



RESEARCH REPORT

# URBAN CHANGE IN A NORTHERN NIGERIA CITY: KADUNA 1965-2015

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## ACRONYMS

|         |  |
|---------|--|
| DFID    | Department for International Development                     |
| FGN     | Federal Government of Nigeria                                |
| GIS     | Geographical Information Systems                             |
| GDP     | Gross Domestic Product                                       |
| GRA     | Government Reservation Areas                                 |
| IMF     | International Monetary Fund                                  |
| KASUPDA | Kaduna State Urban Planning and Development Authority        |
| KSG     | Kaduna State Government                                      |
| LDA     | Local Development Area                                       |
| MLC     | Max Lock Centre  |
| MLCN    | Max Lock Consultancy Nigeria Ltd                             |
| MoLSCP  | Ministries of Ministry of Lands, Survey and Country Planning |
| NIAF    | Nigeria Infrastructure Advisory Facility                     |
| SPSS    | Statistical Package for the Social Sciences                  |
| UN      | United Nations   |
| URN     | Urbanisation Research Nigeria                                |
| WDR     | World Development Report                                     |

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# 1. INTRODUCTION

*“This sense of space pervades Kaduna. The railway station is in the south of the town, and alive with a boisterous crowd who still treat the train’s daily arrival as something of an event – a chance to do business – buy a little and sell a little – carry a bag – push a trolley – embrace a family – joke with a friend and learn the latest news. The four mile drive to the white towered newly-built prestige hotel - the automatic home of the Government visitors – takes one over the Kaduna River -wide and swirling with sand banks - yet hardly a trickle of water between them now but which will soon change at the coming of the rains to a torrent – deep and fast flowing from bank to bank - two hundred yards apart at this narrow point. And so, on up the crowded main street, more full of people than even the station, through the heart of the town – the Sabon Gari. And here it is – first impressions speaking – there seemed to be no centre in all this red dusty scatter of petrol filling stations, farm land, wild river landscape, mud huts, markets, shops spilling their goods out over the roadside, vast tracts of empty ground, modern factories, office blocks, three and four storeyed apartment houses straight from any city in the world and the chaos of poles, posts and wires fleeting past the car window and weaving through magnificent trees above the kaleidoscopic hurly-burly of the people of Kaduna. But here in the Sabon Gari, as one was soon to learn, was the centre of city life for the majority of people.”*

(From ‘A City in the Bush’, an unpublished account of Kaduna by Mike Theis during the preparation of the ‘Kaduna 1917-1967-2017: Survey and Plan of the Capital Territory for the Government of Northern Nigeria by Max Lock and Partners, 1967)

Kaduna (current population about 1.5 million) is strategically located in the key rapidly urbanising economic corridor linking Abuja in the North Central Zone of Nigeria to Kano in the North West. The study explores how a rapidly changing political, institutional and economic environment has conditioned the city’s development and its place within Nigeria’s wider urban system and larger political economy.

As an important secondary city, Kaduna presents many of the typical characteristics of a Nigerian metropolis. Rapid urbanisation has been based on rampant informal land sub division, taking the form of fragmented peripheral urban growth, largely devoid of basic services.

Over the period of the city’s growth since 1965, during which time its population has expanded nearly tenfold, this has led to the development of a major and increasing physical and social infrastructure deficit. A weak infrastructural base, including a poorly connected movement network with growing congestion and pressure on the transportation system are holding back the economic development of the city.

The strategic need and aim of the research is to chart where and how urban development has occurred and the relative influence of the different change

factors, at both the macro, national and international, and micro, local and state level in order to inform national and regional urban policy.

The report is based on a series of inter-related thematic desktop studies examining a mass of existing documentation and socio-spatial data addressing a set of research questions initially outlined in the Inception Report of June 2015, and some initial arguments set out in the review of the theoretical literature on urbanisation.

**Research team and acknowledgements:**

The study, commissioned as part of the DFID-funded Urbanisation Research Nigeria programme, has been carried out by a team of researchers based in, or working in close association with the Max Lock Centre at the University of Westminster in London (MLC).

The research was led by Tony Lloyd-Jones, Reader in International Planning and Sustainable Development at Westminster’s Faculty of Architecture and the Built Environment and Director of Research and Consultancy at the Max Lock Centre, with extensive and in depth research assistance throughout by Federico Redin. The other team members were:

- Dr Michael Theis, (Max Lock Centre/Max Lock Consultancy Nigeria Ltd);
- Dominic Gusah (Max Lock Centre, University of Westminster);
- Martyn Clark (Max Lock Centre, University of Westminster);
- Bill Erickson (Max Lock Centre, University of Westminster);
- Darshana Chauhan (Max Lock Centre, University of Westminster); and
- Prof. Gina Porter (University of Durham);

Other assistance was provided in the field in Nigeria by Tpl Sam Adenekan, Adebola Adenekan and Dr Bill Gregory of Max Lock Consultancy Nigeria Ltd.

The team has been especially fortunate to include the principal author and editor of the original Kaduna Master Plan of 1967, Dr Mike Theis, International Director of the Max Lock Centre and Director of Max Lock Consultancy Nigeria Ltd. His meticulous approach to the documentation of the changes that have occurred in Kaduna over a 50-year period, and the systematic collection, management and analysis of data, both physical and social has informed this study at every stage.

Dr Theis has been instrumental ensuring the preservation of the documentation relating to the background research feeding into the preparation of that Plan. This and other relevant material relating to the first period of urban and regional planning activity by Max Lock and associates between 1965 and 1985 is stored in the Max Lock Archive at the University of Westminster.

In 2008 a re-formed Max Lock Consultancy Nigeria Ltd (MLCN) was appointed with other local partners to review the 1967 Master Plan: *Kaduna 1917 1967 2017, A Survey and Plan of the Capital Territory for the Government of Northern Nigeria*, which was never incorporated in Kaduna, but remained the only guidance on the urban planning of the city since the 1960s. Mike Theis picked up where he had left off more than 40 years previously, enthusiastically adopting a new set of computerised digital tools for socio-spatial data collection, mapping and analysis that made the task of surveying a whole city of more than a million people feasible. He set about

directing an equally rigorous set of comprehensive land use and social surveys of a city that had grown to nearly ten times its previous size.

Tony Lloyd-Jones directed the planning team and coordinated the Nigerian and international inputs into that study: 1967-2010-2050. *Kaduna – the Master Plan Revised 2010 - The Final Report (Max Lock Consultancy Nigeria et al., 2015)*. Apart from Mike Theis’ overall direction, the 2009-10 surveys of Kaduna were led by another director of Max Lock Consultancy Nigeria Ltd, Sam Adenekan with the assistance of Adebola Adenekan and more than two hundred young local surveyors, interviewers and data entry and mapping technicians employed to carry out the fieldwork. Bill Gregory was responsible for overall data management and was notably responsible for the online search for data that informed the 2010 study and in particular it’s report on natural resource management in the wider Kaduna city region. These efforts received the continuous support of MLCN’s other principal director, Sa’adu Dahiru.

Others involved in the 2010 study, who were part of the current research team, include Martyn Clark, who has undertaken much of the detailed interrogation and mapping of the survey data, Darshana Chauhan who carried out the original morphological analysis of the city, and Dominic Gusah, whose exceptional cartographical and GIS skills are exemplified in this report.

We are also grateful to the support of Malcolm Moor, urban designer, whose work on the 2008-2010 master planning study has informed this research and Michael Mutter, Visiting Professor of International Planning at the University of Westminster and Technical Lead of the Effective Cities programme in the Nigeria Infrastructure Advisory Facility in Abuja.

Mike Mutter has provided expert urban and land governance in both this study and the earlier Master Plan Review that informs it. As a former director of Max Lock and Associates and resident of Kaduna in its ‘heyday’ in the early 1980s, his personal insights and knowledge of the city have been invaluable. As technical adviser to the new State Governor on Kaduna’s urban development, his assistance in supporting our stakeholder consultation, along with other NIAF advisers and State Government Ministry staff have given additional impetus to the research and its impact.

In the transportation and movement technical studies we are very grateful for the technical assistance of and inputs from Erica Ferreira Freitas and advice on the potential use of space syntax analytical techniques from Ilkka Törmä, both based in London. In Kaduna, apart from the invaluable assistance of the State Government officials and the technical staff of MLCN, we are grateful for inputs from Stephen Calder of the DFID-supported GEMS3 land registration programme.

All these and others, including the pioneering team who surveyed Kaduna in 1965, and the numerous local and other researchers who have added to the knowledge of the city in the intervening period are part of an enormous collective Nigerian and international effort without which this unique study of urban change in one Nigerian city would not have been possible.

*Tony Lloyd-Jones, February 2016.*

## The argument and hypothesis of the study

Economists have long argued the concentration of wealth and economic assets in cities is a reflection of network and agglomeration effects resulting in economies of scale and increasing returns to scale. Larger urban populations offer economic benefits in terms of access to larger pools of labour and markets for goods and services. Edward Glaeser (Glaeser and Resseger, 2010) using US metropolitan area statistics, argues that every doubling of a city's population contributes to a 9% increase in productivity. Human capital, it is argued, plays a role. The data suggest that higher skilled cities do better while Abel et al (Abel et al., 2012) argue that high density has a positive impact, with doubling density increasing productivity by an average of two to four per cent. Their research (also US-based) suggests that density plays a bigger role in cities where levels of skill and human capital are higher. Research at the Santa Fe Institute led by Luis Bettencourt, meanwhile, suggests that global and historic data demonstrate population doubling leads to increases of 15% in various indices of socio-economic benefit (Bettencourt, 2013a).

The argument of Glaeser, Bettencourt and others about scaling of cities suggests that cities should grow larger in order to improve the benefits to their citizens and to the national economy as a whole. The implication, therefore, is that, if growth is properly managed, bigger is always better. The key question here, though, is what happens when this growth is not properly planned and managed and the supporting infrastructure is not in place? As noted in the theoretical literature review, a number of commentators have argued that this is the case across Sub Saharan Africa as a whole and indeed over much of the developing world with results that are fairly self-evident.

Three key questions for future research arise out of this phenomenon:

1. How has the rapid growth of a sizeable African city affected its level of productivity and socio-economic benefit, given that the process of urbanisation has evidently not been well managed
2. Why has the process of urbanisation not been as well managed in a developing world city such as Kaduna as it apparently has in the rich world?
3. What is the legacy of the deficit in infrastructure and services that has hitherto accumulated and what are the consequences for the future development of cities like Kaduna given such a deficit?

This report addresses these questions through a single case study. It tells the story of urbanisation as it has affected one city of relatively major significance in the Nigerian urban hierarchy and certainly of key importance in the country's political development it was founded by Lord Lugard some ten years after the creation of the country by the British colonial power under just after the turn of the twentieth century.

Kaduna's evolution and trajectory of change inevitably reflects the fortunes of Nigeria as a whole (and the regions within it) and it is impossible to tell this story without some wider examination of the country context. To some extent therefore, conversely, Kaduna's development process can be seen as a microcosm and reflective of the development of the country as a whole.



Nevertheless, the whole story can seldom be presented through the lens of a single example, and Kaduna also exhibits its own features that make it less than typical. Equally, it is not only the evolving national political scenery of the former colony turned federal republic and changing fortunes of the national economy that have shaped the process of change, but also the strong currents of regional change within the country.

With regard to the final question, clear metrics on the scale of current physical and social infrastructure deficits at the city level are not easy to isolate given certain data constraints, even allowing that the data for Kaduna is almost certainly far better than for most cities in Nigeria. In response to these constraints, the study builds on a number of methodological innovations, particularly in the use of mapping methods, to attempt to bridge this gap.

Towards the end of the report it deals factors that have fashioned the development of transport infrastructure in the city are addressed. Here the argument of ‘positive returns to scale’ is turned on its head and the implications of the lack of planning and urban management and the accelerating demands this places on future infrastructure development are explored.

The growing challenges of physical infrastructure are echoed in social infrastructure. This study is able to comment on issues of levels of education and employment among the population from the data available from the household surveys carried out in Kaduna in 1965 and 2009-10, in terms of outcome indicators. However, the surveys did not include a full audit of educational and health facilities except in broad land use terms and most data that is available on such issues is mainly at the state level. Nevertheless, Kaduna itself is unlikely to have escaped the challenges to be found at the state and zonal level, if only because of the pressures on existing social infrastructure caused by the on-going influx of migrants from the rural areas in the region.

As the report argues in the section on demographics, the demographic transition which, in association with rapid urbanisation, has delivered a substantial boost to growth in many Asian economies through a ‘demographic dividend’ can also turn into a disaster if social development needs are not adequately addressed (Canning et al., 2015).

The data suggest Kaduna State is in the frontline of this challenge as the dependency ratio, and the proportion of non working (mainly children) to working age population remains stubbornly high compared to other states in Nigeria. This drag on the economy and failure to adequately meet the social development requirements persists alongside growing numbers of young people joining an urban economy that cannot properly accommodate them.

The wider theoretical linkages between underlying demographic change and growing lags in social and physical infrastructure provision, are beyond the scope of this study but its findings suggest this should be a focus of future research.

As far as the specifics of the study are concerned, it has been shaped by the general hypothesis that *Kaduna’s trajectory of urban change, and apparent*

*failure to realise the potential benefits of urbanisation are strongly an outcome of fundamental demographic and wider macro economic processes, as well as a historical and on going series of political events and decisions taken at the national, as well as state government level.*

The latter have been in large part in response to the tensions of Nigeria's recent historical creation as a vast nation state carved out in the European partition of Africa, with a sequence of crises that have had a particularly strong impact on the city. Nigeria encompasses many hundreds of different language and tribal groups, in many cases nations in themselves, usually with a local axe to grind, loosely organised into shifting coalitions around political parties and encompassing regional, religious, linguistic and tribal identities. Other political factors also come into play, in particular the inheritance of a colonial administration by local elites that have adapted to their own ends in particular in relation to the process of land governance and development

The second related factor is Nigeria's on going commodity export economic dependency which makes it highly vulnerable to global market forces as well as undermining its resilience and restraining its potential to develop as a diversified, modern industrial economy. Again this can be traced back to colonial times and the economic development of the country of the Niger river to meet the requirements of British and European industrial growth with Kaduna, as Lugard's main garrison in the Northern protectorates, playing a pivotal role (as it did in the early years of independence when it was the scene of Nigeria's and one of its most bloody military coups).

In colonial times and shortly thereafter Nigeria was predominantly an exporter of agricultural produce. However, the subsequent discovery and exploitation of oil sealed its fate as a commodity dependent and increasingly 'rentier state' (Mahdavy, 1970), with all that implies for weak governance. This has left Nigeria suspended between a robust and vital but low productivity traditional political economy and a partly formed modern state – evolving but at an insufficient rate to meet the social and economic challenges posed by a rapidly growing population.<sup>1</sup>

### **Regional factors and Kaduna's place in the national urban hierarchy**

A sub hypothesis of the study is that increasing *regional economic divergence has driven underlying demographic factors affecting the rate of urbanisation whilst undermining the capabilities to manage it contributing to the increasing informalisation of Kaduna's economy.*

We suggest that those that argue for increasing returns to scale in city growth, particularly Bettencourt (2013), whose theoretical work this study draws on, but who is a physicist and looking for patterns in the data rather than a social scientist, underplay the exogenous and structural constraints on the ability to govern and manage growth to produce the best outcomes.

On the other hand, economists such as Krugman (2011) suggest that path dependence and increasing returns to scale lead to increasing regional

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<sup>1</sup> Echoes, possibly, of Arthur Lewis's model of the 'Dual Economy'. See Lewis, W.A. (1954) 'Economic development with unlimited supply of labour', *The Manchester School*.

economic divergence and this, in turn, will have an impact on the where any city sits within a national urban hierarchy, and its place within a regionalised economy that will condition its potential for growth and ability to manage it.

The shifting of regional fortunes within Nigeria has had a profound affect on both the economic development and political status of Kaduna on and its place in Nigeria's urban system. This is highlighted in Chapters 4 and 5 but is an underlying theme throughout the report.

### **Structure and contents of the report:**

Chapters 1 to 4 provide the theoretical, historical, national, regional and state level context for the study as well as describing the research methodology and overall conceptual approach. The substantive part of the report, outlining the main findings of the study and addressing in detail the research questions set out below are included in chapters 4 to 12.

The report is structured, broadly thematically, as follows.

**Chapter 1** (this chapter) has provided an overall introduction to the study and strategic aims and set out basic argument and hypotheses.

**Chapter 2** is a theoretical literature review that seeks to place the case study research within the wider debate concerning the process of urbanisation in Nigeria and Sub Saharan Africa over the study change period.

**Chapter 3** describes the research approach and methodology. It includes a set of research questions were formulated early in the study that have been prioritised and developed throughout the research. This chapter provides the overall conceptual framework for the study.

**Chapter 4** looks at Kaduna in its wider political and institutional context from a historical perspective, covering mainly the period since independence in 1960 including the impacts of periodic conflict and turmoil that have marked the republic, but also touching on the colonial period from the beginning of the twentieth century and the early history of Kaduna following its founding in 1913.

**Chapter 5** analyses regional trends in Nigeria's urban and economic development and explains the role that the development of the national transport infrastructure has played in it. The chapter outline the pattern of urbanisation in Nigeria and the shifting place of Kaduna within the national urban hierarchy.

**Chapter 6** provides an overview of the economic development context of Nigeria and Kaduna State and the place of the city within it. It explores the impact on poverty levels of Nigeria's changing economic fortunes and equal distribution of income and describes Kaduna's historical economic development and the factors affecting its recent economic development strategy.

**Chapter 7** analyses the demographic and socio economic changes in Kaduna in the last 50 years based on a range of statistical sources and methods of analysis. This includes an examination of the place of rural-urban and inter-urban migration in the demographic profile of the city.

**Chapter 8** explores the key issues of land tenure and governance and charts the broader pattern of growth of the city as influenced by these key underlying factors.

**Chapter 9** examines the historical origins and the how the physical growth of the city from 1965 to 2015 has been conditioned by it's original, colonial conception.

**Chapter 10** provides a theoretical framework within which the micro-scale form of the city and the changes it has undergone can be mapped and analysed. This chapter also looks at how land use is distributed Kaduna in its wider urbanised area as well as touching on issues of natural resource, environmental impact and land use management in the wider city region of Kaduna.

**Chapter 11** provides an overview of Kaduna's housing market and housing conditions. Drawing on the household survey data it includes a comparative analysis of housing conditions in 1965 and 2010 and poses some initial conditions regarding the implications for how living conditions have changes and how and where continuing slum-like conditions need to be addressed.

**Chapter 12** re-examines the initial theoretical underpinning of the study and applies related spatial analysis techniques to an examination of the city's transport network and movement system. It shows how the largely informal expansion of the city has impacted on the street and road network resulting in an often poorly integrated and connected movement system reflected on employment location and journey to work patterns, particularly in the informal sector,

**Chapter 13** Draw together the findings of the various thematic studies, provides an initial set of conclusions, policy implications and directions of future research.



# 2. THE URBANISATION CONTEXT – A REVIEW OF THE THEORETICAL LITERATURE

## Introduction

Chapter 2 is a theoretical literature review that seeks to place the case study research within the wider debate concerning the process of urbanisation in Nigeria and Sub Saharan Africa over the study change period.

## Relationship between urbanisation and economic development

One of the central questions to be addressed by this research is the relationship between the physical and population growth of Kaduna over the last five decades and the pattern of economic change and development over that period. The research examines the drivers behind urban development in Kaduna. It explores how and why on-going urban growth has accompanied apparent economic stagnation over an extended period, and the related impacts on the living conditions and livelihoods of its inhabitants. This initial literature review seeks to place the case study research within the wider debate concerning the process of urbanisation and its relationship to economic development in Nigeria and Sub Saharan Africa over the equivalent period.

Urbanisation is predominantly theorized in the literature as having a direct relationship to economic development, albeit conditioned by social, cultural and political factors (see Satterthwaite, 2002; Turok and McGranahan, 2013). Historically, cities have arisen in hierarchically organized, cohesive geo-political units with sufficient levels of population and economic surplus to support a political and military elite and a range of specialized services and productive activities serving particular functions and clustered in a central or strategic location (Mumford, 1961, 1956). From small beginnings in antiquity, large cities have a long established place in recorded human history, having emerged as centres of great empires containing tens of millions of inhabitants, e.g. Ancient Alexandria – or Rome with more than one million inhabitants (see Chandler, 1987; Chandler and Fox, 1974; Showers, 1979, all cited in Satterthwaite, 2002).

However, even with fairly large capital cities and large numbers of very much smaller urban centres the overall level of urbanisation remained very low in what remained predominantly unchanging rural societies throughout most of human history until the industrial revolution. With industrialization came the modern period of rapid population and economic growth, coupled with a range of factors leading to demographic transition (falling mortality rates with lagging falling fertility rates) and ever increasing levels of urbanisation – the ‘urban transition’ – (see, for example, Kelley and Williamson, 1984).

With the introduction of metrics like GDP to measure economic output and a range of broadly agreed parameters for assessing the proportion of the population of any country that is urban, levels of urbanisation can be broadly correlated with GDP per capita, though there is clearly considerable variation around the regression line (see Figure 2.1).

### Urbanisation in the Nigerian context

According to current UN population estimates (UN DESA, 2015a), Nigeria is a relatively urbanized country by Sub Saharan African standards, with almost 50% of the population living in urban areas. With a 2014 real GDP per capita of US\$3,416 according to the (IMF, 2014), Nigeria sits slightly below the regression mean in Figure 2.1. However, the divergence would have been much greater preceding the 2013 rebased calculation of the Nigerian GDP, which added more than 80% to the total.

The near 50% urbanisation level is also contested by some researchers who suggest that it is likely to be an overestimate.<sup>2</sup> The problem is compounded by fact that there are no easily identified urban boundaries in Nigeria or officially published urban population figures within the recent census data.<sup>3</sup> The UN Population Division's estimates are projections from historic census data and both the projection model and the data on which it is based have been challenged (see, for example Jerven, 2013, pp 56-65).

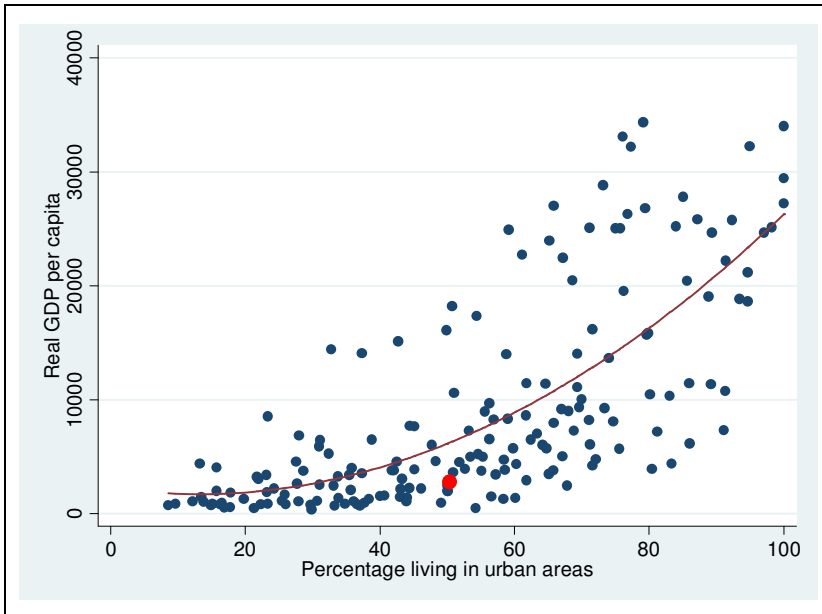
As there are question marks around the reliability of Nigerian census data, the Africapolis study (e-Geopolis, 2007) devotes a chapter to exploring the particular urbanisation issues in Nigeria. The study adopts a specific mapping and urban morphology-based approach closely aligned with that being adopted as part of the methodology of this study and practised in the urban planning work of the Max Lock team in their work on the ground in Kaduna. However, there are also methodological concerns about the Africapolis study, and better current data sources are certainly needed. Its measurement of the level of urbanisation in Nigeria is problematic and its argument can be contested in terms of consistency.<sup>4</sup>

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<sup>2</sup> See the 2007 AFD-sponsored e-Geopolis report, Africapolis: Urbanisation Trends 1950-2020, A Geo-Statistical Approach: West Africa. This estimates the level of urbanisation as just over 30% in 2010 (in a little over 500 urban agglomerations with more than 10,000 inhabitants) and little changed since 2000. Other sources also estimate the urban population as a much smaller proportion of the total. Reflecting national household surveys, for example, the Bill & Melinda Gates Foundation's Financial Services for the Poor (Gates Foundation, n.d.) calculate the total population in 2010 at 150,802,704 compared with a UN estimate of 159, 802,704, and the urban population at 32.5% of the total, compared with the UN estimate of 43.5%.

<sup>3</sup> The publication of the Africapolis report, has proved useful in providing estimated population data using a consistent methodology in its definition of what is 'urban'.

<sup>4</sup> For example, the Africapolis Analytical Report claims that, because of the unreliability of Nigerian census figures, the total population of Nigeria is 100 million rather than 160 million yet it uses the latter figure to estimate the level of urbanisation, having first used what is claimed as a more accurate morphological method to estimate the urban population. Drawing on MLCN's population estimates for Kaduna based on household survey interviews, there is evidence of census over-enumeration in Kaduna State, but this is equally likely to have occurred in rural as in urban enumeration areas (see Chapter 7).



