HOUSING QUALITY BETWEEN RESIDENTIAL NEIGBOURHOODS IN JOS, NIGERIA

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Abstract

Residents of Jos are stratified into low, medium and high density dwellers. However, inequalities exist in the living condition of residents across residential areas. This study aims at examining the quality of residential neigbourhoods in Jos. 400 households were surveyed across 15 locations employing cluster sampling technique in order to generate data on the physical, social and economic characteristics of households. The analysis revealed that residents of low density zone are predominantly people of high status, those in the high density zone are mostly peasants while the medium density zone has a blend of people of high status and peasants. The occupation of householders served as basis for establishing status. It was assumed that the status of a person translates into his earning, which also influence his choice of location and type of housing to reside. It was observed that most residents of low density zone and some parts of medium density zone live in adequate housing and decent neighbourhoods. Those in the high density zone and some parts of medium density zone live in inadequate housing that lack basic infrastructure and facilities. The high density neigbourhoods are unplanned and unsafe with poor sanitary condition. The condition of the neigbourhoods allows us to conclude that such locations have suffered long neglect by government with respect to infrastructure development, provision of social amenities, and enforcement of development control standards. The study proffered suitable recommendations based on the findings.

Key words: Housing quality, residential neigbourhoods, infrastructure and facilities, Jos, Nigeria

INTRODUCTION

Housing is defined as "the process of providing a large number of residential buildings on a permanent basis with adequate physical infrastructure and social amenities, (services) in planned, decent, safe, and sanitary neighbourhoods to meet the basic and special needs of the population" (Federal Ministry of Work and Housing, 2002 in Kuroshi and Bala, 2005). Adequate housing therefore should provide protection from the elements, minimize the risk of disease and injury, and contribute to the physical, mental and social wellbeing of the occupants. Inadequate housing according to Neutze (1998) in Australian Bureau of Statistics (2006) can pose serious health risks.

Studies have shown that many residents of urban areas in developing countries live in inadequate housing and in neigbourhoods that lack the basic requirements of liveable environments (Dung-Gwom 2007, 2008; Rojas 2000; McLeod, 2001, 2003). Ooi and Phua (2007) have observed that most cities in developing world have become centres where vast numbers of people compete for the most basic social services and infrastructural facilities: for a room within reach of employment with an affordable rent, or vacant land on which a shelter can be erected without fear of eviction; for places in schools; for medical treatment for health problems or injuries, or a bed in a hospital; for access to clean drinking water; for a place on a bus or train; and for a corner on a pavement or square to sell some goods—quite apart from the enormous competition for jobs.

Serious challenges continue to exist in urban settlements ranging from scarcity of public services, marked social inequalities in habitat conditions, social and spatial segregation, inequality, poverty, unemployment and increased economic vulnerability, environmental degradation, complexities in the

governance structures for urban environmental service provision, pollution, and vulnerability to technological and natural disasters (UN Commissions of Sustainable Development, 2004). Residents of urban areas in Nigeria are not eluded of these trends. Study by Dung-Gwom (2007) showed that inequalities exist in the provision of basic facilities across residential neigbourhoods in Jos metropolis. Dung-Gwom also observed that urban poverty is also affecting the living condition of urban residents in Jos.

This study examines housing quality between residential neigbourhoods in Jos metropolis. Data on physical, economic and social characteristics of residents was generated from households and neigbourhoods within the study area. In the context of this study, the term "household" refers to all the persons who occupy a dwelling unit. A "dwelling unit" is a house, an apartment, a group of rooms, or a single room that is occupied as separate living quarters. A "separate living quarters" is a dwelling unit which provide facilities for exclusive use of its occupants. The term "neighbourhood" is defined as a residential area in a particular location of city.

