UPGRADING STRATEGY FOR IMPROVING SABON GARIS IN NORTHERN NIGERIA: A GASE STUDY OF ZARIA

BY

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DEDICATION

This work is dedicated to:

My late grand father Mallam Dawood

My late grand father Alhaji Yahaya

My late Brother and mentor Alhaji A Saddiq Abbass

and

Their progeny

Whose memory and influence continue to have a great impact in my life.

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CHAPTER ONE

1.00 INTRODUCTION

The methods hitherto adopted by the authorities to solve the problem of urban slum was through what is known as urban renewal programmes. Although in the Urban Planning field, urban renewal is known to encompass all strategies adopted for replanning in predominantly built up area where blight has set in, the tendency is for restriction of its horizon of applicability by limiting its meaning to its negative aspects which include redevelopment, eradication and repartriation. Thus the other two aspects of urban renewal (Rehabilitation and Conservation) are often overlooked. This misconception and misapplication of 'urban renewal' makes it unpopular not only to the community concerned because of its disruptive nature but also to the authority concerned who is reluctant. Even in cases where urban renewal is applied in its proper form, it is found to give birth to problems such as lost of previous investments, lack of public participation hence alien to those affected and the problem of land ownership.

The failure of 'Urban Renewal' to solve urban problems or rather its ability to give birth to problems of greater magnitudes than the ones it set out to solve, made planners to look for alternative strategy. The most recent one which is gaining popularity in Nigeria is that of urban upgrading. This is introduced to eliminate most problems associated with urban development.

The choice of 'Sabon Garis' for study was made specifically because of the challenge they pose to planners due to their complex socio-economic set up. Their peculiar historical background has not only given rise to problems which is only found in them but also problems which are common to all urban areas. That means the success of this strategy in physical planning problems in 'Sabon-Garis' will be an indicator of the potentiality of its effectiveness in all urban areas.

1.10 PROBLEM JUSTIFICATION OF STUDY:

Establishment of 'Sabon Gari' in Nigeria came about when the township ordinance was passed in 1917 by the British colonial government. The main aim was to seggregate Africans non natives in a special location. This has given rise to a situation whereby three distinct areas of towns are noticeable in the Northern part of the country and two distinct areas in some Southern traditional towns. These are made up of the ancient precolonial city, 'Sabon Garis' reserved for non native settlers and in the case of some Northern towns another area reserved for non-indeginous Northerners.

In the Southern part of the country, the reason for establishment of 'Sabos' (shortened term for Sabon gari) was different because non indeginous settlers seggregate themselves in particular hitherto unoccupied parts of the town voluntarily. The colonialists on the other hand gave the settlements official recognition due to such factors as convenience, sanitation and the need for town planning.

Presently wherever 'Sabon garis' are found in the country, they tend to be the most dynamic area of the town in terms of human activities. The activities include the following:-

(1) Economic: Most settlers of 'Sabon garis' have economic consideration as their motivation for settling in this particular area.

(2) Social: The amount of social interractions here is more of a modern type than traditional. While the traditional part of the town is well known of its traditional social interractions because of the cultural homogeneity of the people, the Sabon gari type of social interraction is the modern type because of the cultural heterogeneity of the traditional background of the residents. Apart from the dominant social activities of modern types the traditional one also exists but in much lesser extent.

(3) Cultural: The fact that the settlers have diverse cultural background gives rise to settlement pattern reflective of such diversity. Being that each settler is assimilated to a certain extent does not prevent him from retaining some of the culture he brings along with him which in turn is reflected in the physical appearance of the area.

(4) Physical: 'Sabon garis' are physically distinct from the rest of the towns. This is mainly because unlike the ancient part of the town it had the opportunity of being planned. The diversity of the residents gave

rise to an equally diversified physical appearance most especially in architectural designs, worshipping places and recreational facilities.

The problems that this study sets out to look for solutions arise because of the interractions of the four factors mentioned which have given birth to peculiar problems associated with 'Sabon garis' and also general ones which are also found in other parts of the town.

The peculiar physical planning problems are:-

(a) Fragmented and uncoordinated pattern of settlement due to lack of facility or service for common usage which would have given the residents sence of distinct communal or neighbourhoods identity. The way colonialists plan townships was such that every landuse was located in a special location without taking into consideration of how it affect or how it is related with the other. A good example is the relationship between institutional and residential.. Others include commercial and recreational.

(b) Piecemeal development of the area. Different authorities in charge of land administration in the same area may have something to do with this.

(c) Problem of expanion: The general physical planning problems include general environmental deterioration, delapidating landuses, conflicting landuses, insufficient facilities, utilities and services and overcrowding.

The study therefore is purposely undertaken in Sabon Gari Zaria to advance remedies for the above problems which can be applicable to all 'Sabon Garis' and also formulate preventive measures against their possible reoccurence.

1.20 AIM AND OBJECTIVES:

Aim: To examine upgrading as a physical planning strategy for improving urban areas with a view to establishing its applicability to Sabon Gari Zaria.

Objectives:

(1) To examine upgrading as a strategy for improving urban areas.

(2) To look at the historical evolution, characteristics and the emergent physical planning problems of 'Sabon Garis'.

(3) To examine the applicability of upgrading strategy to Sabon garis.

(4) To examine the socio-economic and cultural behaviour of the residents in 'Sabon gari' Zaria.

(5) To assess the extent of environmental degeneration and the adequacy of facilities, utilities and services.

(6) To propose an upgrading scheme for 'Sabon Gari' Zaria.

(7) To advance an appropriate machinery for implementation of the proposed upgrading scheme.

1.30 SCOPE AND LIMITATIONS:

1.31 Scope: The study examines the socio-economic, cultural and physical set up of Sabon Garis and the applicability of upgrading strategy in these areas.

1.32 Limitation: The study has limited itself mainly on physical planning problems. The possibility of employing the use of upgrading as a strategy for such problems is applied in Sabon Gari Zaria. The social, economic, political and cultural set up are touched only as they affect the problems or as they relate to their effect on the success or otherwise of the strategy.

1.40 METHODS OF DATA COLLECTION:

To get information as it relates to residents awareness, opinions, attitudes and preferences pertaining to the general physical, economic and social conditions of Sabon Gari area, several types of questionnaires were used on a randomly selected compounds and commercial units.

Information pertaining to the problems associated with the provision of adequate facilities, utilities and services to the area, questionnaires were used on several government agencies whose jurisdiction falls within the study area.

For assessment of the extent of blight, a house to house survey was carried out using base maps on which information such as building materials, roofing materials, life expectancy of structures, landuse types and solid waste disposal points were recorded. Other information recorded during the surveys include the existing facilities, utilities and services.

Other materials collected include:

(a) Traffic volume which was obtained for the busiest roads in the area through traffic survey.

(b) The number of recorded accidents on individual roads

of the study area over a span of five years. This was obtained from Motor Traffic Division.

(c) The number of registered vehicles for the whole Zaria town over a period of five years was also obtained from the Zaria Licence Office.

(d) Population data of the year 1978/79 and number of housing units obtained from Sabon Gari District Head's Office.

(e) The amount of water and electricity supply of the study area and the demand. This was obtained from Water Board and National Electric Power Authority (NEPA) respectively.

1.50 THESIS STRUCTURE:

The thesis structure is made up of six chapters. The first chapter is composed of Introduction, Problem and Justification of study, Aim and Objectives of the study, Scope and Limitations. Methods used to obtain the data used for the study is highlightened. Lastly the structure of the study is analysed.

The second chapter is a review of existing literature of the upgrading strategy. Definition of some important concepts are made. It is also in this section of the chapter that the applications of the concepts in Nigeria is examined.

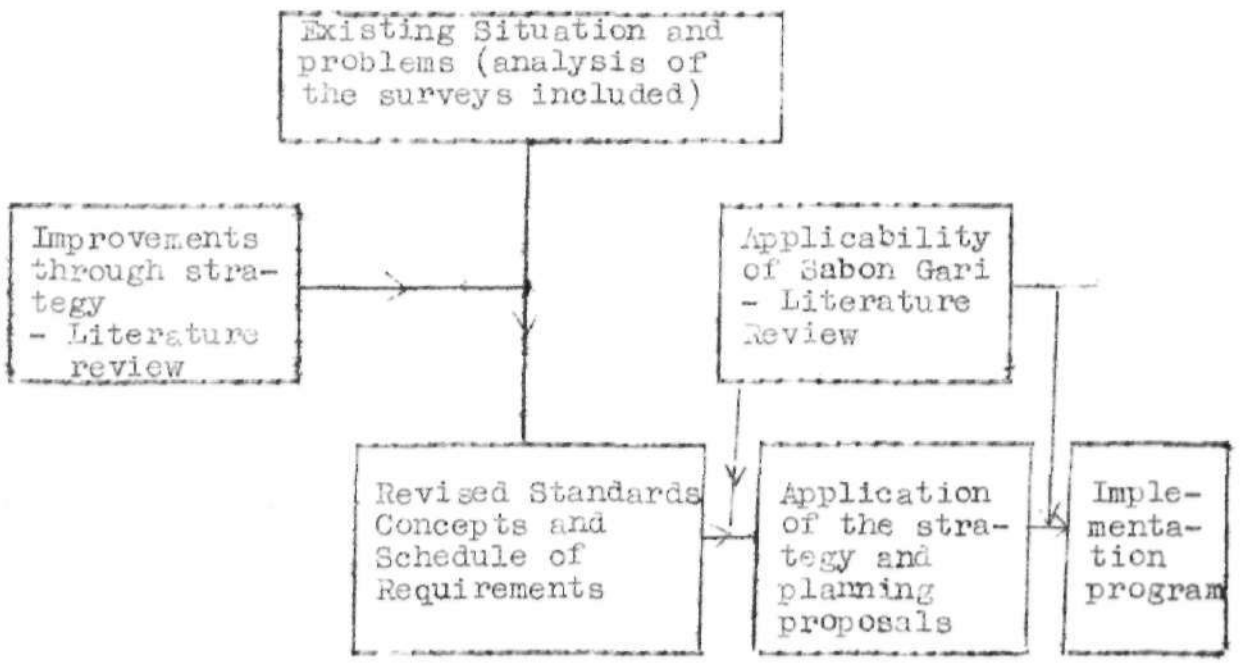
The third chapter deals with a review of existing literature on the evolution and characteristics of Sabon Garis in Nigeria. In this chapter the historical perspective of Sabon Garis is looked into. The socio-economic, cultural and physical characteristics common to Sabongaris are identified and how these affect the applicability of upgrading strategy in these areas.

In the fourth chapter the characteristics of Sabon gari Zaria in the forms of geographical location, historical background, climate, geomorphology, existing landuse pattern, the socio-economic and cultural behaviours of the residents are looked into. Other characteristics like condition of buildings, extent of blight and the facilities, utilities and services are assessed.

The fifth chapter deals with the application of upgrading strategy in Sabon gari Zaria on the landuse pattern, residential and commercial landuses, public and semi-public services and utilities and roads network. The overall proposed upgrading plan of Sabon gari Zaria is examined.

The sixth and the last chapter deals with the implementation set up. This comprised the administrative set up, phasing and financing of the scheme.

THESIS STRUCTURE



CHAPTER TWO

2.00 UPGRADING STRATEGY: A REVIEW OF EXISTING LITERATURE.

2.10 DEFINITIONS:

Upgrading: This is an "Intervention by Government to speed up and coordinate the normal spontaneous process of urban improvement by providing at least sufficient basic infrastructure to enable individuals to further improve their living conditions on their own initiative"[1].

Urban Renewal: "It is the form of recuperative change in the physical city by which the out worn or out moded structure and facilities and in time whole areas are altered or replaced in response to pressures of economic and social change"[2].

Sites and services scheme: Provision of urbanized land supporting services for low income communities.

2.20 THE UPGRADING STRATEGY:

Urban Environmental problems require human intervention if they are to be checked. This fact has been generally accepted but the form which the intervention should take is the area where opinions differ. From the begining, "most attempts at slum improvement have taken the form of negative policies, regulations and controlls"[3]. This approach usually assumes that 'urban renewal' is only made up of such negative policies hence the reason of its failure. In the late nineteenth and early twentieth century this approach was very popular in the western countries. Much later this was adopted by the

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1. World Bank Report 1979.
2. Chapin, F.S. and Kaiser, E.J. (1979) page 270.
3. Yahaya, D.G. (1979) Unpublished M.Sc. Thesis, page 92.

developing countries without taking into cognaissance the difference in the socio-economic set up of the two areas. This approach which is also known as the 'Bulldozer' approach involve such actions as eradication, redevelopment, relocation, repartriation and so on. The experience in countries like United States of America, England and France pertaining to this approach is enough to discourage one from adopting it. This is because apart from the slowness in operation, there is an immense psychological, social and financial difficulties associated with it. Hence the interest on alternative strategy which can be of equal or more effect in solving urban problems without it being accompanied with more problems than it sets out to correct. This is the background of the present interest in upgrading strategy as an alternative remedy to physical planning problems.

2.30 APPLICATION OF THE CONCEPTS IN NIGERIA:

Probably the most enlightening experiences in the history of Nigerias urban renewal projects is that which took place at Surulere on the Mainland of Lagos in 1951.[4] The project known as the Central Lagos slum clearance scheme was undertaken by Lagos Executive Development Board and it involved the demolishing of 28 hectares of poor housing and "the displacement of more than 30,000 people".[5] This project met with a complete failure because of the problems encountered which amongst others include that of displacement, disruption of workplace, financial, land ownership and bad housing design. This led

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4. Ibid.

5. Okede Niyi (1983) 14th NITP Conference Ibadan.

to protests by the community affected and hence the project was termed as partial success by some people while others consider it to be a total failure.

Another example of such negative approach was the one undertaken by the Kaduna Capital Development Board. This involved the indiscriminate clearance of peripheral slums and squatter settlements along the western bypass in 1977.[6] This was even worse than that of Lagos in terms of lack of consideration to the community affected because no arrangement was made to rehouse the displaced people. This also led to the failure of the project.

This failure encountered in applying negative approaches of urban renewal in this country calls for change in policy. This change in policy of urban development should give more attention to positive approach. The trend is presently pointing towards such change with more studies being carried out on the feasibility of urban upgrading as an alternative way of solving urban physical problems.[6] Authorities have not been left behind because "for the first time ever a State Government (Bauchi State Government) has encorporated house upgrading in its housing programme as a policy towards slum improvement.[7] Other States in the country presently applying this strategy include Niger, Sokoto and Imo. But Bauchi's has reached a stage for one to make fair assessment of the concept of upgrading as it is being applied in the country.

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6. Egunjomi Layi (1983) 14th NITP Conference Ibadan.
7. See 4th National Development Plann, page 343.

In its efforts to achieve urban development as proposed in the National Housing Policy, Bauchi State Government has employed the assistance of World Bank in financing such projects as provision of shelter, empoyment and urban services to low income groups at costs which they can afford without the need for public subsidies. It has also aimed to achieving this urban development through the upgrading of several lowest income settlements and the development of sites and services which should improve the living conditions of some 50,000 residents of Bauchi and Gombe towns thereby increasing their productivity as well as their welfare.

The objectives of 'upgrading' and 'sites and services' according to the World Bank report are:-

(i) To ensure that a town grows sufficiently to accommodate the growth in its population.

(ii) To ensure that housing conditions within the scheme are at least as good as the average of the town as a whole.

(iii) To ensure that the schemes are carried out at minimum cost and are therefore affordable by the low income group.

For selecting upgrading area various surveys were carried which included surveys on income, compound and family, construction industry, commercial, industrial, utilities and facilities and finally topographic and hydrographic surveys. The reasons for carrying out the surveys amongst others include making sure that the area selected falls within the target which is the lowest income sector of the population, helping to design institutional and technical mechanism for implementation. Other reasons include establishing the

level of revenues to the local authority and to the providers of the utilities with particular reference to receipts from the target groups (i.e low income households) or those, such as land lords who pay on their behalf. And lastly to choose an area where the level of infrastructural facilities, utilities and services are below average of the whole town.

With all the above surveys carried out, it seems as if the decision of the consultants especially in the case of Bauchi town was guided more by ability of target population to pay back the investment made at the shortest possible time than by the results of any of the above surveys. This has made Makama area to be chosen though from all indications it has the least physical planning problems in all of the Bauchi town especially when compared to Dankadi and Dawaki which were the other areas considered as possible places for application of the upgrading strategy (See Figure 2.3). Putting ₦1,200 as the minimum income per annum for a person who can qualify for housing loan scheme and choosing upgrading area based on the availability of vacant lands for sites and services without looking at the option of the possibility of providing such sites where no vacant land exists coupled with the preference of the project operators to choose an area because it is well suited to using existing and future on and offsite infrastructural facilities, thus leaving the alternative site because it is badly served in this respect, has not only defeated the objective of the whole project which include provision of shelter empoyment and urban services to low income



FIG 2.3

SOURCE: DAR AL HANDASAH CONSULTANTS

UPGRADING STRATEGY FOR IMPROVING SADO-GARIN NI...
A CASE STUDY OF SABON GARI ZARIA.
SKETCH OF BAUCHI SHOWING ALTERNATIVE SITES FOR ...

groups at costs which they can afford, but has also shown how an otherwise good project with elaborate plans which if operated based on findings would have been a success is misused because of the need for quick financial recovery.

The National Housing Policy has its share of blame because the whole project was based on its principle of financial replicability and recovery of investment cost. This has led to relegation to the background an equally important housing policy objective which stressed the need for the project to give special attention to low income groups. This would have easily been reconciled through proper phasing in such a way that even the lowest income earners will enjoy the minimum facilities and services provided by the project without jeopardising the recovery of investment to allow for replicability. The operators of the project are of the opinion that even if the areas of lowest income earners are not considered they will subsequently with time be affected through enveloping effect. The major drawback of enveloping effect is its slow process and the fact that the area which need much attention is given secondary treatment.

Since the project with time is planned to cover the whole of the town through phasing, it would have been more convenient to just choose the area for upgrading based on either administrative, physical or cultural characteristics. After which surveys are carried out to assess the needs of the residents based on which upgrading project will take place in that particular part of the area. This has the advantage of introducing variation in details based on community's

preferences. The community will be more cooperative in seeing to the provision of what to them is the most essential. The above can be summarised as follows:-

A. The objectives of 'upgrading' and 'sites and services' according to the World Bank report:-

(1) To ensure that a town grows sufficient to accommodate the growth in itspopulation.

(2) To ensure that housing conditions within the scheme are at least as good as the average of the town as a whole.

(3) To ensure that the schemes are carried out at minimum cost and therefore affordable by the low income group.

The above objectives of the World Bank project are within the limits set by National Housing programme which has five policy objectives:

(1) Financial replicability.

(2) Substantial increase in housing supply for groups expressing greatest needs - low income groups.

(3) Definition of affordable standards of construction of housing and infrastructure.

(4) Recovery of investment costs to permit for replicability.

(5) Control of effects of urban sector investment on the national and state economies.

Achievements of the project include:-

(1) Comprehensive surveys of physical, social and cultural characteristics of the town as a whole.

(2) Laying of foundation for further spread of the projects from the project area to the diferent parts of the town.

(3) The designing of mechanism capable of being studied, sieved and used by all towns in the different parts of the country.

(4) Laying of infrastructural facilities as a base for the general improvement of the area.

(5) The well coordinated way by which the areas being developed for sites and services were planned in relation to upgrading area thus avoiding creation of 'Island' within the urban area.

The project is not a success as it should be, this may be mainly because of the following reasons:-

(1) The problem of reconciling the five policy objectives of the National Housing Programmes with the World Bank's objectives of 'upgrading' and 'sites and services'. This can be broken into:

(a) Financial replicability vis-a-vis affordability.

(b) Target group (low income group) vi-a-vis affordability and replicability.

(c) Phasing vis-a-vis recovery of investment.

(d) Carrying out scheme at minimum cost vis-a-vis achievement of upgrading objectives.

(2) Choice of averagehousing conditions of the town as the minimum standard especially where the average housing conditions of the whole town are equally bad.

(3) Choice of upgrading area solely based on affordability not on needs.

(4) Improper or inadequate definition of low income groups.

(5) Lack of consideration to the upgrading of housing units themselves.

(6) Methods of financing the project by the State Government World Bank and Mortgage Bank provides a loophole of the total failure of the project most especially if one of the three is unable to meet its financial obligation.

In the above review we have seen what upgrading is, its characteristics and how it is being applied in some urban areas. What remains is to see whether this same strategy could be successfully applied to Sabon Garis or there is the need for some modifications. Before divulging into this it is necessary to know what Sabon Gari is, its characteristics and problems associated with it.

CHAPTER THREE

3.00 THE EVOLUTION AND CHARACTERISTICSOF SABON GARIS IN NIGERIA: AREVIEW OF EXISTING LITERATURE.

3.10 HISTORICAL PERSPECTIVES OF 'SABON GARIS':

One of the most indelible foot prints left by the colonialists in African continent as a whole in the urban environment is the introduction and establishment of urban centres which are quite different from their sorroundings. The reasons behind the establishment of these urban centres also known as townships vary from one country to the other and from one region to the other. But the most common denomenator in all cases is the fact that all of them owe their establishment directly or indirectly to administrative convenience of the colonialists.

The extent to which the policy of setting up 'African' townships went depended entirely on the political set up of the colonialists. Good examples in South Africa with its racial policy coupled with the need of cheap labour necessitated the setting up of 'African' townships to accommodate the African workers in the mining areas whereas on the other extreme are the former French colonies where through the policy was that of assimilation one finds the emergence of 'African' townships. Good examples of these were found in Dakar (Senegal) and Maradi (Niger). In between these two extremes are the former British colonies where the indirect method of administration was practised. This and the philosophy of racial seggregation practised by the British administrators gave rise to the development of distinct spatial units in urban areas where African strangers were

found. The cultural and religious differences between the natives of the area and the settlers made the administrators to put the latter under township authority. These townships characterised urban centres like Zaria, Ilorin and Kano amongst others (See Figures 3.10 a, b and c).

Another groupof African townships not mentioned among the above three were the ones who came up naturally not as a result of any governmental policy. These are mostly found in the Southern part of Nigeria with Ibadan as a typical example (Fig. 3.10 c).

The establishment of Sabon Garis (then popularly known as 'African' townships) in Nigeria came about when the township ordinance was passed in 1917 by the British colonail government. The ordinance provided for "The creation constitution and administration of all towns and municipalities in Nigeria with the exception of those native towns where the population was sufficiently homogenous for it to be administered by a native administration"[8]. Although the legal recognition of what was variously known as 'African' townships, 'stranger towns', 'contonment', 'New towns', and presently 'Sabon garis' came about in the year 1917 the precedence was set since the time Lugard signed treaty with the Sultan of Sokoto in which he promised to guarantee the Northerners their religion and the subsequent application of indirect rule. But the most important factor which led to the creation and establishment of townships in Northern part of Nigeria was "the decision by C.L. Temple to seggregateAfricans of non-Northern origin in special location"[9]. This gave rise to

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8. Mabogunje, A.L. 1968.

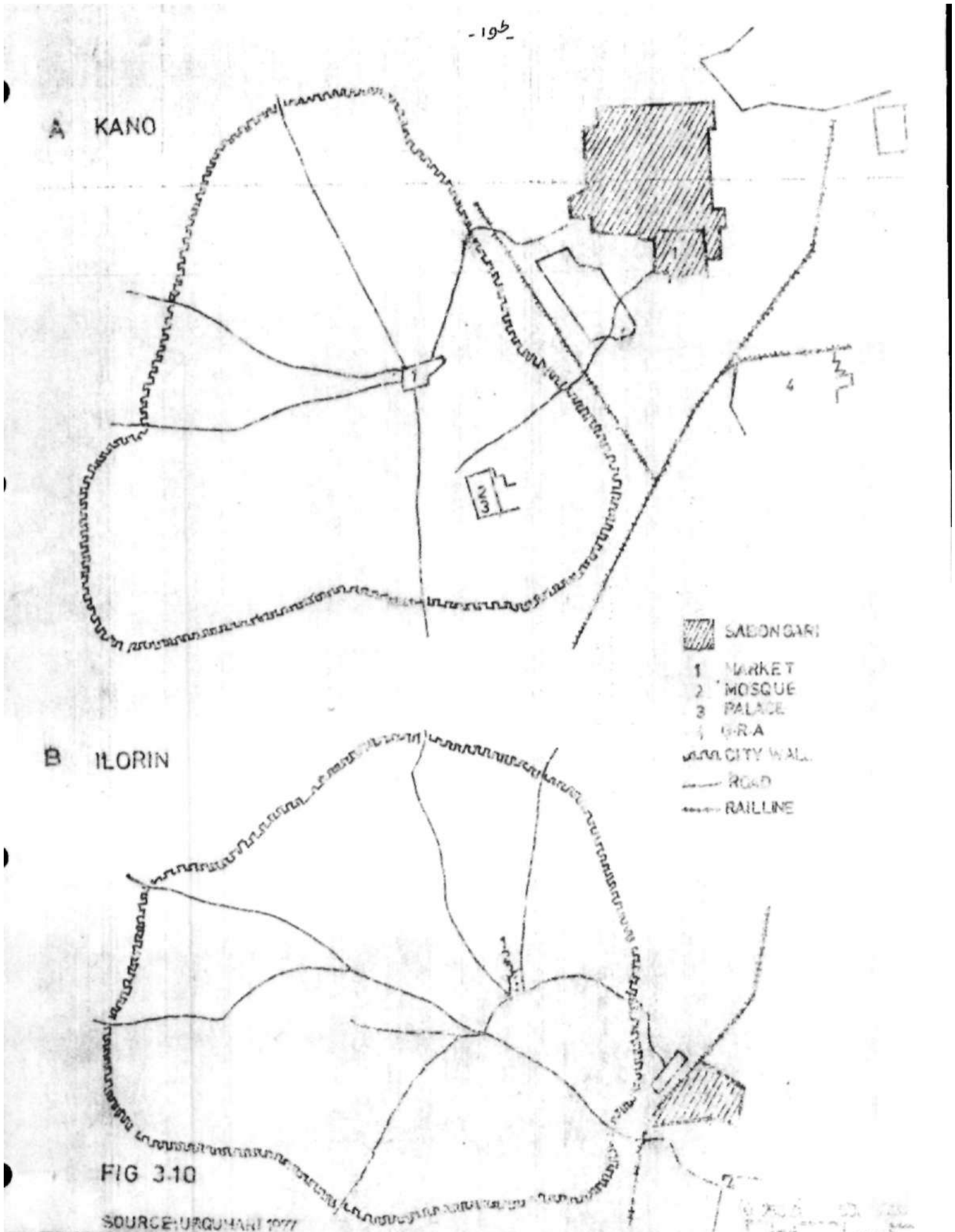


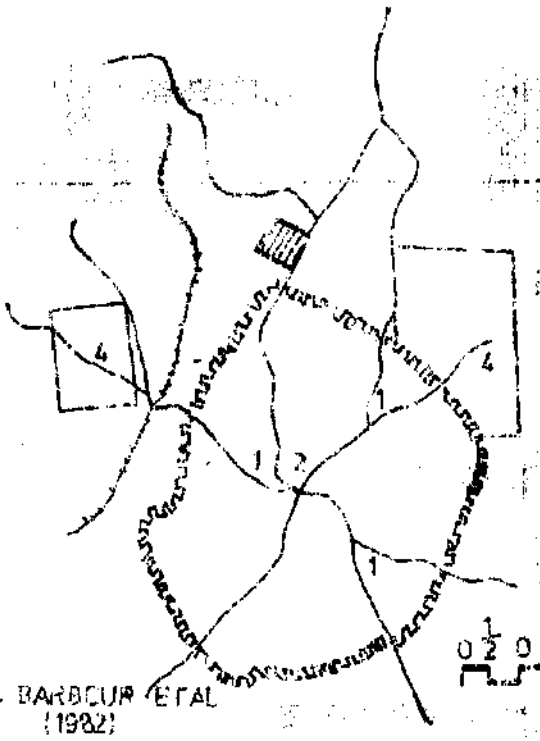
FIG 3.10

SOURCE: URQUHART 1977

LOCATION OF SABONGARI IN SOME SELECTED TOWNS

UPGRADING STRATEGY FOR IMPROVING SABONGARIS IN NIGERIA: A CASE STUDY OF ZARIA

C IBADAN :

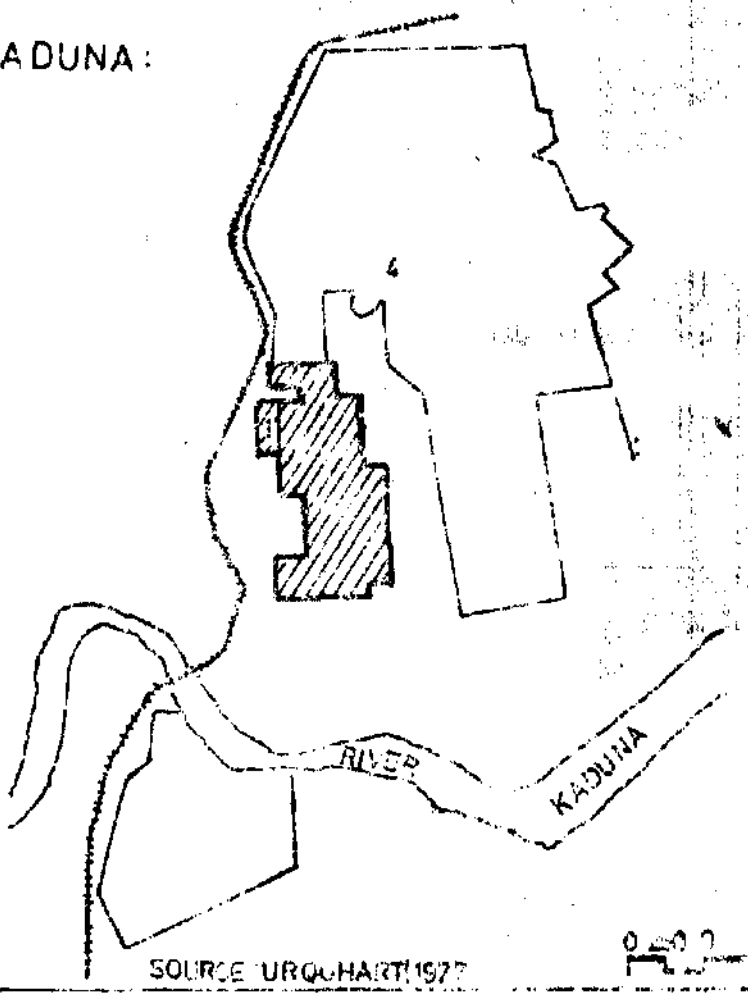


SOURCE : K. M. BARBOUR ET AL (1982)

0 1/2 0 1 2 3Kms

SABONGARI (SABO)
1 MARKET
2 MAPO HALL
4 G.R.A.
CITY WALL
ROAD
RAILLINE

D KADUNA :



SOURCE : URQUHART (1977)

FIG: 3.3

LOCATIONS OF SABONGARIS IN SOME SELECTED TOWNS

UPGRADING STRATEGY FOR IMPROVING SABONGARIS IN NIGERIA : A CASE STUDY OF ZARIA

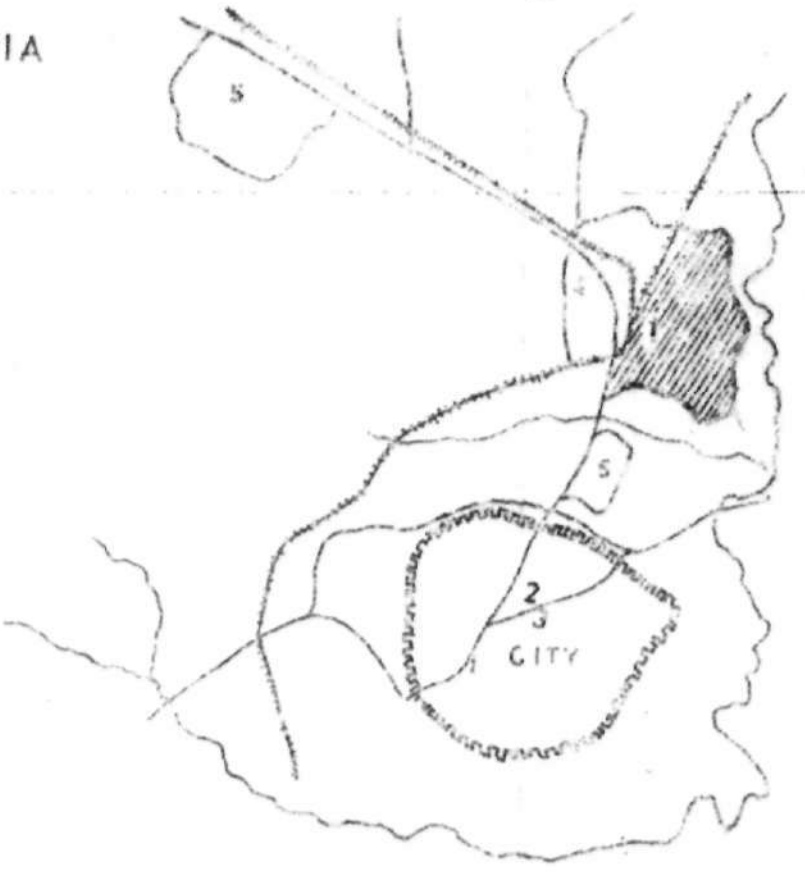
the spatial structure of settlments peculiar to the Hausa/Fulani towns whereby three distinct areas of the towns were noticeable - the city which is the ancient town, the Tudun Wada reserved for Northerners who are non indegines and Sabon Gari ('New Town') reserved for non-Northerners. This seggregation came to have a negative effect on the structural morphology and the present set up of Sabon Garis (See Figure 3.10 f).

The case was slightly different in the Southern part of the country where factors such as convenience, the need for sanitation and town planning played a greater role in the creation of Sabon Garis.

3.20 CHARACTERISTICS COMMON TO SABON GARIS:

3.21 Socio-economic: Wherever Sabon Garis are located are found to be the most dynamic area in the whole urban region in terms of human activities. Among these activities economic is at the forefront which also happens to be the motivation of the first settlers to converge in this particular area. Though Sabon Garis are only sections of the townships they are more independent economically than other parts of the townships. This is because not only they usually have the largest markets in the towns they are found, but also because each compound is engaged in one type of commercial activity or the other in the form of mixed landuse (Figure 3.10a and 3.10d). This may range from retail shops to be pharmaceutical stores all attached to residential compounds. These mix landuse activities found in almost every compound supercedes in importance the commercial activities going on in the main market.