**Figure 2.1: Income per Capita and Urbanisation, 2000**

(Source: Adapted from Bloom et al., 2008, red dot = Nigeria 2014 according to UNDESA 2014)

While the actual level of urbanisation remains controversial, there is little doubt that towns and cities figure highly in Nigeria’s economic and social life. Nigeria has a strong tradition in urbanisation stretching back centuries. In this respect it is quite different to most other Sub Saharan Africa countries where urbanisation is more of a recent trend, and more substantially influenced by colonialism.

An ancient urban history is evident in the existence of a dense network of cities in the Yoruba region of the South West and communication networks and trading routes across the region (e-Geopolis, 2007). The ancient trading centres of Kano in the Hausa-Fulani dominated North, and Ibadan in the South West have remained among the greatest cities in Nigeria. Benin City was the ancient capital of the Edo Empire in the south retaining its importance into the rubber export era. Bauchi, Bida, Katsina and Zaria in the North and ‘about thirty Yoruba cities’ are secondary cities that managed to retain their importance ‘despite periods of relative decline.’ (Ibid.)

The modern colonial pattern of concentration of development along the coastal strip with north-south routes connecting to the interior began towards the latter part of the nineteenth century, with Lagos as the first British colony, later major port, commercial and political capital for the whole of Nigeria. Port Harcourt came later, founded by Lord Lugard in 1913 to export coal from the Enugu region, with the start of the petroleum era in 1958 when the first oil was being shipped from the port. Kaduna was also founded by Lugard in 1913, being designated as the capital of the Northern Region a few years later, with 20th century Nigeria largely a product of Lugard’s ‘dual mandate,’<sup>5</sup> (most notably in the north and west).

<sup>5</sup> Under which direct rule remained the responsibility of traditional rulers but fell under the supervision of the British colonial administration. See Home (1997) pp127-35.

### Agglomeration effects and increasing returns to scale of urban areas

Economists, from Marshall (1890) onwards, have argued the concentration of wealth and economic assets in cities is a reflection of network and agglomeration effects resulting in increasing returns to scale and economies of scale.<sup>6</sup> Marshall's argument focused on the benefits for competitiveness and innovation of local specialization within specific industries, whilst Jacobs (1969), argued that increasing returns to scale resulted from diversification and knowledge spill overs between industries. Current research is contested, tending towards supporting the Marshallian position according to Van der Panne (2004), but with others such as Glaeser (2009) and Abel et al (2011) arguing in favour of increasing knowledge exchange with size and density.

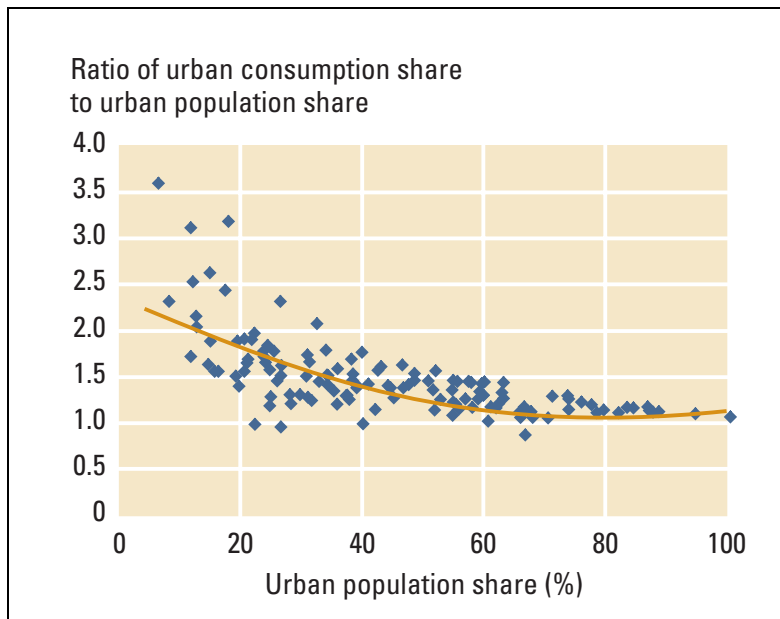
According to Floater et al (2014), 'The economic potential of urban growth is driven by raised productivity resulting from the concentration of people and economic activities in cities. Concentrated economic and social interactions create a vibrant market and fertile environment for innovation in ideas, technologies and processes.' Larger urban populations clearly offer economic agglomeration benefits, larger pools of labour, markets for goods and services, opportunities for green business development. Global and historical research indicates that for every doubling of a city's population, economic welfare increases by a factor of 15% (Bettencourt, 2013a).<sup>7</sup>

Research (World Bank, 2009) gives an indication of the much larger proportional share of urban areas over rural areas in share of overall national consumption (and by implication income). This diminishes as the share of the urban population increases; indicative perhaps of both increased agricultural productivity and 'gentrification' of a shrinking rural population. Data from the World Development Report 2009 (Ibid, p65) suggest that at low levels of urbanisation, the average share of per capita urban consumption in urban areas is double that of rural areas. (Madagascar and Tanzania, for example, have urban population shares of around 20 to 25% and urban consumption shares of about 30 to 35%. Malawi is 10% urban but the economic share of urban areas is 20% (Ibid).

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<sup>6</sup> Noted by many commentators on urban development from Geddes (1915) and Weber, (1921) through to Lucas (1993), Black and Henderson (1999), Rosenthal and Strange (2003), Glaeser (1998, 2011) and O'flaherty (2005).

<sup>7</sup> Glaeser (2011) suggests this factor is nearer 10%.



**Figure 2.2: Rural-urban gaps in per capita consumption**

(Source: based on World Bank 2009 – WDR 2009 team estimates)

While there is no direct data to support it (living standards surveys data in Nigeria not sufficiently disaggregated to carry out this type of analysis),<sup>8</sup> an urbanisation level of nearly 50% would imply an urban-rural multiplier of somewhat less than 1.5. Given the on going prevalence of rural poverty, especially in the north of the country, this factor may well be higher. Additionally, of course, it masks major differences both regionally and between towns and cities with different size populations. An estimate carried out by the research team when engaged in the recent Kaduna Master Plan Review (Max Lock Consultancy Nigeria et al., 2015) drawing on a range of data suggested that the value added in the Kaduna urbanized area was around double that of the Kaduna State rural population (Lloyd-Jones, 2011).

### Urbanisation and economic development trends in in Sub Saharan Africa and Nigeria

In the period leading up to the earlier years of this century, rapid urbanisation in Nigeria, as in many Sub-Saharan countries, appears to have taken place without economic growth over a prolonged period of more than three decades. According to this view, Africa diverged significantly from the world trend as it continued to urbanize more rapidly than other regions, even as its economies were collapsing, or at least stagnating, the so-called ‘over urbanisation’ thesis (World Bank, 1999).<sup>9</sup> Given the conventional view and wider historical evidence in favour of a causal link between urbanisation

<sup>8</sup> See, National Bureau of Statistics, 2012, Consumption Pattern in Nigeria 2009/10 (Preliminary Report). This gives a breakdown of consumption expenditure between urban and rural but only at national level and on the basis of 1991 estimate of urban-rural population breakdown. Breakdowns are also given at state level.

<sup>9</sup> See Box 6.4, page 130 of World Development Report 1999/2000, cited in Satterthwaite (2002).

and economic development, this disconnect has generated considerable controversy and debate (Fay and Opal, 2000).

For some observers, the data to support the view that there is a substantial disconnect are lacking or incorrectly interpreted. Kessides (2005) finds that 'urbanisation in the region is not excessive or imbalanced relative to the experience of other regions' and 'most of the economic growth that has taken place in the past decade derives from mainly urban-based sectors (industry and services).' Her view is that there has been an inadequate institutional response to the major management task presented by the absolute rate of urban growth and although 'cities have clearly not lived up to their productive potential' this is due to 'widespread neglect and bad management.' Kessides argues that the widespread urban poverty that is evident is not a 'sign of failure of the urban economies in Africa'. Rather it relates to 'institutional failures that perpetuate social exclusion and inequalities between the urban poor and the urban non-poor.'

Potts (2012) argues that the pace of urbanisation in Africa has been greatly overstated and has recently been in steep decline. Very rapid urbanisation in sub-Saharan Africa due to migrants moving from rural to urban settlements, she suggests, is a fallacy and natural growth the 'predominant growth factor in most urban populations.' McGranahan et al. (2009) agree that the data show that the rate of urban growth and urbanisation in Sub Saharan Africa has fallen, but that this is in line with trends in other regions, given also the Sub Sahara is at an earlier stage of its urban transition. However, they do not downplay the role of migration, both rural-urban and international. Satterthwaite (2002) agrees that the trends are similar to other regions and the rapid urban population growth rather reflects national population trends than a relative increase in the share of the urban population. Arguing against anti-urban bias in public policy, he claims there is little evidence to support the view that too many people are moving from rural to urban areas (rather a lack of proper urban management and planning to accommodate the population growth) and argues that fears about over-urbanisation are misplaced.

The World Bank (2009) uses a more consistent and stringent approach to the definition of what is urban in its 'agglomeration index' to suggest that the urbanisation level is generally higher in Sub Saharan Africa than the official data would imply, a theme that is turned on its head in the e-Geopolis (2007) Africapolis study, noted specifically in relation to Nigeria. However, this whole debate revolves around data that is by now well out of date, particularly in relation to economic growth, which has been robust for the past decade over much of Sub Saharan Africa. Recently published data – both economic and demographic - offer the overdue opportunity to bring this whole debate up to date, taking a longer-term historical perspective.

### **Urbanisation trends and growth of urban poverty**

Urbanisation was accompanied by a constant rise in poverty levels during the decades leading up to the millennium and, it is argued, and continued to rise in the recent period of fairly strong economic growth thereafter. A recent McKinsey Global Institute report (Leke et al., 2014) links Nigeria's experience of urbanisation with the low productivity of the country, which although having improved in recent years, is still far behind other major



developing economies. The report identifies weak formal job creation and poor skills developments in Nigeria's cities as well as high cost of living as major reasons for persistent urban poverty. A severe and growing infrastructure deficit (both physical and social) is highlighted by others.

The economy of the country in which urbanisation was taking place was described as stagnant and the growth of industrialization negligible (Salau, 1992 cited in Oyeleye, 2013). Consequently, a rise in urban poverty and the associate expansion of informal settlements needs to be understood within the context of the wider national economic growth model (Floater et al., 2014). There is little question that the Nigerian economy suffered cyclical and structural decline following the accumulation of international debt in the 1970s and the imposition of IMF-inspired structural adjustment policies in the 1980s.

The resulting slump was compounded in the non-oil sectors of the economy by the increasing over-dependence on oil, the neglect of both agriculture and manufacturing with the oil boom, the so-called 'resource curse' (Akinwale, 2012; Humphreys et al., 2007; Onyeukwu, 2007). The textile factories that drove a thriving manufacturing industry in Kaduna in the 1960s and 1970s, for example, were largely idle by the twenty first century (Max Lock Consultancy Nigeria et al., 2015).

The pace of urbanisation in the country is thus not agreed, nor the causes that behind it. While rural-urban migration is believed by some to continue to be the major contributing factor (Olalekan, 2014), natural population growth invariably becomes a more important factor as cities grow in size. Examination of the household survey data collected in Kaduna in 1966 and again in 2009 certainly confirm this as far as the case study city is concerned. Regional differences are important with higher fertility rates being more evident in the north of the country whilst the pattern of migration also varies across the country.

### **Qualitative aspects of urbanisation**

A rapid review of the literature about urbanisation and development in sub Saharan Africa shows two schools of thoughts about the relationship between the two. According to Oyeleye (2013): 'The first school of thought welcomes and emphasizes urbanisation as essential ingredients to economic development, modernization, physical development, human resources development and all forms of societal growth (Arthur, 1991; Kessides, 2005). The second school thought believes that the pace of urbanisation has brought enormous problems including environmental problems, slum development, high flood incidence, high social crimes, poverty, pollution, traffic congestion and squatter settlements inter alia (Adetunji and Oyeleye, 2013; Aluko, 2010; Jinadu and Isumonah, 2005; Olotuah and Adesijil, 2005).'

According to (Agbola, 1989) 'the health of the urban residents have been improving in line with the urbanisation process, it is also true that the health status of an average urban resident in Nigeria is far from satisfactory.' Although the health indicators have improved, there are socio-economic costs as a consequence of the rapid urbanisation process (urban sprawl, inefficient public transport infrastructure, energy inefficient buildings, air



pollution, social exclusion and a lack of basic services such as energy, water and waste) and these characteristics can be seen in many cities around the world.

Floater et al (2014) emphasise the importance of poorly managed urban growth, which can reduce the economic benefits of urban concentrations and increase costs. Poorly managed growth is defined here as urban development that results in economic, social and environmental costs. This seems to be the norm in the country; Owei et al (2008) state that ‘not one Nigerian city has evolved an effective urban growth management strategy, as most land for urban development in Nigeria, as observed by Ikejiofor (2006), is supplied outside state regulatory frameworks. Land delivery systems based on legal concepts and administrative systems have proved unable to cope with the demands of rapid urban growth. This has impacted negatively on urban spatial morphology and has reduced the liveability and functionality of the cities’ (Ibid), whilst ‘urban spatial structures that are very resilient and they evolve only very slowly reducing significantly the range of available development options’ (Bertaud, 2004), hence the importance highlighted by Bertaud (2004), of a political will to clearly established objectives for the city development.

The analysis by Rikko and Shola (2013) of the Greater Karu Urban Area confirms Owei’s statement that ‘the lack of planning policy to regulate and guide the growth and development of land use in planning area is a critical challenge that has resulted in unauthorized and haphazard development, emergence of slums and squatters and environmental degradation, lack of facilities and transportation problems.’ The inability of the government and the planning agencies to cope with the enormous planning challenges and the dearth of information required for planning purpose are a major concern (Rikko et al., 2013).

Nigeria, among many African countries has, thus far, not been realizing the agglomeration economies that normally accompany rapid urbanization (with some question mark hanging over the rapid development that has been occurring in the south of the country since 2002). The World Bank noted in 2006 that ‘the factor productivity of African cities lags significantly behind that of Asian cities, hampering export competitiveness.’ (Kessides (2006) p15, cited in Kalarickal, 2007). High transport costs in cited as one of the main factors behind this.

It seems the poverty trap affecting Sub Saharan Africa in particular ‘is intricately related to the urbanization process; an urbanization process that seems divorced from the close relationship with economic growth that much of the world experienced.’<sup>10</sup> It is strongly argued that ‘productive activities located mainly and most efficiently in urban areas should therefore be the primary focus of national growth strategies in Africa....Evidence indicates that sustainable economic growth and an escape

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<sup>10</sup> Research by Paul Collier and colleagues at Oxford described in *The Bottom Billion: Why the Poorest Countries are Failing and What Can be Done About It* (2007) describes the poverty traps which keeps more than one billion people falling further and further behind the world’s other inhabitants.

from poverty are next to impossible without sustained economic growth led by cities.’

### **Informality and urban development**

Max Lock’s planning studies in 1967 and 2010 chart an evident shift in the urban economic structure from one where there was a healthy industrial and strong formal economic sector to one where informal economic activities predominate. This study analyses the role the informal sector has played in the development of the city and how informal development in the physical growth of the city interfaces with the growth of the informal sector in its economic development.

Informality plays an important role on Nigeria’s economy (accounting for around a quarter of the country’s GDP according to Leke et al., 2014) and has also played an important role in Nigeria’s urbanisation process. Leke et al (2014) also highlight the large price that any economy pays for the informality, stating that an increase of one standard deviation in the size of the informal sector leads to a decline of one to two percentage points in the rate of per capita GDP growth, and the impact that this has in job creation, productivity and innovation in small and medium size business, a key issue to improve urban economic growth.

Dovey (n.d.) highlights the importance of incorporating ‘informality as fundamental to understanding the productivity of cities and turns away from any notion that informality as an aberration or problem that can or should be erased.’ He argues that both formal and informal sectors are always present with reciprocal relations in the city process.

This intricate interplay between the formal and the informal also leaves its imprint of the morphology of the city with the physical structure of the city in terms of its movement networks and land use patterns, in turn conditioning its economic development potential.

This forms a separate theoretical focus of the study of urban change in Kaduna and draws on a rich seam of theoretical literature in the fields of urban design (Rossi, 1982; Rowe and Koetter, 1978), urban historical morphology (Conzen, 1988; Kostof, 1992; Kostof and Tobias, 1991) as well as more recent advances in the field of mathematical and algorithmic modelling (Batty, 2013; Erickson and LLOYD-Jones, 1997; Hillier, 1996; Hillier and Hanson, 1984) and digital mapping (Longley and Batty, 2003; Peterlin, 2005).

Finally, a review of the relevant theoretical and background literature on urban governance, planning and land management, housing and urban infrastructure in the Nigerian context embedded in the related chapters of this report draws on work carried out as part of the *Kaduna – the Master Plan Revised 2010, Final Report 2015* (Max Lock Consultancy Nigeria Ltd, et al.) and a URN Theme D Research Report on Urban Land, Planning and Governance Systems in Nigeria.

# 3. RESEARCH APPROACH AND METHODOLOGY

## Introduction

This chapter describes the research approach and methodology. It includes a set of research questions were formulated early in the study and have been developed throughout the research. This chapter provides the overall conceptual framework for the study.

## Research approach

Using the case study of Kaduna in northern Nigeria, where uniquely, extensive and detailed datasets exist spanning a 50-year period, this study has involved the analysis of the process of urban change, including changes in the way people live and their individual, social and economic circumstances (Max Lock Consultancy Nigeria et al., 2015).

Hitherto, a considerable amount of Kaduna data has only been superficially analysed and in Nigerian terms it is still relatively up to date. This study employs traditional methods of statistical analysis of household and other survey data

The research employs a series of *inter-related, thematic desktop studies* examining a mass of existing documentation and socio-spatial data. Building on a range of theoretical approaches, politico-historical, geographical, economic and morphological, and employing a range of statistical, graphical and network analytical methods, these studies address the research questions set out below and the initial arguments set out in the review of the theoretical literature on urbanisation in Nigeria and in the recent Sub Saharan African experience.

The desktop studies draw on the extensive surveys and planning studies undertaken at the beginning and towards the end of the 50-year period in which the process of change is being explored. Analysis of this data provides dynamic profile of the city and its development, charting changes in the demography, economy, social composition and living conditions of the population and how urban form has developed over this period. It provides original insights into the dynamics of the Nigerian urbanisation process.

## Research team and stakeholder engagement

The study has involved a considerable amount of teamwork both between team members in London and between the London team and colleagues on the ground in Kaduna. Co-ordination was managed through a regular series of meetings, workshops, on going email communications and use of online storage and data transfer services. Several field visits were undertaken primarily to co-ordinate information collection and exchange. A workshop in the city took place in November 2015 where the initial findings of the study were presented to state government officials and other stakeholder interests. This was organised through the Ministry of Public Works, Housing and Transport and fed into current policy initiatives aimed at improving Kaduna’s failing transportation system.

## Data sources

Key documents and data sources employed in the various studies relating to the initial and subsequent periods of research were identified in the early phases of the research. These included:

- The original 1917-1967-2017 Kaduna Master Plan (Max Lock and Partners, 1967)
- The 2015 published Final Report of the 167-2010-2050. The Kaduna Master Plan Revised 2010 (Max Lock Consultancy Nigeria et al., 2015)
- A set of Annexes to the Draft final Report of 2010
- World Bank Longitudinal Urban Poverty Study 2002
- DFID - funded Mapping Urbanisation Study with Kaduna Case Study.
- Working papers by Mike Theis, Tony Lloyd-Jones, and others.

A copy of the original household survey questionnaire employed in the 1967 study and confirmation that 2,300 completed survey forms are held in the Max Lock Archive.

The Land Use and Household Survey datasets for 2009-10 are held electronically in a Microsoft Access database by the Max Lock Consultancy Nigeria Ltd at their head office in Kaduna and local office in Jalingo, Taraba State. The same spatial datasets were converted and made accessible in GIS formats with considerable use made in the analysis and mapping of the data by members of the Max Lock Centre team in responding to the research questions and wider demands of the study. Geospatial and household survey data from Nigeria Infrastructure Advisory Facility Solid Waste Management studies 2013-14 were also available to the study team.

## Formulating the research issues

The working hypothesis/basic argument of the research has been earlier formulated thus:

- *Kaduna's trajectory of urban change, and apparent failure to realise the potential benefits of urbanisation are strongly an outcome of fundamental demographic and wider macro economic processes, as well as a historical and on going series of political events and decisions taken at the national government level.*
- *A sub hypothesis of the study is that increasing regional economic divergence has driven underlying demographic factors affecting the rate of urbanisation whilst undermining the capabilities to manage it contributing to the increasing informalisation of Kaduna's economy.*

One of the issue therefore, given the large range of factors influencing in what are complex ways over time is how can this 'trajectory of change' be conceptualised?

Greater Kaduna's (the original core city contained within the Capital Territory, later local government areas of Kaduna North and Kaduna South, together with the rapidly expanding peri-urban developments in the still predominantly rural local government areas of Chikun and Igabe) physical extent has grown about 3.5 times over the 50 years period between 1965 and 2015.

Over this period the income per capita in the metropolitan area of the city has evidently followed an erratic pattern in line with the national economy as a whole, and as conditioned by political factors and events and well as larger global economic factors. The city has fallen back quite radically relative to other cities in Nigeria from the peak of its prosperity in the late 1970s and early 1980s. It has doubtless benefited to some degree, although clearly not as much as its southern rivals, in the period of commodity-led growth since the turn of this century until now, stimulated in large measure by economic development, construction and infrastructure investment in China and other Asian (the current end of the oil and commodity boom now possibly heralding another move in the opposite direction).

Given this erratic path and regional divergence and the lack of clear data on value added at the urban level it is difficult to say, in average income terms with any degree of accuracy, whether things have improved for the population as a whole or not. The incidence of urban poverty and income inequality may certainly have grown, as a result of economic stagnation with the loss of formal sector manufacturing activities, mitigated to some degree by the growth of professional employment and small scale informal business activities and the significant trading and regional distribution functions of the city.

While the city is evidently 'poor' in the general sense, housing conditions in the city are highly variable, with many areas overcrowded and lacking basic services but with most dwellings substantially built. Shantytowns as found in some parts of the wealthier southern cities of Lagos and Port Harcourt are largely absent.

Failure to draw up and implement land use development plans and properly regulate development means that most urban development has and continues to take place informally, often in formally laid out land sub divisions but with no provision for basic infrastructure services and without reference to a strategic plan for the city. This results in a poorly connected and congested movement system in the city that acts as a further break on its economic development.

Overall, the current situation of the city is likely to have resulted from macro scale economic and demographic trends, together with institutional (and politico-cultural) constraints and exacerbated by a fragmented and ultimately ineffective approach to public policy making in infrastructure, health and education, local governance, housing and urban planning and development at both national and state levels.

Political factors have played a central and complicating role, with Kaduna, in national terms being very much a multi-cultural city but having been under growing pressure from inter-religious and inter-ethnic conflict. Violent riots and more recent Boko Haram terrorist attacks on churches and other targets in the city have led to a polarisation between the mainly Muslim north and predominantly Christian south.

While the city continues to function as a single entity in terms of economic activity, there has been a substantial migration of the population within the city. This adds to the commuter flows across the river between north and south intensifying the congestion along the main arteries and across the

bridges. On the basis of this argument and narrative, the following research questions were formulated:

### Research Questions

Key research questions to be explored in analysing demographic, social and economic and geographical data include:

- a) How does urban population growth relate to the broader factors influencing economic development? [See Chapter 5 and 6]
- b) What are the key demographic factors affecting urban change in the city over the study period including fertility rates and patterns of migration? [Chapter 7]
- c) How have changing political, institutional and governance factors impacted on urban and infrastructure development and service delivery in the city? [Chapter 4, 11 and 12]
- d) What is the change in patterns of employment and how have these influenced livelihoods and income levels? How has the poverty and socio-economic inequality profile of the city changed? What are the gender impacts? [Chapter 7]
- e) What has been the impact of ethnic and political conflict on housing conditions, the perception of security (as well as actual security precautions) and the intra-city movement of people both in terms of residence and daily commuting patterns? [Chapter 4 and 7]
- f) What are the main impacts of land governance and tenure factors of the growth of the city, urban sprawl and the housing market [Chapter 8, 9, 10 and 11]
- g) How has the city's form been shaped by its original planned layout, its geography and the interplay between the formal and informal development? [Chapter 9 and 10]
- h) How has the lack of development control and conformance with an overall strategic master plan shaped the physical development of the city over the last 50 years and what are the resulting past, present and future social and economic costs to the city? [Chapter 9 and 10]
- i) How has the city's transport network developed and responded to changing traffic demands over the study period? [Chapter 12]
- j) What are the main factors influencing housing supply and living conditions and how have these changed over time? [Chapter 11]
- k) What are the broader impacts of the urban development that has taken place on the natural environment and natural resource base of the city region? [Chapter 10]

Given the wide range of research questions, some of these are dealt with contextually, on the basis of a qualitative assessment of the available documentary evidence. Others have been subject to more substantive and detailed analysis, using statistical methods and digital techniques, including mapping and modelling, where appropriate.