Brief Overview of the Study Area

Jos is a colonial creation and its history and early growth are closely tied to tin mining industry on the Jos Plateau. From a small town of less than 10,000 in 1930, 20,000 in 1950, the population grew to over 155,000 in 1973 and to over 600,000 in 1991 (Dung-Gwom, 2008). Today, Jos is the administrative headquarters of Plateau State.

The study covered Jos North and Jos South Local Government Areas (LGA). These Local Governments, until 1991 were administered as one Local Government Council, but for effective administration they were separated into Jos North and Jos South LGA respectively. Jos North Local Government Area has Jos Town as its Council headquarters. It has a population of 429,300 based on the 2006 National Census. Jos South is located 15 kilometres south of Jos North, and has Bukuru as the Council headquarters. It has a population of 306,716 based on the 2006 National Census. Jos North and South Local Government Areas are jointly referred to as "Jos" for the purpose of this study.

Jos is experiencing an urban sprawl as a result of urbanization and the landscape of the city is changing. The city is conurbating with surrounding rural settlements and this has undermined the previous approved Master Plan which expired in 2001. A new greater Jos-Bukuru Master Plan is currently being designed to accommodate the present state of development and future growth.

METHODOLOGY

Residential neigbourhoods in Jos are zoned into low, medium and high densities. There are eight (8) locations in the low density zone, twenty one (21) in the medium density zone and sixteen (16) in the high density zone respectively. A total of forty five (45) locations are found across the three (3) residential zones. The forty five (45) residential locations were treated as the entire population out of which one-third locations were randomly sampled to ensure adequate coverage. The summation of one-third locations across the three residential zones makes up the sample size. The survey of residential neigbourhoods therefore covered fifteen (15) locations.

Cluster sampling (area sampling) technique was employed to establish the number of households to be surveyed across the fifteen (15) locations which make up the sample size. This technique was chosen to overcome the problem of non availability of record on the number of households in the residential locations. Ibanga (2006) and Trochim (2006) recommend the use of cluster or area sampling technique where the exact population size is not known in advance and where the population under consideration

is disbursed across a wide geographic region as it is the case in this study. Furthermore, the Nigerian Federal office of statistics has utilized the technique in its National Household Surveys. The study also assumed that people of similar characteristics tend to "cluster" or live together in designated residential areas – what sociologists may refer to as "cultural areas" (Ibanga, 2006).

From the fifteen (15) residential locations which formed the sample size cutting across the three (3) zones, areas to be surveyed were created. Random selection method was used in choosing neigbourhoods to be covered in the survey. Neigbourhoods were chosen on the criteria that such locations are delineated by either natural or man made features (e.g minor, secondary and main roads, water course, mountain, school, rail line etc) while a survey of the households within the delineated areas was carried out. All together 400 households were surveyed; 57 in low density zone, 238 in medium density zone and 105 in high density zone.

Data analyses involved comparing characteristics of neigbourhoods, determining the adequacy of facilities provided in houses in relation to household sizes as well as assessing the conditions of the residential neigbourhoods. Tables were employed in summarizing data and simple percentage was used in the analysis of data.

DATA PRESENTATION AND ANALYSIS

Classification of Residential Areas in Jos Metropolis

Residential neigbourhoods in Jos are stratified by planning provisions of the Jos Metropolitan Development Board (JMDB). Based on JMDB provisions, there are three categories of residential zones as presented in table 1 with varying planning and site requirements.

The planning and site requirement for the different categories of residential zones is a sort of social stratification but with an objective of achieving a well organized human settlement. These provisions will serve as the basis for evaluating the physical characteristics of residential neigbourhoods as would be seen in subsequent analysis.