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SOURCE: BARBOUR ET AL (1982)

F CONCEPTUAL FORM OF SABONGARIS AS RELATED TO URBAN REGION

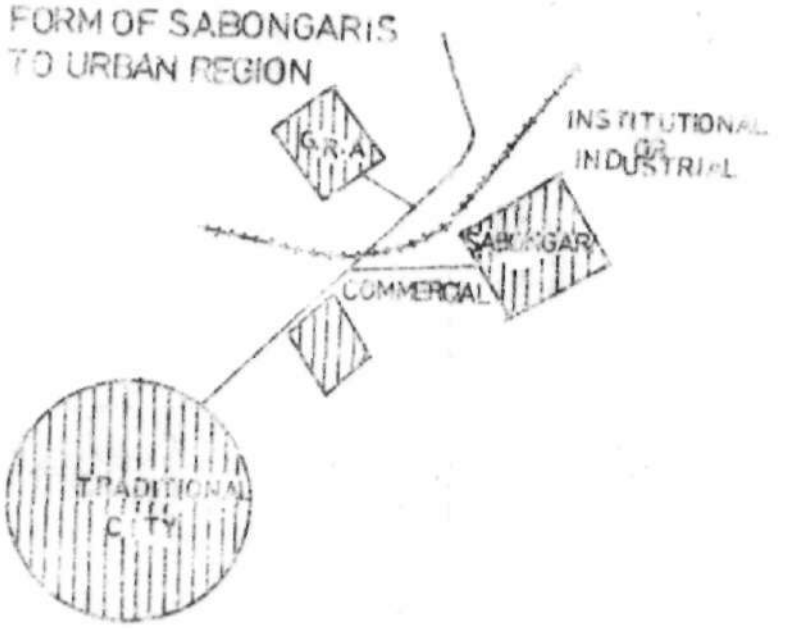


FIG:3.10

UPGRADING STRATEGY FOR IMPROVING SABON GARIS IN NIGERIA: A CASE STUDY OF ZARIA

While markets only operates from morning to evening, the commercial activities going on in the residential compounds start early in the morning and continue up to past midnight.

The importance of the markets found within Sabon Garis can be seen most clearly if one considers the fact that they do not only serve the local needs but also that of the whole urban region. For example the market within Sabon Gari in Kano serves both the traditional city, Tudun Wada, Fago, Brigade, Gyadi-gyadi and Hotoro amongst others just as the one in Zaria serves city, Tudun Wada, Sabon Gari and Samaru. There are also other mini markets which though unplanned but all the same serving the immediate needs of different residential sectors and neighbourhoods.

Socially Sabon Garis can be said to be melting pots of different ethnic and religious denominations. The degree of social activities is very high as can easily be seen from the numerous cultural organisations, youth clubs and religious bodies. It is also reflected by the large number of social spots like clubs, cinemas houses, bars, hotels, etc. Other areas of social interraction includes playfields and stadia. The salient function of these social spots is that they serve as places of relaxation and recreation other less salient function is that they provide places which are suitable in providing for public enlightenment and communal awareness of the residents. Market places also apart from their functions as commercial areas they also serve as 'social' areas where people interest and disseminate information amongst themselves.

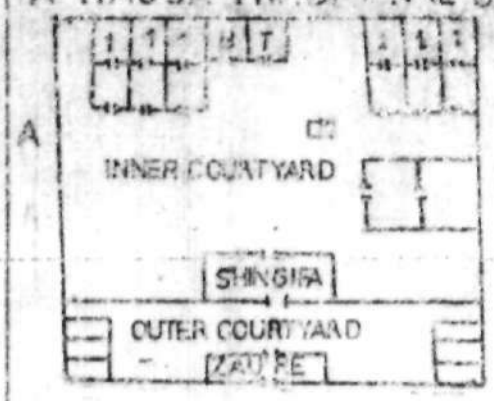
There are also negative effect about the haphazard and indiscriminate locations of these social 'sports'. These include influx of people of shoddy character which gives rise to deliquency, prostitution and vagrancy. Another side effect which is of particular importance to general environmental deterioration of 'Sabon Garis' is the huge amount of garbage and liquid wastes which these 'Social Spots' produce and wastes which are carelessly disposed of. The haphazard way they are located makes the area to be the noisiest in all the township.

3.22 Cultural: Sabon Garis are made up of people with different social, cultural and religious background. This mainly is due to the fact that historically they owe their establishment to the policy of segregation which made all African non-indegines or non-natives to be restricted in one area. Therefore one finds people of different background coming to settle. Though each settler is assimilated to a certain extent he still retains some of the culture he brings along with him from his original hometown. These in turn are reflected in the urban environment. It is only Sabon Garis that one finds almost all the major ethnic groups of the country represented and most of them having their own houses irrespective of where they originally came from or where they are presently living. It is therefore a common sight to see a house owned by a Yorubaman in Sabon Gari Zaria or Kano without a toilet because it is not usually attached to a house in the area he came from but located far away or even absent completely. The designs of houses owned by

people of different cultural background can still be seen in Sabon Garis. House with 'Soro' (mud roof) and rounded 'Zaure' (reception room of male visitors) which reflects a Hausa type of architectural design is built side by side with a rectangualr house with zinc and iron sheet roofs reflecting Yoruba or Ibo type of buildings (Figure 3.20). The presence of a large number of religious buildings such as mosques and churches reflect the variety in the religious background of the residents.

3.23 Physical: The most striking physical feature of Sabon garris in Nigeria is how they are laid out in grid iron pattern with relatively wide streets. Some of the Sabon Garis expand to encompass unplanned hitherto more or less rural areas, this gives two distinct physical appearances. One is the planned Sabon Gari with modern appearance whereas the other is a replica of the traditional settlements with narrow winding streets. A good example is Muciya and Cikaji in Sabon Gari Zaria. Another physical peculiarity of Sabon Garis is in the architectural designs of the houses. Three different types are worth noting because of their large number. There is the Hausa type of architecture typified by a compound with 'Zaure' one or two courtyards and a wall sorrounding the house. Decoration found in front of the compound gives it a good visual appearance. This type of design though found mostly in Hausa settlements in the Northern part of Nigeria, they are also found in Sabon Garis of the other parts. An example here is Sabo Ibadan where

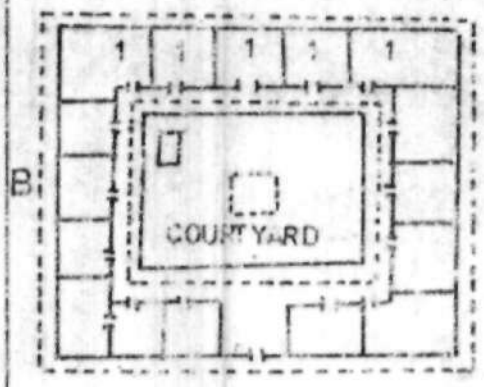
A HAUSA TRADITIONAL COMPOUND





COMPOUND ENTRANCE

A YORUBA TRADITIONAL COMPOUND



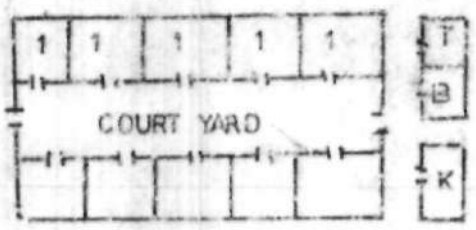
1 ROOMS FOR THE WIVES
T TOILET
B BATHROOM
K KITCHEN

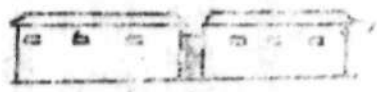


COMPOUND ENTRANCE

C

A ROOMING COMPOUND





COMPOUND ENTRANCE

SOURCE: BARBOUR K.M ET AL(1982)

UPGRADING STRATEGY FOR IMPROVING SABON GARIS IN NIGERIA. A CASE STUDY OF ZARIA.

FIG: 3.20

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there are large number of Hausa settlers (See Figure 3.20 a). The second type of architectural design found is Yoruba in origin. Here the wall of the compound forms also the walls of the rooms which are built on both sides facing one another (See Figure 3.20 b). Toilets and kitchens are located further apart in some cases toilets may not be present at all. The third type of design is adopted after the colonial types found in major Eastern townships like Enugu and Port Harcourt.

There are basically two types of building materials used in building and these are cement and clay bricks. The roofing materials in the background of the different people in Sabon Garis gives rise to an equally diversified physical appearance.

3.30 APPLICATION OF UPGRADING STRATEGY TO SABON GARIS:

The problems associated with Sabon Garis included some which are only peculiar to them and those which are common physical planning problems associated with all rapidly growing urban areas. The peculiar problems are:-

(1) Generally the townships are fragmented and uncoordinated. The various units making up the township which include 'Sabon Gari' Government Reservation Areas and Institutional lands lack unified common sence of place. This has given rise to lack of effective functional and physical integration amongst the different unts.

(2) The grid iron design characteristic of all Sabon Garis is associated with such environmental problems as high accident risks and difficulty of differentiating road hierarchy.

(4) Problem of expansion: Fragmented and uncoordinated development pose a problem of expansion of different landuses. Sabon Garis are just parts of townships which in turn are parts of the whole urban region. The township is divided into different zones based on the nature of landuse. There are institutional areas, public/semi public, commercial and residential areas. When this was being done consideration was given to the fact that each type of landuse may need to expand. Therefore the indiscriminate sandwitching of landuses without allowances for each to expand uniterrupted leads to the problem of expansion.

The common problems amongst others include:-
General environmental deterioration, delapidating landuse, conflicting landuses, overcrowding, insufficient facilities and services. The above sets of problems though serious but they do not require such drastic solutions like eradication, relocation and comprehensive redevelopment because these negative actions have unpleasant feedbacks which may be worse than the problems one sets out to correct. This is not withstanding the fact that once in a while such actions as slum clearance may be necessary especially in the central parts of the area where lack of adequate facilities and services may force the authority to acquire an area where blight is in an advanced stage to site such public facilities and services. This will not have the unpleasant feedback which arise because it will only affect few houses and hence will not cause any socio-economic disruption found in large scale slum clearance.

Based on the above analysis the best strategy worth giving a chance for improving urban areas in general and 'Sabon garis' in particular is upgrading which does not only reduce unpleasantries associated with former strategies considerably but also allows for stage by stage improvement based on the present state of the urban area and also based on the priorities in the residents preferences. This it does through the following actions:

(1) Introduction of new facilities such as drains, open spaces, street lighting, health, educational and other socio - infrastructural facilities into such areas. The site and services schemes which also go hand in hand with upgrading, involves the provision of essential services to the peripheral lands which are hitherto of low density. This action will not only solve such problems as lack of facilities and services, overcrowding in the core, under population in the periphery, peripheral slums but also the piecemeal development which is rampant in Sabon Garis will be greatly improved.

(2) Putting into working order those existing infrastructural facilities that have deteriorated. This is done through improvement of street pattern, improvement of defective blocks, renovation of all the areas that need skeletal facilities to support modern urban functions and enforcement of zoning regulations. This will improve the problems of delapidating landuses. Conflicting landuses and traffic bottlenecks which presently Sabon Garis are experiencing.

(3) The preservation of predominantly built up areas that are in 'good' condition. This according to Saillard involve "... remodelling of defective blocks of historic signficance or architectural merit". This is directly done through encouraging the private compound owners to undertake the rejuvenation of their various compounds. This will not only make Sabon Garis more functional but will also give them their own distinctive individual physical character and appeal.

The above actions should take into consideration the need to forestall causes which are presently hindering the full success of similar upgrading projects taking place in the different parts of the country. These include:-

(1) The need to reconcile the policy objectives of the National Housing programme with the objectives of 'upgrading' and 'sites and services'.

(a) Financial replicability should not be made to overshadow the need to give the necessary consideration to the target group (low income group).

(b) Since all projects of this nature require financial replicability for it to be on a continuing basis, an element of time consideration need to be introduced so that even those in the lowest income groups can enjoy the project and be able to afford it. This can be done by spreading the payback period over many years such that they will not feel much of the impact.

(c) There is the need to carryout the scheme at moderate cost instead of the minimum cost under which the project is operating so that realisation of most of the upgrading objectives will be made.

(2) The choice of average housing conditions of the town as the minimum standard should be discarded. A new standard based on the survey made on the whole town be used. This will not only prevent using substandard condition as the minimum standard but will also allow for improvement on the area that would have been considered as 'average' and be left for the ones considered as 'below average'.

(3) Choice of upgrading area should solely be based on needs while affordability should be given secondary consideration.

(4) Low income groups should not be given arbitrary definition for example those with annual income of ₦1200 but a more embracing definition like "all those with annual income below ₦1,200".

(5) Upgrading strategy should give equal importance to the improvement of housing units themselves instead of restricting its action on public held places.

(6) A State Government should take the responsibility of all financial commitments on capital projects whose payback period is long. Therefore the government should guarantee loan from the bank or make provision from annual budget. In the case of loan from Bank the government should pay the loan within the time limit set by

the financial institution but give enough time for the residents to pay it back over the period to be determined by their level of income.

(7) The administrative machinery should be a simple one in which overlapping of functions will be avoided. This can be done by appointing an authority whose sole responsibility will be that of coordination while different ministries and parastatals will undertake all the capital projects which normally falls under their jurisdiction. A private organisation should be involved only in areas where government has not got the manpower and technology to effectively carryout the project.

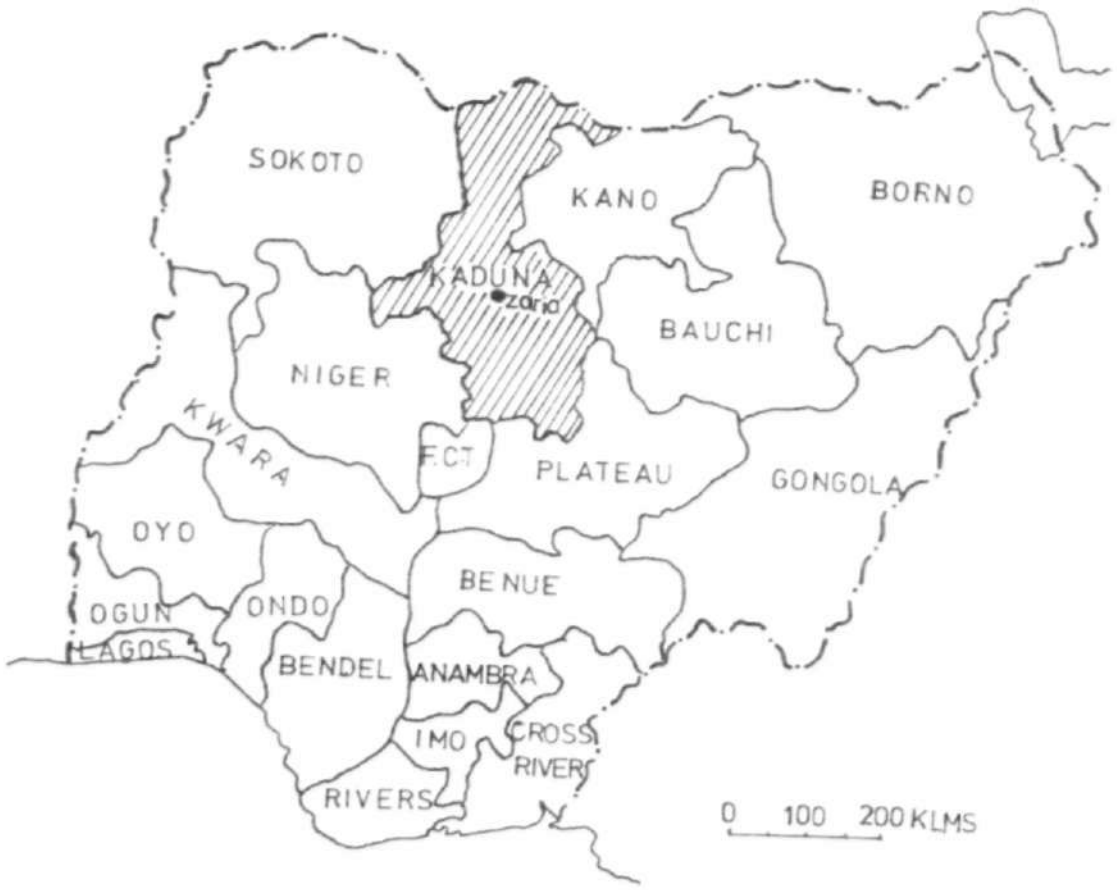


FIG. 4.10 ZARIA WITHIN NATIONAL AND KADUNA STATE CONTEXTS

CHAPTER FOUR

4.00 CHARACTERISTICS OF SABON GARI ZARIA.

4.10 DELIMITATION OF THE STUDY AREA AND SIZE:

Sabon Gari Zaria is part of Zaria township and is located in the North Eastern part of Zaria Urban Area. The area is bounded by river Galma in the East, Cikaji Industrial area in the North, Nigeria Railway Corporation by the West and Army depot together with the township commerical area forms the Southern boundary. The area is about 385.21 hectares in size and is made up of three areas with distinct physical characteristics. In the North just below the Cikaji Industrial Estate, Cikaji and Muciya residential area are located. This area has more or less no difference with a typical Hausa/Fulani traditional city. The second residential area with its own peculiar characteristics is Dogon Bauchi located South-west of Muciya. It is planned in both radial and grid iron pattern. The third residential area is the "Old Sabon Gari made up of Ungawar Yamma and Unguwar Gabas which forms the Southern boundary of the study area. It is in contact with the army depot and township commercial area. The streetpattern is rigidly grid iron. There are other two areas which though separate from Muciya and Cikaji but still can be categorised under the same group. These areas are Dushin Waje and Zabi, like Muciya and Cikaji they were also former villages but now have been incoporated with the study area.

4.20 HISTORICAL BACKGROUND:

The study area came into being between 1911 and 1914 then it was no more than a small village. The 1917 township ordinance and the subsequent policy of seggregation gave the area its present outlook. With the passing of this ordinance all Africans of non-northern origin were restricted in this area. Whereas other Africans were restricted to Tudun Wada or Zaria City depending on whether they are Africans of Northern origin but non-natives or they are the natives of Zaria respectively. Before it came to be more widely known as Sabon Gari, this area was variously known as 'African' township, New Town and Contonment. As time goes on Sabon Gari completely shed its character of 'Strangers' settlement and as of now almost all major ethnic groups of the country are fully represented and now has become as much a home for Northern as it was for Southern Nigerians.

Parts of 'Old' Sabon Gari which are now known as Anguwan Gabas and Anguwan Yamma were laidout and fully occupied between 1911 and 1959. In 1942 due to the movement and settlement of people in the hitherto unsurveyed area of Dogon Bauchi a directive was given for surveying and plotting the area and no new building be allowed except in authorised layout".[9]

Muchiyan Dan auta and Cikaji did not come up as a result of planning by colonial administrators but initially started as a squatting areas of Hausa workers whom officially were not suppose to reside in old Sabon Gari. The settlers have increased rapidly in number and their population now exceeds that of any part of Sabon Gari villages like Jushin Waja and

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9. Urquhart, A.W. (1977) page 50.

Zabi were fully integrated in Sabon Gari when they rapidly expanded due to the influx of urban workers (See Figure 4.20).

4.30 CLIMATE:

The climatic conditions of Sabon Gari Zaria is the same with that of the whole Zaria Urban Region which is that of Tropical continental. Zaria is located "670.5 metres above mean sea level and 640 kilometres away from the sea". The town has a distinct wet and dry seasons. The mean annual total rainfall is about 1099.3 mm. The change of weahter is influenced by two air masses. The dry one which usually influence the weather of the area from January to March and from November to December of every year, come from the North East hence its dry nature. This is the Tropical continental air mass. The other air mass which originates from the atlantic ocean is wet and influence the weather of the area between early May and late September. This is the Tropical wet Atlantic air mass.

The influence of the Tropical continental air mass is marked by dry season with no rains and this period is the one closest to winter in the year becuase of its dry and chilly nature. It is also known as the Harmattan period. The period of between March and April is the interphase of dry and wet seasons though there may be some few rains but it is not enough for the period to be included in the rainy season. From May to October in the rainy season starting with thunder storms and squalt of wind.

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10. Zaria Master Plan - 200 (1979).

4.40 GEOMORPHOLOGY:

Generally Zaria Urban Area is located in the great Hausa plains with varying heights of 550 to 700 metres. The study area falls within the relatively low land of this plain. The only area lowest to it is the flood plain of River Galma which is the main focus of drainage system in Zaria. The tributries of River Galma extends far upland where it forms wide, shallow valleys.

Geologically the Zaria Urban Area is made up of undifferentiated pre-cambrian basement complex formations comprising both igneous and metamorphic rocks. Superficial deposits include older and younger laterites and alluvium. The study area (Sabon Gari) is completely superficially covered by younger laterite formations.

4.50 THE SOCIO-ECONOMIC AND CULTURAL BEHAVIOUR OF THE RESIDENTS:

4.51 Population: Despite the limitation of reliable data most especially on population, effort was made to arrive at a figure which is in consonance with that of the whole Zaria Urban Region which the study area is part of. The population is approximately 69,181 taking population growth rate proposed by the Zaria Master Plan for the whole urban region which is 6.3% up to 1982 and 3.5% from 1983 upwards to the year 2000. The original population figure of Sabon Gari Zaria was obtained from annual surveys carried out by the District Heads Office for the purpose of tax assessment. The fact that the figure was intended to be used for revenue generation not allocation made the possibility of exageration

very small. The survey carried out during this study found the figure to be reasonable.

4.52 Educational background: The population has been categorised under five educational groups and the sixth one more or less takes care of those without any form of formal education. The total respondents of the socio-economic survey carried out was 277.

Table 1. **Educational background of the residents**

Educational level	Number	Percentage
(a) Koranic	50	18.1
(b) Adult Education	5	1.8
(c) Primary School	86	31.0
(d) Secondary School, TTC, Technical	81	29.2
(e) University	14	5.1
(f) None of the above	41	14.8
Total	277	100

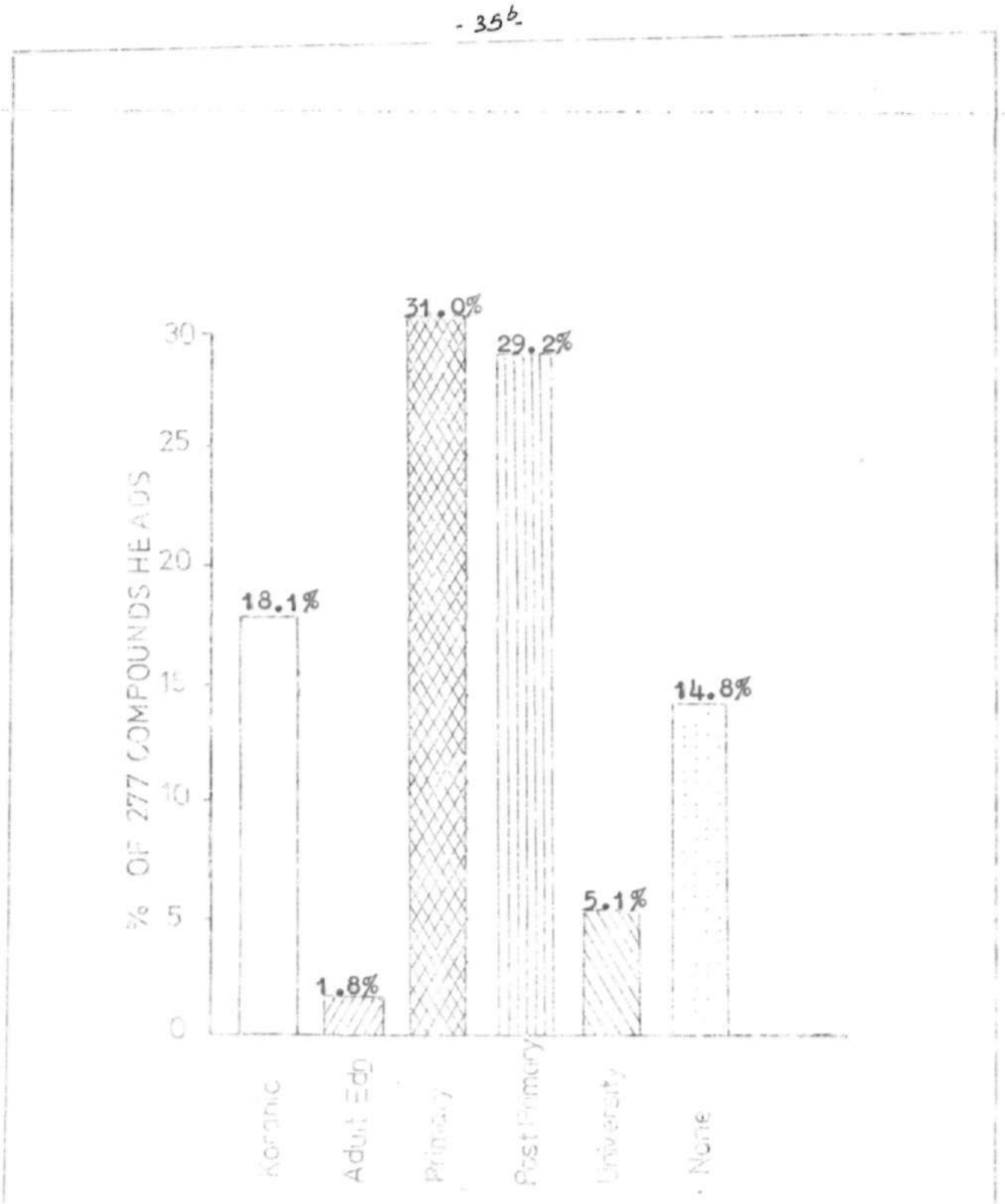
From the table (Table 1) it can be observed that the bulk of the population had one type of education or the other. Though a certain degree of error is expected most especially with regards to compound heads who insisted that they will fill the form themselves and return it latter. In this situation the tendency is for the respondent to give the form to an educated member of the household to fill and instead of putting the educational level of the compound head he puts his own. This probably explains the high percentage (5.1%) of graduates. This is not expected to affect the results much because such respondents are very small less

2%. 14.8% of the respondents come under none of the above these are those who did not have any sort of education though it is likely a very small percentage of this group have had some sort of education not mentioned in the questionnaire (See Figure 4.52).

4.53 Occupation: The highest number of respondents belong to the group categorised under "Others" with 44.9%. This is not surprising because Sabon Gari contain alot of under-employed ranging from praise singers to manicurists. The Industrial and Trading sectors have the second and third largest share of the employees. The type of occupation which has not even had one out of the total respondents is agriculture. This is not surprising because a very negligible percentage of the total residents of Sabon Gari are expected to engage in Agriculture. The major types of occupational activities being trade and industrial (See Figure 4.53).

4.54 Residents Expressed Needs and Preferances: Out of the total population the amjroty (47.7%) expressed their dissatisfaction with lack of adequate transportation facility. The bad state of roads is the main cause of residents preferance in having the transportation facility improved more than any other. The next in order of preference is health facility followed by educational facility. Leisure had the least percentage and comes lowest in the list of preference.

There is a variation of the residents expressed needs and preferences depending on the area they are located. The residents of Muciya and Cikaji seem to favour having



EDUCATIONAL BACKGROUND OF THE RESIDENTS.

FIG 4.52

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A.B.U. Z/Ria.

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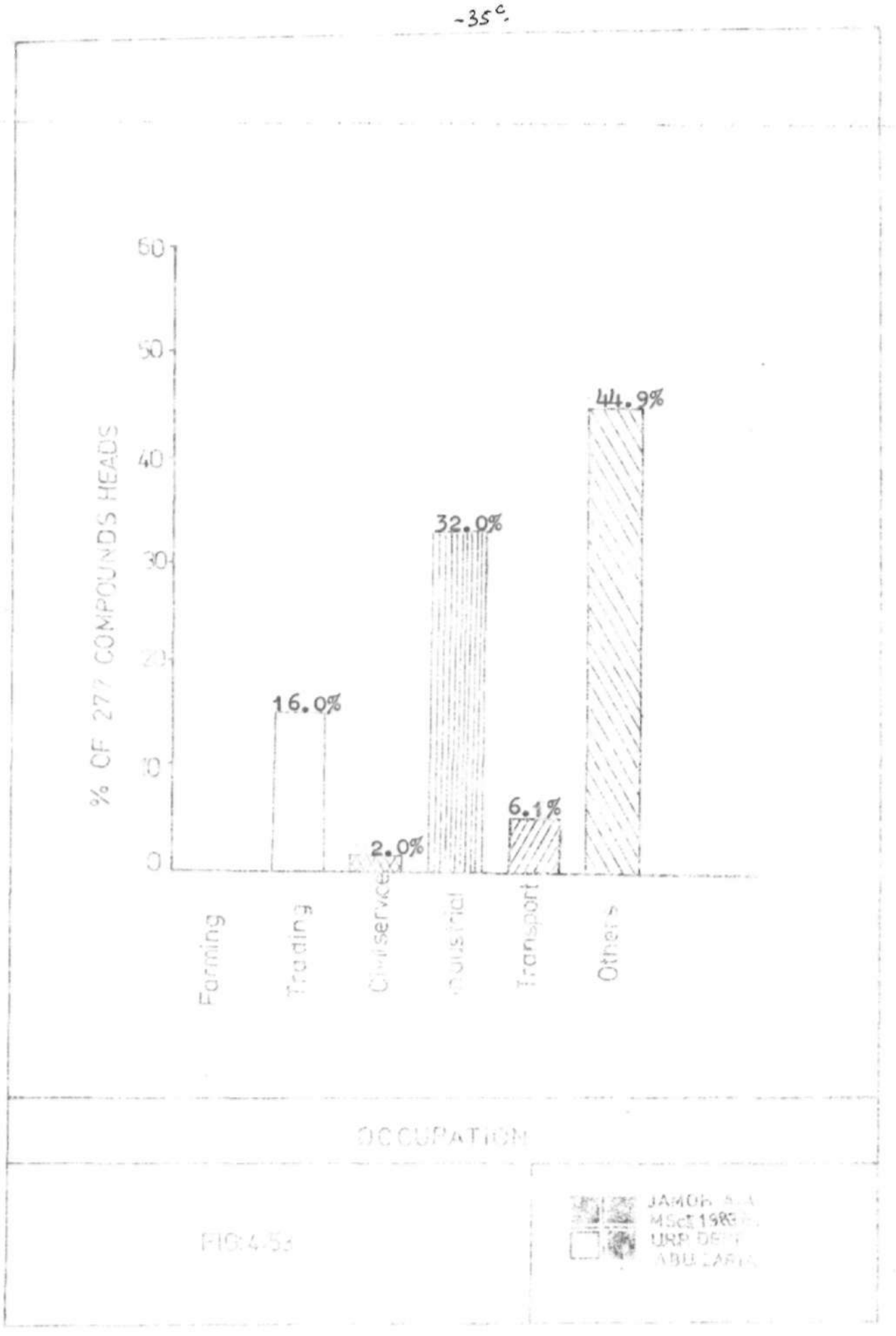


FIG: 4.5a

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transportation facility with only small difference in the number of people that prefer one of the other three. This shows the accute shortage of transportation facility in this. The residents of Dogon Bauchi more or less expressed the same preferance but with less expressing their need for transportation and more for health than in the case of Muciya and Cikaji. In the case of Anguwan Yamma and Anguwan Gabas, the residents seem to value the need for transportation and educational facilities but the need for health facility is ahead than others while leisure facility is trailing behind (Figure 4.54).

4.55 Residents Opinions on ways to improve the area: Out of the total respondents in the area 39.0% are of the opinion that their neighbourhood is in such a bad shape that it needs complete rebuilding. 33.8% on the other hand though they too are of the opinion of their neighbourhood's need for improvement, they do not think if deserves such a drastic action as complete rebuilding but rather repairs of the existing structures will do. Out of the remaining 28.0%, 18% think that the neighbourhood is good as it is while 10% could not decide whether their neighbourhood requires any of the suggested solutions (Figure 4.55). That means out of the total respondents 51% do not support complete rebuilding while 39.0% are in support. Amongst the 39.0% the majority (58.4% of the 39.0%) are of the opinion that the government should limit its role to giving subsidy on building materials to private owners (Figure 4.56). Opinions of the residents regarding the conditions of neighbourhoods and compounds is found to be related to the type of compound ownership. The



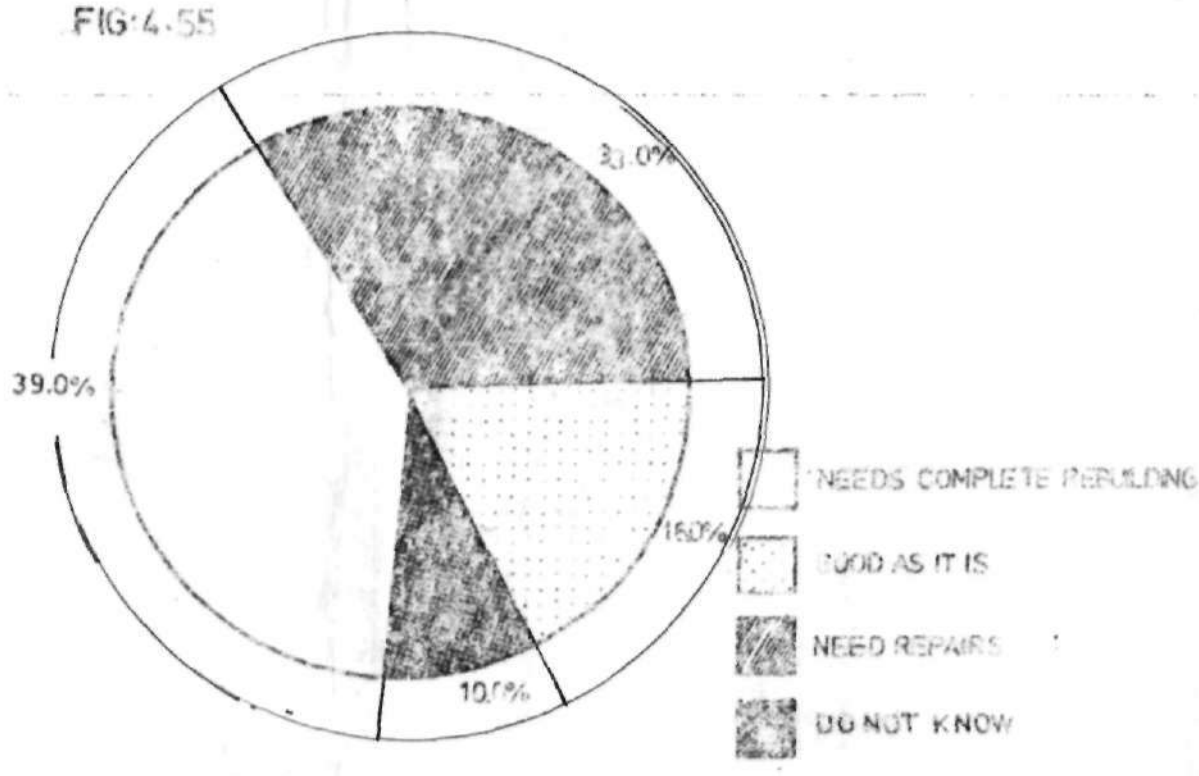
FIG. 4.54

RESIDENTS PREFERENCES OF VARIOUS FACILITIES IN DIFFERENT PARTS OF SABONGARI ZARIA.