## Conceptual framework

The conceptual framework for the study as shown in figure 3.1 has been developed around the narrative as set out in this chapter and these central research questions.

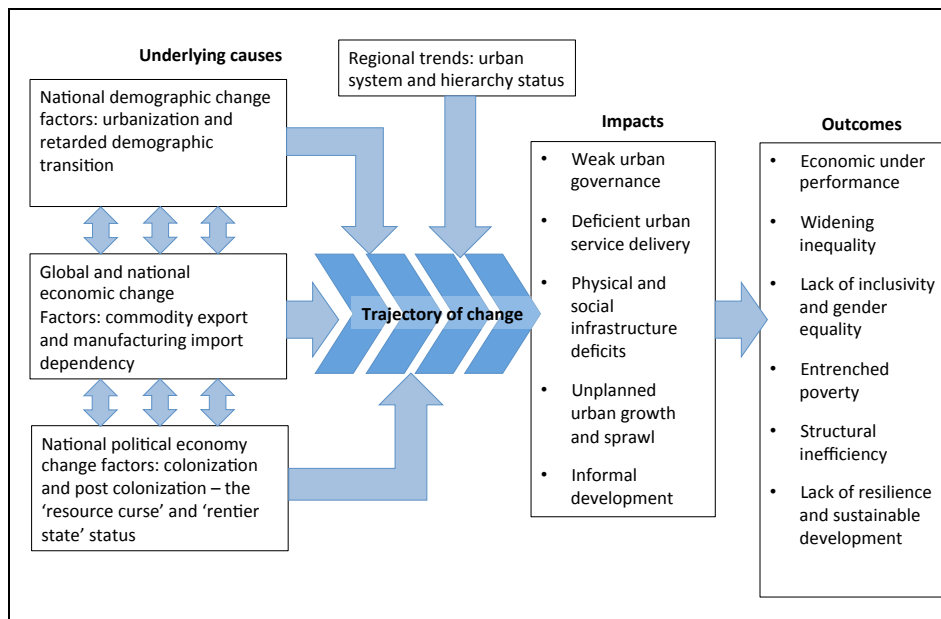


Figure 3.1: Conceptual Framework for the study

## Methodology

Different methodological approaches and techniques were employed in the thematic studies making up the research on urban change as a whole. Some were analysed on the basis of a qualitative assessment of the available documentary evidence. Others were subject to more substantive and detailed analysis, using statistical methods and digital techniques, including mapping and modelling:

**Chapter 4: The City in its Historical Political and Institutional Context** is based on literature review and original documentation from the Max Lock Archive.

**Chapter 5: The Regional Pattern of Urbanisation** analyses regional trends in Nigeria’s urban and economic development based on a literature review and various national and international data sources with the use of representational mapping techniques. It also provides an overview of the physical infrastructure challenges at the various geographical scales.

**Chapter 6: Economic Development** provides an overview of the economic context of Nigeria and also at Kaduna’s state and city level based on a literature review and an analysis of various national and international data sources.

**Chapter 7: Demographic and Socio Economic Change** analyses the demographic and socio economic changes in Kaduna in the last 50 years based on a range of statistical sources and methods of analysis. This includes an examination of the place of rural-urban and inter-urban migration in the demographic profile of the city.



**Chapter 8: Land Governance and Development**, explores the key issues of land tenure and governance and urban growth mainly through a literature review and GIS based spatial analysis and cartography

**Chapter 9: Historical Origins And Physical Growth Of The City** mainly through a review of the 1967 Kaduna Survey and Plan examines the historical origins and the how the physical growth of the city from 1965 to 2015 has been conditioned by it's original, colonial conception.

**Chapter 10: Urban Morphology and Land use** drawing on the theoretical literature provides a theoretical framework within which the micro-scale settlement form of the city and land use changes it has undergone are mapped and analysed.

**Chapter 11: Housing Markets and Household Conditions** employs statistical analysis on the household survey data and mapping methods, It cross tabulates data from the two sources and includes a comparative analysis of housing conditions in 1965 and 2010.

**Chapter 12: Transportation and Movement** re-examines the initial theoretical underpinning of the study through a further examination of the literature review and applies related spatial analysis techniques to an examination of the city's transport network and movement system.

**Chapter 13: Conclusions** pulls together the findings from each of the chapters and each of the desk studies and, in addressing the initial hypothesis and research question, attempts to summarises the story of Kaduna's trajectory of urban change. Suggestions for future areas of research are indicated along with some key policy implications.

One of the initial methodological intentions of the project was to review, compare and contrast the approach to Land Use and Sample Household Survey data collection as carried out for the 1967 and 2010 Master Plan studies, noting the contextual changes and the role of new digital technologies, and highlighting the lessons for future urban development research in the Nigerian context. This has been carried out in three principal areas of study: statistical analysis of the socio-spatial data, spatial cartographical analysis of the physical development of the city, and network analysis of the city's movement system.

#### **Analysis of the socio-spatial data**

The statistical analysis is based on 1965 and 2010 household interview surveys based on a sample of one in thirteen (1965) and one in twenty (2010) residential parcels recorded during a 100% land use survey of the whole of the Kaduna Built-up Area. In 2010 more than 11,000 households were interviewed.

In addition this report provides more detailed analysis of the 2010 data, considered in the context of other datasets on social conditions in Nigeria, and qualitative analysis drawing on relevant literature from Nigeria and the West African region.

Comparisons of data published in the planning study reports and accessible from related databases include changes in the spatial distribution of population; in age and sex structure of the population; kin migration

patterns and contribution to population growth, education levels, labour market changes; journey to work and household characteristics, housing density, conditions and overcrowding, sources of fuel and energy, water and sanitation arrangements, the cost of utilities, tenure and rental costs.

Some of this data is correlated with the regional data collected in national surveys such as the Demographic and Health and National Housing surveys, and published census data.

The datasets for the 2009-10 study are more complete, if more complex, given that the city expansion since 1967. In particular, the opportunities for spatial analysis using digital software are greatly enhanced. Alongside a randomized sample survey of 1 in 20 plots and households across the urban area, land use and basic building characteristics are recorded for every address outside of the institutional areas, together with line maps that record the physical footprint of every building for a large part of the city.

### **Analysis of physical development**

Kaduna is continuing to expand at a rapid pace whilst existing areas densify and land use changes are evident. However, the physical expansion and land use change in the city thus far has been poorly understood as there is little effective land use planning or accurate mapping and the expansion is largely unmanaged and unrecorded.

The physical form is one of the most obvious features revealed from remotely-sensed images. Together with morphological analysis based on detailed analysis of satellite imagery, this provides a basis for developing a broader methodology for generating city level data and informing urban planning and land management across Nigeria.

The aim of this element of the study was to better understand the process of rapid urban morphogenesis and land use change so that remote sensing imagery can be more accurately interpreted and associated with other data sets.

An in-depth analysis of the housing conditions by settlements typologies is provided (settlement typologies as described in chapter 10).

Summaries and cross tabulations of the survey data for the two periods have been carried out at citywide and 'locality' (township or district) level. These datasets have made it possible to undertake a spatial analysis of land use, housing and household characteristics across the city on the basis of settlement types and morphological units at the sub district level. i.e. independently of the administrative boundaries. This has greatly enhanced the potential of the study to carry out localised case studies at the sub city level.

This is also seen as a step forward in developing a methodology for generating robust demographic and socioeconomic urban data where, as is most frequently the case in Nigeria and other Sub Saharan African countries, where basic statistical data is scarce.

Use has been made of a 'transect' approach to analysing the urban morphology of the city – for example how the density of development varies from core to periphery); and how the developments across space as

revealed in a transect can provide insights into the natural and characteristics of urban neighbourhoods as they develop over time.

### **Connectivity and network analysis.**

The full street and road network of the metropolitan area of the city was mapped as part of the 2010 Master Plan Review study. This data has been analysed employing digital network analysis techniques to determine the current level of connectivity of the city.

Together with the data from transportation studies carried out as part of the 1967 Max Lock study and Master Plan Revised 2010 and journey to work data from the social survey, this has enabled the research team to provide a evidence-based approach to the analysis of change in the city's movement system and explore the impacts of the unplanned development of the city on its economic functioning.

Although all three areas of analysis identify the key socio-spatial characteristics of the city at the different points in time, the opportunities to map the data for the purposes of comparative spatial analysis have been constrained, though maps from both reports have been employed to the full to illustrate the major changes. Equally, we have worked from intensive surveys carried out at the beginning and towards the end of a 50-year period. For the period in between, data sources have been more limited and study has drawn mainly on the academic work of Nigerian and international researchers.

# 4. THE CITY IN ITS HISTORICAL POLITICAL AND INSTITUTIONAL CONTEXT

## Introduction

This chapter looks at Kaduna in its wider political and institutional context from a historical perspective, covering mainly the period since independence in 1960 including the impacts of periodic conflict and turmoil that have marked the republic, but also touching on the colonial period from the beginning of the twentieth century and the early history of Kaduna following its founding in 1913.

## 4.1 HISTORICAL OVERVIEW

For fifty years, shortly after the city was founded in 1913, Kaduna remained the capital of the almost autonomous Northern Province and thereafter the Northern Region of Nigeria, its largest constituent component. Strategically, it became an important junction on the Nigerian railway, created to bind the new British Government-established country together (as well as enabling the colonial power to access its natural resources and potential outlets for its manufacturing outputs across a wide swathe of the country).

After independence in 1960, Nigeria moved into the post colonial period in which the new political regimes/elites carried forward the project of cementing the country together on a federal model, first established by the colonial regime in 1954. Subsequent military rule, the Biafran War in the late sixties, the further subdivision of regions, then into states can be seen as part of the effort to counter the pressures first for regional autonomy – primarily from the Igbos, and subsequently to fend off pressures from the subdominant ethnic groups.

What might be termed the ‘Nigeria unification project’ initiated by Lugard, was carried forward during the long period of military rule between 1966 and 1998. broken by the four-year period of the Second Republic - civilian rule by the Shagari regime from 1979 to 1983. The years of progressive military rule leading up to the 1979 election left their mark in the (‘Washington’ presidential model) Constitution of 1978, and the Land Use Decree of the same year, subsequently enacted as the Land Use Law of 1990. When the country finally returned to civilian rule in 1999, the new constitution essentially reprised that of 1978. These two key pieces of legislation have helped frame the subsequent development of the city.

Despite the successive reduction in the size of Kaduna's sphere of influence as Kaduna State shrunk to its present size, the city has retained its residual political and military importance and in various ways is beginning to benefit

from its proximity to Abuja, built during the eighties and becoming the new Federal capital in 1991, that might have undermined its position still further.

The economic centre of gravity of the country has moved continuously southwards, with the growing commercial dominance of Lagos and the growth of oil production in the Niger Delta from the 1950s onwards. In the 1970s and 80, there were Federal government-led infrastructural efforts to counter this with the construction of the oil pipeline and Kaduna oil refinery (commissioned 1980) and major highway construction including upgrading the main A2 trunk road. But the die was already cast with the oil economy rapidly becoming dominant.

Nigeria rapidly transformed into a 'rentier economy' with all levels of government increasingly reliant on oil revenue hand-outs. All of this was supercharged by the huge hike in oil prices in the 1970s, which was followed by the oil price collapse in the 1980s. It is suggested that Nigeria's massive international debt, put down largely to corruption, can also be attributed primarily to having to borrow to cover paying for the imports it had become dependent on, and therefore accumulated later than other developing country regimes that borrowed as the banks were recycling petro dollars from the 1970s oil boom. Both the Buhari and Babangida regimes ended up 'voluntarily' adopting the same neo-liberal structural reform 'medicine' recommended by IMF/World Bank, making economic conditions considerably worse.

The 1980s and 90s saw a predictable spiral of economic decline and informalisation of the national economy, with deteriorating public services, lack of infrastructure investment, including urban infrastructure to keep up with the growth of the population and urbanisation. The rapid growth of youth under- and unemployment provided grist to the mill of politically exploited ethnic and religious conflict.

The recovery in international oil prices brought sufficient revenue for later regimes to make substantial repayment of the external debts towards the end of the last century, but the gap in infrastructure (especially power and urban infrastructure) and effective governance (continuing dependence on oil revenues and lack of Internally generated revenue and voter accountability) has continued to grow.

Belated attempts have been made to get oil pipelines operational, gas pipelines in place and a working railway off the ground again (the Chinese stepping into the breach to insure their future oil supplies, and against the pressure for maintaining the status quo from the road hauliers). Such efforts are yet to be realized, and privatisation of the energy sector is still to deliver the goods. A new period of relatively low oil prices is providing further challenges for the newly-installed Buhari regime to continue and upscale this momentum.

Throughout the period leading up to Independence and beyond into the consolidation of Nigeria as a 'modern' federal republic, with its shifting economic fortunes, largely tied to its role as a major oil producer, Kaduna has continued to expand, growing from a small town of 35,000 in 1950 to a city of more than 160,000 in 1965, when Max Lock & Partners started their

study for the Master Plan for the city, to a metropolis of more than 1.4 million today. Inward migration has always been an important factor, and remains so despite a diminishing role. Trying to gain a better understanding of the factors that have fuelled this growth and the way it has shaped the form of the city and life of its citizens has been a key challenge of this study.

## 4.2 GEOGRAPHICAL CONTEXT

Kaduna is the capital of Kaduna State, part of Nigeria’s North Western geo-political zone, and the fourth largest state in the country. It covers a total land area of 46,053 square kilometres (slightly bigger than the Netherlands or Denmark). Kaduna State has the third largest population in Nigeria, after Kano and Lagos, with a population of 6.113 million in the 2006 census and a projected population of 8.1 million in 2015 based on an estimated annual growth rate of 3% (UNFPA, 2015). The state borders on Kano and Katsina States to the North, Niger and Zamfara States to the West, Nasarawa State, the Federal Capital Territory to the south, and Plateau State to the east.

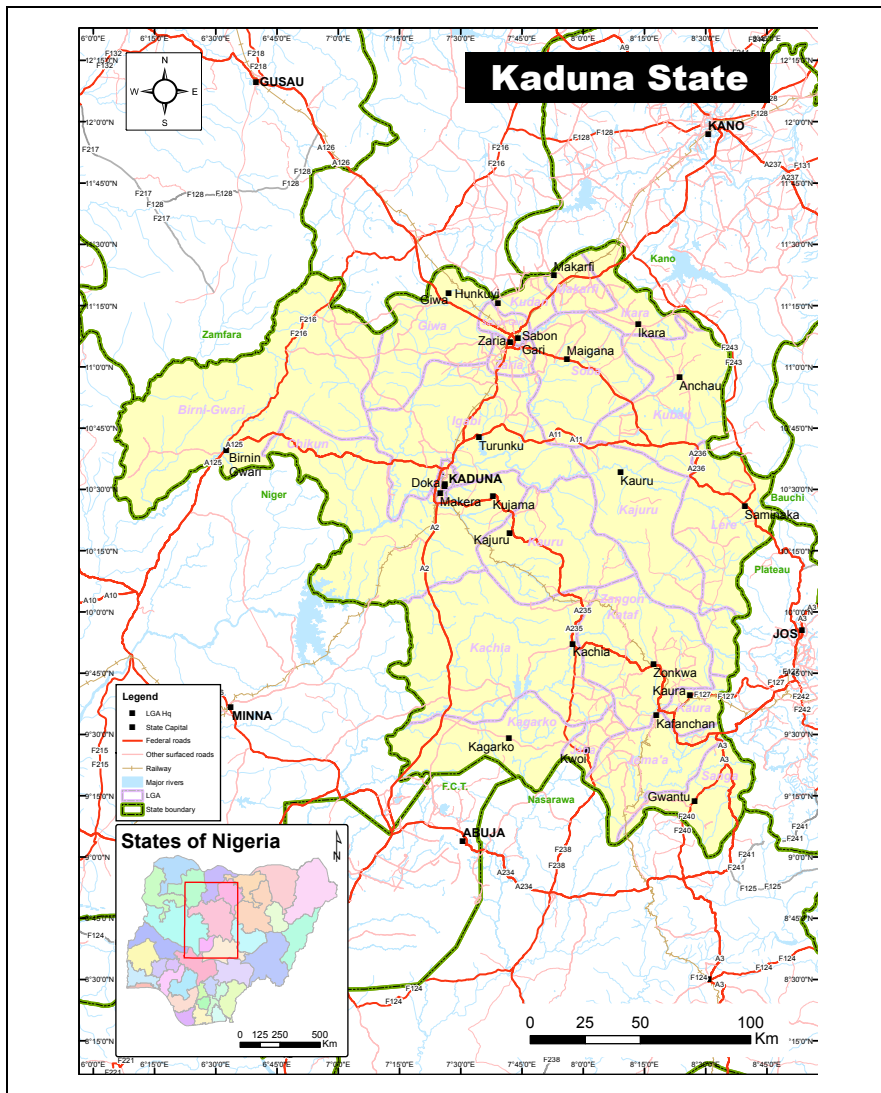


Figure 4.1: Kaduna State map



It is mostly populated by Hausa, Gbagyi Katab and Bajjuu ethnic communities, with Hausa and English as the most commonly spoken languages. The north of the state is predominantly Muslim, while the south has a larger Christian population. Apart from six major ethnic groups found in the state, there are many other ethnic minority groups (ibid).

Although the majority of Kaduna's population lives and depends on the rural areas, about 40% of the state's population is located in two major urban centres of Kaduna and Zaria and the smaller city of Kafanchan. The rural population density is moderate, reaching a high of over 500 persons per square kilometre in Kaduna/Zaria areas and the neighbouring villages but is relatively sparse elsewhere, especially in the south of the state (Kaduna State Government, 2008). During the dry season young male labourers migrate in large numbers from rural villages to towns in search of seasonal work and to learn specific trades or skills (ibid).

## 4.5 KADUNA'S GOVERNANCE

The wider urban area of Kaduna (Greater Kaduna) is comprised of Kaduna North and Kaduna South Local Government Areas and parts of Chikun and Igabi Local Government Areas, as well as being the seat of the state government that has considerable powers over local government.

As state capital and home to the state government and assembly, Kaduna's governance and the management of its development, infrastructure and service delivery is firmly in the hands of the Kaduna State Government ministries, departments and agencies. Of particular importance are the Department (former Ministry, now within the Governor's office) of Lands, Survey and Country Planning (DoLSCP) and Ministry of Public Works, Housing and Transport.

Kaduna State Urban Planning and Development Authority (KASUPDA) is responsible for all planning matters within the defined Kaduna Urban Area (see Appendix 4a). However, it is subordinate to the DoLSCP as the policymaking body and line ministry and has responsibility for all defined urban areas across the state. Proposals for a Kaduna City Development Authority to focus on the wider metropolitan area of the city were put forward in the Max Lock Review of the Master Plan in 2015 and adopted by the State Government. The recently elected Executive Governor of the State, His Excellency, Nasir Ahmad El-Rufai, has been keen to pursue this proposal to pioneer this model of metropolitan governance in Nigeria which address some of the key issues of urban management in the Greater Kaduna area.

Kaduna State was originally administrated under the concept of Provincial Administration and Native/Local Authority systems. However, in 1976 the General Murtala Mohammed government introduced the Local Government Area (LGA) system, which transferred some responsibilities to the elected/appointed councillors. With each successive Federal Military Administration, the number of the LGAs in Kaduna State increased from fourteen in early 1980s to the present twenty three in 1998, including the basically urban local governments of Kaduna North and Kaduna South. Each LGA is divided in smaller units such as districts and wards. There are 46 local



development areas (LDAs) in Kaduna State, with between one and four LDAs in each LGA.

### Local government in Kaduna

‘There are 23 (twenty three) local governments. The institutional and organizational structure of local governments is determined by every state government. Section 7 of 1999 Constitution exclusively conferred on the government of every state the power to make laws which provides the establishment, structure, composition, finance and functions of LGAs.’ (Garba and Eze, 2007)

Kaduna State Local Government (Administration) Law as amended provides that each local government council is made up of:

- Chief Executive (i.e. Chairman),
- Vice Chairman,
- Three Supervisory Councillors to be nominated by the chairman from among the elected Councillors,
- Such number of Councillors as will represent each ward within the LGA,
- All Area Development Administrators (ex-officio members),
- Director Of Personnel Management,
- Secretary of the Council appointed by the State Governor.

The state government, under the Kaduna State Local Government (Administration) Law, has merged the executive and legislative arms of the LGAs under its control into one body. This is contrary to the 1999 Constitution and contrasts with the federal and state levels where government is organised along presidential principles.

Local governments in the state operate with the following departments:

- Administration,
- Finance,
- Agriculture,
- Health,
- Works,
- Education and Social Development,
- Legal Department.

The absence of functional legal departments at a local levels means that the state government provides legal services, including drafting bye-laws, drawing standard contract agreements, vetting already drawn contracts and other legal documents, and litigation.

Local governments operate with four main standing committees:

- Finance and General Purpose Committee,
- Education Committee,
- Security Committee,
- Planning Committee.

The 46 LDAs created in 2003 function as sub-administrative units, and in theory are, under the control of the 23 LGAs. However, most of the delegated functions of the LDAs are the same constitutional duties,

functions and responsibilities assigned to the local governments. There are also areas within LGAs that are not within the span of control of any LDA, and in addition, LDAs fund their expenditure through a direct grant of N1 million per month from the state government and only payment of salaries and agreed overhead costs come from parent LGA.

## 4.7 NIGERIA'S HISTORICAL URBANISATION

Nigeria has a strong and resilient tradition of urbanisation stretching back centuries. In this respect it is quite different to many other Sub Saharan Africa countries where urbanisation is more of a recent trend, and where a native urban tradition to counter the dominance of European colonialism was lacking. This tradition is apparent in the existence of a dense network of cities in the Yoruba region and communication networks and trading routes across the region (e-Geopolis, 2007).

Cities in the north, such as Kano, Zaria and Katsina were long established major towns and the centres of emirates. In the 19th century, these urban conglomerations had populations of between 25,000 and 100,000 and functioned as important trading centres and had well-defined settlement patterns (Ullah, no date). Kano and Ibadan the southwest have remained among the most important cities in Nigeria. Benin City was the ancient capital of the Edo Empire in the south retaining its importance into the rubber export era. Many pre-existing secondary cities that managed to retain their importance 'despite periods of relative decline' (e-Geopolis, 2007).

Demographic decline and the collapse of ancient political systems began to impact on West Africa from the start of the 15th century (Diop-maes, 1996). The European slave trade; Arab raids from the north and east; the opening up of shipping routes and gradual decline in trans-Saharan trade destabilised the political systems as internal wars multiplied. Traditional industries and trade centres were gradually supplanted by an export economy that served the new colonial cities on the coast (e-Geopolis, 2007).

The modern colonial pattern of concentration of development along the coastal strip with north-south routes connecting to the interior began towards the latter part of the nineteenth century, with Lagos as the first British colony, later major port, commercial and political capital for the whole British colonial enterprise. This led to the subsequent amalgamation of the Northern and Southern protectorates in 1914 creating an opportunity for Britain to further the exploitation of the economic potential of Nigeria. This commercial interest largely, explains the pattern of urbanization and city development in the colonial era (Otto, no date).

Trade in agricultural produce and mineral resources between Nigeria and the western world was pursued, and the infrastructure created to facilitate the movement of goods across the country. Thus it was noticeable that the railways "ran neatly from the groundnuts pyramids of Kano through the tin-ore rich Jos, to the coal deposits of Enugu down to Port Harcourt, founded in 1913 to export coal from the Enugu region or to the Lagos ports." (Ibid)

20th century Nigeria was largely a product of Lugard’s ‘dual mandate,’<sup>11</sup> Most notably in the north and west, traditional rulers were left very much in control of their towns – high density agglomerations of courtyard housing linked by very narrow access ways. Migrants to the cities built more formally laid out urban areas, the *Tudun Wadas* and *Sabon Garis*, being specific new towns for strangers on the fringes of the existing settlements.

All these areas also tended to be at high density, but significantly with an assumed paper title from the traditional authority of district heads, though still not recognized by state governments under the Land Use Decree of 1978. These enable residents to construct at fairly high standards (maintained mud brick walls and corrugated iron roofs), even though without formal services and with all wastes discharging haphazardly from the compound boundary into no-mans-land.

The colonialists built European, later ‘Government Reservation Areas’, *GRAs*, some distance from those combined settlements. These were very low density, motor vehicle accessible, and these set the precedent for the large scale ‘land grab’ of fenced single-use institutions – for education, police or military - that ring the Nigerian cities of today often as a noose of containment, not allowing an orderly expansion of the cities, but forcing ever wider circles of spontaneous development and ribbon development along the main routes out of town.

As amply demonstrated in this study, the lengthy and arduous process of obtaining urban full land title from a state governor (‘Certificate of Occupancy’ CofO) has also imposed a significant brake on an orderly, planned expansion of cities, and the infrastructure that should go with it.

A lack of basic urban services dominates the urban scene – poor drainage, refuse piled high, intermittent electricity and water, and off the main roads, a lack of all-season access roads. Poor drainage and a liability to flood is a universal vulnerability. The illegal shanty tradition that characterizes what most people know as ‘slums’ is relatively rare in Nigeria (outside some parts of Lagos and Port Harcourt). However, as noted elsewhere in this report, owing to a lack of basic service provision, slum dwellers, within the official UN definition of the term, are prevalent in Nigeria.