Table 1: Planning and Site Requirements of Residential Areas in Jos

Items		*Low Density Zone*	*Medium Density zone*	*High Density Zone*
Plot size		900 – 1200m^2	450-900m^2	225-450m^2
Plot coverage		30%	45%	60%
Building height		1-2 storey	1-3 storey	1-4 story
Setbacks	Front	6m	5m	3m
	Sides	3m	2m	2m
	Rear	3m	2m	2m
Front edge of plot to edge of road		4m	3m	3m
Fence wall height		1.5m	1.1m	1m
Temporary structures		Not allowed	Allowed within well defined plot boundary	Allowed within well defined plot boundary
Landscaping		Mandatory to grow flower and hedge	Mandatory to grow flowers	Desirable to grow flow
Commercial uses		Neighbourhood shops only	Shopping complex allowed, no street trading	Shops/offices allowed, street trading allowed but off the road reservation
Conversion of uses		Not allowed	Not allowed	Only those that will not change the use significantly
Industrial uses		Not allowed	Not allowed	Service industries of small scale can be allowed
Accessibility		Well defined access roads of 7-10m with front drainage	Well defined access roads of 7-10m width with front drainage	Well defined access road width 6-7m with front drainage

Source: Jos Metropolitan Development Board JMDB (2006)

Common Types of Residential Housing in Jos

The common types of residential housing in Jos are presented in table 2. Bungalow and duplex housing are predominant in the low density zone. Bungalows constitute 64.4% while duplexes constitute 31.5% of the houses surveyed within the low density zone. Within the medium density zone, bungalows are common and constitute 73.5% while tenement and duplex housing types constitute 20.5% and 5.0% respectively of the houses surveyed. Tenement housing type is common in the high density zone and constitutes 90.4% while bungalow housing type constitutes 9.5% of the surveyed houses in the zone. It is also important to state that in Jos, bungalow and duplex housing types are associated with the elite class while tenement housing is associated with people of low status.

Table 2: Common Types of Residential Housing in Jos

Housing types	*Low Density Zone*		*Medium Density Zone*		*High Density Zone*	
	Number of houses	Percent	Number of houses	Percent	Number of houses	Percent
Tenement building	-	-	49	20.5	95	90.4
Block of flats	-	-	02	0.8	-	-
Bungalow	39	64.4	175	73.5	10	9.5
Duplex	18	31.5	12	5.0		
Total	*57*	*100*	*238*	*100*	*105*	*100*

Source: Field Survey (2009)

It is also important to note that within the high and medium density zones, there are neigbourhoods with houses of old design reflecting the pattern and form of a rural setting. This is as a result of urbanization which is causing a continuous conurbation of the city with surrounding rural settlements. There are rural settlements that have been trapped into the urban setting and have today been designated as low, medium or high density zone.

Householders' Status

The purpose of the data analysis was to overcome the difficulty encountered in obtaining the income levels of householders across the residential zones. It was assumed that a person's status translates into his earnings. Table 3 presents the classes of residents across the residential zones under study. The survey of households revealed that civil servants, employees of private organizations, military officers, political office holders and professional persons are mostly found in the low density zone. This class of people in Nigeria are considered to be of high socio-economic status or "the rich". Furthermore, they have renter or ownership affordability for bungalow and duplex housing types, which happened to be common in the low density zone.

Residents of medium density zone as shown in table 3 are comprised of civil servants, employees of private organizations, military officers, professionals, artisans, traders, unemployed persons and retirees. The medium density zone has a blend of people of varying status. This explains why the zone has different sort of housing types as shown in table 2 to accommodate persons of varying affordability.

The high density zone provides affordable shelter for artisans, petty traders, unemployed persons, retirees, civil servants and some employees of private organizations. Majority of these people are considered to be the urban peasants or the economically weak class whose affordability is mostly for tenement housing as shown in table 2. Tenement housing types in Jos often provide smaller and cheaper apartments such as single room, two rooms (bedroom and sitting room), two bedrooms and a sitting room etc. A common feature of tenement housing in Jos is the sharing of facilities by occupants of a number of apartments, which can be significant.