UPGRADING STRATEGY FOR IMPROVING SABONGARIS IN NIGERIA; A CASE STUDY OF ZARIA

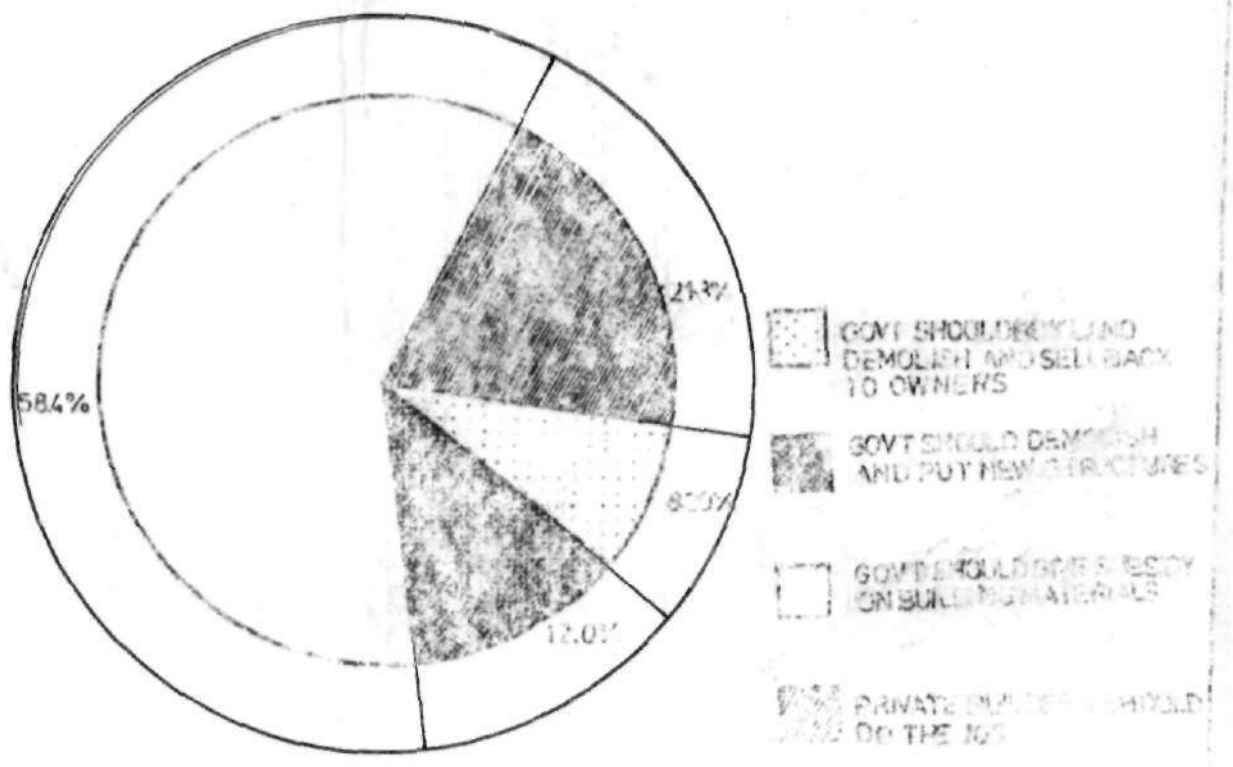
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FIG:4.55



GENERAL OPINION REGARDING NEIGHBOURHOOD

FIG:4.56



BESTWAY TO REBUILD THE NEIGHBOURHOOD

majority of compound's heads which belong to owner occupier group either consider the compounds to be good and therefore require no improvement or they only need repairs 34.1% and 33.4% respectively. Other compound owners 24.4% admitted that the compounds need repairs while 29.1% of them are of the opinion that the compounds are good therefore need no repairs. On the other hand, the majority (90%) of those occupying the compounds free regards them as good while a small proportion (10%) of them are of the opinion that they need complete rebuilding.

Unlike compounds, the neighbourhoods are regarded by the majority of those under owner occupied compounds to need repairs. The tenants also have reversed their opinions when it comes to the question of neighbourhood many of whom could not express any opinion (Fig. 4.57). What can generally be deduced from this is that the majority of the residents irrespective of ownership favoured action which does not involve complete rebuilding.

The degree of involvement in the project did not dawn on the respondents till when they were asked whether they support the idea of being resettled somewhere to implement redevelopment or not. Outrightly 64.9% opposed it while 35.1% expressed their support. Out of 35.1% who expressed their support, only 41.3% prefered to be resettled permanently (Figure 4.58). This means out of the total respondents only 20.7% are ready to be permanently relocated while the rest even though some of them will not mind temporary resettlment, prefer remaining where they are. This is a pointer to the

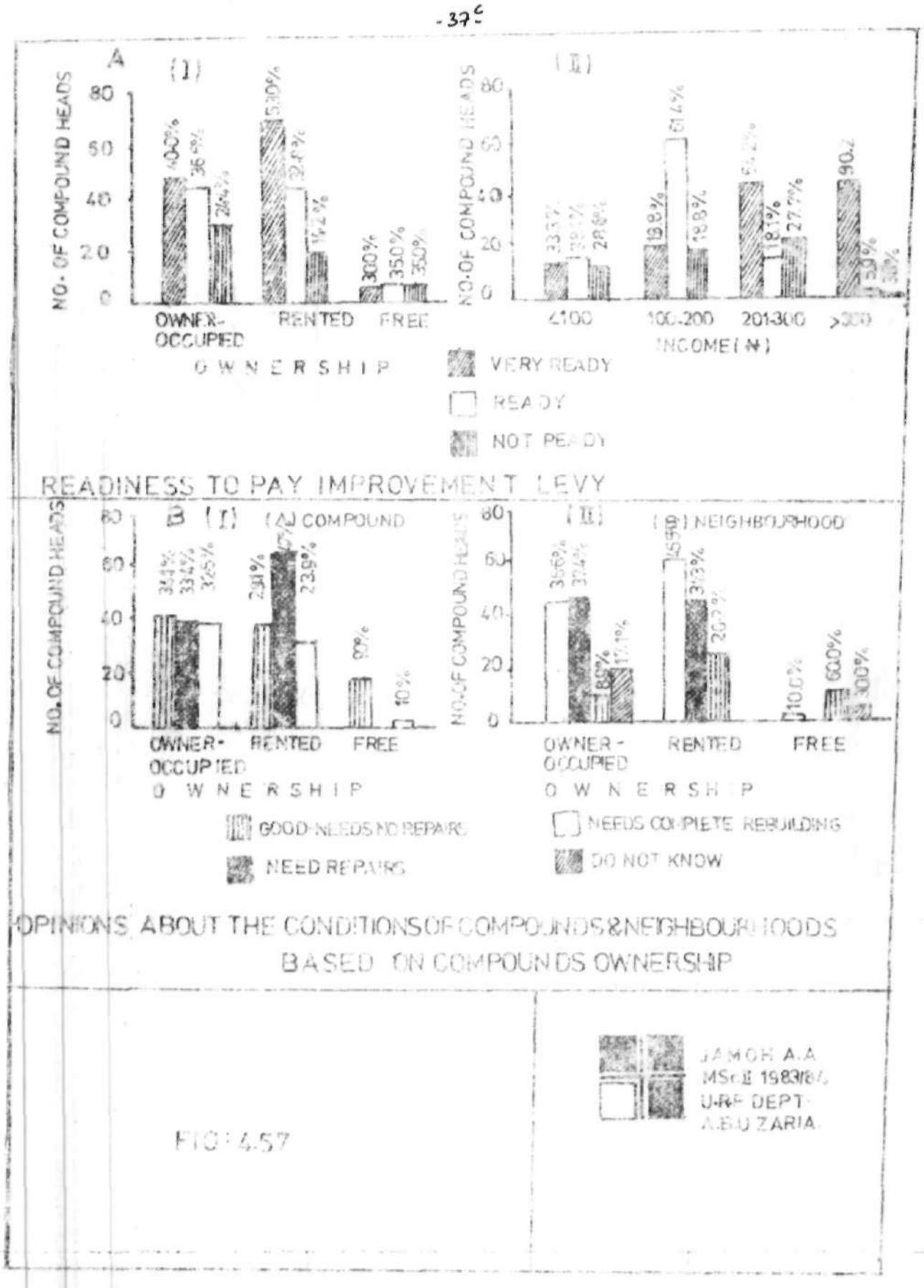
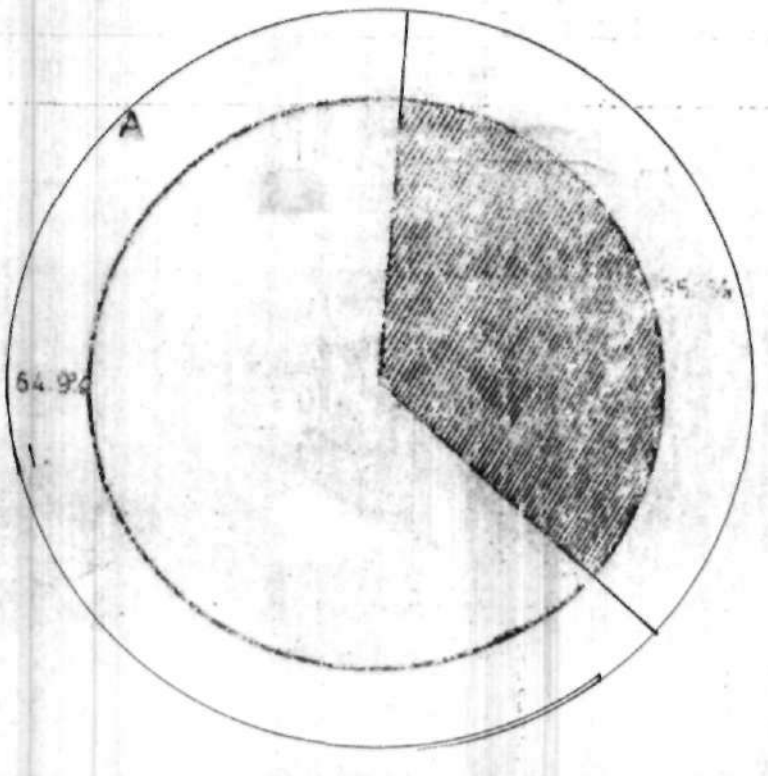


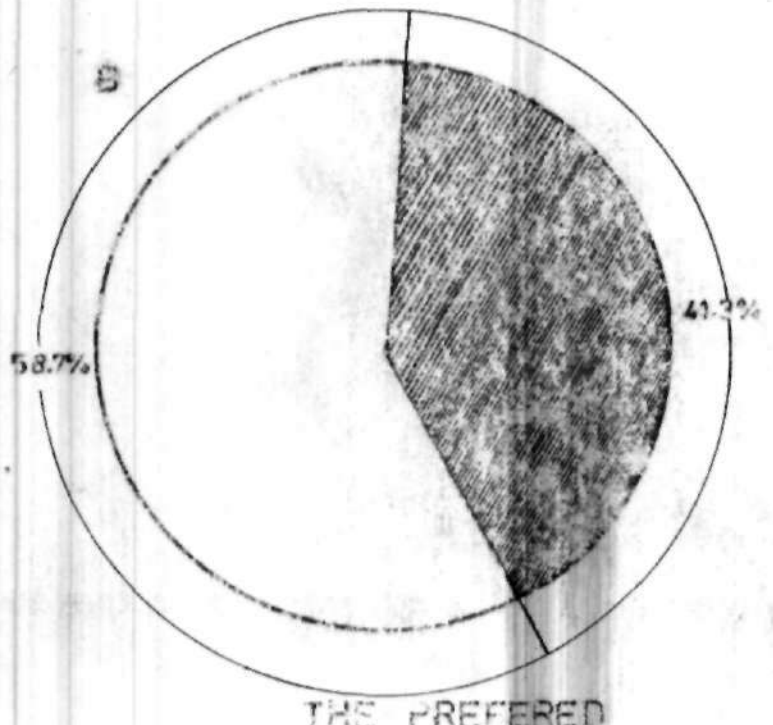
FIG: 4.57

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FIG:4.58



RESETLEMENT SOMEWHERE TO IMPLEMENT REDEVELOPMENT



THE PREFERED
NATURE OF RESETLEMENT

fact that whatever form upgrading will take should be such that will only cause the barest minimum displacement. In circumstances where displacement cannot be avoided those to be relocated should be resettled within close proximity to the former location. To further show the desirability to such type of resettlement in the survey carried out 35.9% of the 20.7% ready to be permanently relocated prefer to stay very near to the former abode (Figure 4.59).

Some other interesting findings are the relationships between educational background and willingness to be relocated on one hand and between willingness to be relocated and the location of the respondent in the study area. (Figure 4.60). The respondents who have no formal educational background surprisingly are the most willing to be relocated in all the three communities of Sabon Gari. Whereas those who have had primary and secondary education are the least willing to be relocated. The effect of locational difference on the respondents willingness to be relocated is clearer on respondents with Koranic level of education. Those in Anguwar Yamma are not willing to be relocated while those in Dogon Bauchi are willing. But those in Muciya/Cikaji area, 50% are willing while the other 50% are not.

The most prefered type of contribution towards improving the study area by the respondents is in a form of communal work. 40.1% of the respondents prefered this type of contribution, followed by financial contribution supported by 23.0% of the respondents. The least prefered type of contribution is material with 5.6% of total respondent opting for it.

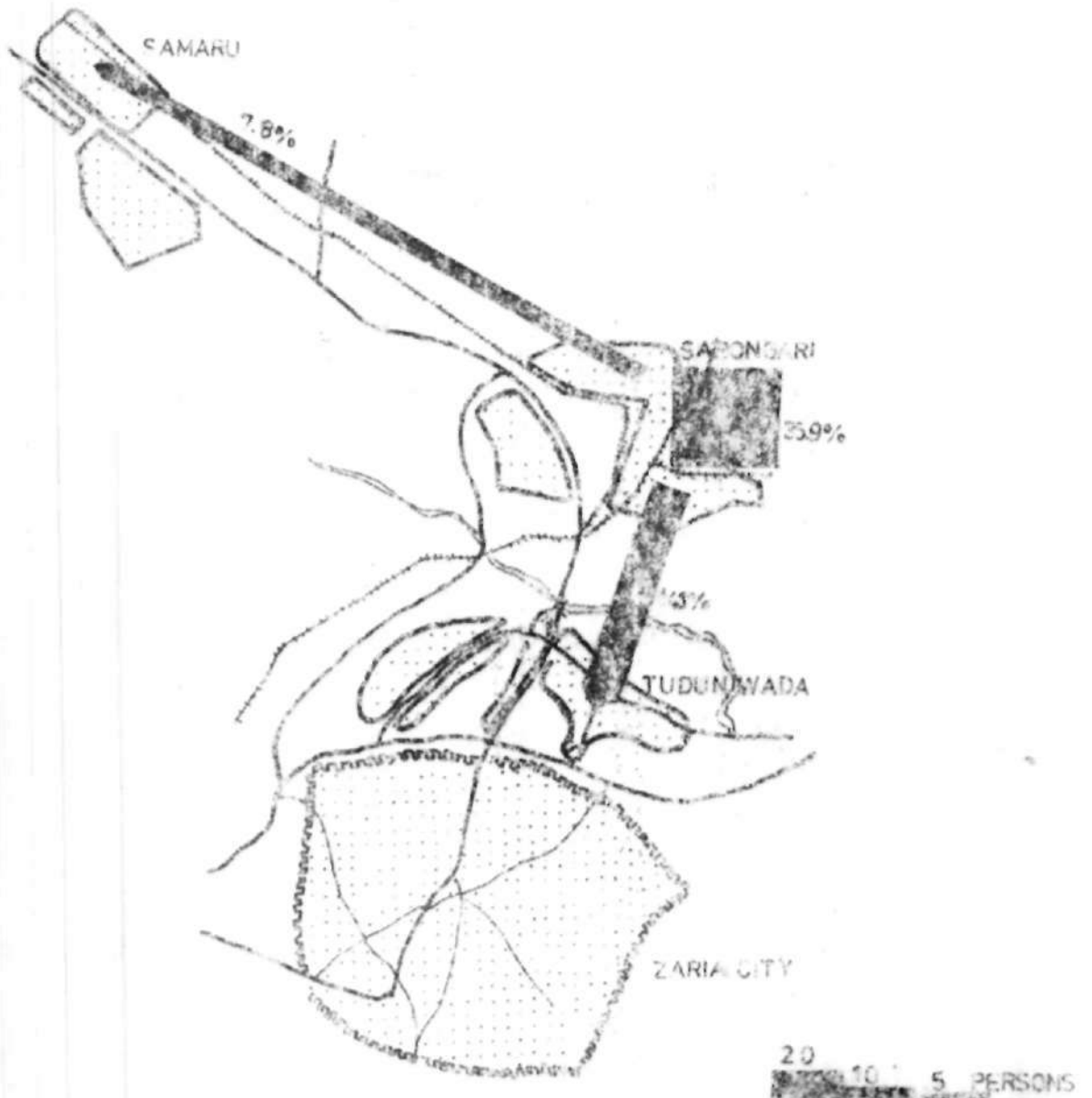


FIG: 4.59

ALTERNATIVE AREA PREFERENCE OF THOSE WILLING TO BE RELOCATED

UPGRADING STRATEGY FOR IMPROVING SABON GARIS IN NIGERIA: A CASE STUDY OF ZARIA.

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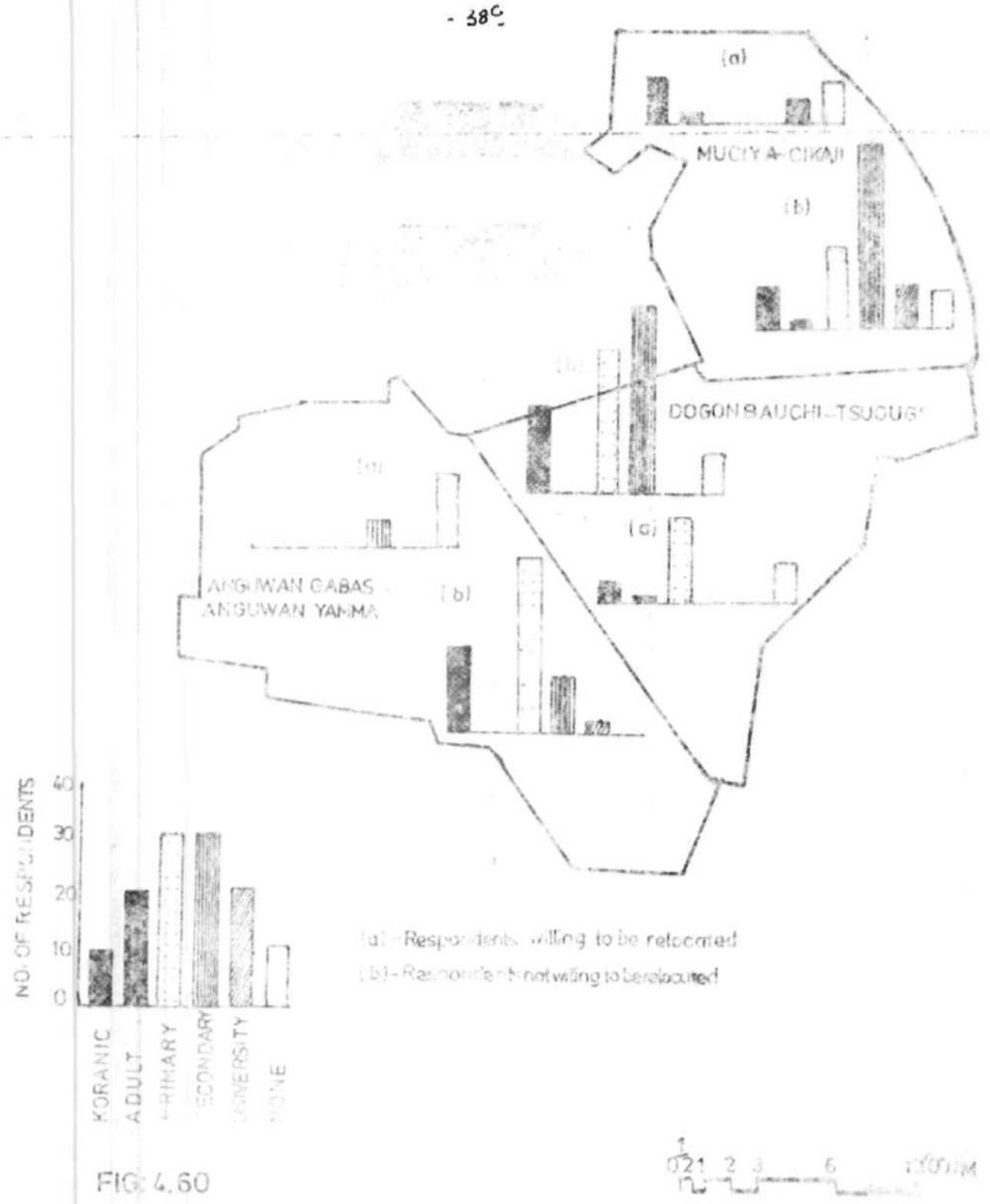


FIG: 4.60

RESIDENTS WILLINGNESS TO BE RELOCATED FROM DIFFERENT PARTS OF SABON GARI ZARIA

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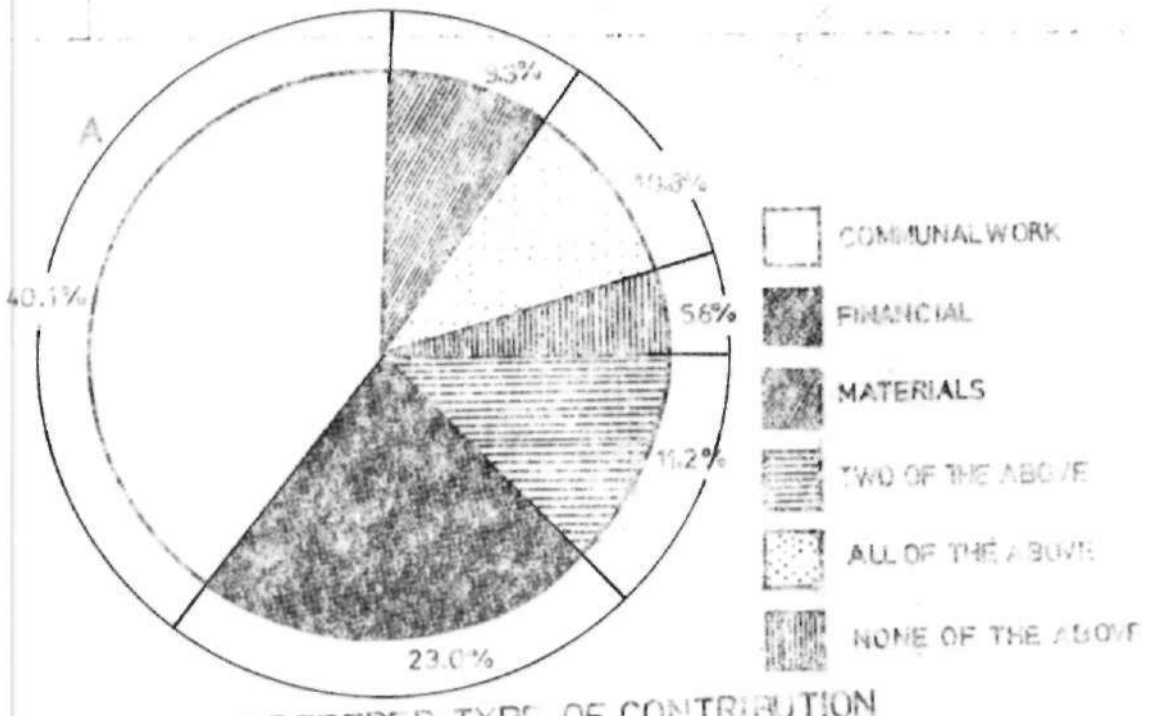
Other respondents are willing to give more than one type of contribution (Figure 4.61A). In response to the question of how ready the respondents were to pay a levy for the improvement of the area, only 20.3% said they were not ready but all the rest were willing (Figure 4.61B). This is an indication of residents willingness not only to give contribution but also to pay certain levy for the improvement of facilities and services.

4.60 EXISTING LANDUSE PATTERN:

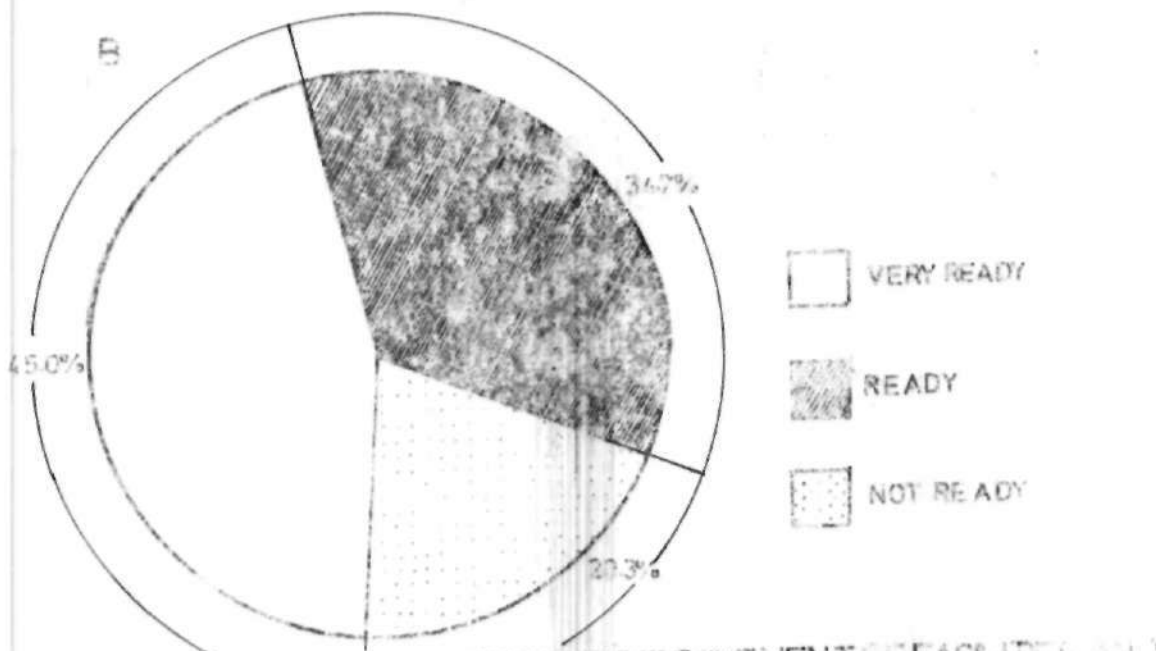
Sabon Gari historically was meant to be a residential area with a small amount of commercial activity to cater for the immediate needs of the residents. This role of Sabon Gari is reflected in its landuse pattern. While the residential activity has occupied more than its share of spatial allocation, other landuses which are expected to be of complimentary use to residential activities have less share of spatial allocation than required.

Out of the total area of 385.21 hectares presently occupied by the whole of Sabon Gari area, the bulk (301.44 hectares) is under residential landuse this amounts to 77.58% of the total area. This is at the expense of commercial landuse with an area of 10.30 hectares, public/semi public 3.133 hectares and recreational 14.1 hectares thus they occupy 2.67%, 8.13% and 4.35% respectively (Figure 4.62). Roads and streets cover a total land area of 16.00 hectares which is 4.15% of the total area.

FIG: 4.61



THE PREFERED TYPE OF CONTRIBUTION



READINESS TO PAY A LEVY FOR THE IMPROVEMENT OF FACILITIES AND SERVICES


EXISISTING LANDUSE
RESIDENTIAL
COMMERCIAL
INDUSTRIAL
RECREATIONAL
PUBLIC SEMI PUBLIC
ORGANISED OPENSPACE
MIXED LANDUSE
PS PRIMARY SCHOOL
SS SECONDARY SCHOOL
CLINIC
0 1 2 3 4 5 6(00) METRES

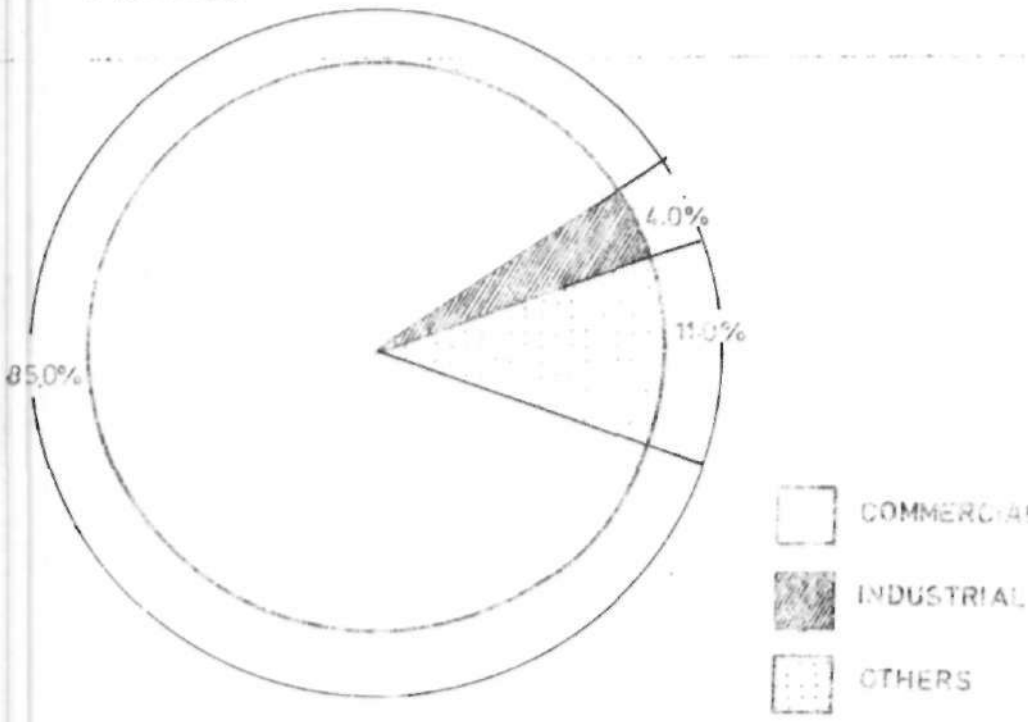
FIG. 4.62

4.61 Residential: The total area as shown in Figure 4.62 devoted under residential use is out of proportion with other complimentary landuses, therefore there is the need to balance in order to make the residential area more functional and livable for the residents.

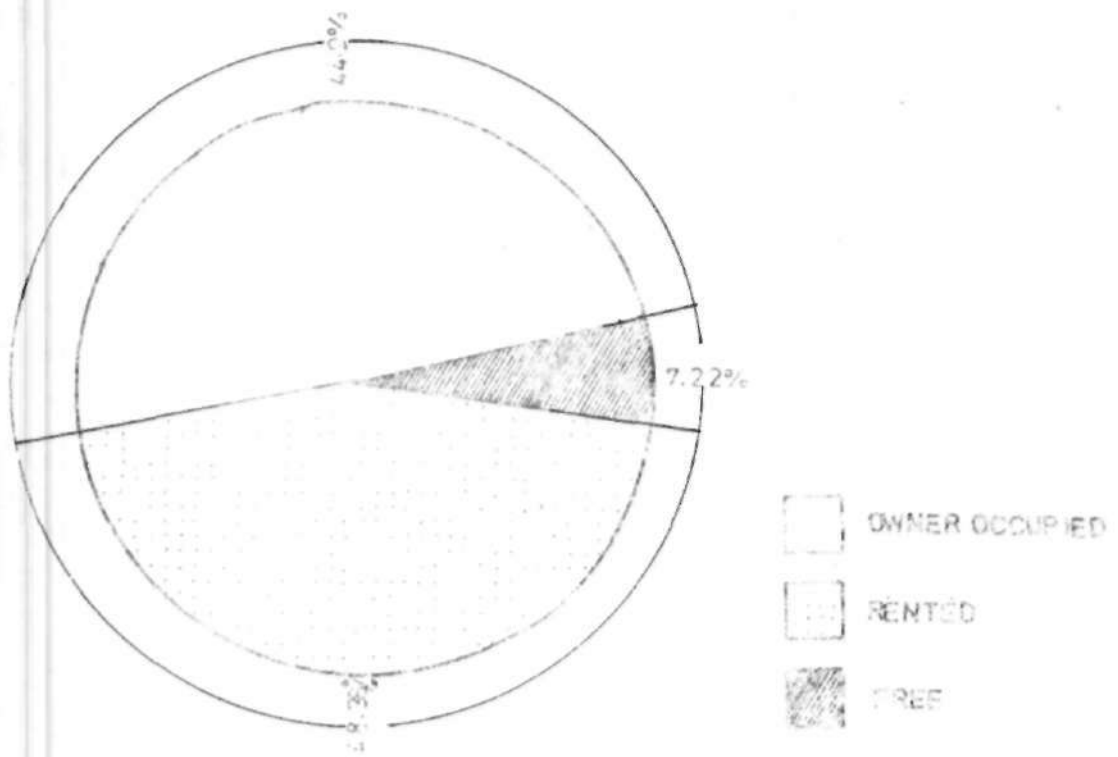
4.62 Commercial: Commercial activity is the most important form of economic activity in the whole of Sabon Gari but the form in which it is reflected on land leaves much to be desired. Market which is the main focus of the commercial activities is over congested. This is not surprising because it is designed to cater for a total of 1,464 traders each one with his own stall but as at now there are more than 2,518 traders having stalls in the maket in addition to those traders using the passages to display their items. Lack of basic facilities and services further worsen the problem.

4.63 Mixed Landuse: Though in Sabon Gari there are different types of mixed landuse including industrial/commercial, recreational/residential, industrial/residential, the most important which deserves more serious attention is commercial/residential (Figure 4.63). This is found in every street and almost every residential compound. The mixed type of landuse takes two form vertical and horizontal. The vertical one consists of residential and commercial one on top of the other in buildings with more than one floor. The horizontal one is just a situation whereby commercial and residential are found adjacent to one another in the same compound. There are instances where it is found shops used for commercial activites are also used for residential purpose (See Figure 4.62).

FIG: 4.63



OTHER USES OF THE COMPOUNDS APART FROM RESIDENTIAL



COMPOUNDS OWNERSHIP

The large area (12.04 hectares) occupied by this type of landuse and the haphazard and orderless way it is located calls for proper physical planning strategy which will bring control and proper operation of this mixed activity. (See Plate 1)

4.64 Public/Semi-Public: This encompasses all lands under public use including schools, dispensaries, health centres, worshipping places organised and unorganised open spaces and district administrative offices. The largest land coverage is by the unorganised open spaces and schools. Public and semi public should be the most accessible form of landuse for the residents but this is not the case in Sabon Gari. The existing situation is where you find the police post and district office at the extreme end of the area where it is not easily accessible to most residents. The location of district office near the market adjacent to police post contribute to the traffic problems.

4.65 Health: This is one of the most inadequate facility in the area. The only health facility so far is a dispensary under the controll of Ahmadu Bello University Teaching Hospital. It is located along Old Hospital Road and is being accommodated by the old buildings of the hospital first located in the area as early as 1911-1927. This health facility is not only used by the residents of Sabon Gari but also from other parts of the urban region (see Figure 4.6a). There are also two private clinics which are of course commercial and not within the reach of the majority of people in the area. There is the need for the provision of more health facilities in the area preferably by the State and Local Governments in a form



PLATE 1: A Residential Compound bding used as a Bakery. An Aspect of Mixed Landuse.



2a: One of the numerous hotels haphazardly located in Sabon Gari Zaria.



PLATE 2b: One of the two cinema houses found in the area. It provides an indoor recreational facility for the residents.

of Dispensaries, Health Centres, and Clinics. The higher order health facilities like specialised clinics and hospitals should be provided taking into consideration the needs of the whole urban area.