## 4.8 THE HISTORICAL DEVELOPMENT OF THE CITY

Kaduna was founded in 1913, being designated as the capital of the Northern Region a few years later. Previously a cluster of villages during the pre-colonial era, Kaduna became the colonial capital of the Protectorate of Northern Nigeria and was not under the control of any traditional authorities. It was thus free from local political pressures brought by the emirs with their entrenched and ancient seats of Islamic power in the existing towns (Max Lock Centre, 2003).

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<sup>11</sup> Under which direct rule remained the responsibility of traditional rulers but fell under the supervision of the British colonial administration

Prior to the advent of the British occupation, the basic unit of human settlement was the extended family compound. As compounds grew, the needs for security and defence led to the formation of settlements called 'Garuruka' (towns). These towns, with a titled/administrative head appointed by higher political authority, the 'Sarki', were protected by walls. This pattern of settlement dominated the Hausawa cultural groups to the north, whereas in other parts of the state, development of settlements came later and was stimulated by roads and railways, Christian missionaries, markets and administrative reorganization. Over time the dominance of the cities of Zaria and Kaduna was cemented (Kaduna State Government, 2008).

In 1967 the Northern Region was split up into six states, one of which was the North-Central State with Kaduna city retained as its administrative capital. In 1976, when the General Murtala Mohammed administration created seven new states in Nigeria, North Central State, with capital at Kaduna, was renamed Kaduna State. The old Kaduna State was made up of the two colonial provinces of Zaria and Katsina until 1987 when it was divided into two to create Katsina and Kaduna State, as it is currently known.

Sir Frederick Lugard founded Kaduna just after the turn of the last century as an administrative and military headquarters for the recently subdued northern territories of Nigeria. By 1911 Lugard fixed this site for his new capital from which he could govern the Protectorate by 'indirect rule'. He hoped to make Kaduna the capital of a united (Northern and Southern Protectorates) Nigeria, but the Colonial Office in London vetoed this idea (Haruna, 2008). As capital of the north, the city was strategically placed in the centre of the region. The region was sparsely populated, thus minimizing local resistance to colonial rule (Haruna, 2008).

Water came from the perennial Kaduna River, large parcels of well-drained land for development and freedom from traditional political structures. The undeveloped state of local educational facilities meant that people recruited from outside the region, or attracted to it by the economic opportunities it offered, largely performed the administrative and technical services (Max Lock Centre, 2003). By the 1930s the population of Kaduna was over 30,000 people, including British colonizers, artisans from other West African British colonies, artisans and clerks from the southern protectorate as well as labourers and trades from the Hausa, Nupe, Kanuri, Fulani and other northern tribes (Haruna, 2008).

Prior to independence the political importance of Kaduna city grew with the founding in 1948 of the Jan'iyayan Matanen Arewa A Yau (Association of Northerners Today) that later became a political party. Similarly, Kaduna city became the headquarters of the Northern People's Congress (Haruna).

In addition to, or in support of, the political importance of Kaduna, the city was also a centre of commerce and industry. These developments started in 1957 when Kaduna city became the most important hub in the country's railway network (Haruna, 2008). The largest industry and employer in the city was textiles, being the location of several large textile manufactures, including the biggest textile conglomerate in Nigeria, since closed down. Car assembly, an oil refinery and breweries are the main industries now in operation (Akpan, 2007). There has also been a movement or downgrading of multinational representation in Kaduna and civil disturbances of the past

few years have discouraged investment in the particularly vulnerable central retail and commercial locations (Max Lock Centre, 2003).

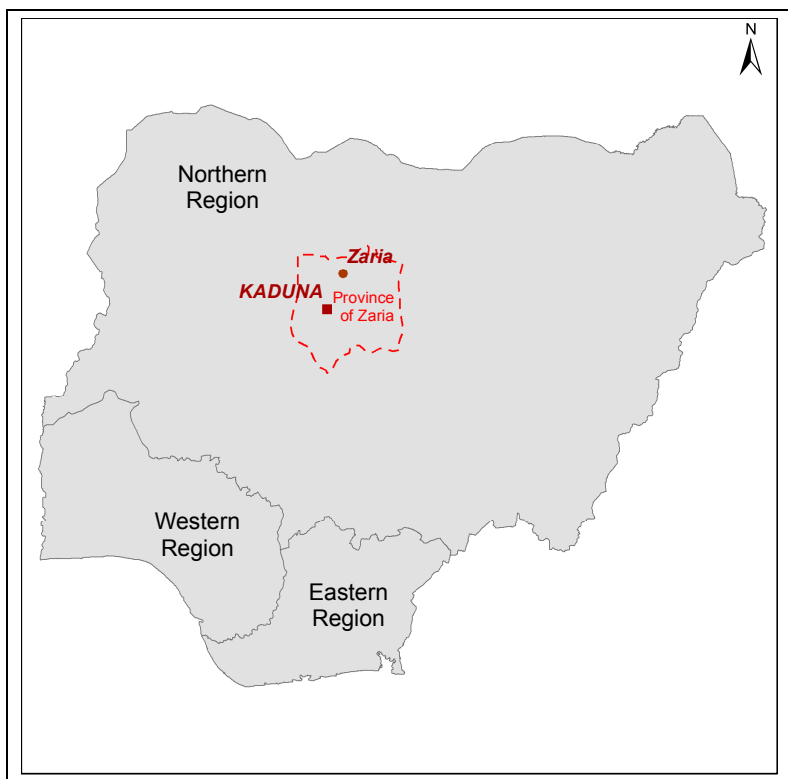
The political importance of Kaduna has also diminished from the 1970s onwards, with explanations including the creation of new autonomous states (see following section), the shift of the national capital to nearby Abuja, the diminishing status of the press in Kaduna, and broader changes politics and governance at a national level that has seen broadening of the power base to include new political groupings (Akpan, 2007). However, Kaduna retains political importance, being the meeting place of northern traditional chiefs, religious leaders and state governors and senators. It also remains the leading industrial centre in the state and it serves an important commercial and administrative function. The location of the International Trade Fair in Kaduna and the increasing presence of the federal government through the location of several parastatals have further strengthened the city's evolving position (Kaduna State Government, 2008).

## 4.3 POLITICAL AND INSTITUTIONAL CONTEXT

### Pre- and post Independence

As the long time political (and military) capital of the northern province and region, Kaduna remained a relatively small town but with a huge political importance. This lasted through to the end of colonialism and into the initial period of independence,

A federal system was adopted in 1954 comprised a national government and three regional governments: Eastern, Northern, and Western (Figure 4.2). The Eastern and Western regions became self-governing in 1957, followed by the Northern Region in 1959. National independence was won in 1960. A federal system of government was maintained in the independence Constitution of 1960, which replaced the 1954 Constitution, as well as in the subsequent constitutions: the republican Constitution of 1963, the presidential Constitution of 1979, and the revised presidential Constitution of 1989 (Adamolekun, 1991). “Since its independence in 1960, the country has undergone major political and economic changes. It has attempted to forge a unified nation out of diverse regional, ethnic, and religious groups through a federal structure of government, whose leadership has changed fifteen times, mostly through military coups”. (NCEMA, no date)



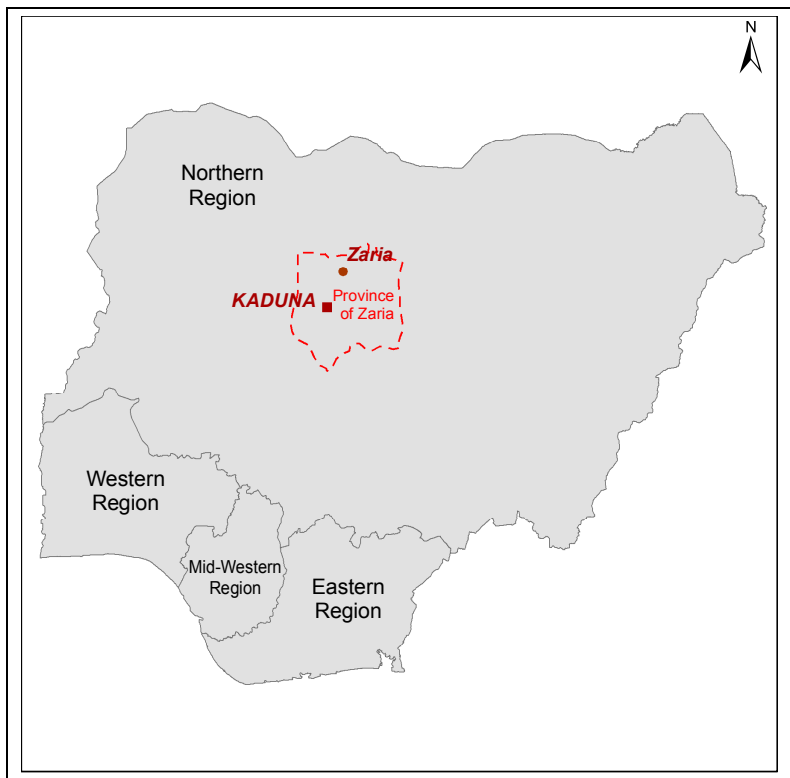


Figure 4.2: Map of Nigeria's region in 1960-1963 (above) and in 1963-1967 (below).

### **Military rule 1966-79**

Two events in the country's political development in the 1960s had profound consequences for the evolution of the federal system as for the city itself: the imposition of military rule in January 1966 and the civil war of 1967-1970 (Ibid). A military coup in 1966 initiated in Kaduna, as the principal garrison town, and swiftly curtailing efforts to implement the Max Lock plan for the city (see 'Reminiscences' Appendix 4b), brought Major-General Aguiyi-Ironsi, an ethnic Ibo from the Eastern Region, to power. He dispensed with the federal system and replaced it with a central government with many Ibos as advisors. However, he was killed a few months later, and was replaced by Lt-Col Yakubu Gowon, a Christian from the North, as the head of a new military government.

In 1967, in order to do away with the political power of the regional blocs, Gowon established a twelve-state federal structure with the Northern Region reconstituted into six states and the three southern regions also into six states. However, the military governor of the Eastern Region (Colonel Ojukwu) refused to accept the division of the Eastern Region, and declared the Eastern Region an independent republic called Biafra. This led to a civil to the thirty-month civil war that started in June 1967, and continued until Biafra surrendered on January 15, 1970 and after over 1 million people had died (gfpinc, no date).

**Gowon was replaced by Brigadier Murtala Muhammed 1975, who was assassinated a year later. He was followed by Lt-Gen Olusegun Obasanjo as head of the Federal Military Government (BBC, 1999). In response to the perceived demand for more local representation within the federal**



system and to create a more manageable administrative system, the Mohammed/Obasanjo regime created seven more states and instituted a 19 state federal structure.

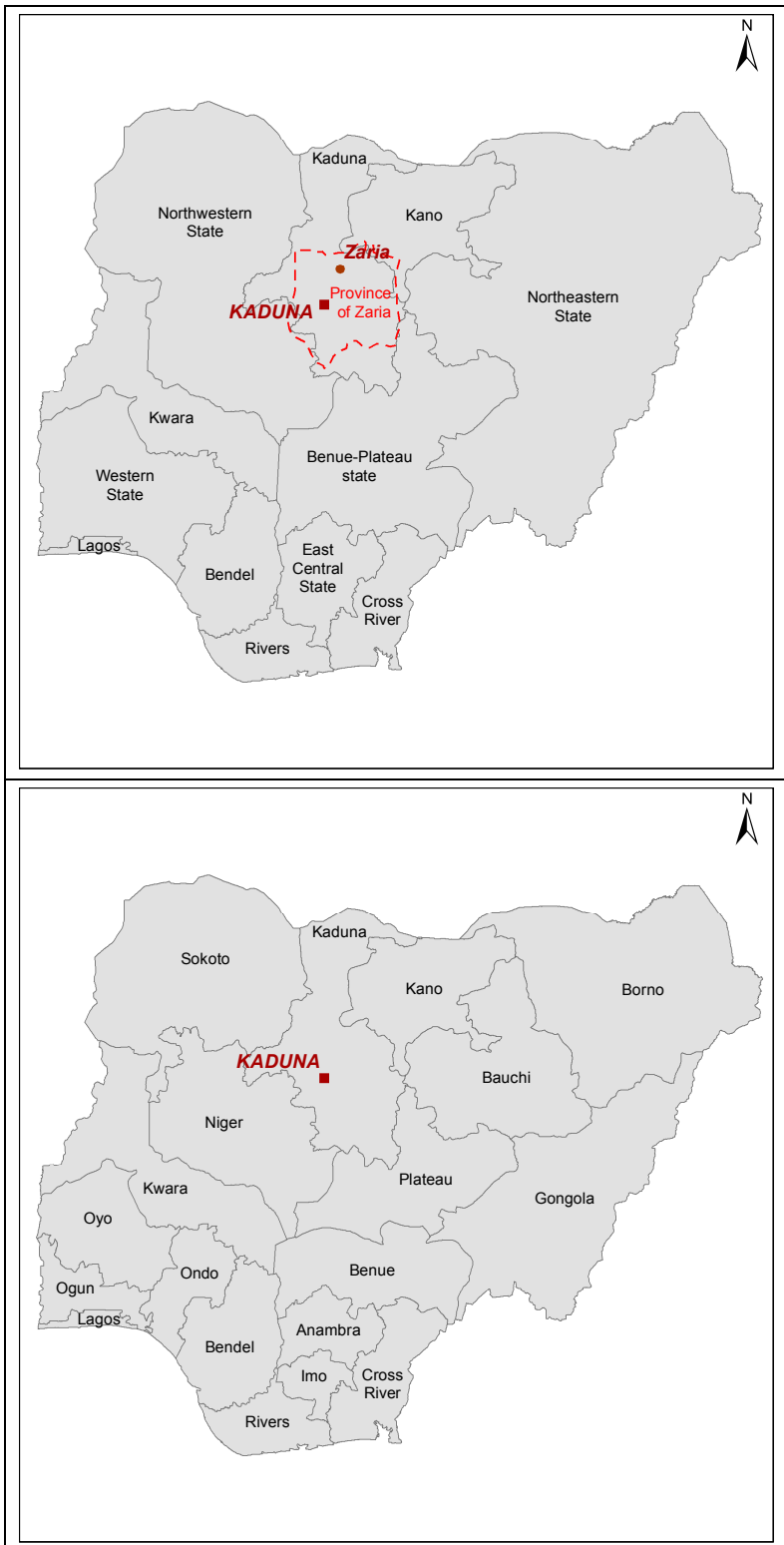


Figure 4.3: Map of Nigeria's states in 1967-1976 (top) and in 1976-1987

**Political reform 1976-79**

In 1976 the new military regime instituted the Local Government Reform, described as ‘one of the most important legacies’ of the First Military Era (onlinenigeria.com, no date). The reform established local governments as the third tier of government, after the federal and state levels, entitled to statutory allocations from both federal and state governments. The reform had several objectives aimed at repositioning local government for effective service delivery and participatory democracy in the local areas (Wilson, 2013); and resulted in the creation of more than 300 local governments. Abuja was designated the new Federal Capital Territory although the capital was not moved from Lagos until 1991.

During this period of radical and progressive reform the groundwork was laid for a new American style presidential constitution and the Land Use Decree of 1978 later to become the Land Use Act of 1990 became the new basis of land governance in Nigeria (see Chapter 8).

**Box 4.1: Aims of local government in Nigeria**

The Federal Government of Nigeria Local Government Reform of 1976 recognised Local Government as a separate tier of government with the following aims:

- To make appropriate services and development activities responsive to local wishes and initiatives by devolving or delegating them to local representative bodies.
- To facilitate the exercise of democratic self-government close to the local levels of our society and to encourage initiative and leadership potential.
- To mobilise human and material resources through the involvement of members of the public in their local development.
- To provide two-way channel of communication between local communities and government (both state and federal).

From 1976 a local government was intended to have distinct responsibility for managing its own finance through internal generation of revenue and complemented with allocation from Federation Accounts and 10% share of state governments’ internally generated revenue. The 1999 Constitution guaranteed the system of Local Government by democratically elected Local Government Councils and that every State shall ensure their existence. Under the Constitution local governments are expected to offer a wide range of services, collect revenue from the transactional services, and formulate economic plans and development schemes for their area of operation

*(Source: Garba, A M and Eze, C (2007) Kaduna State Local Government Reform Planning, Hemel Hempstead: HTSPE/DFID)*

**Second Republic 1979-83 and military rule to 1999**

In 1979 Nigeria returned to civilian government rule, electing Sheu Shagari as President of the Second Republic. However, by the end of 1983, the civilian government was overthrown by a military coup led by Major-General Muhammadu Buhari.

The constitution of the Third Republic was drafted in 1989, when General Babangida, the military Head of State, promised to terminate military rule by 1990 – a date which was subsequently pushed back to 1993 when Babangida annulled the election of Abiola.

Under the Babangida Administration (1985-1993) two more states were created in 1987, Akwa Ibom and Katsina, dividing the old Kaduna State in two and further reducing the city of Kaduna’s political significance. In 1989 the government instituted 149 new local government areas; and two years later another nine new states and one hundred forty new local governments were also created. Nigeria thus became a thirty-state federation with 589 local governments (Adeyemi, 2012).<sup>12</sup>

In 1993 General Sani Abacha led a coup d'état which overthrown President Shonekan and his government. Under Abacha regime (1993-1998) six more states were created in 1996 (Ojo and Adebayo, 2008) and Nigeria became a federation of 36 states, a federal capital territory (FCT) and 774 local government areas (Ononugbo et al., n.d.)



<sup>12</sup> Different authors indicate different numbers here



Figure 4.4: Map of Nigeria's region in 1987-1991 (top) and in 1991-1996

#### Fourth Republic 1999 to date

Nigeria regained democracy in 1999 when it elected Olusegun Obasanjo, the former military head of state, as the new President of Nigeria. This ended almost 33 years of military rule (from 1966 until 1999), excluding the short-lived second and third republic (1979 to 1983) (Onianwah, 2008).

From 2007 to 2010 Umaru Musa Yar'Adua was head of state, followed by the government of Goodluck Ebele Azikiwe Jonathan from 2010 to 2015. General Muhammadu Buhari of the main opposition party, the All Progressives Congress, has been recently elected in peaceful and transparent elections on 28 March 2015, to continuing with the longest democracy period in the country's history (IFES, 2015).



Figure 4.5: Map of Nigeria's region from 1996 to present

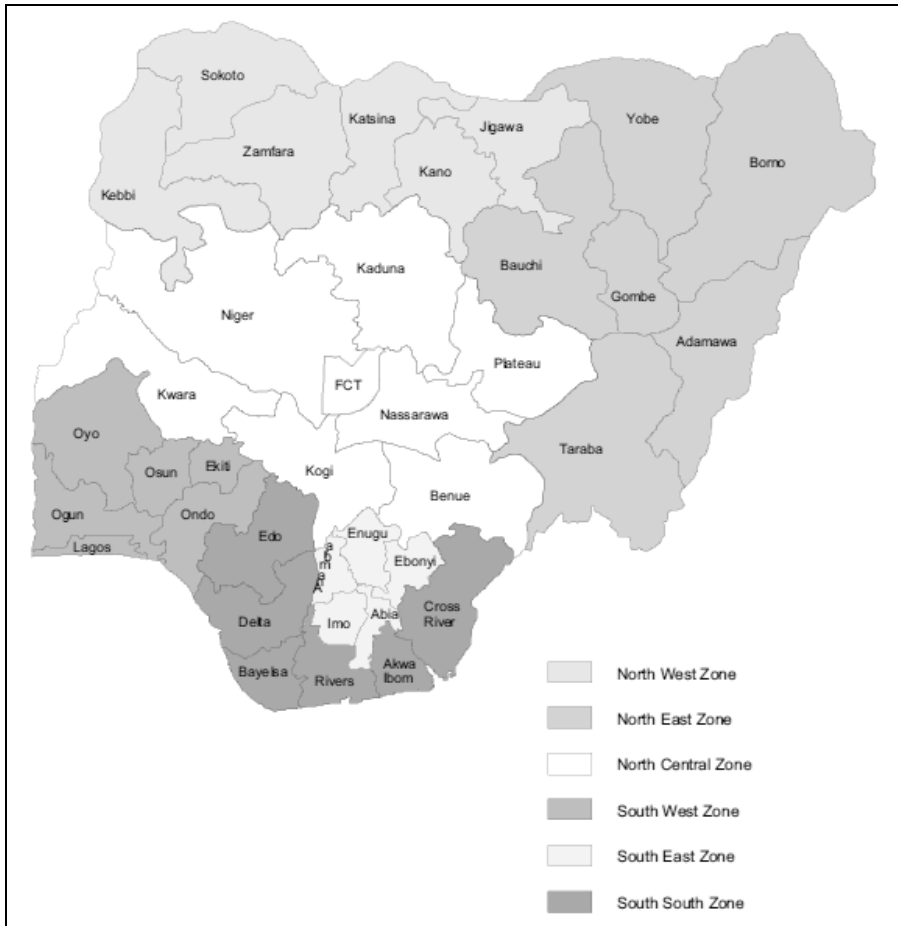


Figure 4.6: Map of Nigeria’s six geo-political zones

## 4.4 CURRENT STRUCTURE OF GOVERNMENT<sup>13</sup>

As described, Nigeria has moved from three regions at independence to four regions in 1963, 12 states in 1967, 19 states in 1976, 21 in 1987, 30 states in 1991 and 36 states in 1996. In 1991 the federal capital was moved from Lagos to Abuja in the new Federal Capital Territory (FCT) in the centre of the country.

Nigeria’s government bureaucracy is divided into three tiers: federal, state and local, each with different responsibilities assigned under the Constitution (see Table 4.1). That state and local governments share some responsibilities (such as primary education and health care) allows for potential disparities across LGAs and states, as it is at the discretion of state governments to decide the extent of LGA participation in their shared functions (Khemani, 2001). In the health sector, there has been consistent decentralisation to LGAs but primary education, water and sanitation ‘are characterized by considerable overlap and confusion with regard to the sharing of responsibilities between the three tiers of government, often at

<sup>13</sup> From: Kaduna. The Master Plan Revised 2010, Chapter 3

the expense of undermining LGA responsibility and accountability' (Khemani, 2001).

| Tier of Government     | Expenditure Category  |
|------------------------|---|
| Federal only           | Defence; shipping; federal trunk roads; aviation; railways; post, telegraphs and telephones; police and security services; regulation of labour, interstate commerce and telecommunications; mines and minerals; social security; insurance; national statistical system; national parks; guidelines for minimum education standards at all levels; water resources affecting more than one state |
| Federal-state (shared) | Antiquities and monuments; electricity; industrial, commercial and agricultural development; scientific and technological research; statistics and surveys; university, technological and post-primary education; health and social welfare   |
| State-local (shared)   | Primary, adult and vocational education; health services; development of agriculture and non-mineral resources  |
| Local government only  | Economic planning and development; cemeteries and burial grounds; homes for the destitute and infirm; markets; sewage and refuse disposal; roads, street lighting, drains and other public facilities   |

Table 4.1: Expenditure responsibilities of different tiers of government (Source: Khemani, 2001)

### State and local government finance

The country's 36 States (and Abuja FCT) and 774 Local Government Areas are largely financed by statutory allocations from the Federation Account, which derives principally from sales of crude oil. Yet despite fairly generous allocations to Federal, State and Local Governments, Nigeria is considered a 'poor' country, in terms of the living conditions of the ordinary people (Max Lock Consultancy Nigeria et al., 2015).

Nigeria operates a system of fiscal federalism with the allocation of tax-raising powers and expenditure responsibilities between the different levels of governments (Sunday, et al 2014). It includes the system of transfer or grants through which the federal government shares its revenue with state and local government as set out in the 1999 Constitution of the Federal Republic of Nigeria. This provides for statutory allocations of public revenue to local government councils within the state, which is a main source of revenue to the local government.

This has been periodically reviewed upward to increase their revenue base. In 1979, the statutory allocation to local governments was 10% of the Federation Account, reviewed to 15% in 1991 and 20% in 1992. The allocation to Federal Government has fallen slightly from 55% in 1981 to a

current level of just over 52% while the allocation to state has fallen from 30% in 1981 to now nearly 27% (Ibid.)

The high dependence on oil revenues (currently 70% of government revenue and falling because of the oil price slump but previously much higher) (Magnowski, 2014) means that all levels of government suffer from revenue stream volatility in line with global market prices for oil. This can have a severe impact on both current and capital expenditure and related infrastructure investment projects.

The creation of the country's 36 states (and Abuja FCT) and 774 local government areas (LGAs) has satisfied some but not all the demands of different ethnic and religious groups for greater self-determination (Ukiwo, 2003).

Some argue that 'over dependence' on statutory allocations from both the state and federal governments, deliberate tax evasion by the local citizenry, creation of nonviable local government areas, differences in the status of local governments in terms of the rural–urban dimension, and inadequate revenue and restricted fiscal jurisdiction have all led to unsatisfactory and overly unequal economic development. Effectively, the financial allocation to local government is controlled by the State Government and this is a major source of their current weakness (MLCN 2015).