Table 3: Householders' Status

Category		*Low Density Zone*		*Medium Density Zone*		*High Density Zone*	
		Number of houses	Percent	Number of houses	Percent	Number of houses	Percent
Civil servants		24	42.1	112	47.0	10	9.5
Employed in private organization		09	15.7	46	8.9	05	4.7
Military officer		03	5.2	09	3.8	-	-
Political office holder		12	21.0	07	2.9	-	-
Self employed	Professional class	09	15.7	49	20.6		
	Artisan			04	1.7	40	38.0
	Unskilled person	-	-	-	-	05	4.7
	Trader			07	2.9	08	7.6
	Petty trader	-	-	-	-	25	23.8
Unemployed persons		-	-	03	2.8		
Retiree		-	-	04	1.7	10	9.5
Total		*57*	*100*	*238*	*100*	*105*	*100*

Source: Field Survey (2009)

The survey also revealed that some indigenous residents of Jos before now were farmers by occupation, but due to urbanization many were dispossessed of their land and today they constitute majority of unskilled persons, petty traders and unemployed in the city.

Materials Employed in Construction of Houses

Most of the houses in the low and medium density zones are constructed with conventional materials such as sandscrete blocks or bricks as shown in table 4. House owners in low and medium density zones can afford the cost of these materials unlike those in the high density zone. Mud houses are a dominant feature of high density zone. Mud is cheap, available and affordable in Jos. Out the houses surveyed in the high density zone, 47.1% are constructed with mud while 42.8% are constructed with sandscrete block or bricks. 9.5% of the houses are constructed with a combination of sandscrete blocks or bricks and mud based materials.

Coloured long span aluminium roofing sheet which is durable, exotic and expensive compared to most of the corrugated iron roofing sheets in the Nigerian markets was found to be a common roof covering to houses in the low density zone. 78.9% of the surveyed houses were covered with coloured long span roof sheets while 21.0% are covered with corrugated iron sheets. In medium density zone, 85.2% of the houses are covered with corrugated iron sheets while 14.7% are covered with long span roofing sheets. Within the high density zone, 95.2% of the houses were found to be covered with corrugated iron sheets while 4.7% had long span aluminium roof.

With regard to external wall finishing (table 4), all the houses surveyed in the low density zone are finished in different sort of paints and stone materials. In the medium density zone, 79.4% of the

houses were painted while 20.5% were rendered but without painting. The survey also showed that only 33.3% of houses in the high density zone are finished in painting while 57.1% of the houses are rendered with no painting. 9.5% of the houses however were without any external finishing.

It is important to state here that absence of painting to external wall allows for fungal stains or mould occurrence on wall surfaces and the wall is susceptible to damp penetration. The total absence of rendering to external wall is also responsible for erosion of mortar joints. In the course of the survey, erosion of mortar joints was found to be common on houses that are not rendered and which results to water penetration of the wall causing dampness. Furthermore, wall finishing generally beautifies a house. As such the lack of external finishes. As such the lack of external finishes and all subsequent defacing leads to poor aesthetics and generation of dullness of the environment.

Table 4: Materials Employed in Construction of Houses

Building Materials		*Low Density Zone*		*Medium Density Zone*		*High Density Zone*	
		Number of houses	Percent	Number of houses	Percent	Number of houses	Percent
Structural Material	Sandscrete block or bricks	57	100	238	100	45	42.8
	Mud	-	-	-	-	50	47.6
	Combination of Sandscrete block or brick with mud	-	-	-	-	10	9.5
Roof covering	Corrugated iron sheet	12	21.0	203	85.2	100	95.2
	Long span aluminium sheet	45	78.9	35	14.7	5	4.7
Finishing material (external walls)	Paint	51	89.4	189	79.4	35	33.3
	Tiles	-	-	-	-	-	-
	Rendered without paint	-	-	49	20.5	60	57.1
	No finishing at all	-	-	-	-	10	9.5
	Stone facing	6	10.5	-	-	-	-

Source: Field Survey (2009)

Neigbourhoods where mud houses were found during the survey had before now existed as rural settlements in which the common and available building material was mud and grass. The houses were constructed in the traditional pattern and style with local materials. Some of the houses have become very old and the owners are gradually renovating or reconstructing them with conventional materials. Perhaps this may be the reasons why some of the houses surveyed have a combination of mud and sandscrete blocks.