4.66 Recreational: This is among the least developed facilities in the area though compared with other parts of the urban region it appears to be better off. The type of outdoor recreational facilities available include one stadium located within Anguwan Gabes and many playfields mostly located within the premises of primary schools and other institutions. Other outdoor recreational facilities like parks are completely absent. The lack of adequate outdoor recreational facilities is nearly balanced with large number of indoor recreational facilities. This include cinema halls (two in number) various clubs, bars and other entertainment houses. (Plate 2a & b) The haphazard nature of location of these indoor recreations pose alot of nuisance and environmental problems to the residents. There is therefore the need for locational control (See Firgure 4.66).

4.67 Transportation: From the various surveys carried out this seems to be the most pressing needs of the residents (See Figures 4.54). Transportation problem vary from one part of Sabon Gari to the other. While some areas totally lack adequate transportation facility (Muciya/Cikaji), others though having some, they are either totally neglected thus rendering them inadequate or they are not enough to cater for the large number of users hence accute traffic congestion. Lack of proper parking spaces or misuse of the ..

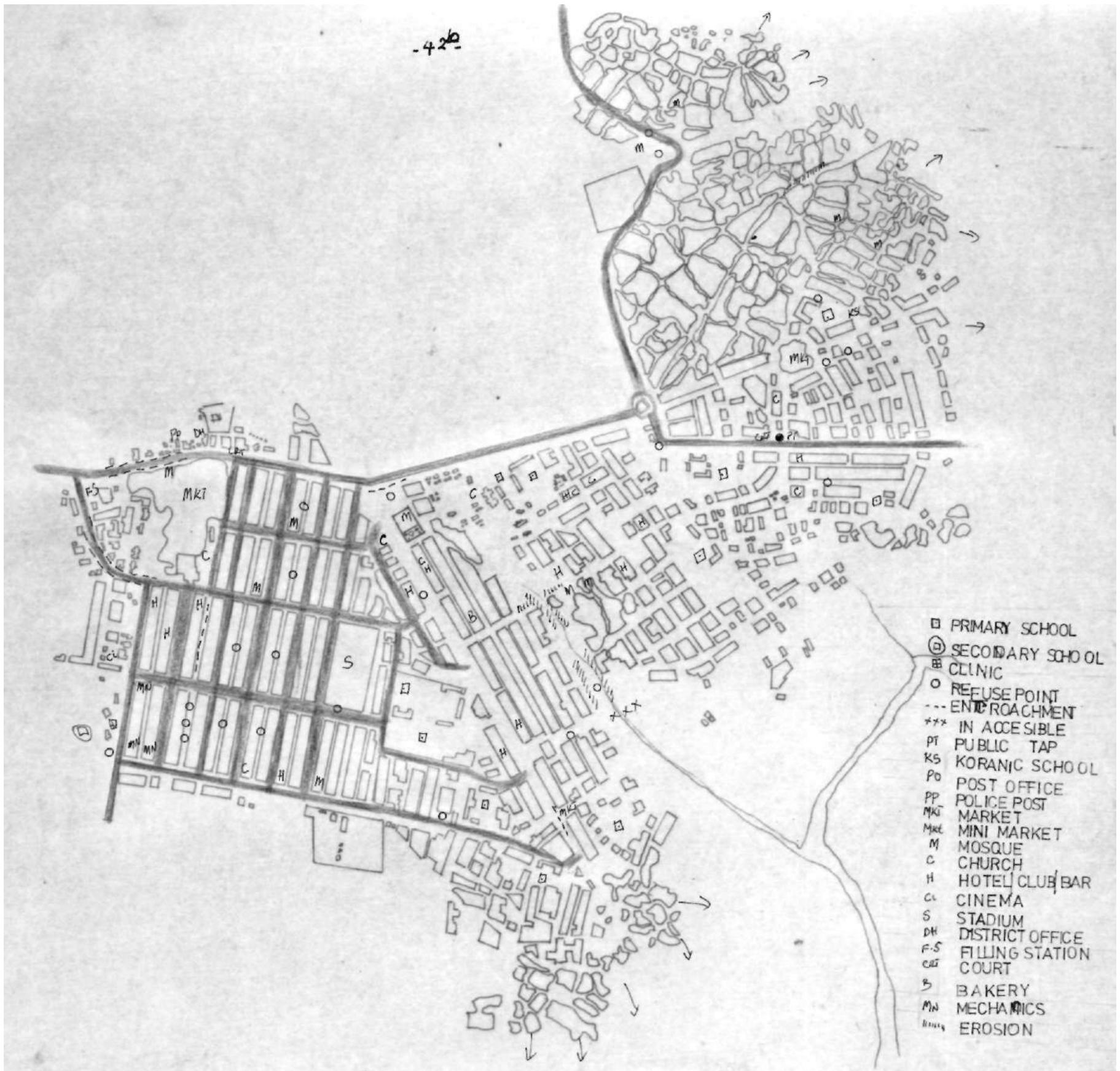


FIG 4.66

UPGRADING STRATEGY FOR IMPROVING SABONGARIS IN NIGERIA: A CASE STUDY OF ZARIA

EXISTING FACILITIES

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ones provided through encroachments add to the gravity of the problems. (Plate 3).

From the traffic survey carried out for this study, Aminu and Hospital Roads seem to be the most congested in the area. It was in trying to ease the congestion problem that they are converted to one way traffic but the problem is still to be adequately solved. (See Figure 4.67). Tobacco road at the extreme North East end of Sabon Gari is also equally congested. This congestion can be attributed to improper landuse allocation. In the case of Aminu Road, the presence of the market, district offices, courts, police post and residential compounds coupled with lack of adequate parking space is the main cause. Whereas in the case of Tobacco Road, the narrowness of the road presence of industrial area in the North of Cikaji and other industries like Nigerian Tobbacco Company and Oil Depot just opposite high density residential area of Cikaji village are the main sources of traffic congestion and hazards in the area. The roads within Anguwan Gabas' and Anguwan Yamma of Sabon Gari have their right-of-ways wider than average of the area this together with the fact that there is no proper suggregation of pedestrian walk aways leads to its misuse by the residents alot of solid wastes are deposited in these right-of-ways which sometimes extend to the middle of the roads (See Figure 4.67). The role of Sabon Gari Township as both industrial, administrative and commercial centre of Zaria makes it an attractive point for commuters from different parts of the town. While the majority of traders and civil servants of



PLATE 3: Traffic along Aminu Road, lack of parking facilities adds to the problem of traffic congestion.

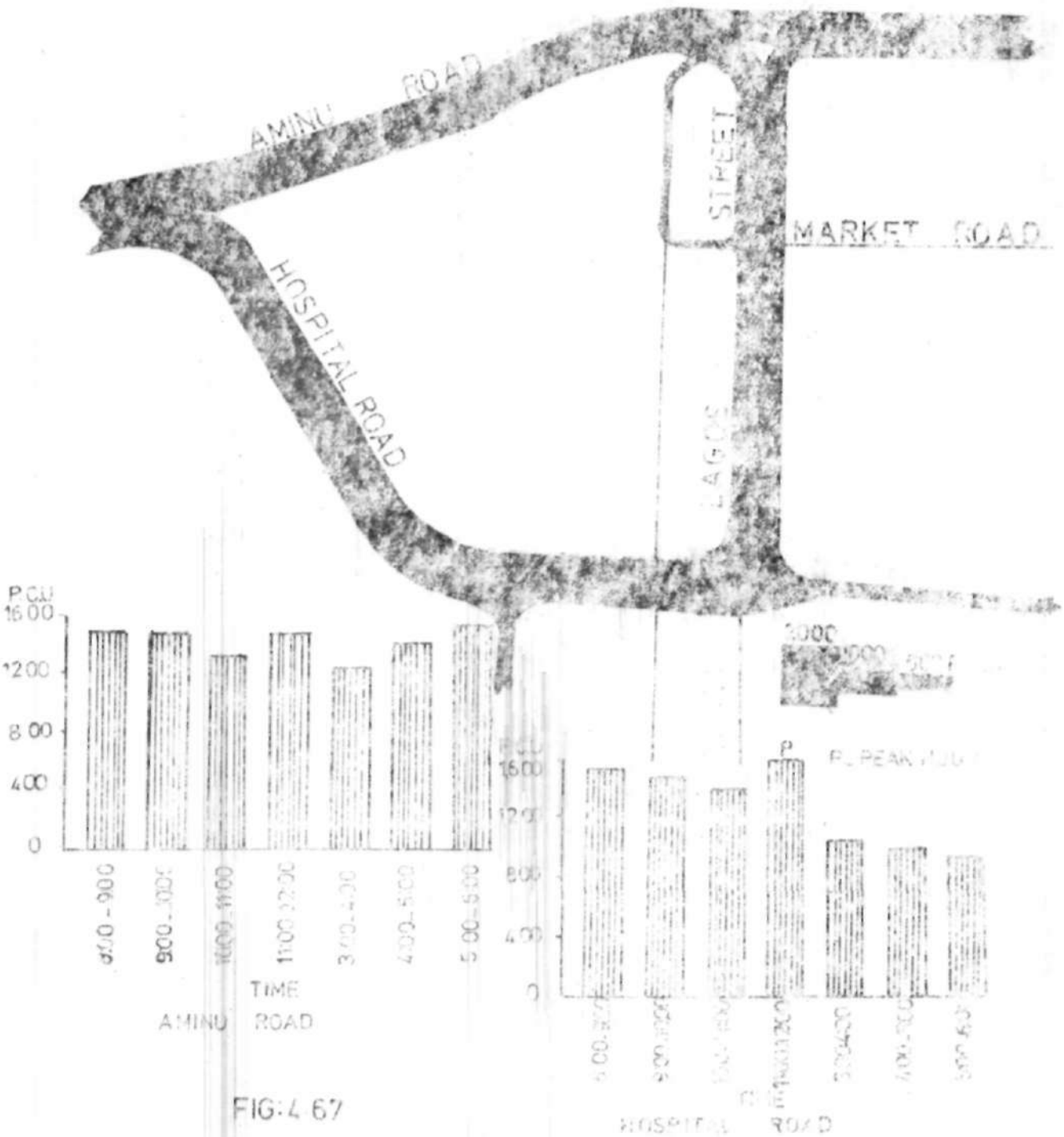


FIG: 4.67

DESIRE LINE SHOWING PEAK HOUR TRAFFIC VOLUME IN SOME SELECTED ROADS OF ZARIA METROPOLIS

UPGRADING STRATEGY FOR IMPROVING SANITATION IN NIGERIA: A CASE STUDY OF ZARIA

Zaria Urban Area converge to Sabon Gari, most of the residents (64.3%) of Sabon Gari on the other hand have their working place located in Sabon Gari and the mode of transportation range from private cars, taxis down to those who walk on foot (Figure 4.68).

4.70 FACILITIES, UTILITIES AND SERVICES:

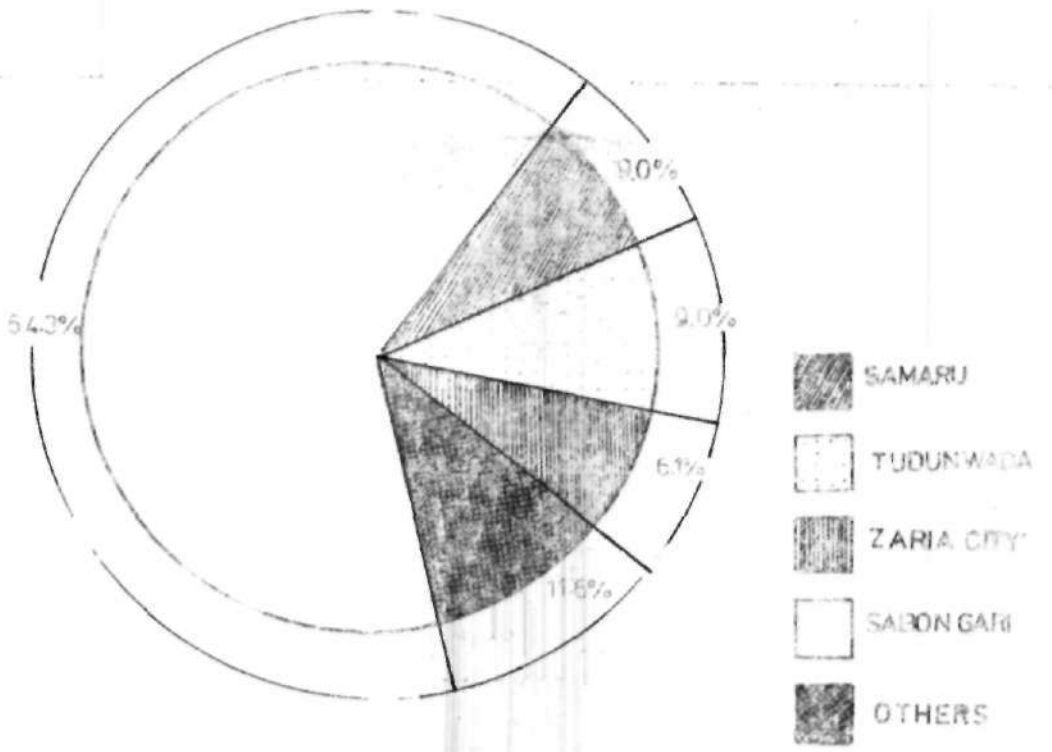
4.71 Police and Fire Services: The existing police post is enough to cater for the area though its location is not suitable because it is not easily accessible to all the residents of the area.

Although one Fire Service Station is required for the Urban Region, there is the need to provide a fire service post near the market area which will serve as an emergency unit.

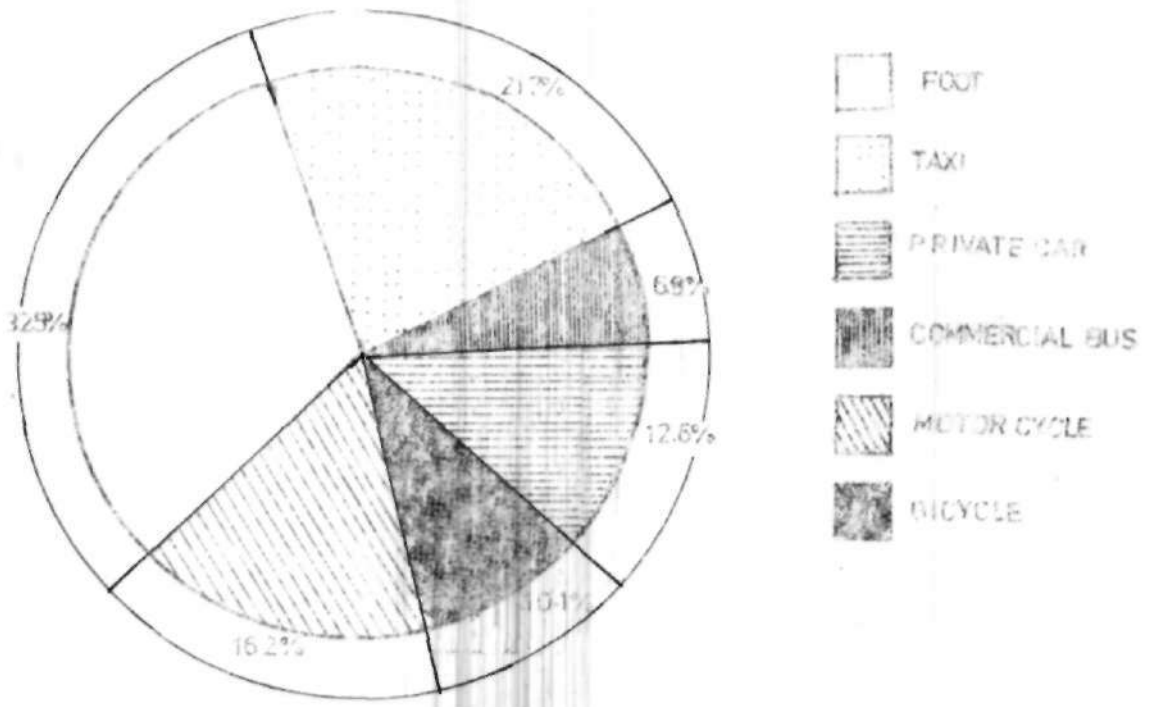
4.72 Worshipping Places: Next to clubs and bars in number are the worshipping places. In almost every street there are more than one mosques and churches (See Figure 4.66). The location of these uses sometimes do not conform with other landuses. Though the right to freedom of worship should be respected in any physical plan, there is the need for control in order to forestall any unpeasantry that may come up as a result of this. Apart from the need for proper locational relationship of worshipping places of different religious grouos there is also the need for such with regards to other activities most especially social. (Plate 4a & b).

4.73 Postal Services: Postal services in the area has been inadequate. For one to post a letter he has to go to the main post office some kilometres away. The subpost office presently under construction after completion will solve this problem.

FIG: 4.68



WORKING PLACE LOCATION



MODE OF TRANSPORT TO WORKING PLACE



PLATE 4a: Sabon Gari Central Mosque located adjacent to a Church and opposite to a brothel - conflicting landuse.



PLATE 4b: A Church: one of the numerous worshipping places found in Sabon Gari.

4.74 Electirity: The electricity supply of the study area is dependent on the national supply. Though the total power supply of Sabon Gari has steadily increased from 0.5 megawatts in 1979 to the present (1984) supply of 1.6 megawatts it has not been able to meet the demand. Apart from insufficient supply from the National Grid there are also local problems which add to power supply shortage. These include:-

(1) Poor access roads

(2) Haphazard method of erecting buildings.

(3) Non regular payment of electricity bills.

(4) Lack of spaces for installation of equipments and poles.

Solving of the above problems will optimise the use of the amount of power supplied by the National Grid. (See Figure 4.74). Presently 88.4% of the compounds surveyed use electricity and the trend is shaving an increase in demand.

4.75 Pipeborne Water Supply: The survey carried out has shown that 48.1% of the residents have private piped water connections to their compounds while 19.1% use public piped water supply this totals to 67.2% which means only 32.8% use well water as source of domestic water supply (See Figure 4.75). Total number of piped water consumers in Sabon Gari totals 1,366 and the average consumption per month is 150,000 litres (33,000 gallons). This means the gross water supply per day per person amounts to 0.13 litres. Whereas the net water supply is 0.65 litres per day per person. (See plate 5a & b) There is therefore the need for:-

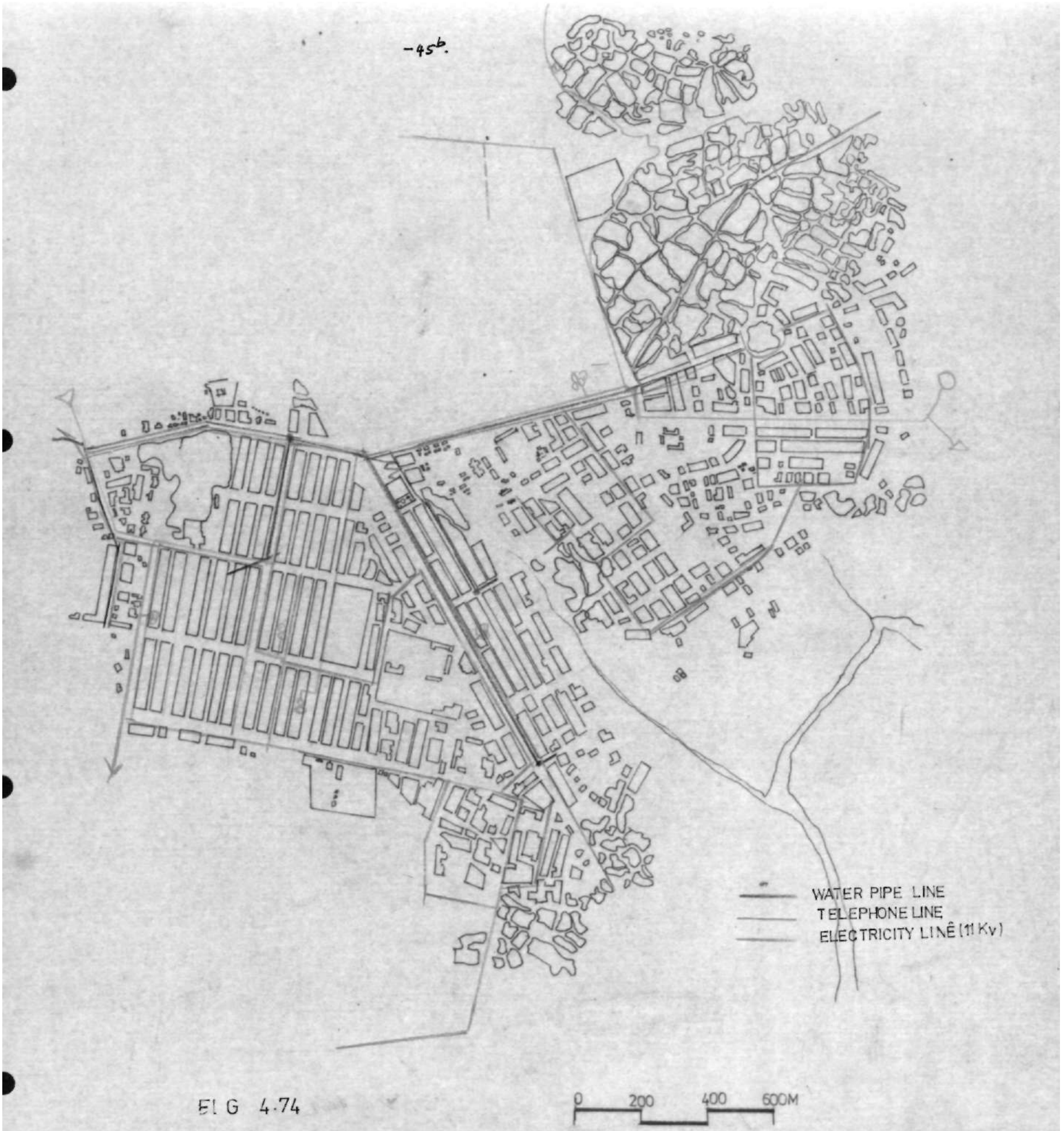


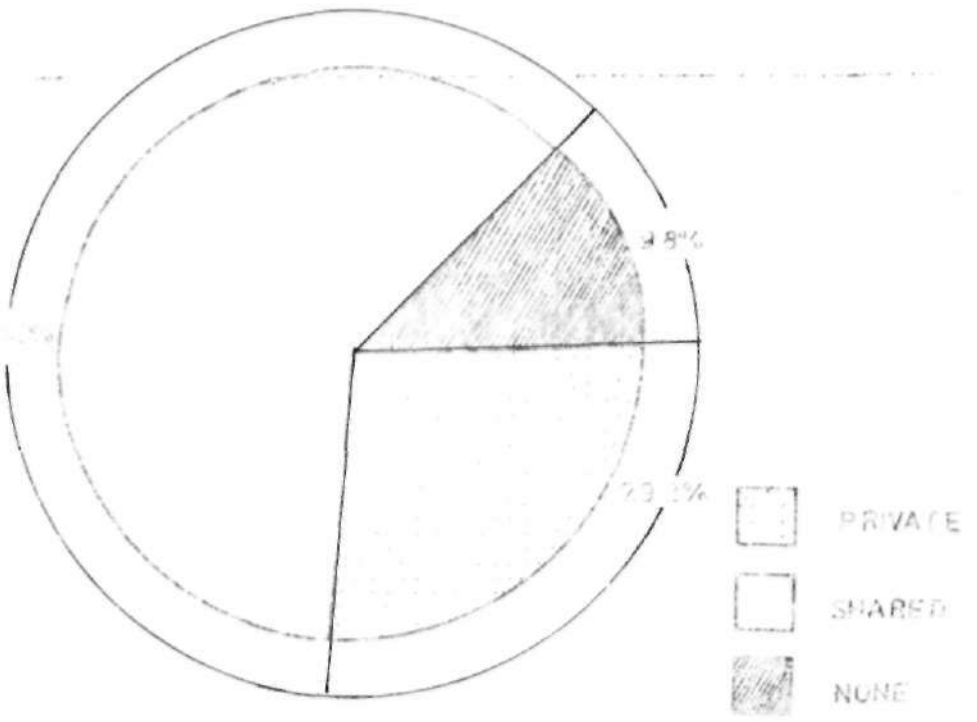
FIG 4.74

UPGRADING STRATEGY FOR IMPROVING SABONGARIS IN NIGERIA: A CASE STUDY OF ZARIA

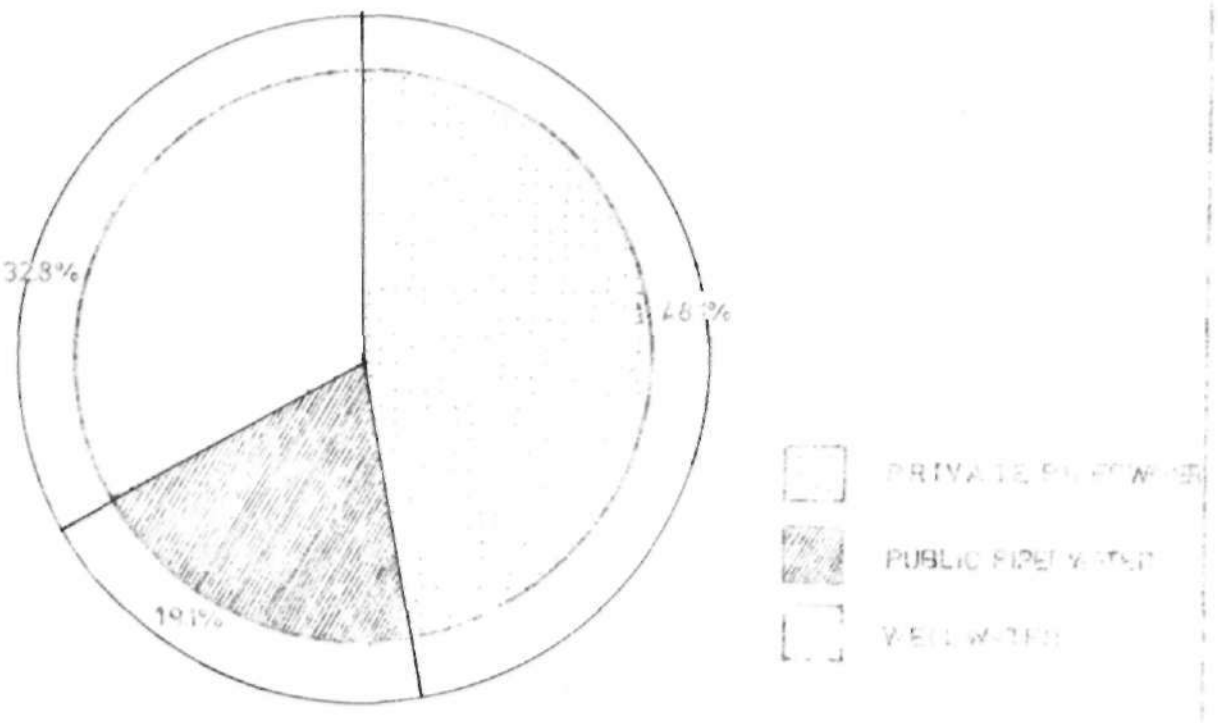
EXISTING UTILITY LINES

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FIG:4.75



KITCHEN TYPE



SOURCE OF DOMESTIC WATER SUPPLY



PLATE 5a: A public well filled with refuse.



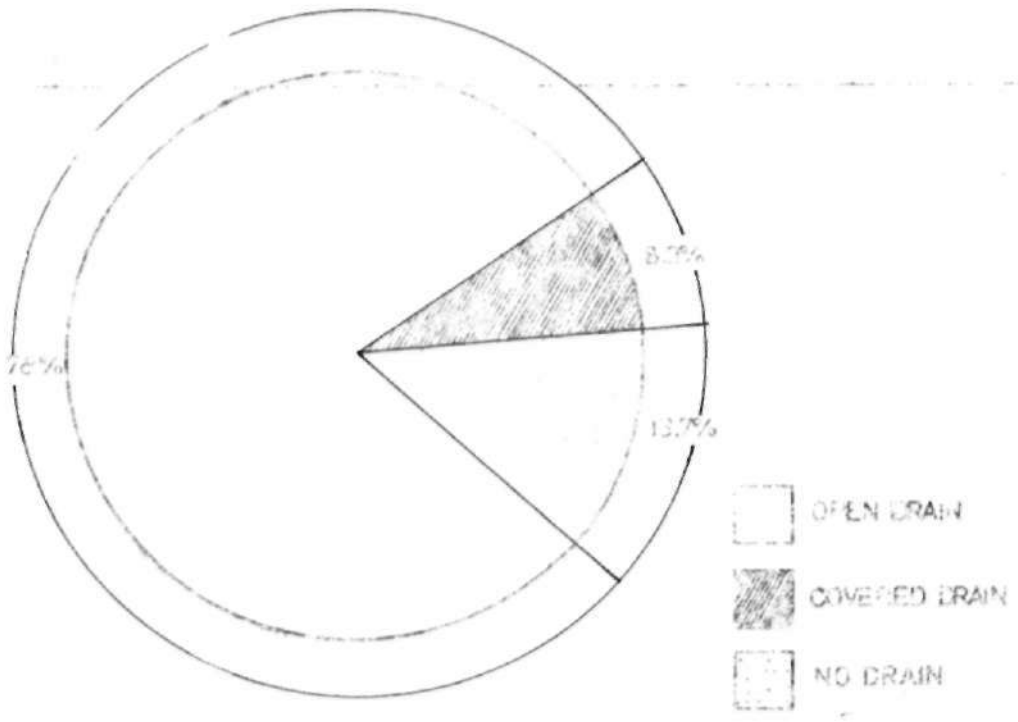
PLATE 5b: One of the very few public taps found in the area: see the long que and poor drainage facility.

1. More public taps to cater for those without it.
2. Distribution of waterlines as near as possible to the compounds to encourage private connections.
3. Increase in the accessibility of some parts of Sabon Gari to provide adequate property line for the extension of pipe lines.
4. Increasing the net water supply to the area.

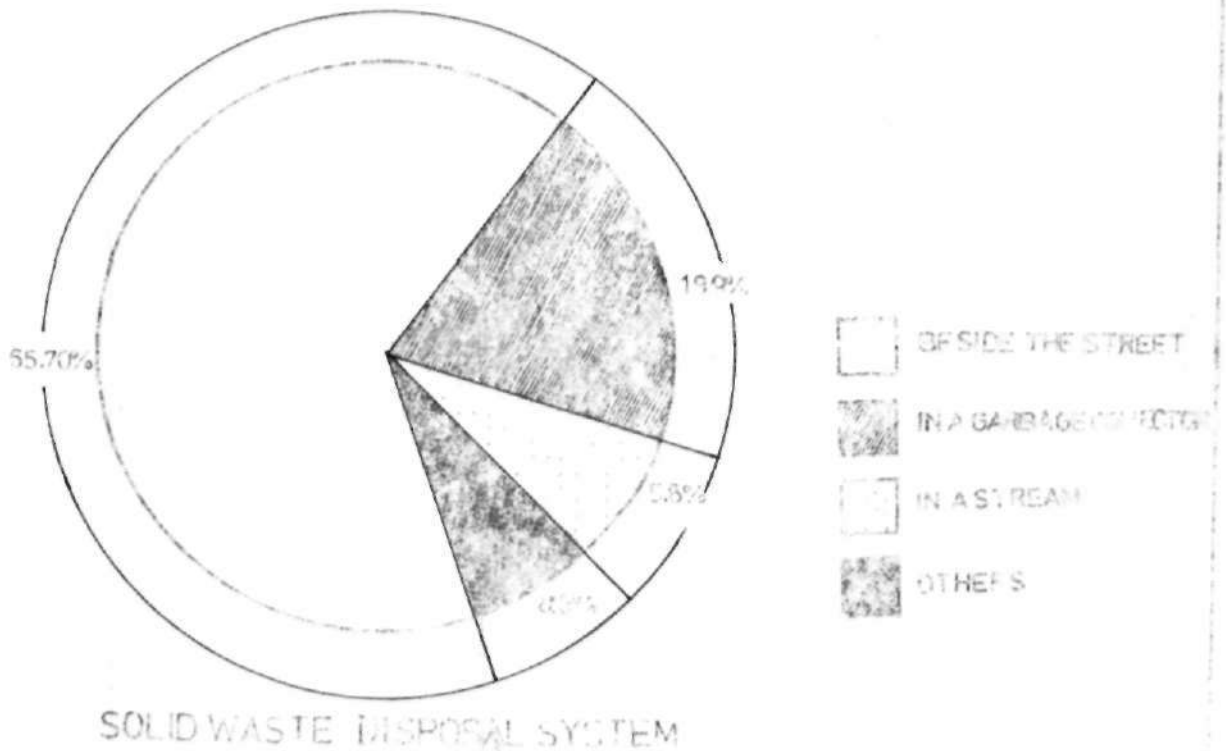
4.76 Drainage lines: One of the major physical planning problems facing Sabon Gari area is lack of adequate drainage system. The fact that the area is located in low laying area adds to the problem. Inefficient drainage starts from foul drainage in the compounds up to storm water drainage along the roads. Poor inter connections between foul and storm water drainage lines contribute to the deteriorating conditions of the roads. (See Plate 5b) 13.7% of the total compounds surveyed have no any drainage system whatever liquid waste is disposed of, ends up on the roads. 78% of the compounds surveyed have open drain though most of them either end up emptying their loads in the streets or they make a pool beside the compound but few are able to reach the storm drainage lines (See Figure 4.76). There is a serious danger of erosion by the side of some main storm drainage lines most especially in areas along Hausa and Arab roads (See Figure 4.76).

