	2957.92	2957.92	2957.92	2957.92	2957.92	2957.92	2957.92	2957.92	2957.92	1914.02
Amt to Rent Thro. Afford. Inc.		354.95	354.95	354.95	354.95	354.95	354.95	354.95	354.95	354.95	354.95	7165.91
Afford. @ Real Ann. Inc. of:		2294.17	1971.45	1381.53	1069.30	831.23	645.47	499.43	387.13	298.56	232.55	110.47
PV @ Afford. Real Ann. Inc.		2294.17	1971.45	957.47	655.82	451.16	310.03	212.29	145.62	99.39	68.51	220.94
Financial Subsidy											375.00	11471.01
Management Fee											750.00	15110.47
Cost to End User												
Benefit to End User												
B-C Ratio to Developer												88.20%
B-C Ratio to End User												131.73%
Afford.-Cost Ratio to End User												16.69%

exactly as they are currently being operated, it would be easy to see how successful or unsuccessful the policy options are if they were to have the cost of construction included.

8.3.4 The Preferred Policy Option

In the preceding sections we attempted to rank Alternatives for each of the three policy options. The result of the findings are as presented in table 8.10 (and Appendices 8.2, 8.3 and 8.4). In column 2, the listed most preferred alternatives for each of the 3 policy options are further examined for ranking using the evaluation parameters in column 3. The result of which will provide us with the most preferred policy option which is examined along with the existing policy in the study area.

The benefit-cost ratio and affordability-cost ratio to the end-user under subsidized public housing (SPH) are superior to the other two policy options (table 8.10). On the part of the developer, the reverse is the case for the benefit-cost ratio. In terms of the affordable income, the SPH records a value of N6,881.12 which is well above the income range of N1,500 - N5,000.0 of the target population. Worse still, the amount to rent through affordable income for the SPH stands at N825.73 which is greater than the values of the other two policy options.

The affordability evaluation parameter values to the end-user and benefit-cost ratio values to the developer put sites and services (S&S) and up-grading (UPG) over and above the subsidized public housing option. In ranking between S&S and UPG using the 4 evaluation parameters, we see a 50-50 outcome. On the one hand, the first two evaluation parameters, BCR and ACR put the UPG above the S&S. On the other hand, the last two evaluation parameters, AIN and ARAI put S&S ahead of the UPG. The tie is broken when we fall back to the income range of the target population and compare it with those in table 8.10 for S&S and UPG, respectively. On that count, S&S is more affordable, and

Table 8.10: Summary of Findings on the Three Policy Options Selected for Comparison.

Policy Options	Most Preferred Alternatives	Evaluation Parameters	Developer	End-User
Subsidized Public Housing SPH	A	(a) Benefit-Cost Ratio, BCR (b) Afford-Cost Ratio, ACR (c) Affordable Income, AIN (d) Amt.to Rent Thro.Afford. Income, ARAI	65.88% - - -	137.98% 24.90% N6881.12 N825.73
Sites & Service S & S	A	(a) Benefit-Cost Ratio, BCR (b) Afford-Cost Ration, ACR (c) Affordability Income, AIN (d) Amt.to Rent Thro.afford. Income, ARAI	79.44% - - -	0.98% 14.19% N1971.45 N236.57
Up-Grading UPG	B	(a) Benefit-Cost Ration, BCR (b) Afford-Cost Ratio, ACR (c) Affordable Income, AIN (d) Amt.to Rent Thro.afford. Income, ARAI	88.20% - - -	131.73% 16.69% N2957.92 N354.95

Source: Field Survey, 1990

by over 70 per cent of the target population within the income range of N1,500-N5,000, than that of UPG. Thus, we are inclined to rank the policy options in the following order of preference:

      (1) Sites and Services, S&S   preferred option

      (2) Up-grading, UPG   second option

      (3) Subsidized Public Housing, SPH   third option

The choice of sites and services becomes more apparent when we consider the fact that only the target population with approximately N3,000.0+ can afford the upgrading scheme. Moreover, our earlier definition of upgrading as it is practised in Benin City at the current time is restricted to home owners who are not necessarily among the target population.

The Subsidized Public Housing which is presently popular in Benin City but the least preferred in our analysis, once again confirmed the hypothesis that the existing housing policy (Subsidized Public Housing) has been unable to provide shelter at costs that intended beneficiaries can reasonably afford. This becomes more obvious when we realize that this policy option has already been heavily subsidized as we examined in chapter 7.

8.4   AFFORDABILITY OF THE PREFERRED POLICY OPTION

It is, however, pertinent to observe that when we assessed the degree of affordability by the target population, sites and services is not a very rosy policy option. Particularly when we have seen in this research that sites and services with structure is affordable to only a very small proportion of the target population. While under Sites and Services A which is the preferred Alternative, the nominal annual gross rent is N576.0. The target population whom we have said can afford this scheme according to their annual income, can only afford to devote N236.57 to rent per annum. When we further examined the

affordability cost ratio, the target population that can afford this scheme can only afford 14.19 per cent of the annual rent. Consequently, someone has to bear the burden of the remaining 85.81 per cent.

To further investigate the affordability of this policy option, we examined the financing of the land at the end of the ten year period when the property has to be sold. Considering the fact that the selling price of the land is N12,000 and the fact that the end-user has to spend another six thousand Naira for the structure eventually, we have assumed that any amount of loan to be requested has to include both costs. To raise the said amount, therefore, the end-user has to seek for a mortgage loan. This has, therefore, brought in the whole issue of a financing model in which we attempted to investigate the interest rate at which the end-user can actually finance or afford a mortgage loan. The next section has thus attempted to model the mortgage under financing model.

8.4.1   The Mortgage Financing Model (MFM)

A brief description of the mortgage loan scheme is presented before the actual mortgage financing model. This is particularly necessary as it will enable us to understand the input data and the actual Mortgage Financing model. The operation of the mortgage loan is fairly complicated at the current time in Benin City. Different income groups have different amounts of loan which they can be granted. In the same way, different people in the society have different interest rates. For instance, those households who are either civil or public servants pay 8 per cent interest, irrespective of salary grade. While those in the private sector operate at a different interest rate which is 10 per cent irrespective of salary grade (these figures were as of January, 1990). Because we input one interest rate in our computer software model for the purposes of this research, we have decided to adopt the mean which is 9 per cent. This conservative interest rate applies to both the civil servants and their counterparts in the private sector.

The amount granted, varies with income but not with being either a civil servant or in the private sector. Nonetheless, a standard has been established to make calculations easy and to ensure that no household is granted an amount whereby the household is forced to repay more than 25 per cent of their income. Based on this, the initial amount loanable to a prospective homeowner is N30,000.00 or 5 times the mortgagee's annual salary, whichever is less.

By 1984, when Nigeria's economic situation became very depressed, the total amount of N30,000.00 was increased to N40,000 for the middle and high income households. This is because N30,000.00 could no longer purchase the house type it could purchase prior to this date. That for low income households,' which was originally kept at N15,000.00 limit was increased to N20,000.0 or 5 times the annual salary whichever is less, for the same reason stated above. Another important issue is the repayment period. This ranges between 15 and 30 years depending on the following:

        (a) the age of the mortgagee

        (b) the amount of grant received, and

        (c) the anticipated life span of the property.

All these factors are carefully considered for the mortgage finance input data.

8.4.1.1   Input data and assumptions for (MFM)

In order to effectively construct the mortgage financing model, a number of assumptions have been made regarding the input data taking cognisance of the exiting situation in Benin described in section 8.4.1 and the earlier model developed for this study. A fixed interest rate of 9 per cent has been assumed although in reality the interest rate is subject to variation. The factors which lead to such variation are outside the scope of this research. Nevertheless, an average interest rate appears handy and reduces the

complexity of the proposed mortgage financing model and is thus easy to generate and appreciate the results.

The amount of mortgage required is as follows:

(a)	Cost of serviced land	N12,000.00
(b)	Estimated cost of structure	N6,000.00
	Sub-total	N18,000.00

The end-user has spent the following amount:

(a)	Present value of the nominal rent for 10 years	N3,106.00
(b)	Estimated Investment towards structure	N2,880.00
(c)	Financial subsidy (benefit from Govt. as calculated from the present value model)	N88.83
	Sub-total	N6,074.83

The amount required for mortgage loan is

$$N18,000.00 - N6074.83 = N11925.17$$

approximately N12,000.00

From the above calculations, the mortgage amount required by the end-user at the end of 10 years is N12,000.00 which apparently happens to be the cost of the land. For the purposes of this study, we are assuming that the down payment is zero, because the amount of mortgage grant initially requested is N12,000 and the amount granted is also N12,000. Moreover, the lack of down payment is because the end-user has already spent a great deal, about N6,000.0 before the household applied for the mortgage. We have also assumed a repayment period of 25 years which is tied up with the economic lifespan of the property (table 8.11). Also included in the input data on table 8.11 are:

(a) amount to rent through affordability income (ARAI), and

Table 8.11   Input Data for Morgage Financing Model

```
PURCHASE INPUT
SALES PRICE                    12000
EXTRA TRANCTION COST            0.03


FINANCING INPUT
 Mortgage Amount               12000
 Interest Rate on Mort.         0.09
 Mort. Term                        25
EQUITY INVEST.(DOWN PAY.)           0

RENT - INCOME INPUT             0.12
INTERVENTION
 Financial Subsidy              0.25



AMT. TO RENT THRO. AFFORD      236.57
AFFORD. @ NORMINAL INCOME     1971.45

ELASTICITY                      0.55
CONSTANT                       -1.40
MKT. RENT                          16
```

(b)   affordability at nominal income;

both of which are brought forward from the earlier model (Appendix 8.2).

8.4.1.2   Modelling of Mortgage Financing

The theoretical foundation for the Mortgage Financing Model is based on Jaffe (1985). It has been adopted in this research to further investigate the affordability level of the target population by using the Lotus 123 program. The main objective of the mortgage financing model is to further assess the affordability level of the most preferred policy option which is S&S Alternative A. The selection process for this policy option is presented in section 8.3.4. In constructing the model, it was attempted to determine the affordability level by examining various interest rates ranging from the adopted rate of 9 per cent down to 3 per cent, while observing the response of the ratio of amount to rent through affordability income and mortgage payment. Table 8.12 is a summary of the ratio generated from this model, while table 8.13 presents the model at 9 per cent interest rate. Using this ratio as the measurement parameter, it was found that the sites and services scheme is only affordable at 3 per cent interest rate (Appendix 8.5 A-F). Invariably, this means that at 3 per cent interest rate the target population can afford 34.33 per cent of their annual income for mortgage repayment[5]. The 34.33 per cent of annual income devoted to mortgage repayment for low income households who earn between N1,500.00 - N5,000.00 per annum is rather high.

8.5   THE LEVEL OF AFFORDABILITY

The findings in the preceding section indicate that the end-user cannot cope with the mortgage repayment at 9 per cent interest rate. At 3 per cent interest rate, the target

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[5]   The higher the ratio (ARAI/Mortgage payment), the higher the amount households can devote to renting or mortgage repayment).

Table 8.12 Ratio Generated from the Mortgage Financing Model.

MORTGAGE AMOUNT	REPAYMENT PERIOD	MORTGAGE INTEREST	EXTENT TO WHICH TARGET GROUP CAN FULFILL MORT. PAYMENT (ARAI*/Mort. Payment) (%)
12,000.00	25	9	19.36
"	"	8	21.04
"	"	7	22.97
"	"	6	25.20
"	"	5	27.79
"	"	4	30.80
"	"	3	34.33

Source: Field Survey, 1990

ARAI*: Amount to Rent through Affordability Income.

Table 8.13 Mortgage Financing Model at 9% Interest Rate

TITLE - MORTGAGE FINANCING ON THE MOST FEASIBLE POLICY OPTION.

PURCHASE INPUT	
SALES PRICE	12000
EXTRA TRANCTION COST	0.03
FINANCING INPUT	
Mortgage Amount	12000
Interest Rate on Mort.	0.09
Mort. Term	25
EQUITY INVEST.(DOWN PAY.)	0
RENT - INCOME INPUT	0.12
INTERVENTION	
Financial Subsidy	0.25
AMT. TO RENT THRO. AFFORD	236.57
AFFORD. @ NORMINAL INCOME	1971.45
ELASTICITY	0.55
CONSTANT	-1.40
MKT. RENT	16

YEAR	BEG. BAL	MORT. PAY.	INTEREST	AMORTIZATION	END BAL.	AFFORD. @ NO A.R.A.I.	A.R.A.I.	A.R.A.I./MORT
1	12000.00	1221.68	1080.00	141.68	11858.32	1971.45	236.57	19.36%
2	11858.32	1221.68	1067.25	154.43	11703.90	1971.45	236.57	19.36%
3	11703.90	1221.68	1053.35	168.32	11535.58	1971.45	236.57	19.36%
4	11535.58	1221.68	1038.20	183.47	11352.10	1971.45	236.57	19.36%
5	11352.10	1221.68	1021.69	199.99	11152.12	1971.45	236.57	19.36%
6	11152.12	1221.68	1003.69	217.98	10934.13	1971.45	236.57	19.36%
7	10934.13	1221.68	984.07	237.60	10696.53	1971.45	236.57	19.36%
8	10696.53	1221.68	962.69	258.99	10437.54	1971.45	236.57	19.36%
9	10437.54	1221.68	939.38	282.30	10155.24	1971.45	236.57	19.36%
10	10155.24	1221.68	913.97	307.70	9847.54	1971.45	236.57	19.36%
11	9847.54	1221.68	886.28	335.40	9512.15	1971.45	236.57	19.36%
12	9512.15	1221.68	856.09	365.58	9146.56	1971.45	236.57	19.36%
13	9146.56	1221.68	823.19	398.48	8748.08	1971.45	236.57	19.36%
14	8748.08	1221.68	787.33	434.35	8313.73	1971.45	236.57	19.36%
15	8313.73	1221.68	748.24	473.44	7840.29	1971.45	236.57	19.36%
16	7840.29	1221.68	705.63	516.05	7324.24	1971.45	236.57	19.36%
17	7324.24	1221.68	659.18	562.49	6761.75	1971.45	236.57	19.36%
18	6761.75	1221.68	608.56	613.12	6148.63	1971.45	236.57	19.36%
19	6148.63	1221.68	553.38	668.30	5480.33	1971.45	236.57	19.36%
20	5480.33	1221.68	493.23	728.44	4751.89	1971.45	236.57	19.36%
21	4751.89	1221.68	427.67	794.00	3957.88	1971.45	236.57	19.36%
22	3957.88	1221.68	356.21	865.47	3092.42	1971.45	236.57	19.36%
23	3092.42	1221.68	278.32	943.36	2149.06	1971.45	236.57	19.36%
24	2149.06	1221.68	193.42	1028.26	1120.80	1971.45	236.57	19.36%
25	1120.80	1221.68	100.87	1120.80	0.00	1971.45	236.57	19.36%

population can afford 34.33 per cent of their income on housing whereas at 9 per cent they can only afford 19.36 per cent. Since the closer the ratio obtained is to 100 the more affordable it is, it invariably means that N12,000 mortgage is more affordable at 3 per cent interest rate than 9 per cent interest rate. This notwithstanding, 34.33 per cent of the target population's income cannot possibly make the required annual mortgage repayment. Moreover, for this income level, the United Nations (1978) proposed and recommended between 8-10 per cent of their annual income as affordable rent (which in this case represents the mortgage repayment). Invariably, by the United Nations recommendation, at 3 per cent interest rate N12,000 mortgage is not even affordable. This is confirmed, by the fact that under section 8.4 above, the target population can only afford 14.19 per cent of the annual rent under the preferred policy option. Whereas with 3 per cent interest rate they require 34.33 per cent of their annual income (table 8.12). Worse still, there is no financial institution that would be willing to grant a mortgage at 3 per cent interest rate, irrespective of the fact that the Nigerian Government has recently proposed 3 per cent interest rate, the mortgage institutions and the commercial banks are still charging an interest rate of between 10 per cent and 20 per cent. The Nigerian Government's proposal of 3 per cent interest rate becomes more unrealistic and unworkable when it is realized that the inflation rate is over 20 per cent which in fact means that the difference between the proposed rate by the Government and the inflation rate is a negative 17 per cent. This means that the real interest rate is supposed to be 17 per cent. Even in Britain, the current interest rate on mortgage is about 11.5 per cent. What this actually means is that the real interest rate in Britain is 9.75 per cent after tax relief on 11.5 per cent and inflation rate of about 5.8 per cent as at May, 1991 (United Kingdom National Accounts, 1989; Central Statistical Office, 1991); while in Kenya, mortgage interest rate is 18 per cent and in Ghana it is 26 per cent (Republic of Kenya - Development Plan, 1989-1993, the P.N.D.C. Budget and Economic Policy for 1990, Ghana). For instance, the inflation rate in Ghana is 25 per cent while the interest rate

is 26 per cent (The P.N.D.C. Budget and Economic Policy for 1990, Ghana). From the comparison above, it could be observed that the Benin situation is far from being normal.

Consequently, it does mean that in Benin City, Government has to further subsidize the sites and services policy option by 6 per cent, a figure obtained by subtracting the affordable interest rate of 3 per cent from the market rate of 9 per cent. In effect, Government has to subsidize sites and services policy option by 6 per cent plus 2.5 per cent financial subsidy already granted in the earlier model, bringing the total subsidy to 8.5 per cent. The question that readily comes to mind at this point is: Can government really bear the burden of 8.5 per cent subsidy on any policy option? The answer to this question is definitely not positive. This becomes more apparent when we realize that the whole analysis in this chapter has been prompted by the fact that the subsidized public housing has failed to meet the housing need of the low income households mainly because the level of subsidy is huge for government to bear and still be able to provide housing for the target population.

What has apparently emerged from this chapter is that the low income households may have to remain in rental accommodation. This is because the low income households cannot cope with the mortgage for only N12,000.00 and Government is not in a position to subsidize the policy option to an affordable level. On account of the foregoing, a likely proposal will be that which advocates a combination of policy measures. The programmes drawn out of such policies have to be planned in such a way that the target population is able to afford a greater proportion of the preferred policy option. This sort of proposal will be examined in detail in the next chapter.

CHAPTER 9

RECOMMENDATIONS AND CONCLUSION

9.1   **SUMMARY OF FINDINGS**

This study has investigated low income housing problems and provision, the role of the Government and the popular sector in Benin City. Within the same framework a sophisticated analysis of the housing policy options being currently operated in Benin was conducted through the use of economic demand models, hedonics, and the present value method. While the hedonic technique has been used as an evaluative and predictive tool for the market mechanism and the policy options, the present value model is used as both an evaluative and assessment tool for the policy options and the affordability levels for the low income households. Using the above two techniques in conjunction with a third one referred to as mortgage financing policy, it became apparent that the most important single constraint in housing provision in Benin City is the level of household incomes vis-a-vis costs of housing. From the research, it is found that the ratio of house price (using Government pricing for the subsidized housing) to annual income for the low income households, for new dwelling units is in the order of 20:1, which is prohibitive[1]. The Benin situation is perhaps only comparable in the literature with that of Kumasi, Ghana where the ratio of house price to annual income is in the region of 12:1 (Tipple, 1987). Consequently, this tends to give an indication of how inefficient and distorted is the Benin City housing market.

The following conclusions were also drawn from the evaluative and assessment techniques:

9.1.1   Inappropriateness of Conventional or Subsidized Public Housing

The conventional housing approach operated through the subsidized public housing is an inappropriate housing policy principally because:

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[1] This is more than 3 times higher than the ratios which characterize Indian and Japanese housing which are deemed quite high (Global Report on Human Settlement, UNCHS, 1986).

(i)   it is not affordable to the low income households due to high standards and perhaps the use of imported building materials which resulted in high development costs.

(ii)   both the high standard and high cost result in limited numbers of housing stock as the Government is unable to mobilize more funds for more units. Therefore, in terms of quantity of output, the policy is one cause of housing shortage.

Consequently, from the point of view of the Government, the policy is too expensive to operate, especially in the face of many competing needs; even though it is quite beneficial to the few households who are lucky enough to participate in the programme.

(iii)   A number of inputs within the housing process, including land, finance, building materials, building codes and regulations, etc., have acted singly or in combination as a major constraint to the efficient and successful implementation of the policy.

(iv)   Finally, and most significantly, is the fact that the subsidized public housing is adopted as a policy without actually matching the objectives with the available resources. In other words, this policy is formulated without actually evaluating the target population's ability to pay and the general government resources in relation to other demands. This is indeed one of the reasons why it is often a failure.

9.1.2   Inappropriateness of upgrading because of the discriminating manner in which it is practised in Benin City

Although the upgrading scheme was found to be affordable by the low income households, the type currently used in Benin City (incremental renovation) is restricted to home-owners, therefore, this policy option is equally inappropriate since it discriminates against tenants and new-comers.

9.1.3 Long-term Benefit of Sites and Services

Although the sites and services may not necessarily benefit the end-users in the short run, it could benefit them in the long run. However, it is not as affordable as most people would have liked it to be, particularly in its present form. An appropriate set of parameters such as the reduction of plot size and the size of dwelling unit, which may probably lower the cost of construction, is likely to make it more promising than any other policy option evaluated in this study. This is because a good proportion of the low income households could participate in the programme thus making the production of more housing feasible. However, it does appear that the success of operating the sites and services scheme as a policy option would depend largely on the success of control imposed on housing input market discussed in chapters 3 and 4.

9.1.4 Reliance on the Popular Sector Housing

Another interesting area which this study has highlighted is the extent to which the system relies on the private market to supply housing to the low income households. As stated in chapter 3, this is found to be between 90 and 95 per cent of the total stock of housing in Benin City. It is common knowledge, and a striking factor about housing development and thus housing policy, that the private sector grows very rapidly. In Britain, for instance, the various private sectors contribute over 66.6 per cent of the total housing stock, and although there has been a major shift in the balance between private renting and private owning, the public sector grows proportionately quite slowly (Social Trends, 1991). This fact has been demonstrated to be true of Benin city housing industry in this study. It is therefore imperative that for housing, Government must consider market behaviour to a far greater extent than is the case with other social services; although it is always argued that much of this market behaviour is greatly influenced by Government interventions. Perhaps, the time has come when these Government

interventions have to be positively oriented rather than the current negative effects which they have had on housing. Considering the huge housing shortage which exists in Benin City and the fact that the low income household can only afford 3 per cent interest rate on mortgage, it becomes obvious that the current housing situation requires a radical re-direction of policy. This re-direction has to do with equity and efficiency in the distribution of national or state resources. Chapter 4, section 4.1 discussed this issue in greater detail. The issue of equity and efficiency in national resources, especially as related to housing development, has greater credence when we consider the new housing policy in Nigeria whose goal is "to ensure that all own or have access to decent housing accommodation at affordable cost by the year 2,000 A.D." (The Guardian, Monday, February 25th, 1991, p.11). Based on the preceding section, it is therefore essential to suggest some policy formulation strategies which are likely to bring the suggested equity distribution in housing.

9.1.5 The Application of a Micro Software to the Analysis of Hedonic Technique

The application of Modified Davis Fortran program to the analysis of hedonic technique is a major finding and contribution of this study. As shown in chapter 7, section 7.4.2.2., modified Davis's Fortran Program is a micro software which can be used for the analysis of hedonic techniques in developing countries. This is advantageous because this program can be easily accessible to most housing analysts in developing countries for the analysis of the hedonic model which hitherto has been analysed by a large computer software (SPSSX) which is not easily accessible to people in the developing countries where advanced technology is still in its infancy, and the cost of these high technology is prohibitive.

9.2   **HOUSING POLICY FORMULATION STRATEGY**

In chapter 2, it was discovered that policy formulation strategies were based on a rule of thumb and this has proved to be disastrous as far as low income housing provision is concerned. Therefore there is an absolute need for a clear-cut, well-defined housing policy formulation strategy. Housing policy formulation strategy is defined in the context of this study, as a plan identifying in operational terms a course of action through which the goals set in the housing policy could be attained. Therefore, in housing policy formulation, it is always essential to identify the target population, their appropriate number and their most severe needs or problems. When this is known, it would then be necessary to access and decide the kind of methods and tools required or needed to improve their situation. For instance, which of the following would be the best methods:

(a)   To demolish the present housing stock and replace it with new,

(b)   To improve, rehabilitate and upgrade? or

(c)   To adopt a completely new approach such as;

    (i)   to improve the financial system,

    (ii)   to give assistance and training to self-help builders,

    (iii)   to provide them with a secure tenure, a serviced plot, etc., or

    (iv)   to combine some of these items?

In order to attain or achieve given goals, the formulation of a strategy must be a comprehensive exercise in which the priority needs are identified on the grounds of a proper overall view of the resources available. Even in this, it appears as if the only solution to the housing problem of the low income households is to adopt an incremental approach both in the planning and implementation levels. This again may not provide all the solutions to the problems as management of resources such as land requires comprehensiveness in planning and implementation. This, however, means that different tactics should be applied at different levels or stages and in different localities. Perhaps flexibility is required in certain projects and this should be guided by a consistent plan.

9.2.1   The Use of Strategic Planning and the "Matching Principle"

Quite often in developing countries in general and Benin City in particular, policies are formulated and projects/programmes started before detailed calculation of needed resources; in other words, using a "rule of thumb". This is not good enough. It does not make for effective execution of policies. It is often argued that long term planning is always a failure; this is perhaps so because the plans are often too detailed and too rigid. Instead, there should be strategic planning which should be continuous and an iterative process which could be revised from time to time. In fact, the core of strategic planning should be "to seek a practical balance between what is desirable (for example in terms of basic health requirements and structural safety), attainable (technically and administratively and using local skills, methods and materials), and affordable by the poor themselves and the nation as a whole" (Berghall, 1987).

The same planning principle could be called the "matching principle", which implies that objectives must be matched with the available resources. Through such a practice, all the available resources would be related to the total need and methods, while tools and standards would be chosen in accordance with the 'matched principle'. The eminent advantage of this kind of procedure is that the tools adopted would meet the scale of the need.

The basic philosophy behind the 'matching principle' is to reverse the conventional approach based on unrealistic objectives. In that way, the final targets on what can be accomplished are estimated on the basis of the resources available. This approach does not advocate high standards for a few people; rather it is suggesting that the needs should be satisfied in some order of priority for all the target populations. The selected policy strategy should be such that wastage is avoided or reduced to a minimum, so that resources are utilized to the fullest. Formulation of a housing policy strategy should be

a bargaining process in which the 'spender' checks all his resources and the possibility to increase them by choosing the most essential tools and methods. Through this new approach being suggested, housing should be viewed not as a product but as a process (Turner, 1976) through which people's residential environment is gradually improved according to the pace stipulated by the inhabitants' circumstances, economy and the nation at large.

9.2.2   Meeting the Quantitative Housing Need

Housing requirements or housing needs are used in this study to express the extent to which housing conditions fall below the levels or norms considered necessary for health, privacy and the development of family living conditions. Housing requirements are closely related to population, number of households, and rates of housing replacement (Struyk, 1988). However, this should not be confused with housing demand which expresses the economic ability to satisfy what is both desired and affordable. It was discovered from chapters 2 and 3 that between 500,000 and 800,000 dwelling units were required annually at the national level to meet the need in 1985. Even if an equal need is assumed for the 21 states of the federation, a total of 23,800 dwelling units would be required by each state in 1985. This invariably means 119,000 and 143,000 dwelling units by 1990 and 1991 respectively. The financial involvement which is estimated at N297 billion and N357 billion approximately (assuming that the cost of a low income dwelling unit based on the subsidized public housing costing is N25,000) is colossal. It is clear from the foregoing that the 'gap' between desired and actual production is enormous.