Availability of Amenities in Households

The analyses as regards the amenities available to households are limited to source of water and power (electricity) supply in households. The sources of water supply to households in Jos are presented in table 5. The household survey carried out revealed that 21.0% of low density households are connected to the municipal water supply system, 10.5% of the households rely on boreholes while 68.0% combine two sources (municipal supply with either well or borehole). In the medium density

zone, 82.2% of the households rely on well water, 8.8% use borehole water, 2.9% are connected to the municipal water system while 5.8% combine two sources (municipal supply with either well or borehole). In the high density zone, 90.4% of the households solely depend on well water and only 9.5% are connected to the municipal water system.

Water supply in Jos is still a big challenge because of the inefficiency and inadequacy of the municipal water supply organization. The capacity of the municipal water treatment plant has become inadequate due to urbanization and population growth. In addition to that, there is problem of power (electricity) supply to ensure continued operation by the Water Board and there is also a problem of efficient water distribution within the city. Only few areas are connected to the municipal water supply system and most of the households connected are within the low density zone with few in the medium and high density zone. Large percentage of households in medium and high density zones depends on well water often is not safe for drinking. Moreso, during the dry season, most of the wells often dry up causing severe water shortage for medium and high density areas.

Table 5: Availability of Amenities in Households

Amenities/Sources		*Low Density Zone*		*Medium Density Zone*		*High Density Zone*	
		Number of houses	Percent	Number of houses	Percent	Number of houses	Percent
Water	Well	-	-	196	82.2	95	90.4
	Public mains	12	21.0	07	2.9	10	9.5
	Borehole	06	10.5	21	8.8	-	-
	Combination of two sources (public mains with well or borehole	39	68.0	14	5.8	-	-
Power (electricity)	Connected to grid	15	26.3	203	85.2	95	90.4
	Combination of grid and power Generator	42	73.6	35	14.2	10	9.5

Source: Field Survey (2009)

With regard to power (electricity) supply, virtually all households surveyed are connected to the grid as shown in table 5. But due to the epileptic nature of power supply from the grid, some residents have to often augment inadequate power supply with power generators of different sizes. The problem with the use of power generator is that it causes a lot of noise and air pollution. Several accidents have been reported whereby residents died due to carbon-monoxide poisoning because of inadequate safety precautions employed in the use of generators.

Provision of Sanitation Facilities in Households

The household surveyed generated data on the types of toilets and baths facilities as well as solid waste collection and disposal. Result of the analysis is presented in table 7. The analysis revealed that 100% of the households surveyed in the low and medium density zones are using water system toilets and baths connected to septic tank and soakaway. These households have provision for solid waste collection in form of refuse bins except that some of the residents lack proper arrangement for disposal of waste. There is an agency known as the Plateau State Environmental Protection Agency which is

responsible for collection and disposal of solid waste from the city. Its activities have helped in clearing heaps of garbage disposed around the city indiscriminately and also regulating harmful environmental practice. The Agency is however unable to scale up its operations to cover the entire city.

Within the high density zone, only 38.0% and 19.0% of household surveyed have water system toilets and baths respectively. 61.9% of the households are using pit latrine while 80.9% are using unregulated drain baths. Stagnant water was observed around houses that use unregulated drains and foul air (smell) is characteristic of the surrounding environment. Some households in the high density zone are being faced with problem of solid waste collection and disposal. The analysis showed that 76.1% of the households collect their waste by means of refuse bins while 23.8% use open garbage heaps around their homes. The problem with the use of open garbage heaps is that rain water usually carries waste and deposit it into drainage gutters thereby causing blockage. Furthermore, it was observed that the external walls of some houses get damp due to inadequate drainage provision.