4.77 Solid Waste: There is no single organised solid waste collection point. Most of the solid wastes end up on the roads (See Figure 4.66) or along the drainage lines thus leading to fould and storm water drainage problems. The back to back arrangement of blocks provide space for the type of careless

FIG: 476



DRAINAGE SYSTEM



SOLID WASTE DISPOSAL SYSTEM

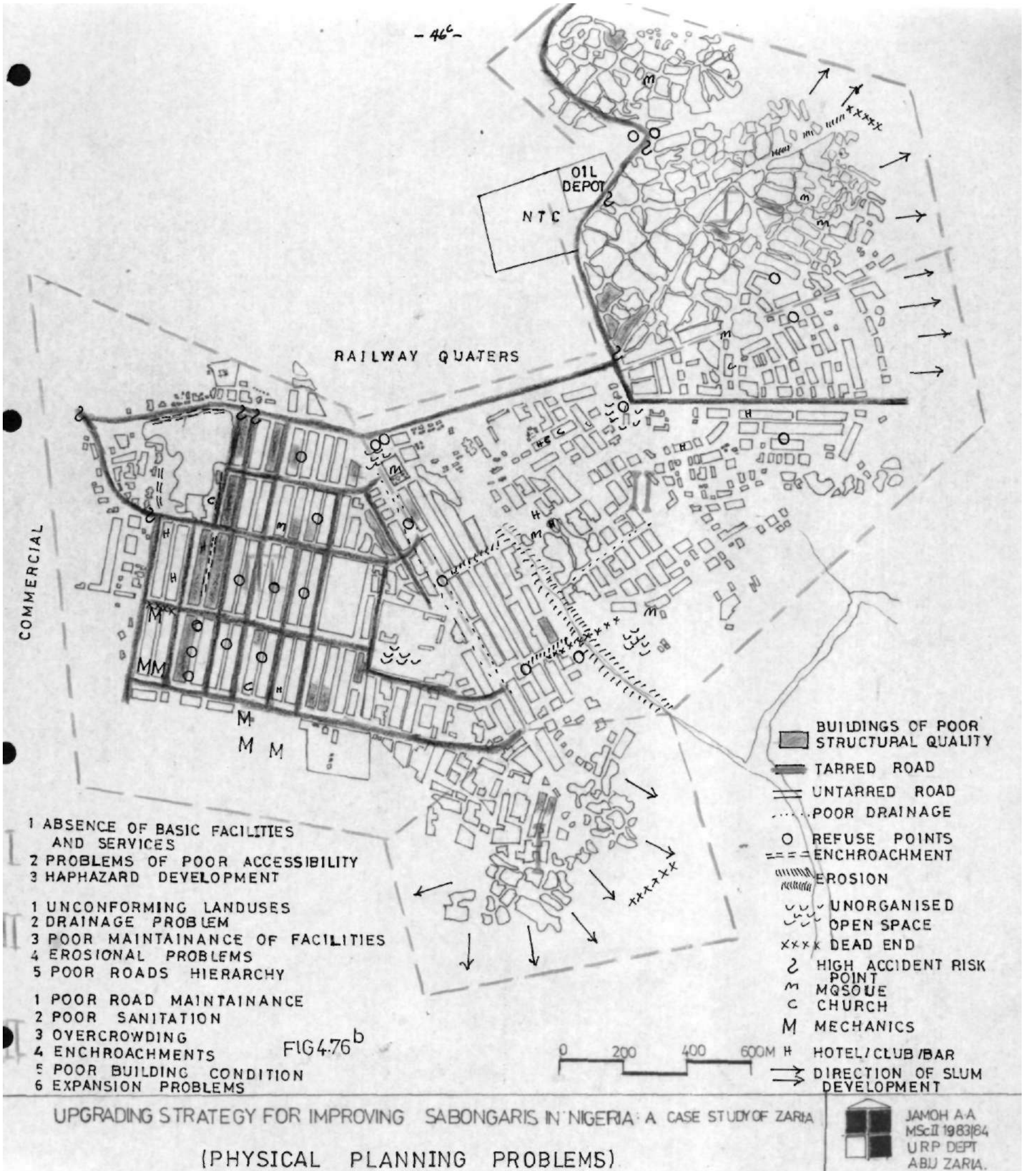


FIG 4.76b

UPGRADING STRATEGY FOR IMPROVING SABONGARIS IN NIGERIA: A CASE STUDY OF ZARIA

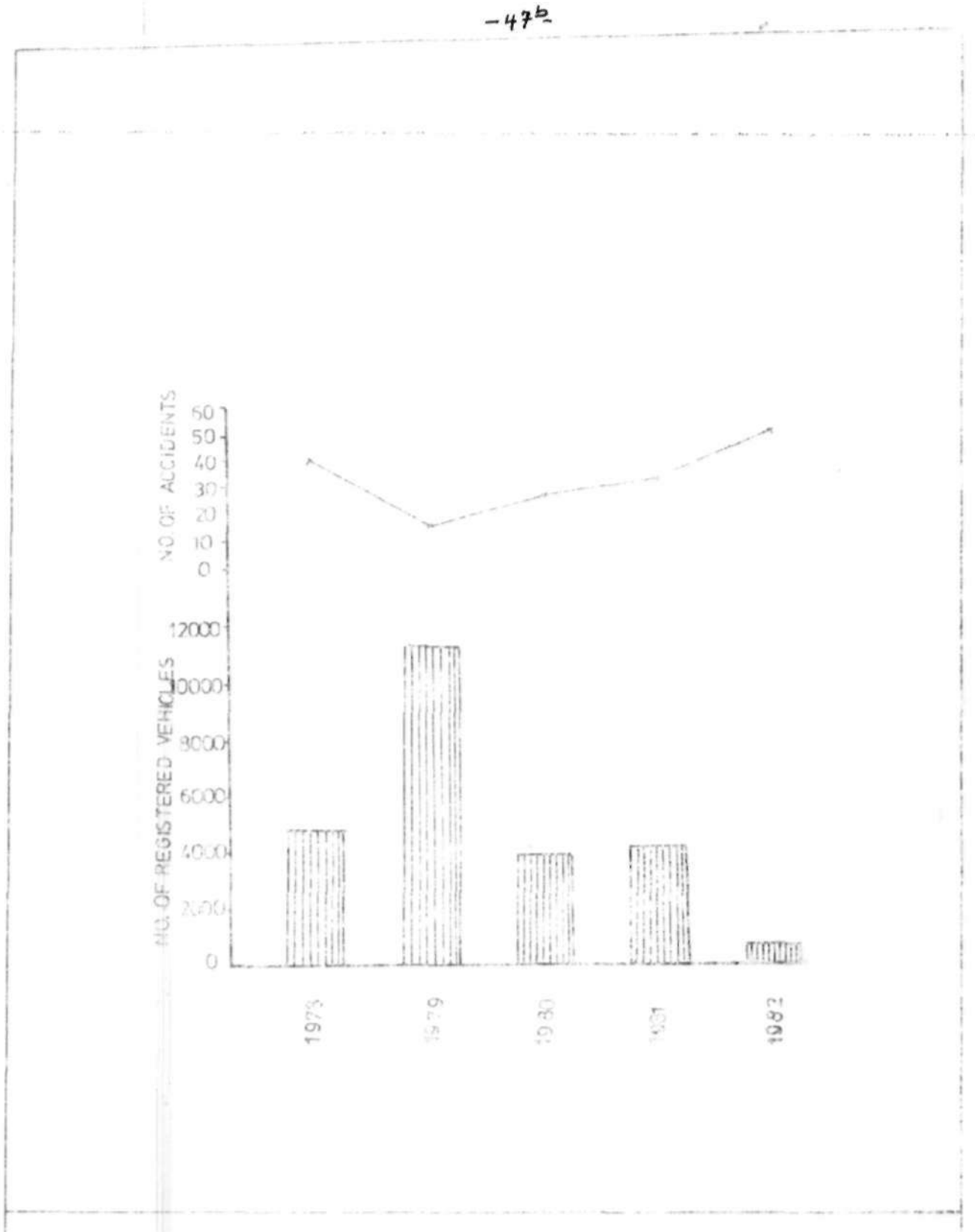
(PHYSICAL PLANNING PROBLEMS)

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solid waste disposal. Only 19.9% of the respondents dispose of their solid wastes in proper garbage collector. Majority (65.7%) admitted tipping the waste beside the street while 5.8% tip their in the drainage lines (See Figure 4.76 & Plate 6a-c). There is therefore the need for refuse collection points at convenient points for each residential neighbourhood.

4.78 Telephone Lines: Telephone lines in the area are underground. Though the consumption of this facility is low only 11.6% of the compounds surveyed. The demand will considerably increase in the near future with increase literacy and income levels.

4.79 Road Network: Sabon Gari has one of the highest number of roads in the whole of Zaria Urban Region. Anguwar Gabas and Anguwar Yamma together with Dogon Bauchi have no much problem as far as accessibility by road is concerned. The only problem is that of lack of maintainance. Whereas areas like Muciya, Cikaji, Anguwar Kanawa, Zabi and Jushin Waje have a very low accessibility by roads. This is because the roads serving them are very few with numerous foot paths. Road congestion is another pointer to the fact that some roads are being under utilised while others have heavy traffic at any one time. The number of traffic accidents and the volume per unit time of a road are found to be directly proportional. This explains the high accident rates along Aminu and Hospital Roads. All roads found in Anguwan Gabas and Yamma are grid iron while that of Dogon Bauchi area is radio contric (See Figure 4.66). The total number of registered vehicles in Zaria town as a whole have been on the increase so is also the rate of increase in accidents in Sabon Gari Zaria (See Figure 4.79).



NO OF REGISTERED VEHICLES COMPARED WITH NO OF RECORDED ACCIDENTS

FIG 4.79

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PLATE 6a: Refuse dumping ground extending to the road.



PLATE 6b: An open space littered with refuse and illegal structures. A site proposed for Television viewing centre.



PLATE 6c: Back to Bake Arrangement of residential block. The alley inbetween the blocks is used for dumping refuse.

4.80 CONDITION OF BUILDINGS:

4.81 Age: The age of buildings have been found to be related with the time the area in which they are erected was developed (See Figure 4.20). Angu wan Kudu which starts from the Hospital Road to Club Road in the South-West was developed from 1911 to 1927. Most of the structures erected within this period of time are still existing though there have been some redevelopment of few compounds most in Warri and Lagos Streets. The buildings near where the main street divide into Hospital and Aminu roads are all relatively young. Most of them having been developed later than 1957. New Hospital Road happens to be the most recently developed in this area. The area starting from Club Street to Dogon Bouchi Road was developed between 1927 and 1957. Here also some redevelopments of some of the compounds took place but the bulk of the buildings are still as they were originally constructed. The buildings located between Accra and Aggrey Roads took place between 1960s and 1970s thus making the area the most recently developed. Muchiyan Dan Auta and Cikaji area first developed as squatting area for railway workers. The development started to take place around 1911 when railway line reached Zaria and continued extending southwards untill when layout was made to check the unplanned development in 1960s hence Aggrey road forms the boudary of the planned development which started from the south and the unplanned development which extended from the north downwards. Extension of Sabon Gari led to the 'enveloping' of peripheral villages which had been existing to form part of Sabon Gari. These

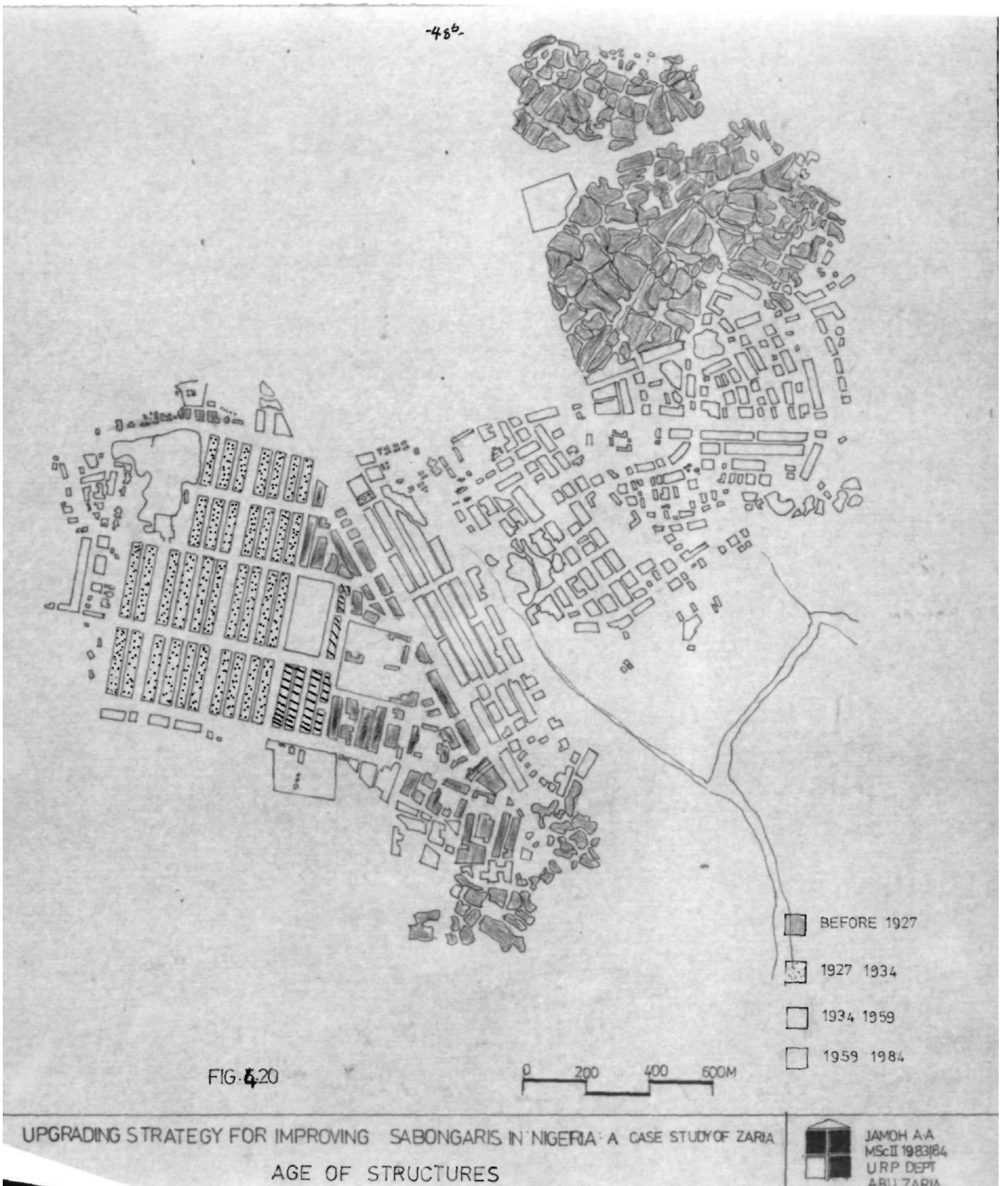


FIG. 4.20

UPGRADING STRATEGY FOR IMPROVING SABONGARIS IN NIGERIA: A CASE STUDY OF ZARIA

AGE OF STRUCTURES

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villages include Tsugugi, Jushin Waje and Zabi. The above account shows that the ages of buildings in Sabon Gari range from 73 years to the ones which are being constructed (See Figure 4.20).

4.82 Building and Roofing Materials: Building materials vary from mud, mixture of mud and cement to sandcrete blocks. The roofing materials also vary from mud, zinc, asbestor sheets to concrete. According to the sample survey, out of 277 compounds. 31.6% have their walls built with mud, another 31.6% with mud and plaster while 36.8% were built with concrete blocks (Figure 4.81). As for the roofing materials 1.8 was thatch, 26.7% Absbestor, 3.3% mud, 3.6% concrete and 64.6% iron sheet (See Figure 4.82). Different parts of Sabon Gari are characterised with particular types of building and roofing materials (See Figure 4.83). Anguwan Yamma and Kudu have most of their walls built with mud and plastered with cement while most of the roofs are iron sheets. From Marmara Road to Aggrey Road the building material is mostly sandcrete blockes with iron sheet roofs also some of the houses roofed with asbestos sheets. Muchiya, Cikaji, Zabi, Jushi and Tsugugi have the walls of the compounds made of mud only and also a large number of them made of mud plastered with cement. The roofs are mostly iron sheets. The bulk of few mud roofs found in Sabon Gari are located in these areas (See Figure 4.83 & Plates 7a-e).

4.90 EXTENT OF BLIGHT:

There are various techniques for assessing the extent of blight. Usually the method used depends on the resources (both human and material) available. The most preferable type

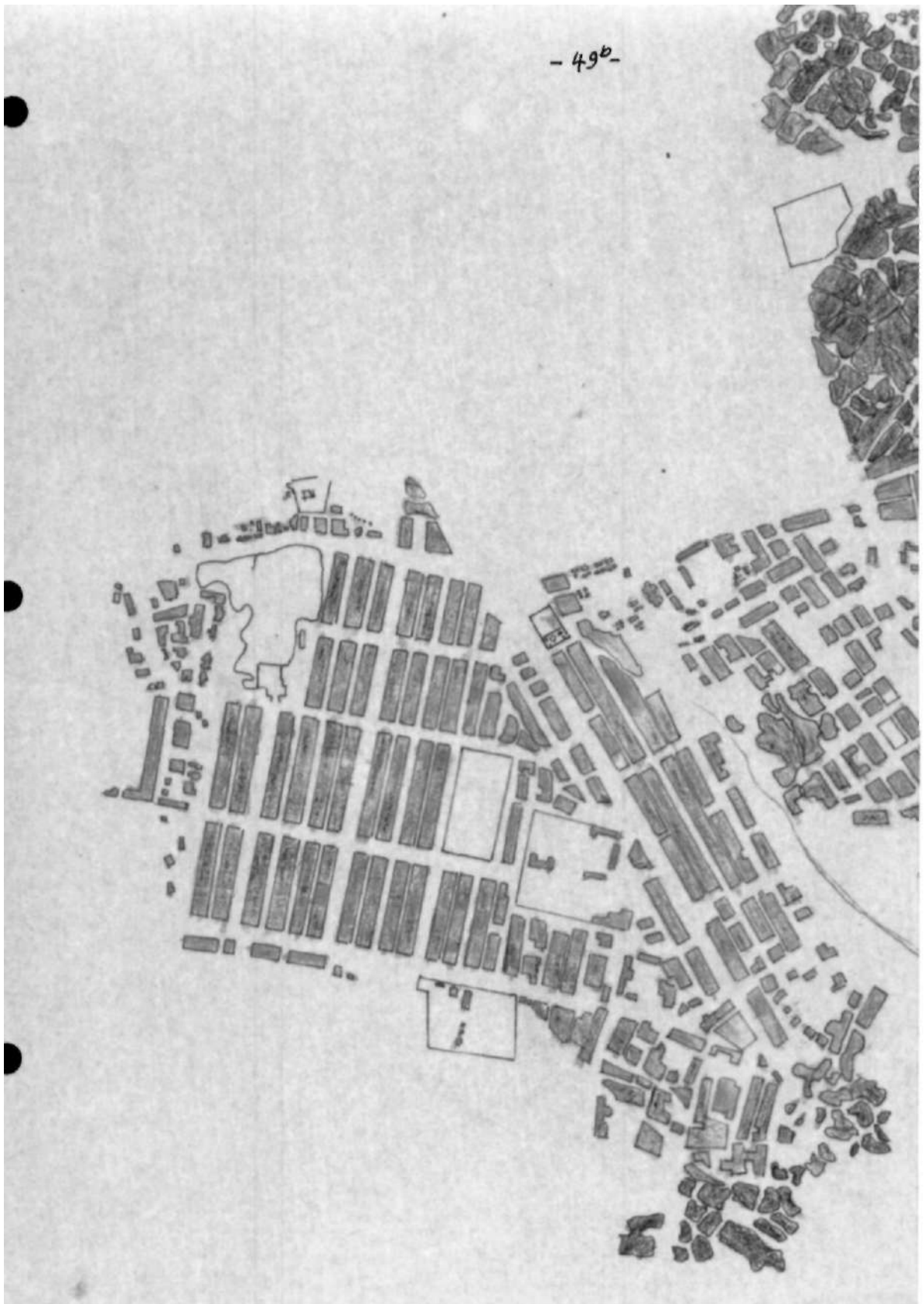
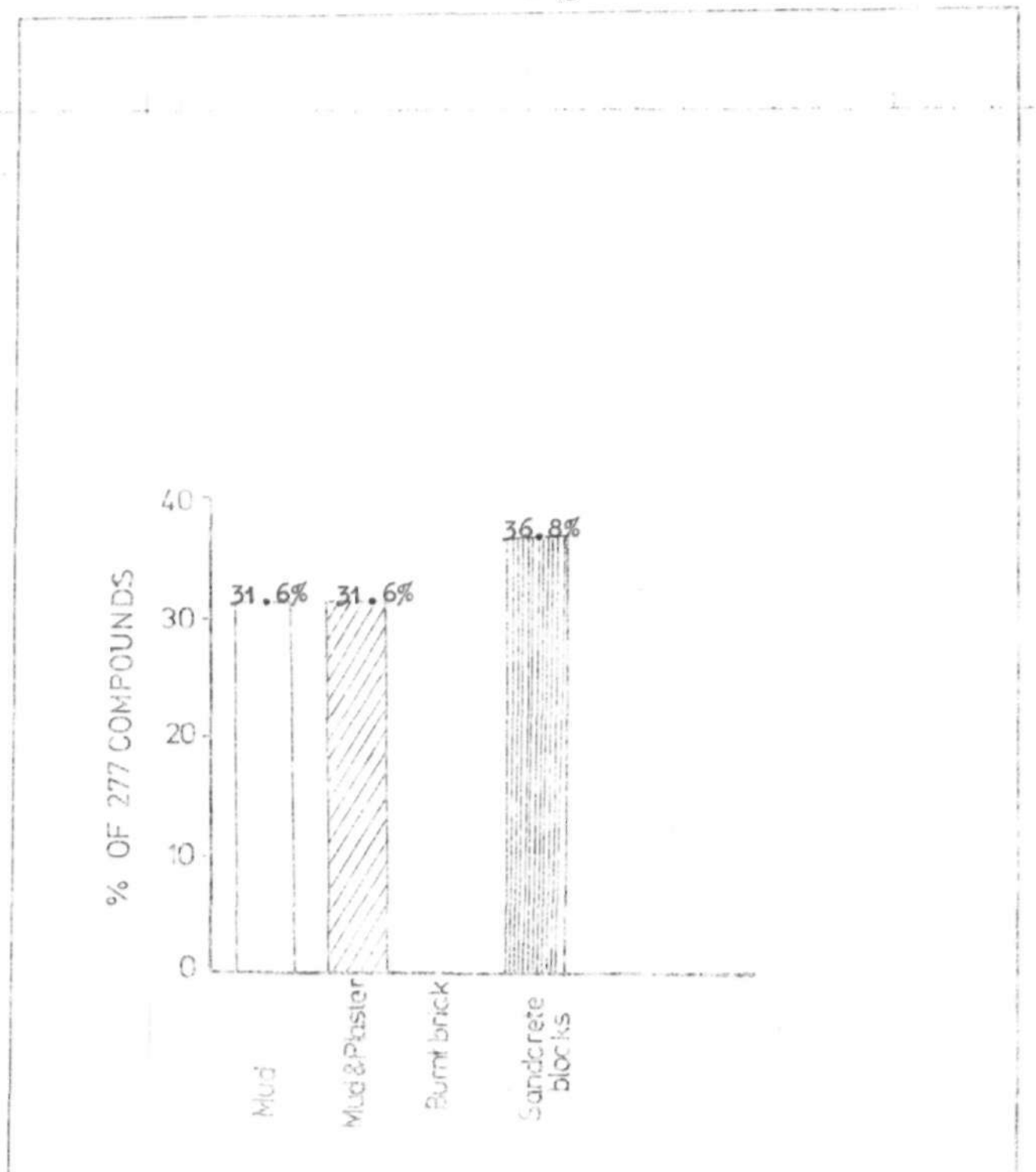


FIG 4.83

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UPGRADING STRATEGY FOR IMPROVING SABONGARIS IN NIGERIA: A
BUILDING AND ROOFING MATERI



BUILDING MATERIALS

FIG. 4.31

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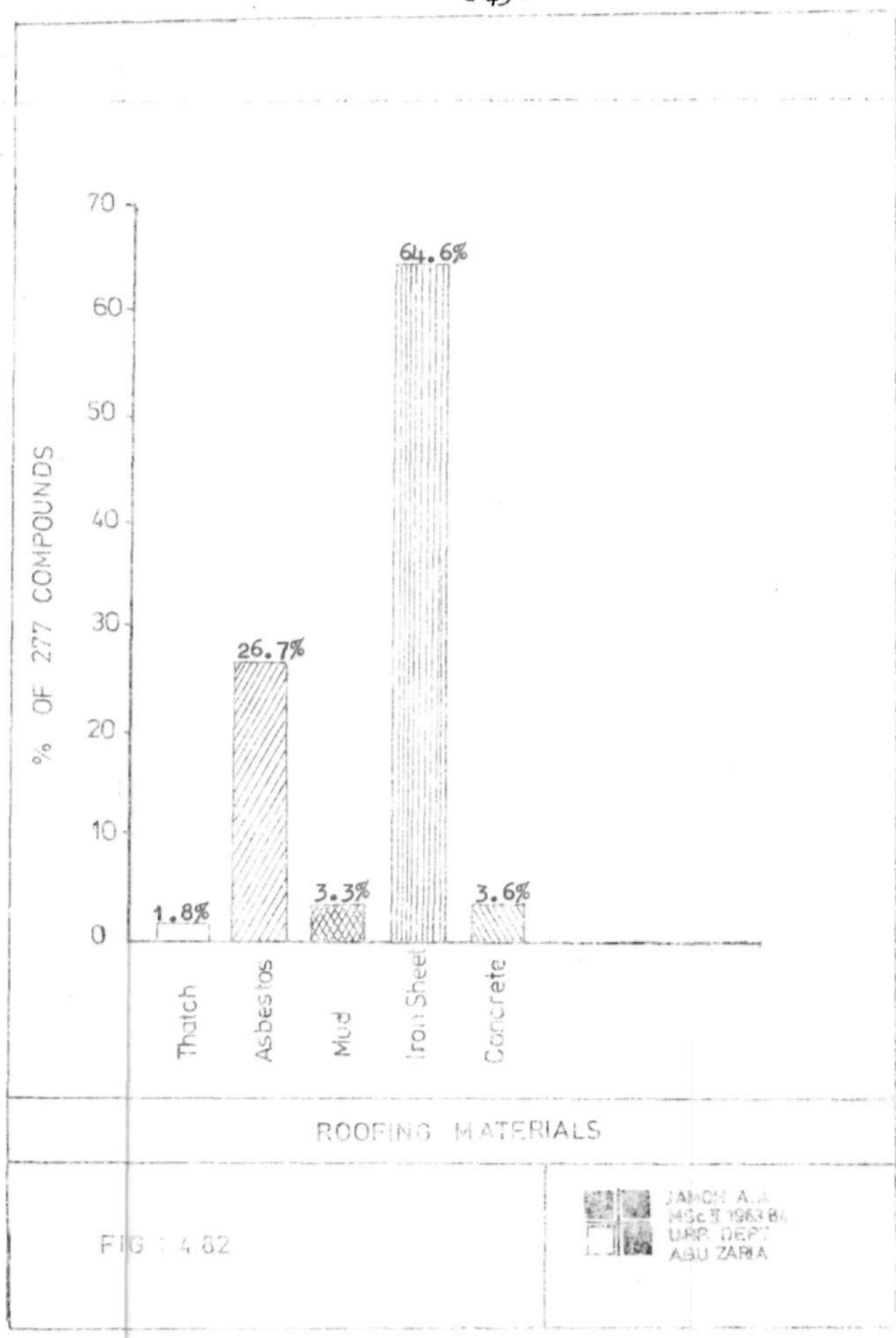


FIG : 4.82

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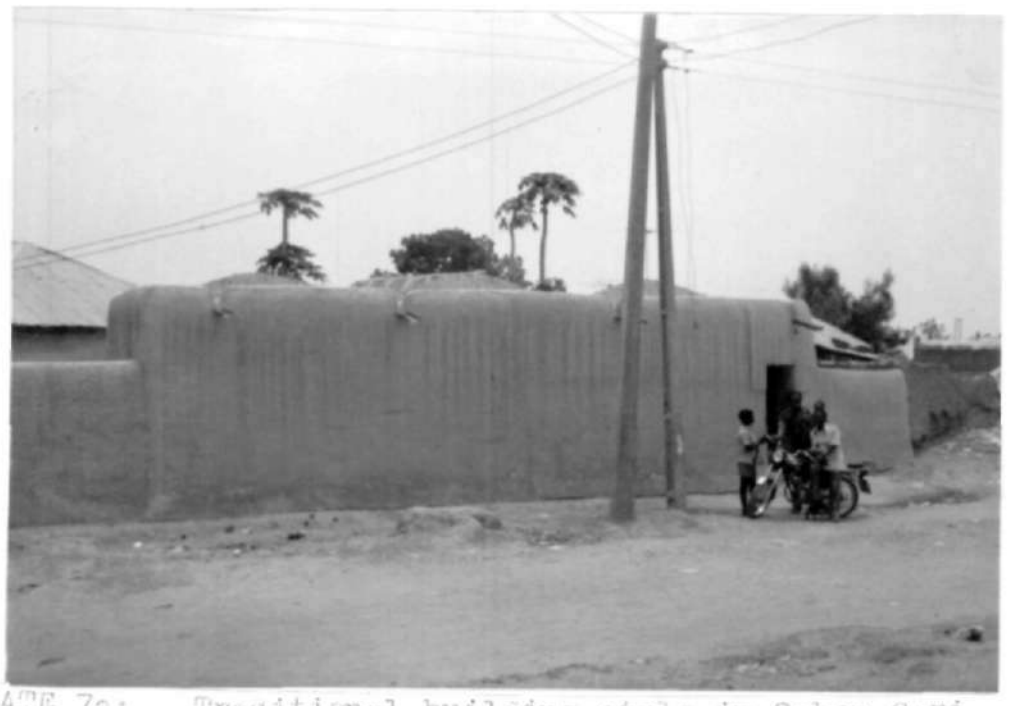


PLATE 7a: Traditional building style in Sabon Gari, See the 'Zaure' and the 'Soro' roof.



PLATE 7b: Part of Dogon Bauchi: See the wide but undifferential road. The road come of culvert. See also the roofing and building materials (Corrugated iron and sandcrete blocks).



PLATE 7c: A Delapidated Structure: One of the areas suitable for location of facilities after the delapidated structure has been removed.

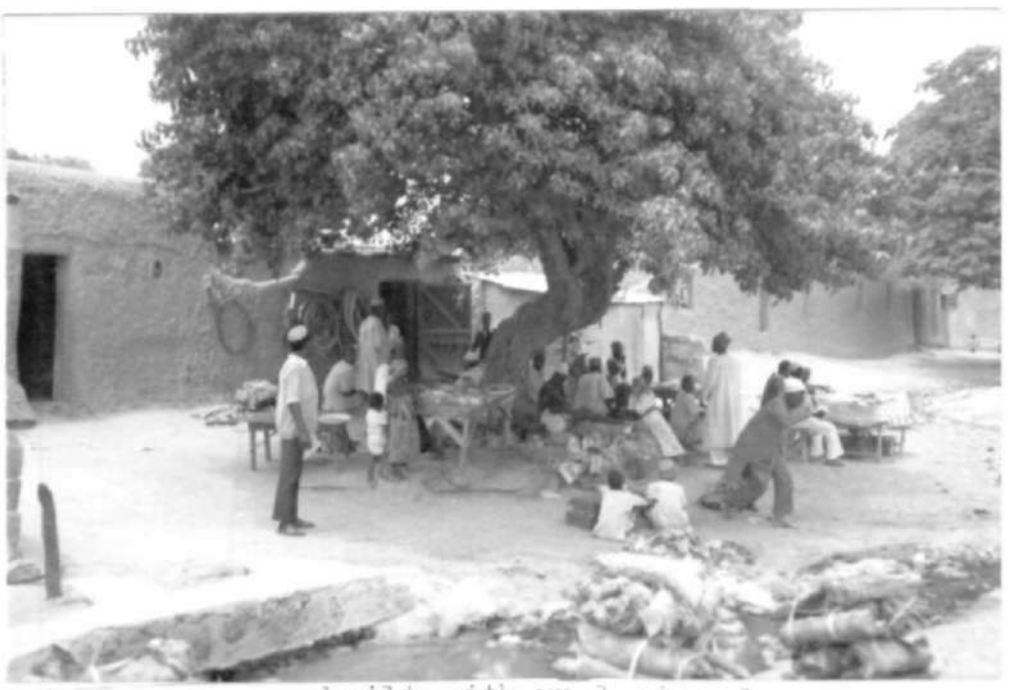


PLATE 7d: Houses built with unplastered mud. See the utilisation of open space (Unorganised mini market) and shallow drain.

of blight analysis is the one which uses all the criteria for determining obsolescence but this is not usually possible not only because of limitation pose by available resources but also it usually involves cumbersome type of techniques which on slight error may render the whole exercise useless. The most common techniques in order of increasing complexity used for determining the extent of blight are:

(1) Rough screening method,

(2) Weight and exponent method,

(3) Multiple index method.

1. Rough sketch method is the quickest and the cheapest among the three and it also happens to be the simplest. But as the name suggests it is rough method which is only useful in recognaissance survey before a more serious method of determining degree of blight is used.

2. Weight and exponent method: This is more detailed than the rough screening method and also gives weight to different criteria such as structural soundness, sanitation, adequacy of facilities and services, maintainance and other elements of public interest. The wieghts and standard employed are matters of local determination. Where local standards are not available or inadequate for the survey purpose, the standards operating in communities of similar characteristics are adopted with modifications to suit the study area. This method is a much better and thorough than the Rough Sketch Method. It involves the use of more criteria and the employment of the use of weight is non cumbersome and can easily be adopted by different areas by just a slight adjustment in wieghting of the different factors.

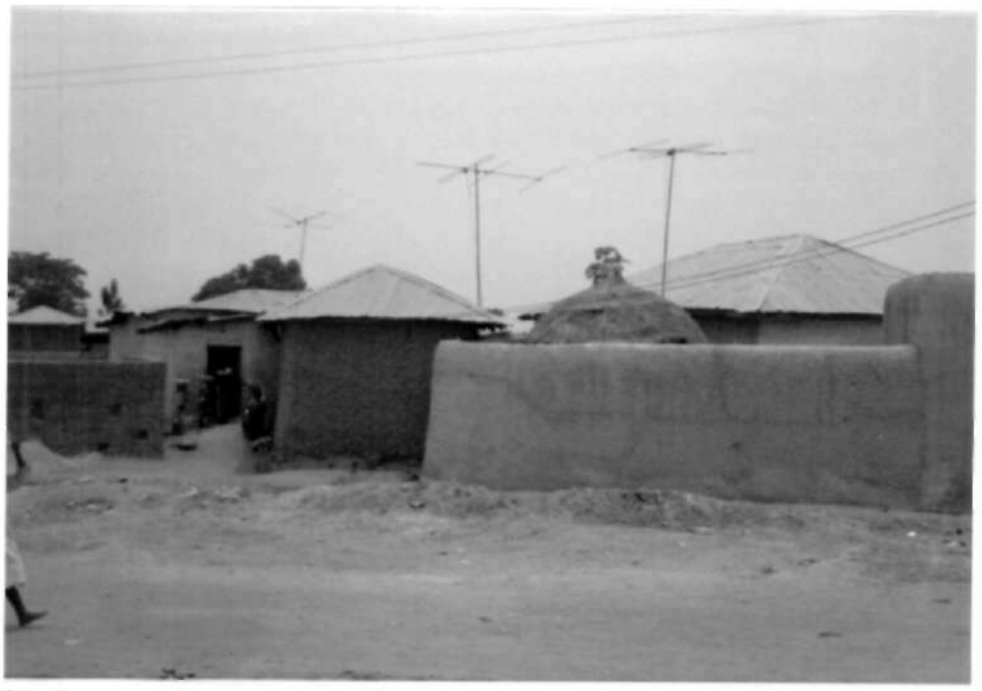


PLATE 7e: Modernised Traditional Compound at Jushi. See the iron roof and mud wall.