Therefore, an efficient and effective housing policy which would be able to tackle these problems should focus on both public and private sectors. In other words, there should be a redirection of housing policies from construction and the output housing market

greater improvements in the supply of input housing components such as easy accessibility to land, credit facilities and provision of infrastructure) on the one hand. On the other hand, there should be encouragement and easy conditions for the development of private input industries. Emphasis on these areas is likely to be more appropriate. The role of private organisations, companies and the target population themselves should equally be tapped or considered in this radical change or re-direction of policy.

As a means of achieving the above, a careful assessment of what the target population would prefer if they have the choice has to be made. This will enhance effective formulation and implementation of the new re-direction of the policy being advocated.

9.2.2.1 People's Perception of their Housing Need

In order to find out from the people what they would want the government to provide for them, a number of choices were provided in the questionnaire (Appendix 5.1). Out of the 387 and 127 households interviewed in the popular and public sectors respectively, 31.6 per cent and 26.4 per cent respectively wanted a dwelling unit/flat/house from the government; while another 31.6 per cent and 27.3 per cent respectively wanted only a mortgage loan. Figure 9.1 and appendix 9.1 present details of the remaining choice as indicated by the people. What has come out clearly from the people's choice is that, although it has been shown in this study that it is not profitable for the Government nor affordable by the people for Government to continue with the policy of subsidized public housing (or conventional housing policy), a change away from this provision does appear to be popular among the households interviewed. The reason for this preference is likely to be because of the present economic recession which has made housing construction cost to be prohibitive while wages are still very low (see section 9.1). Moreover, the state is seen by people as a great benefactor and they have got into the habit of expecting

PERCENTAGES

Fig.9.1 CHOICE OF POLICY OPTION

POLICY OPTION

PUBLIC

POPULAR

Dwelling Units

Core House (Only)

Serv. Plot + Mort. Loan

Mort. Loan (Only)

Serv. Plot (Only)

Nothing From Gov.

POLICY OPTION
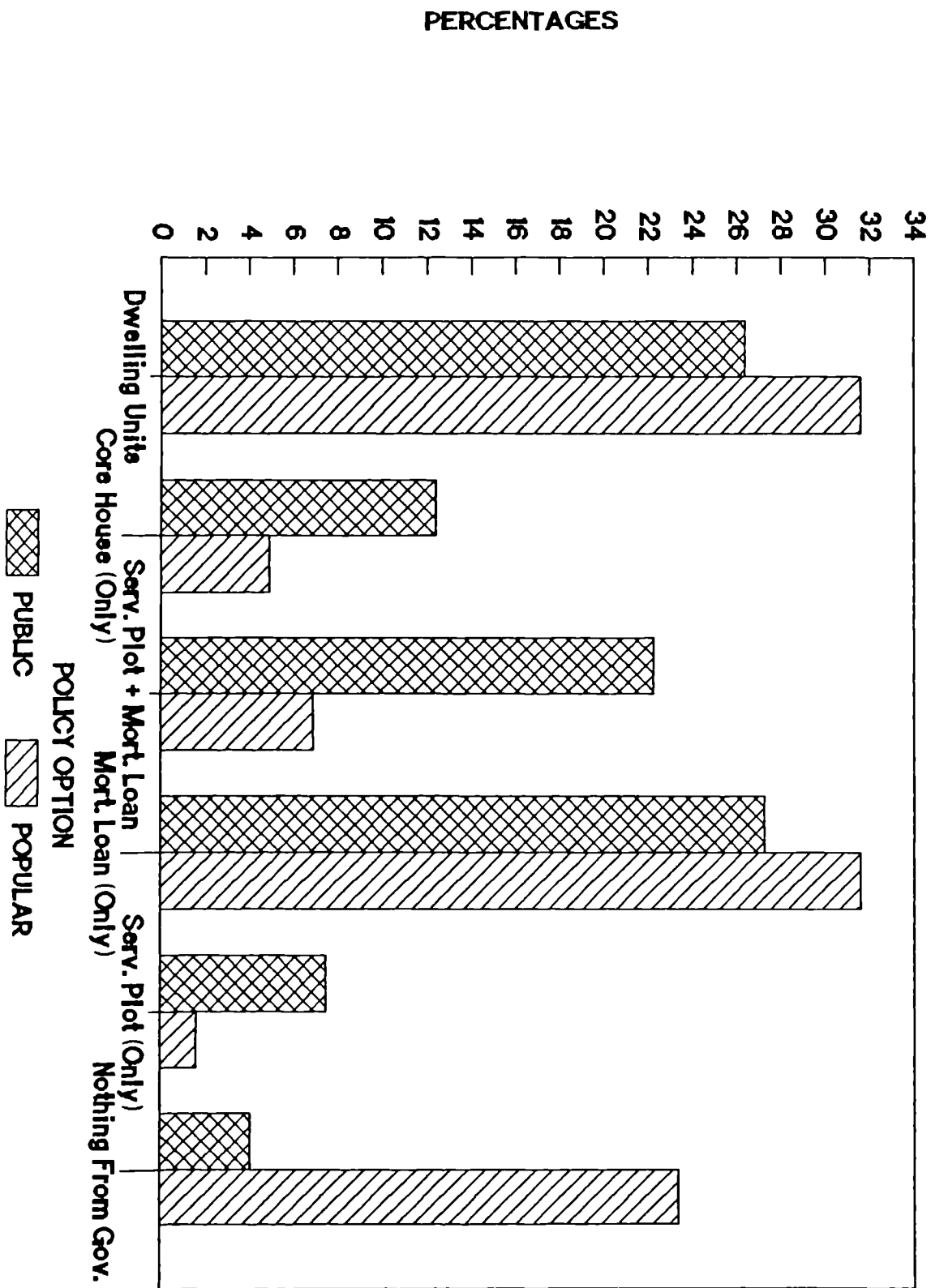
Government to provide. Thus a number of the low income households probably feel that their only hope of ever owning a dwelling unit is through Government allocation from conventional housing (subsidized public housing). Another reason is that the low wage of the low income households which, as a result of the economic recession, is hardly enough for daily needs. For instance, in a situation such as in Benin where over 50 per cent of the household's monthly income and a mean of 50 per cent of the household's head income is spent on food, it will be difficult to afford housing. This situation is, however, not unique to Benin. In Kumasi, Ghana, for instance, a mean of 68 per cent of the household's income is spent on food (Ghana Living Standard Survey, 1989).

In spite of the people's preference, there has to be a delicate balance between what the people prefer and what government has resources to provide. The only way to achieve this is to examine what the people can actually afford. In other words, by the time the effective demand is determined, matched with both the original requirement and the people's preferences, then the kind of policy which may seem realistic and desirable may start to emerge.

9.2.2.2   Affordability

Earlier in this chapter, it has been shown that policy formulated on requirement alone, without basing it on affordability, cannot be effectively implemented. It has equally been demonstrated in chapter 8 that the most realistic and desirable policy option is that which is based on the affordability level. Thus, although the people seem to prefer conventional housing and the grant of a subsidized mortgage loan, the only housing requirement affordable by the people is the sites and services scheme. Because the sites and services scheme is apparently not as affordable as desired, it is therefore being recommended that the following measure should be taken in order to make it affordable:

(a)   The size of the plot currently used - 30m x 15m (450 m^2) - could be reduced to 20m

x 20m (400m^2), and 20m x 12.5m (250m^2) and 20m x 10m (200m^2) respectively[2].

These sizes have been recommended because evidence exists from other projects

that people are happy with these plot sizes. For instance, when some of the

households were interviewed (Appendix 5.1b) they indicated that they would

accept smaller plot sizes provided they are serviced and mortgage loans are made

available to construct the houses. One of the respondents said "I can accept any

plot size provided I am granted a mortgage loan to build the house." Another

respondent said, "It is not the size of the plot that is my problem, it is owning a

house that I am worried about."

9.3   RECOMMENDED POLICY OPTION

The revised sites and services option is being recommended. This is because if modified,

the scheme would become affordable to over 60 per cent of the population, provided

Government is able to implement the mortgage loan scheme, and reform the land policy

in such a way that land is easily accessible to the low income households.

For the suggested revised sites and services to be effective and make an impact on low

income housing provision, a number of parameters which form basic components of

housing which include land, infrastructure, finance, etc., must be reviewed.

In chapter 7, four main physical characteristics were identified to have influence on rent.

These characteristics include:

(a) availability of water supply,

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[2]   It is also known that most of the World Bank funded housing projects in Nigeria such
as in Owerri, Aba and Umuahia (Imo State) are normally based on plot sizes within
200m^2, 240m^2, 250m^2 and 300m^2. Investigation shows that the size of the plots
notwithstanding, people are always scrambling for allocation under these projects
(PIU, Project Inspectorate Unit, World Bank, Owerri Imo State, Nigeria, 1989)

(b) availability of electricity,

(c) number of rooms and

(d) condition of access roads to the dwelling unit.

What this apparently means is that any dwelling unit which is serviced with a, b, and d is likely to attract higher rents than dwelling units either without these services or moderately serviced. Logically, dwelling units with these characteristics would be more expensive to build or construct than those without the services or moderately serviced; depending, of course, on the type of building materials used and the nature of the finishing. Therefore, to revise the sites and services scheme each one of these parameters or characteristics must be re-examined. Already, reduction of plot size from 450 m² used in the original model to 400 m², 300 m², 250 m², and 200 m² have been suggested. This indirectly would cater for the rooms which may not change in number but the sizes of which have to alter as the entire plot size has changed. Invariably, it is hoped that the reduction in the sizes of plots recommended would, in turn, result in the reduction in the cost of the land. For instance studies conducted in Mexico, Botswana and Burkina Faso have shown that reduced plot sizes below those of conventional public housing programmes can reduce project cost considerably (World Bank, 1978(c), 1978(h) and 1978(i) as cited in World Bank, 1979). The Owerri, Aba and Umuahia projects (all in Nigeria) cited in the preceding section have reflected a 30 per cent reduction in cost of construction mainly because of the plot sizes.

In addition to the reduction of plot sizes, construction cost of dwelling units should be further reduced by the following measures:

(i)   registration cost - total elimination is suggested.

(ii)   Land use and building regulation plan approval - 25 per cent reduction in cost.

     (iii)   floor area ratio - 33.3% and 50% reduction in size (this is

derived from reducing the original area ratio of 0.5 to 0.25)

The rationale behind total elimination of registration cost suggested in (1) above is

because the researcher is of the view that progressive taxation should be introduced into

titling and land registration. It is being suggested that the cost of titling land,

registration and stamp duty for the low income households should be waived. At the

same time, that cost can be recovered by the Government by increasing the cost of titling

for medium and upper income groups. An amount of N500 for residential building plan

approval has often been frowned upon by the public especially the low income households.

The suggested reduction of 25 per cent brings it to N400 per residential building plan.

Similarly, the reduction of the floor area ratio by 33.3 per cent and 50 per cent is justified

particularly with the reduction of the plots to the suggested various sizes.

In addition to the reduction in the size of plots, floor area ratio and the elimination of

registration fee, it is equally suggested that a further reduction be made on the cost of

providing infrastructure. Although, in our earlier model, the cost of infrastructure to the

site is included in the cost of land, the researcher feels that it is necessary to further

reduce the cost of providing infrastructure. This is because communal water points could

be provided. A stand pipe for every 1-5 plots and 6-10 plots, i.e., between 5 and 25 and

30 and 50 people (assuming a plot is occupied by a household with an average household

size of 5) would probably be ideal to start with. A World Bank study conducted by

Warford and Julius (1977) in the Yemen Arab Republic indicate that the average cost of

communal stand pipes fell in the range of $30 to $50 for individual plots. As the

households improve their economic status or as they re-order their priorities, they could

connect water to their plots and eventually the dwelling units. However, the initial

provision for water mains must be connected to both sides of the streets in order to avoid

damage on the roads later on when the households begin to connect to the individual

homes.

The level of reduction of the cost of these parameters would, however, depend ultimately on the level of affordability by the households within the target population. This can only be determined by using the data generated from the modified sites and services model to construct and run a mortgage financing model. It is hoped that through this process, it would be possible to access the amount of mortgage different households in different income grades within the target population would be able to afford. This exercise is necessary because the target population can afford the sites and services scheme if a mortgage scheme is incorporated into the programme. A number of Alternative Mortgage Financing models have been constructed. While most of the input data remain constant, the size and cost of land, the amount households would be able to afford to devote to mortgage per annum (referred to as amount to rent through affordability), the affordable income, and, of course, the interest rate will continue to vary.

Before simulating the mortgage financing model it is important to highlight certain basic issues which resulted from the sites and services model constructed earlier.

(a)   The nominal annual gross rent for the target population generated from the model is N576. (i) this is 12 per cent of N5,000 (which is the upper limit of the annual income of the target population as defined by the study); and (ii) 28 per cent of N2,000[3] (the lower limit of the annual income of the target population).

(b)   From the same model, it was indicated that the target population can only afford N236.57 for rent per annum. This is 41 per cent of N576.

However, N236.57 is 5 per cent of N5,000, and 12 per cent of N2,000. These figures discussed in the preceding paragraph were based on the assumption that the cost of the plot and infrastructure is N12,000 (which is the mortgage amount). Now that certain

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[3]   Although we have earlier on defined the target population to mean households between N1,500 to N5,000 per annum, our model indicated a lower limit of N1,971.57 which we have approximated to N2,000.

recommendations towards reducing the cost of mortgage have been made, the researcher then conducted a number of sensitivity analyses using both the upper and lower limits incomes per annum for the target population, in order to determine the amount of mortgage which 100 per cent of the target population in these income grades can afford.

For those households on N5,000 per annum, four different analyses on the mortgage financing models were constructed as follows:

9.3.1   RECOMMENDED POLICY ALTERNATIVES

9.3.1.1   ALTERNATIVE A

The model constructed under this alternative, assumes that the households would be able to afford the following:

(i)   reduction in the size of land - 33.3%

(ii)   further reduction in cost of infrastructure - 13%

(iii)   that the household is prepared to spend 12% of their annual income for rent or mortgage.

The effect of (i) and (ii) above is:

(i)   size of land - 300m^2 instead of 450m^2

(ii)   cost of land per metre - N23 (no change from the original cost)

(iii)   cost of 300m^2 at N23 ie N6,900 - N900 for extra reduction on infrastructure cost = N6,000.

The other input data for this alternative is presented on table 9.1. The mortgage financing model generated from the above is presented as appendix 9.2. Table 9.2 summarizes the evaluation results through a series of sensitivity analysis ranging from 9 per cent interest to 3 per cent.

Table 9.1   Input Data from which the Recommended Mortgage Financing
Model Alternatives have been Derived as some Inputs are Varied.

INPUT DATA

DISCOUNT RATE (%)	0.13
INFLATION RATE	0.15
COSTS	
Land price	23
Lot Size	300
CONST. COST	100
Unit in Structure	3
Floor Area Ratio	0.5
Number of Years bf Sale	10
Depreciation Rate (%k)	0.04
Maintenance Rate (%k)	0.025
Extra Tranction (%sp)	0.03
PRICES	
Mkt Rent (SPH)	31.82
RELATIVE PRICE CHANGES	
Wage	0.025
Land	0
Structure	0
Rent	0
INTERVENTIONS	
Registration	0.02
Land Subsidy	0.01
Landuse & Blgd.Reg.	400
Tax Rate	0.03
Property Tax (%k)	0.03
Management Fee (%k)	0.05
Financial Subsidy	0.025
DEMAND	
Rent/Income	0.12
Elasticity	0.55
Constant	-1.4
POLICY OPTION	
Cost of S & S	6000
Selling Price (S & S)	6000
Mkt Rent (S & S)	8

Table 9.2   Summary of Evaluation Results from Mortgage Financng Model for

Alternative A for Target Population with N5000 Income per Annum

Prepared to Pay 12% of their Income for Rent.

MORTGAGE INTEREST RATE	AFFORDABILITY RATIO
9	98.23
8	106.75
7	116.54
6	127.83
5	140.94
4	156.22
3	174.13

Source: Field Survey, 1990

Note: Mortgage Amount - N6000

Income per Annum - N5000

Amount devoted to Mortgage Repayment or Rent is 12% of N5000 - N600

Table 9.2 indicates that if households earning N5000 per annum are willing to devote 12 per cent of their income to rent or mortgage, they will be able to afford N6000 mortgage grant at 9 per cent interest rate.

9.3.1.2   ALTERNATIVE B

The mortgage financing model generated under this alternative is based on the assumption that these households, although earning N5,000 per annum would probably be able to afford the following:

(a)   reduction in size of land - 11 per cent.

(b)   further reduction in infrastructure - 13 per cent.

These reductions indicated on (a) and (b) have resulted in:

(i)   size of land - 400 m^2 instead of 450m^2

(ii)   cost of land per metre - N23 (no change from the original cost)

(iii)   cost of 400 m^2 = 9200 - 1200 for further reduction in infrastructure = 8000

The amount of mortgage required is therefore N8000.

Similar to Alternative A, the remaining input data is derived in the same way as in table 9.1. The difference between the data input for Alternatives A and B is that the plot size has increased from 300m to 400m which affects the cost. The mortgage financing model generated indicates that N8,000 mortgage would only be affordable by these households at 9 per cent interest rate if the households are prepared to spend 16.5 per cent or 17 per cent of their income for rent or mortgage payment. Tables 9.3 and 9.3B show the models generated, while table 9.4 presents the summary of the sensitivity analysis for both the percentage income the households are prepared to spend on mortgage and the mortgage interest rate ranging from 9 to 3 per cent.

Table 9.3 Recommended Mortgage Financing Model for Alternative B for Households whose Annual Income is N5000, Prepared to Pay 16.50% of Their Income for Mortgage at 9% Interest Rate

TITLE - MORTGAGE FINANCING ON THE MOST FEASIBLE POLICY OPTION.

PURCHASE INPUT	
SALES PRICE	8000
EXTRA TRANCTION COST	0.03
FINANCING INPUT	
Mortgage Amount	8000
Interest Rate on Mort.	0.09
Mort. Term	25
EQUITY INVEST.(DOWN PAY.)	0
RENT - INCOME INPUT	16.50%
INTERVENTION	
Financial Subsidy	0.25
AMT. TO RENT THRO. AFFORD	825
AFFORD. @ NORMINAL INCOME	5000
ELASTICITY	0.55
CONSTANT	-1.40
MKT. RENT	69

YEAR	BEG. BAL	M RT. PAY.	INTEREST	AMORTIZATION	END BAL.	AFFORD. @ NO A.R.A.I.	A.R.A.I.	A.R.A.I./MOR
1	8000.00	814.45	720.00	94.45	7905.55	5000.00	825.00	101.30%
2	7905.55	814.45	711.50	102.95	7802.60	5000.00	825.00	101.30%
3	7802.60	814.45	702.23	112.22	7690.38	5000.00	825.00	101.30%
4	7690.38	814.45	692.13	122.32	7568.07	5000.00	825.00	101.30%
5	7568.07	814.45	681.13	133.32	7434.74	5000.00	825.00	101.30%
6	7434.74	814.45	669.13	145.32	7289.42	5000.00	825.00	101.30%
7	7289.42	814.45	656.05	158.40	7131.02	5000.00	825.00	101.30%
8	7131.02	814.45	641.79	172.66	6958.36	5000.00	825.00	101.30%
9	6958.36	814.45	626.25	188.20	6770.16	5000.00	825.00	101.30%
10	6770.16	814.45	609.31	205.14	6565.03	5000.00	825.00	101.30%
11	6565.03	814.45	590.85	223.60	6341.43	5000.00	825.00	101.30%
12	6341.43	814.45	570.73	243.72	6097.71	5000.00	825.00	101.30%
13	6097.71	814.45	548.79	265.66	5832.05	5000.00	825.00	101.30%
14	5832.05	814.45	524.88	289.57	5542.49	5000.00	825.00	101.30%
15	5542.49	814.45	498.82	315.63	5226.86	5000.00	825.00	101.30%
16	5226.86	814.45	470.42	344.03	4882.83	5000.00	825.00	101.30%
17	4882.83	814.45	439.45	375.00	4507.83	5000.00	825.00	101.30%
18	4507.83	814.45	405.71	408.74	4099.09	5000.00	825.00	101.30%
19	4099.09	814.45	368.92	445.53	3653.56	5000.00	825.00	101.30%
20	3653.56	814.45	328.82	485.63	3167.93	5000.00	825.00	101.30%
21	3167.93	814.45	285.11	529.34	2638.59	5000.00	825.00	101.30%
22	2638.59	814.45	237.47	576.98	2061.61	5000.00	825.00	101.30%
23	2061.61	814.45	185.55	628.90	1432.71	5000.00	825.00	101.30%
24	1432.71	814.45	128.94	685.51	747.20	5000.00	825.00	101.30%
25	747.20	814.45	67.25	747.20	0.00	5000.00	825.00	101.30%

Table 9.3B   Mortgage Financing Model for Alternative B for Households with an Annual Income of N5000 Prepared to Pay 17% of their Income for Mortgage at 9% Interest Rate

TITLE - MORTGAGE FINANCING ON THE MOST FEASIBLE POLICY OPTION.

PURCHASE INPUT
SALES PRICE 8000
EXTRA TRANCTION COST 0.03

FINANCING INPUT
Mortgage Amount 8000
Interest Rate on Mort. 0.09
Mort. Term 25
EQUITY INVEST.(DOWN PAY.) 0

RENT - INCOME INPUT 0.17
INTERVENTION
Financial Subsidy 0.25

AMT. TO RENT THRO. AFFORD 850
AFFORD. @ NORMINAL INCOME 5000

ELASTICITY 0.55
CONSTANT -1.40
MKT. RENT 71

YEAR	BEG. BAL	MORT. PAY.	INTEREST	AM RTIZATI N	END BAL.	AFFORD. @ NO A.R.A.I.	A.R.A.I.	A.R.A.I./MOR
1	8000.00	814.45	720.00	94.45	7905.55	5000.00	850.00	104.36%
2	7905.55	814.45	711.50	102.95	7802.60	5000.00	850.00	104.36%
3	7802.60	814.45	702.23	112.22	7690.38	5000.00	850.00	104.36%
4	7690.38	814.45	692.13	122.32	7568.07	5000.00	850.00	104.36%
5	7568.07	814.45	681.13	133.32	7434.74	5000.00	850.00	104.36%
6	7434.74	814.45	669.13	145.32	7289.42	5000.00	850.00	104.36%
7	7289.42	814.45	656.05	158.40	7131.02	5000.00	850.00	104.36%
8	7131.02	814.45	641.79	172.66	6958.36	5000.00	850.00	104.36%
9	6958.36	814.45	626.25	188.20	6770.16	5000.00	850.00	104.36%
10	6770.16	814.45	609.31	205.14	6565.03	5000.00	850.00	104.36%
11	6565.03	814.45	590.85	223.60	6341.43	5000.00	850.00	104.36%
12	6341.43	814.45	570.73	243.72	6097.71	5000.00	850.00	104.36%
13	6097.71	814.45	548.79	265.66	5832.05	5000.00	850.00	104.36%
14	5832.05	814.45	524.88	289.57	5542.49	5000.00	850.00	104.36%
15	5542.49	814.45	498.82	315.63	5226.86	5000.00	850.00	104.36%
16	5226.86	814.45	470.42	344.03	4882.83	5000.00	850.00	104.36%
17	4882.83	814.45	439.45	375.00	4507.83	5000.00	850.00	104.36%
18	4507.83	814.45	405.71	408.74	4099.09	5000.00	850.00	104.36%
19	4099.09	814.45	368.92	445.53	3653.56	5000.00	850.00	104.36%
20	3653.56	814.45	328.82	485.63	3167.93	5000.00	850.00	104.36%
21	3167.93	814.45	285.11	529.34	2638.59	5000.00	850.00	104.36%
22	2638.59	814.45	237.47	576.98	2061.61	5000.00	850.00	104.36%
23	2061.61	814.45	185.55	628.90	1432.71	5000.00	850.00	104.36%
24	1432.71	814.45	128.94	685.51	747.20	5000.00	850.00	104.36%
25	747.20	814.45	67.25	747.20	0.00	5000.00	850.00	104.36%

Table 9.4   Summary of Evaluation Results for Alternative B.

| MORTGAGE INTEREST RATE | AFFORDABILITY RATIOS | |
| | 16.5 % | 17 % |
	(N825)	(N850)
9	101.30	104.36
8	110.88	113.42
7	120.18	123.82
6	131.83	135.82
5	145.34	149.75
4	161.10	165.98
3	174.13	179.57

Source: Field Survey, 1990

Note: Mortgage Amount - N8000

       Income per Annum - N5000

       Amount devoted to

       Mortgage Repayment -   (i) 16.5% of N500 = N825

                                 (ii) 17% of N5000 = N850

9.3.1.3 ALTERNATIVE C

Using the same procedure as in alternatives A and B, the following figures were obtained
for this alternative:

(a)   mortgage amount - 9000

(b)   annual income - 5000

(c)   percentage of income devoted to mortgage repayment

  (i)   17 per cent of 5000 - 850

  (ii)   18 per cent of 5000 - 900

  (iii) 18.5 per cent of 5000 - 925

And table 9.5 summarizes the affordability ratios generated from the models, while
appendix 9.3A-C presents the models. It is obvious from table 9.5 that these households
can only afford a mortgage grant at 9 per cent interest rate if they are prepared to spend
18.5% of their annual income for mortgage.

9.3.1.4 ALTERNATIVE D

Following strictly from the procedures used for alternatives A - C, the main input figures
for this alternative are as follows:

(a)   mortgage amount - 10,000

(b)   annual income - 5000

(c)   percentage of income devoted to mortgage repayment is 20 per cent of 5000
      = 1000

The affordability ratio generated from the mortgage financing model in this alternative
is presented on table 9.6, while the model is shown on table 9.7. From this table
therefore, it has been revealed that those households who earn as much as N5,000 per

Table 9.5   Summary of Evaluation Results for Alternative C.

MORTGAGE	AFFORDABILITY RATIOS		
INTEREST RATES	17 %	18 %	18.5 %
9	92.77	98.23	100.95
8	100.82	106.75	109.71
7	110.06	116.54	119.77
6	120.73	127.83	131.38
5	133.11	140.94	144.85
6	147.54	156.22	160.56
3	165.46	174.13	178.97

Source: Field Survey, 1990

Table 9.6   Summary of Evaluation Results for Alternative D

MORTGAGE INTEREST RATE	AFFORDABILITY RATIO 20%
9	98.23
8	106.75
7	116.54
6	127.83
5	140.94
4	156.22
3	174.13

Source: Field Survey, 1990

Table 9.7   Recommended Alternative D Mortgage Financing Model for Target Population with an Annual Income of N5000 Prepared to Pay 20% of their Income for Mortgage for Mortgage at 9% Interest Rate

TITLE - MORTGAGE FINANCING ON THE MOST FEASIBLE POLICY OPTION.