Lack of adequate water supply is affecting the level of sanitation of residents across residential zones in Jos. The quantity and quality of water available to household users determine the level of their sanitation. Unfortunately greater percentage of houses across the zone relies on well water for household uses as has been earlier noted (table 5). Most of the houses that use water system toilets and baths often depend on well water, which in most cases is inadequate.

Table 6: Sanitation Facilities in households

Facilities		*Low Density Zone*		*Medium Density Zone*		*High Density Zone*	
		Number of houses	Percent	Number of houses	Percent	Number of houses	Percent
Toilets	Water system	57	100	238	100	40	38.0
	Pit latrine	-	-	-	-	65	61.9
Bath	Water system	57	100	238	100	20	19.0
	Unregulated drain baths	-	-	-	-	85	80.9
Solid waste collection and disposal	Refuse bins	57	100	238	100	80	76.1
	Open garbage heap	-	-	-	-	25	23.8

Source: Field Survey (2009)

The relationship of the number of users to number of toilets and bathrooms is used to establish their adequacy in this analysis (table 7). The analysis revealed that 100% of households surveyed in the low density zone are occupied as separate living quarters, having two or more toilets and bathrooms. All houses surveyed in the low density zone have household sizes of less or equal to 10 persons.

In the medium density zone, 59.7% of the households which are separate living quarters, provided for at least one toilet and bathroom and most of them have less or equal to 10 persons or users. 39.9% of the households are multiple occupants on buildings that provides for at least one toilet and bathroom. In the medium density zone, there are multiple occupant buildings that provided for only one toilet and bathroom for more than 11 persons or users in some cases.

In the high density zone, 28.5% of the households were found to be occupied as separate living quarters with at least a provision for one toilet and bathroom. 71.3% of the households are multiple occupants in buildings that provided for at least one toilet and bathroom. There are buildings with more than 16 persons using just one toilet and one bathroom.

Table 7: Provision of Facilities in dwelling unit in relation to users

LOW DENSITY ZONE					
Facilities	*Provision*	*Provision of facilities in relation to users*			
		≤ 4 persons	5-10 persons	11-15 persons	≥ 16 persons
Toilets	1	-	-	-	-
	2	03(5.2%)	08(14.0%)	-	-
	≥3	-	46(80.7%)	-	-
Baths	1	-	-	-	-
	2	06(10.5%)	03(5.2%)	-	-
	≥3	-	48(84.2%)		
MEDIUM DENSITY ZONE					
Facilities	*Provision*	*Provision of facilities in relation to users*			
		≤ 4 persons	5-10 persons	11-15 persons	≥ 16 persons
Toilets	1	42(17.6%)	14(5.8%)	07(2.9%)	-
	2	21(8.8%)	42(17.6%)	-	-
	≥3	03(1.2)	95(39.9%)	14(5.8%)	-
Baths	1	42(17.6%)	14(5.8%)	10(4.2%)	-
	2	21(8.8%)	80(33.6%)	-	-
	≥3	14(5.8)	49(20.5%)	08(3.3)	-
HIGH DENSITY ZONE					
Facilities	*Provision*	*Provision of facilities in relation to users*			
		≤ 4 persons	5-10 persons	11-15 persons	≥ 16 persons
Toilets	1	05(4.7%)	25(23.8%)	60(57.1%)	10(9.5%)
	2	-	-	05(4.7%)	-
	≥3	-	-	-	-
Baths	1	05(4.7%)	25(23.8)	60(57.1%)	10(9.5%)
	2	-	-	05(4.7%)	-
	≥3	-	-	-	-

Source: Field Survey (2009)

The development control standards and regulations for development in Jos have not set standards on number of persons allowed to share facilities such as toilets and bathroom in residential buildings. However, this study has observed that the large percentage of residents in high density area and some parts of the medium density area live in houses that provide inadequate facilities. In buildings where people living in separate dwelling units have to share toilets and bathing facilities experience a lot of inconveniences most especially during peak periods (morning and evening). The inconvenience increases when there is only just a toilet and bathroom for many users (table 7) where more than 16 persons have to share such facilities.