## 4.5 DIFFERENCE AND DIVISION IN KADUNA STATE

Kaduna State is populated by more than sixty ethnic groups with Hausa Fulani as the major group (Hayab, 2014; cited in OMICS, n.d.). A large proportion of the smaller ethno-linguistic groups, sometimes referred to as the 'South Kaduna minority ethnic groups', are concentrated in the southern part of the state.<sup>14</sup> Although there are no official data, according to some estimates, up to 40% of the population of the city of Kaduna may be Christian (Maier, 2000) and more than 50% of its current population live in the majority Christian Kaduna South and Chikun LGAs.

Historically pagan, the southern Kaduna tribal groupings mainly converted to Christianity during the British colonial occupation. As a result, the move towards instituting Sharia law at state level following the return to democracy in 1999 stoked historical tensions in that part of the state. Despite its hitherto record of ethnic diversity and relative integration, this boiled over into deadly inter communal riots in the city of Kaduna itself in 2000, in which at least 2000 people were killed (Astill, 2002; Human Rights Watch, 2003). 'Some commentators have described the 2000 Kaduna riots as the single worst outbreak of violence in Nigeria since the 1967-70 civil war.' (Human Rights Watch, 2003).

Twelve out of Nigeria's thirty-six states have Sunni Islam as the dominant religion. Following the return to democracy, the governors of those states

<sup>14</sup> See, for example [http://www.ethnologue.com/map/NG\\_02](http://www.ethnologue.com/map/NG_02) - a map showing the multiplicity of ethno-linguistic groups in Southeast Kaduna State.



decided to have Sharia courts as well as customary courts (U.S. Department Of State, 2008). Sharia was introduced during the years 2000-1, despite condemnation from President Obasanjo that this was unconstitutional (BBC News, 2000). Nine northern states instituted Sharia, whilst three, Kaduna, Niger and Gombe, also instituted Sharia in some parts with large Muslim populations

In the riots involving Christians and Muslims in Kaduna in February and May 2000, much of the city was devastated and at least 1,000 people died, probably nearer 2,000 and possibly as many as 5,000 according to some reports (Human Rights Watch, 2003). Following this, State Governor Mohammed Ahmed Makarfi decided to introduce Sharia courts into the predominantly Muslim areas of the state, covering religious and family matters, and customary courts remained for predominantly non-Muslim areas where sales of alcohol were not restricted.

Subsequent riots in Kaduna in 2002 over the decision to host the Miss World contest in Nigeria (later revoked) intensified inter-communal tensions and the trend towards greater segregation of the city along north-south, Muslim-Christian lines (Human Rights Watch, 2013). Unfortunately, the movement of numbers of people from north to south and vice versa has only gathered pace in recent years with the actual and perceived threats to Christian communities in the north of the city from Boko Haram terror attacks. Although across the north and central regions such attack have become increasingly indiscriminate, early Boko Haram attacks were focused on churches with a deadly attack on a church in Kaduna on Easter 2012 killing at least 50 people (Kay and Hazzad, 2012). A second attack occurred later that year when the terrorist group carried out a series of attacks in Kaduna state, bombing three churches in Kaduna State (two attacks in the nearby city of Zaria and one in Kaduna city) (BBC News, 2012).

The move towards the introduction of Sharia law in the modern era dates back to the period of the second republic (1979-1983) whilst political hostility to Emir of Zazzau's writ in the southeastern corner of Kaduna State has more ancient origins. According to Blench et al (2006) resentment against emirate rule formed basis for political manipulation of religion by the elite. Quoting James (1997): In the colonial period 1903-1960 'colonial authority was super-imposed on the Emirate through conquest. Through its Indirect Rule Policy the colonial administration legitimized the Native Authority System. However, for Southern Zaria communities this was 'merely a means of sanctioning and legitimizing the imposition of alien forms of control.'

The Emirate System of Zazzau rested on the subordination of southern Kaduna (then Zaria Province) peoples 'under the control of resident district chiefs from Zaria posted to Hausa trading colonies and the 'duplication of the Zaria hierarchical model at the district, village and hamlet levels.'

As James further notes: 'In the post-Independence era, it proved impossible for the Southern Zaria peoples to entirely shake off the influence of Zazzau Emirate and this pre-colonial slaving emirate became the basis for the modern Kaduna State, bringing together entirely incompatible groups. The history of Southern Zaria has largely been one of greater pressure for more

ethnically delimited LGAs and for the creation of chiefs reflecting the large peoples.’

According to Suberu (2001) between 1946 and the 1976 local government reform, there were violent demonstrations by the Katafs and related groups in Southern Zaria province over aspects of the emirate system, particularly the headship of the Fulani ruling families over predominantly non-Fulani districts (Suberu, 2001; quoted in Ullah, n.d.). Suberu lists the Kafanchan Crisis of March 1987 and the Zangon Katab riots of February and May 1992, and links the associated tensions to the relative underdevelopment and sparse population of southern Kaduna state (Suberu, 2001, p132).

By the 1980s, these tensions took on religious aspect of Muslim versus Christians. It is argued that the expansion in the number of states from 19 in 1976 to 30 in 1991 undermined the former regional basis of Nigerian politics, especially for the so-called ‘northern oligarchy’ (Ibrahim, 1989). Suberu notes that ‘despite periodic controversies over the status of Shariah law, religion was never explicitly recognized as a politically salient element of Nigeria’s federal character until relatively recently’ (Suberu, 2001).

The former large regions of Nigeria made it difficult for religious, ethnic, linguistic and regional diversity to find a political expression whilst the political leaders at the time were keen to avoid religious polarization. Ibrahim (1989) argues that the ruling classes, whose power and wealth had been based on exploiting regionalist politics, needed to find new ways to mobilize support that ‘since the Sharia debate of 1978, the northern oligarchy has increasingly come to use religion as a tool to forge a new hegemonic coalition’ (Ibid).

The ethnic and religious tensions emanating in particular from this part of Kaduna State have not gone away. Nigeria’s 2014 National Conference recommended the creation of 18 new states including Gurara State, to be created out of Kaduna State, comprising Sanga, Jama’a, Jaba, Kargako, Kaura, Zango Kataf, Kachia, Kajuru, Chikun, Lere Local Governments (Ayedun, 2014) – the greater part of southern Kaduna State including Chikun LGA which currently hosts more than a quarter of the population of Greater Kaduna and is one of its most rapidly growing components.

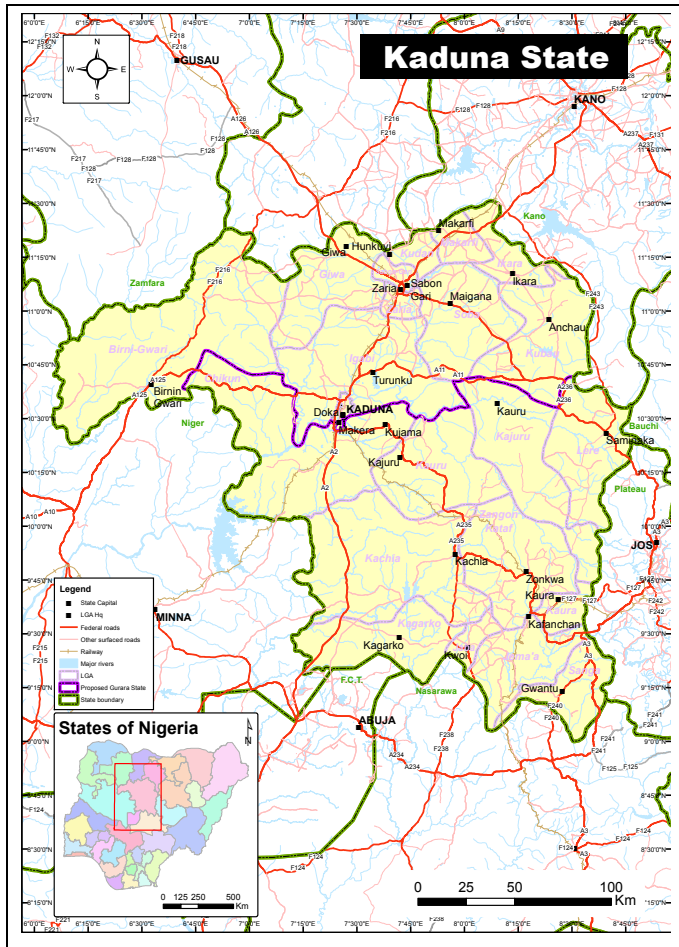


Figure 4.7: Gurara State in southern part of Kaduna State as proposed in the Nigeria’s 2014 National Conference

Apart from some spill over from the Zangon Mataf conflict in 1992, Kaduna city itself experienced little in the way of violent ethno-religious crises until the early months of 2000. Abdu and Umar (2002) argue that ‘unlike the ancient of northern Nigeria, such as Zaria, Sokoto, and Kano, where ‘indigenous’ communities are separated from ‘settlers’ lasting interpenetration across ethnic and religious lines (was) evident in Kaduna.’ While this ‘lasting-interpenetration’ was certainly not there in the original colonialist plan for city and is becoming somewhat threadbare in recent times, there is little doubt that by the mid 1960s when Max Lock and Partners were drawing up their plan, and in the few decades that followed, that Kaduna had taken on more of the character of an integrated, ‘modern’, multicultural city.

The mass in-migration primarily from across the north and central regions but from all corners of Nigeria accompanying the industrial growth of the city, clearly played a major part in this (see Chapters 6 and 7). This dated from 1956 when the first textiles factory was established, but continued well into the 70s and 80s partly spurred by the federal reorganization in 1976 (and indeed a on a more segregated and much lesser scale with the subsequent collapse of industry, on into the present day). Over time, this large in-migration blurred the lines between new settlers and indigenous

communities and inter-marriage between communities fostered kinship ties across ethnic and religious differences (Okpanachi, 2010). Most enlightened commentators recall this former period with regret.

Although there is no direct evidence to support it, the mass unemployment and related social discontent caused by the economic downturn in the 1980s and subsequent de-industrialisation into the 1990s was certainly a contributing factor. Reflecting the situation in Nigeria as a whole, religious difference remains a defining feature of Kaduna’s politics, with an overriding demand to demonstrate even-handedness in decisions that affect development and service delivery in the city.

However, despite the ongoing trends towards spatial polarisation along religious lines, the city continues to work as a single economic unit and it remains the case that, from a simple economic and social perspective, Metropolitan Kaduna can only work as integrated and cohesive spatial totality.

### Conclusions

This chapter has set out the political, institutional, geographical, cultural and ethnic context for the development of Kaduna which is critical to understanding the both its origins as a political capital in the context of Nigeria’s founding and administration as a British colony and the changes it has undergone post independence. The different political epochs have clearly framed Kaduna’s development and status within the country as whole.

These are summarized as follows:

|                                  |           |  |   |
|----------------------------------|-----------|--|---|
| Colonial:                        | 1885-1960 | Northern and Southern Provinces and Lagos. Federal system of three regions from 1954<br>Constitution gradually becoming self governing   | Kaduna as capital of the Northern Province and Northern Region                        |
| Independence and First Republic: | 1960-1966 | Federal Republic in 1963. Mid-Western Region added.  | Kaduna as capital of the Northern Region  |
| Military rule:                   | 1967-79   | 12-state Federation created in 1967. Biafra War 1967-70. 1975 Murtala Mohammed followed by Obasanjo 1976. Expansion to 19 states. Local government reform.<br><br>1977 Constituent Assembly elected. 1978 Constitution (Washington | Kaduna as capital of North Central State (1967-70) and Kaduna State including Katsina |

model) and Land Use Decrees of 1978.

|                  |              |  |   |
|------------------|--------------|--|---|
| Second Republic: | 1979-83      | Shagari regime   | Kaduna as capital of Kaduna State including Katsina |
| Military rule:   | 1983-98      | Buhari 1983-5; Babangida 1985-93; Abacha 1993-98; 36 states in 1996.                                     | Kaduna as capital of a reduced Kaduna State         |
| Fourth Republic: | 1999 to date | Obasanjo 1999-2007; 1999 Constitution and Land Use Act. Yar'Adua 2007-10; Jonathan 2010-15; Buhari 2015- | Kaduna as capital of Kaduna State                   |

This can be seen partly as a ratcheting downwards, with ethnic and religious division weakening the city's status still further. Yet at the same time the weight of history means that Kaduna maintains its residual momentum as a place of great symbolic and actual political importance in the Nigerian context.

Observers have noted that in many ways Kaduna is a microcosm of Nigeria as a whole, and the recent unfortunate trend towards polarization of the city along religious lines and the ongoing efforts to counter this are reflective of broader trends in Nigeria as a whole.

# 5. THE REGIONAL PATTERN OF URBANISATION – KADUNA’S PLACE IN NIGERIA’S URBAN SYSTEM

## Introduction

This chapter analyses regional trends in Nigeria’s urban and economic development including the on going wealth shift to the south of the country. It explains the role that the development of the national transport and power infrastructure has played in it and the emergence of urbanising economic corridors in Nigeria along the lines predicted by John Friedmann’s 1966 model of dynamic core-periphery development. The chapter outlines the pattern of urbanisation in Nigeria, the shifting place of Kaduna within the national urban hierarchy and the importance of policy decisions regarding the political administration of the country on that hierarchy. The underlying theme is one of an urban system comprising a continuously evolving hierarchy of cities and emergent urban economic corridors linking these cities along the main transportation links.

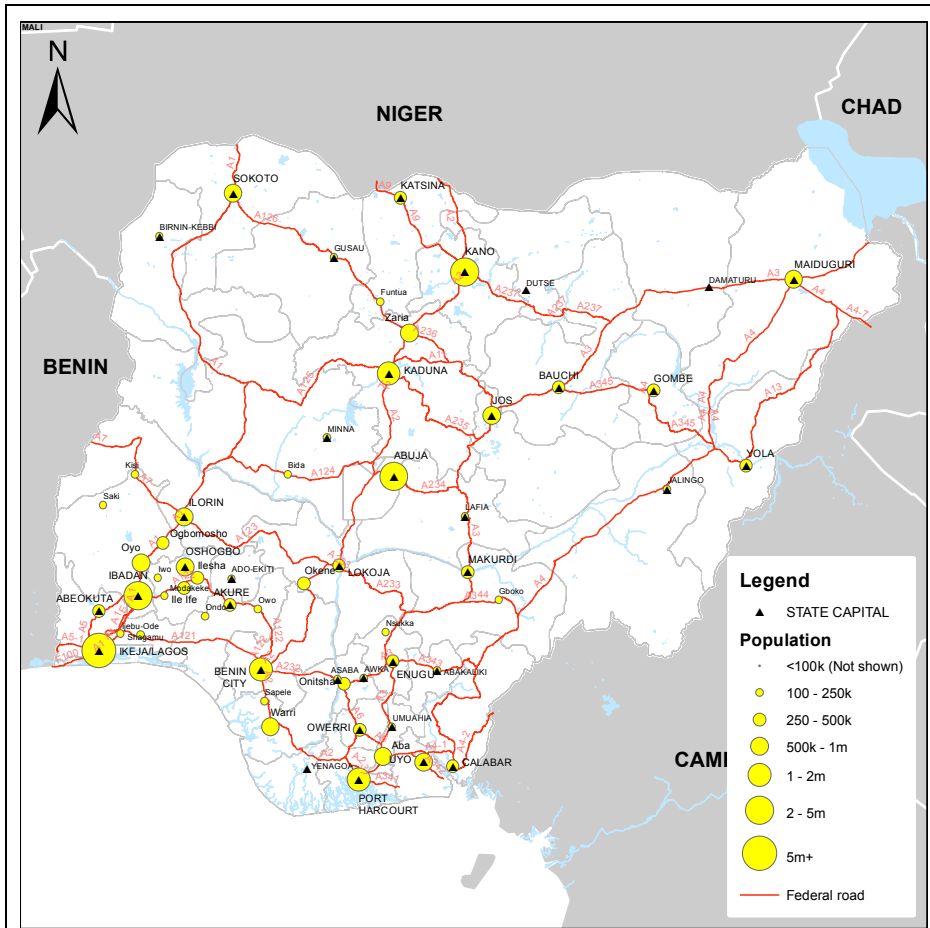


Figure 5.1: Nigeria: States and state capitals and the principal transport connections

## REGIONAL INEQUALITY

Regional inequality is a particular problem for Northern Nigeria, where Kaduna is located. Apart from the political/governance challenges, the northern cities, with the current transport links, are too far from the coast to benefit directly from international commerce and oil and have weak and thinly developed hinterlands. A project to create an ‘inland port facility’ in or near Kaduna is still on the drawing board and dependent on decisions about the railway network that are still politically uncertain.

Figure 5.1, mapping GDP per capita by Regional Zone at Purchasing Power Parity, gives a clear image of regional inequality in Nigeria as it was in 2007.<sup>15</sup> The South-South Regional Zone (including the oil rich Niger Delta region) was the area with the highest income, about 1.7 times the national average. The South East is nearly 40% above the national average followed by the South East just above the national average. The remaining regional zones are all below the national average; with the North Central Regional

<sup>15</sup> The maps created by Dominic Gusah and reproduced here and much of the text draws on a 2012 Max Lock Centre working paper on Urbanisation in Nigeria by Tony Lloyd-Jones. Parts of this paper were reproduced in the Effective Cities Conceptual Framework for the Nigeria infrastructure Advisor Fund (2013)-



Zone at substantially better off than the North West and North East at slightly above half the national average.

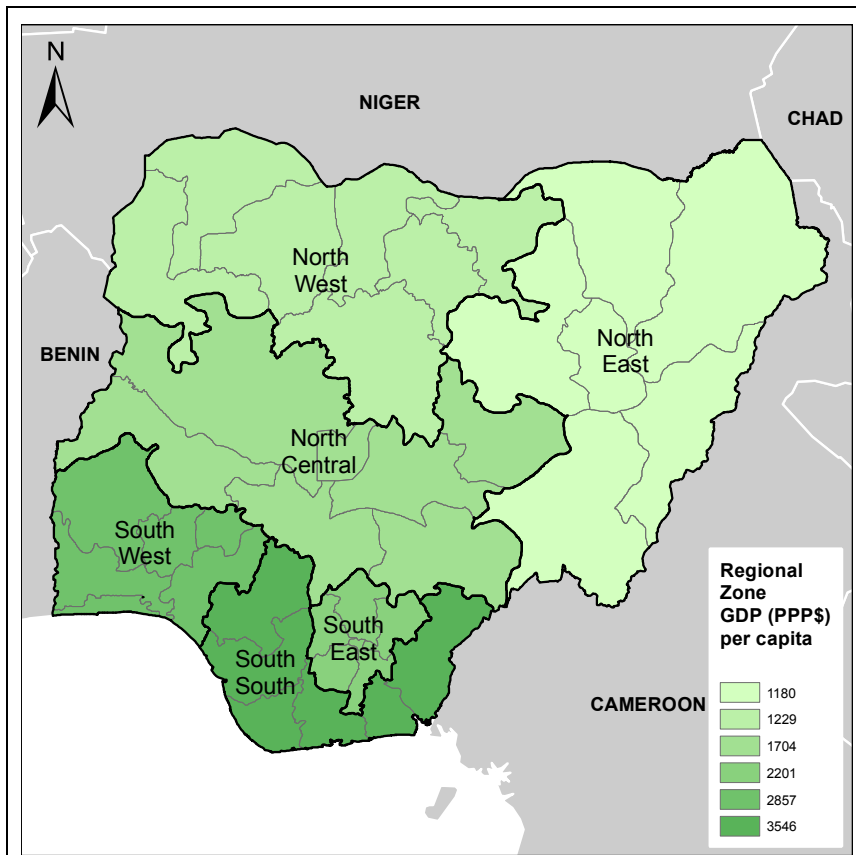


Figure 5.2: Nigeria: Per capita GDP (\$US/PPP) by Regional Zone in 2007

Figure 5.3, mapping GDP per capita by same 2007 data, gives a finer grain view of geographical income equality in Nigeria. Lagos and 3 states in the South-South (Rivers, Delta and Edo) and one in the South East (Imo), together with FCT, form the top rank. The second rank of states, with GDPs above the national average, are all in the South West and South-South, together with Abia in the South East. Kaduna State lies in the third rank, below the average, the only state in North West Regional Zone in this category together with a set of adjacent states in the North Central Regional Zone.

The poorest states are concentrated in the North West and North East Regional Zones, with a belt of relatively low-income territory across the south central region of the country encompassing Ekiti, Kogi, Ebonyi and Enugu. The poorest states are all in the North West and North East with less than half the national average GDP at Purchasing Power Parity.

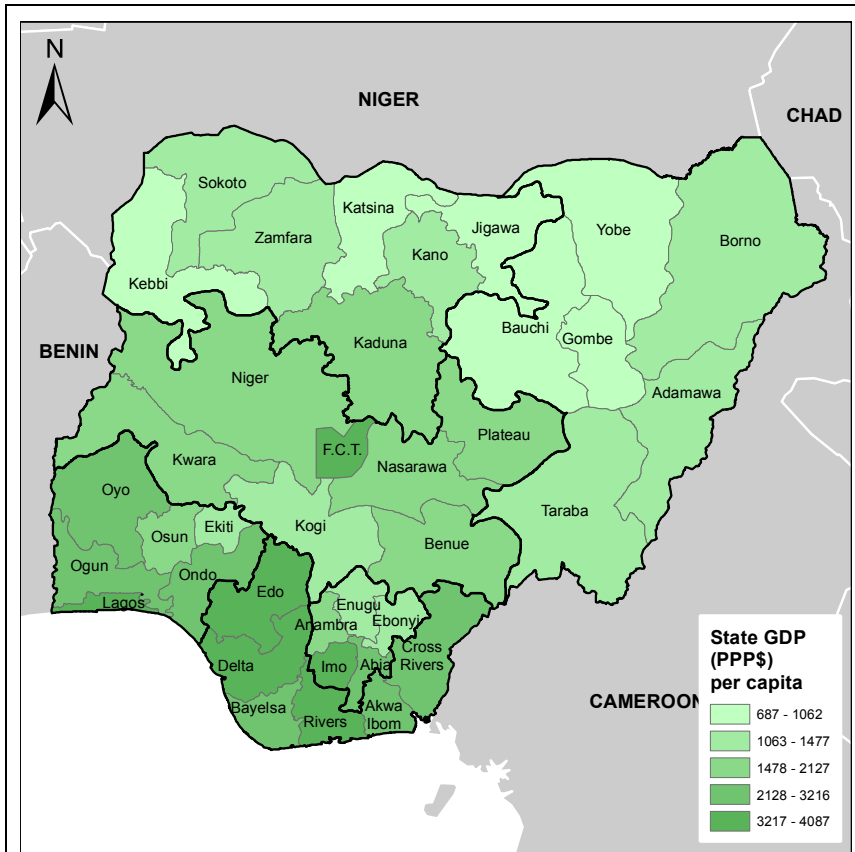


Figure 5.3: Nigeria: Per capita GDP (\$US/PPP) by state in 2007

## 5.2 KADUNA’S PLACE IN NIGERIA’S URBAN SYSTEM 1965-2015

### The regional pattern of urbanisation

Nigeria’s urbanisation, as has already been described, is intimately bound up with its history and the close interplay of its natural capital with political and economic factors. Ancient kingdoms and trading routes, the inroads of European colonialism and of Islam and Christianity, tribal, cultural and ethnic allegiances and the political dynamics of the post colonial era have all left a strong mark on the regional structure of Nigeria’s cities, as they exist today.

As noted in the theoretical literature review, recent urban economic theories have focused on the role of economies of, and increasing returns to scale, with ‘agglomeration economies’ contributing to the relative economic success of many cities (and relative decline of peripheral regions). Increasing returns to scale are also a central feature of the ‘New Economic Geography’ and the manufacturing for the ‘home market’ effect, where an industry bases itself in the region where most of its products are consumed in order to minimize transportation costs. This goes some way to explaining why the countries with very large populations are doing well as emerging economies but it also implies that instead of spreading out evenly, production will tend to concentrate in densely populated regions, or cities, with higher levels of disposable income. The ‘core-periphery’ model ‘can

emerge from the interaction of increasing returns, transportation costs and demand' (Krugman, 1991).

This phenomenon is clearly evident with the concentration of productive output in the south, especially in Lagos and the movement of productive capacity from cities like Kaduna to Abuja. Those economic regions with the highest spending power and most production will be more profitable and will therefore attract even more production.<sup>16</sup>

Urban geographers have long used a core-periphery model focused mainly on localisation factors at the city-region rather than overall urbanisation at the national level. Their explanation of what is currently termed 'mega urban regions' relies more on the centrifugal forces at work in the principal, central city in the region, and diminishing returns associated with business location within it. These are associated with increasing congestion, property rental, labour and service costs (to a large degree driven in turn by the level of rent). This results in more concentration of high value commercial activities in the central city and the exodus of other economic activity, together with new investment, initially to the periphery and subsequently to nearby secondary towns and cities. This phenomenon tends to explain why the growth of urban agglomerations tends to slow down, as they get larger, while secondary towns and cities in the region experience a spurt of growth.

#### **Spatial development of an urban system through a core-periphery model**

John Friedmann's described his early core-periphery model of the development of an urban system thus (Friedmann, 1966 quoted in Kalarickal, 2007):

'The core-periphery model basically features an amount of economic activity in one main area surrounded by a remote area of less dense activity. The concentration of this economic activity in one area (usually a city centre) allows for the growth and expansion of activity into other and surrounding areas because of the cost minimizing location decisions of firms within these agglomeration economies sustaining high productivity and advantages which therefore allow them to grow outside of the city (core) and into the periphery. A small decrease in the fixed cost of production can increase the range of locations for further establishment of firms leading to the loss of concentration in the city and possibly the development of a new city outside the original city where agglomeration and increasing returns to scale existed.'