PURCHASE INPUT

SALES PRICE	10000.00
EXTRA TRANCTION COST	3.00%

FINANCING INPUT

Mortgage Amount	10000.00
Interest Rate on Mort.	0.09
Mort. Term	25
EQUITY INVEST.(DOWN PAY.)	0.00

RENT - INCOME INPUT

INTERVENTION	20.00%
Financial Subsidy	2.50%
AMT. TO RENT THRO. AFFORD	1000.00
AFFORD. @ NORMINAL INCOME	5000.00
ELASTICITY	55.00%
CONSTANT	-1.4
MKT. RENT	83.00

YEAR	BEG. BAL	MORT. PAY.	INTEREST	AMORTIZATION	END BAL.	AFFORD.@ NOM INCOME	A.R.A.I.	A.R.A.I / MORT.PAY.
1	10000.00	1018.06	900.00	118.06	9881.94	5000.00	1000.00	98.23%
2	9881.94	1018.06	889.37	128.69	9753.25	5000.00	1000.00	98.23%
3	9753.25	1018.06	877.79	140.27	9612.98	5000.00	1000.00	98.23%
4	9612.98	1018.06	865.17	152.89	9460.08	5000.00	1000.00	98.23%
5	9460.08	1018.06	851.41	166.65	9293.43	5000.00	1000.00	98.23%
6	9293.43	1018.06	836.41	181.65	9111.78	5000.00	1000.00	98.23%
7	9111.78	1018.06	820.06	198.00	8913.77	5000.00	1000.00	98.23%
8	8913.77	1018.06	802.24	215.82	8697.95	5000.00	1000.00	98.23%
9	8697.95	1018.06	782.82	235.25	8462.70	5000.00	1000.00	98.23%
10	8462.70	1018.06	761.64	256.42	8206.28	5000.00	1000.00	98.23%
11	8206.28	1018.06	738.57	279.50	7926.79	5000.00	1000.00	98.23%
12	7926.79	1018.06	713.41	304.65	7622.14	5000.00	1000.00	98.23%
13	7622.14	1018.06	685.99	332.07	7290.07	5000.00	1000.00	98.23%
14	7290.07	1018.06	656.11	361.96	6928.11	5000.00	1000.00	98.23%
15	6928.11	1018.06	623.53	394.53	6533.58	5000.00	1000.00	98.23%
16	6533.58	1018.06	588.02	430.04	6103.54	5000.00	1000.00	98.23%
17	6103.54	1018.06	549.32	468.74	5634.79	5000.00	1000.00	98.23%
18	5634.79	1018.06	507.13	510.93	5123.86	5000.00	1000.00	98.23%
19	5123.86	1018.06	461.15	556.92	4566.95	5000.00	1000.00	98.23%
20	4566.95	1018.06	411.03	607.04	3959.91	5000.00	1000.00	98.23%
21	3959.91	1018.06	356.39	661.67	3298.24	5000.00	1000.00	98.23%
22	3298.24	1018.06	296.84	721.22	2577.02	5000.00	1000.00	98.23%
23	2577.02	1018.06	231.93	786.13	1790.89	5000.00	1000.00	98.23%
24	1790.89	1018.06	161.18	856.88	934.00	5000.00	1000.00	98.23%
25	934.00	1018.06	84.06	934.00	0.00	5000.00	1000.00	98.23%

annum can only afford a mortgage grant of N10,000 at 9 per cent interest rate if they are prepared to spend 20 per cent of their annual income for mortgage repayment.

9.3.1.5   ALTERNATIVE E

The model developed for this alternative is for the households with an income of N2,000 per annum. This model is constructed on the assumption that these households would be able to afford:

(a)   reduction in size of land - 44 per cent

(b)   further reduction in the cost of infrastructure - 33.3 per cent

Similar to the earlier alternatives, these reductions have resulted in:

(i)   size of land - 250 m^2 instead of 450 m^2

(ii)   cost of land per metre - 23 (no change from the original cost)

(iii) cost of 250 m^2 = N4,600 - N1,750 (extra reduction cost) = N4,000.

Similar to the earlier alternatives, this alternative is then modelled using N2,500[4], N3,000 and N4,000 mortgage grant respectively.

The results obtained from these models are as follows:

(a)   These households on N2,000 per annum can afford N2,500 mortgage grant at 9 per cent interest rate if they are prepared to spend 13 per cent (N260) of their annual income for mortgage repayment.

(b)   Similarly these households can afford N3,000 mortgage grant at 9 per cent interest rate if they are prepared to spend 15.5 per cent of their annual income for mortgage repayment.

(c)   Finally, these households can only afford up to N4,000 mortgage grant at 9 per cent if they are willing to pay 20 per cent of their income for

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[4]   These amounts were derived by further reducing the size of plot by 50 per cent and cost of infrastructure by 47 per cent and 49 per cent respectively.

mortgage repayment. Appendix 9.4^{A-C} present the models for Alternative E (a-c above).

9.3.1.6 Summary

(a) In compliance with the National Housing Policy, 20 per cent of the target population's annual income has been adopted as the upper limit which households can afford for housing. While some households within the target population can easily afford more than this percentage for housing, a good proportion of the households are likely to be unable to afford it.

(b) From the analysis, it is obvious that the households with annual income of N5,000 can afford a mortgage grant of N6,000, N8,000, N9,000 and N10,000 at 9 per cent interest rate depending on how much they are prepared to spend for mortgage repayment (fig. 9.2).

(c) Similarly, households with annual income of N2,000 can afford N2,500, N3,000 and N4,000 depending on how much they are willing to spend for mortgage repayment.

From the summaries displayed in (b) and (c) above, it has been demonstrated that this type of analysis would offer a useful yardstick for assessing and measuring how much mortgage grant households in different income groups can possibly afford under a given interest rate. Secondly, the mortgage financing models constructed in alternatives A-E have re-emphasized the earlier finding that not every household within the target population would be able to afford a dwelling unit. Therefore these households have to remain in rental accommodation. The implication of this on housing policy is that provision must be made for them so that they may be able to afford the rent from the popular/private sectors. The best method of achieving this is to have an effective input market.
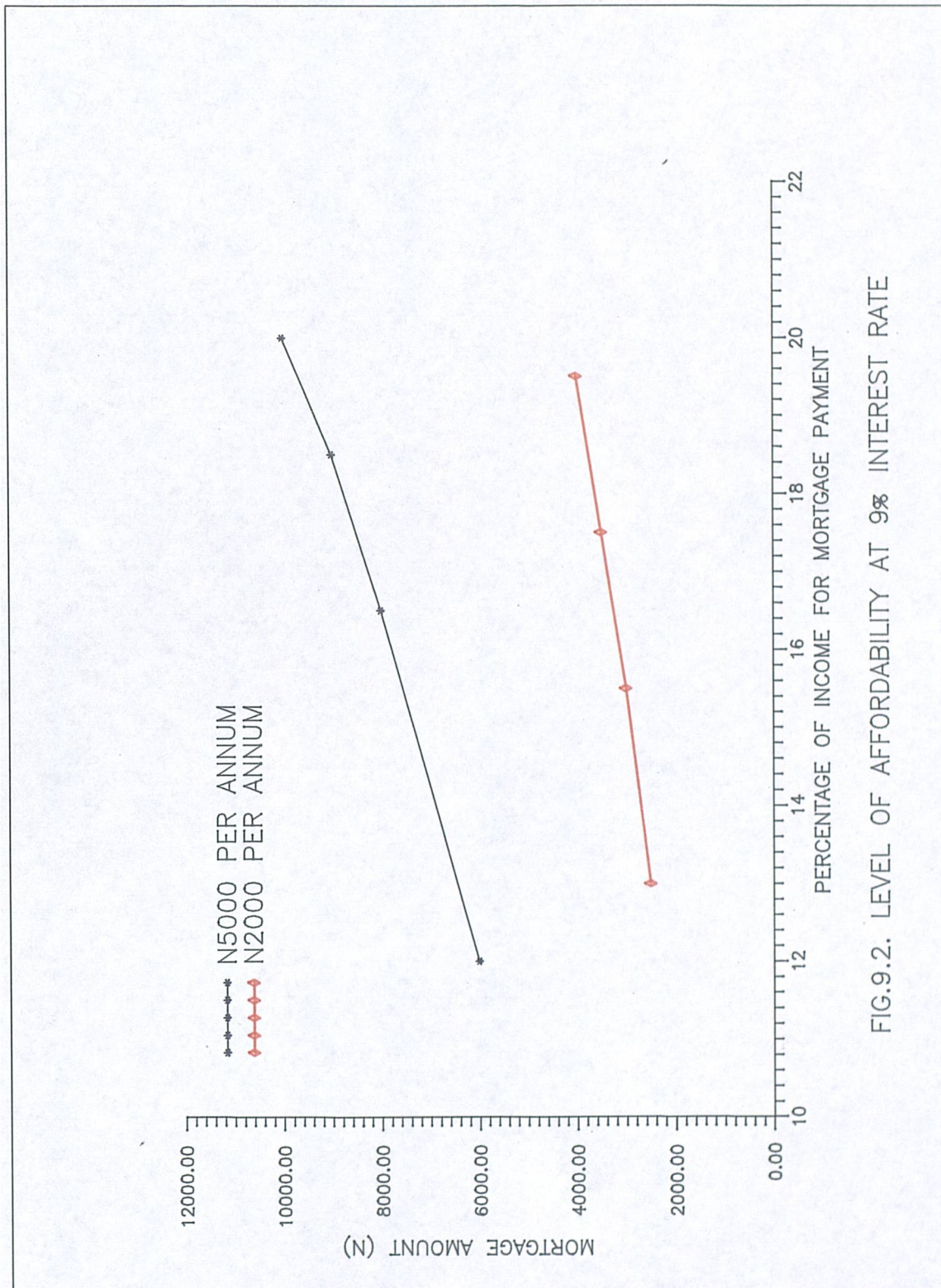
FIG.9.2. LEVEL OF AFFORDABILITY AT 9% INTEREST RATE

The sites and services policy option recommended cannot be implemented only on the basis of the modifications discussed in section 9.3. A successful policy requires more input. Throughout the study, it has been identified that the imperfection or failure associated with the housing market mechanism in Benin City is one of the major problems in low income housing provision. In chapter 4, section 4.1, it was equally shown that only equitable and efficient distribution of national resources could give rise to social welfare. The housing input components including land, finance, building codes and regulations, etc., act as distortions, constraints and bottlenecks to low income housing provision. Ineffective co-ordinated use of human resources equally contribute to the problems and result in inefficient delivery systems. Therefore, it is necessary to suggest ways and means to eradicate these constraints and bottlenecks to enable the effective implementation of the sites and services schemes. Towards achieving this the production process should be the sole duty of the private sector while the input market should be the major concern of the Government.

9.4   Recommendation for Various Housing Components

9.4.1   Land Resources

"Land is the foundation of shelter, food, work and a sense of nationhood. Land is therefore inseparable from the concept of a civil society and it is inseparable from social and economic relationships within that society. Policies about land are policies about society, how it shall be organised, and governed and what relationship there shall be between the different groups and peoples in society. Land policies then must be all-embracing and cannot be based on any assumption that some land relations are of little or no account and others are the 'correct' ones because this is tantamount to saying that some groups or people are of little or no account and others are the preferred ones" (McAuslan, 1987, p.41). Unfortunately, it seems that the land policy in Nigeria currently

is based on the assumption that some land relations are of little or no account and others are the 'correct' ones. It is that land policy which advocates complete public ownership and control of land. This is not only common in socialist land policies, it is equally a feature of colonial land regimes. It is a land regime modelled on a former colonial pattern[5]; as well as reflecting a feature of strict Islamic land regimes.

Nigeria is a heterogenous society, comprised of Moslems and Christians as well as atheists and observers of local religions. It is a society with diverse culture and traditions and treating land as a commodity with only one dimension is sure to create disputes, confusion and in fact lack of implementation of such a policy. This is indeed what has happened in the Nigerian land policy. Government declared the Land Use Decree in 1978 with an aim to make land available to all Nigerians. Incidentally, this land policy has failed to recognise differences within the society, it failed to realise that land is a multi-dimensional commodity. Therefore the policy has so far been a failure, at all levels. Thus Government still has not been able to distribute affordable land for housing low income households because of the problems mentioned in the preceding sentence and thus inefficient implementation mechanism.

The main points which this study is trying to highlight, therefore, is that whether a state adopts a basic human needs strategy of development or a more market orientated strategy to overcome problems of poverty and underdevelopment, the cultural place of land in the development process should be acknowledged on both sides. Attention should be drawn to the economic, the anthropological, the political and the developmental aspects of land. It has to be acknowledged that land is multi-dimensional and this should be reflected in land policy. According to McAuslan (1987), there are at least two basic approaches to land:

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[5] For example, Northern Nigeria had the land and the Native Land Ordinance 1912. This was the forerunner of the Land Tenure Law 1962, which in turn provided the model for the Land Use Act, 1978 (Omotola 1982).

(a) as a part of the social relations between people and society, and land is also part of the religio-cultural syntax of many traditional religions - the abode of the ancestors, etc, the locus of loyalty.

(b) as a part of economic relations between persons and persons in society.

Unless recognition is accorded to both approaches it will be difficult to formulate coherent land policies. There are three main factors which overlap and share the same space which must be recognised by policy makers:

(a) Customary land and its regulation via traditional processes - its space is principally but not exclusively in rural society;

(b) unofficial market in land regulated by custom and practice - more dominant in urban and sub-urban areas but gradually growing in rural areas as well;

(c) the modern official land market regulated by statutory codes of law interpreted and applied by professionals and state officials - its space is both urban and rural.

All these factors have a place in any society and any attempt to ignore or eliminate one factor is likely to result in total chaos and confusion.

For a land policy to function adequately, a nation must clearly sort out what the purpose or purposes of its policies are, otherwise it will be difficult to justify or explain particular laws or practices. The components for national interest in land should include:

(a) Efficiency: Land is a scarce community in many societies in general and Nigeria in particular because it is expensive to purchase or because it is controlled by a few people who are happy to see land lie vacant, or because of population pressure, etc. Efficiency in land allocation is, therefore, good for any society and this justifies Government's land policies.

(b)   Equity: is a necessary goal for any form of land policy. Equity means that a fair and reasonable proportion of land is made available to all members of the society. Equity could be argued to be an aspect of efficiency and it could give rise to social and political stability. This is particularly important in the Benin, Nigeria situation as we have already shown in chapter 4, section 4.1 that 'efficiency and equity are the basic tools for social welfare'. Therefore, efficiency and equity should be applied in the distribution of national resources of which land is a major part.

(c)   Certainty: Efficiency and equity are economic and social aspects of land while certainty is a more administrative and legal aspect of land. Certainty can make reality of efficiency and equity.

(d)   The recognition of difference: The existence of different but equally valid approaches to cultures and traditions of land relations in many parts of Nigeria should be recognised and policies framed accordingly. For example, the place of customary land should be affirmed.

Policies must be accompanied by commitment. If customary rights in land, market relations and all the other dimensions discussed above are implemented without commitment, the policy will still not be efficiently implemented. "Policy is one thing and implementation is another" (McAuslan, 1987, p. 23).

While not advocating a total abrogation of the Land Use Decree, it is being suggested that it should be reformed in such a way that the main issues raised in the preceding paragraphs are considered. However, as an interim measure, a better machinery is required for the efficient and effective implementation of the land policy, such a machinery should include:

(a)   The establishment of an interdisciplinary body such as a Land Use Commission to be solely responsible for the Land Use Decree review and

implementation. This Commission should replace the Land Use and Allocation Committee which is politically oriented. The new body should be drawn from various Government establishments and the membership should include professionals such as planners, land surveyors, estate valuers, builders, etc. Such a commission, whose functions would be as stated below, is likely to bring efficiency in the implementation of the Land Use Decree while reducing the red-tape and bureacracy presently inherent within the procedure. The function of the Commission must include:

(i)   To make projections on the quantity of land required to house the households in Benin City with particular emphasis on the low income households.

(ii)   To prepare projections and estimates on capital-investment and cash-flow requirements for acquisition, development (layout, payment of compensation on developments), and disposition of land.

(iii)   To ensure that provision is made for the technical and administrative personnel necessary to execute the policy.

(iv)   To ensure that the number of future households and their affordable housing expenditure is accurately predicted.

(v)   To predict and forecast the distribution of various income groups in Benin City as well as other urban centres in the State.

(vi)   To streamline the criteria for land allocation.

(vii)   To simplify the process of certificate of occupancy and land registration (Holstein, 1987).

(viii) To conduct a comprehensive land survey and land inventory.

To enable the commission to function properly and effectively, Government must work out a mechanism for a short-term bridging fund and a long term sustainable finance. This

is absolutely essential because the commission cannot function efficiently if adequate funding is not made available.

(b) There is urgent need for the preparation of a Structure Plan for Benin City. This would enable Government to plan and manage the growth of Benin City in such a way that appropriately located and serviced land is provided for meeting the low income households' housing need in accordance with their level of affordability and their priorities. When a Structure Plan exists, it would be easy to select areas for sites and services schemes that would consider

(i) easy access to commercial and community centres.

(ii) proximity to employment opportunities.

(iii) cheap and simple connection to infrastructure network (for instance water, electricity, sewage disposal, etc.) (Tallbery and Stockholm, 1983).

(c) All public and private lands which are appropriately located for housing the low income households, and are either left unused or used inefficiently, should be expropriated (U.N., 1980). This land could be planned and made accessible to the low income households. A comprehensive land survey would act as an adequate means of identifying such lands.

(d) Following from the recommendation on (c) above, Government should make it clear that vacant or undeveloped land especially those that are strategically located would be subject to expropriation. While those remotely located but left vacant would be subject to taxation. These penalties would be enforced after leaving the land vacant for 3 years.

(e) Government should develop a method of paying compensation for structures or development on land acquired. Where funds are not available for the payment of compensation in cash, the acquired land should be quickly planned and infrastructure provided so that about 1/5 of that

serviced land could be re-allocated to the original owners as compensation. Through this method, the communities are likely to accept this gesture and not disturb the execution of whatever development is planned for the rest of the land.

(f)   Government should always endeavour to develop such land promptly as this would prevent unnecessary encroachments.

(g)   Government must offer incentives to private developers through easy access to moderately priced serviced land. This is particularly essential in the light of the newly published National Housing Policy which emphasises public participation. It is important to mention that after the land reform, the suggested Commission could still exist except that its functions could be slightly modified.

9.4.2   Ways and Means of Providing Funds for Low Income Housing

The core of an efficient and equitable housing delivery system constitutes institutions and instruments for the mobilisation of financial resources and the extension of long term credit. With concentration of housing need among the low income households who have less access to conventional formal financing mechanisms, the problem of finance assumes a critical role in the development of a policy to resolve housing problems. Lending in small amounts to low income borrowers requires special institutional approaches. In addition to Government actions geared to generating investment and mobilising savings into the housing sector, a broad-based housing investment policy in turn requires a well established housing lending system which will transfer these funds to organisations and households via short term financing for the housing construction process, long term financing for land infrastructure development, and long term mortgage to households for house ownership purposes. The key feature of this system is the operation of the mortgage lending system, the means by which borrowers have access to long term credit

for house ownership purpose. The major housing finance institutions at present are the housing corporations, commercial banks, insurance companies and staff housing schemes for Government and private employers. The following are suggested as the financial policies of Government in respect to the housing finance systems:

(a)   All commercial banks should be required to set aside a sizeable proportion of their loanable funds for lending for residential construction. The United Bank for Africa Ltd., has a housing scheme which it manages directly to the public and the interest rate is very high (about 13 per cent at the time mortgage interest rate by Government Housing Corporations was 8 per cent (1988 figures)). In order to moderate the chargeable interest rate by these commercial banks, all credit allocation for this purpose should be deposited with the Central Bank of Nigeria for onward lending to the Housing Corporations for mortgage purposes.

(b)   The housing corporations should charge differential interest rates to achieve equity and efficiency, for example 8 per cent for owner occupied houses for the medium income and 6 per cent for low income households; both of which are social loans; and 9 per cent for mixed purposes including letting. For large construction industries investing mainly for low income housing for letting or outright sales to low income households, an incentive should be given to them by charging them about 6 per cent interest rate[6]. This would no doubt, encourage a lot of private developers to invest on real estate development. However, non-residential development should attract interest rates of about 13 per cent upwards (commercial loans). In addition to the above, the following policy measures should be introduced towards raising funds for housing:

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[6]   All the interest rates proposed in this paragraph are subject to proportional change depending on what the inflation rate and the Central Bank recommended rate of discount are at any given time.

9.4.2.1   Target Saving

There is great constraint in lending and deposit policies. Therefore, there is a need to consider improving the efficiency of operations. This could be done by lowering the profit margins through the reduction of the spread between deposit rates and loan rates to attract more savings and generate growth. The policy change should include interest rates paid to depositors and lending policies.

9.4.2.2   The Pension and National Investment Trust

This institution which should be Government-owned should be established in each state. The main responsibility for this institution should be the payment of pensions to workers upon retirement from service. All pension funds, both by the Federal and State Governments, should be pulled together under this organisation. Funds raised under this umbrella should be invested on medium and high income housing. Outright sales should be the mode of disposal. Profits raised from this investment should be shared thus:

(i)   50 per cent to the Pension and National Investment Trust.

(ii)   50 per cent to the Housing Corporation that executes the project. Out of this profit, the Housing Corporation should invest 25 per cent on low income housing.

The initial capital of such a fund should be a revolving fund for housing development. The advantage is that this sort of investment will help to preserve the real value of its participants' capital.

9.4.2.3   Finance Through Multi-national Companies

Bendal State is the second largest oil producing state in Nigeria. This could be used to an advantage. These multi-national companies, especially the oil companies, must be

encouraged to invest in housing corporations or private construction companies. If the housing industries both public and private are able to convince these oil companies that low income housing development is profitable and that they (the oil companies) would have 50 per cent of the profit, it is likely that most of the oil companies would gladly participate in financing housing development for the low income households, especially in their areas of operation. Presently, these oil companies invest in infrastructure especially road development in their areas of operation. This is because it enhances their operations. Therefore, if there is evidence to show that investing on housing would not only enhance the productivity of the participants but also that it would be a profitable venture, the oil companies are likely to invest certain percentage of their annual profits (say 2.5 per cent) on low income housing development.

9.4.2.4 Introduce Measures to Make the Housing Corporations More Effective

The financial base of the housing corporations should be reinforced by increasing their capital allocation both in terms of equity and loans. Secondly, the housing corporations should be allowed to borrow money from the Capital Market for the development of housing for the medium and high income groups as well as industrial and commercial estates. The profit realized from such ventures could be partially invested on low income housing. The Bendel Development and Property Authority has experimented in this for some years and it has proved to be a viable venture and it should be encouraged.

9.4.2.5 Mortgage Insurance

The issue of loans and loan repayments assumes a very important position when it comes to a question of an individual or a households having a title to a property. This becomes more relevant when resources are scarce as in the case with the low income households. A property could be lost because of lack of repayment of a loan especially in cases where

the owner of the house dies or loses a job. Where death occurs, the burden to repay the loan is passed to the children who may not be in a position to tackle the problem. In order to avoid such an ugly situation, mortgage insurance companies should be allowed to function. Moreover, if such a body is introduced and made compulsory, the amount often required as down payment of an individual home buyer would reduce. This would no doubt, facilitate increased lending within the reach of the low households.

9.4.2.6   Building Societies

Apart from the Mortgage Bank and some of the housing corporations in Nigeria, there has not been a serious drive towards the mobilization of savings for housing development. The only institution that has attempted to mobilize savings for housing finance is the Lagos State Investment Board (LSIB). In the United Kingdom and the U.S.A. building societies and savings and loan societies respectively play very active roles in generating funds for the provision of housing (Ball, Harloe and Martens, 1988). The Mortgage Bank derives most of its resources from the Government and Government guaranteed sources or loans while the contribution from savings is relatively insignificant. The National Provident Fund, which we have suggested should be managed by a trust, has accumulated over N300 million (Fadawunsi, 1987). This amount could be invested in housing development. Such investment should be guaranteed by the Government. In addition, the State Housing Corporations should have a Housing Finance Company as a branch of each. Funds for such companies could be generated from contributions by insurance companies, Pension and National Investment Trust, special percentage allocation from the various local Government areas, contributions by the oil companies and internally generated funds. The Housing Finance Company is recommended to be under the Umbrella of the Housing Corporation in order to reduce cost of operation. Also operating both establishments under one Executive Officer would enhance coordination and productivity. Private building societies should be encouraged. Such building societies

or boards could finance Government housing projects and could also grant loans to private investors or organisations.

9.4.2.7   The Federal Mortgage Bank: F.M.B.

The operation of the Federal Mortgage Bank needs some improvements. The F.M.B.'s main function is to grant loans to individuals all over the federation. The market area of the F.M.B. is zoned into circles. Thus a client in Bendel State has his desire for a house load tied to the approval of the far away circle office at Enugu, Anambra State (about 200 kilometres away from Benin). The fulfillment of this desire may come down in trickles thereby restricting housing ownership. This process can be simplified by the F.M.B.'s making bulk amounts available to the state housing corporations as loans which in turn can grant the loans to the individual households. This would not create any problems whatsoever as every state in the Federation has a Housing Corporation. The merit of this new proposal is that residents of various states would henceforth look to the States' Housing Corporations for easily obtainable housing finance. Unnecessary delays caused by the F.M.B. or in some cases total denial would be reduced. There is also the advantage of time saving and promotion of healthy rivalry on the part of various states' Housing Corporations.

9.4.2.8   Property Taxation

In most cities in the developing countries, property taxation plays a major role in raising revenue for urban Government. Unfortunately, the revenue potentials of property taxation in Benin City have been totally neglected. It is one source of fund which could be reinvested in low income housing without putting any burden on the low income households. Revenue could be derived from the taxation of land as well as the building itself. Taxation on land has two advantages:

(a)   Because taxation on land would reduce the expected future yield, this in turn reduces the present value, thus lowering land price.

(b)   Taxation on land would compel owners to release vacant land for subdivision and development as they would not want to pay tax on vacant land. Alternatively, it could compel them to develop the land themselves[7]. Taxation has been successfully applied in Taiwan, Senegal and many Latin American countries (Bahl and Lin, 1978). On the other hand, taxation on building is a source of raising funds which could be used to develop land for the low income housing. However, care should be taken in building taxation so that it would not be counter productive. This is because it could result in disincentive in new construction and maintenance. Nevertheless, it has been recommended elsewhere in this study that there should be no taxation on buildings which are solely constructed for letting to low income households. Where mixed use occurs, say commercial and residential, if the residential section is used for housing the low income households, it should not attract tax. The commercial section should be taxed proportionately.

9.4.2.9   Housing Allowance to Public and Private Employees

Currently, the public and private organizations pay housing allowance to their employees. This amounts to about 25 per cent of their monthly income. While it is recommended that this system should be continued the method of payment should be modified. Rather than paying the allowance monthly, it could be paid annually. At the end of the year, a lump sum equivalent to 25 per cent of their annual income should be paid to them. This would

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[7]   For example most properties in the G.R.A. have very vast empty land surrounding them. If the vacant land is taxed, the owners would be forced to redevelop the entire plot or give out the empty land to Government or other private developers for housing construction.

encourage some households to save this money towards house construction or purchase of land. In fact, some households might decide to purchase storeable building materials with the lump sum. For example, those on N5,000 per annum require only four and a half years' savings to be able to purchase a serviced plot without loan. In the Nigerian situation, experience has shown that many households begin to make genuine effort towards saving for housing construction after they have been able to acquire a piece of land. The idea may appear strange and difficult for households in the first few months of introduction; thereafter the advantages would be much more that the disadvantages.

9.5   APPROPRIATE BUILDING MATERIALS

It is no exaggeration that building material accounts for a great proportion of the cost of building. As a matter of fact, in Nigeria, building material accounts for over 75 per cent of the cost of a building depending on the quality of the finishing of the house (Fadawunsi, 1987). In Nigeria in general and Benin City in particular, the housing industry has completely moved away from the use of traditional building materials. This trend is more pronounced in the urban areas. Cement/sand block has replaced the usual traditional mud walls, concrete floors have replaced the rammed earth floors, sand/cement replaced the local plastering materials, steel and processed timber have replaced the roof members which were formally made out of unprocessed timber or palm tree planks, glass louvre blades replaced the wooden shutters and the corrugated iron sheets plus asbestos or aluminium sheets have replaced the roof covering which was either made out of leaves, palm fronds (thatched) or processed soil. While these modern building materials are, no doubt, adequate for national prestige and good for the well-to-do in the society, their use tends to set a general pace to which every household aspires. Unfortunately, the majority of the households, especially the low income ones, cannot afford them. Sites and services schemes cannot be effectively implemented using imported building materials. Affordable housing for the low income households must certainly involve a search for less expensive

building materials. Cost can only be reduced by adopting materials which can be produced easily and cheaply by many people.