Degree of Blightedness	Weight Scoe
Deterioration begining (I) Slight Blight	3
Deterioration Started but not detrimental (II)	2
Very bad condition extreme blight (III)	1

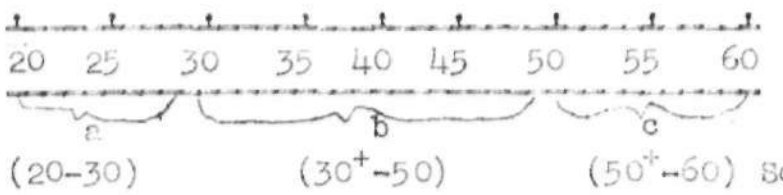
Different factors are used in the area based on which weights are given. The weights can vary depending on the importance the residents of the area consider the different factors. The criteria of assigning weights in the case of Sabon Garia Zari is based on the survey carried out as regards to what the residents consider as very essential to them. The residents preference is combined with personal observation and the two are married together to formulate the following weights against the various factors. The maximum weight any factor can attain no matter how important is 5 and the minimum is 1.

Condition of road	- 5.0
Sanitation	- 4.0
Facilities and Services	- 3.0
Drainage	- 3.0
Structural soundness	- 2.0
Haphazard development	- 2.0
Overcrowding	- 1.5
Maintainance	- 1.0

Condition of roads has the maximum weight because all the other factors depend directly or indirectly on it. Moreover it is one of the most important needs of the residents (See Figure 4.54). Sanitation follows in order of priority because it contributes alot to the general environmental degeneration of Sabon Gari area. Drainage is also important

in that it affects the quality of roads, sanitation and structural soundness of the buildings. Overcrowding and maintainance have the least weights because the former is not yet serious whereas the latter becomes of less importance if the other factors are adequately catered for.

The scale below is used to determine the type of action an area deserves based on its total score.



a = Poor (large number of slum) ____ major upgrading

b = Fair (moderate slum) ____ moderate upgrading

c = Good (No slum) ____ minor upgrading

Based on Table II the following result have been deduced.

- Muchiya-Cikaji (M/C)has a total of 25.5 scores which means the area falls in category "a" of the scale which requires major upgrading. This means most of the facilities, utilities and services are to be provided apart from dealing from scratch such things like accessibility in form of motorable roads, sanitation and improvement on haphazard development.

- Anguwan Yamma (Y) Anguwan Gabas (G) and Tsugugi (T) with 43.5, 40 and 39 scores respectively fall in category "b" which requires 'moderate' upgrading. Here the action involves the mixture of provision of non available facilities, utilities and services and the proper maintainance of the available ones.

- Dogon Bauch (D): This is an area which though is the least affected by blight but it suffers from lack of maintainence which includes proper drainage lines, road maintainance, utility connection and maintainance of open spaces.

The weight and exponent analysis result is in consonance with the result of ground survey carried out on age of structure, building/roofing materials, building condition, facilities, utilities and the overall physical planning problems (See Figures 4.20, 4.83, 4.90, 4.66, 4.74 and 4.67 respectively).

Table II: DETERMINATION OF EXTENT OF BLIGHT IN SABON GARI ZARIA (WEIGHT AND EXPONENT METHOD)

ITEM	YAMMA			GABAS			TSUGUGI			D/BAUCHI			MUCIYA/CIKAJI		
	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
Condition of Roads	-	5	-	-	-	5	-	5	-	-	5	-	-	-	5
Sanitation	-	-	4.0	-	-	4.0	-	-	4	-	4	-	-	-	4
Facilities and Services	3	-	-	-	3	-	-	~~3~~	3	3	-	-	-	-	3
Drainage	-	-	3	-	3	-	-	3	-	-	3	-	-	-	3
Structural Soundness	-	-	2	-	2	-	-	2	-	2	-	-	-	-	2
Haphazard Development	2	-	-	-	2	-	2	-	-	-	2	-	-	-	2
Overcrowding	1.5	-	-	-	1.5	-	-	1.5	-	-	1.5	-	-	-	1.5
Maintainance	-	-	1.0	-	1.0	-	-	-	1.0	-	1.0	-	1.0	-	-
TOTAL	6.5	5	10	-	12.5	9	2	11.5	8	5	16.5	-	1	-	20.5
WEIGHT SCORE	3	2	1	3	2	1	3	2	1	3	2	1	3	2	1
TOTAL SCORE	19.5	10	10	0	25	9	6	23	8	8	33	0	3	0	20.5
TOTAL SCORE	45.5			34			37			41			23.5		

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5.10 Alternative Concepts of Upgrading:

Generally the variation in the application of upgrading strategy is due to the differing conception by various people on what it involves. While some limit its application to the housing units others limit it to the provision of sufficient public facilities, utilities and services where they are absent and maintaining the ones available but not functioning well. Hence the concept of upgrading can be classified into two, based on the ways the strategy is applied.

1. Upgrading of housing units.
2. Upgrading of public facilities, utilities and services.

1. Upgrading of housing units: This is a method used for upgrading slums and squatter settlements with emphasis on housing units. This type of upgrading strategy used by the U.S. Save the Children Federation in Colombo Sri Lanka[11]. The aim was to tackle the much broader objective of physically upgrading shanty settlement housing while simultaneously providing income and employment for the inhabitants but with the vital ingredient of applying only a level of basic resources which should be within their capacity to sustain.

(2) Upgrading of public facilities, utilities and services. This is the method used by the World

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11. Parry, J.P.M. (1980) Projects to apply appropriate technology methods for rehabilitating housing in Krillapone shanty in Colombo.

Bank to improve urban areas in Nigeria (Bauchi, Gombe, and Minna and some towns in Imo State). It considers upgrading to be an "intervention by government to speed up and coordinate the normal spontaneous process of urban improvement by providing at least sufficient basic infrastructure to enable individuals to further improve their living condition on their own initiative. This goes hand in hand with sites and services. The objectives here include minimising population displacement, retaining of investment in housing stock and maintaining and developing the economic and social fabric of the community concerned.

Taking into consideration the type of physical planning problems found in the Lagos area, a third type of upgrading method is proposed for the purpose of this study.

(3) Upgrading of public facilities, utilities, services and housing unit. In order to ascertain the effectiveness of this method, it has been compared with the other two methods based on how much is able to satisfy upgrading objectives.

5.11 Evaluation of the Concepts.

Table 5.01: EVALUATION OF THE CONCEPTS

	Upgrading Objectives	Concept 1	Concept 2	Concept 3
1.	Improvement of Housing Stock	++	+	++
2.	Public Participation and skill development	++	+	++
3.	Retaining form investment	++	++	++
4.	Provision of public facilities, utilities and services	-	++	++
5.	Alloting for continuety	++	+	++
6.	Allowing for individual initiative	++	+	++
7.	Minimising of displacement	++	+	++
8.	Utilisation of local resources	++	+	++
	TOTAL	13+	10+	16+

Concept 1: Upgrading of Housing units.

Concept 2: Upgrading of facilities, utilities, and services.

Concept 3: Upgrading of facilities, utilities, and Services and housing units.

The assessment in Table 5.01 is made through assingning either positive or negative signs depending on whether it takes care of such objective or not. Single positive sign denotes the fact that though the

concept takes care of the objective it does so with less attention than required. The double positive signs denotes the fact that such objective is given much emphasis in the concept. Whereas negative signs connotes total neglect of such objective in the concept. The overall points are arrived at by adding the total number of positive signs and subtracting the total number of negative signs. Concept one has 13 points, concept 2 and 3 have 10 and 16 points respectively. From this simple evaluation concept 3 with 16 points there is the most comprehensive because it takes care of all the upgrading objectives appropriately with the additional advantage of flexibility in application which the others do not have (See Table 5.01).

5.13 Proposed Upgrading Plan of Sabongari Zaria:

Any upgrading proposal for Sabon gari should take into consideration variation in the extent of physical planning problems found in different parts of Sabon gari. The attempt made to assess the extent of blight in the area has given rise to three categories of environmental degeneration. And each one falls within a particular part of the study area which is physically distinguishable from the rest. Based on this the following areas are identified:-

(1) Kuciya-Cikaji: This is an area found to [illegible] require major upgrading which means most [illegible]

facilities, utilities and services will have to be provided newly at both levels of community and individual compounds.

(2) Anguwar Yamma-Anguwar Kabasa: There are some skeletal facilities in this area most of which need repairs. Moderate type of upgrading is proposed here so that non-available facilities, utilities and services will be provided as well as the maintenance of the available ones.

(3) Dogon Rauchi is the area found to be the least effected by blight but lack of maintenance is evident in all the available facilities. The upgrading strategy found to be suitable for the area generally is the one which involves provision of facilities, utilities and services from district to compound level together with the structural improvement of housing units. The provision and maintenance will depend on which of the different units making up Sabon gari require major moderate and minor upgrading.

Established Standards:

Three standards are used as yardstick for determing standard for the study area. Two of the standards are the ones used in upgrading schemes while the remaining one is the one used in the proposed for Sokoto residential and development Zaria Master Plan. The upgrading standard project has given given on the number of facilities per population whereas in the case of upgrading standard

for Bauchi State World Bank project has not given any fixed standard. (See Table 5.04). The common feature amongst the two different upgrading standards is the fact that none of them has indicated the area required by each facility. This is because upgrading deals with an already developed area there is therefore the limitation of space. For this reason, the available vacant land is used in such a way that it is distributed among the various needed facilities. On the other hand, standards proposed by the Zaria Master Plan has given consideration to both unit facility per population and the required size of the land. This is because availability of vacant land is not a constraint. It is based on these three standards that the standard to be used for the upgrading area has been proposed. This has taken into consideration the unit facility per population and the areal requirement. Some standards proposed by the three standards are found to be suitable for the study areas while others are adjusted to suit the area under study. The standard for the District Market as proposed the Sokoto Project is found to be suitable for Sabon gari Zaria, this is because only one District Market is needed for a district and the projected population of the study area will be within the range (100-150,000) given by the proposal made for Sokoto by the year 2000 which is the year taken for the upgrading project of the study area to reach its final stage.[12] As regards

12. See Benna Associates Draft Final of Sokoto Residential Upgrading and Development.

TABLE 5.02: UPGRADING OF SABON GARI: DERIVED STANDARDS.

ITEM	STANDARD Zaria Master Plan		UPGRADING STANDARD Sokoto Residential Development Project		UPGRADING STANDARD Bauchi State World Bank Project		PROPOSED STANDARD	
	Per Population	Area (Ha)	Per Population	Area (Ha)	Per Population	Area (Ha)	Per Population	Area (Ha)
COMMERCIAL								
1. District Market	-	-	1/100-150,000	-	-	-	1/100-150,000	3.8
2. Mini Market	-	-	1/2,100	-	-	-	1/30-50,000	0.75
PUBLIC/SEMI PUBLIC								
1. Clinic	1/400	0.1	1/40-50,000	-	-	-	1/30-50,000	0.1
2. Health Centre	1/12,000	2.5	-	-	-	-	1/50,000	0.5
3. Post Office	1/30-40,000	0.5	1/40-50,000	-	-	-	1/30-50,000	2.1
4. Police Post	1/13-15,000	-	1/40-50,000	-	-	-	1/50,000	0.1
5. Fire Fighting Station	1/120-128,000	-	1/100-150,000	-	-	-	1/150,000	0.5
6. Central Mosque	1/40-50,000	-	1/100-150,000	-	-	-	1/150,000	0.5
7. Mosques/Churches	1/15-50,000	0.5	-	-	-	-	1/15,000	-
8. Cemetry	1/100-150,000	0.5	1/100-150,000	-	-	-	1/50,000	0.5
9. Motor Park	-	-	1/100-150,00	-	-	-	1/150,000	1.5
10. Cinema	1/40-60,000	-	1/100-150,000	-	-	-	1/30,000	0.25
11. Koranic School	-	-	-	-	-	-	1/5-15,000	0.1
12. Nursery School	1/80,000	0.6	-	-	-	-	1/10,000	0.1
13. Primary School	1/3-4000	-	1/2,100	-	1/1200 Pupils	2.5	1/10,000	0.5
14. Secondary Sch.	1/24,000	5.0	1/10-12000	-	-	-	1/25,000	1.0
15. Reading Room	1/25-50,000	0.6	-	-	-	-	1/50,000	1.5
16. Sports Field	1/13-15000	2.0	1/10-12,000	-	Prim.Sch. Facilities		1/20-30,000	0.5
17. Sports Statium	1/120-128,000	5.0	1/100-150,000	-	-	-	1/120,000	3.5

to standard for clinic, Zaria Master Plan has proposed 1 per 4,000 people whereas upgrading standard for Sokoto has proposed 1 per 40-50,000 the later proposal is adopted with regards to unit per population and that of the former adopted as regards to area needed which is 0.1 hectare per unit. It is based on these considerations the standards for the different facilities are proposed (See Table 5.02).

Schedule of Requirements: Taking 2000 as the target year of completion of the scheme, a projected population for that year (116,000) is used to determine the requirements. Other factors taken into consideration are the existing number of facilities, the areal coverage of each unit per population. The proposed standard on the other hand act as the ultimate target to be achieved by the year 2000. (Table 5.03) The number of units of a certain facility required by the year 2000 is calculated by dividing the projected population of that year by the population required by the proposed standard to be served by such facility. The amount of land required by the units of the facility is arrived at by multiplying the number of units with the proposed amount of land required per unit. Looking at the schedule of requirements one could see some things that need explanation. Starting with the existing situation column, the population being served by the existing/.

market is 400-500,000 though the population of the study area is only 69,181. This is because the existing market though located within the study area, it serves the whole of the Zaria Urban Region whose population is 400,500,000. The fact that another regional market has been proposed and is already in the offing, this site will be free to be used as a district market serving the study area. That is why the area in the final situation under general requirement by the year 2000 has been reduced from 6.00 hectares to 3.0 hectares. The other 3.0 hectares is free for the provision of other facilities. The existing mini market is shown to be serving 69,181 people because there is only one for the district. Fire Fighting Station which is which is not located within the study area but is supposed to be serving the whole urban region has also been shown to exist but the existence connotes the services not the structural building. The fact that in the proposed standards one fire fighting station should serve 150,000 persons make it necessary for Sabon Gari to have one by the year 2000. The size of the land required is reduced to 0.5 hectares because its services are now limited to Sabon gari area. There are other facilities which though found to be adequate, their location restrict their services to all the residents. For this reason therefore motor park has been relocated and its areal coverage increased and primary

Table 5.3: UPGRADING OF SABON GARI AREA: SCHEDULE OF REQUIREMENTS : 2000 A.D.

POPULATION: 116,000

ITEM	EXISTING (1984) Population: 69,181 No. of Units	Area (Ha)	PROPOSED STANDARDS Per. Pop.	Per Pop.	Area (Ha)	TOTAL REQUIREMENTS (2000 A.D) No. of Units	Area (Ha)	Addition Required No. of Units	Area (Ha)
COMMERCIAL									
1. District Market	1	6.0	1/400-500,000	1/100-150,000	3.0	0	3.0	0	0
2. Mini Market	1	0.75	1/69,181	1/30-50,000	0.75	3	2.25	2	1.5
PUBLIC/SEMI PUBLIC									
3. Clinic	1	0.1	1/69,181	1/30-50000	0.1	3	0.3	2	0.2
4. Health Centre	-	-	-	1/50,000	2.5	2	5.0	2	1.0
5. Post Office	1	0.1	1/69,181	1/30-50,000	0.1	2	0.2	1	0.1
6. Police Post	1	0.1	1/69,181	1/50,000	0.1	2	0.2	1	0.1
7. Fire Fighting Station	1	1.0	1/400-500,000	1/50,000	2.5	1	2.5	1	0.5
8. Central Mosque	1	2.0	1/69,181	1/150,000	1.5	1	1.5	0	0
9. Mosques/Churches	15/13	-	-	1/15,000	0.045	1 per neighbourhood	-	-	-
9. Cemetry	2	3.5	1/35,000	1/50,000	0.5	3	1.5	1	0.5
9. Motor Park	1	1.0	1/69,181	1/150,000	1.5	1	1.5	0	-
10. Cinema	2	2.0	1/35,000	1/50,000	0.25	3	.75	1	0.25
11. Koranic School	9	1.5	1/7-17000	1/5-15,000	0.1	1 per neighbourhood	-	-	-
12. Nursery School	11	Varied	1/7000	1/10,000	0.1	12	1.2	1	0.1
13. Primary School	15	Varied	1/4-5000	1/10,000	0.5	12	6.0	0	-
14. Secondary School	2	8.2	1/35,000	1/25,000	1.0	5	5.0	3	3.0
15. Reading Room	-	-	-	1/50,000	0.5	2	1.0	2	1.0
16. Sports field	-	-	-	1/20-30,000	0.5	4	2.0	4	2.0
17. Sports Stadium	1	1.0	1/70,000	1/20,000	3.75	1	3.75	0	0
CT.D							2.74		1.25

schools have been rearranged to be easily accessible to all the residents.

5.14 Application of the Selected Strategy:

For effective execution of the proposals and administrative convenience a planning hierarchy has been proposed consisting of one planning district, three communities and seven residential sectors (See Table 5.04). This has been done taken into consideration physical, economic and administrative characteristics of the different units. Each community falls within an area to be improved by a particular type of upgrading strategy. Based on the schedule of requirements drawn, and the locations of different facilities, utilities and services in the area, certain principles have been followed.

(1) Accessibility has been given first priority because all other facilities directly or indirectly depend on it. This is very essential especially in areas where lack of vacant lands will necessitate siting of certain essential services away from the most suitable area that is easily accessible for those to be served. Improving the access will reduce the relative distance considerably. Provision of access roads in areas hitherto absent will also open way to easy provision of other utilities. It is also envisaged that compounds needing repairs will be much cheaper to improve because of improved transportation facilities.

(2) Where a certain facility is provided to serve the whole planning district, a location easily accessible to all communities is chosen. But where more than one is required each community is proposed to have one, after which additional ones are proposed where possible.

(3) All proposals made by the Zaria Master Plan concerning the study area have been included with modifications where necessary.

Based on the above principles certain proposals have been made for the study area ranging from the district to neighbourhood level.

(a) District Centre: This is a very essential unifying element both economically and socio-culturally. This being so, one is proposed for Sabon Gari Zaria. The location is found to be most suitable in Anguwar Yamma where the present regional market is located. Since there is a plan presently to construct another regional market inbetween Tudun Wada and Sabon Gari along Kaduna road, the present market will be free to serve Sabon Gari district only. The function of district centre is not only commercial therefore other facilities and services have been proposed in the same area especially those to serve the planning district. There are already existing clinic, cinema house, Police station, court and district office in the vicinity. Therefore what needs to be done is to coordinate them in such a way that they provide district centre function for the study area. Two residential

blocks which are in advanced degree of delepidation are to be demolished to provide sites for other services. The size of District Centre is 21.80 hectares (See Figure 5.14).

(b) Transportation facilities: Construction of new roads and widening of existing ones in Kuciya-Cikaji area has been proposed not only to provide the residents good accessibility, but also to provide wide enough right of way to lay down utilities and provide drainage facilities lacking in the area. The roads to be improved include Kuciya road which serves as a residential primary road. To provide access to communities which cannot be served with the main access roads. Convenient service roads some of which end up in cul-de-sacs have been proposed. Another major route between Cikaji industrial area and Cikaji residential area has been proposed to provide two way access to the area. Anguwan Mamma and Anguwan Gabas have limited problem of lack of accessibility but that of proper maintenance of the existing roads and poor road hierarchy. The problem of traffic congestion in areas around the proposed District Centre most especially along Hospital, Lagos and Aminu Roads is to be solved by constructing of a sector road starting from the main street and joining the cemetry road. Parking facilities have also been provided. Dogon Bauchi

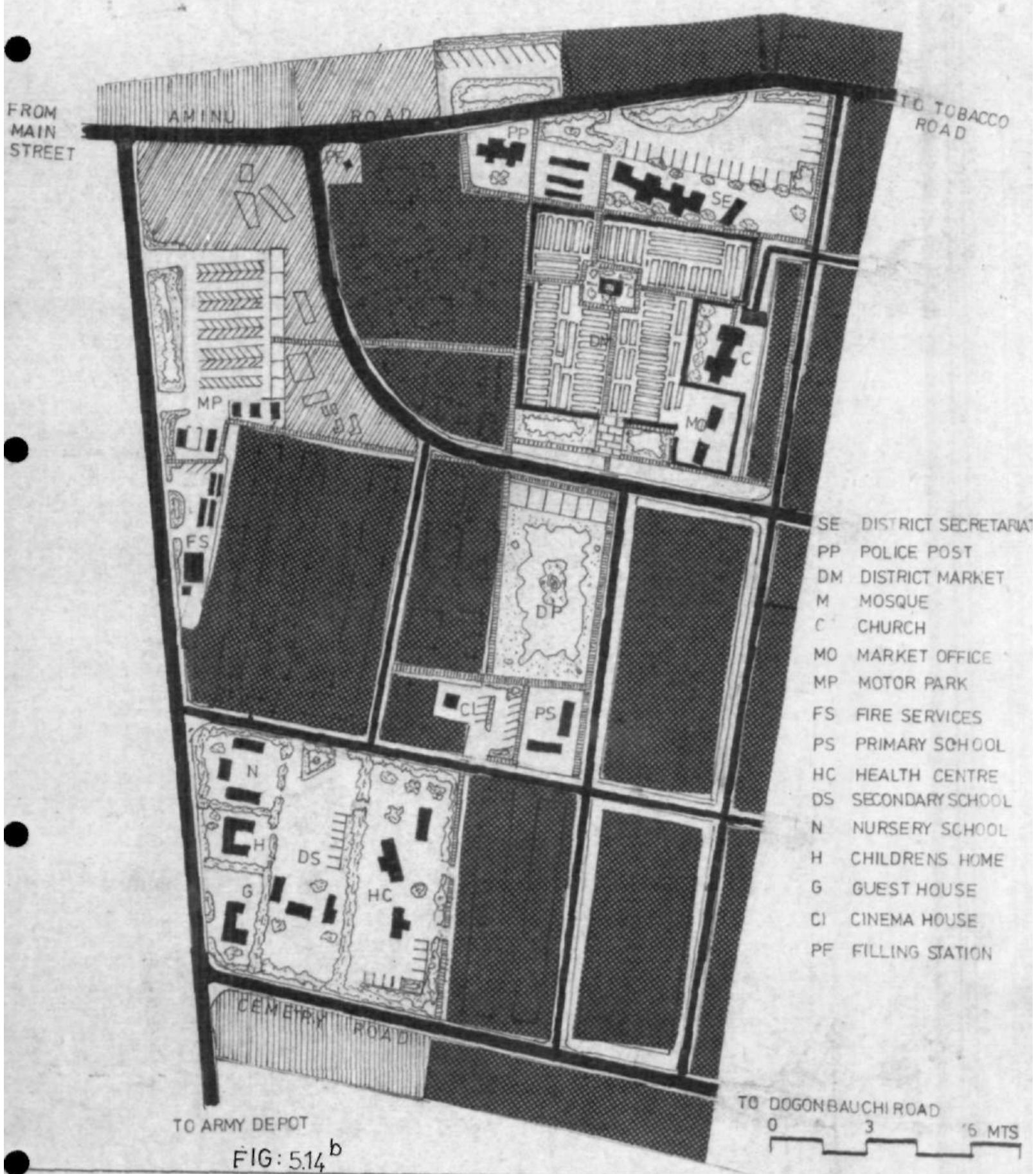


FIG: 5.14b

UPGRADING STRATEGY FOR IMPROVING SABONGARIS IN NIGERIA: A CASE STUDY OF ZARIA.

(A PROPOSED DISTRICT CENTRE)

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area is also lacking in maintenance of the existing roads and poor hierarchy. For this reason two access roads have been proposed for upgrading into primary distributor roads. These are Jimo road and Beckely street which joins Ondo road and Kindly Kings road. Dogon Dutchi road where Jimo and Beckely streets originate have also been upgraded into a major road.

(c) Organised open spaces have been proposed from district to neighbourhood level. This will utilise the areas likely to be flooded and other vacant lands unsuitable for structural development but found within the residential areas. Institutional playfields should also serve both as organised open spaces and playgrounds.

(d) A flexible standard is used for the provision of other facilities, utilities and services. The standard is based on three factors.

(i) Population

(ii) Areal Coverage

(iii) Availability of vacant land

Unlike planning in a vacant land, upgrading standard depends very much on the availability of vacant land than any other factor. That is why upgrading aims at providing the basic minimum standard which the available land could allow. The flexibility of upgrading standard gives room for the provision of minimum standard utilities, facilities and services in an already developed urban area as a means of achieving the maximum standard.

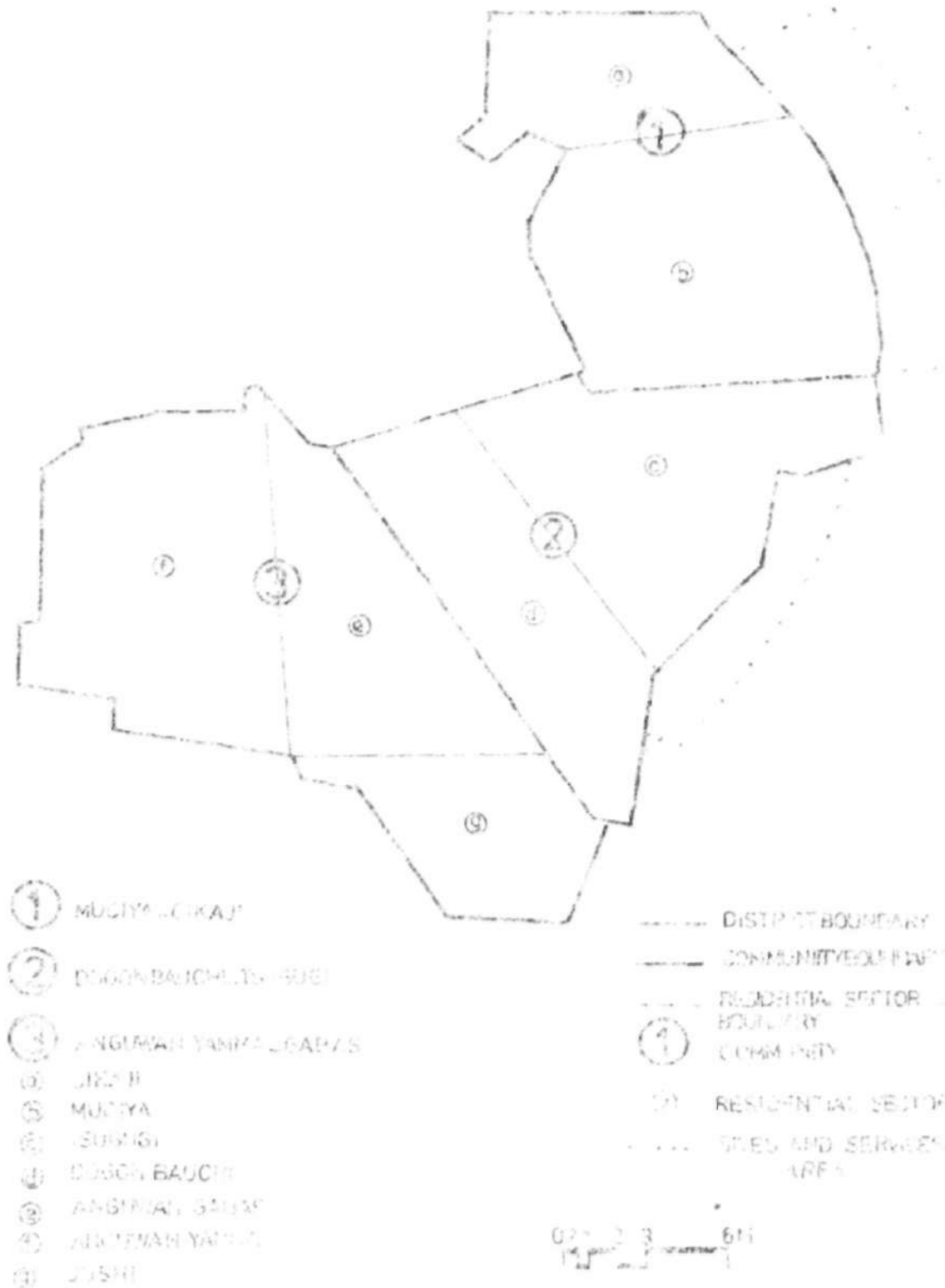
5.20 Proposed Landuse Pattern:

The existing landuse pattern of Sabon Gari is dominated by the residential use (77.58%). This situation coupled with the fact that this strategy is purposely chosen to minimise displacement, has set a limitation to the extent to which the relative significance of residential landuse can be decreased through introduction of other landuses. Despite this limitation the landuse pattern has been modified such that residential land use by the year 2000 will be 50% of the total developed land and the remaining 50% will be used in the provision of other complimentary facilities and services. This will be done through both the absolute and relative reductions in residential landuse. The absolute reduction will involve removing the few houses that have been dilapidated beyond repairs. The relative reduction of residential landuse coverage will take the form of infilling of vacant lands and upgrading hitherto undevelopable lands and converting them for use in the provision of facilities and services. Another method use in relative reduction of residential landuse is through sites and services in the periphery of the study area. Among the complimentary landuses roads, streets and parking spaces experienced the highest increase from 4.15% of the total developed land to 15%. Mixed landuse on the other hand

has increased from 3.12% to 9% this is taking into consideration the fact that the increase in the area under access brings about the increase in mixed landuse. This activity has as much as possible been discouraged to develop haphazardly that is why it is suggested that the major roads should be used for it not in all parts of the residential areas. Commercial, public/semi-public and recreational with existing 2.67% 8.13 and 3.65% of the total land use respectively have increased to 4%, 14% and 6% respectively (See Table 5.05 and Figure 5.20).

Table 5.05: EXISTING AND PROPOSED LANDUSE PATTERN

	Landuse	Existing (1984)		Proposed (2000)	
		Area (Ha)	%	Area (Ha)	%
1.	Residential	301.44	77.48	454.00	56
2.	Commercial	10.50	2.67	32.44	4
3.	Public/Semi Public	31.33	8.13	113.50	14
4.	Recreational	14.10	3.65	48.66	6
5	Mixed landuse	12.04	3.12	40.55	5
6.	Roads, Streets and Parking	16.00	4.15	121.65	15
	TOTAL	385	100	811	100



PROPOSED PLANNING APPLICATION IN SABON LARI ZARIA

UPGRADING STRATEGY FOR IMPROVING SABON GARIS IN NIGERIA A CASE STUDY OF ZARIA

FIGURE 6.2

5.21 Residential Landuse: The result of the application of the sites and services concept in the area is the proper utilisation of previously vacant sites, through provision of well laidout and serviced plots in these areas. This involves identifying suitable land for housing, acquiring the land, preparing residential layout with its supporting public facilities ..[13] This has become necessary for the following reasons,

1. To resettle those who have been displaced as a result of widening of roads or siting of one facility or the other which results into the lost of the whole or substantial part of their compound. That means the provision of these facilities and services will make the percentage of the residential landuse to decrease.
2. The only remedy to the haphazard, uncoordinated and unplanned growth of the residential area is through this measure whereby the vacant land is acquired and laid out at the same time providing some necessary facilities, utilities and services.
3. Some of the plots in the sites and services area could be reserved for model houses as part of upgrading strategy for improving individual compounds.
4. It is another way of generating funds for the continuation of the improvement process. The plots could be sold to interested buyers

after the displaced have been settled and the profits can be used for provision and maintenance of facilities, utilities and services. The remaining profit could be reinvested in another profit venture for further revenue generation. There are three areas proposed for the sites and services one is located at Unguwan Yamma, another at Dogon Bauchi and the third at Nuciya-Cikaji area. The one at Unguwar Yamma should be used to resettle the few residences displaced in the proposed District Centre because of its nearness to their former neighbourhood. The ones at Dogon Bauchi and Nuciya should be used for resttling the few compound owners who are affected by widening of roads in their respective vicinity. The rest should be used mainly to generate revenue, check haphazard growth and few for model houses (See Figure 5.20).

5.22) Commercial Landuse: The existing market which is the main commercial centre for the area is 6.0 hectares. This is commensurate to its function as a regional market. Since in the very near future another market will take over its function it is proposed that 3.0 hectares should be used as a District Market while the other 3.0 hectares is used to site District Secretariat with its parking space, toilet facilities and police post. A mosque has been proposed in the centre of the market and the existing church beside

the market is enough to serve the people in the vicinity.

The arrangement of the market should be such that the wet and dry sections are separated by a pedestrian walk. The capacity of the market has been calculated to be 1,500 stalls 1000 in the dry section while 500 in the wet section. This will more than take care of the districts requirement considering the fact that when it was serving the urban region its total capacity was 1,464 stalls though due to high demand 2,516 traders are now in the market each with his stall. In respect called to the proposed market structure which was absent is an office to be in charge of rent collections at the same time controll the use of the market and maint in the facilities provided. To supplement the commercial function of the district market two mini markets have been proposed to take care of immediate needs of the different communities. The present market in the Kucyn-Cikaji area (Abe road) should be improved and the overseeing of the market should be also performed by the office in the district market. A vacant land has been proposed for another mini market to serve Dagon Bauchi community while the district market should also serve both functions for Angwan Tanko/Angwan Gabas community. Apart from these markets any other should be discouraged as a measure for controlling haphazard markets all over the area which not only accelerate environmental degeneration but also constitute traffic hazards. (Fig.5.20).

5.23 Mixed landuse: There is an increase of about 3% from the existing 3.12% to the proposed 6% this is necessary for the meantime after which strict controll should be made as regards to area and types of mixed landuse. The proposed suitable zones are along the major roads and primary distributor roads. Areas near to the district centre are also included in the mixed landuse zone.

5.24 Public/Semi Public: All the existing public places which are suppose to serve the whole district have either been provided with roads from all parts of the area, or have been relocated to a more accessible location.

The problem of poor location of the District Office and Police Post which is one of the main causes of traffic congestion along Kaimu road has been tackled by relocating them and providing good parking space for them. Three more primary schools have been proposed for the district though it has been found that the existing ones are adequate for the area. But the fact that the schools serve children from outside the planning area and some areas within the planning area are not so served. A proposal is made such that a maximum walking distance of 1.0 kilometre is not exceeded from a primary school to any of the compounds in the area. Some factors have been taken into consideration before a proposal for primary school location is made:-

(a) Walking distance from individual compounds to the schools.

(b) The population to be served by a primary school.

(c) Availability of vacant land.

The three factors have been reconciled in such a way that a primary school is located within 1 kilometre radius at the same time serving a given population (in this case 1 per 10,000 population). That means morethan one primary school may be found within 1 kilometre radius if the population is more than the 10,000 ceiling. The problem of availability of vacant land has been minimised by reducing the size of land required for a primary school. Instead of the 2.5 hectares normally devoted for primary school 0.5 hectares is proposed but with allowance of going 2-floors vertically.

An additional Day Secondary School is proposed for Kuciyo and another one for Cikaji in addition to the two already existing in Anguwan Yamma/Anguwan Gabas and another proposed one in Dagon Bauchi. The number of secondary schools tobalked to five in number which are enough to cater a population of 116,000. The plot size also has been reduced instead of 5.0 hectares per secondary school as recommended by the Zaria Master Plan 1.0 hectare is proposed per secondary school in the study area. The buildings could go vertically up to 3-floors thus compensating

for lack of horizontal space for expansion. One Kormic and one nursery schools have been proposed for each residential neighbourhood. The locations proposed for them are very near the other institutions so that they can share some of the recreational facilities. The proposed plot size requirement for study area as regards to Nursery and Primary Schools is 0.1 hectares each.