Assessment of Residential Neigbourhoods

This aspect of the study presents the perceived level of compliance to development control standards and regulations as provided by JMDB in table 1. The assessment is based on physical observation of neigbourhoods covered during household survey and the finding is presented in table 8.

Table 8: Assessment of Residential Neigbourhoods

Items		*Low Density Zone*	*Medium Density zone*	*High Density Zone*
Plot size		Above standards in most houses	Within standard in most houses	Below standard in most houses
Plot coverage		Within standard in most houses	Above standards in most houses	Above standard in most houses
Building height		Within standard	Within standard	Within standard
Setbacks	Front	Within standard in most houses	Below standard in most houses	Below standard in most houses
	Sides	Within standard in most houses	Below standard in most houses	Below standard in most places
	Rear	Within standard in most places	Below standard in most houses	Below standard in most houses
Front edge of plot to edge of road		Within standard in most places	Below standard in most places	Below standard in most places
Fence wall height		Above standard in most houses	Above standard in most houses	Absent in most houses. Few available are above standard
Temporary structures		Not common	Common and beyond plot boundary in most houses	Common and beyond plot boundary in almost all houses
Landscaping		Available in most houses	Not common in most houses	Absent in most houses
Commercial uses		Base on standard	Shopping complex available and street trading is common beside the road	Shops/offices available and street trading is common even on the road reservation
Conversion of uses		Not common	Common	Common
Industrial uses		Not common	Common but small scale service industries	Very common but only small scale service industries
Accessibility		Up to standard with front drainage in most places	Below standard and without front drainage in most places	Below standard, very narrow in most places with no front drainage

Field survey (2009)

There is gross violation of development control standards and regulations across residential zones in Jos with little or no action/response by the relevant statutory regulatory bodies. The most terrible situation exists in the high density zone where houses occupy 100% of the plots without provision for access, drainage and circulation spaces. In most of the high density neigbourhoods, there are no spaces between adjoining buildings such that the roof of one building often overlaps that of another. This constitutes a safety hazard particularly with respect to fire outbreak. The above is further aggravated by lack of access roads for fire fighting vehicles. Because of encroachments the feeder

roads also become narrow, such that large vehicles like fire fighting machines and sewage evacuators can not gain access.
It has also been observed that residents often rear animals such as pigs, birds, sheep; goat etc. piggery and poultry farms are common across residential zones. This constitutes health hazards and presently there are no regulations as regards such practices in residential areas. Some haphazard attempts to regulate are ineffective and lot needs to be done to coordinate the work of Development Control Board and Public Health Boards.

Summary of Findings

i) The common types of residential housing are shown on table 2. Bungalow and duplex housing types are dominant in the low density zone; tenement buildings, flats, bungalow and duplex housing types are common in the medium density zone while tenement buildings are the most common housing types in the high density area with just few bungalows.

ii) Residents of low density zone in Jos are people considered to be of high status who are mostly civil servants, some employees of private organizations, military officers, political office holders and some self employed professionals. The urban peasants who are mostly artisans, unskilled persons, petty traders, unemployed persons and retirees are resident in the high density zone. The medium density zone has a blend of high status people and peasants.

iii) With respect of materials employed in construction, most houses in the low and medium density zones are built with sandscrete blocks or bricks while mud houses are common in the high density zone.

iv) Most of the houses in the low density zone are covered with coloured long span aluminium roofing sheets, with few having corrugated iron sheets. This is also similar to medium density houses but the greatest percentage of houses in the high density zone are covered with corrugated iron sheets.