Some research institutions such as the Nigeria Building and Road Research Institute, Ghana Building and Road Research Institute and Kenyan Housing Research Institute have developed low-cost construction techniques which have not been effectively used in Nigeria although some of these have been successfully applied in small quantities in Ghana and Kenya (The PNDC Budget Statement and Economic Policy for 1990, Ghana; Kenyan Development Plan, 1990-1992). For example, the sun dried brick wall could be used for internal partitions while the concrete block is used for the external wall. Dwelling units are required in large quantities to meet the huge shortage and the affordability calculations have proved beyond doubt that low income households cannot afford expensive dwelling units which is the result of using imported building materials. Governments are no longer in a position to implement heavy subsidies on dwelling units for the urban poor. Therefore, there has to be re-orientation to the use of local building materials. Nonetheless, more in-depth research is still required for the local building materials. While Governments both at the Federal, State and local levels should use these materials in order to encourage people to use them. For instance, the use of stabilized mud for the walls could reduce building cost significantly.

9.6   BUILDING CODES AND REGULATIONS

Building codes and regulations are, no doubt, essential elements of organised built environment and spatial form. If well formulated and properly implemented, they enhance the achievement of an orderly, systematic and functional environment. Codes and regulations set standards and levels and provide the yardstick for measuring the degree of achievement of such standards in relation to conditions and regulations. They act as a guide for architectural/building designs and also for planning and development

control purposes. Unfortunately, there is a lack of national building codes and regulations on affordable housing in Nigeria at the current time. There exist building codes and regulations both at the Federal and State levels. But the standards which are prescribed by these codes and regulations are totally unaffordable to the low income households. In chapter 2, section 2.3.2, a fairly detailed description of the existing bye-laws in Bendel State was given. The weaknesses and drawbacks associated with these building codes and regulations or bye-laws were adequately highlighted. They arise from the fact that the building codes and regulations or bye-laws are based on the Town and Country Planning Law Cap 133 of 1981, which in turn is still based on the Nigerian Town and Country Ordinance of 1946 totally drawn from the British Town and Country Planning Act of the 40s.

This law is, no doubt, obsolete and requires review. It could be argued that the 1981 Town and Country Planning law is an amendment from the 1946 law, yet much still has to be done to make these laws functional and effective. The advocated review has to be such that it is based on the present day situations, realities, culture and the national ideologies. The British Town and Country Acts of the 40s have since been amended over and over again to incorporate the changing trends of the society. Therefore imported and colonial building codes and regulations are unrealistic unless they are tailored to the local needs and circumstances. Areas that require urgent attention in the design and development of building codes and regulations or bye-laws include:

(a)   Health and Safety:- Building codes and regulations have to give priority to health and safety.

(b)   Affordability:- To reach the low income households through sites and services projects or any such programme, correct design standards which truly reflect willingness to pay and ability to pay by the low income households must be developed. Therefore affordability and finance ought to have prime importance as far as building codes and regulations are

concerned while not sacrificing health and safety measures. Thus the income and purchasing power of the various categories of households in the society in question should be considered while developing codes and regulations. Therefore, ability to pay rather than what has hitherto existed, in which need without effective demand was reflected, should be considered adequately.

(c)   Building codes and regulations should not institutionalize unrealistic standards and practices which normally exclude the majority of the population from development. For instance, the use of modified mud walls (stabilised mud) should be allowed for building constructions in the cities provided their safety is ensured. Otherwise, all the efforts made to develop local building materials will be abortive if such local materials are not allowed in the codes and regulations.

(d)   Appropriate technology should be emphasised in the building codes and regulations rather than imported building standards; for example, concrete block walls, asbestos roofing sheets etc. could be substituted by stabilised mud walls and asphaltic roofing materials, both of which are locally produced and cheaper to purchase.

(e)   Flexibility: There is absolute need for flexibility in the building codes and regulations. This would enhance the frequent adjustment and continuous improvement of standards as the society changes. The society is dynamic and thus changes occur from time to time. Therefore, developments should correspondingly change standards. Moreover, this would accommodate the existence of appropriate technology as well as the inevitable imported materials for some specific projects.

(f)   The building codes and regulations ought to have graduated standards for amenities within and around the dwellings. This means the provision of amenities according to income and affordability of households, which could

be improved upon when the economic situation of the household improves. Hitherto this has not been included in the codes and regulations. It is therefore being recommended that this graduated standards of amenities provision in a dwelling should be included in the building code and regulation which hitherto has been omitted.

9.7 HUMAN RESOURCES AND PROFESSIONAL INTEGRATION

Human resources are one of the most fundamental tools for effective implementation of housing policies. Professionals associated with the field of human settlement planning and development especially housing development are regarded as those who shape the environment. Where the role of shaping the environment is left to non-professionals such as politicans, either by design or by default, it is the professionals who inherit the blame. A typical example is the highrise buildings in Killingworth demolished in 1987 in Newcastle upon Tyne. Although many reasons were responsible for the failure of that project, yet most of the blame was heaped on the professionals, especially the architect who designed the project. (Kellet, 1987). Therefore, it is the duty of the professionals to intervene and act in accordance with their professional ethics in this process of shaping the environment especially housing development. Various complementary disciplines such as architecture, urban and regional planning, engineering, surveying (land and quantity), estate management or valuers, environmental scientists, social scientists, transportation planners, technicians, ecologists, etc., are associated with human settlement development, e.g. housing development. For instance, the planners plan the community at the macro level while the architects shape the community at the micro level. In other words, while the planner determines the land use, the form and structure (e.g., layout plans) of the overall area of the community, the architect determines the land use, form and structure of individual plots (could be industrial, commercial and residential plots) within the component land use types in the community. Although planners and architects are key

designers of the environment and thus housing development, the other professionals enumerated in the preceding paragraph equally play significant role in shaping the environment.

Consequently the inter-dependence and inter-relationship between all these disciplines has to be recognized and thus promote effective teamwork and integration among professionals. However, while interdisciplinary integration is advocated for effective housing policy implementation, there is equally a great need to integrate cultural, technical and socio-economic aspects into the entire process of housing policy formulation and implementation (fig. 9.3)

9.7.1 Manpower Training

Manpower training for human settlement development is absolutely essential for various calibres of staff and at various levels. This sort of training ranges from the policy makers to the support staff, i.e. artisans.

9.7.1.1 The Policy Makers

Project plans and designs prepared by the planners, architects, etc. are not normally approved by the Policy makers/administrators who may not be professionals in these fields. Very often, good and well-thought out plans and designs are rejected by the policy makers due to ignorance, poor communication between the technocrats and the policy makers, and lack of understanding of the underlying assumptions behind the plans. Unfortunately, there is no forum to train and educate the policy makers particularly as most of them are ill-educated in the discipline related to human settlement. Consequently, it is necessary to introduce short-time, ad-hoc training for the policy makers and administrators. One-day or two-day seminars and workshops on human
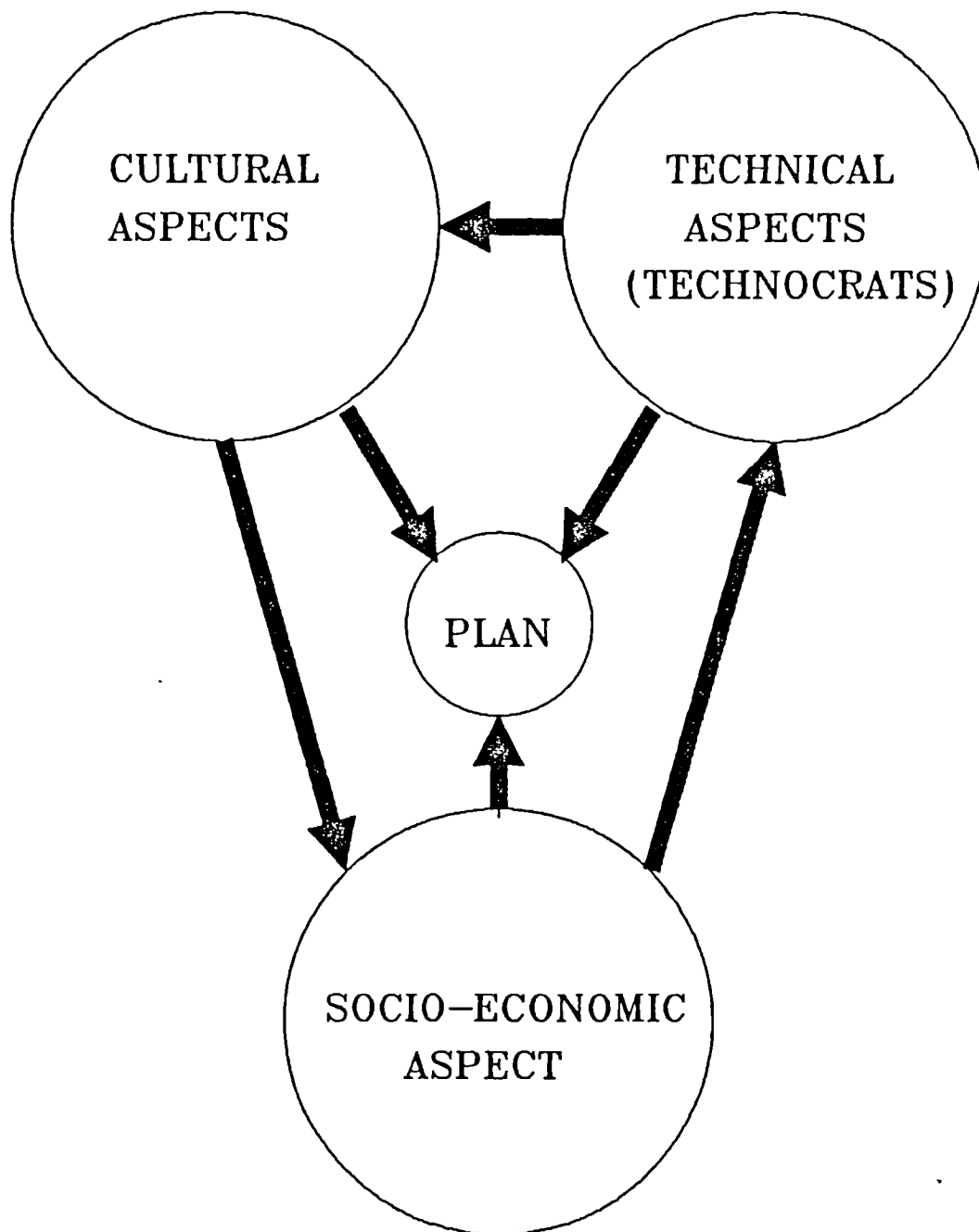
FIG. 9.3. SUGGESTED TEAM WORK & INTERNAL COMMUNICATION
(Adapted from Infraplan, 1986)

settlement development, mainly geared toward housing policy formulation and implementation should be organized from time to time by various institutions of higher learning such as ASCON, NISER, NIM and NBRRI. This type of forum would no doubt create better awareness and reduce areas of conflict between these two groups - policy makers and technocrats. This is particularly important because co-operation and understanding between the policy makers, technocrats, etc. is an essential ingredient for successful housing policy formulation and implementation (fig. 9.4).

Equally important are short courses and seminars for the well-educated professionals who in turn train those who operate at lower levels.

9.7.2   Labour

Human resources are differently viewed here and are regarded as labour which is required for the actual construction of the dwelling. Traditionally, communal labour was used for the construction of dwellings. This was carried out by groups of people who live in some area, say a 'quarter', getting together to assist would-be-builders. Each builder took their turn within the group. No monetary transaction was involved in this process. With the advent of the monetary economy, education and 'white collar' jobs, etc., this system faded away even in the villages. The consequence is that the cost of labour sharply rose and this equally affected skilled labour. Thus contributing to the escalated cost of building. This notwithstanding, the cost of building construction can once again be reduced by re-introducing community activities. Because the urban situation is much more difficult to articulate, it is therefore being advocated that this could be done through co-operatives.
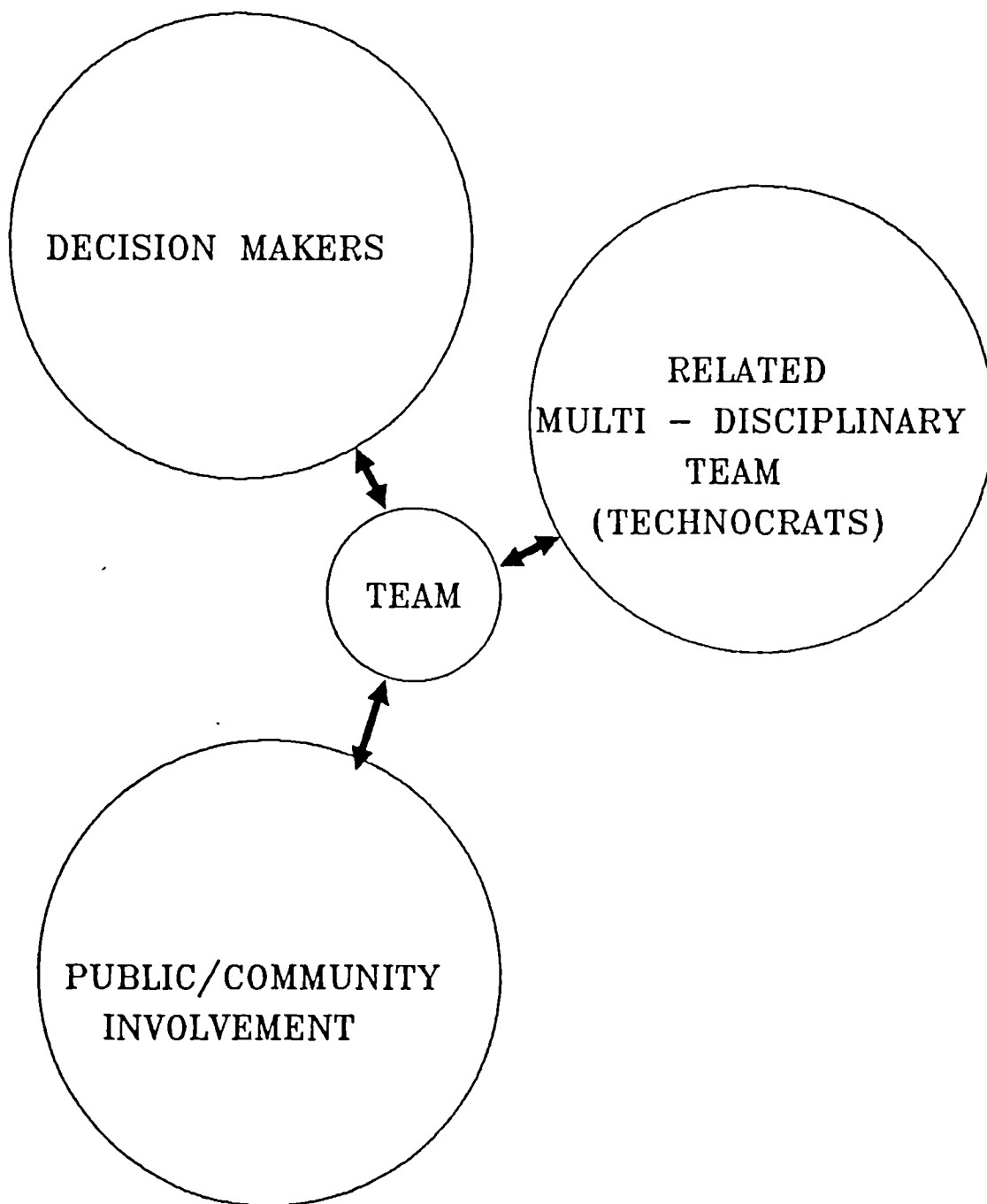
FIG. 9.4. COMMUNICATION BETWEEN VARIOUS TEAMS
(Adapted from Infraplan, 1986)

9.8   **THE ROLE OF THE PRIVATE/POPULAR SECTORS**

The analysis, evaluation and assessment so far made in this study have shown that the popular sector plays a very vital role in the provision of housing for the low income households. In order to make this role more valuable and effective, a number of radical changes and improvements have been proposed for housing input such as land, finance, buildings, building codes and regulations, etc. The proposals and suggestions advanced would not be fully and successfully implemented without the co-operation and full participation of the private sector. The private developers equally have to ensure that their housing is affordable by the low income households. However, there are a number of ways through which this could be achieved.

(a)   The private sector must be fully involved in all the human settlement development processes. In other words, there is need for effective participation at all levels of human settlement development. For instance, Benin City is divided into wards. The Ward leaders should always represent the people in matters concerning human settlement development such as land allocation, planning and design, recent developments in building industries and research centres, etc., right from the planning stages to the execution stage. For example, the people should be fully informed about the results of the NBRRI findings on local building materials as well as sources of acquisition of these materials.

(b)   There must be a concerted effort between the public and popular sectors as well as the voluntary agencies. It is possible for the private developers to increase the stock of housing being provided for the low income households particularly if they are encouraged. The housing input such as the provision of infrastructure which cannot be individually provided by the private developers because of the huge sum of money involved should be

provided by the Government at a reasonable cost and made easily accessible to the private developers.

(c)   As already recommended in the preceding sections, it is being emphasized here that bureaucracy inherent with land titling, land transfer and certificate of occupancy must be reduced or eliminated.

(d)   Tax incentives through the elimination of property rating must be given to the private developers who build mainly for letting to the low income households. Low income here is defined as all households who are within the salary grade levels 01 - 07 and the equivalent, in the private sector (see appendix 2.1).

Various non-governmental organizations such as voluntary organisations, churches, etc., must play a role in the task of providing affordable housing for the low income households. For instance, it is possible to convince the Catholic Church in Benin which has much land to either release a portion of her land for housing development for the low income households on the understanding that any profit accruing from the development has to be shared with the church. If the taxation of vacant land recommended in the preceding section is adequately implemented, the church could otherwise be forced to either develop the land or allow Government through the Housing Corporation to develop the land. However, if the church undertakes to develop the land for low income housing, Government must provide infrastructure.

In Bendel State, some rich individuals have single-handedly extended electricity and water supply to their villages. Such interested members of the public and traditional and local clubs, could equally make contributions towards the provision of infrastructure and land development for the low income households. It has been shown in this study that if land and infrastructure is provided, the cost of constructing a two bedroom dwelling unit, for instance by low income households, would be reduced by a third or more. Non-

governmental organisations are playing important roles in the provision of low income housing in Kenya (for example, the Harambee projects). It is now time for the Nigerian business and voluntary organisations to display their wealth by participating in housing provision for the poor in the society.

The resources of the informal sector should be exploited by encouraging them to produce more acceptable housing through the adaptation of more realistic plot sizes and building standards. This could be achieved by encouraging them to form housing co-operatives through which their resources, both human and economic, could be better utilized towards the production of acceptable dwelling units. It could be argued, however, that the informal sectors cannot organise themselves. To a certain extent this may be true. However, with proper guidance from the Government through the Housing Corporations, for example, it is likely that they would be able to organize themselves to form co-operatives when they now realize that they have Government support and, moreover, it will enable them to obtain security on land and construct better dwellings for themselves. In summary, the sort of concerted effort being recommended is shown in figure 9.5.

9.9 IMPLEMENTATION MECHANISM

Adequate and effective administrative and management machinery is essential for the efficient implementation of the housing policies advanced in this study. The existing institutional arrangement which was discussed in chapter 2 indicates that the Bendel Development and Property Authority is a Government Parastatal vested with the powers for the execution of all public housing policies and programmes under the supervision of the Ministry of Works and Housing. The current arrangement is good but the BDPA must be strengthened both legally and financially. Indeed the authority should be vested with greater powers. Based on this recommendation, the following proposals are being advanced:

(a)

PRIVATE

PUBLIC

[Housing Input]
mainly

Private
Develops

Informal
Sector

VOLUNTARY

(b)

| NON GOVERMENTAL ORGANISATIONS | ← | PUBLIC (Parastals, Local Autho.) | → | PRIVATE |

GOVERMENTS
MIN. OF WORKS &
HOUSING, LANDS &
SURVEY ETC
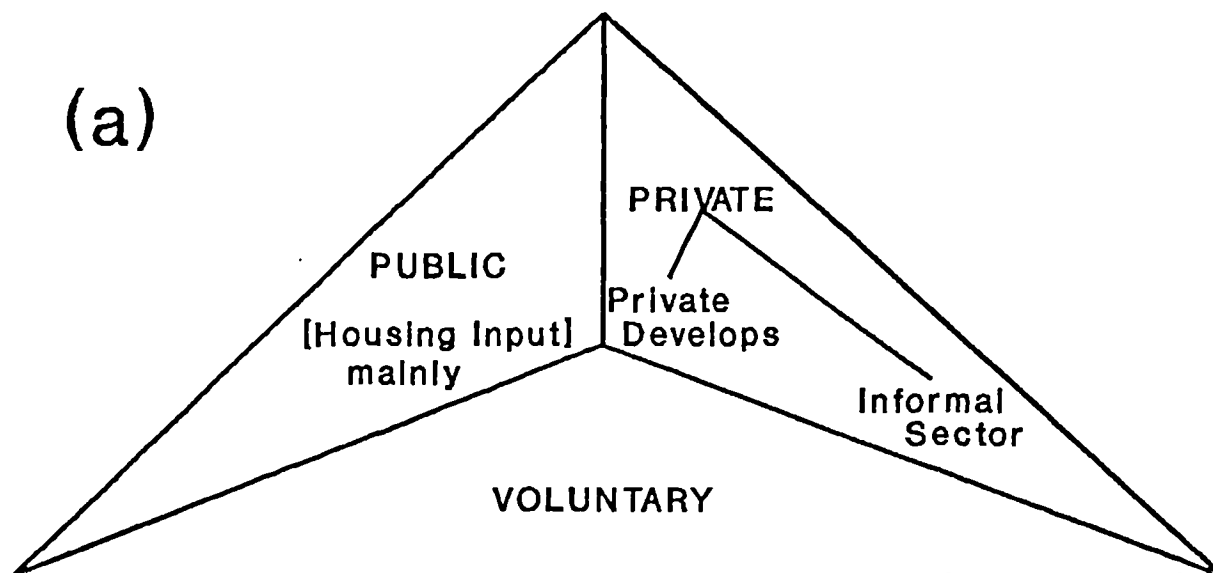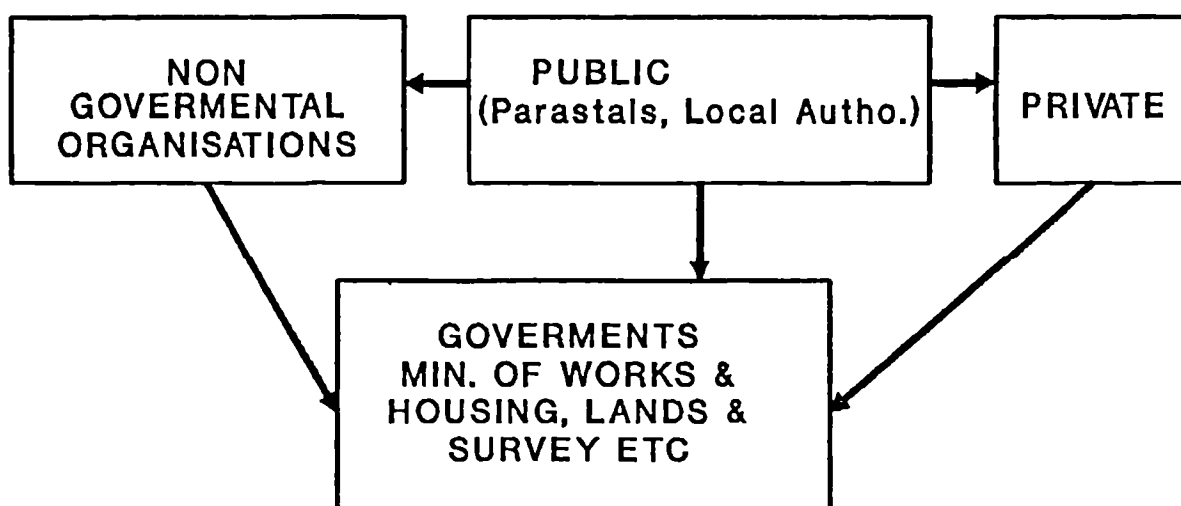
FIG. 9.5. RECOMENDED CONCERTED EFFORT FOR THE PROVISION OF
AFFORDABLE INFRASTRUCTURE, AND DWELLING UNITS FOR
THE LOW INCOME HOUSEHOLDS

(a)   The Ministry of Works and Housing should be mainly responsible for the determination of housing policies and programmes.

(b)   In addition to the existing functions discussed in chapter 2, the BDPA should be expanded to include:

(i)   Bendel State Housing Finance company. As an arm of the BDPA, this department should make funds available for middle and high income mortgage housing whether public or private. This department should be equally responsible for seeking for possible sources of housing funds.

(ii)   Housing Research Development Unit: This department should work in close collaboration with either the University of Benin or Ekpoma and the Nigerian Building and Road Research Institute. It's functions would include:

(a)   Assessment of housing requirements,

(b)   conducting research on social, economic and technical aspects of housing,

(c)   organising and directing surveys and studies related to housing development,

(d)   Co-ordinating housing programmes related to other developments such as water and electricity corporations.

(e)   Invoking participation into housing development programmes through community development personnel who should work with the people at neighbourhood levels. Major areas of concentration would include advice and support on co-operatives and self-help construction and access to serviced land and finance.

However, the Ministry of Works should co-ordinate the activities of the BDPA and the land commission proposed earlier on (fig. 9.6).
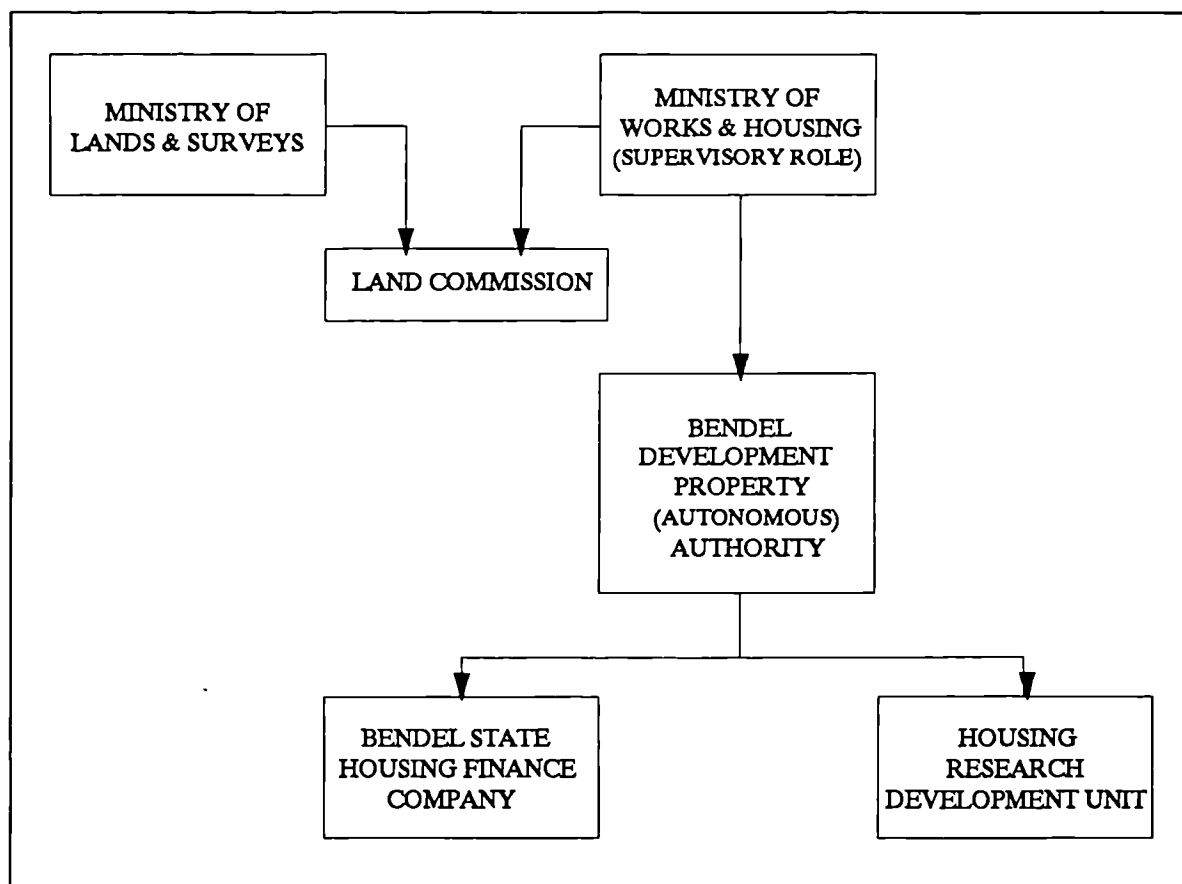
Fig. 9.6   Organization Chart for Efficient Implementation of
Housing Policy in Bendel State

If this proposed institutional arrangement is efficiently implemented, it is likely that the proposed and recommended policies would have the chance of being adequately implemented.