5.25 Health: The only public health facility existing in an area with a population of 70,000 people is one health clinic. The study has therefore proposed a health clinic for each community in addition to the Health Centres to be provided by the year 2000. The existing health clinic located in Anguwan Yamma within the proposed district centre should be upgraded to a health centre for the whole planning district. Additional health centre is proposed at Dogon Dauchi area. A clinic is also proposed per community but where there is a health centre it will also perform the function of a clinic so there won't be the need to provide an extra one. (See table 5.03). 0.1 hectare is set aside for each clinics while 0.2 hectares is proposed for the health centre.

5.26 Recreational Landuse: Recreational landuse has been categorised into two.

(i) Indoor recreation

(ii) Outdoor recreation

(i) Indoor recreation here simply means recreational activities carried within a compound. This includes cinema halls, bars and clubs. A provision has been made for siting an additional cinema hall at Muciya in addition to the other two already existing. An area of 0.25 hectares have been proposed for it. A television viewing centre has been proposed in the area where the old abbatoir was located. As regards to Bars and Clubs there is the need for strong zoning regulation to check their proliferation. In the proposal made for sites and services pertaining to indoor recreational facilities include demarcating areas to be used for such activities in the initial layout instead of haphazard conversion of residential landuse into recreational.

(ii) Outdoor recreation: This is normally carried out outside the compound most commonly in the parks and playfields. The study area has a wide expense of fadama area which can be reclaimed using refuse produced in the study area. This can then be used for recreational activities such as parks.

A provision has been made such that from the district to compound level there is an organised system of open space. A large piece of land has been proposed for district park in the district centre. It is 1.8 hectares. Each of the communities is also provided with communal parks for recreational activities. Smaller parks have also been proposed for residential sectors (See Figure 5.14).

5.27 Transportation Facilities: As a remedy to the problems of inadequacy and poor state of existing transportation facilities certain strategies proposed in the study area are:-

1. Provision of parking facilities in the District Centre. This will reduce considerably road congestion most especially along Hospital and Aminu Roads which is caused by encrouachment of parked vehciles into the carriageway.
2. Improvement of undifferentiated right of ways through proper seggregation of pedestrian walk away from the carriageway. This will not only help the circulation of both vehicles and pedestrians but will also reduce the misuse of right of ways as refuse dumping ground.
3. Provision has been made in this study for a workshop in the proposed main motor park to take care of vehicles which need repairs and also to replace the roadside mechanics which are to be moved out.

5.30 Services and Utilities:

5.31 Police and Fire Services: The existing police post has been proposed for relocation to a site adjacent to the proposed site for the District Secretariat so that parking and other facilities could be shared between them. An additional police post is proposed for Dogon Bauchi area which make the police post to be two in number.

As regards to fire services, the Zaria Master Plan has proposed two fire fighting stations for Zaria Urban region. One is already existing near the city wall, the other is proposed by this study to be sited in the Urban part District Centre. The size of the land set aside is 0.5 hectares.

5.32 Religious Places: There presently exist one Friday mosque which is found to be adequate for the area it is located in Dongon Dawaki area. A motor park has been proposed for its use by the worshippers on Fridays while another days it can be used for other vehicels. On Sunday the adjacent church could make use of it also. There are also numerous smaller mosques and churches all over the area. There is the need for locational controll not only to prevent siting of conflicting landuses but also for functionality. A proposal has been made for only one mosque and one church for one neighbourhood.

5.33 Postal Services: The post office under construction when completed will be adequate to cater for the postal services of the area and its present population. Another post office has been proposed for the area in Mucijia. The two will be enough to cater for the residents up to the year 2000.

5.34 Electricity: With the proposed improvement of access roads which has also increased the availability of space for equipment installation by National Electric Power Authority is bound to make it

grid. The upgrading proposal for the area with regards to electricity supply includes:

(1) Extension of 11 KV lines to as much close to compounds as possible to make it easier for individual compounds connection.

(2) Substations should be located such that no compound is more than 1 km from it. Therefore one more substation should be located in Muciya-Cikaji area.

(3) For easier network distribution the 11 KV lines should follow the proposed major routes and lines carrying a low voltage supply could extend to as near the compounds as possible preferably not more than 150 metres distance. (See figure 5.34).

4. N.E.P.A. should also improve its method of Bills collection. Since there is the problem of staff shortage it should adopt a method whereby customers get their bills regularly.

5.35 Pipe Borne Water Supply: The network of water pipelines need to be over hauled for the following reasons.

(1) The pipelines have been laid decades ago they are so old that there are rampant pipe bursts.

(2) The way the existing pipelines are connected makes for the inefficiency of the supply. In most cases pipes of smaller diametre are

connected to the ones of longer diametre instead of from. The network should be in such a way that there is a progressive decrease in the diametres of pipes linking from the treatment works down to the individual compounds level.

(3) The presence of industrial area in the North of Sabon Gari and the fact that they are using the same tank is also a contributary factor to insufficient supply therefore a separate tank should be provided for the residential area.

After solveing the major problems the next thing is the distribution of waterlines as close to individual compounds as possible for easy connection. The proposed increase in accessibility to the higherto less accessible areas will make the exoercice less costly.

With these proposed improvements there should be an increase in the nett water supply to the area. The capacity of the treatment works serving the whole Zaria Urban region posses no limitation to the proposed increase. The capacity of the treatment works is up to 11 million gallons (49.5 million litres) per day out of which less than 500,000 gallons (2.25 million litres) are utilised.

The nett supply by the year 2000 should be increased from the present 0.65 litres per day per person to 50 litres per day per person. This should be done through:-

(a) Encouraging private connection by extension of pipes close to the individual compounds.

(b) Provision of more public standpipes to cater for those who cannot afford private connections. The number of standpipes proposed for the area varies. In Anguwan Gabas, Anguwan Yamma and Dogon Bauchi 200 metres radius have been proposed per one standpipe while in Muciya and Cikaji area a radius of 100 metres per standpipe is proposed (See Figure 5.35).

The reason for the variation is because in Anguwan Yamma, Anguwan Gabas and Dogon Bauchi the existing individual connection has exceeded 60% of the compounds whereas in Muciya and Cikaji isless than 40%. In areas where the population exceeds 20 within the 100 metre radius in the case of Muciya and Cikaji or the population exceeds 400 or 40 households within 200 metre radius in the case of Anguwan Yamma, Anguwan gabas and Dogon Bauchi an additional standpipe is proposed.

5.36 Drainage lines: This has been classified into two:

(a) Foul drainage line

(b) Storm water drainage lines

(a) Foul drainage line: Here domestic water from each compound passes via either Pipe or open channel to discharge into storm water drainage systen along the road. Two methods of disposing liquid domestic

waste of the compounds have been proposed:-

(i) Soakaways: Where the soil is permeable and there is enough space this method is recommended. This is proposed for Anguwan Yamma, Anguwan Gabas and Dogon Bauchi where there is enough space within the courtyards to construct soakaways. The increasing use of a number of tap heads and flush system of toilet facility calls for a combined liquid waste disposal in a compound (Figure 5.36).

(ii) Concrete linen channel leading into storm water drainage system. Since the existing practice is whereby shallow open drains empty their loads in the streets or make a pool beside the compound, the concrete linen open channel will be easy to adopt by the residents. Maintenance will not pose a problem unlike the soakaways where the residents will have to learn methods of its maintenance. The concrete line channel is proposed for areas where soakaways will not be easy to construct due to the impermeability of the soil and lack of space. Areas like Muciya, Cikaji and Dushi should use this method of domestic liquid waste disposal.

(b) Storm water drainage: The problem of storm water drainage in Sabon Gari range from total lack of it as in Anguwan Yamma or poor maintenance of the existing ones thus leading to erosional activities as is the case in Dogon Bauchi (along Hausa and Arab roads) and Muciya(along Muciya road) (See Figure 5.34). Three types of storm water drainage lines are proposed for the area:

(i) Those along major roads

(ii) Those along distributor roads and

(iii) Those along services roads.

(i) Along the major roads: Any road with more than 15 metres right of way should have two storm water drains one on each side and the width should not be less than 1.8 metre wide. All proposed major roads should have this type of drainage line. The existing ones which are in bad condition should be improved and if the area is erosion prone as is the case of Hausa and Arab roads, it should be prodived with concrete line (Figure 5.36a). Where there is an abrupt restriction of carriage way and there is the need for the channel to cross the carriageway, 250 millimetre tile drain should be provided.

(ii) Those along distributor roads: The size of the channels are the same with those along the major roads the only difference is that the right of way is 15 metres and less therefore the distance separating the two storm water drains is reduced (Figure 5.36 b).

(iii) Along service roads: The storm water drainage proposed for the service roads are 1.8 metres in width but located on only one side of the road therefore the road slopes to that side so that the other side with no drain could be drained. This type of channel is recommended for all the proposed service roads in Muciya-Cikaji area (Figure 5.36 c).

5.37 Solid Waste Disposal: Three levels of action have been proposed to deal with the problem of solid waste disposal:-

(a) Compound level

(b) Neighbourrhood level

(c) District level

(a) Compound level: Most people prefer to dispose refuse directly into drainage channel or on the streets. To put a stop to this, each compound should have a metal or plastic container with lid in which they can be putting their daily refuse. The containers should preferably

be the one which can easily be transported to the neighbourhood refuse collection point. It should be the duty of individual compound owners to see to the proper disposal of the refuse collected in the neighbourhood collection point

(b) Neighbourhood level: This is the level at which refuse is collected from individual compounds. A proposal has been made such that no compound should be more than 100 metres away from the collection point (See Figure 5.37). This is because 100 metres is considered to be a convenient walking distance. Large metal containers should be provided at the collection points. The containers should be such that they will not be affected by changes in weather conditions this can be assured through phosphating the inside and outside faces of the containers to prevent corrossion. Incineration in the collection points should be discouraged because of space problems and also the fact that the ashes will have to be disposed of.

(c) District level: At this level the action should involve refuse disposal. There are several methods of doing this which include

(i) Incineration

(ii) Composting

(iii) Dumping

(iv) Sanitary landfill

(v) Others (Pyrolysis, hydrogenation, ferrous metal separators, etc).

The method proposed for Sabon Gari Zaria is the landfill which is not only cheaper but alo has the advantage of confining the materials to the smallest possible area and volume. Vermins and other disease vectors usually rampant in refuse disposal areas are prevented access to the waste. The site for landfill should be such that there won't be a danger of ground water contamination. With this in mind a low lying area which has been proposed for the district park is found to be suitable. It is located in Dogon Bauchi area (see Figure 5.37). This is a low lying area within which tributary of River Galma flows. It is also the area meant to be the main outlet of thedrainage system in the area. There is therefore the need to make adequate survey to dimarcate the area to be filled with refuse such that an adequate space is allowed for the drainage system. The total capacity of the area to be land-filled has been found thus:-

Volume = Length x Breadth x Height

1200m x 250m x 10m = $3 \times 10^6 m^3$

This means the total capacity of the area is 3 million cubil metres.

The amount of refuse that will be discharged yearly is calculated with the following basis (See Table 5.06).

Table 5.06: SOLID WASTE PROJECTED.

YEAR	POPULATION	SOLID WASTE/DAY	SOLID WASTE/YEAR
1985	71,602	35801kg (79.5m^3)	29017.5m^3
1986	74,108	37054kg (82.3m^3)	30039.5m^3
1987	76,702	38351kg (85.2m^3)	30198.0m^3
1988	79,387	39694kg (88.2m^3)	32193.0m^3
1989	82,165	41082kg (91.3m^3)	33324.0m^3
1990	85,041	42521kg (94.5m^3)	34492.5m^3
1991	88,017	44009kg (97.8m^3)	35697.0m^3
1992	91,098	45549kg (101.2m^3)	36938.0m^3
1993	94,286	47143kg (104.8m^3)	38252.0m^3
1994	97,587	48794kg (108.4m^3)	39566.0m^3
1995	101,002	50501kg (112.2m^3)	40953.0m^3
1996	104,537	52269kg (116.2m^3)	42413.0m^3
1997	108,196	54099kg (120.2m^3)	43873.0m^3
1998	111,983	55992kg (124.4m^3)	45406.0m^3
1999	112,115	56048kg (124.6m^3)	45479.0m^3
2000	116,039	58020kg (129m^3)	47805.0m^3

(1) Solid waste generation of 0.5 kilograms per inhabitant per day.

(2) Compacted to a density of 450 kilograms per cubic metres.

(3) A daily cover of at least 60 centimetres to prevent vermin access and to accelerate decomposition.

The total expected solid waste for the area that will need to be disposed of = 595646.5m^3
The total capacity of the landfill area = 3 x $10^6 m^3$.

The above calculation shows that in the next 16 years 595646.5m^3 of solid wastes will be produced in the area. If this is compared with the total capacity of the landfill area which is 3 x $10^6 m^3$ it will only be one-fifth filled by the year 2000. This means the landfill area will still be used after the year 2000.

Methods of refuse collection: Two methods are proposed for the area:-

(i) From individual compounds to collection point by individual compound owners using metallic or plastic containers with tight fitting lids.

(ii) From collection points to landfill site.

This should be done by vans owned by the authority charged with the responsibility in the area.

(iii) Some areas which are less accessible to the collection routes will have an additional method whereby the refuse are conveyed to the collection routes by people employed to do the job.

Number of vehicles required per day for collection of refuse and the number of trips to be made have been calculated

Capacity of one van = 5 tons

1 ton = 1,016.06 kg

Table 5.17: NUMBER OF VEHICLES REQUIRED PER DAY FOR COLLECTION OF REFUSE.

Year	Solid Waste/Day	Number of Vehicles with 5 tonne capacity	Proposed No. of Vehicles
1985	35801kg (35.2 tons)	6 vehicles per day 1 trip each 1 vehicle per day 6 trips	2 vehivles per day
1986	370kg (36.5 tons)	7 vehicles per day 1 trip each 1 vehicle per day 4 trips	2 vehicles per day 3 trips each
1987	3835kg (37.7 tons	8 vehicles per day 1 trip each 1 vehicle per day 8 trips each	2 vehicles per day 3 trips each.
1988	39694kg (39.1 tons)	8 vehicles per day 1 trip each 1 vehicle per day 8 trips	2 vehicles per day 3 trips each.
1989	41082kg (40.4 tons)	9 vehicles per day 1 trip each 1 vehicle per day 9 trips each	3 vehicles per day 3 trips each.
1990	42521kg (41.8 tons)	9 vehicles per day 1 trip each 1 vehicle per day 9 trips each	3 vehicles per day 3 trips each.

Table 5.07 shows the numbers of vans that will be required to collect and convey refuse to the landfill area. The more the number of vehicles, the less the number of trips that will be made from the collection points to the disposal area. Since the maximum number of vehicles required to clear the refuse per day is not economically feasible, a few number of vans are utilised to do the job but with additional trips. By the year 2000 the amount of refuse per day will reach 58020kg which means 11 refuse collection vans will be needed or much less but with more trips. Taking into consideration the future increase in Saban Garis expansion which means more distance to be covered, a maximum of 6 vehicles should be used and each one should make at least two trips per day. The assumption here is that no van should go to the landfill area with less than its maximum capacity which is 5 tons.

Routes to be taken by the refuse vans have been proposed (See Figure 5.37). The proposed time table for collection is also proposed in Table 5.08.

Table 5.38: REFUSE COLLECTION TIME TABLE

Day	Morning			Evening		
	Time (a.m)	No. of Hours	Area to be Cleared	Time (p.m)	No. of Hours	Area to be Cleared
Saturday	8-12	4	Miciya-Cikaji	6-7	1	Dongon Bauchi-Tsuguɗi
Sunday	8-12	4	Unguwan Gabas/ Yamma	6-7	1	Dogon Bauchi-Tsuguɗi
Monday	5.30-6.30	1	Dogon Bauchi-Tsuguɗi	6-7	1	Miciya-Cikaji
Tuesday	5.30-6.30	1	Miciya-Cikaji	6-7	1	Dogon Bauchi-Tsuguɗi
Wednesd	5.30-6.30	1	Unguwan Gabas/ Yamma	6-7	1	Unguwan Gabas/ Yamma
Thursday	5.30-6.30	1	Dogon Bauchi/ Tsuguɗi	6-7	1	Dogon Bauchi-Tsuguɗi
Friday	5.30-6.30	1	Dumping of refuse in the land fill site	6-7	1	Landfill site

Each refuse collection van should contain a maximum of 5 persons and the function of each should be as follows:-

1 Person to be driving the van

2 Persons to bring out refuse from other roads to the collection routes

3 Persons to lift and pour the refuse into the vehicle.

The area reclaimed through landfill method should be used for parks. Market gardening could also be practiced to utilise the fertile soil.

5.38 Telephone Lines: There is the need to extend the underground telephone cables into areas where lack of accessibility had made it impossible. Areas like Muciya and Cikaji should be served with the telephone lines immediately after the proposed improvement of the access roads have been implemented. Stand poles should also be increased in the whole area so that connections by individuals compounds could be encouraged.

5.40 Road Network: Upgrading of access ways through improvements in the road networks have been proposed through the following ways:

(a) Construction ofnew roads in areas hitherto not well served either:-

i. by the absence of such roads in which case it is recommended that no compound should be more than 200 metres from a road. Muciya-Cikaji is the area much affected by this proposal. Two primary distributor roads a number of secondary and service roads are proposed. The provision of the service roads will go hand in had with compound upgrading.

ii. or by the inadequacy of the existing road to cater for the traffic flying over it. This is the case of Aminu and Hospital roads where traffic congestion is a very serious problem. For this reason a new road has been proposed to

the proposed motor park joining cemetry road.

(b) Improvement of the existing ones: This has been tackled through:-

i. upgrading some secondary distributor roads into primary distributor roads. The roads are Hospital, Cemetry, Arab, Ondo and Muciya roads.

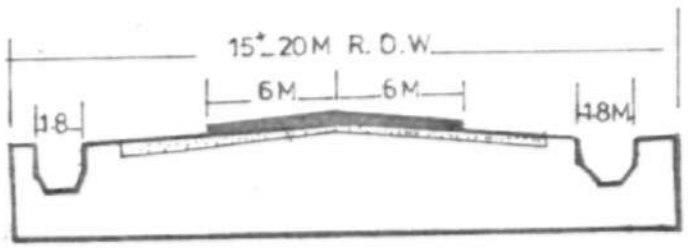
ii. upgrading of some primary distributor roads into major roads. The roads affected by this proposal are Aminu, Tobacco, Kings and Dogon Dauchi roads.

iii. Some existing access roads have been upgraded into a secondary distributor roads.

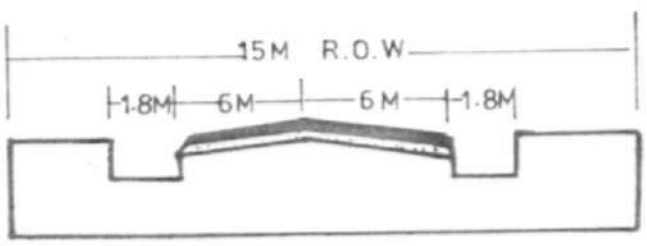
iv. improvement of the right of ways where there is a problem of encroachment especially in Anguwan Yamma where there are wide and undifferentiated right of ways.

v. General improvements of the road hierarchy through actions i-v. Most especially in Anguwan gabas, Anguwan Yamma and Dogon Dauchi areas.

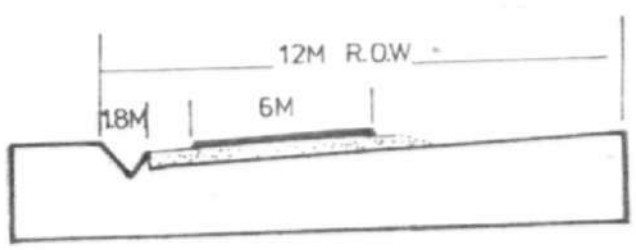
Both the proposed new roads and the existing but improved ones have been categorised into four types (See figures 5.40 a to c).



A) MAJOR ROAD



B) DISTRUBUTOR ROAD



C) SERVICE ROAD

FIG. 5.40

(a) Major roads

(b) Primary distbibutor roads

(c) Secondary distributor roads

(d) Access or service roads.

(a) Major roads: By definition they are roads that permitt movement through an area. In Sabon Gari there are only 3 roads that fit into this definition - Aminu-Tobacco road, Kings road and Dogon Bauchi road. Aminu-Tobacco road is the main link between the study area and the rest of the urban area. Whereas Kings and Dogon Bauchi roads provide routes to the proposed Shika byepass.

(b) Primary Distributor roads: These are the ones which run parallel to the major roads but instead of linking an area to the outside they link the different communities of the area and they normally terminate at the major roads. They are Hospital, Kasuwa, Cemetry, Arab and Ondo roads.

(c) Secondary distributor roads are those that cut across a community with service roads either starting or termination on them. Marmara, Prince, Aggrey and Sapele roads are among many found in the area.

(d) Access/Service roads: These are the roads that provide immediate access to the compounds.

They are of two types:

(i) Those that are meant to provide access for heavy vehicles to within 100 metres of every compound. These are designed as loops or cu-de-sacs to preclude use by other traffi. These are mostly found in Muciya and Cikaji area.

(ii) Those that are meant to provide access to compounds but one can be able to pass through them without meeting dead ends. These are found all over the study area but most especially in the planned areas. By the year 2000 all the compounds of the district will be served by this type of road.

5.50 Upgrading of Housing Units:

Upgrading of housing units have been looked into under two aspects which are

(1) group of housing units

(2) individual housing unit

(1) Group of Housing Units: Upgrading here involves more than one compound found in a block. The compounds are either joined by a common wall or they are closely located. In areas where there is an organic type of development (Muciya, Cikaji and Jushi) the different blocks are separated from one another by foot paths and on few occasions service roads. Upgrading of block of compounds of this nature needs the cooperation

of the individual owners. Since most of the paths will have to be expanded to provide service roads the walls will have to be readjusted. This should be done by two opposite blocks leaving 2 metres as right of way this adds to 4 metres and added two the two metres already existing as a path the total right of way adds to 6 metres this is enough to be used for provision of utilities as well as to provide access to the compounds in each block (see figure 5.51). This type of upgrading should be undertaken by the compound owners of the same block under the supervision of either a civil or Building Engineer. After the outer wall of the whole block has been readjusted such that there is enough space for service roads what remains is the internal arrangement in each block such that each compound is separated by a wall. There should be a distance of at least 2 metres from the wall of a block and the walls separating individual compounds within it. This will ensure privacy as well as free circulation of air (See Figure 5.52). The wall of each compound and the internal structures will be the responsibility of each individual compound owner. Whatever is the internal arrangement made within the individual compound should not be such that will have a bad effect to the rest of the compounds in the same block. A drainage line coming from one of the compounds should be directed such that waste empty outside the compound into the main drain outside

EXISTING NEIGHBOURHOOD

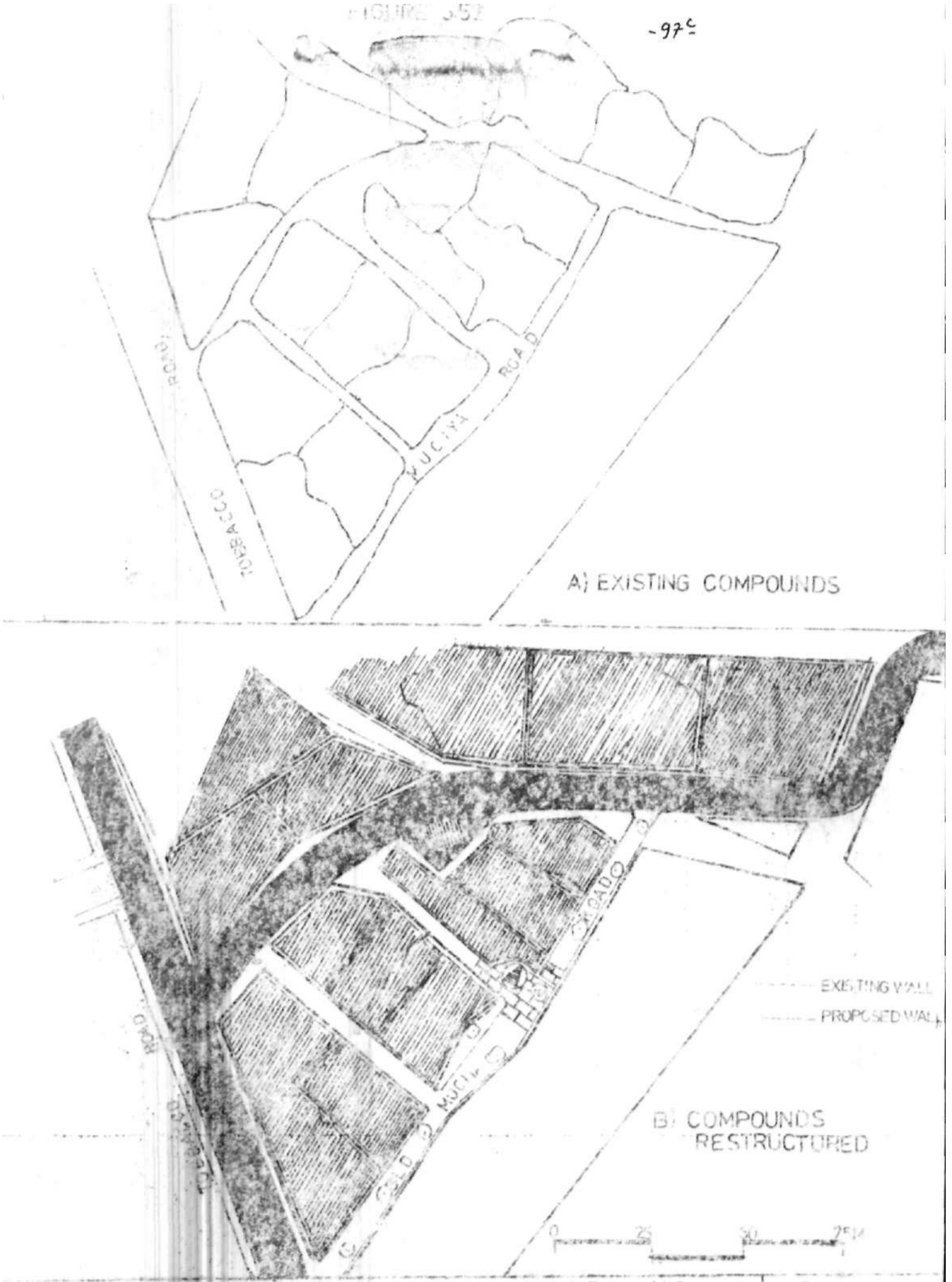


PROPOSED IMPROVEMENT OF A NEIGHBOURHOOD



FIG 5.51

FIGURE 3.52



UPGRADING STRATEGY FOR IMPROVING SABONGARIS IN NIGERIA:
A CASE STUDY OF ZARIA

As regards to the Building materials the local ones should be improved such that the walls will not have to be maintained every year. This is done through good fourdation made of semi permanent material like laterite blocks.

(2) Upgrading of individual housing unit. Upgrading of housing unit (a compound) should take two forms depending on the physical characteristics of the area it is located.

In Muciya-Cikaji area where there is a high percentage of owner occupied type of ownership, there is bound to be more interest by the residents to improve their compounds themselves. Most buildings in this area are made up of such materials as mud, mud with plater and iron sheet roof. Soul drainage and solid wastes are in most cases improperly disposed of. Apart from poor ventilation which is general in the area due to the need for privacy, there is also the problem of lack of good drinking water. The source of domestic water supply is well coupled with the fact that the type of toilet facility is pit constitute a health hazard to the community of this area. Poor durability of the building materials used makes annual compound maintenance cost to be very high.

An example of a compound existing within Muciya-Cikaji area and which has been affected by the propoposed road widening is used. All the characteristics of most of the housing units in the area are found in

this particular compound. To meet the minimum standard of health and to increase the livability and functionality of compounds of this nature a ... cheap and effective methods should be used to upgrade them. The income of the compund head is about ₦257 per month (₦3,084 per annum). Below is his expenditure of compound maintenance per annum:

2 labourers ₦3 each for 7 days	= ₦42
1 builder ₦5 for 7 days	= ₦35
Building material	= ₦50
	₦127

That means averagely every year he spends 3% of his annual income for structural maintenance of the house. This maintenance is more or less focused on the walls and the roofs of the compound. Less attention is given to other house facilities like toilets, bath, source of demestic water and drainage.

The characteristics of the compound.

Size of the compound:	27.5 meters by 16.9 metres
Size of the bedrooms:	Smallest room 3m x 3m Biggest room 4.5 x 4m
Walls building material:	Mainly mud with few places plastered with cement.
Foundation material:	Mud.
Roofing material:	Galvanised iron sheet. No ceiling.
Source of domestic water:	Well located directly opposite the toilet and downslope.

Facilities: Toilet and bathroom in the same space, no roof, temporary grass will used for privacy.

: Kitchen and store: No cross ventilation to allow for free passage of smoke.

: Source of light is electricity.

Utilities: Open drain from the compound which terminates on the road.

: No refuse bin : The refuse is disposed of beside the house very close to the road.

Courtyard: Used for drying of clothes and as children playing ground.

Bedrooms: There are 4-bedrooms all of which are inadequately ventilated.

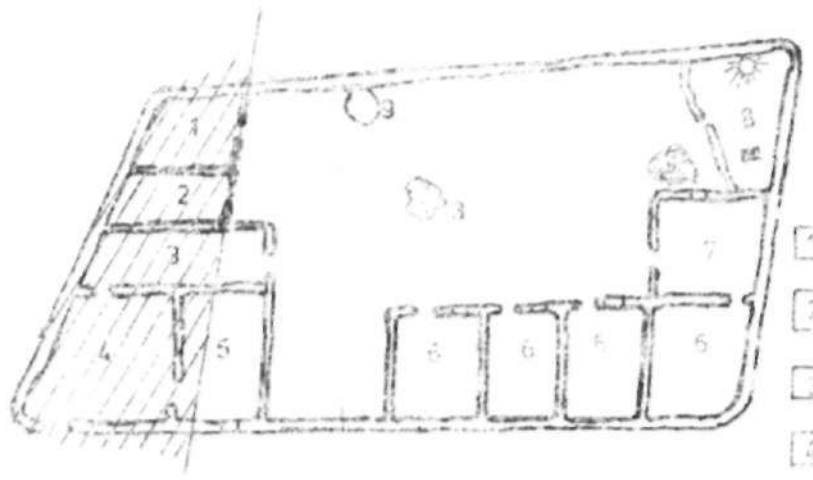
Others: High rate of erosion caused by the water coming from the roof and falling on the base of the wall.

Inferences: What one could infer from the above data are:-

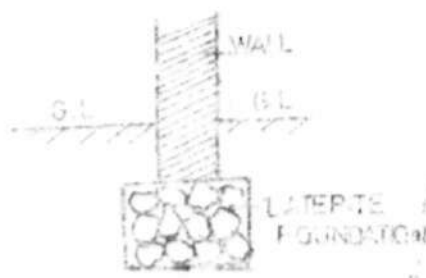
(1) The cost of maintenance of the walls and the roofs is very high most especially with the fact that it is a yearly event.

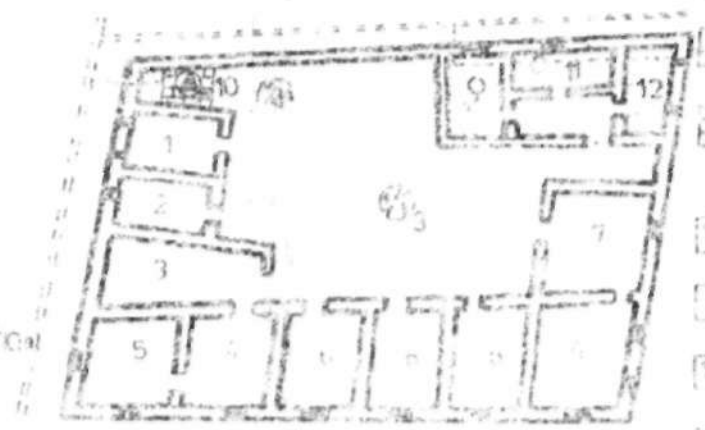
(2) The improvement of facilities and utilities within the compound are not given much consideration.





EXISTING COMPOUND





PROPOSED IMPROVEMENTS

1 KITCHEN
2 STORE
3 COURTYARD
4 ZAURE
5 GUESTROOM
6 BEDROOM
7 SITTING ROOM
8 PIT LATRINE/BATH
9 WELL
PART TO BE DEMOLISHED
PAVEMENT
10 TAP
11 PIT LATRINE
12 BATH
FOUL DRAIN
STORM DRAIN
TREES

FIGURE 5.13

0 3 6 9 12 METRES

UPGRADING STRATEGY FOR IMPROVING SABONGARIS IN NIGERIA
A CASE STUDY OF ZARIA

(UPGRADING OF A COMPOUND)

JAMOH A A
MSCE 1982
URP DEPT
ABU ZARIA

(3) The compound is not well planned as regards to the locational relationships of certain facilities. A good example is the locations of pit latrine and well which is themain source of domestic water. Not only they are directly opposite but the pit latrine is upslope while the well is down slope.

(4) Generally there is poor ventilation in the compound.

(5) There is no overcrowding of structures within the compound. Its size and of the rooms are adequate.

(6) There is no overcrowding in terms of the average number of persons per room (occupancy ration) which is averagely 2.

Adjustment: As a result of the proposal made for road to pass by the compound, part of it will have to be demolished. This will affect the whole of the 'Zaure', the store and the kitchen will also have to be completely demolished. The well has also been affected by the proposed road. Although this has left a substantial part of the compound unaffected but still its size has been reduced from the original 27.5m x 16.9m to 22.8m x 16.9m. Most of the existing facilities have to be removed. These include the kitchen, store and the well (See Figure 5.53).

The offset of the construction of the new road on the compound is not so serious to warrant relocation, therefore the compound head after being compensated for the structures destroyed should use the money for reparing the compound. This is also an opportunity for him to improve the compound generally. This should be done under the supervision and advice of someone qualified in building engineering employed by the appropriate authority.

1. Repairs and Improvement of the Compound: This will have to follow the following sequence:

(a) Erection of the wall separating the compound with the other compounds in the same block. This is after a joint erection of the main block wall. The compound which was built with no any form of foundation is liable to collapsing. Most especially with the amount of water pouring to the base of the walls. There is therefore the need to use a more solid foundation which is cheap and can withstand the impact of rain water . Since the compound is located in an area with abundant supply of laterite, it is bound to be cheaper to use its blocks as materials for making the foundation. The laterite blocks should be joined together with the use of cement. The depth of the foundation should be at least 20cm below the ground (See Figure The advantages of using laterite blocks area:-

(i) It is very cheap and available in the area.

(ii) It is strong and can withstand the impact of rain drops.

(iii) Since generally the area is low lying and has a high water table, laterite blocks will prevent any flood from reaching the weaker materials on the top. (See Table 5.09).

Table 5.09: TYPES OF FOUNDATIONS.