Friedmann suggests the system develops in four stages:

- Stage 1 (Pre-industrial): An agricultural society, with low mobility, localized economies and a small scale, scattered settlement structure. Large parts of rural Nigeria remain in this condition.

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<sup>16</sup> As Krugman (1991b) puts it, 'If there is one single area of economics where path dependence is unmistakable it is in economic geography – the location of production in space.'

- Stage 2 (Transitional): A dominant centre emerges as a growth pole whilst overall mobility remains low. Most city regions of Nigeria are in this transitional state, including Kaduna.
- Stage 3 (Industrial). With economic growth and diffusion other growth centres appear, with deconcentration associated with increasing production costs. There is increased economic interaction between the towns and cities in the urban system associated with the development of inter-urban transport infrastructure.
- Stage 4 (Post-industrial). As the urban system becomes fully integrated economic activities are more spatially specialised 'with intense flows along high capacity transport corridors.' (Ibid)

Stage 3 development is becoming predominant around the Lagos Mega-city. Low cost satellite towns have also emerged on all sides of the Federal Capital, Abuja while a number of cities in the South South and South East zones have close economic linkages. It is also becoming evident that Kaduna, having initially lost out economically to Abuja, is now beginning to benefit as a major city with lower costs in the vicinity of the capital and good road links. When complete the Abuja-Kaduna rail link, close to completion, should accelerate this trend.

#### **Nigeria's three principal urban regional clusters**

Figure 5.4 highlights the three major large-scale regional urban clusters that characterize the historical growth of urbanization in Nigeria. These have their origins in different political eras and correspond with Nigeria's geopolitical major fault line between the North, South West and South East. Seen 'close up', more subtle geographies emerge. Lagos is a postcolonial city, the nation's commercial centre and its only megacity. Ibadan and the multiple cities of Yorubaland are an ancient city system but their close proximity is creating a wider urban region with considerable market power. The South West, with its concentration of multiple cities and cultivated farmland contains early 27 million people in one of Nigeria's smaller regional zones.

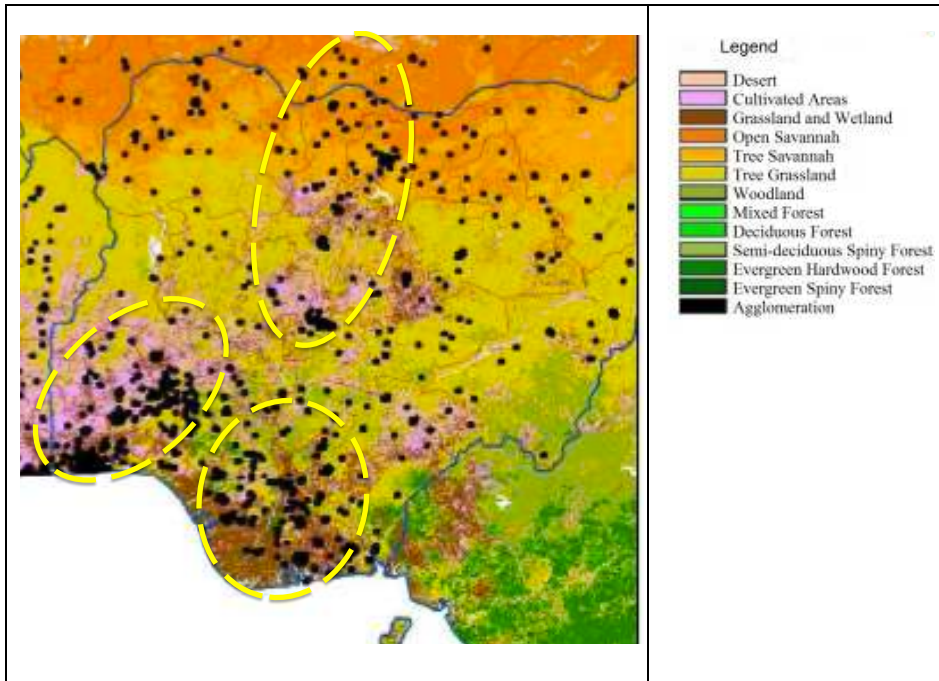


Figure 5.4: Nigeria's towns and cities and the ecological regions (Urban areas shown as block dots; cultivated areas are shown in pink, wider urban belts or clusters indicated with a yellow broken line) (Source: adapted from Africapolis, e-Geopolis, 2007)

The main south eastern city cluster forms a belt going north from Port Harcourt encompassing cities such as Aba, Owerri, Onitsha as far as Enugu in the north, taking in states that form part of the separate South-South (Rivers) and South East Regional Zone (Abia, Imo, Anambra and Enugu) groupings with about 20 million people. From the point of view of the core urban region in this part of Nigeria, states like Ebonyi in the South East and Cross River, Akwa Bom and Delta in the South-South are peripheral, Edo is endowed with a good sized metropolis in Benin City which forms a nascent corridor with Sapele and Warri in Delta State to the south east.

**Growth of cities on major economic corridors**

Within these larger clusters are a number of existing urbanising economic corridors with axes that follow the principal connecting highways. Kaduna lies at the fulcrum of an emerging North-South development axis/economic corridor linking what are possibly now Nigeria's second and third largest urban areas, Kano and Abuja.<sup>17</sup> Kano, links to secondary and market towns in the surrounding agricultural area. It is the North's ancient metropolis, and the gateway commercial capital of the region. The corridor links Kano with Zaria, Kaduna State's second city and seat of the historic Emirate of Zazzau, through Kaduna to Abuja, the Federal capital and Nigeria's fastest growing

<sup>17</sup> At this point in time, three cities vie for second place behind Lagos, which is well established at Nigeria's 'primate city'. These are Kano, which clams the mantle, Ibadan which was once Nigeria's largest city and the urbanised area of which covers more actual territory than Kano, and the rapidly growing Greater Abuja, which with outlying satellite towns beyond the boundaries of FCT, is likely to overtake its rivals in the near future, if not already.

large city, in the North Central zone of the country. Together, the metropolitan core territories of Kano and Kaduna States and the FCT contain about 17 million people (UN DESA, 2011), of which about half live in the major urban centres.<sup>18</sup>

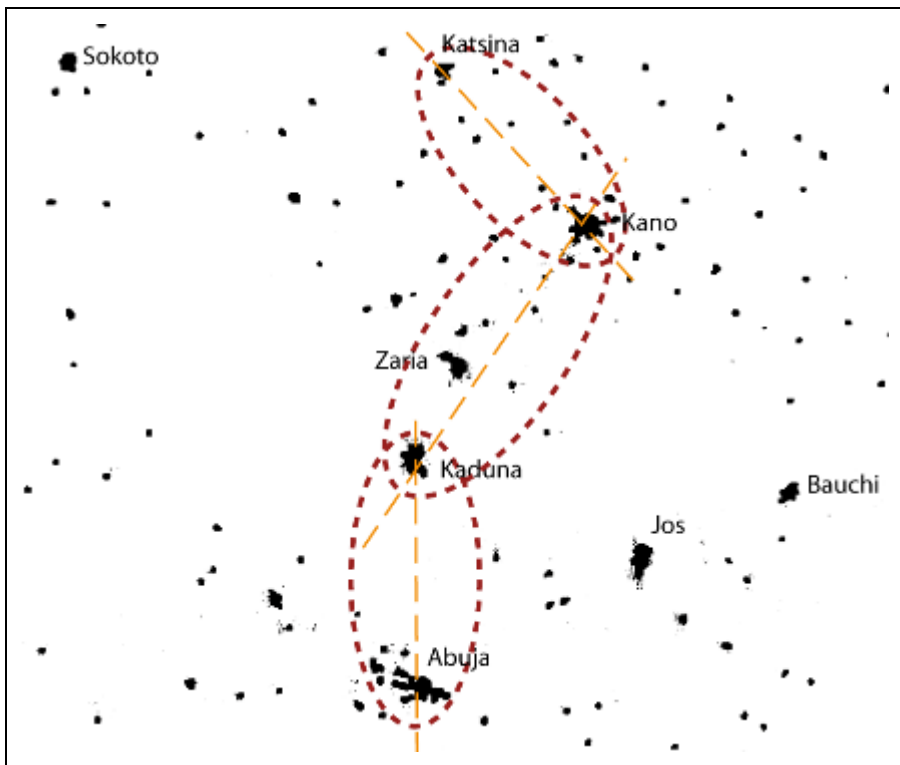


Figure 5.5: Kaduna’s strategic location in emergent urban corridors in the North Centre and W

### **Kaduna place in Nigeria’s urban hierarchy and the rank size principal**

Population size is one method of gauging Kaduna’s country’s urban system with its ranking reflecting the ebb and flow of its regional significance over the past 50 or 60 years. An analysis of its population estimates based on the UNDESA World Urbanisation Prospects 2014 Revision, currently puts Kaduna at eighth position, having risen and fallen in the ranks since the early post Second World War period. As noted in Chapter 7, the UN’s population projections for Kaduna in 2010 and 2015 are certainly under estimates and other estimates, including that based on the 2010 household interview survey and the World Urbanisation Prospects 2011 Revision, put it somewhat higher and probably sitting a place higher in the hierarchy.

According to the UN data, and belying its political importance as the capital of the whole Northern Region, Kaduna was only the 22<sup>nd</sup> biggest city in 1950. However, the subsequent 15 years were the start of its rapid rise in status.

<sup>18</sup> Outliers include Katsina (another ‘gateway’ city) to the north west of Kano which lies on an emergent corridor important trading link with Niger State, Sokoto in the North West, Bauchi in the North East Zone, Jos, Minna and Bida in the North Central Zone and the state capitals of the other North Eastern and North Central Regional Zone states. None of these are close enough to one another to form a workable cluster or corridor, and with the possible exception of Maiduguri and Jos, large enough to function as reasonably significant markets in their own right.



At this time and on into the following decade, Kaduna was Nigeria's among the fastest growing cities of any size and according to UNDESA, the fastest growing during the 5 years leading up to 1965, becoming Nigeria's 10<sup>th</sup> largest city by that date. This rapid growth in population continued until 1990 Kaduna by which time had become the fourth largest city in Nigeria (according to both the 2011 and 2014 World Urbanisation Prospects Revisions). It has retained a strong position since then although now beginning to be overtaken by more southerly rivals. (See Appendix 5.a for a more detailed analysis of Nigeria's historical city ranking by population size).

Lagos, Kano and Ibadan have remained the three largest cities in Nigeria since 1955, Lagos having overtaken Ibadan in size in 1960. The continuing rapid growth of the southern megacity and its rise to unquestioned pre-eminence, means that Nigeria now has an urban hierarchy that begins to resemble a 'rank size' distribution.

According to the 'rank-size' principal in urban geography, subject to various interpretations,<sup>19</sup> the frequency distribution of city populations within a defined territorial limits, usually taken as a country, will be characterized by a single (sometimes more than one) large city, called a primate city, with other cities decreasing in size respective to it but in ever greater numbers.

The mathematical underpinnings of the rank-size rule are disputed by urban geographers, including the relationship to probability distributions, and exceptions to any particular formula are numerous. Wide variations in the way urban populations are defined by different governmental and non-governmental sources undermine any fully scientific approach. Nevertheless, given these limitations, when city populations are mapped against distribution, in most cases where cities are sufficiently numerous, they will follow a descending concave curve that can be approximated to a straight line descending log function.

The logic of the rank-size phenomenon imposes certain constraints on city size depending on how important a city is in terms of its location within the regional economic setting and the overall level of urbanisation within a country. Such hierarchies are seldom fixed and can be highly dynamic in character but common overall structural features broadly reflective of the rank size become established.

Over the long-term divergences emerge, some cities move up the ladder, others fall back, and new entrants appear. There are spurts of growth and stagnation, long term declines and occasional revivals. Political factors have

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<sup>19</sup> As the e-Geopolis Africapolis study describes it, 'as early as 1903, Auerbach noted that when cities in any given territory are classified in descending order of size, the distribution curve is lognormal. In other words, on the graph showing the logarithm of the cities' population against the logarithm of their ranking, the slope of the curve is roughly -1. This rule is related to the laws of probability governing the natural distribution of very large numbers (Pumain, 1982). It was formalized mathematically by Zipf (1941), and is known as the "rank-size" rule... Another model, suggested by Davis (1970), suggests that the distribution of cities according to size follows a harmonic pattern. For example, if the largest city has  $n$  inhabitants, the population of the next two largest will be  $n/2$ , the population of the next four will be  $n/4$ , and so on. As is the case with sound frequencies, the distribution of the size of cities thus follows a harmonic sequence (1/2, 1/3, 1/4).' (e-Geopolis, 2007)



a major impact. Kaduna’s role as a capital of a shifting territorial sub division is a case in point, or the impact of the Boko Haram insurgency in the North East, which has almost certainly affected Kaduna’s recent and on going rapid growth through some of the estimate Nigerian’s 1.5 million people (IDMC, n.d.) displaced by the conflict settling in the city.

| Year | Rank | Population | Year | Rank | Population |
|------|------|------------|------|------|------------|
| 1950 | 22   | 35,000     | 1985 | 5    | 565,000    |
| 1955 | 19   | 53,000     | 1990 | 4    | 785,000    |
| 1960 | 14   | 99,000     | 1995 | 6    | 832,000    |
| 1965 | 10   | 163,000    | 2000 | 6    | 881,000    |
| 1970 | 9    | 211,000    | 2005 | 7    | 933,000    |
| 1975 | 7    | 293,000    | 2010 | 7    | 988,000    |
| 1980 | 6    | 407,000    | 2015 | 8    | 1,048,000  |

Table 5.1: Kaduna’s ranking in Nigeria urban hierarchy according to its population size (UN DESA, 2014)

**Notably, Nigeria’s urban hierarchy and system has been strongly influenced by its increasing political subdivision. Each new state has a new state capital city. Each new governor wants to make their capital city a worthy entrant to the urban landscape and a political showcase, so absorbing a disproportionate part of the state budget, which is so critical to the local economy. As many of these cities are relatively small, commanding relatively small territories and populations, it could be argued they prevent the emergence of much larger and more productive regional centres and shape or distort the urban hierarchy in Nigeria. This will be the subject of future research at the Max Lock Centre on metropolitan governance in Nigeria.**

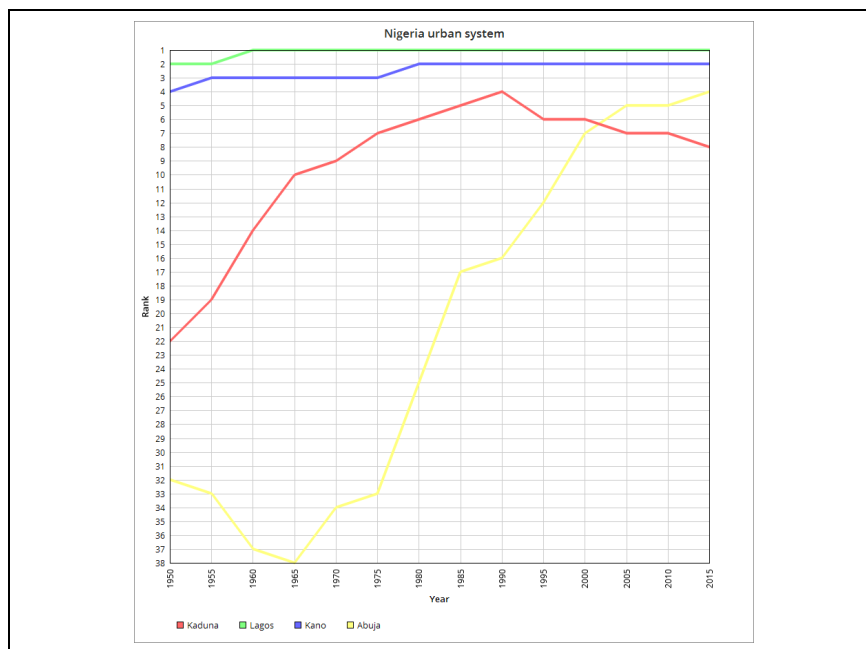


Figure 5.6: Kaduna ranking in Nigeria’s urban hierarchy (based on cities by population size in UNDESA World Urbanisation Prospects 2014)

## 5.3 NATIONAL INFRASTRUCTURE CONTEXT

The regional economic development of Nigeria has reflected the development of its road and rail transport and power generating capacity distribution grid. Until recent decades, Nigeria's infrastructure system had served Kaduna well, enabling its rapid development as an industrial and manufacturing centre in the sixties, seventies and eighties. More recently, however, the strains have begun to tell, particularly in terms of the capacity and reliability of the power supply. The city remains relatively well connected with other major cities by road, though subject to varying degrees of maintenance, while the railway network that was once its lifeline has fallen into relative disuse.

This is particularly true of the road transport system, which is by far the most widely used mode of transport in the country. Of all commodity movements to and from the seaports, at least two-third are now handled by road transport while up to 90% of all other internal movements of goods and persons take place by roads (Onakomaiya, undated cited in Ighodaro, no date).

### **Brief History of Road Development in Nigeria**

According to Anyanwu et al (1997) the history of the modern road transport system in Nigeria dates back to 1904 when Lord Lugard attempted the construction of a mule road linking Zaria and Zungeru in Northern Nigeria. The road was later extended from Zaria to Sokoto, Katsina and Maiduguri (Ighodaro, no date).

An alternative view is put forward by the Stanford Research Institute (1963), which suggests that the growth of road transport in Nigeria was a later development, and did not evolve through the stage of animal-drawn carts. According to this view, roads were not developed until the advent of motor vehicles in the 1920s and 1930s (Ogunbodede, 2008).

In 1925, the central government of Nigeria set up a Road Board. By 1926, H.E. Walker proposed a skeleton trunk road system to link the major administrative centres in the country. 'These roads were designed as a frame upon which the network of secondary roads could be built thus enabling the general road system to be considered as a co-coordinated whole-rather as a jigsaw of small disjointed sections. By 1937/38, the total length of roads maintained by the government rose from 6,160 km (5,875 miles) in 1938/39 to 9,453 km (5,875 miles).' (Ighodaro, no date).

The end of Second World War (1945) actually marked the period when the country was served with adequate network of all season roads for lorry and passenger car traffic. According to Onakomaiya (1978), the roads were designed to serve two major objectives. First, they were meant to extend the commercial hinterlands opened up by the government railways by linking up the nearest urban centres with the major railway stations. The second was to reduce the strains thrown on the inland provinces in the provision of porters for the British colonial officers (Ogunbodede, 2008).

The need to open up the economic and settlement frontiers of the country was the major factor that influenced road network development in Nigeria. This began with the introduction of feeder road services to the Nigerian Railways to link the major railway stations along the Lagos-Kano line with the neighbouring settlements, thereby increasing the supply of export products such as cocoa, palm produce, cotton and groundnuts that were moved to the ports by the railways. By 1960, roads linked all parts of the country, although the network of roads is much denser in the south. (Ogunbodede, 2008).

After the civil war, under the Second National Development Plan, the general policy on transport was to promote coordination and rationalization of investment decisions in transport sector (Federal Government of Nigeria, FGN, 1970). The road development Programme was to focus on the creation of national road network of primary and secondary arteries. The primary roads were those connecting the prominent cities of the country with each other and with the ocean terminals (Lagos, Warri, Port-Harcourt and Calabar) and main border crossing. The secondary road network was to connect important centres within the primary and secondary roads network. The states were to focus principally on minor roads within the primary and secondary roads. (Ighodaro, no date).

The period between 1967 and 1970 witnessed no growth in road network because of the Nigerian civil war whilst, between 1971 and 1975 the Nigerian Government was concerned with rehabilitating the war torn areas (Ogunbodede, 2008).

From 1975 and through the 3rd and 4th Development plans, the military and civilian governments at Federal, state and local government levels embarked on the construction of many roads culminating in the present relatively dense nature of Nigeria's road network (Ogunbodede, 2008). The road improvements strengthened Kaduna's strategic position. And, given the high level of investment in public infrastructure, this was a time that offered a historically rare opportunity to implement the recommendations of the 1967 plan for Kaduna and put the city on the right footing as far as its movement system was concerned.

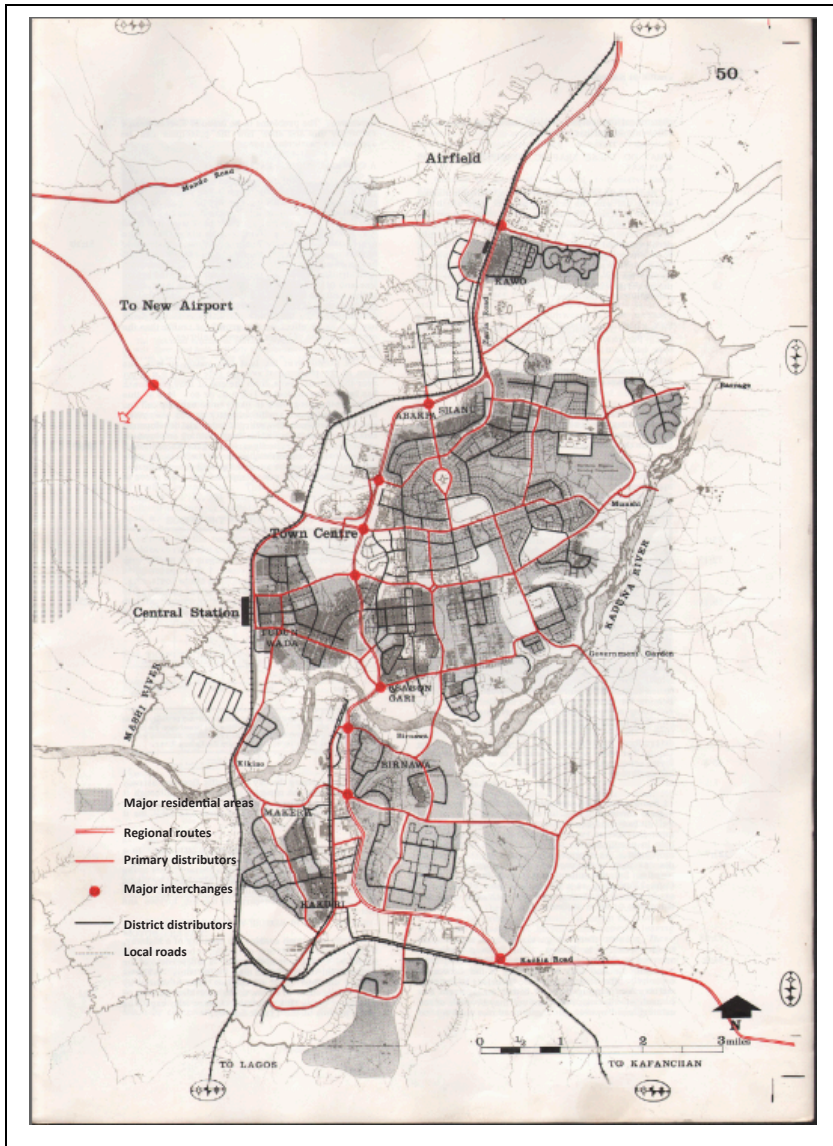


Figure 5.7: 1967 Kaduna Masterplan transport proposal

Instead, the opportunity was lost. The railway was left in its present alignment dividing the city centre from its rapidly growing sub-centres to the west. Instead of establishing Ahmadu Bello way as a civic spine (see Chapter 9), the decision was made, in accordance with the World Bank loan stipulations, to ‘upgrade’ it to a dual carriageway and divide one half of the main commercial street from the other. Thereafter a ‘western bypass’ was constructed, but poorly connected to the rest of the city.

### Current state of the road network

Nigeria has a road density of 0.21 km of road per square km of land area, which compares well with an average of 0.06 km per sq. km. for the West and Central Africa regions combined. The road density for Nigeria is roughly the same as that for South Africa, Mexico, Brazil, Indonesia, and Pakistan.

‘The road network is currently estimated to be 197,000 km, about 18% of it paved. This network carries 90 per cent or more of the internal and cross-border freight of the country. The major traffic generators are the main

towns, state capitals and especially to the sea ports and inland ports.’ (AfDB, no date)

The main issue is the lack of maintenance. Significant portions of the road network are in poor condition, subjecting the process to capacity constraints, with a poor road safety record and weak traffic and safety law enforcement. It is estimated that 40 per cent of the Federal primary road network is in poor condition or worse, and therefore in need of rehabilitation; 30 per cent is in fair condition and in need of periodic maintenance; and about 27 per cent is in good condition (AfDB, no date).

In total, 85% of roads in Nigeria are said to be in bad condition and only 10-15% of more than 160,000 km of secondary and tertiary roads (an average of 4,300 km per state) are paved (Ubandoma Ularamu, National Coordinator of RAMP, quoted in Oyibo, 2011). Local government roads that constitute about 70% of the total (132,000 km) are in the worst state of disrepair.