9.10 CONCLUSION AND AREAS FOR FUTURE RESEARCH

With the use of economic demand models, hedonics, and the present value methods as techniques for the evaluation, prediction and assessment of the market mechanisms, policy options and level of affordability by the target population in Benin City, it became apparent that the most important single constraint in housing provision is the level of household income vis-a-vis the cost of housing. Thus, in a situation of this nature policies which have been based on a 'rule of thumb' and quantity need have been inefficient and unsuccessfully implemented. This is because the policies have neither matched objectives with available resources nor put into consideration the target population's willingness and ability to pay. Consequently, the housing policy being operated in Benin City was a total failure. Also the market imperfections which exist in the low income housing provision in Benin City are mainly imposed by public actions such as building codes and regulations, housing standards and other such interventions by the Government. Finally, acting as a constraint to low income housing is inaccessibility to serviced land and credit facilities.

The best way to tackle these problems is not to involve the public sector in direct construction, rather these housing input components which act as distortions, constraints and bottlenecks to low income housing provision should be eliminated directly by the Government by formulating appropriate policies. It has been shown in this study that subsidized public housing or conventional housing (direct construction) is not as cost-effective as S & S (see chapter 8). The popular sectors' initiatives in the provision of dwelling construction appears to be preferable to public direct construction. This is

because, when properly organized and executed, it seems to be a more efficient way (as demonstrated in chapter 8 with the policy options) of using scarce resources in terms of adoption of appropriate technologies and standards, utilization of unskilled labour resources, mobilization of low income savings and investments, and conservation of scarce management, skilled labour and limited capital resources. The appropriate policies being advocated here would include:

(a)   the development of a housing capital market accessible to the low income households,

(b)   basic provision of sites and services and regularization of land titling, allocation, and so on. These policies could stimulate the mobilization of private savings for dwelling constructions in sites and services schemes. Evidence abounds that, if contemporary inputs into housing (particularly secured tenure, serviced plot and, to some extent, capital) are available, the low income households would be quite willing to construct their dwellings in accordance with their ability to pay (World Bank, 1979; McAuslan, 1987). Also, this would enable the private developers who construct for letting to increase their stock at a reasonable rent.

As a long term measure, the general economic situation of the low income households must be improved. Towards this direction, emphasis should be laid on the establishment of industries nationwide. Particular attention should be paid to agro-based small scale industries which both the public and private sectors could establish. Finally, care should be taken in the management and utilization of funds generated from oil production.

9.10.1 Areas for Future Research

Issues which are crucial to policy evaluation, assessment and formulation as well as the target population's level of affordability have been investigated. This notwithstanding,

there are a number of important issues which this study has not been able to investigate because of the scope and limitations of the study. Such issues could be subject for future research. They could be summarized as follows:

(a)   In chapter 7, section 7.5, it was discovered that 56 per cent of the variance in rent is accounted for by the variables in the regression equation. Obviously, the variables determining the remaining 44 per cent which is unaccounted for should be a subject for future research. Such future research would help explain the other characteristics which are of significance to rent in Benin City, which this study has not identified.

(b)   The effect of different household size on housing demand equally requires further investigation.

(c)   In chapter 8, the present value method used a fixed interest rate. The effect of differential interest rate on the PV model constructed and the mortgage financing model developed is another area for future research.

(d)   Greater in-depth research is required for the use of local building materials. Such a research should not only concentrate on the development of local building materials, but also on the durability and acceptability of the materials. The degree of cost saving in the use of local building material as compared with imported building materials should be examined.

(e)   Household survey directed towards establishing the household pattern of expenditure on various sectors of need as related to preferences and taste, for instance, the simple design types preferred, the level of facilities preferred, willingness to pay for and ability to pay for them.

(f)   Finally, the extent to which the low income households would be willing to share community facilities, e.g., water supply.

As a pioneering study in Benin, Nigeria, emphasis has been laid on the process rather than the end result. However, it is hoped that the technique used in this research, if further pursued, would provide a reliable method for housing policy evaluation, assessment and formulation in developing countries in general and Nigeria in particular, thus providing a solution to the problem of formulating viable, desirable and affordable housing policies which has hitherto eluded most developing countries.

*   *   *

APPENDIX

APPENDIX 2.1: ELONGATION OF SALARY GRADE WITH SAP RELIEF OF 50 PER CENT AND 40 PER CENT FOR STATE GOVERNMENT

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Salary Level	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10	Step 11	Step 12	Step 13	Step 14	Step 15	Incremental Rate
01 P.A	1500.00	1620.00	1740.00	1860.00	1980.00	2100.00	2220.00	2340.00	2460.00	2580.00	2700.00	2820.00	2940.00	3060.00	3180.00	120.00
M.Basic	125.00	135.00	145.00	155.00	165.00	175.00	185.00	195.00	205.00	215.00	225.00	235.00	245.00	255.00	265.00	
Rent	30.00	30.37	32.63	34.88	37.13	39.38	41.63	43.88	46.13	48.38	50.63	52.63	55.13	57.33	58.50	
Transp.	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	
02 P.A	1530.00	1680.00	1830.00	1980.00	2130.00	2280.00	2430.00	2580.00	2730.00	2880.00	3030.00	3180.00	3330.00	3480.00	3630.00	150.00
M. Basic	127.00	140.00	152.50	165.00	177.00	190.00	202.50	215.00	227.50	240.00	252.50	265.00	277.50	290.00	302.00	
Rent	30.00	31.50	34.31	37.13	39.94	42.75	45.56	48.38	51.19	54.00	56.81	59.63	62.44	65.25	69.00	
Transp.	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	
03 P.A	1572.00	1752.00	1932.00	2112.00	2292.00	2472.00	2652.00	2832.00	3012.00	3192.00	3372.00	3552.00	3732.00	3912.00	4092.00	180.00
M. Basic	131.00	146.00	161.00	176.00	191.00	206.00	221.00	236.00	251.00	266.00	281.00	296.00	311.00	326.00	341.00	
Rent	30.00	32.85	36.23	39.60	42.98	46.35	49.73	53.10	56.48	59.85	63.23	66.60	69.97	73.35	76.73	
Transp.	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	
04 P.A	1752.00	1962.00	2172.00	2382.00	2592.00	2802.00	3012.00	3222.00	3432.00	3642.00	3852.00	4062.00	4272.00	4482.00	4692.00	210.00
M. Basic	146.00	163.00	181.00	198.50	216.00	233.50	251.00	268.50	286.00	303.50	321.00	338.50	356.00	373.50	391.00	
Rent	32.85	36.79	40.73	44.67	48.60	52.54	56.48	60.41	64.35	68.29	72.23	76.16	84.10	84.03	87.97	
Transp.	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	
05 P.A	1986.00	2226.00	2466.00	2706.00	2946.00	3186.00	3426.00	3666.00	3906.00	4146.00	4386.00	4626.00	4866.00	5106.00	5345.00	240.00
M. Basic	165.50	185.50	205.50	225.50	245.50	265.50	285.50	305.50	325.50	345.50	365.50	385.50	405.50	425.50	445.50	
Rent	37.24	41.74	46.24	50.74	55.24	59.74	64.24	68.74	73.24	77.74	82.24	86.74	91.24	95.74	100.24	
Transp.	120	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	
06 P.A	2418.00	2712.00	3006.00	3300.00	3594.00	3888.00	4182.00	4476.00	4770.00	5064.00	5358.00	5652.00	5946.00	6240.00	5534.00	290.00
M. Basic	201.50	226.00	250.50	275.00	299.50	324.00	348.50	373.00	397.50	422.00	446.50	471.00	495.50	520.00	544.50	
Rent	45.34	50.85	56.36	61.88	67.39	72.90	72.41	83.93	89.43	94.95	100.46	105.98	111.49	117.00	122.51	
Transp.	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	
07 P.A	3174.00	3586.00	3998.00	4410.00	4822.00	5234.00	5646.00	6858.00	6470.00	6882.00	7294.00	7706.00	8118.00	8530.00	8942.00	410.00
M. Basic	264.50	298.83	333.17	367.5	401.83	436.17	470.00	504.83	539.16	573.50	607.83	642.16	676.50	710.83	745.17	
Rent	59.51	57.24	74.96	82.69	90.41	98.14	105.86	113.59	121.31	129.03	136.76	144.49	152.21	169.99	167.66	
Transp.	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	
08 P.A	3924.00	4122.00	5040.00	5618.00	5916.00	6406.00	6912.00	7410.00	7908.00	8406.00	8904.00	9402.00	9900.00	10390.00	10893.00	498.00
M.Basic	317.00	368.00	420.00	457.00	493.00	534.00	576.00	617.50	659.00	700.50	742.00	783.50	825.00	866.50	908.00	
Rent	68.67	77.00	86.10	96.81	103.53	110.25	120.00	128.68	138.00	147.10	153.82	164.54	175.25	181.90	190.68	
Transp.	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	

APPENDIX 2.1: (cont.)

Salary Level	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10	Step 11	Step 12	Step 13	Step 14	Step 15	Incremental Rate
09 P.A.	5112.00	5702.00	6291.00	6882.00	7472.00	8052.00	8652.00	9242.00	9832.00	10422.00	11012.00	11602.00	12192.00	12782.00	13372.00	590.00
M. Basic	426.00	475.00	524.43	573.50	622.83	671.83	721.00	770.16	819.33	868.50	917.66	966.83	1016.00	1065.13	1114.33	
Rent	89.46	99.78	110.11	120.44	130.76	141.08	151.41	161.73	172.06	182.38	191.71	203.03	213.36	223.68	234.81	
Transp.	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	141.00	
10 P.A.	6252.00	6932.00	7582.00	8232.00	8882.00	9532.00	10182.00	10832.00	11482.00	12132.00	12782.00	13432.00	14082.00	14732.00	15382.00	650.00
M. Basic	523.58	572.66	631.83	686.00	740.17	794.33	810.50	902.66	956.83	1011.00	1065.16	1119.33	1173.50	1227.67	1281.83	
Rent	109.93	121.31	132.68	144.06	156.36	166.81	178.85	189.56	200.93	212.31	223.60	235.06	246.43	257.81	269.18	
Transp.	162.00	162.00	162.00	162.00	162.00	162.00	162.00	162.00	162.00	162.00	162.00	162.00	162.00	162.00	162.00	
11 P.A.	7320.00	8330.00	9340.00	10350.00	11368.00	12370.00	13380.00	14390.00	15400.00	16410.00						1010.00
M. Basic	610.00	694.17	770.34	862.50	946.66	1030.00	1115.00	1199.16	1283.33	1367.50						
Rent	128.10	145.77	165.45	181.12	198.82	216.48	214.45	251.82	269.10	307.00						
Transp.	162.00	162.00	162.00	162.00	162.00	162.00	162.00	162.00	162.00	162.00						
12 P.A.	8034.00	9078.00	10122.00	11166.00	12210.00	13254.00	14290.00	15242.00	16300.00	17430.00						1044.00
M. Basic	659.50	756.50	843.50	930.50	1017.50	1104.00	1091.00	1278.50	1365.50	1452.50						
Rent	140.59	150.56	177.13	195.41	213.07	231.94	250.22	278.48	298.00	305.02						
Transp.	162.00	162.00	162.00	162.00	162.00	162.00	162.00	162.00	162.00	162.00						
13 P.A.	8712.00	9816.00	10920.00	12024.00	13788.00	14332.00	15336.00	16440.00	17544.00	18600.00						1104.00
M. Basic	720.00	810.00	910.00	1002.00	1094.00	1196.00	1270.00	1370.00	1407.00	1554.00						
Rent	152.66	171.78	191.10	210.42	229.74	249.06	268.00	289.10	307.00	326.34						
Transp.	162.00	162.00	162.00	162.00	162.00	162.00	162.00	162.00	162.00	162.00						
14 P.A.	9850.00	11042.00	12776.00	13410.00	14594.00	15778.00	16908.00	18146.00	19330.00	20514.00						1184.00
M. Basic	821.00	920.16	1015.83	1117.00	1216.16	1314.83	1413.50	1512.16	1610.83	1709.50						
Rent	177.52	195.24	213.95	234.84	255.39	276.11	296.84	317.55	338.27	358.99						
Transp.	203.00	203.00	203.00	203.00	203.00	203.00	203.00	203.00	203.00	203.00						
15 P.A.	11046.00	12510.00	13974.00	15438.00	16902.00	18366.00	19830.00	21294.00								1464.00
M. Basic	920.50	1042.00	1164.50	1285.50	1400.00	1530.00	1652.50	1774.50								
Rent	193.30	218.92	244.35	270.16	295.78	321.48	347.02	372.64								
Transp.	203.00	203.00	203.00	203.00	203.00	203.00	203.00	203.00								
16 P.A.	12354.00	13918.00	15482.00	17046.00	18610.00	20174.00	21738.00	23382.00								1564.00
M. Basic	1029.50	1159.63	1290.16	1420.50	1550.83	1681.16	1811.50	1941.83								
Rent	216.19	243.57	270.00	298.30	325.67	353.04	380.41	407.78								
Transp.	203.00	203.00	203.00	203.00	203.00	203.00	203.00	203.00								
17 P.A.	13812.00	15456.00	17100.00	18744.00	20380.00	27032.00	23676.00	25320.00								1644.00
M. Basic	1151.00	1288.00	1425.00	1562.00	1699.00	1836.00	1973.00	2110.00								
Rent	241.71	270.00	299.25	328.02	356.79	365.00	414.33	443.00								
Transp.	203.00	203.00	203.00	203.00	203.00	203.00	203.00	203.00								

Appendix 3.1   **Estimated and Projected Population for Some Selected Cities in Nigeria**

Urban Agglomerations	Estimated and Projected Population in Urban Agglomerations of 500,000 Inhabitants and over as of 1980 (In thousands and millions)						
	1950	1960	1970	1975	1980	1990	2000
Lagos	360	700	1440	2100	2790	4790	8340
Ibadan	432	578	725	839	970	1296	1733
Kano	140	214	335	424	503	758	1278
Ogbomosho	147	242	410	539	658	1028	1735

Source: Field Survey, 1990.

Appendix 3.2   Benin City: Age-Sex Composition

Age Group	Total Population	% of Total Population			Ratio of Males to Females (%)
		Total	Males	Females	
0-4	80,935	15.9	7.0	8.9	79
5-9	95,188	18.7	9.2	9.5	97
10-14	64,137	12.6	6.8	5.8	117
15-19	48,357	9.5	5.4	4.1	132
20-24	49,376	9.7	4.4	5.3	83
25-29	45,303	8.9	3.9	5.0	78
30-34	30,033	5.9	2.7	3.2	84
35-39	23,924	4.7	2.3	2.4	96
40-44	19,343	3.8	1.9	1.9	100
45-49	15,271	3.0	1.6	1.4	114
50-54	10,690	2.1	1.1	1.0	110
55-59	6,103	1.2	0.6	0.6	100
60-64	7,635	1.5	0.3	0.7	114
65-69	3,563	0.7	0.3	0.4	75
70-74	2,545	0.5	0.2	0.3	67
75-79	2,036	0.4	0.2	0.2	100
80-84	2,036	0.4	0.2	0.2	100
85 and above	2,545	0.5	0.3	0.2	150

Source: Household Survey, Omokhodion Associates, 1981.

Appendix 3.3   Quality Index Classification

Quality Criteria	Weight	Class Value		Cumulative
		Class	Mark	
1. Building materials	4	a) Cement-sand block wall/G.1 or asbestos roof	5	20
		b) mud wall rendered cement/G.1 or asbestos roof	4	16
		c) mud wall/G.1 or asbestos roof	3	12
		d) mud wall/mud roof	2	8
		e) mud wall/thatch roof	1	4
2. Age of structure	2	a) less than 5 years	5	10
		b) 5-10 years	4	8
		c) 11-20 years	3	6
		d) 21-30 years	2	4
		e) 31-40 years	1	2
		f) over 40 years	½	1
3. Condition of	3	a) sound building (needs no maintenance)	5	15
		b) requires minor repairs	4	12
		c) requires major repair	3	9
		d) deteriorating	2	6
		e) dilapidating	1	3
4. Services	3	a) all 5	5	15
		b) 4 out of 5	4	12
		c) 3 out of 5	3	9
		d) 2 out of 5	2	6
		e) 1 out of 5	1	3
		f) none	0	0

Source: Modified from Onyeacholem, 1979.

Appendix 3.4   **Basic factors underlying the evaluation of environmental quality by professional assessors in Benin City**

Factors	Description of factors and variables*	Factor loadings
I	Building features and planning standards	
	Attractiveness of building colours	0.730
	Exclusiveness of buildings	0.724
	Level of landscaping	0.717
	Building decorations	0.713
	Architectural designs	0.706
	Planning standards	0.695
	Monotony of building types	0.690
	Building density	0.679
	Building types	0.675
	Building construction material	0.667
	Compatibility of house colours	0.630
	Age of building	0.620
	Scenic beauty	0.610
	Percentage variance explained	36.0%
II	Environmental health	
	Tidiness of neighbourhood	0.775
	Presence of recreational parks	0.771
	Overall healthiness of neighbourhood	0.765
	Effectiveness of waste disposal	0.724
	Level of road maintenance	0.708
	Natural drainage	0.680
	Adequacy of kitchen facilities	0.666
	House ventilation	0.600
	Percentage variance explained	9.0%
III	Land-use compatibility	
	Land-use compatibility	0.579
	Population density/crowding	0.576
	Neighbourhood symbols	0.560
	Percentage variance explained	5.8%
IV	Social status	
	Residents' social status	-0.677
	Land-use type	-0.632
	Friendliness of neighbours	-0.570
	Compatibility of neighbours	-0.557
	percentage variance explained	5.0%

Appendix 3.4   (cont.)

Factors	Description of factors and variables*	Factor loadings
V	Street flooding and erosion	
	Frequency of flooding	0.783
	River water pollution	0.769
	Sedimentation on streets	0.712
	Severity of street erosion	0.691
	Provision of drainage facilities	0.563
	Percentage variance explained	3.5%
VI	Traffic flow	
	Vehicle traffic flow	0.546
	Monotony of landscape	0.530
	Percentage variance explained	2.9%
VII	Ornamentation	
	Presence of ornamental plants	0.501
	Percentage variable explained	2.7%
VIII	Migrant status	
	Migrant status of residents	0.711
	Dominant conditions of roads	0.567
	Neighbourhood noise level	0.542
	Percentage variance explained	2.5%
IX	Vistas	
	Vistas	0.562
	Percentage variance explained	2.4%
Total variance explained by all 9 factors		69.8%

* Only significant variables are listed

Source: Odemerho & Cholcor, 1991.

Appendix 3.5: **Basic factors underlying the evaluation of environmental quality by lay assessors in Benin City.**

Factors	Description of factors and variables*	Factor loadings
I	Architectural design and planning standards	
	Architectural designs	0.680
	Planning standards	0.679
	Building construction material	0.671
	Building decorations	0.670
	Attractiveness of building colours	0.667
	Building strength/foundation	0.655
	Monotony of building types	0.654
	Compatibility of house colours	0.640
	Level of maintenance of housing shell	0.638
	Age of building	0.611
	Adequacy of kitchen facilities	0.604
	percentage variance explained	23.0%
II	Drainage	
	Natural drainage	0.820
	Provision of drainage facilities	0.757
	Frequency of flooding	0.679
	Percentage variance explained	8.4%
III	Community feeling	
	Neighbourhood feelings	0.666
	Ruggedness of topography	0.614
	Percentage variance explained	5.9%
IV	Street erosion	
	Severity of street erosion	0.849
	River water pollution	0.816
	Percentage variance explained	4.4%
V	Pest infection	
	Ant/cockroach infestation	0.846
	Mosquito nuisance	0.754
	Percentage variance explained	3.9%
VI	Street maintenance	
	Level of road maintenance	0.653
	Street tidiness	0.624
	Percentage variance explained	3.7%
VII	Topographic setting	
	Steepness of ground slope	0.734
	Vehicle traffic flow	-0.635
	Percentage variance explained	3.4%

Appendix 3.5:   **(cont.)**

Factors	Description of factors and variables*	Factor loadings
VIII	Historical significance and neighbourhood compatibility	
	Compatibility of neighbours	0.698
	Buildings of historic importance	0.539
	Percentage variance explained	3.1%
IX	Household size	
	Household size	0.692
	Percentage variance explained	2.8%
X	Social status	
	Residents' social status	0.659
	Land-use type	0.564
	Percentage variance explained	2.5%
XI	Crowding	
	Population density/crowding	0.621
	Percentage variance explained	2.4%
XII	Migrant status	
	Migrant status	0.723
	Dominant conditions of roads	0.661
	Neighbourhood noise level	0.602
	Percentage variance explained	2.3%
XIII	Ornamentation	
	Presence of ornamental plants	0.598
	Appearance of neighbourhood soil	0.513
	Percentage variance explained	2.1%
XIV	Neighbourhood symbols	
	Neighbourhood symbols	-0.701
	Percentage variance explained	2.1%
Total variance explained by all 14 factors		70.1%

Appendix 5.1:   **Questionnaire**

<div align="center">

UNIVERSITY OF NEWCASTLE UPON TYNE
SCHOOL OF ARCHITECTURE

CONFIDENTIAL

HIGH DENSITY AREAS OF BENIN CITY - NIGERIA -
HOUSING AND HOUSEHOLDS CHARACTERISTIC SURVEY

</div>

INTERVIEW NUMBER

CARD NUMBER

INTERVIEWER

DATE
CALL AGAIN (REQUEST FOR ANOTHER INTERVIEW)

                                        1 = YES
                                        2 = NO

HOUSE/NUMBER

STREET

SEX OF RESPONDENT   1 = MALE
                                 2 = FEMALE

STATUS IN HOUSEHOLD   1 = HEAD H/HOLD
                                 2 = WIFE
                                 3 = OTHERS

Ask the following questions to the head of the household or a close relative. Apart from questions 6, 24, 25 and 36

        7 = Do not know
        8 = not applicable and
        9 = no response throughout the questionnaire

Appendix 5.1: **(cont.)**

1. How many households are in this house/flat?

    1
    2
    3
    4
    5 Others, specify

2. How many rooms are in this house/flat?

3. Do you or any member of this household own this house/flat?

    1 = owner
    2 = someone else
    3 = no

4. If no, do you rent your house/flat from

    1 = yes
    2 = no

5. Would you rather buy this house/flat if you have the choice?

    1 = yes
    2 = no

6. Please estimate how much you spend on maintenance in a year

7. (Ask landlords) if this house had been built by the Government, how much rent would you have paid for it?

8. (Ask tenants) if this house had been built by the Government, how much rent would you have paid for it?

9. (Ask landlords) how much do you charge for rooms let on commercial use?

10. How much rent/mortgage do you pay per month?

    1 = 01 - 20
    2 = 21 - 40
    3 = 41 - 60
    4 = 61 - 80
    5 = 81 - 100
    6 = above 100

11. Are you satisfied with this payment?

    1 = very satisfied
    2 = satisfied
    3 = indifferent
    4 = not satisfied
    5 = very dissatisfied

    Why do you say that?

    _____

    _____

    _____

Appendix 5.1: **(cont.)**

12. How many rooms in this house/flat are normally used by members of this household?

    (a) If you pay this rent/mortgage would you
        a like bigger or smaller room?

              1 = bigger
              2 = smaller

    (b) If you pay more rent/mortgage would you like
        a bigger or smaller room?

              1 = bigger
              2 = smaller

    (c) If you pay less rent/mortgage would you like
        a bigger or smaller room?

              1 = bigger
              2 = smaller

13. Which of the following services do you all use?

kitchen	1 = none
bathroom	2 = shared
toilet	3 = exclusive
water supply	
electricity	

14. Where are they?

kitchen	1 = inside
bathroom	2 = outside
toilet	3 = covered
water supply	
electricity	

15. Do you think that the house services you receive bearing in mind what is available elsewhere are adequate?

kitchen	1 = very adequate
bathroom	2 = adequate
toilet	3 = indifferent
water supply	4 = not adequate
electricity	5 = very inadequate

16. What type of toilet do you have in this house?

              1 = water closet
              2 = pit latrine
              3 = bucket latrine

    If not adequate, reason

---

17. If you would choose any three of these services to be improved which of them would you choose? (in order of preference)

              1 = kitchen
              2 = bathroom
              3 = toilet
              4 = water supply
              5 = electricity

436

Appendix 5.1:   (cont.)

18.   Would you be prepared to pay extra to have these three services improved?

                    1 = yes
                    2 = no

___

19.   I will like to turn to land issue.

       Do you own land anywhere?

                    1 = yes
                    2 = no
                    3 = I don't know

20.   If yes, is the house

                    1 = not started
                    2 = in course of construction
                    3 = completed

21.   Where is the land?

                    1 = Benin
                    2 = Hometown
                    3 = elsewhere

22.   If question 15 is yes, has the head of the household any other estate property in Benin or elsewhere? (properties such as)
                building   1 = Benin
                plot of land   2 = elsewhere
                farm land
                others (specifiy)

23.   Is it still your intention to continue to stay in this house/flat?

                    1 = yes
                    2 = no

       If no, what plans have you?
                    1 = have already begun to build
                    2 = have land in Benin ready to build
                    3 = yet to build in Benin
                    4 = I do not know/how will I know?
                    5 = As God wills
                    6 = not applicable

___

INTERVIEWER NUMBER   CARD NUMBER

Appendix 5.1:   **(cont.)**

24.   How much do you spend on hosehold every month? (Naira)
(By household we mean everyone who normally lives and shares the same housekeeping arrangements)

(a) Rent or housing loan repayment
(b) Food eaten in the house
(c) Food eaten outside the house
(d) Services - water, electricity, etc.
(e) School fees
(f) Health
(g) Transport
(h) Others

25.   How much is the monthly income in this household?

(a) head monthly income
(b) wife monthly income
(c) others monthly income

26.   Has any one in this household any of the following?
(code as appropriate)

car   1 = yes
television   2 = no
radio
video
cooker
fan

27.   When did you first move into this house/flat?
(specify which year)

28.   Ask those who pay rent what was the rent per month when you first moved in?
1 = 0 - 20
2 = 21 - 40
3 = 41 - 60
4 = 61 - 80
5 = 81 - 100
6 = above 100

29.   If the rent has gone up since you first moved in, when was the last time it went up?
1 = 1 - 6
2 = 7 - 12
3 = 13 - 18
4 = 19 - 24
5 = 25 - 30
6 = 31 - 36
7 = above 36 months

Appendix 5.1:   (cont.)