v) In terms of finishing, the houses surveyed in the low density zone are painted externally with some few having stone facing. This is also similar to houses in the medium density zone except that few are rendered with no painting. It is however, different in the high density zone as most of the houses are rendered externally with no painting and there are houses with no finishing at all.

vi) With regard to sanitation facilities, all the houses surveyed in the low and medium density zones have provisions for water system toilets and bathrooms. In the high density zone, greater percentage of houses are still using pit latrines and unregulated drain baths. Solid waste collection in low and medium density zones is by refuse bins whereas open garbage heap is still being used by some residents of high density areas.

vii) All the buildings surveyed in the low density zone are separate dwelling units with provisions for one or more toilet and bathroom each. Most of the buildings have 10 or less occupants or users of facilities. The medium density zone has a combination of buildings which are designed as separate dwelling units and those with multiple dwelling units. Most of the separate dwelling unit buildings have provision for at least one toilet and bathroom. The multiple dwelling buildings also provide for one or more toilet and bathroom with 15 or less persons/users. There is high occurrence of sharing facilities by residents of high density areas in Jos. Most of the buildings surveyed in the high density zone have multiple dwelling units with one or more toilet and bathroom used by less than 16 or more persons in some cases.

viii) There is gross violation of development control standards across the residential zones with limited or no action by relevant statutory bodies. The most terrible cases are found in the high density zone and some parts of medium density zone where plots are built up almost 100% with little allowances for circulation. Access roads reservations are encroached on, creating a very narrow access for bigger vehicles including fire fighting machines and sewage evacuators.

Buildings are erected very close to one another with the roof overlapping thereby constituting a safety hazard. In case of fire outbreak on one of the building, other adjoining buildings will also be affected.

ix) The practice of animal rearing around residential neigbourhoods was observed across the residential zones with the worse cases found in the high density zone.

Conclusion and Recommendation

Based on the data generate in the survey of 400 households across 15 residential locations in Jos, the study therefore concludes that only residents of low density locations and some parts of medium density zone live in adequate housing. It is also concluded that residents of high density locations and some parts of medium density zone live in inadequate housing that lack basic physical infrastructure and social amenities. Most of the high density neigbourhoods where people of low socio-economic status reside are unplanned, indecent, and unsafe with poor sanitary conditions. The study also allows us to conclude that there is a gross violation of development control standards across the residential zones in Jos. The following recommendations are however proffered:

i) There is need for studies on neighbourhood and household characteristics of Nigerian cities. Study of this nature will serve as stepping stone to further researches which will benefit Government in terms of urban development policy formulation and effective urban governance.

ii) The presence of people with low socio-economic status in Jos is inevitable because they provide lower level manpower in Government establishment and private organizations. They also provide a lot of services that are required by urban residents. As such, they need to be properly accommodated. To achieve this, there is need to carry out land reform in Nigeria with the aim of reviewing the cumbersome procedure for getting access to land by all urban residents who wish to acquire land for development of personal homes.

iii) The use of local building materials should be promoted; Government should create the enabling atmosphere for private sector to invest in manufacture of alternative building materials. This will increase the capacity of low income earners to acquire personal home

iv) The study recommends for Public Private Partnership in infrastructure develop in Jos and Nigerian cities at large.

v) Community participation approach should be initiated across residential neigbourhoods in Jos where individuals will be involved in upgrading their housing conditions and provision/maintenance of shared facilities. Cooperative societies should be established by residents of neighbourhood where finances will be pooled together and be used for such purposes.

v) There is need to undertake a holistic survey of households characteristics in Jos city in order to generate and document data for policy formulation and implementation. It is necessary because this study only sampled residential locations that existed on the expired Jos Master Plan. All settlements not represented on the expired Master Plan at the time of the study will hopefully be represented on the greater Jos-Bukuru Master Plan and will serve as a guide for a wider study.

vi) The statutory body responsible for development control in Jos should take action against individuals that have violated development control standards across the residential zones, irrespective of their status.

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