### **Kaduna State road network**

In terms of transport infrastructure, federal, state and local government roads serve the state ‘but rural roads are few, sparsely located and poorly maintained’ (World Bank, 2008a). Kaduna state is served with 2,820km of trunk federal well-surfaced roads radiating from Kaduna city in five directions: westwards to Tegina, northwards to Kano, eastwards to Jos, southwards to the FCT and south east to Katchia and the Benue River crossing at Makurdi (Kaduna State Government, 2008). There are tarred roads laid by the state government totalling 1,200km.

Under the Rural Travel and Transport Programme of the federal government the World Bank approved the Rural Access and Mobility Project for Kaduna in 2008. This will see the upgrading, rehabilitation and maintenance of 427km of rural roads and 132 river crossings in the state. The project also involves an institutional strengthening, reform and capacity building component (World Bank, 2008a, AfDB, 2013a)

### **Railway development in Nigeria**

By the time of the first Max Lock study the railway was seen as pivotal to Kaduna’s future development. Today, after decades of neglect of the railways, it still remains a possibility that a new ‘railway age’ could herald a turn around in the city’s fortunes.

The history of Nigerian Railway goes back to 1912, when Frederick Lugard merged the pre-existing Lagos government railway and the Baro-Kano railway to become the ‘Nigerian Railway.’ Historians have always posited that that singular act influenced the merging of the Northern and Southern Nigeria Protectorates in 1914. (Osuji, 2013)

Prior to the development of modern highways and airports in Nigeria, railway was the only means to travel efficiently and move goods from one point to another. It also paved the way for the economic development that was witnessed from the colonial times to the early 1970s (Osuji, 2013).

In the early years of the Lagos railway, the intentions of Governors MacGregor and Egerton were to develop a rail line from Lagos to the furthestmost parts of North-eastern Nigeria and to open the interiors of South-western Nigeria to commerce (Osuji, 2013). Successive extension to



the railway created the current narrow gauge network that, in principle, achieved the early aims of the British Colonial Government and promoted the early development of the country post independence.

The network currently consists of 4,332km of track km and 3,505km of route, characterized by sharp curves and steep gradients in many sections. Only 30 km of the track is in the form of double track and all of that is in the Lagos area (AfDB, no date).

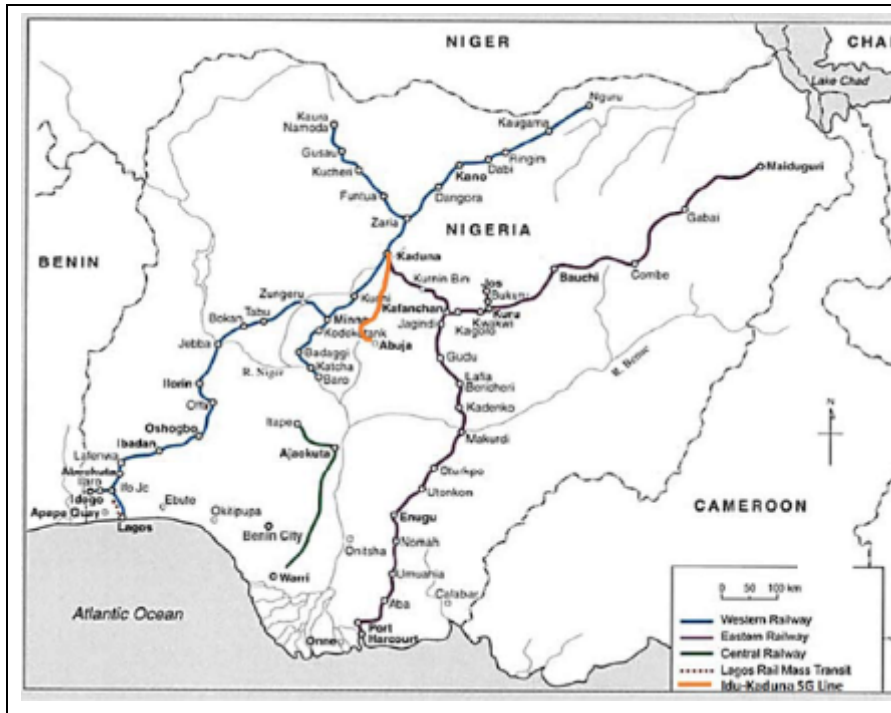


Figure 5.8: Nigeria’s rail network map

The Nigerian railway system has suffered a long-term decline as a result of competition from road transport, which has eroded the rail traffic base and neglect by the government. The rolling stock of the Nigerian Railways Corporation (NRC) is in very poor condition and, although there has been extensive rehabilitation of the track, the rail network continues to operate essentially with much of its original facilities. Many structures and some of the trackwork are now over 100 years old. The declining quality of railway assets and train services has also led to the disappearance of intermodal transport nodes and further decline in traffic volumes. The situation has been exacerbated by management weaknesses and institutional arrangements in the railway system. (AfDB, no date)

The current imbalance in modal share between rail and road transportation emerged after the 1960s. Up until then, the railways carried over 60 per cent of the freight tonnage compared to its current share of less than two per cent. (Osuji, 2013)

Rail passengers declined from 15 million in the mid-1980s to about one million in 2007. Freight traffic declined from a high of three million tonnes in the mid-1960s to 117 thousand tonnes in 2000. The amount of freight carried had declined due to deterioration of the level of service and competition from road transport and the poor condition of the infrastructure

and rolling stock. However, recognizing the importance that the rail system brings to the health of the transport sector, the government has embarked on some upgrades. As a result, available data shows that the number of passengers carried by the rail system has risen significantly, from about 1 million in 2009 to about 4.2 million in 2012 (AfDB, no date).

**Power supply**

In 1965, Kaduna was sufficiently well supplied with power from the grid and municipal power sources to facilitate the decision to locate industrial plant in the city on a major scale. Nowadays, inadequate power supply is usually cited as the most important constraint on investment in the city. In the period in between, the population of the country has increased threefold, with urbanisation welling the numbers of urban consumers, while a nationalised power industry failed to invest to meet the growing demand.

Figure 5.9, a map of the existing and proposed national electricity grid, is taken from an original NEPA map at about 1:1,000,000 scale probably made in the early to mid nineties and copied as part of a Petroleum Trust Fund project in 1997 for Afriprojects. It is largely diagrammatic but it is an accurate copy of the original.

It bears some relationship to actual construction work that the Max Lock planning team in 2009 observed on the ground although unable to confirm or obtain completion or even progress dates for any of these proposals indicated in the map so subsequent implementation is uncertain – now subject to the recent reorganisation of privatisation of the power industry. However, such improvements to the grid if realised can help in assuring supplies to the lower voltage network supplying electricity to Kaduna and the developing areas in the City Region.

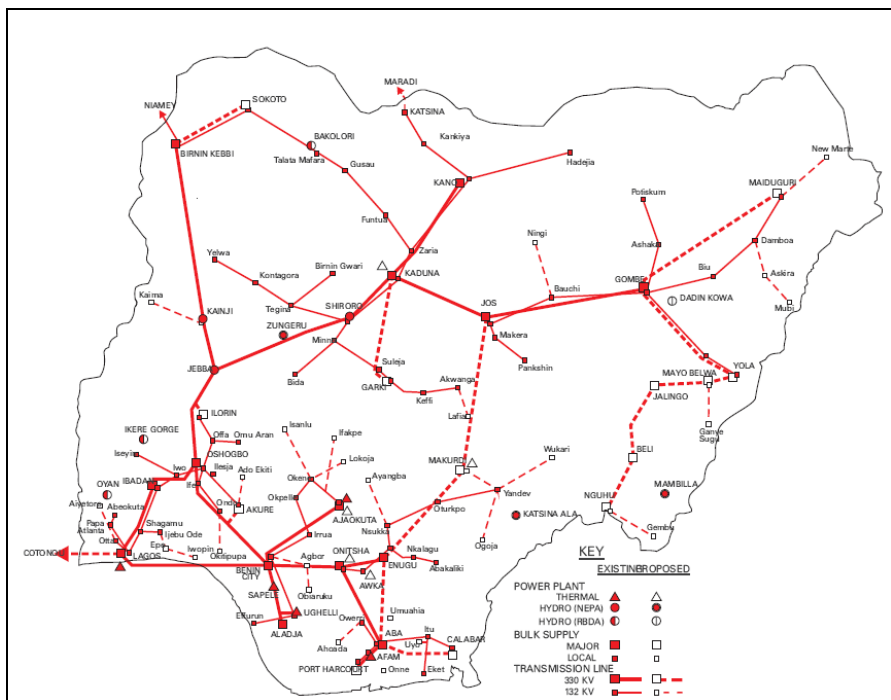


Figure 5.9: NEPA/PNHG Nigeria National Grid

In 2009 the Ministry of Power signed a contract for the construction of a 215Mw Dual Thermal Plant using Low Pour Fuel Oil (LPFO) and Natural Gas,



to be located in Kaduna, with a consortium of General Electric and Rockson Engineering Nigeria Ltd. At a meeting of the Max Lock Planning team with the then Governor, later Vice President Namadi Sambo, the question of the supply of natural gas to the plant was raised. In December 2014, the Federal Ministry of Power engaged Greenville Oil and Gas Limited to convert the plant from natural gas to liquefied Natural Gas and to supply the plant. There is no further recent news of completion of the plant.

### **Current infrastructure context**

Nigeria has made important progress in improving much of its infrastructure in recent years. Compared to a number of Sub-Saharan countries, Nigeria has relatively advanced power, road, rail and information and communications technology (ICT) networks that cover extensive areas of the country.

Investment in improving IT (mobile phone) networks is continuing throughout the state although there are still many periods of overloading and poor connections between service providers as well as areas yet to be covered, which is important from the point of view of improving efficiency in marketing agricultural produce. Nigeria, along with South Africa and Kenya has the largest number of internet users in Africa. Kaduna sits on the country's extensive if still under-utilised fibre optic cable network and is a focus of internet activity in the country.

Unlike some other countries in the West Africa region, Nigeria has developed infrastructure backbones that have a national reach. (AfDB, no date)

However, Nigeria's state of its infrastructure is a major challenge for its economy. In fact, the country's core stock of infrastructure is desperately inadequate, estimated at only 20-25% of GDP. 'The level for middle income countries of this size should be around 70%,' according to Ousmane Dore, country director of the African Development Bank (AfDB) in Nigeria cited in FDintelligence (2015). As in other African countries, poor construction, bad maintenance and underinvestment are among the reasons for this deficit (FDintelligence.com, 2015).

According to Foster and Pushack (2011), infrastructure in Nigeria has made a net contribution of around 1 percentage point to its improved per capita growth performance in recent years, in spite of the fact that unreliable power supply held growth back. The authors argue that Nigeria has conducted several important infrastructure sector reforms in recent years, including power, ports, ICT and air transport.

But concerns persist in a number of areas, including the power sector. Inoperative generation capacity and lack of investment mean that the country has been able to meet only about half of its power demand. This, in turn, has resulted in an extremely unreliable supply; social costs can be conservatively estimated at 3.7% of gross domestic product (Ibid).

Today, the nation generates about 4,000 MW, and has installed capacity of about 5,900 according to the last figures from the United States Energy Information Administration in 2011. This can be compared with South Africa, the continent's other major economy, which has an installed capacity

of 44,000 MW, according to the Department of Energy, serving a population of 53 million (FDintelligence.com, 2015).

## 5.4 POLICY IMPLICATIONS AND REGIONAL TRANSPORT INFRASTRUCTURE

### Growth of cities on major economic corridors

Nigeria has become dependent on the flow of goods for trade and services along the major highways as developing economic corridors. This is particularly true of Kano, Kaduna, Katsina (en-route to trade with Maradi in Niger) and Maiduguri (en-route to trade with Cameroun and Chad).

These cities have grown sporadically, fuelled by land made available by local traditional rulers rather than the formal planning system, which has proven to be slow and tiresome. New planning techniques utilizing satellite mapping can enable streamlined community-focused administrations in these places to 'leap-frog' to more organized planning for land and infrastructure, systematically, more swiftly, and pro-actively, resulting in better economic development. Learning from Lagos and the planning and transport systems there would enable these other cities to consolidate their development progress in linking the cities and regions of the country.

Preliminary studies at the regional scale can scope out the potential or city-led development in the regions and identify strategically placed cities. These will identify the key centres for triggering city-led development in Nigeria's different regions – strategically located to benefit most and earliest from efforts to improve infrastructure at the national level, particularly power and roads, sea and airport (in the medium term rail)

At the regional level, such studies need to scope out the potential for synergies in transport and economic development in Nigeria's key urban corridors across the country, Lagos-Ibadan (population c25m) in the South East, Abuja-Kaduna-Zaria-Kano (17m) in the Central Region and North West, Port Harcourt-Enugu in the South East (10m). There is potential for city-led manufacturing starting in these corridors with their large concentrations of urban population and potentially large consumer markets, or for development as regional centres of educational excellence with good transport connections that could benefit from the longer-term development of knowledge-based industries

Clearly, there are a range of levels at which the various spatial and economic forces operate and a level of sophisticated analysis with good data is required that is beyond the scope of this report. Better transport connections can open up huge opportunities for Nigerian firms in terms of access to national markets.

Much of the policy support work carried out by the Nigeria Infrastructure Advisory Facility has focused in the urban dimension of this, reflecting the concern in cities such as Kaduna with the bottlenecks, central area congestion and meeting the need for off road trailer parking and servicing. In addition to locating these transport constraints within the national

highway system, this section of this report highlights the particular economic importance of considering inter-city transport linkages.

As previously noted, those economic regions in Nigeria with the highest spending power and most production will be more profitable and will attract more production.<sup>20</sup> Although these regions need to build their own resilience and reinforce the advantages that arise from 'clustering', this can also lead to polarisation with increasing advantage for the urban regions that are already advantaged, with the rest of the country falling further behind. For an urbanisation perspective, the regional development policy challenge then has three elements to it:

- Ensuring that improved inter-city networking of the already established and advantages clusters in the South West and South East help to make the best of their advantages and contribute to the manufacturing diversity, export-orientation (and import substitution) of the Nigerian economy as a whole.
- Explore the potential for emergent 'clusters of cities' and nascent urban corridors in other regions of Nigeria, notably along the Abuja-Kano axis (with Kaduna as a strategic pivotal location), to see how better city networking can create more efficient inter-city markets, i.e. the emergence of larger, more efficient local companies servicing a adjacent or clusters of cities.
- A focus on how cities in other less developed regions of Nigeria can be a lever to improved agricultural and rural development, in turn spurring the growth of the cities as servicing and manufacturing centres processing local agricultural products and building local consumer markets.

With regard to this last point, this has to be seen within the broader agricultural and natural resource development policy of Nigeria as a whole. For good historical reasons relating to the higher density of population, higher level of income from agricultural production and development of towns and cities as service and manufacture centres based on the agricultural economy, the most urbanised areas have emerged in those that are most heavily cultivated. More efficient agricultural production and the encouragement of cash crop production by small farmers is essential if the cities in the more isolated regions of Nigeria are to flourish, as noted in the discussion of rural-urban linkages previously.

Whatever form these spatial network phenomena adopt, cluster or corridor, improving linkages between major population centres that are in fairly close proximity to one another can improve their prospects in terms of agglomeration economies and home market affects.

While the Federal government clearly has a central role in promoting the necessary improvements in national transport infrastructure, forging the necessary links between the state governments in other infrastructure and business development policy initiatives remains a major challenge.

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<sup>20</sup> As Krugman puts it, 'If there is one single area of economics where path dependence is unmistakable it is in economic geography – the location of production in space.'

### **Transport and communications: inter-city connections – networking cities**

Part of the answer lies in city networking and better inter city connections. Many roads between the major cities have been greatly improved. However, the traffic bottlenecks at truck stops and in city centres and encroachment on the major routes through the cities all need to be addressed, along with lane discipline, traffic management and road safety issues more generally.

There is a basic internal airline service (suffering recently from a poor safety record). The existing narrow gauge national rail network is being rehabilitated, as noted, but only some sections are in use and even then only infrequently. A Chinese company has now largely completed standard gauge inter-city rail link between Kaduna and Abuja. However, for a line intended to carry passengers there are as yet no stations, and, in relation to Kaduna, it is unclear how any proposed station is to be accessed. The designers have failed to consult with the Kaduna state authorities concerned with the development of the city the railway is intended to serve and to integrate with existing services.

The issue of the indiscriminate parking of lorries on the national highways and their designated road reservations, is having a serious impact on the flow of goods and services from south to north in the country as a whole. It is thought to be a brake on the levelling of economies between the south and the north. It certainly inconveniences other road users, seriously extending travel times.

An example is the A2 Trunk Highway between Abuja and Kano that traverses Kaduna, which has the junctions of five Federal Highways. This already brings large quantities of goods from the south (Port Harcourt, etc.) to the north and enables northerners to sell produce in the south. However, the transit through Kaduna is not easy and in the evening is brought to a complete halt by the parking of the heavy goods vehicles on the road. A start was made on an Eastern By-pass some years ago, in order to relieve the in-town traffic congestion. The timetable for completion has only now been revived by the new Kaduna State Government.

### **Improving rural-urban linkages**

One of the most striking aspects of life in Nigeria is how, just a few miles outside of major urban centres, impoverished rural villages can be found in almost medieval isolation.

Clearly, rural road schemes have a central role to play in promoting rural-urban linkages. Studies carried out in 2006 revealed that about 20 per cent of total agriculture production never reached the market. According to the World Bank, 'although RAMP has about three years to completion in Kaduna, positive economic impacts are already being manifested, with some beneficiary communities reporting an increase in the market price of their agricultural produce and a reduction in the cost of transportation' (The World Bank, 2012).

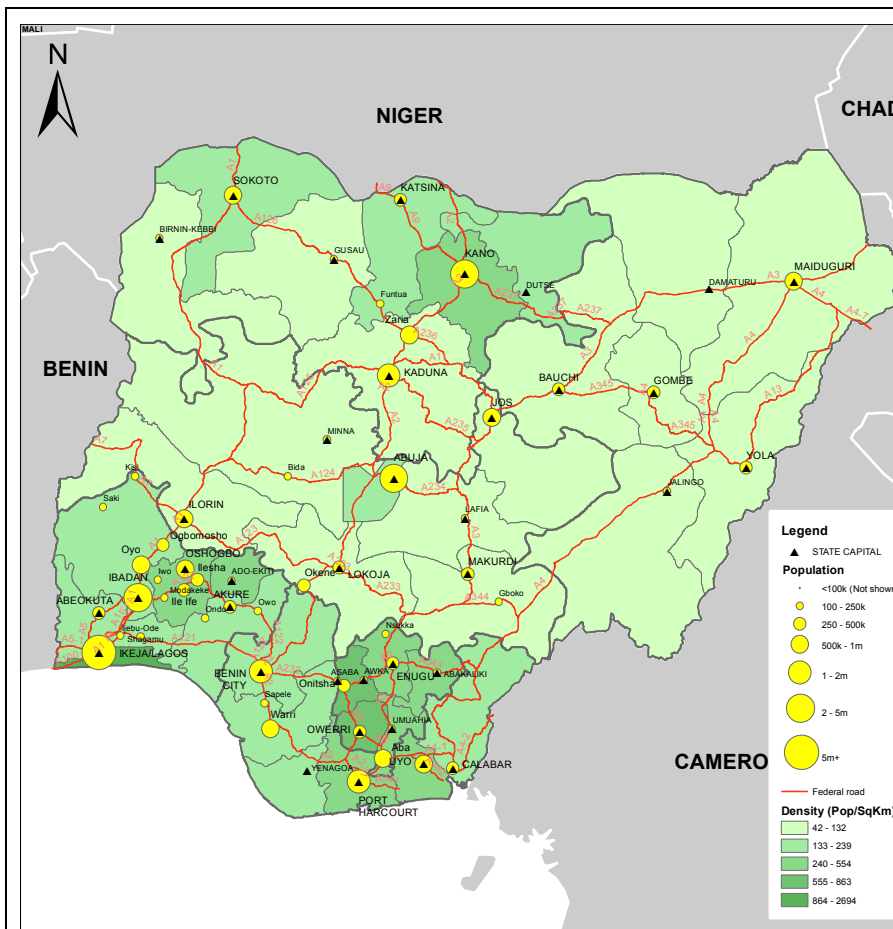


Figure 5.10: Major cities and population density by state

Positive synergies between rural and urban areas are important for as important for the city's future as they are for the rural areas it draws upon, for the marketing, wholesaling, retailing and transshipment of agricultural produce in the city, for the growing potential for food processing drawing on local agricultural production and for provision of goods and services to the rural and farming sector by the city.

### Rail

Apart from roads, railways converge on Kaduna city from Lagos in the southwest and Port Harcourt in the southeast, and extend to Zaria with railway lines branching to Kaura Namoda in Zamfara State and Kano (Kaduna State Government, 2008). The railway network in Kaduna suffered from decades of neglect and services were halted. In May 2008, however, the state government launched the Kaduna State Railway Mass Transit Scheme in partnership with Nigerian Railway Corporation to revive the inter-state service, starting with the running of trains within the state capital. The intra-city train service began in Kaduna in September 2008 (Abba, 2008b). Kaduna State Government has also recently announced the acquisition of two locomotives 'to facilitate the haulage of goods from Apapa seaports to the state's inland container depot. Gov Mohammed Sambo made this known in Kaduna after the flag-off of the second phase on the state's mass transit train services.' (This Day 25.11.08).

## Conclusions

The chapter has analysed regional trends in Nigeria's urban and economic development and the historical context of the national transport and power infrastructure within which this has been played out setting out some broader policy implications. The final part of the chapter has outline the infrastructure context for Kaduna State and capital city itself.

In exploring the changing pattern of urbanisation in Nigeria, the emergence of urbanising economic corridors in Nigeria and the rise and subsequent fall of Kaduna within the urban hierarchy have been analysed. Kaduna's strategic location in an emerging northern corridor linking two of Nigeria's largest cities may turn what has been a liability (the creation within a two hour journey of the new political capital of Abuja in the Federal Capital Territory in 1976) into an asset.

The city's shifting fortunes have notably reflected wider changes in the regional context of Nigeria as a whole, with growing economic divergence and resulting political tensions and challenges arising between the north and south of the country. Despite the undoubted economic ebb and flow there are hints in this story of a stubborn resilience on the part of Kaduna's population of different communities in the face of relative economic decline which give some cause for optimism.

# 6. ECONOMIC DEVELOPMENT

## Introduction

This chapter provides an overview of the economic development context of Nigeria and Kaduna State and the place of the city within it. It explores the impact on poverty levels of Nigeria’s changing economic fortunes and unequal distribution of income. It describes Kaduna’s historical economic development and the factors affecting its recent economic development strategy. The rapid growth and decline of Kaduna’s industrial sector over little more than forty years is chronicled, highlighting the reasons for this decline that lie at the macro economic and national policy agenda level.

## 6.1 NIGERIA: NATIONAL ECONOMIC CONTEXT

### Overview

Nigeria has a population of over 182.2 million in 2015, growing at 2.54% p.a. (UN DESA, 2015b) It is Sub Saharan Africa’s most populous nation, and the 7th most populated country in the World, it is also one the largest in terms of land extent, covering 923,770 square kilometres.

The World Bank puts Nigeria’s Gross Domestic Product at market prices in current UD\$ at \$568.5 billion in 2014 with an annual growth rate of 6.3 % for that year, growing at 1.2% and 2.4% (estimate) faster than the Sub-Sahara region as a whole in 2013 and 2014 (World Development Indicators, 2015). The IMF estimates Nigeria GDP growth at 3% for 2015, but projects that it will pick up again in 2016 and 2017, with growth rates of 4.1 and 4.2% respectively.

Between 1971 and 2005, the exchequer earned an estimated \$390bn from oil related revenues leading to a healthy level of foreign currency reserves and to investment in infrastructure and a public sector-led construction boom in the 1970s and early 80s. The recent sharp declines in oil prices have put fiscal pressures on the Government. Foreign external reserves, under pressure from the efforts of the current Federal administration to prop up the Naira in the face of the oil collapse, declined by 21% from USD 43.6 billion in 2013 to USD 34.4 billion in December 2014 (Barungi et al., 2015)

In per capita terms, using the Purchasing Power Parity measure for the years this data is available, in absolute terms (using constant 2011 US\$) this grew from \$3030 in 1990 to \$5,123 in 2010 (falling to \$2,740 in 1995 before rising to \$2,836 in 2000 and \$4,129 in 2005).





Figure 6.1: Historic and forecast annual GDP growth % - 2000-2020<sup>21</sup>

As a consequence of the revision of its GDP in 2014, Nigeria also became Africa’s largest economy, the continent’s largest oil producer and a top destination for foreign investment (Oxford Business Group, 2015). The NBS recalculated the value of GDP, adding 89% to previous GDP based on production patterns in 2010, increasing the number of industries it measures to 46 from 33 and giving greater weighting to sectors such as telecommunications and financial services. Oil and gas, by far the biggest source of government revenue, contributed 14% of GDP under the new set of data, compared with 32% under the old system (Magnowski, 2014).

The Nigerian economy has enjoyed sustained economic growth for a decade, with annual real GDP increasing by, on average, around 7%. The non-oil sector has been the main driver of growth, with services contributing about 57%, while manufacturing and agriculture, respectively contributed about 9% and 21%. The economy is thus diversifying and is becoming more services-oriented, in particular through retail and wholesale trade, real estate, information and communication (Barungi et al., 2015). However, vulnerability to oil prices, and a high dependence on oil exports remains, particularly to fuel public sector expenditure, with its need to meet a critical demand for substantial infrastructure development.