30.   Ask all
> When you moved in did you have to pay anything? (advance payment, non-refundable deposit, etc.) other than the rent/mortgage?
>
>   1 = yes
>   2 = no

31.   If yes, to whom?   1 = landlord
                                    2 = last tenant

32.   Out of your current monthly income, what is the most you would be willing to pay in rent/mortgage for your present house/flat or for a similar house/flat?

33.   How long have you lived in Benin?

>   1 = 0 - 5
>   2 = 6 - 10
>   3 = 11 - 15
>   4 = 16 - 20
>   5 = above 20 years

34.   Have you lived in another house in Benin?

>   1 = yes
>   2 = no

35.   If yes, where did you last live?

_____

_____

36.   Why did you move out from there? (specify)

_____

_____

37.   Where do you come from?

_____

38.   What is your religion?   1 = Christian
                                     2 = Moslem
                                     3 = Other religions

39.   If you were to choose, which of the following options would you select?
> 1 = serviced plot and loan from Government
> 2 = a house/flat from Government on mortgage
> 3 = only loan from government
> 4 = only core house and serviced plot from Government
> 5 = only serviced plot from Government
> 6 = nothing from Government

Appendix 5.1:   (cont.)

40. Could you tell me about each person (maximum 8 people) in your household? (Give each person a separate line starting with the head of the household). (A household is a group of people who normally live together and share the same housekeeping arrangements)

SEX M/F	RELATION-SHIP TO HEAD	IF STUDENT SPECIFY IF PRY, SEC., POLY OR UNI	IF WORKER SPECIFY TYPE OF WORK	WHAT IS MONTHLY INCOME	AGE
1 = male	1 = head	1 = primary	1 = place		1=0-10
2 = female	2 = wife	2 = secondary	2 = type		2=11-20
	3 = son	3 = polytech.			3=21-30
	4 = daughter	4 = University			4=31-40
	5 = Brother				5=41-50
	6 = Sister				6=51-60
	7 = Cousin				7=61-70
	8 = Others				8=above 70

41. Finally number of persons in the house

Appendix 5.1A

Which of the following plot sizes would you prefer?

    (a) 450 square meters
    (b) 400 square meters
    (c) 350 square meters
    (d) 300 square meters
    (e) 250 square meters
    (f) 200 square meters.

Appendix 5.2A   **Dwelling space per person (M²/person) for 1-bedroom flats.**

	2.37	3.82	4.78	5.97	7.23	9.85
Frequency distribution %	30.6	27.3	10.3	6.1	9.4	16.3
Cumulative %	30.6	57.9	68.2	74.3	83.7	100.0

Mean dwelling space per person is 5.67m²

Source: Field Survey, Sept. 1988.

Appendix 5.2B   **Dwelling space per person (M²/person) for 2-bedroom flats**

	4.47	5.63	7.23	9.43	12.74	18.26
Frequency distribution %	16.5	11.5	23.0	22.3	20.4	6.3
Cumulative %	16.5	28.0	51.0	73.3	93.7	100.0

Mean dwelling space per person is 9.63m²

Source: Field Survey, Sept. 1988.

Appendix 5.3   Comparison of space allocation of federal low cost housing Ikpoba Hill with Anikantamo, Lagos

Dwelling space per person (M²/person) for 2-bedroom flats

IKPOBA HILL, BENIN

4.47	5.65	7.23	9.43	12.74	18.26
Frequency Distribution %					
16.5	11.5	23.0	22.3	20.4	6.3
Cumulative %					
16.5	28.0	51.0	73.3	93.2	100.0

ANIKANTOMO, LAGOS[a]

8.26	9.46	11.04	13.24	16.55	22.07
Frequency Distribution %					
18.8	12.5	31.3	6.3	18.8	12.5
Cumulative %					
18.8	13.3	62.5	68.8	87.5	100.0

Appendix 6.1   **Exclusive Use of Services**

Services	None %	Shared %	Exclusive %
Kitchen	8.5	67.6	23.8
Bathroom	1.0	79.5	19.4
Toilet	0.5	78.0	21.4
Water Supply	10.6	75.2	14.2
Electricity	2.3	83.5	14.2

Source: Field Survey, 1990.

Appendix 6.2   **Rent/Income Shares by City and Income Group**

	Household earnings per month (US$)				
	50	**100**	**150**	**300**	**City Average**
Seoul (Korea)	77	52	42	29	22
Kwangjju (Korea)	46	35	30	23	21
Cali (Colombia)	47	32	25	17	19
Taegu (Korea)	53	36	28	19	18
Bogotá (Colombia)	33	26	23	18	18
Busan (Korea)	68	42	32	20	16
Bangalore (India)	12	9	8	6	10
Beni Suef (Egypt)	11	8	6	5	9
Manila (Philippines)	23	17	14	10	9
Santa Ana (El Salvador)	17	12	9	7	8
Sonsonate (El Salvador)	15	11	9	6	8
Davao (Philippines)	9	9	8	8	8
Cairo (Egypt)	10	7	6	4	7

Source: Malpezzi and Mayo (1987a, p. 210)

Appendix 6.3A: Willingness to Pay

```
                        --------- CROSS TABULATION OF ---------
    TMIN  TOTAL MONTHLY INCOME         BY       RWPAY   AMOUNT YOU ARE WILLING TO PAY

                                   CONTROLLING FOR.....   RP  AMOUNT OF RENT PAID PER MONTH
                                                              VALUE=   1     01-20
```

	RWPAY		
COUNT	0 TO 20	ABOVE 12	ROW
	1	7	TOTAL
TMIN			
0 TO 150 1.00	2		2 / 13.3
151 TO 300 2.00	1	2	3 / 20.0
301 TO 450 3.00	3		3 / 20.0
601 TO 750 5.00	6		6 / 40.0
ABOVE 900 7.00		1	1 / 6.7
COLUMN TOTAL	12 / 80.0	3 / 20.0	15 / 100.0

Appendix 6.3B: Willingness to Pay

```
--------------- CROSS TABULATION OF ---------------------
 TMIN  TOTAL MONTHLY INCOME        BY      AMOUNT YOU ARE WILLING TO PAY
                                          RWPAY
                         CONTROLLING FOR.....
                         RP  AMOUNT OF RENT PAID PER MONTH
                             VALUE=  2    21-40
```

	RWPAY				
COUNT	0 TO 20	21 TO 40	41 TO 60	ABOVE 120	ROW TOTAL
TMIN	1	2	3	7	
2.00 151 TO 300	8	5		2	15 17.9
3.00 301 TO 450	17	3		1	21 25.0
4.00 451 TO 600	22		1	1	24 28.6
5.00 601 TO 750	11	1			12 14.3
6.00 751 TO 900	6	1			7 8.3
7.00 ABOVE 900	5				5 6.0
COLUMN TOTAL	69 82.1	10 11.9	1 1.2	4 4.8	84 100.0

Appendix 6.3C: Willingness to Pay

```
------------  CROSS TABULATION OF  ------------
 TMIN   TOTAL MONTHLY INCOME   BY   RWPAY   AMOUNT YOU ARE WILLING TO PAY

              CONTROLLING FOR.....   RP  AMOUNT OF RENT PAID PER MONTH
                                         VALUE=   3        41-60
```

COUNT	RWPAY				ROW TOTAL
	0 TO 20	21 TO 40	41 TO 60	ABOVE 120	
TMIN	1	2	3	7	
151 TO 300 2.00		1	1		2 15.4
301 TO 450 3.00	1				1 7.7
451 TO 600 4.00	1	1		1	3 23.1
601 TO 750 5.00	1	1		1	3 23.1
751 TO 900 6.00	2			1	3 23.1
ABOVE 900 7.00	1				1 7.7
COLUMN TOTAL	6 46.2	3 23.1	1 7.7	3 23.1	13 100.0

Appendix 6.3D: Willingness to Pay

```
- - - - - - - - - - - - - - - CROSS TABULATION OF - - - - - - - - - - - - - - -
 TMIN   TOTAL MONTHLY INCOME          BY      RWPAY     AMOUNT YOU ARE WILLING TO PAY

                                  CONTROLLING FOR......      RP  AMOUNT OF RENT PAID PER MONTH
                                                               VALUE=    4       61-80
```

	RWPAY					ROW
COUNT	0 TO 20	21 TO 40	41 TO 60	61 TO 80	ABOVE 12	TOTAL
	1	2	3	4	7	
TMIN						
451 TO 600 4.00			1			1 / 16.7
601 TO 750 5.00	1	1		1		3 / 50.0
751 TO 900 6.00	1				1	2 / 33.3
COLUMN TOTAL	2 / 33.2	1 / 16.7	1 / 16.7	1 / 16.7	1 / 16.7	6 / 100.0

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University of Newcastle

Appendix 7.1　　Modified Davis Fortran Program

```
C       *****************************************************************
C                            COPIED FROM:
C             DAVIS,J.C. 1973: STATISTICS & DATA ANALYSIS IN
C               GEOLOGY, 1ST ED., JOHN WILEY & SONS,NEW YORK
C
C                  MULTIPLE REGRESSION -- DEMAND MODEL
C
C       THIS PROGRAM ACCEPTS AN N BY M DATA MATRIX WHERE N IS THE
C       NUMBER OF OBSERVATIONS AND M IS THE NUMBER OF VARIABLES.
C       VARIABLE 1 IS THE DEPENDENT VARIABLE AND 2 THROUGH M ARE
C       INDEPENDENT. PROGRAM COMPUTES MULTIPLE REGRESSION BY
C       SOLVING M SIMULTANEOUS NORMAL EQUATIONS AND RETURNS PARTIAL
C       REGRESSION COEFFICIENTS AND STATISTICS FOR TESTING SIGNIFI-
C       CANCE. LISTS OF Y,Y-EST.,AND DEVIATION FOR EACH OBSERVATION
C       ARE PRINTED.
C       SUBROUTINE REQUIRED ARE READW, PRINTM, AND SLE
C
C       *****************************************************************
        DIMENSION X(500,20),D(500,3),A(20,20),B(20)
        DATA LR,LW,ND,MD,MM/5,6,500,2*20/
C
C       -- READ AND PRINT INPUT DATA MATRIX
        CALL READM (X,N,M,ND,MD,LR,LW)
C
C       -- ZERO SLE MATRIX AND OTHERS.
        DO 100 I = 1,M
        B(I) = 0.0
        DO 100 J = 1,M
        A(I,J) = 0.0
  100   CONTINUE
C
C       -- CALCULATE SLE MATRIX
        DO 101 I = 1,N
        Y = X·(I,1)
        X(I,1) = 1.0
        DO 102 J = 1,M
        B(J) = B(J) + X(I,J)*Y
        DO 102 K = 1,M
        A(J,K) = A(J,K) + X(I,J)*X(I,K)
  102   CONTINUE
        X(I,1) = Y
  101   CONTINUE
C
C       -- SOLVE SLE
        CALL SLE (A,B,M,MM,1.0E-08)
C
C       -- CALCULATE ESTIMATED VALUE & DEVIATION FOR EACH OBSERVATION.
        DO 103 I = 1,N
        D(I,1) = X(I,1)
        D(I,2) = B(1)
        DO 104 J = 2,M
        D(I,2) = D(I,2) + B(J)*X(I,J)
  104   CONTINUE
        D(I,3) = D(I,1) - D(I,2)
  103   CONTINUE
C
C       -- PRINT Y, ESTIMATED Y, AND DEVIATION
        WRITE(LW,2005)
        WRITE(LW,2006)
        CALL PRINTM (D,N,3,ND,3,LW)
C
C       -- PRINT REGRESSION COEFFICIENTS
        WRITE(LW,2007)
        CALL PRINTM (B,M,1,MM,1,LW)
```

```
C
C        -- CALCULATE ERROR MEASURES
         SY = 0.0
         SYY = 0.0
         SYC = 0.0
         SYYC = 0.0
         DO 105 I = 1,N
         SY   = SY  + D(I,1)
         SYY  = SYY + D(I,1)**2
         SYC  = SYC + D(I,2)
         SYYC = SYYC +D(I,2)**2
  105    CONTINUE
         SST = SYY - SY*SY/FLOAT(N)
         SSR = SYYC - SYC*SYC/FLOAT(N)
         SSD = SST - SSR
         NDF1 = M - 1
         AMSR = SSR/FLOAT(NDF1)
         NDF2 = N - M
         AMSD = SSD/FLOAT(NDF2)
         R2 = SSR/SST
         R = SQRT(R2)
         F = AMSR/AMSD
         NDF3 = N - 1
C
C        -- PRINT ERROR MEASURES
         WRITE(LW,2000)
         WRITE(LW,2001)SSR,NDF1,AMSR,F
         WRITE(LW,2002)SSD,NDF2,AMSD
         WRITE(LW,2003)SST,NDF3
         WRITE(LW,2004)R2,R
C
C        - - -  F O R M A T S  - - -
 2000    FORMAT(///1X,'SOURCE OF',13X,'SUM OF DEGREES OF  MEAN',/,
        1 'VARIATION',13X,'SQUARES  FREEDOM   SQUARES    F-TEST'/,
        2 1X,60('-'))
 2001    FORMAT(' REGRESSION',10X,F10.2,I8,2X,F10.2/51X,F10.4)
 2002    FORMAT(' DEVIATION',11X,F10.2,I8,2X,F10.2)
 2003    FORMAT(' TOTAL VARIATION',5X,F10.2,I8)
 2004    FORMAT(' GOODNESS OF FIT = ',F10.4/,
        1 ' CORRELATION COEFFICIENT = ',F10.4)
 2005    FORMAT(//////5X,60('=')//25X,'MULTIREGRESSION  RESULTS'//5X,
        1 60('='))
 2006    FORMAT(////3X,'NO.',2X,'ORIGINAL Y',6X,'ESTIMATED Y',7X,
        1 'DEVIATION'/3X,3('='),2X,10('='),6X,11('='),7X,9('='))
 2007    FORMAT(////2X,'NO.',2X,'REGRESSION COEFF.'/2X,
        1 3('='),2X,17('='))
         STOP
         END
C        ************************************************
C                      PROGRAM 4-1
C              SUBROUTINE TO READ A MATRIX
C              HAVING N ROWS AND M COLUMNS
C
         SUBROUTINE READM(A,N,M,N1,M1,LR,LW)
C        ************************************************
         DIMENSION A(N1,M1),TITLE(18),HEADG(80,20)
         CHARACTER LOGRIM*3,CUBSQ*3
C
C        -- ENTER TITLE YOU WISH TO BE PRINTED
         READ(LR,900)TITLE
         WRITE(LW,1002)TITLE
C        -- ENTER OPTION FOR CONVERTING INPUT DATA TO LOGRITHMIC
C           EQUIVALENTS ASSUMING MULTREG. EQ. IS OF POWER LAW &
C           NEEDS TO BE LINEARIZED.
         READ(LR,910)LOGRIM
         IF(LOGRIM.EQ.'NO '.OR.LOGRIM.EQ.'YES')GO TO 150
         WRITE(LW,1006)
         WRITE(LW,1009)
         STOP
  150    READ(LR,910)CUBSQ
```

```
         IF(CUBSQ.EQ.'NO '.OR.CUBSQ.EQ.'YES')GO TO 180
         WRITE(LW,1008)
         WRITE(LW,1009)
         STOP
C        -- READ SIZE OF MATRIX & ECHOE-CHECK.
  180    READ (LR,1000) N,M
C        -- READ MATRIX ONE COLUMN AT A TIME.
         DO 200 K=1,M
         READ(LR,902)(HEADG(J,K),J=1,80)
         READ (LR,1001) (A(J,K),J=1,N)
  200    CONTINUE
C        -- SQUARE SELECTED SET OF DATA
         IF(CUBSQ.EQ.'NO')GO TO 320
         DO 300 I = 1,N
         DO 300 J = 4,4
         A(I,J) = A(I,J)**2
  300    CONTINUE
C        -- CONVERT DATA TO LOGRITHMIC EQUIVALENTS
  320    IF(LOGRIM.EQ.'NO ')GO TO 360
         DO 350 I = 1,N
         DO 350 J = 4,4
         A(I,J) = LOG(A(I,J))
  350    CONTINUE
  360    DO 380 K = 1,M
         WRITE(LW,1004)(HEADG(J,K),J=1,80)
         WRITE(LW,1005)
         WRITE(LW,1003)(J,A(J,K),J=1,N)
  380    CONTINUE
  500    RETURN
  900    FORMAT(18A4)
  902    FORMAT(80A1)
  910    FORMAT (A3)
 1000    FORMAT (2I10)
 1001    FORMAT (10F8.0)
 1002    FORMAT(//5X,72('*')//6X,18A4//5X,72('*'))
 1003    FORMAT(5(3X,I3,2X,E8.2))
 1004    FORMAT(////21X,80A1/)
 1005    FORMAT(5X,'NO.',1X,'VARIABLE',3X,'NO.',1X,'VARIABLE',3X,
        1 'NO.',1X,'VARIABLE',5X,'NO.',1X,'VARIABLE',4X,'NO.',1X,
        2 'VARIABLE'/5X,3('='),1X,8('='),3X,3('='),1X,8('='),3X,
        3 3('='),1X,8('='),5X,3('='),1X,8('='),4X,3('='),1X,8('='))
 1006    FORMAT(//72('*')//4X,'OPTION FOR CONVERTING INPUT DATA',
        1 'TO LOGARITMIC EQUIVALENTS IS ENTERED INCORRECTLY',
        2 //16X,'INPUT IS: EITHER YES or NO '//72('*'))
 1008    FORMAT(//72('*')//4X,'OPTION FOR SQUARING INPUT DATA',
        1 'IS ENTERED INCORRECTLY'//16X,'INPUT IS: EITHER YES or NO',
        2 //72('*'))
 1009    FORMAT(///20X,'* * P R O G R A M  T E R M I N A T E D  * *')
         END
```

```
C       ********************************************************
C                         PROGRAM 4-2
C                 SUBROUTINE TO PRINT A MATRIX
C                 HAVING N ROWS AND M COLUMNS
C
        SUBROUTINE PRINTM(A,N,M,N1,M1,LW)
C       ********************************************************
        DIMENSION A(N1,M1)
C
C       PRINT MATRIX OUT IN STRIPS OF 10 COLUMNS
        DO 100 IB=1,M,10
        IE=IB+9
        IF (IE-M) 2,2,1
    1   IE=M
C       PRINT MATRIX
    2   DO 101 J=1,N
C       PRINT ROW OF MATRIX
        WRITE (LW,2001) J,(A(J,K),K=IB,IE)
  101   CONTINUE
  100   CONTINUE
        RETURN
 2001   FORMAT(1X,I4,F15.7,2X,F15.7,2X,F15.7,2X,F15.7)
        END
C       ********************************************************
C                         PROGRAM 4-9
C       SUBROUTINE FOR SOLUTION OF N SIMULTANEOUS EQUATIONS.
C       MATRIX A IS N X N AND B IS A COLUMN VECTOR OF N ELEMENTS.
C       A IS CONVERTED TO THE IDENTITY MATRIX.
C       B CONTAINS SOLUTION.
C
        SUBROUTINE SLE(A,B,N,N1,ZERO)
C       ********************************************************
        DIMENSION A(N1,N1),B(N1)
        DO 100 I=1,N
        DIV=A(I,I)
        IF (ABS(DIV)-ZERO) 99,99,1
    1   DO 101 J=1,N
        A(I,J)=A(I,J)/DIV
  101   CONTINUE
        B(I)=B(I)/DIV
        DO 102 J=1,N
        IF (I-J) 2,102,2
    2   RATIO=A(J,I)
        DO 103 K=1,N
        A(J,K)=A(J,K)-RATIO*A(I,K)
  103   CONTINUE
        B(J)=B(J)-RATIO*B(I)
  102   CONTINUE
  100   CONTINUE
   99   RETURN
        END
```

Appendix 8.1: Composite Consumer Price Indices
Base: 1975 = 100

COMPONENTS	1986 (1)	1987 (2)	1988 (3)	Percentage Change	
				(1) and (2) (4)	(2) and (3) (5)
All items	509.7	561.6	776.5	10.2	38.3
Food	499.2	541.9	824.7	8.6	52.2
Drinks	421.4	457.5	479.8	8.6	4.9
Tobacco and Kolanuts	672.7	767.5	829.5	14.1	8.1
Accommodation, fuel and light	362.5	378.1	357.3	4.3	-5.5
Clothing	704.3	787.8	871.4	11.9	10.6
Transport	422.2	478.0	552.9	13.2	15.7
Other services	834.4	1,015.5	1,0191.5	21.8	7.4

Source: Federal Office of Statistics (FOS), Lagos - 1988

Appendix 8.2 Alternative A For all policy options

TITLE - BENIN CITY LEASE WITH OPTION TO BUY MODEL

YEAR	0	1	2	3	4	5	6	7	8	9	10	PRESENT VALUE (11)
GENERAL PRICE INDEX	1.	1.15	1.25	1.52	1.75	2.01	2.31	2.66	3.06	3.53	4.05	
LAND COST	-10350.00											
STRUCTURE COST	-22500.00											
MAINTENANCE COST		-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-3033.20
MANAGEMENT COST		-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-6066.40
REGISTRATION COST	-450.00											
LANDUSE & BLDG. REGULATION	-500.00											
LAND SUBSIDY	103.50											
SALVAGE VALUE FOR LAND											10350.00	10350.00
SALVAGE VALUE FOR STRUCTURE											13500.00	13500.00
MKT RENT	.	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	171.58
FINANCIAL SUBSIDY											596.25	175.65
EXTRA TRANCTION COST											715.50	210.78
MKT VALUE OF UNIT	24500.00											24500.00
POLICY OPTIONS												
Subsidized Public Housing												
Nominal Monthly HH Rent		31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	171.58
Real Monthly HH Rent		27.67	25.46	20.93	18.18	15.83	13.77	11.96	10.40	9.01	7.86	
Nominal Annual Gross Rent		1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	6177.05
Real Annual Gross Rent		996.10	916.42	753.63	654.58	569.91	495.90	430.65	374.35	324.51	282.84	
Rental Income Taxes		-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-185.31
Property Taxes		-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-3639.84
Developer's Cash Flow	-33696.50	-1251.35	-1251.35	-1251.35	-1251.35	-1251.35	-1251.35	-1251.35	-1251.35	-1251.35	-1251.35	-40044.20
Cost to Developer	-33800.00	-2396.87	-2396.87	-2396.87	-2396.87	-2396.87	-2396.87	-2396.87	-2396.87	-2396.87	-2396.87	-46724.74
Benefit to Developer	24603.50	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	30780.55
Sale Price(Sal. Value)											23850.00	
Afford. @ Nom. Ann. Income of:		6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	37705.42
Amt to Rent thro. Afford. Inc.		825.73	825.73	825.73	825.73	825.73	825.73	825.73	825.73	825.73	825.73	4452.65
Afford.@ Real Inc. of:		5337.03	4586.26	3213.91	2487.55	1933.72	1501.57	1161.84	900.59	694.55	541.00	
PV of Afford. Real Ann.Inc.		5337.03	4586.26	2227.40	1525.66	1049.55	721.23	493.85	338.77	231.21	159.37	16670.33
Cost to End User												17883.73
Benefit to End User												24675.65
B-C Ratio for Developer												65.88%
B-C Ratio for End User												137.98%
Afford. Cost Ratio to End User												24.90%

Appendix 8.2 (cont.)

SITES & SERVICES

Item	Init	1	2	3	4	5	6	7	8	9	10	Total
Nominal Monthly HH Rent		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	
Real Monthly HH Rent		13.91	12.80	10.53	9.14	7.96	6.93	6.02	5.23	4.53	3.95	86.28
Nominal Ann. Gross Rent		576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	
Real Ann. Gross Rent		500.87	460.80	378.95	329.14	286.57	249.35	216.54	188.24	163.17	142.22	3106.00
Rental Inc. Taxes		-17.28	-17.28	-17.28	-17.28	-17.28	-17.28	-17.28	-17.28	-17.28	-17.28	-93.18
Property Taxes		-330.00	-330.00	-330.00	-330.00	-330.00	-330.00	-330.00	-330.00	-330.00	-330.00	-1779.48
Developer's Cash Flow	-11846.50	-896.28	-896.28	-896.28	-896.28	-896.28	-896.28	-896.28	-896.28	-896.28	-896.28	-16679.56
Extra Tranctions Cost											330.00	97.21
Benefit to Developer	12103.50	576.08	576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	15209.50
Cost to Developer	-11450.00	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-19389.05
Sale Price											12000.00	
Afford. @ Nominal Ann. Inc.		1971.45	1971.45	1971.45	1971.45	1971.45	1971.45	1971.45	1971.45	1971.45	1971.45	10630.76
Amt. to Rent Thro. Afford. Inc.		236.57	236.57	236.57	236.57	236.57	236.57	236.57	236.57	236.57	236.57	1275.69
Afford. @ Real Inc. of:		1529.07	1313.97	920.79	712.69	554.01	430.20	332.87	258.02	198.99	155.00	
PV of Afford. Real Ann. Inc.		1529.07	1313.97	638.15	437.10	300.70	206.63	141.49	97.06	66.24	45.66	4776.07
Financial subsidy											300.00	88.38
Cost to End User												8991.22
Benefit to End User												88.38
B-C Ratio to Developer												78.44%
B-C Ratio to End User												0.98%
Afford.-Cost Ratio to End User												14.19%

UPGRADING

Item	Init	1	2	3	4	5	6	7	8	9	10	Total
Nominal Monthly HH Rent		13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	70.10
Real Monthly HH Rent		11.30	10.40	8.55	7.43	6.47	5.63	4.89	4.25	3.68	3.21	40.58
Nominal Ann. Gross Rent		468.00	468.00	468.00	468.00	468.00	468.00	468.00	468.00	468.00	468.00	2523.62
Real Ann. Gross Rent		406.96	374.40	307.89	267.43	232.84	202.60	175.94	152.94	132.58	115.56	1461.01
Real Income Taxes		-14.04	-14.04	-14.04	-14.04	-14.04	-14.04	-14.04	-14.04	-14.04	-14.04	-75.71
Property Taxes		-285.00	-285.00	-285.00	-285.00	-285.00	-285.00	-285.00	-285.00	-285.00	-285.00	-1536.82
Extra Tranction Cost											285.00	
Developer's Cash Flow	-10346.50	-1973.54	-1973.54	-1973.54	-1973.54	-1973.54	-1973.54	-1973.54	-1973.54	-1973.54	-1973.54	-20988.52
Benefit to Developer	9603.50	468.00	468.00	468.00	468.00	468.00	468.00	468.00	468.00	468.00	468.00	12127.12
Cost to Developer	-10450.00	-861.54	-861.54	-861.54	-861.54	-861.54	-861.54	-861.54	-861.54	-861.54	-861.54	-15095.73
Sale Price											9500.00	
Afford. @ Nominal Ann. Inc.		1351.54	1351.54	1351.54	1351.54	1351.54	1351.54	1351.54	1351.54	1351.54	1351.54	7287.97
Amt to Rent Thro. Afford. Inc.		162.18	162.18	162.18	162.18	162.18	162.18	162.18	162.18	162.18	162.18	874.56
Afford. @ Real Ann. Inc. of:		1048.26	900.80	631.25	488.59	379.81	294.93	228.20	176.89	136.42	106.26	
PV @ Afford. Real Ann. Inc.		1048.26	900.80	437.49	299.66	206.14	141.66	97.00	66.54	45.41	31.30	3274.26
Financial Subsidy											237.50	69.96
Management Fee											475.00	139.93
Cost to End User												7200.27
Benefit to End User												9569.96
B-C Ratio to Developer												80.33%
B-C Ratio to End User												132.91%
Afford.-Cost Ratio to End User												12.15%

Appendix 8.3 Alternative B model for options I, II & II

TITLE - BENIN CITY LEASE WITH OPTION TO BUY MODEL

YEAR	0	1	2	3	4	5	6	7	8	9	10	PRESENT VALUE 11
GENERAL PRICE INDEX	1.	1.15	1.25	1.52	1.75	2.01	2.31	2.66	3.06	3.53	4.05	
LAND COST	-10350.00											
STRUCTURE COST	-22500.00											
MAINTENANCE COST		-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-3033.20
MANAGEMENT COST		-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-6066.40
REGISTRATION COST	-450.00											
LANDUSE & BLDG. REGULATION	-500.00											
LAND SUBSIDY	103.50											
SALVAGE VALUE FOR LAND											10350.00	10350.00
SALVAGE VALUE FOR STRUCTURE											13500.00	13500.00
MKT RENT	.	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	171.58
FINANCIAL SUBSIDY											596.25	175.65
EXTRA TRANCTION COST											715.50	210.78
MKT VALUE OF UNIT	24500.00											24500.00
POLICY OPTIONS												
Subsidized Public Housing												
Nominal Monthly HH Rent		31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	171.58
Real Monthly HH Rent		27.67	25.46	20.93	18.18	15.83	13.77	11.96	10.40	9.01	7.86	
Nominal Annual Gross Rent		1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	6177.05
Real Annual Gross Rent		996.10	916.42	753.63	654.58	569.91	495.90	430.65	374.35	324.51	282.84	
Rental Income Taxes		-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-185.31
Property Taxes		-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-3639.84
Developer's Cash Flow	-33696.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-42796.10
Cost to Developer	-33800.00	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-42899.60
Benefit to Developer	24603.50											24603.50
Sale Price(Mk. Value)											24500.00	24500.00
Afford. @ Nom. Ann. Income of:		6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	37105.42
Amt to Rent thro. Afford. Inc.		825.73	825.73	825.73	825.73	825.73	825.73	825.73	825.73	825.73	825.73	4452.65
Afford.@ Real Inc. of:		5337.03	4586.26	3213.91	2487.55	1933.72	1501.57	1161.84	900.59	694.55	541.00	16670.33
PV of Afford. Real Ann.Inc.		5337.03	4586.26	2227.40	1525.66	1049.55	721.23	493.85	338.77	231.21	159.37	20885.63
Cost to End User												30852.70
Benefit to End User												
B-C Ratio for Developer												57.35%
B-C Ratio for End User												147.72%
Afford. Cost Ratio to End User												21.32%

Appendix 8.3 (cont.)