	Rammed Earth	Sandcreat Block Foundation	Laterite Block Foundation
1.	Very Cheap	Expensive	Cheap
2.	Involves some labour	Much labour	Less labour
3.	Locall available materials	Not local material	Local material
4.	Not durable	Very durable	Very durable

The rest of the wall can be erected using the conventional dried clay bricks but use of spine wall most especially in a case where it will have to carry a weight is a form of a roof is advantageous. The other section of the compound which has not been affected by the proposed road needs repairs to strengthen the base of the wall and also plaster skin will protect it from erosion. The strengthening of the base of the walls could be done by digging around the wall so that laterite blocks can be built around the hitherto unprotected base of the wall.

(b) Repairs and Improvement of roofs: The compound

is roofed with iron sheets with heat and cold insulator (ceiling). There are three alternative improvements:-

(i) Provision of cardboard ceiling

(ii) Using woven 'elephant' grass stalks as ceiling.

(iii) Construction of flat toped mud roof before the final iron sheet roof.

The table below compares the three with the existin one:

Table 5.10:

	Iron sheet with no ceiling	Iron sheets with card-board ceiling	Iron sheets with elephant grass stalks	Iron sheets with mud roof.
1.	No protect-ion against hot and cold weather	Good pro-tection against weather	Fair pro-tection against weather	Excellent protection against weather
2.	Very cheap	Expensive	Cheap	Expensive
3.	Less labour	Alot of labour	Alot of labour	Alot of labour
4.	Durable	Durable	Durable	Durable
5.	Materials not locally made	Materials not locally made	Materials not locally made	Locally made

Based on the above assessment the method whereby a mud roof is made and later iron sheet roof is used to cover it, is preferred for the following reasons:-

i. Once it is made there will not be any need for annual maintenance.

ii. Considering the weather of the area, it will provide good protection against hot season and harmattan wind.

iii. Though it is expensive compared to ceiling made of woven elephant grass ('Asabri') but its low maintainance requirement and the fact that members of the family in the compound could do most of the job, reduces the cost considerably.

iv. Its durability and the fact that all of the materials needed for its constretuion can be obtained locally is another big advantage.

(c) Improvement of Ventilation: There are two equally strong but opposing factors that gave rise to the poor ventilation in this particular compound.

(i) The need for privacy

(ii) The need for ameliorating weather conditions.

The need for privacy has made the compound owner not to provide adequate ventilation facility for air circulation. Therefore most of the rooms have only one window and the few that have two are all constructed on the same side of the wall which is of course in the inside. Therefore proposals have been made as how the compound owner could improve the ventilation pattern of the compound without necessarily jeoprdising privacy. These proposal are:-

i. Provision of windows on two sides of the walls, one facing outside the compound and one facing the courtyard.

ii. The ones facing outside the compound need not to be seen from the street. This is because there is a wall already constructed for the whole block within which they walls of the different compounds are erected. But should in case they appear outside the should be be located at least six feet (1.8 metres) above the ground whereas the ones within the compound can be made much lower.

iii. The size of the windows facing outside the compound should be smaller in size preferably 6" x 18" (0.15m x 0.45m) whereas the size of the ones facing the house should be much bigger (See Figure 5.54).

2. Building and Repairing of facilities and utilities:

(a) Pipe borne water: The fact that water pipe line has been proposed to pass very near to each compound there is no need to reconstruct another well which is even more expensive and less healthy. Construction of a well now costs ₦150-₦200 in the area where as connection of a pipe will cost less than ₦100 including both labout and materials.

(b) The demolished kitchen and store can be replaced on the same side of the former wall this will cause a reduction in courtyard's size but it is still adequate. This time both the kitchen and the store should be provided with adequate ventilation which will also ensures the needed privacy of the inhabitants.

(c) Toilet and bathroom are to be provided with walls of semi permanent or permanent materials instead of 'Zana' grass. Separation of the bathroom from the toilet has also been proposed. Ventilation should also be provided. Since the toilet facility being used by the residents is pit and since the compound head cannot afford to construct and maintain the water system type, and improvement of the existing pit latrine is proposed.

A proposed improvement of toilet facility:

The existing pit latrine is just a dug hole with mud cover to squatt on. There is no cover and nothing has been done to prevent erosion by the direct impact of raindrops. This has caused the erosion of the outer material exposing the 'Azara' used for covering the latrine. There is also only one pit latrine serving the whole compound should in case it collapses the members of the family will have to go somewhere to use the facility. The improvements proposed are:-

i. There should be two pit latrines in the compound at any one time out of which one is to be left unused while the other is being used. The advantage of this is whenever the pit has filled up the reserved one could then be used. The filled one is then left unused and should regularly be mixed with organic matter (organic refuse) and left to decompose for one to four months after which it is dug and used as fertilisers for agriculture. After the organic matter has been removed, it is then reconstructed and left unused till the second one becomes filled up.

ii. There should always be a cover to prevent flies from entering. An overhang should be constructed to discourage maggots from climbing out (see Appendix).

iii. An opening through the wall of the toilet big enough to allow for the organic matter removal when it become filled up should be constructed.

(d) Lightening facility: The compound uses electricity and all the room are well lightened but there is need to provide security lights infront of the compound. As regards to the side of the compound the proposed street lights will take care of it.

(e) Liquid waste disposal: The present method whereby liquid waste is disposed of on the roads leaves much to be desired. There are several ways through which this can be improved. Two of the methods are:

(i) Covered foul drain.

(ii) Septic tank.

(i) Covered fould drainage line: This is of two types. One is the type which the drain is dug, lined with concrete, and provided with concrete cover. The other is the type which after the drain has been dug instead of linen it with concrete, as asbestos or plastic pipe of about 750mm diametre is laid and covered. It is through the pipe that all the liquid waste is transported into storm water drainage line along the street. The difference between the two is only in the amount of skill required. In the case of the concrete lined covered drain alot of skills are required in making the concrete and the cover whereas in the case of laying plastic pipe there is less skill required once one could be able to make the gradient such that the liquid waste could flow smoothly. In both the two methods wire mesh is required to protect the pipe or drainage lines from being used by vermins. For this particular compound the piped drainage line is much more suitable therefore it is recommended.

ii. Septic tank: This is another alternative of liquid waste disposal methods. There are some basic requirements for its construction:

(a) The soil must be permeable

(b) There should be enough space to construct it.

(c) It requires skills for both its construction and maintainance.

The low lying position of the ground on which the compound is postioned makes the water table to be high and the soild to be less per meable than required but with certain improvements it could be constructed. The available court-yard is also enough to provide space for its construction. As regards to the neccssary skills required, neither the head nor any other member of the compound possesses the skills necessary for construction and amaintenance of septic tank moreover its high cost makes it prohibitive. Therefore septic tank is not suitable for the compound. The best type of drainage facility for the compound is the type which conveys liquid wastes via pipe to the storm drainage line outside. As regards to the drainage network within the compound, linking the toilet, bathroom and kitchen, smaller size pipes should be used to convey the wastes into the main pipe for onward conveyance out of the compound to the storm water drain beside the street (See Figure 5.54).

II. In Anguwan Yamma/Anguwan Gabas area, the compounds are made more or less with the same building and roofing materials. All other characteristics discussed under Muciya/Cikaji area are applicable to the compounds in this area with the exception of the following:-

Ownership: The occupants of the compound are all tenants

Size: The size of the compound is 15m x 30m.

Households: Unlike the compound in Muciya, there are several household in this compound.

Privacy: No much emphasis on privacy.

Alley: Back to back arrangement gives rise to an alley which is used as refuse dumping ground.

Ventilation: Fair

Source of domestic water supply: Private tap.

Population of the compound is 25.

Shop is attached to the compound.

The following are the proposals for improvement of the compound:

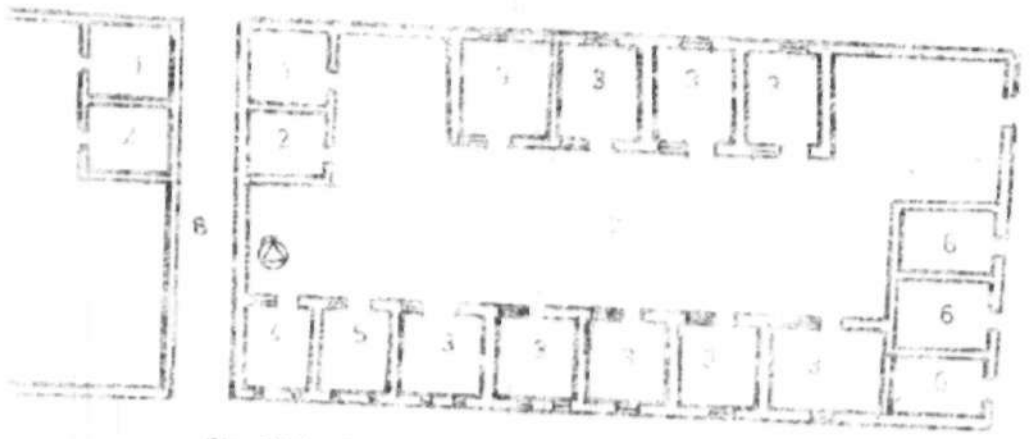
i. Back to back arrangement of the compouns and the alley inbetween. This was formerly used by the labourers in charge of removing night soils from the compounds when bucket latrines were being used. Since this type of toilets have been phased out, people have turned the alley into a rubbish dumping ground. The

alleys are now proposed to be made part of the compounds as a strategy for discouraging throwing out of refuse from the nearby compounds. (See Figure 5.55).

iii. Method of liquid waste disposal: The method used is the same with the ones in Muciya-Cikaji area. The waste is drained out of the compounds into the street. The improvement is to have a common sewage disposal tank for the whole compound. The landlord can afford from the monthly rents both the construction and maintenance costs.

iii. Solid waste disposal: Each household is to have a plastic or metallic container for collection of refuse and whenever it is full it should be collected into a common refuse collector for the whole compound. A person should be employed either by the landlord or the tenant to covey the refuse to the neighbourhood refuse collection point from where a van will convey it to the proposed landfill area.

iv. Toilet facility: The compound should phase out the use of pit latrine instead a water system should be used and since there is the need to dispose of other domestic liquid waste septic tanks in soakaway pit is the best



EXISTING COMPOUND

1 TOILET
2 BATHROOM
3 BEDROOM
4 KITCHEN
5 STORE
6 SHOP
COURTYARD

A ALLEY
TAP
TREES
DRAIN



FIGURE 55 IMPROVED COMPOUND

UPGRADING STRATEGY FOR IMPROVING SABON GARI IN NIGERIA
A CASE STUDY OF ZARIA

JAMOH AA
MSc II 1988/
URP DEPT
ABU ZARIA

method for disposal. The large number of households in the compound requires more than one toilet facility, therefore a minimum of three toilets and three bathrooms is required for it.

The soakage pit to be dug depends on the number of people in the compound. For this particular compound there are 25 people therefore the depth can be calculated as follows:

Liquid wastes production per person per day = 200 litres

Total liquid wastes per 25 persons per day = 200 x 25 = 5000 litres

90 litres require $1m^2$

5000 litres require $\frac{5000}{90} = 55.55m^2$

$$\therefore \text{Depth} = \frac{55.55}{2\pi} = \frac{55.55}{2 \times 3.4}$$

$$= \frac{55.55}{6.28} = \underline{8.84 \text{ metres.}}$$

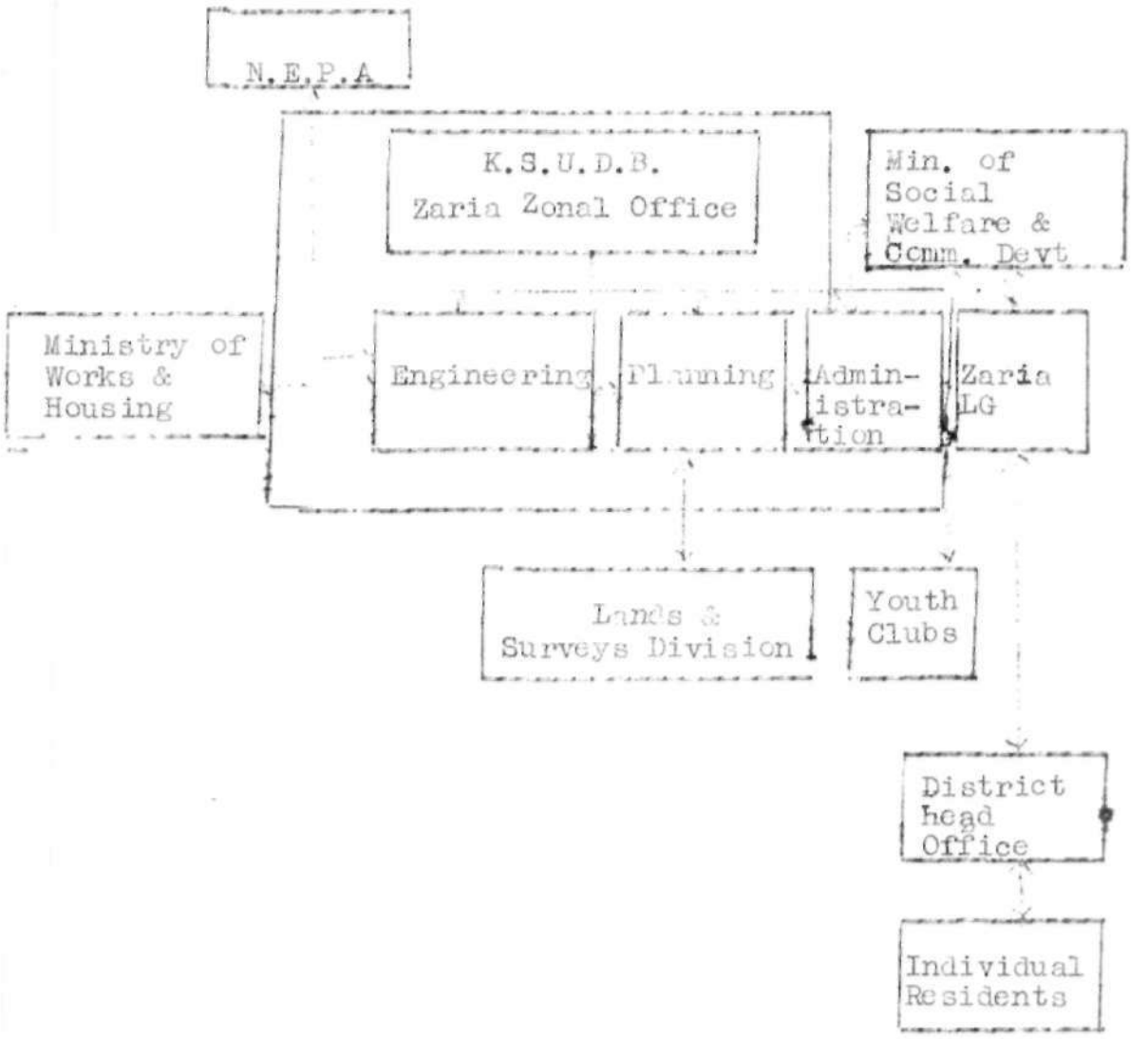
Therefore the depth of the soakage pit to be dug for the family in the compound is 8.84 metres.

CHAPTER SIX.

6.00 PROPOSED IMPLEMENTATION POLICIES.

6.10 Administrative Set up:

For the upgrading project to be a success there should be a coordinating body responsible for organising the different functions to be performed by different agencies. The recently proposed Zaria zonal office of Kaduna State Urban Development Board will be ideal for such an undertaking if it is well staffed with the people that possess technical expertise in design and supervision of construction works. The ability to work with the local community in a community development projects is equally important in the success of the scheme. The Zonal Urban Development Board will consist of Envineering, Administration and Planning sections. The planning section will take over the present responsibilities of the Zaria Town Planning Office which will be absorbed in the Board. Engineering Division will also contain Surveyors.


N.E.P.A
K.S.U.D.B.
Zaria Zonal Office
Min. of
Social
Welfare &
Comm. Devt
Ministry of
Works &
Housing
Engineering
Planning
Admin-
istra-
tion
Zaria
LG
Lands &
Surveys Division
Youth
Clubs
District
head
Office
Individual
Residents

Reduction of cost in the upgrading scheme is very important therefore an optimum use should be made of other State and Local Government agencies whose functions are desirable in the upgrading scheme. The government agencies include the Zaria Zonal Office of Ministry of Social Welfare and Community Development, the Zaria Zonal Offices of Ministry of Works and Housing, Lands, Survey and Country Planning, Kaduna State Water Board, National Electric Power Authority (N.E.P.A), Federal Department of Posts and Telecommunications and the Zaria District Head's Office. (See the Chart). Public participation coordinated and orfanised through the various development clubs, organisation and even indivudials.

Functions of differen' agencies in the Upgrading Scheme.

1. The Zaria Zonal Office of Kaduna State Urban Development Board. Its functions include that of coordinating of different agencies responsible for the upgrading scheme. The responsibility of designing, surveying and construction should be vested to the authority. Landuse control generally is to be taken cared of by the Board. This includes controll of mixed landuse so that it is limited to the areas proposed for such activities. Other landuse controls include that of controlling the proliferation of private clinics, worshipping places, hotels and

bars in areas where they are not suppose to be located. Whatever subvention accruing from the State Government should be channeled through the Board.

2. Zonal Headquarters of Ministry of Works and Housing, Lands and Surveys department in conjuctuion with other parastatals should be responsible for all capital projects within their schedule of work. Ministry of works and housing has alot to contribute in conjunction with Engineering section of the Kaduna State Urban Development Boards Zonal Office in Zaria in upgrading of housing units. Model houses which are proposed in the areas reserved for sites and services should be constructed, maintained and managed by the Ministry. The houses laboron could be sold out or given out for hire to interested tenants. Linking of the study area with the other parts of the towns with roads should also be the responsibility of the Ministry.

3. Water Board, N.E.P.A. and Posts and Telecommunication Departments are responsible for the extension of water, electricity and telephone lines respectively. Their fucntions also include maintenance of the utility lines and collection of bills for the services rendered.

4. Zaria Local Government: Such traditional services that have been the responsibility of the local government should continue to be so. Such services which include sanitary inspection, sewarage, refuse and

night soild disposal, control of vermin, licensing supervision and regulation of bake houses, eating houses and laundaries and control of animals. Other functions include that of rendering basic health services and control of primary schools.

5. District heads office will be the liasoning channel between the planning authority and the public.

6. The public: The residents have a very important role to play. This is not only because they are the people to be affected by the project but also because they are expected to fully participate in all the stages. Their participation should both be group and individual. Group participation should mainly be in a form of community development projects from the district to neighbourhood level. Individual participation includes upgrading of the housing unit and its sorroundings. The emphasis here should be on such things as rejuvenation of the house by plastering, strengthening of foundations and concreting of drains coming out from ones compound into the main drain along the street. Making sure members of the compound tip refuse in the proper collection point is another form of public participation. Payments of contributions for development of the area, payment of bills and levies are all the responsiblity of the individual compound owners. The Zonal Office on the other hand should help individual compound owners with free

technical guidance and house designs.

There are various constraints which will make implementation of all the proposals made at the same time impossible. The most important constraint is the principle of upgrading itself which does not encourage infact it discourages mass relocations and displacements of the residents for the purpose of improving urban areas. This with the need to inject more facilities, utilities and services in a built up area pose a great problem. Therefore proper phasing is necessary such that these facilities are injected without mass displacements. Another constraint is financial. The money and materials that will be used for carrying out the proposals cannot be available within a short period of time most especially if the project is desired to be a self sustaining one. This therefore gives rise to the need of phasing such that each phase is carried out within the available resources. Sudden changes in the ways of life of the people are not usually readily acceptable, phasing will introduce these changes overtime such that it will not involve a sudden switch from one aspect of life to the other. Due to these reasons, three phases have been proposed starting from the year 1985 to the year 2000. The year 200 is chosen as that of the end of final phase so that to coincides with the proposals made in the Zaria Master Plan. The first

phase begins from 1985 to end in the year 1990, after which the second phase will commence and end in the year 1996. The third and final phase should start from 1997 and and end in the year 2000. Though the upgrading scheme will have to give priority to certain projects upon which subsequent upgrading activities will depend such as accessibility, however, it is expected to be in such a way that in any of the pahse there are the minimum facilities, utilities and services to cater for the residents.

First Phase (1985-1990)

1. Establishment of Planning Authority.
2. Setting and Mobilisation of upgrading implementation machinery.
3. Appraisal of the scheme by the planning authority and enlightenment of the public.
4. Accessibility: Freesing of improvements on the compounds to be affected by provision of accessibility and stoppage of developments on vacant lands earmarked for sites and services.
5. Surveys and marking of the areas to be affected by road improvement in Anguwan Yamma, Anguwan Gabas, Dogon Bauchi, Cikaji, Muciya and Jushi.
6. Readjustments of walls by individual compound owners to provide space for service roads in Muciya, Cikaji and Street widening in Anguwan Yamma and Anguwan Gabas.

7. Clearing of the existing refuse dumping grounds and assigning each neighbourhood with refuse collection point and demarcating the area to be used for infill.
8. Relocation of the main motor park.
9. Provision of some of the proposed facilities (See Table 6.01).
10. Construction of sector road at Anguwan Yamma.
11. Acquiring and laying out of land to be used for sites and services.
12. Provision of some of the proposed public taps in Muciya and Cikaji area each covering at least 200 metre radius.
13. Completion and opening of the post office under construction.

During this phase, the emphasis is to pave way for the subsequent major improvements and also provision of the most needed facilities and services. In this phase two delapidated blocks opposite the main market should be removed to provide space for warehouses. District park and the primary school to be relocated from Dogon Bauchi. The sites and services are very near to the blocks affected in Anguwan Yamma should be used to resettle those affected.

Second Phase (1991-1996)

1. Repairing of all existing but ill functioning utilities and facilities. These include the repairs and replacements of electrical equipments

like water tanks.

2. Provision of an additional water tank to Muciya and Cikaji so that they do not have to use the one being used by the industrial area.
3. Widening and improvement of all the proposed major roads these are:-
   i. Aminu road/Tobacco road. Stretching from main street to Sokoto road.
   ii. Dogon Bauchi road starting from Aminu road to the proposed Shika bye pass.
   iii. Kings road from the roundabout at Muciya to the Kano bye pass.
4. Construction and upgrading of Muciya road into a primary distribution road. This will include road widening provision of storm water drainage and a culvert.
5. Upgrading of two service roads (Arab and Ondo/Barkey roads) into primary distributor roads.
6. Provision of one clinic in Muciya/Cikaji area.
7. Decongestion of the main market after some of the traders have moved to the proposed regional market.
8. Construction of fire station in the district.
9. Establishment of children's home and guest house in the proposed district centre.
10. Construction of Television viewing centre in Dogon Bauchi.

11. Widening and improving of all primary and secondary roads.
12. Construction of a day secondary school in Kuciya.
13. Provision of 3-communities. The one for Dogon Bauch community should be located within Tsuguci residential sector and the one for Anguwan Gabas/Yamma community to be located in Jushi.
14. Upgrading of housing units under the supervision of the authority free technical advice and house designs should be provided .

Third Phase (1997-2000)

1. Relocation of the police post and the district office, to the proposed sites adjacent to the district market at Anguwan Yamma.
2. Construction of a bye-pass linking Kings road with Tobacco road.
3. Construction of a clinic in Dogon Bauchi.
4. Relocation of a primary school from Dogon Bauchi to Anguwan Yamma near the district park.
5. Construction of the third cinema house in Cikaji and rejuvenating of the existing two. Rex Cinema should be provided with a motor park which could also be used by the primary school to be sited opposite it. The open space in the vicinity of Independe Cinema should be used in the provision of park.

6. The second polic post to be located in Dogon Bauchi.
7. Full implementation of the proposed number of public taps (55 in number) public parks and play fields.
8. Other capital projects like building of schools, clinic and recreational facilities.
9. Extension of utilitic line
   i. Water pipe lines to be extended into Muciya, Cikaji and Jishi areas along the secondary roads. The pipe network should be in such a way that it will be abl to distribute a minimum of 50 litres per person per day in the district.
   ii. Drains (storm water) to be constructed along all the streets.
   iii. All the compounds should not be more than 150 metres away from 11 KV electricity lines.
10. All the upgrading proposals should have been implemented by the end of the year 200.
11. Setting up of machinery for maintence (See Table 6.01 and 6.02.

Table 6.01: PHASING OF PROPOSED FACILITIES.

Phase	Period	Facilities Type	No. of Units	
1st	1985-1990	Health Centre	1	Anguwan Yamma
		Post Office	1	Anguwan Gabas
		Motor Park	1	Anguwan Yamma
		Sports Stadium	1	Anguwan Gabas
		Play Fields	3	Anguwan Gabas, Dogon Bauchi and Muciya
		Parks	1	District Park in Anguwan Yamma
		Day Secondary School	1	Cikaji
2nd	1990-1995	Clinic	1	Muciya/Cikaji
		Fire Station	1	Anguwan Yamma (District Centre)
		Reading Room	1	Jushi
		Day Secondary School	1	Muciya
		Reading Room	1	Dogon Bauchi
		Community Markets	2	Dogon Bauchi and Muciya
		Community Parks	3	Anguwan Gabas/Dogon Bauchi and Muciya
		T.V. Viewing Centre	1	Down Bauch
3rd	1995-2000	District Secretariat	1	Anguwan Yamma (District Centre)
		Clinic	1	Dogon Bauchi
		Primary Schools	2	Anguwan Yamma/Cikaji
		Cinema House	1	Muciya
		Police Post	1	Dogon Bauchi
		Health Centre	1	Dogon Bauch

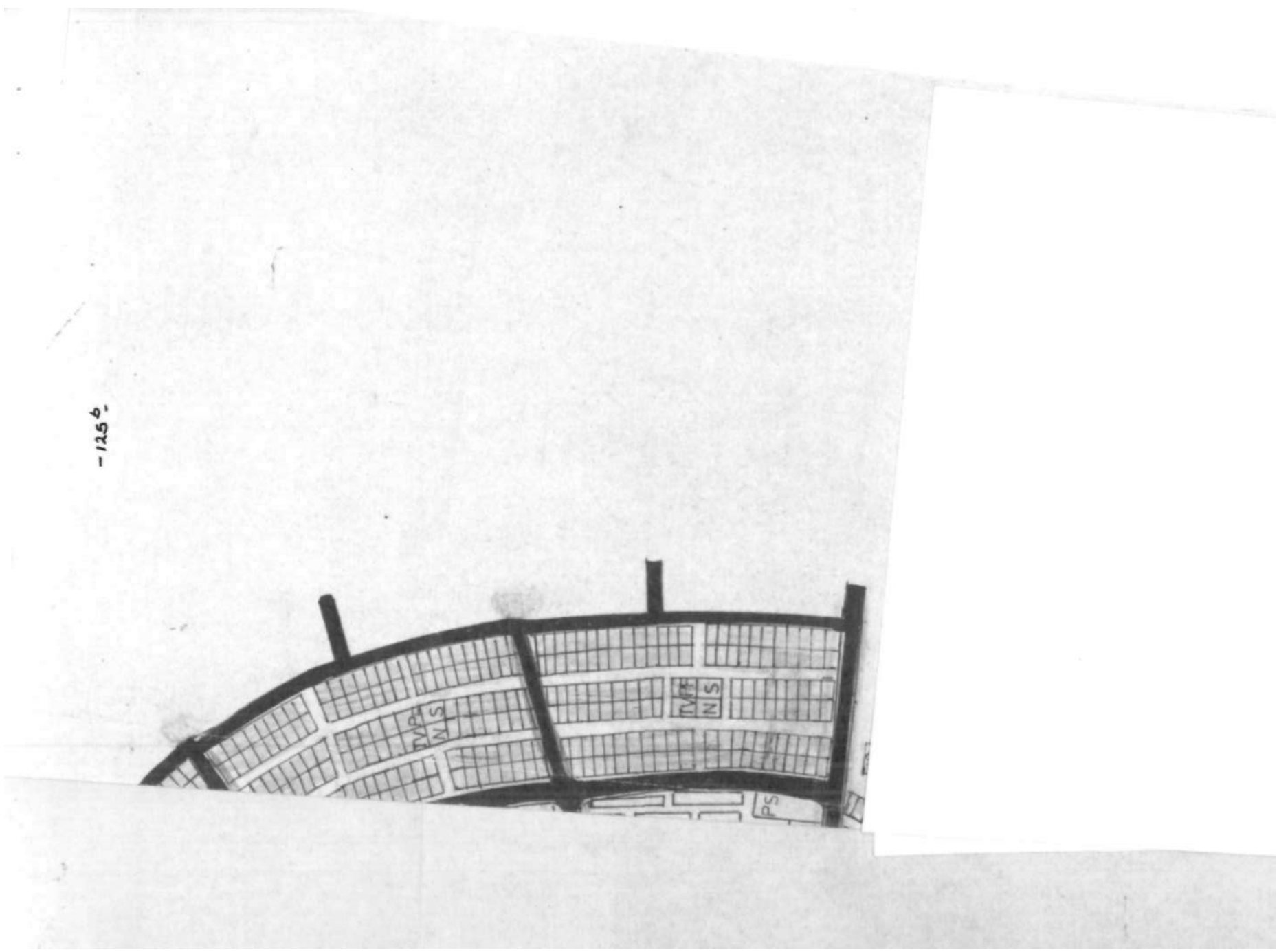

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Table 6.02: PHASING OF UTILITIES, SITES & SERVICES AND UPGRADING OF COMPOUNDS.

Phase	Period	Item	Location
1st	1985-1990	Roads	- Freezing of improvements on the compounds to be affected by the provision of accessibility this is mainly in Muciya, Oikaji and Jushi. - Surveys and marking of the areas to be affected by road improvement in Anguwan Yamma, Anguwan Gabas, Dogon Kawchi, Oikaji , Muciya and Jushi. - Readjustments of walls by individual compound owners to provide space for service road in Muciya, Oikaji and street widening in Anguwan Yamma and Anguwan Gabas - Construction of sector road at Anguwan Yamma
		Water Supply	- Provision of some of the proposed public taps in Muciya and Oikaji area only covering at least 2000 metre radius.
		Solid Waste	- Clearing of the existing refuse dumping grounds. and assigning each neighbourhood with refuse collection point.
		Sites & Services	Acquiring and laying out of land to be used for sites and services

Phase	Period	Item	Location
		Roads	- Widening and improvement of Aminu Road/Tobacco road stretching from main street to Sokoto road, Dogon Bauch road starting from Aminu Kings road from the round about at Muciya to the Kano bye-pass.
2nd	1990-1996		- Construction and upgrading of Muchiya road into a primary distributor road.
			- Upgrading of two service roads (Arab and Ondo/Berkely roads into primary distributor roads.
			- Widening and Improvement of all Primary and Secondary roads.
		Water Supply	- Provision of an additional water storage tank for Mucya and Cikaji area.
		Drainage	- Widening and provision of storm water drainage in Muciya/Cikaji area
		Compunds	Upgrading of compounds in all the different parts of the district through improvement of compound utilities and facilities, foul water drainage, toilet facilities, compound refuse collection and source of domestic water supply should be improved.
		Sites and Services	- Extension of roads, electricity and water lines in the area reserved for sites and services.

Phase	Period	Item	Location
3rd	1997-2000	Roads	- Construction of bye-pass linking Kings road with Tobacco road.
		Water Supply	- The 50 litres per person per day should be achieved through:
			- Full implementation of the proposed number of public taps (55 in number).
			- Extension of main water pipelines into Muciya, Cikaji and Jushi areas.
		Drainage	- All the streets should be served with storm water drains.
		Electricity	- All the compounds should not be more than 150 metres away from 11 KV electricity line.
			- Provision of an additional substation in Muciya-Cikaji area.
		Others	- Full implementation of all other proposals brought forward from other phases and setting up of maintaince machinery.

6.30 Financing of the Scheme:

The fact that projects being finance by numerous financiers always face the risk of failure due to the tendency of one of them failing to meet with his financial obligation. Therefore it is the view of this study that the governments both at the State and local levels should bear the financial burden of the scheme together with the residents. Loan may be obtained from Banks to help in some aspect of the project possibly to be used as a revolving fund but the loan should not form a substantial amount to be spent in the project. The primary aim of phasing is to ensure that the authority in charge does not over stress its resources. Financing of the scheme will come from the following sources:

i. Federal Government: Finance from this source should accrue indirectly through the budget allocations made to different federal government bodies who are responsible for the provision of some of the facilities needed in the area. Posts and Telecommunication department will operate with its financial resource to provide postal and telecommunication service proposed for the area. National Electric Power Authority will be responsible for extension of 11 KV electiricity lines and provision of transformers in some strategic parts of the area to encourage private connections.

2. Kaduna State Government will be the main financier of the whole project this it will do through the following channels.
   (a) direct subventions to the Kaduna State Urban Development Authority.
   (b) indirectly through subventions made to the various Kaduna State Ministries, parastatals and Zaria Local Government.
   (c) Guaranteing of loans from Banks to be used as revolving funds.

3. Zaria Local Government: In all the Districts making up the Zaria Local Government, Sabon Gari generates the highest revenue every year. This amounts to ₦1.2 m and it is generated through property tax, site rent and conservation fees. Therefore part of this should be used by the Local Government in carrying out its normal functions in the area. This should include:-
   (a) Environmental Sanitation
   (b) Provision of basic health services.
   (c) Managing of primary schools.
   (d) Maintainance of roads and
   (e) Payment of electricity and water rates of public places under its jurisdiction.

4. Kaduna State Urban Development Board's main source of finance is the State Government but since the authority has the power to borrow from Banks,

it can use this money as a revolving funds to finance such projects as sites and services which will subsequently accrue alot of profits. The profits should be reinvested and use to provide the needed continuety of the project.

5. Private organisations: Sabon Gari being a very important commercial centre has alot of attractions to private business organisations. Therefore the proposed Kaduna State Urban Development Authority should encourage them by providing sites for cottage industries and also warehouses to generate revenue.

6. Clubs and other developmental organisations are very important in community development projects. Alot of labour cost will be saved if these are used appropriately.

6. Individual residents: The form of contributions by individuals are many. This range from personal contributions to development levies. Majority of Sabon gari residents have shown their willingness to contribute both materially and financially to any scheme that will facilitate the improvement of their neighbourhoods. Therefore the source of revenue should be fully utilised. Charges should be made and paid by the residents for such services as water and electricity supply. Financing of the scheme should be such that in the first phase it is financed by government and

agencies, second phase partial financing by government, rents and levies by the residents while in the last phase little finance should come from the government while rent from plots and other revenue should finance the rest of the scheme.

CONCLUSION.

This study has shown how effectively upgrading strategy could be used in solving physical planning problems in Sabon Garis. The success of the application of the method as a remedy has proved that upgrading strategy could be applied in Sabon Garis Traditional Towns. Failuresof schemes in more cases than one are found to be due to faulty implementation process. Therefore setting up of a functional and effective implementation machinery is as vital as all the other aspects of upgrading. The proposals made in this study are more of curative than preventive. While the effectiveness of the upgrading strategy in both prevention and solving physical planning problems is not in doubt but still the most effective strategy is the early detection and prevention of urban slums before it reaches an alarming proportion. This is where the policy of integrated regional development comes in handy. Therefore combining of upgrading scheme with regional planning will not only lead to the eradication of the existing slum conditions in Sabon Garis and other parts of the urban areas but will also prevent its future reoccurence.

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