SITES & SERVICES

Item	1	2	3	4	5	6	7	8	9	10	Total
Nominal Monthly HH Rent	16.00	16.00	16.	16.0	16.00	16.00	16.00	16.00	16.00	16.00	86.28
Real Monthly HH Rent	13.91	12.80	10.53	9.14	7.96	6.93	6.02	5.23	4.53	3.95	
Nominal Ann. Gross Rent	576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	3106.00
Real Ann. Gross Rent	500.87	460.80	378.95	329.14	266.57	249.35	216.54	188.24	163.17	142.22	
Rental Inc. Taxes	-17.28	-17.28	-17.28	-17.28	-17.28	-17.28	-17.28	-17.28	-17.28	-17.28	-93.18
Property Taxes	-330.00	-330.00	-330.00	-330.00	-330.00	-330.00	-330.00	-330.00	-330.00	-330.00	-1779.48
Developer's Cash Flow [-11046.50]	-896.28	-896.28	-896.28	-896.28	-896.28	-896.28	-896.28	-896.28	-896.28	-896.28	-16679.56
Extra Tranctions Cost											97.21
Benefit to Developer [12103.50]	576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	576.00	15209.50
Cost to Developer [-11450.00]	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-1472.28	-19389.05
Sale Price										12000.00	
Afford. @ Nominal Ann. Inc.	1971.45	1971.45	1971.45	1971.45	1971.45	1971.45	1971.45	1971.45	1971.45	1971.45	10630.76
Amt. to Rent Thro. Afford. Inc.	236.57	236.57	236.57	236.57	236.57	236.57	236.57	236.57	236.57	236.57	1275.69
Afford.@ Real Inc. of:	1529.07	1313.97	920.79	712.69	554.01	430.20	332.87	258.02	198.99	155.00	45.66
PV of Afford. Real Ann. Inc.	1529.07	1313.97	638.15	437.10	300.70	206.63	141.49	97.06	66.24	45.66	4776.07
Financial subsidy										300.00	88.38
Construction Cost										6000.00	1767.53
Invest. on Const.(% of Ann. Gross Rent)	288.00	288.00	288.00	288.00	288.00	288.00	288.00	288.00	288.00	288.00	1553.00
Nom. Month. HH Rent With Const.	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	129.42
Real Month. HH Rent with Const.	20.87	19.20	15.79	13.71	11.94	10.39	9.02	7.84	6.80	5.93	
Nom. Ann. Gross Rent with Const.	864.00	864.00	864.00	864.00	864.00	864.00	864.00	864.00	864.00	864.00	4658.99
Aff.@ Nom. Ann. Inc. with Const.	4120.52	4120.52	4120.52	4120.52	4120.52	4120.52	4120.52	4120.52	4120.52	4120.52	22219.29
Amt.to Rent Thro. Aff. Inc.(const.)	494.46	494.46	494.46	494.46	494.46	494.46	494.46	494.46	494.46	494.46	2666.31
Cost to End User											12311.75
Benefit to End User											88.38
B-C Ratio to Developer											78.44%
B-C Ratio to End User											0.72%
Afford.-Cost Ratio to End User											10.36%

UPGRADING

Item	1	2	3	4	5	6	7	8	9	10	Total
Nominal Monthly HH Rent	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	107.85
Real Monthly HH Rent	17.39	16.00	13.16	11.43	9.95	8.66	7.52	6.54	5.67	4.94	62.44
Nominal Ann. Gross Rent	720.00	720.00	720.00	720.00	720.00	720.00	720.00	720.00	720.00	720.00	3882.49
Real Ann. Gross Rent	626.09	576.00	473.68	411.43	358.21	311.69	270.68	235.29	203.97	177.78	2247.71
Real Income Taxes	-21.60	-21.60	-21.60	-21.60	-21.60	-21.60	-21.60	-21.60	-21.60	-21.60	-116.47
Property Taxes	-450.00	-450.00	-450.00	-450.00	-450.00	-450.00	-450.00	-450.00	-450.00	-450.00	-2426.56
Developer's Cash Flow [-15846.50]	-2139.10	-2139.10	-2139.10	-2139.10	-2139.10	-2139.10	-2139.10	-2139.10	-2139.10	-2139.10	-27381.28
Extra Tranction Cost											132.56
Benefit to Developer [15103.50]	720.00	720.00	720.00	720.00	720.00	720.00	720.00	720.00	720.00	720.00	18985.99
Cost to Developer [-15950.00]	-1034.10	-1034.10	-1034.10	-1034.10	-1034.10	-1034.10	-1034.10	-1034.10	-1034.10	-1034.10	-21526.23
Sale Price										15000.00	
Afford. @ Nominal Ann. Inc.	2957.92	2957.92	2957.92	2957.92	2957.92	2957.92	2957.92	2957.92	2957.92	2957.92	15950.13
Amt. to Rent Thro. Afford. Inc.	354.95	354.95	354.95	354.95	354.95	354.95	354.95	354.95	354.95	354.95	1914.02
Afford.@ Real Ann. Inc. of:	2294.17	1971.45	1381.53	1069.30	831.23	645.47	499.43	387.13	298.56	232.55	
PV @ Afford. Real Ann. Inc.	2294.17	1971.45	957.47	655.82	451.16	310.03	212.29	145.62	99.39	68.51	7165.91
Financial Subsidy										375.00	110.47
Management Fee										750.00	220.94
Cost to End User											11471.01
Benefit to End User											15110.47
B-C Ratio to Developer											88.20%
B-C Ratio to End User											131.73%
Afford.-Cost Ratio to End User											16.69%

Appendix 8.4   Alternative C for option I

TITLE - BENIN CITY LEASE WITH OPTION TO BUY MODEL

	0	1	2	3	4	5	6	7	8	9	10	PRESENT VALUE 11
YEAR												
GENERAL PRICE INDEX	1.	1.15	1.25	1.52	1.75	2.01	2.31	2.66	3.06	3.53	4.05	
LAND COST	-10350.00											
STRUCTURE COST	-22500.00											
MAINTENANCE COST		-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-562.50	-3033.20
MANAGEMENT COST		-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-1125.00	-6066.40
REGISTRATION COST	-450.00											
LANDUSE & BLDG. REGULATION	-500.00											
LAND SUBSIDY	103.50											
SALVAGE VALUE FOR LAND											10350.00	10350.00
SALVAGE VALUE FOR STRUCTURE											13500.00	13500.00
MKT RENT	.	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	171.58
FINANCIAL SUBSIDY											596.25	175.65
EXTRA TRANCTION COST											715.50	210.78
MKT VALUE OF UNIT	24500.00											24500.00
POLICY OPTIONS												
SUBSIDIZED PUBLIC HOUSING												
Nominal Monthly HH Rent		31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	31.82	171.58
Real Monthly HH Rent		27.67	25.46	20.93	18.18	15.83	13.77	11.96	10.40	9.01	7.86	
Nominal Annual Gross Rent		1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	1145.52	6177.05
Real Annual Gross Rent		996.10	916.42	753.63	654.58	569.91	495.90	430.65	374.35	324.51	282.84	
Rental Income Taxes		-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-34.37	-185.31
Property Taxes		-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-675.00	-3639.84
Developer's Cash Flow	-33696.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-42796.10
Cost to Developer	-33800.00	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-1687.50	-42899.60
Benefit to Developer	24603.50											24603.50
Sale Price(Sal. Value)											23850.00	
Afford.% Nom. Ann. Income of:		6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	6881.12	37105.42
Amt to Rent thro. Afford. Inc.		825.73	825.73	825.73	825.73	825.73	825.73	825.73	825.73	825.73	825.73	4452.65
Afford.% Real Inc. of:		5337.03	4586.26	3213.91	2487.55	1933.72	1501.57	1161.84	900.59	694.55	541.00	16670.33
PV of Afford. Real Ann.Inc.		5337.03	4586.26	2227.40	1525.66	1049.55	721.23	493.85	338.77	231.21	159.37	20235.63
Cost to End User												30237.83
Benefit to End User												
B-C Ratio for Developer												57.35%
B-C Ratio for End User												149.43%
Afford. Cost Ratio to End User												22.00%

Appendix 8.5A   Mortgage Financing Model at 8% Interest Rate

TITLE - MORTGAGE FINANCING ON THE MOST FEASIBLE POLICY OPTION.

PURCHASE INPUT

SALES PRICE	12000
EXTRA TRANCTION COST	0.03

FINANCING INPUT

Mortgage Amount	12000
Interest Rate on Mort.	0.08
Mort. Term	25
EQUITY INVEST.(DOWN PAY.)	0

RENT - INCOME INPUT

INTERVENTION	0.12
Financial Subsidy	0.25
AMT. TO RENT THRO. AFFORD	236.57
AFFORD. @ NORMINAL INCOME	1971.45
ELASTICITY	0.55
CONSTANT	-1.40
MKT. RENT	16

YEAR	BEG. BAL.	MORT. PAY.	INTEREST	AMORTIZATION	END BAL.	AFFORD. @ NO	A.R.A.I.	A.R.A.I./MORT
1	12000.00	1124.15	960.00	164.15	11835.85	1971.45	236.57	21.04%
2	11835.85	1124.15	946.87	177.28	11658.58	1971.45	236.57	21.04%
3	11658.58	1124.15	932.69	191.46	11467.12	1971.45	236.57	21.04%
4	11467.12	1124.15	917.37	206.78	11260.34	1971.45	236.57	21.04%
5	11260.34	1124.15	900.83	223.32	11037.02	1971.45	236.57	21.04%
6	11037.02	1124.15	882.96	241.18	10795.84	1971.45	236.57	21.04%
7	10795.84	1124.15	863.67	260.48	10535.36	1971.45	236.57	21.04%
8	10535.36	1124.15	842.83	281.32	10254.05	1971.45	236.57	21.04%
9	10254.05	1124.15	820.32	303.82	9950.23	1971.45	236.57	21.04%
10	9950.23	1124.15	796.02	328.13	9622.10	1971.45	236.57	21.04%
11	9622.10	1124.15	769.77	354.38	9267.72	1971.45	236.57	21.04%
12	9267.72	1124.15	741.42	382.73	8884.99	1971.45	236.57	21.04%
13	8884.99	1124.15	710.80	413.35	8471.65	1971.45	236.57	21.04%
14	8471.65	1124.15	677.73	446.41	8025.23	1971.45	236.57	21.04%
15	8025.23	1124.15	642.02	482.13	7543.11	1971.45	236.57	21.04%
16	7543.11	1124.15	603.45	520.70	7022.41	1971.45	236.57	21.04%
17	7022.41	1124.15	561.79	562.35	6460.06	1971.45	236.57	21.04%
18	6460.06	1124.15	516.80	607.34	5852.72	1971.45	236.57	21.04%
19	5852.72	1124.15	468.22	655.93	5196.79	1971.45	236.57	21.04%
20	5196.79	1124.15	415.74	708.40	4488.39	1971.45	236.57	21.04%
21	4488.39	1124.15	359.07	765.07	3723.31	1971.45	236.57	21.04%
22	3723.31	1124.15	297.86	826.28	2897.03	1971.45	236.57	21.04%
23	2897.03	1124.15	231.76	892.38	2004.65	1971.45	236.57	21.04%
24	2004.65	1124.15	160.37	963.77	1040.88	1971.45	236.57	21.04%
25	1040.88	1124.15	83.27	1040.88	0.00	1971.45	236.57	21.04%

Appendix 8.5B   Mortgage Financing Model at 7% Interest Rate

TITLE - MORTGAGE FINANCING ON THE MOST FEASIBLE POLICY OPTION.

PURCHASE INPUT

SALES PRICE	12000
EXTRA TRANSCTION COST	0.03

FINANCING INPUT

Mortgage Amount	12000
Interest Rate on Mort.	0.07
Mort. Term	25
EQUITY INVEST.(DOWN PAY.)	0

RENT - INCOME INPUT

INTERVENTION	0.12
Financial Subsidy	0.25
AMT. TO RENT THRO. AFFORD	236.57
AFFORD. @ NORMINAL INCOME	1971.45
ELASTICITY	0.55
CONSTANT	-1.40
MKT. RENT	16

YEAR	BEG. BAL	MORT. PAY.	INTEREST	AMORTIZATION	END BAL.	AFFORD. @ NO A.R.A.I.	A.R.A.I.	A.R.A.I./MORT
1	12000.00	1029.73	840.00	189.73	11810.27	1971.45	236.57	22.97%
2	11810.27	1029.73	826.72	203.01	11607.27	1971.45	236.57	22.97%
3	11607.27	1029.73	812.51	217.22	11390.05	1971.45	236.57	22.97%
4	11390.05	1029.73	797.30	232.42	11157.63	1971.45	236.57	22.97%
5	11157.63	1029.73	781.03	248.69	10908.93	1971.45	236.57	22.97%
6	10908.93	1029.73	763.63	266.10	10642.83	1971.45	236.57	22.97%
7	10642.83	1029.73	745.00	284.73	10358.11	1971.45	236.57	22.97%
8	10358.11	1029.73	725.07	304.66	10053.45	1971.45	236.57	22.97%
9	10053.45	1029.73	703.74	325.98	9727.46	1971.45	236.57	22.97%
10	9727.46	1029.73	680.92	348.80	9378.66	1971.45	236.57	22.97%
11	9378.66	1029.73	656.51	373.22	9005.44	1971.45	236.57	22.97%
12	9005.44	1029.73	630.38	399.35	8606.09	1971.45	236.57	22.97%
13	8606.09	1029.73	602.43	427.30	8178.79	1971.45	236.57	22.97%
14	8178.79	1029.73	572.52	457.21	7721.58	1971.45	236.57	22.97%
15	7721.58	1029.73	540.51	489.22	7232.37	1971.45	236.57	22.97%
16	7232.37	1029.73	506.27	523.46	6708.91	1971.45	236.57	22.97%
17	6708.91	1029.73	469.62	560.10	6148.80	1971.45	236.57	22.97%
18	6148.80	1029.73	430.42	599.31	5549.49	1971.45	236.57	22.97%
19	5549.49	1029.73	388.46	641.26	4908.23	1971.45	236.57	22.97%
20	4908.23	1029.73	343.58	686.15	4222.08	1971.45	236.57	22.97%
21	4222.08	1029.73	295.55	734.18	3487.90	1971.45	236.57	22.97%
22	3487.90	1029.73	244.15	785.57	2702.33	1971.45	236.57	22.97%
23	2702.33	1029.73	189.16	840.56	1861.76	1971.45	236.57	22.97%
24	1861.76	1029.73	130.32	899.40	962.36	1971.45	236.57	22.97%
25	962.36	1029.73	67.37	962.36	0.00	1971.45	236.57	22.97%

Appendix 8.5C   Mortgage Financing Model at 6% Interest Rate

TITLE - MORTGAGE FINANCING ON THE MOST FEASIBLE POLICY OPTION.

PURCHASE INPUT
SALES PRICE   12000
EXTRA TRANCTION COST   0.03

FINANCING INPUT
Mortgage Amount   12000
Interest Rate on Mort.   0.06
Mort. Term   25
EQUITY INVEST.(DOWN PAY.)   0

RENT - INCOME INPUT
INTERVENTION   0.12
Financial Subsidy   0.25

AMT. TO RENT THRO. AFFORD   236.57
AFFORD. @ NORMINAL INCOME 1971.45

ELASTICITY   0.55
CONSTANT   -1.40
MKT. RENT   16

YEAR	BEG. BAL	MORT. PAY.	INTEREST	AMORTIZATION	END BAL.	AFFORD. @ NO A.R.A.I.	A.R.A.I.	A.R.A.I./MORT.PAY.
1	12000.00	938.72	720.00	218.72	11781.28	1971.45	236.57	25.20%
2	11781.28	938.72	706.88	231.84	11549.44	1971.45	236.57	25.20%
3	11549.44	938.72	692.97	245.75	11303.68	1971.45	236.57	25.20%
4	11303.68	938.72	678.22	260.50	11043.18	1971.45	236.57	25.20%
5	11043.18	938.72	662.59	276.13	10767.05	1971.45	236.57	25.20%
6	10767.05	938.72	646.02	292.70	10474.35	1971.45	236.57	25.20%
7	10474.35	938.72	628.46	310.26	10164.09	1971.45	236.57	25.20%
8	10164.09	938.72	609.85	328.87	9835.22	1971.45	236.57	25.20%
9	9835.22	938.72	590.11	348.61	9486.61	1971.45	236.57	25.20%
10	9486.61	938.72	569.20	369.52	9117.09	1971.45	236.57	25.20%
11	9117.09	938.72	547.03	391.70	8725.39	1971.45	236.57	25.20%
12	8725.39	938.72	523.52	415.20	8310.20	1971.45	236.57	25.20%
13	8310.20	938.72	498.61	440.11	7870.09	1971.45	236.57	25.20%
14	7870.09	938.72	472.21	466.52	7403.57	1971.45	236.57	25.20%
15	7403.57	938.72	444.21	494.51	6909.07	1971.45	236.57	25.20%
16	6909.07	938.72	414.54	524.18	6384.89	1971.45	236.57	25.20%
17	6384.89	938.72	383.09	555.63	5829.26	1971.45	236.57	25.20%
18	5829.26	938.72	349.76	588.96	5240.30	1971.45	236.57	25.20%
19	5240.30	938.72	314.42	624.30	4615.99	1971.45	236.57	25.20%
20	4615.99	938.72	276.96	661.76	3954.23	1971.45	236.57	25.20%
21	3954.23	938.72	237.25	701.47	3252.77	1971.45	236.57	25.20%
22	3252.77	938.72	195.17	743.55	2509.21	1971.45	236.57	25.20%
23	2509.21	938.72	150.55	788.17	1721.04	1971.45	236.57	25.20%
24	1721.04	938.72	103.26	835.46	885.59	1971.45	236.57	25.20%
25	885.59	938.72	53.14	885.59	0.00	1971.45	236.57	25.20%

Appendix 8.5D Mortgage Financing Model at 5% Interest Rate

TITLE - MORTGAGE FINANCING ON THE MOST FEASIBLE POLICY OPTION.

PURCHASE INPUT

SALES PRICE	12000
EXTRA TRANCTION COST	0.03

FINANCING INPUT

Mortgage Amount	12000
Interest Rate on Mort.	0.05
Mort. Term	25
EQUITY INVEST.(DOWN PAY.)	0

RENT - INCOME INPUT

INTERVENTION	0.12
Financial Subsidy	0.25
AMT. TO RENT THRO. AFFORD	236.57
AFFORD. @ NORMINAL INCOME	1971.45
ELASTICITY	0.55
CONSTANT	-1.40
MKT. RENT	16

YEAR	BEG. BAL	MORT. PAY.	INTEREST	AMORTIZATION	END BAL.	AFFORD. @ NO A.R.A.I.	A.R.A.I.	A.R.A.I./MORT.PAY.
1	12000.00	851.43	600.00	251.43	11748.57	1971.45	236.57	27.79%
2	11748.57	851.43	587.43	264.00	11484.57	1971.45	236.57	27.79%
3	11484.57	851.43	574.23	277.20	11207.37	1971.45	236.57	27.79%
4	11207.37	851.43	560.37	291.06	10916.31	1971.45	236.57	27.79%
5	10916.31	851.43	545.82	305.61	10610.69	1971.45	236.57	27.79%
6	10610.69	851.43	530.53	320.89	10289.80	1971.45	236.57	27.79%
7	10289.80	851.43	514.49	336.94	9952.86	1971.45	236.57	27.79%
8	9952.86	851.43	497.64	353.79	9599.07	1971.45	236.57	27.79%
9	9599.07	851.43	479.95	371.48	9227.60	1971.45	236.57	27.79%
10	9227.60	851.43	461.38	390.05	8837.55	1971.45	236.57	27.79%
11	8837.55	851.43	441.88	409.55	8427.99	1971.45	236.57	27.79%
12	8427.99	851.43	421.40	430.03	7997.97	1971.45	236.57	27.79%
13	7997.97	851.43	399.90	451.53	7546.43	1971.45	236.57	27.79%
14	7546.43	851.43	377.32	474.11	7072.33	1971.45	236.57	27.79%
15	7072.33	851.43	353.62	497.81	6574.51	1971.45	236.57	27.79%
16	6574.51	851.43	328.73	522.70	6051.81	1971.45	236.57	27.79%
17	6051.81	851.43	302.59	548.84	5502.97	1971.45	236.57	27.79%
18	5502.97	851.43	275.15	576.28	4926.69	1971.45	236.57	27.79%
19	4926.69	851.43	246.33	605.10	4321.59	1971.45	236.57	27.79%
20	4321.59	851.43	216.08	635.35	3686.24	1971.45	236.57	27.79%
21	3686.24	851.43	184.31	667.12	3019.13	1971.45	236.57	27.79%
22	3019.13	851.43	150.96	700.47	2318.65	1971.45	236.57	27.79%
23	2318.65	851.43	115.93	735.50	1583.16	1971.45	236.57	27.79%
24	1583.16	851.43	79.16	772.27	810.89	1971.45	236.57	27.79%
25	810.89	851.43	40.54	810.89	0.00	1971.45	236.57	27.79%

Appendix 8.5E   Mortgage Financing Model at 4% Interest Rate

TITLE - MORTGAGE FINANCING ON THE MOST FEASIBLE POLICY OPTION.

PURCHASE INPUT

SALES PRICE	12000
EXTRA TRANCTION COST	0.03

FINANCING INPUT

Mortgage Amount	12000
Interest Rate on Mort.	0.04
Mort. Term	25
EQUITY INVEST.(DOWN PAY.)	0

RENT - INCOME INPUT	0.12
INTERVENTION	
Financial Subsidy	0.25

AMT. TO RENT THRO. AFFORD	236.57
AFFORD. @ NOMINAL INCOME	1971.45

ELASTICITY	0.55
CONSTANT	-1.40
MKT. RENT	16

YEAR	BEG. BAL	MORT. PAY.	INTEREST	AMORTIZATION	END BAL.	AFFORD. @ NO A.R.A.I.	A.R.A.I.	A.R.A.I./MORT.PAY.
1	12000.00	768.14	480.00	288.14	11711.86	1971.45	236.57	30.80%
2	11711.86	768.14	468.47	299.67	11412.19	1971.45	236.57	30.80%
3	11412.19	768.14	456.49	311.66	11100.53	1971.45	236.57	30.80%
4	11100.53	768.14	444.02	324.12	10776.41	1971.45	236.57	30.80%
5	10776.41	768.14	431.06	337.09	10439.32	1971.45	236.57	30.80%
6	10439.32	768.14	417.57	350.57	10088.75	1971.45	236.57	30.80%
7	10088.75	768.14	403.55	364.59	9724.16	1971.45	236.57	30.80%
8	9724.16	768.14	388.97	379.18	9344.98	1971.45	236.57	30.80%
9	9344.98	768.14	373.80	394.34	8950.64	1971.45	236.57	30.80%
10	8950.64	768.14	358.03	410.12	8540.52	1971.45	236.57	30.80%
11	8540.52	768.14	341.62	426.52	8113.99	1971.45	236.57	30.80%
12	8113.99	768.14	324.56	443.58	7670.41	1971.45	236.57	30.80%
13	7670.41	768.14	306.82	461.33	7209.08	1971.45	236.57	30.80%
14	7209.08	768.14	288.36	479.78	6729.30	1971.45	236.57	30.80%
15	6729.30	768.14	269.17	498.97	6230.33	1971.45	236.57	30.80%
16	6230.33	768.14	249.21	518.93	5711.40	1971.45	236.57	30.80%
17	5711.40	768.14	228.46	539.69	5171.71	1971.45	236.57	30.80%
18	5171.71	768.14	206.87	561.27	4610.44	1971.45	236.57	30.80%
19	4610.44	768.14	184.42	583.73	4026.71	1971.45	236.57	30.80%
20	4026.71	768.14	161.07	607.08	3419.64	1971.45	236.57	30.80%
21	3419.64	768.14	136.79	631.36	2788.28	1971.45	236.57	30.80%
22	2788.28	768.14	111.53	656.61	2131.67	1971.45	236.57	30.80%
23	2131.67	768.14	85.27	682.88	1448.79	1971.45	236.57	30.80%
24	1448.79	768.14	57.95	710.19	738.60	1971.45	236.57	30.80%
25	738.60	768.14	29.54	738.60	0.00	1971.45	236.57	30.80%

Appendix 8.5F Mortgage Financing Model at 3% Interest Rate

TITLE - MORTGAGE FINANCING ON THE MOST FEASIBLE POLICY OPTION.

PURCHASE INPUT
SALES PRICE	12000
EXTRA TRANCTION COST	0.03

FINANCING INPUT
Mortgage Amount	12000
Interest Rate on Mort.	0.03
Mort. Term	25
EQUITY INVEST.(DOWN PAY.)	0

RENT - INCOME INPUT
INTERVENTION	0.12
Financial Subsidy	0.25

AMT. TO RENT THRO. AFFORD	236.57
AFFORD. @ NORMINAL INCOME	1971.45
ELASTICITY	0.55
CONSTANT	-1.40
MKT. RENT	16

YEAR	BEG. BAL	MORT. PAY.	INTEREST	AMORTIZATION	END BAL.	AFFORD. @ NO A.R.A.I.	A.R.A.I.	A.R.A.I./MORT.PAY.
1	12000.00	689.13	360.00	329.13	11670.87	1971.45	236.57	34.33%
2	11670.87	689.13	350.13	339.01	11331.86	1971.45	236.57	34.33%
3	11331.86	689.13	339.96	349.18	10982.68	1971.45	236.57	34.33%
4	10982.68	689.13	329.48	359.65	10623.02	1971.45	236.57	34.33%
5	10623.02	689.13	318.69	370.44	10252.58	1971.45	236.57	34.33%
6	10252.58	689.13	307.58	381.56	9871.02	1971.45	236.57	34.33%
7	9871.02	689.13	296.13	393.00	9478.02	1971.45	236.57	34.33%
8	9478.02	689.13	284.34	404.79	9073.23	1971.45	236.57	34.33%
9	9073.23	689.13	272.20	416.94	8656.29	1971.45	236.57	34.33%
10	8656.29	689.13	259.69	429.45	8226.84	1971.45	236.57	34.33%
11	8226.84	689.13	246.81	442.33	7784.51	1971.45	236.57	34.33%
12	7784.51	689.13	233.54	455.60	7328.91	1971.45	236.57	34.33%
13	7328.91	689.13	219.87	469.27	6859.65	1971.45	236.57	34.33%
14	6859.65	689.13	205.79	483.35	6376.30	1971.45	236.57	34.33%
15	6376.30	689.13	191.29	497.85	5878.46	1971.45	236.57	34.33%
16	5878.46	689.13	176.35	512.78	5365.68	1971.45	236.57	34.33%
17	5365.68	689.13	160.97	528.16	4837.51	1971.45	236.57	34.33%
18	4837.51	689.13	145.13	544.01	4293.50	1971.45	236.57	34.33%
19	4293.50	689.13	128.81	560.33	3733.17	1971.45	236.57	34.33%
20	3733.17	689.13	112.00	577.14	3156.03	1971.45	236.57	34.33%
21	3156.03	689.13	94.68	594.45	2561.58	1971.45	236.57	34.33%
22	2561.58	689.13	76.85	612.29	1949.29	1971.45	236.57	34.33%
23	1949.29	689.13	58.48	630.66	1318.64	1971.45	236.57	34.33%
24	1318.64	689.13	39.56	649.58	669.06	1971.45	236.57	34.33%
25	669.06	689.13	20.07	669.06	0.00	1971.45	236.57	34.33%

Appendix 9.1:   Choice of Policy Option by the People

	POLICY OPTION	FREQ. %		CUM %	
		PUBLIC	POPULAR	PUBLIC	POPULAR
1.	Dwelling Unit	26.4	31.6	26.4	31.0
2.	Core House (Only)	12.4	4.9	38.8	36.5
3.	Serviced Plot and Mortgage Loan	22.3	6.9	61.1	43.4
4.	Mortgage Loan (Only)	27.3	31.6	88.4	75.0
5.	Serviced Plot (Only)	7.5	1.6	95.9	76.6
6.	Nothing from Government	4.1	23.4	100.0	100.0

Sources: (a)   Field Survey, 1988
            (b)   Field Survey, 1990

* The policy options have been arranged in descending order of cost to Government.

Appendix 9.2 Alternative A Mortgage Financing Model for Households on an Annual Income of N5000 Prepared to Pay 12% of their Income for Rent at 9% Interest Rate

TITLE - MORTGAGE FINANCING ON THE MOST FEASIBLE POLICY OPTION.

PURCHASE INPUT
SALES PRICE 6000.00
EXTRA TRANCTION COST 3.00%

FINANCING INPUT
Mortgage Amount 6000.00
Interest Rate on Mort. 0.09
Mort. Term 25
EQUITY INVEST.(DOWN PAY.) 0.00

RENT - INCOME INPUT 12.00%
INTERVENTION
Financial Subsidy 2.50%

AMT TO RENT THRO. AFFORD 600.00
A RD. @ NORMINAL INCOME 5000.00

ELASTICITY 55.00%
CONSTANT -1.4
MKT. RENT 50.00

YEAR	BEG. BAL	MORT. PAY.	INTEREST	AMORTIZATION	END BAL.	AFFORD.@ NOM INCOME	A.R.A.I.	A.R.A.I / MORT.PAY.
1	6000.00	610.84	540.00	70.84	5929.16	5000.00	600.00	98.23%
2	5929.16	610.84	533.62	77.21	5851.95	5000.00	600.00	98.23%
3	5851.95	610.84	526.68	84.16	5767.79	5000.00	600.00	98.23%
4	5767.79	610.84	519.10	91.74	5676.05	5000.00	600.00	98.23%
5	5676.05	610.84	510.84	99.99	5576.06	5000.00	600.00	98.23%
6	5576.06	610.84	501.85	108.99	5467.07	5000.00	600.00	98.23%
7	5467.07	610.84	492.04	118.80	5348.26	5000.00	600.00	98.23%
8	5348.26	610.84	481.34	129.49	5218.77	5000.00	600.00	98.23%
9	5218.77	610.84	469.69	141.15	5077.62	5000.00	600.00	98.23%
10	5077.62	610.84	456.99	153.85	4923.77	5000.00	600.00	98.23%
11	4923.77	610.84	443.14	167.70	4756.07	5000.00	600.00	98.23%
12	4756.07	610.84	428.05	182.79	4573.28	5000.00	600.00	98.23%
13	4573.28	610.84	411.60	199.24	4374.04	5000.00	600.00	98.23%
14	4374.04	610.84	393.66	217.17	4156.87	5000.00	600.00	98.23%
15	4156.87	610.84	374.12	236.72	3920.15	5000.00	600.00	98.23%
16	3920.15	610.84	352.81	258.02	3662.12	5000.00	600.00	98.23%
17	3662.12	610.84	329.59	281.25	3380.88	5000.00	600.00	98.23%
18	3380.88	610.84	304.28	306.56	3074.32	5000.00	600.00	98.23%
19	3074.32	610.84	276.69	334.15	2740.17	5000.00	600.00	98.23%
20	2740.17	610.84	246.62	364.22	2375.94	5000.00	600.00	98.23%
21	2375.94	610.84	213.84	397.00	1978.94	5000.00	600.00	98.23%
22	1978.94	610.84	178.10	432.73	1546.21	5000.00	600.00	98.23%
23	1546.21	610.84	139.16	471.68	1074.53	5000.00	600.00	98.23%
24	1074.53	610.84	96.71	514.13	560.40	5000.00	600.00	98.23%
25	560.40	610.84	50.44	560.40	0.00	5000.00	600.00	98.23%

Appendix 9.3A   Recommended Mortgage Financing Model for Alternative C for Households whose Annual Income is N5000, Prepared to Pay 17% of Their Income for Mortgage at 9% Interest Rate

TITLE - MORTGAGE FINANCING ON THE MOST FEASIBLE POLICY OPTION.

PURCHASE INPUT
SALES PRICE 9000.00
EXTRA TRANCTION COST 3.00%

FINANCING INPUT
Mortgage Amount 9000.00
Interest Rate on Mort. 0.09
Mort. Term 25
EQUITY INVEST.(DOWN PAY.) 0.00

RENT - INCOME INPUT
INTERVENTION 17.00%
Financial Subsidy 2.50%

AMT. TO RENT THRO. AFFORD 900.00
AFFORD. @ NORMINAL INCOME 5000.00

ELASTICITY 55.00%
CONSTANT -1.4
MKT. RENT 70.80

YEAR	BEG. BAL	MORT. PAY.	INTEREST	AMORTIZATION	END BAL.	AFFORD.@ NOM INCOME	A.R.A.I.	A.R.A.I./MORT.PAY.
1	9000.00	916.26	810.00	106.26	8893.74	5000.00	850.00	92.77%
2	8893.74	916.26	800.44	115.82	8777.92	5000.00	850.00	92.77%
3	8777.92	916.26	790.01	126.24	8651.68	5000.00	850.00	92.77%
4	8651.68	916.26	778.65	137.60	8514.08	5000.00	850.00	92.77%
5	8514.08	916.26	766.27	149.99	8364.09	5000.00	850.00	92.77%
6	8364.09	916.26	752.77	163.49	8200.60	5000.00	850.00	92.77%
7	8200.60	916.26	738.05	178.20	8022.40	5000.00	850.00	92.77%
8	8022.40	916.26	722.02	194.24	7828.16	5000.00	850.00	92.77%
9	7828.16	916.26	704.53	211.72	7616.43	5000.00	850.00	92.77%
10	7616.43	916.26	685.48	230.78	7385.66	5000.00	850.00	92.77%
11	7385.66	916.26	664.71	251.55	7134.11	5000.00	850.00	92.77%
12	7134.11	916.26	642.07	274.19	6859.92	5000.00	850.00	92.77%
13	6859.92	916.26	617.39	298.86	6561.06	5000.00	850.00	92.77%
14	6561.06	916.26	590.50	325.76	6235.30	5000.00	850.00	92.77%
15	6235.30	916.26	561.18	355.08	5880.22	5000.00	850.00	92.77%
16	5880.22	916.26	529.22	387.04	5493.18	5000.00	850.00	92.77%
17	5493.18	916.26	494.39	421.87	5071.31	5000.00	850.00	92.77%
18	5071.31	916.26	456.42	459.84	4611.47	5000.00	850.00	92.77%
19	4611.47	916.26	415.03	501.22	4110.25	5000.00	850.00	92.77%
20	4110.25	916.26	369.92	546.33	3563.92	5000.00	850.00	92.77%
21	3563.92	916.26	320.75	595.50	2968.41	5000.00	850.00	92.77%
22	2968.41	916.26	267.16	649.10	2319.31	5000.00	850.00	92.77%
23	2319.31	916.26	208.74	707.52	1611.80	5000.00	850.00	92.77%
24	1611.80	916.26	145.06	771.19	840.60	5000.00	850.00	92.77%
25	840.60	916.26	75.65	840.60	0.00	5000.00	850.00	92.77%

Appendix 9.3B Recommended Mortgage Financing Model for Alternative C for Households whose Annual Income is N5000, Prepared to Pay 18% of Their Income for Mortgage at 9% Interest Rate

TITLE - MORTGAGE FINANCING ON THE MOST FEASIBLE POLICY OPTION.

PURCHASE INPUT

SALES PRICE	9000.00
EXTRA TRANCTION COST	3.00%
FINANCING INPUT	
Mortgage Amount	9000.00
Interest Rate on Mort.	0.09
Mort. Term	25
EQUITY INVEST.(DOWN PAY.)	0.00
RENT - INCOME INPUT	
INTERVENTION	18.00%
Financial Subsidy	2.50%
AMT. TO RENT THRO. AFFORD	900.00
AFFORD. @ NORMINAL INCOME	5000.00
ELASTICITY	55.00%
CONSTANT	-1.4
MKT. RENT	76.60

YEAR	BEG. BAL	MORT. PAY.	INTEREST	AMORTIZATION	END BAL.	AFFORD.@ NOM INCOME	A.R.A.I.	A.R.A.I./MORT.PAY.
1	9000.00	916.26	810.00	106.26	8893.74	5000.00	900.00	98.23%
2	8893.74	916.26	800.44	115.82	8777.92	5000.00	900.00	98.23%
3	8777.92	916.26	790.01	126.24	8651.68	5000.00	900.00	98.23%
4	8651.68	916.26	778.65	137.60	8514.08	5000.00	900.00	98.23%
5	8514.08	916.26	766.27	149.99	8364.09	5000.00	900.00	98.23%
6	8364.09	916.26	752.77	163.49	8200.60	5000.00	900.00	98.23%
7	8200.60	916.26	738.05	178.20	8022.40	5000.00	900.00	98.23%
8	8022.40	916.26	722.02	194.24	7828.16	5000.00	900.00	98.23%
9	7828.16	916.26	704.53	211.72	7616.43	5000.00	900.00	98.23%
10	7616.43	916.26	685.48	230.78	7385.66	5000.00	900.00	98.23%
11	7385.66	916.26	664.71	251.55	7134.11	5000.00	900.00	98.23%
12	7134.11	916.26	642.07	274.19	6859.92	5000.00	900.00	98.23%
13	6859.92	916.26	617.39	298.86	6561.06	5000.00	900.00	98.23%
14	6561.06	916.26	590.50	325.76	6235.30	5000.00	900.00	98.23%
15	6235.30	916.26	561.18	355.08	5880.22	5000.00	900.00	98.23%
16	5880.22	916.26	529.22	387.04	5493.18	5000.00	900.00	98.23%
17	5493.18	916.26	494.39	421.87	5071.31	5000.00	900.00	98.23%
18	5071.31	916.26	456.42	459.84	4611.47	5000.00	900.00	98.23%
19	4611.47	916.26	415.03	501.22	4110.25	5000.00	900.00	98.23%
20	4110.25	916.26	369.92	546.33	3563.92	5000.00	900.00	98.23%
21	3563.92	916.26	320.75	595.50	2968.41	5000.00	900.00	98.23%
22	2968.41	916.26	267.16	649.10	2319.31	5000.00	900.00	98.23%
23	2319.31	916.26	208.74	707.52	1611.80	5000.00	900.00	98.23%
24	1611.80	916.26	145.06	771.19	840.60	5000.00	900.00	98.23%
25	840.60	916.26	75.65	840.60	0.00	5000.00	900.00	98.23%

Appendix 9.3C Mortgage Financing Model for Recommended Alternative C for Target Population whose Annual Income is N5000 prepared to pay 18.5% of their Income for Mortgage at 9% Interest Rate

TITLE - MORTGAGE FINANCING ON THE MOST FEASIBLE POLICY OPTION.

PURCHASE INPUT
SALES PRICE 9000.00
EXTRA TRANCTION COST 3.00%

FINANCING INPUT
Mortgage Amount 9000.00
Interest Rate on Mort. 0.09
Mort. Term 25
EQUITY INVEST.(DOWN PAY.) 0.00

RENT - INCOME INPUT
INTERVENTION 18.50%
Financial Subsidy 2.50%

AMT. TO RENT THRO. AFFORD 925.00
AFFORD. @ NORMINAL INCOME 5000.00

ELASTICITY 55.00%
CONSTANT -1.4
MKT. RENT 77.00

YEAR	BEG. BAL	MORT. PAY.	INTEREST	AMORTIZATION	END BAL.	AFFORD.@ NOM INCOME	A.R.A.I.	A.R.A.I / MORT.PAY.
1	9000.00	916.26	810.00	106.26	8893.74	5000.00	925.00	100.95%
2	8893.74	916.26	800.44	115.82	8777.92	5000.00	925.00	100.95%
3	8777.92	916.26	790.01	126.24	8651.68	5000.00	925.00	100.95%
4	8651.68	916.26	778.65	137.60	8514.08	5000.00	925.00	100.95%
5	8514.08	916.26	766.27	149.99	8364.09	5000.00	925.00	100.95%
6	8364.09	916.26	752.77	163.49	8200.60	5000.00	925.00	100.95%
7	8200.60	916.26	738.05	178.20	8022.40	5000.00	925.00	100.95%
8	8022.40	916.26	722.02	194.24	7828.16	5000.00	925.00	100.95%
9	7828.16	916.26	704.53	211.72	7616.43	5000.00	925.00	100.95%
10	7616.43	916.26	685.48	230.78	7385.66	5000.00	925.00	100.95%
11	7385.66	916.26	664.71	251.55	7134.11	5000.00	925.00	100.95%
12	7134.11	916.26	642.07	274.19	6859.92	5000.00	925.00	100.95%
13	6859.92	916.26	617.39	298.86	6561.06	5000.00	925.00	100.95%
14	6561.06	916.26	590.50	325.76	6235.30	5000.00	925.00	100.95%
15	6235.30	916.26	561.18	355.08	5880.22	5000.00	925.00	100.95%
16	5880.22	916.26	529.22	387.04	5493.18	5000.00	925.00	100.95%
17	5493.18	916.26	494.39	421.87	5071.31	5000.00	925.00	100.95%
18	5071.31	916.26	456.42	459.84	4611.47	5000.00	925.00	100.95%
19	4611.47	916.26	415.03	501.22	4110.25	5000.00	925.00	100.95%
20	4110.25	916.26	369.92	546.33	3563.92	5000.00	925.00	100.95%
21	3563.92	916.26	320.75	595.50	2968.41	5000.00	925.00	100.95%
22	2968.41	916.26	267.16	649.10	2319.31	5000.00	925.00	100.95%
23	2319.31	916.26	208.74	707.52	1611.80	5000.00	925.00	100.95%
24	1611.80	916.26	145.06	771.19	840.60	5000.00	925.00	100.95%
25	840.60	916.26	75.65	840.60	0.00	5000.00	925.00	100.95%

Appendix 9.4A   Recommended Mortgage Financing Model for Target Population with an Annual Income of N2000

Prepared to Pay 13% of Their Income for Mortgage at 9% Interest Rate

TITLE - MORTGAGE FINANCING ON THE MOST FEASIBLE POLICY OPTION.

PURCHASE INPUT

SALES PRICE	2500.00
EXTRA TRANCTION COST	3.00%

FINANCING INPUT

Mortgage Amount	2500.00
Interest Rate on Mort.	0.09
Mort. Term	25
EQUITY INVEST.(DOWN PAY.)	0.00
RENT - INCOME INPUT	13.00%

INTERVENTION

Financial Subsidy	2.50%
AMT. TO RENT THRO. AFFORD	260.00
AFFORD.@ NORMINAL INCOME	2000.00
ELASTICITY	55.00%
CONSTANT	-1.4
MKT. RENT	21.60

YEAR	BEG. BAL	MORT. PAY.	INTEREST	AMORTIZATION	END BAL.	AFFORD.@ NOM INCOME	A.R.A.I.	A.R.A.I./MORT.PAY.
1	2500.00	254.52	225.00	29.52	2470.48	2000.00	260.00	102.15%
2	2470.48	254.52	222.34	32.17	2438.31	2000.00	260.00	102.15%
3	2438.31	254.52	219.45	35.07	2403.24	2000.00	260.00	102.15%
4	2403.24	254.52	216.29	38.22	2365.02	2000.00	260.00	102.15%
5	2365.02	254.52	212.85	41.66	2323.36	2000.00	260.00	102.15%
6	2323.36	254.52	209.10	45.41	2277.94	2000.00	260.00	102.15%
7	2277.94	254.52	205.01	49.50	2228.44	2000.00	260.00	102.15%
8	2228.44	254.52	200.56	53.96	2174.49	2000.00	260.00	102.15%
9	2174.49	254.52	195.70	58.81	2115.68	2000.00	260.00	102.15%
10	2115.68	254.52	190.41	64.10	2051.57	2000.00	260.00	102.15%
11	2051.57	254.52	184.64	69.87	1981.70	2000.00	260.00	102.15%
12	1981.70	254.52	178.35	76.16	1905.53	2000.00	260.00	102.15%
13	1905.53	254.52	171.50	83.02	1822.52	2000.00	260.00	102.15%
14	1822.52	254.52	164.03	90.49	1732.03	2000.00	260.00	102.15%
15	1732.03	254.52	155.88	98.63	1633.39	2000.00	260.00	102.15%
16	1633.39	254.52	147.01	107.51	1525.88	2000.00	260.00	102.15%
17	1525.88	254.52	137.33	117.19	1408.70	2000.00	260.00	102.15%
18	1408.70	254.52	126.78	127.73	1280.97	2000.00	260.00	102.15%
19	1280.97	254.52	115.29	139.23	1141.74	2000.00	260.00	102.15%
20	1141.74	254.52	102.76	151.76	989.98	2000.00	260.00	102.15%
21	989.98	254.52	89.10	165.42	824.56	2000.00	260.00	102.15%
22	824.56	254.52	74.21	180.31	644.25	2000.00	260.00	102.15%
23	644.25	254.52	57.98	196.53	447.72	2000.00	260.00	102.15%
24	447.72	254.52	40.29	214.22	233.50	2000.00	260.00	102.15%
25	233.50	254.52	21.02	233.50	0.00	2000.00	260.00	102.15%

Appendix 9.4B **Recommended Mortgage Financing Model for Target Population with an Annual Income of N2000**

Prepared to Pay 15.5% of Their Income for Mortgage at 9% Interest Rate

TITLE - MORTGAGE FINANCING ON THE MOST FEASIBLE POLICY OPTION.

PURCHASE INPUT	
SALES PRICE	3000.00
EXTRA TRANCTION COST	3.00%
FINANCING INPUT	
Mortgage Amount	3000.00
Interest Rate on Mort.	0.09
Mort. Term	25
EQUITY INVEST.(DOWN PAY.)	0.00
RENT - INCOME INPUT	15.50%
INTERVENTION	
Financial Subsidy	2.50%
AMT. TO RENT THRO. AFFORD	310.00
AFFORD. @ NORMINAL INCOME	2000.00
ELASTICITY	55.00%
CONSTANT	-1.4
MKT. RENT	25.80

YEAR	BEG. BAL	MORT. PAY.	INTEREST	AMORTIZATION	END BAL.	AFFORD.% NOM INCOME	A.R.A.I.	A.R.A.I./MORT.PAY.
1	3000.00	305.42	270.00	35.42	2964.58	2000.00	310.00	101.50%
2	2964.58	305.42	266.81	38.61	2925.97	2000.00	310.00	101.50%
3	2925.97	305.42	263.34	42.08	2883.89	2000.00	310.00	101.50%
4	2883.89	305.42	259.55	45.87	2838.03	2000.00	310.00	101.50%
5	2838.03	305.42	255.42	50.00	2788.03	2000.00	310.00	101.50%
6	2788.03	305.42	250.92	54.50	2733.53	2000.00	310.00	101.50%
7	2733.53	305.42	246.02	59.40	2674.13	2000.00	310.00	101.50%
8	2674.13	305.42	240.67	64.75	2609.39	2000.00	310.00	101.50%
9	2609.39	305.42	234.84	70.57	2538.81	2000.00	310.00	101.50%
10	2538.81	305.42	228.49	76.93	2461.89	2000.00	310.00	101.50%
11	2461.89	305.42	221.57	83.85	2378.04	2000.00	310.00	101.50%
12	2378.04	305.42	214.02	91.40	2286.64	2000.00	310.00	101.50%
13	2286.64	305.42	205.80	99.62	2187.02	2000.00	310.00	101.50%
14	2187.02	305.42	196.83	108.59	2078.43	2000.00	310.00	101.50%
15	2078.43	305.42	187.06	118.36	1960.07	2000.00	310.00	101.50%
16	1960.07	305.42	176.41	129.01	1831.06	2000.00	310.00	101.50%
17	1831.06	305.42	164.80	140.62	1690.44	2000.00	310.00	101.50%
18	1690.44	305.42	152.14	153.28	1537.16	2000.00	310.00	101.50%
19	1537.16	305.42	138.34	167.07	1370.08	2000.00	310.00	101.50%
20	1370.08	305.42	123.31	182.11	1187.97	2000.00	310.00	101.50%
21	1187.97	305.42	106.92	198.50	989.47	2000.00	310.00	101.50%
22	989.47	305.42	89.05	216.37	773.10	2000.00	310.00	101.50%
23	773.10	305.42	69.58	235.84	537.27	2000.00	310.00	101.50%
24	537.27	305.42	48.35	257.06	280.20	2000.00	310.00	101.50%
25	280.20	305.42	25.22	280.20	0.00	2000.00	310.00	101.50%

Appendix 9.4C Recommended Mortgage Financing Model for Target Population with an Annual Income of N2000

Prepared to Pay 20% of Their Income for Mortgage at 9% Interest Rate

TITLE - MORTGAGE FINANCING ON THE MOST FEASIBLE POLICY OPTION.

PURCHASE INPUT
SALES PRICE 4000.00
EXTRA TRANCTION COST 3.00%

FINANCING INPUT
Mortgage Amount 4000.00
Interest Rate on Mort. 0.09
Mort. Term 25
EQUITY INVEST.(DOWN PAY.) 0.00

RENT - INCOME INPUT
INTERVENTION 20.00%
Financial Subsidy 2.50%

AMT. TO RENT THRO. AFFORD 400.00
AFFORD. @ NORMINAL INCOME 2000.00

ELASTICITY 55.00%
CONSTANT -1.4
MKT. RENT 33.30

YEAR	BEG. BAL	MORT. PAY.	INTEREST	AMORTIZATION	END BAL.	AFFORD.@ NOM INCOME	A.R.A.I.	A.R.A.I./MORT.PAY.
1	4000.00	407.23	360.00	47.23	3952.77	2000.00	400.00	98.23%
2	3952.77	407.23	355.75	51.48	3901.30	2000.00	400.00	98.23%
3	3901.30	407.23	351.12	56.11	3845.19	2000.00	400.00	98.23%
4	3845.19	407.23	346.07	61.16	3784.03	2000.00	400.00	98.23%
5	3784.03	407.23	340.56	66.66	3717.37	2000.00	400.00	98.23%
6	3717.37	407.23	334.56	72.66	3644.71	2000.00	400.00	98.23%
7	3644.71	407.23	328.02	79.20	3565.51	2000.00	400.00	98.23%
8	3565.51	407.23	320.90	86.33	3479.18	2000.00	400.00	98.23%
9	3479.18	407.23	313.13	94.10	3385.08	2000.00	400.00	98.23%
10	3385.08	407.23	304.66	102.57	3282.51	2000.00	400.00	98.23%
11	3282.51	407.23	295.43	111.80	3170.72	2000.00	400.00	98.23%
12	3170.72	407.23	285.36	121.86	3048.85	2000.00	400.00	98.23%
13	3048.85	407.23	274.40	132.83	2916.03	2000.00	400.00	98.23%
14	2916.03	407.23	262.44	144.78	2771.24	2000.00	400.00	98.23%
15	2771.24	407.23	249.41	157.81	2613.43	2000.00	400.00	98.23%
16	2613.43	407.23	235.21	172.02	2441.41	2000.00	400.00	98.23%
17	2441.41	407.23	219.73	187.50	2253.92	2000.00	400.00	98.23%
18	2253.92	407.23	202.85	204.37	2049.54	2000.00	400.00	98.23%
19	2049.54	407.23	184.46	222.77	1826.78	2000.00	400.00	98.23%
20	1826.78	407.23	164.41	242.81	1583.96	2000.00	400.00	98.23%
21	1583.96	407.23	142.56	264.67	1319.29	2000.00	400.00	98.23%
22	1319.29	407.23	118.74	288.49	1030.81	2000.00	400.00	98.23%
23	1030.81	407.23	92.77	314.45	716.35	2000.00	400.00	98.23%
24	716.35	407.23	64.47	342.75	373.60	2000.00	400.00	98.23%
25	373.60	407.23	33.62	373.60	0.00	2000.00	400.00	98.23%

Appendix 9.5   Recorded and Recommended Plot Sizes for Site and Services Projects

Plot size sq. m.	% of completed plots	% of proposed plots	% of total	Countries
< 100	15	41	23	Colombia, El Salvador, Guinea, Jamaica, India, Indonesia, Korea, Morocco, Pakistan
101-200	69	21	55	Colombia, Chile, Guinea, Indonesia, Iraq, Kenya, Nicaragua, Pakistan, Senegal, Zambia
201-300	8	14	8	Colombia, Kenya, Senegal, Tanzania
301-400	1	24	9	Botswana, Kenya, Zambia
> 400	7	0	5	Malawi, Sudan
	100	100	100	

Agency/source	Plot size sq. m.	Configuration with minimum frontage	Assumed household size	Remarks
United Nations Relief and Works Agency - UNRWA	105	7.5 m x 14 m	5	Recommended minimum plot size
US Agency for International Development, USAID, 1966	100	5 m x 16.7 m	5	Recommended minimum plot size
USAID survey in 11 Latin American Countries	204		5-6	Average recorded (Range: 104-467 sq. m.)
Organisation of American States, QAS, 1968	40	5 m x 8 m	6	Recommended minimum plot size
Scanning survey 80 projects, 1973	60-200		5-8	Recorded weighted Range 15 to 850 sqm
Survey in 10 Latin American countries, M.I.T. 1964	165		5-6	Recorded Average (Range: 74-254 sq. m.)

Source: Patel (1974)

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