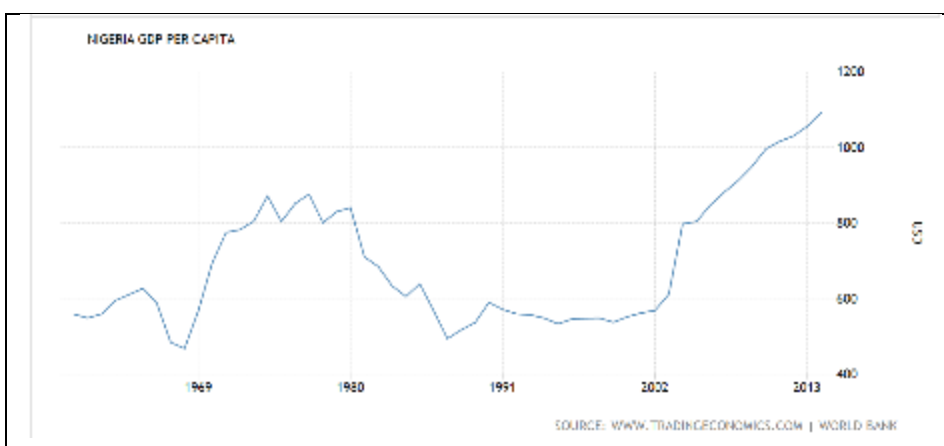


Figure 6.2: GDP per capita in Nigeria (at constant \$US 2005) (Source: Trading Economics, 2015/World Bank)

<sup>21</sup> IMF World Economic Outlook.

One of the most salient features of Nigeria’s economy in that, in line with most of the rest of Sub Saharan Africa, it suffered a ‘lost two decades’ in the 1980s and 1990s following the excessive external borrowing of the 1970s (when Nigeria was in the grip of an oil cash driven boom) and the period of ‘structural reform’ that followed it. “The introduction of an ‘austerity programme’ by the government in April 1982 to curtail the oil slump’s effect on the nation’s economy did not produce the desired result” (Oladokun, 2009). It paralysed an already erratic system of import licensing and foreign exchange allocation, creating additional bottlenecks and bureaucratic distortions. Production was repeatedly disrupted. Capacity utilization declined to its lowest point, perhaps some 30% for the industry as a whole by 1983 (Oladokun, 2009).

In absolute terms, it took until 2006 for the country to achieve the GDP per capita level it held in 1980 (\$841 in constant US\$2005). Using the PPP and constant US\$2011 yardstick and the more tightly defined GNI measure which is a more accurate measure of welfare the 1990 level of \$2,743 per capital was not achieved again until 2002 (with a 2010 value of \$4,833). Thus while the economy has shown a healthy growth rate of from 2000 onwards, it is only in the most recent period that any improvement in overall welfare has been evident.

The only absolute per capita economic welfare data which goes back to 1965, at the beginning of our study period, is GDP, measured in constant \$US for 2005. This is shown in Figure 6.1. The impacts of global market changes and significant political and policy decisions are clearly registered. Up to 1966 when successive military coups and the Biafra War brought a short period of economic collapse, per capita incomes were showing strong growth. The pick up with the oil price boom of the early 1970s was dramatic, levelling off at a high point above \$800 per head in the period 1975 to 80. In the 1980s, with the introduction (voluntary rather than imposed) of structural reform measures, GDP per capita declined dramatically, falling back to levels not seen since the Biafra War in the late 80s. A real recovery does not being again until 2002. For Nigeria, the lost two decades remain closely correlated with the price of oil (see Figure 6.2).

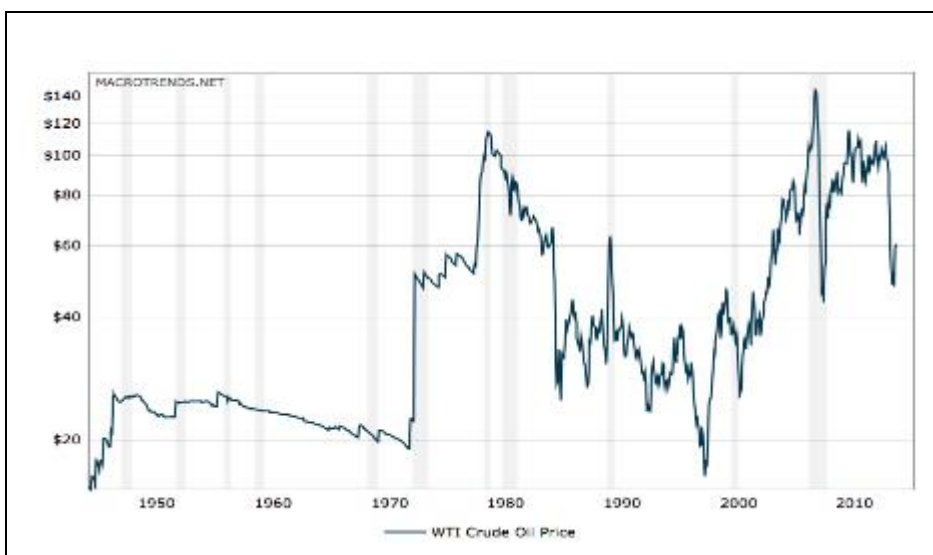


Figure 6.3: Crude oil price (macrorends.net, n.d.)

### Implications for Kaduna's economic development

As an indicator, the national economic fortunes as measured by GDP per capita, are a starting point for exploring Kaduna's economic development over the study period. While GDP in Kaduna has not been directly measured, it is possible to use indirect methods to try and assess its likely dimensions.

In general urban average incomes are higher in urban than in rural areas, especially in developing countries. As noted in the theoretical literature review (Chapter 2), research in the 2009 World Development Report gives an indication of the larger proportional share of urban areas over rural areas in share of overall national consumption that diminishes as the share of the urban population increases.

The data suggest that at low levels of urbanisation, the average share of per capita urban consumption in urban areas is double that of rural areas). World Urbanization Prospects – 2014 Revision estimates Nigeria's level of urbanisation in 1965 at 16.6%. Using the calculated average ratio of urban consumption to population share (consumption levels in urban areas about double those in rural areas) the average urban incomes in 1965 would have been about \$1,075 in constant US\$2005. While it is impossible to measure Kaduna's income relative to other cities in Nigeria at that time, it was already Nigeria's 11<sup>th</sup> largest city with a population well above the average for the urban sector as a whole, indicating above average income. On this basis, the figure for 1965 is not far off the GDP per capita for Nigeria as a whole for 2013, using the same baseline.

While there is no direct data to support it (living standards surveys data in Nigeria not sufficiently disaggregated to carry out this type of analysis),<sup>22</sup> an urbanisation level of nearly 50% would imply an urban-rural multiplier of somewhat less than 1.5. Given the on going prevalence of rural poverty, especially in the north of the country, this factor may well be higher.

Additionally, of course, it masks major differences both regionally and between towns and cities with different size populations. An estimate carried out by the research team when engaged in the recent Kaduna Master Plan Revised 2010 (2015) drawing on a range of data suggested that the value added in the Kaduna urbanized area was around double that of the Kaduna State rural population (Lloyd-Jones, 2011). On the basis of this calculation, the GDP per capita for Kaduna was very close to the average for the country as a whole (see Appendix 6.a).

***While these estimates are far from scientific they suggest that average incomes in 2013 in Kaduna may not be very much greater than they were in 1965.***

In between 1965 and 2015 of course, Kaduna's economic fortunes have fluctuated wildly. Certainly at the peak of its boom years around 1980, when Kaduna was the 4<sup>th</sup> largest city in the country and its manufacturing industries were in full flood The GDP per capita would have been some level

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<sup>22</sup> See, (National Bureau of Statistics, 2012), Consumption Pattern in Nigeria 2009/10 (Preliminary Report). This gives a breakdown of consumption expenditure between urban and rural but only at national level and on the basis of 1991 estimate of urban-rural population breakdown. Breakdowns are also given at state level.

above the average for urban areas as a whole. At that point Nigeria was 30% urbanised and the GDP per capita stood at \$841 for Nigeria as a whole, according to the WDP regression line, with a 30% urbanisation level, the average urban GDP per capita would have been around \$1,095. Given Kaduna, was certainly more prosperous than average at that point in time, this would have been the high point in its economic development, with a GDP per capita that it has yet to match again.

### Development indicators

‘Despite the rapid economic growth in the past decade, there has been no reduction in the incidence of poverty in Nigeria. The number of people living below the international poverty line increased from 46 million in 1986 to 108 million by 2010 (61.2% according to the agreed international poverty line). With an increasing incidence of absolute poverty over the past three decades in combination with a steady increase in average national income per capita in real terms, there has been a substantial increase in income inequality. Another feature of the poverty issue in Nigeria is that poverty rises with distance from the coast. National poverty rates in the coastal areas are typically under 40%, but they rise to more than 70% in parts of central Nigeria and even more so in the northern parts of the country, a large part of which are landlocked with widespread dilapidated infrastructure’ (AfDB, n.d.).

The mortality rate has declined from 15% in 2005 to 11.7% in 2013, although still above the average in the Sub-Sahara region, 9.24% (World Development Indicators, 2015). 8.7 million children were not in school in 2010 and 62% of the population live on less than \$1.25 a day (Ibid). Life expectancy in 2013 was 52.5 years, which is lower than all its Sub-Sahara neighbours (56.9) (Ibid) and 62.2% of the population have access to improved drinking water whilst only 33.3% of the population have access to improved sanitation facilities.<sup>23</sup>

Nigeria has seen major economic reform, with sweeping changes, notably in the banking and communications sectors, privatization of government owned industries, as well as a growing confidence in democratic structures and institutions and more effective tax collection and internal revenue generation. Whilst reform has been tangible at a policy and structural level, as noted by both local and international observers, this has yet to percolate meaningfully to the local and community level. Strong, sustainable ‘grassroots reform’, which impacts on the everyday life of ordinary Nigerians, is yet to happen and the process of policy and institutional reform needs to deepen and mature. (Max Lock Centre, 2008).

The share of non-oil exports in the total exports has been less than 5% over the period 1980-2013 (updated from Akinlo, 2012; WTO, 2015). Akinlo (2012) argues that oil dependency has had dire consequences on the growth and development of the economy. If the export sector had been more diversified, the impact of the fluctuations in the international petroleum markets on the economy would have been minimal.’ It remains to be seen if the recent diversification of the national economy will give it sufficient

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<sup>23</sup> NBS, 2015

resilience and momentum to overcome negative impacts that are being felt, particularly in the public sector.

In labour market terms, given its low labour intensity, the oil sector only accounts for 1.3% of the labour force, which is very low when viewed in terms of the size of the sector in value terms.<sup>24</sup> In comparison the agricultural sector employs about 70% of the labour force (AfDB, 2013b) and accounts for 23% of Nigeria’s GDP. Furthermore, medium-size domestic firms in Nigeria constitute more than 90% of businesses, yet contribute less than 10% to the nation’s GDP—a much lower proportion than seen in countries at similar levels of development.<sup>25</sup>

**Economic structure**

The Nigerian economy is primarily dependent on agriculture, trade and, oil and gas. In 2014, agriculture accounted for 23% of total GDP, while trade accounted for 17%, and information and communication accounted for 11%. Oil and gas accounted for 10% of total GDP, but the importance of the sector can be seen by the fact that in 2011 it accounted for 79% of revenue collected at federal level and 71% of export revenue. The sector break down is given in Figure 6.3.

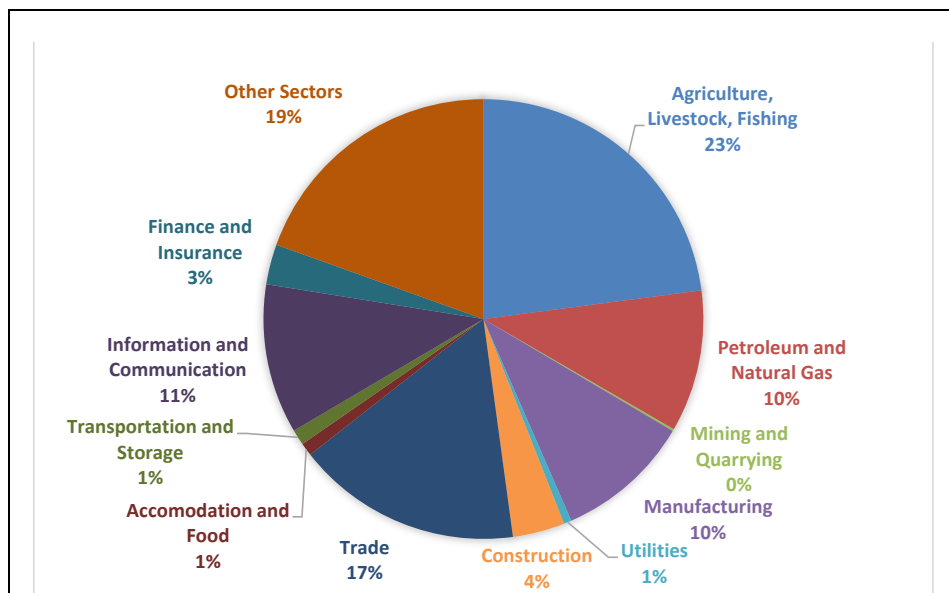


Figure 6.4: Nigeria – GDP by Sector, Q2 2014 (source: NBS, 2014)

Agriculture has major untapped potential in Nigeria and, in fact, has suffered as a sector from the larger macro economic trends, along with the rest of the economy. The major food crops include rice, yam, cassava, sorghum, beans and millet produced primarily for domestic consumption. The major non-food crops, produced primarily for the export market, are rubber, cocoa, and palm oil. Cocoa beans are the main food export, with 260,000 tonnes exported in 2011. By contrast, Nigerian imported over 4 million tonnes of wheat in the same year.

<sup>24</sup> World Bank 2014

<sup>25</sup> Ibid.

Manufacturing accounts for around 10% of the total output in the country but has been held back by inadequate power, poor transport infrastructure, and a heavy dependency on agricultural inputs or imports, which are vulnerable to shocks. Processing of food, beverages and tobacco account for over 50% of the output in volume terms.

Trade accounts for 17% of Nigeria's GDP, and is growing. Rapid urbanisation, accompanied by a growing middle class with higher disposable incomes, is leading to increased market opportunities for and penetration by wholesale and retail chains, including major foreign retailers. Growth in this sector, as in others, is hindered by inadequate logistics services.

## 6.2 THE KADUNA STATE ECONOMY

At an altitude of 500–1000m above sea level, and annual average rainfall of 1,272mm and fertile soils, Kaduna is one of the most fertile states in Nigeria (World Bank, 2008). It is estimated that more than 60 per cent of the population is engaged in small- and medium-scale farming but with relatively low productivity.

Agriculture is the largest employer of labour in the state and a key contributor to income creation and poverty alleviation (Ibid). The crops produced in the state include cotton, groundnuts, tobacco, maize, yam, beans, guinea corn, millet, ginger, rice, cassava, sugarcane, shea nuts, cowpea, mango, kenaf, cocoyam, cassava, timber, palm kernel, banana, soya bean, corn, onions, sorghum and potatoes. During the dry season, a considerable number of people in the state engage in irrigation farming along some major rivers and near dams (fadama farming), mainly growing vegetables. Another important aspect of agriculture is the rearing of cattle, sheep, goats, pigs and poultry.<sup>26</sup>

Kaduna is the major market (for agricultural products for local consumption and transshipment) in southern Kaduna State and the regional hub for the supply of goods and services (both private and public) for the whole of southern part of Kaduna State. Linkages to its rural hinterland are therefore a critical element of its current economic importance.

Despite the evident decline in activity in its main city, Kaduna State remains the second most industrialised state in the North West zone after Kano State. Kaduna's urban economy and the contribution of services and manufacturing industry is dealt with in the following section and in Appendix 6b.

## 6.3 KADUNA'S URBAN ECONOMY

In 1965 Kaduna was a small city of about 160,000 people, with elegant tree-line avenues and official buildings befitting the capital of the whole northern region of Nigeria. Forty years later it has grown to ten times this size and continues to be overwhelmed by the rapid pace of urbanisation.

<sup>26</sup> Kaduna State Government, 2008



It remains a capital city, albeit one of one of the largest states in Nigeria, rather than the whole Northern Region. Other cities compete for primacy in the region and some could be said to have fared better than Kaduna in the intervening period. Above all, its position has been challenged when the Federal Government took the fateful decision to plan and build a brand new national capital city, Abuja, just two hours to the south. While Kaduna retains some key national military functions, Kaduna’s political and economic importance has undoubtedly been undermined.

While Kaduna may have lost out in the recent past to its neighbours, its location mid-way between Kano and Abuja, with a good connecting transport infrastructure, can be turned to its strategic advantage. The rapid growth of Abuja means that there are already pressures for it to decentralise some its functions to neighbouring towns and cities.

Kaduna’ industrial history started in 1957 when Kaduna Textiles Ltd stated its operations. Before that, there had been virtually no manufacturing industrial employment in the city. As described on in the 1967 Plan (Max Lock and Partners, 1967), government employees in departments as the PWD workshop on maintenance or building construction were the only persons applying any degree of industrial skill. Prior to 1957, the colonial administration remained the major source of employment providing opportunities for clerks, local government functionaries, artisans and various types of unskilled labourers; by 1929 about three-quarters of the city’s total population were economically dependant, directly or indirectly, on the government (Oladokun, 2009).

Nigeria adopted an import-substitution strategy in its First National Development Plan (1962-68) in order to create jobs and opportunities in non-agricultural occupations. This strategy favoured the development of the industrial sector and Kaduna State saw a steep increase of industrial establishments from only six by 1960 to more than 300 by 1985 (Table 6.1). These industrial development transformed Kaduna from a mere capital city into a modern industrial hub in Nigeria. During this period, the population of Kaduna grew from 33,000 inhabitants in 1950 to 163,000 in 1965 and 565,000 in 1985 rising from 22<sup>nd</sup> to 5<sup>th</sup> in Nigeria’s urban hierarchy (as described in the previous chapter) (UN DESA, 2014).

The industrialisation of Kaduna was distributed ‘over five industrial areas by 1985: the Kaduna South Industrial Area, the Tudun Wada Industrial Area, the Kawo Light Industrial Area, the Kudenda Industrial Area and the Kaduna Refinery Industrial Area’ (Oladokun, 2009).

| Period:   | No of manufacturing establishments |
|-----------|------------------------------------|
| 1950-1960 | 6                                  |
| 1961-1970 | 36                                 |
| 1971-1980 | 174                                |
| 1981-1985 | 116                                |
| Total     | 332                                |

Table 6.1: The growth in number of manufacturing establishments in the Kaduna Region (1950-1985). (Sources:



S.A. Sati, 1990, cited in Ibrahim James, Kaduna State: The Challenge of Industrialization, p.10, cited in Oladokun, 2009).

| Firm:                       | No of Employees |              |
|-----------------------------|-----------------|--------------|
|                             | 1965            | 1973         |
| Kaduna Textiles Ltd         | 2,833           | 5,000        |
| Norspin                     | 1,050           | 1,965        |
| Arewa Textile Ltd           | 937             | 1,618        |
| United Nigerian Textile Ltd | 374             | 1,850        |
| Northern Nigeria            | 600             | 1,400        |
| Nortex                      | 900             | 2,060 (1974) |
| Total                       | 6,694           | 13,983       |

**Table 6.2: Employment in Kaduna's textile mills (1965 and 1973)<sup>27</sup>**

After the establishment of Kaduna Textile Ltd several other textile factories were established in Kaduna, including Arewa Textiles, United Nigeria Textiles, Nortex, Northern Nigeria Textiles and Zamafara Textiles. These were followed by a wide variety of other industries include paper products, printing and publishing, a brewery, a car assembly plant (Peugeot Automobile Assembly Plant), asbestos-cement and construction-related products etc. (Critall Windows, Turners Cement Asbestos, roofing) and chemicals (Industrial Gases, Super Phosphate Fertilizer).

With Kaduna accumulating the highest concentration of textile mills in the country, at the time, the city was referred as "the Manchester of Nigeria" (Oladokun, 2009) One estimate puts the number employed in the industrial sector employed in the industrial sector by 1975 at more than 18,000 (see Table 6.3).

| Industry                | No. | Employment | Products                          |
|-------------------------|-----|------------|-----------------------------------|
| Textiles                | 6   | 14,200     | Textile goods                     |
| Printing and Publishing | 3   | 1,096      | Commercial printing and Newspaper |
| Paper products          | 1   | 78         | Stationeries                      |
| Industrial Gases        | 1   | 17         | Oxygen and allied goods           |
| Cement-Asbestos         | 1   | 308        | Pipes, roofings etc.              |
| Furniture making        | 3   | 330        | School, office, furniture etc.    |
| Metal products          | 3   | 500        | Motor body buildings              |

<sup>27</sup> Source: NAK, North Regional Ministry of Social Welfare and Commercial Development; File 1010, statistics; and Medugbon, op.cit, p.209

|                         |    |        |                            |
|-------------------------|----|--------|----------------------------|
| Surgical products       | 1  | 360    | Hospital Lint bandages     |
| Brewery                 | 1  | 502    | Beer and soft drinks       |
| Bakery                  | 2  | 136    | Cakes, bread etc.          |
| Car Assembly            | 1  | 600    | Peugeot Cars               |
| Fertilizer (June, 1975) | 1  | 260    | Super-phosphate fertilizer |
| Defence                 | 1  | n.a.   | Ammunition                 |
| Total                   | 25 | 18,387 |                            |

Table 6.3: Industrial Kaduna (major establishments) 1975<sup>28</sup>

The Federal Government's decisions in the mid 1970s to locate a petroleum refinery and the automobile assembly plant (PAN) in the city further widened its industrial growth base and increased the concentration in Makera/Tudun Wada, Kakuri, and along Kachia Road. Other major manufacturing industries who opened up in the city include Super Phosphate Fertiliser Company Ltd and Petro-Chemical Company Ltd. Following the public sector led pattern of the time, many new establishments were Federal or State Government parastatals. There are many other small to medium scale industries based in the city that are important in supplying the needs of the surrounding rural population.

Subsequent globalisation has had a major impact In the 1980s, with the collapse of the oil price bringing the decline of the manufacturing sector, and the closure of large percentage of industrial establishments across the country, affecting Kaduna industrial sector particularly heavily. Gone are the days when the city was the home of many textile industries. Apart from UNTL, all the others, Kaduna Textiles Limited, Arewa Textile, Supertex, Finetex, Nortex and United Nigeria Textile Limited, have since shut their factories, throwing thousands of workers into the job market.

Nigerian's industrialization was dependent on imported capital goods, as well as raw materials and foreign expertise and role of the oil slump in increasing the cost of imported capital goods and the raw materials needed for the industry cannot be overstated. Nigeria's export earnings, of which oil made up 96% on average over the decade, dropped by half in both volume and unit value. The full impact was first kept at bay with greatly expanded borrowing. The debt which was moderate at the onset of the period, grew by 10 billion USD over the first half of the decade

If these problems, and others such as the lack of power and other infrastructural deficiencies, were not enough there has also been a sharp increase in the influx of the dumping of cheap textiles and finished garments into Nigeria since 2007, mainly through the land border with Niger Republic. Smuggled goods reputedly occupy 80% of the market share. Many of these goods, which originate from China, counterfeit the Nigeria textile manufacturing and bear false 'Made in Nigeria' labels.

<sup>28</sup> Source: Federal Office of Labour, Kaduna and Idris, Ibid, p.18, cited in Oladokun, 2009

While the textile industries have folded up, only the two major brewery companies in the city, Nigerian Breweries Limited, NBL, and the International Beer and Beverage Industry, IBBI, both located in the southern part of the city, have been expanding.<sup>29</sup> In recent time these have been joined by a new factory built by the Indonesian noodle-producing firm, Indomie, whose products are widely enjoyed in Nigeria but this has been the only bright light in the darkening horizon of Kaduna's once flourishing industrial sector.

The city's economy now once more seems largely dependent on the public sector, along with basic commercial centre activities and a thriving informal trading sector that snakes out from the overcrowded central market, overwhelming the street spaces of the surrounding informal settlements. However, much of this activity is marginal and poverty is much in evidence.

Although commercial activities are evident everywhere in Kaduna, the main spine of Ahmadu Bello Way along with the central market is the centre of commerce. Most bank branches are located around this area. No particular ethnic group controls this market. The market is representative of the various interest groups, which had grown very rich through buying and selling. It has been estimated that more than 50% of the traders still live in Kaduna South which helps to explain major traffic congestion on and around the Ahmadu Bello Stadium bridge at peak periods.<sup>30</sup>

The Kaduna refinery, started in 1975, was completed during President Shagari's short term in office, in October 1980. The Kaduna refinery was built according to a Japanese design to address the problem of petroleum shortages but is subject to intermittent operation and seldom at anything like its full capacity. Its contribution to the local economy is controversial if not questionable and some in the Nigerian oil industry have called for it to be scrapped (Mbamalu and Onyewuchi, 2016). Kaduna refinery was designed to refine heavy crude oil, which is not produced in Nigeria, and has to be imported from Venezuela. The wisdom of a refinery so far from the coast was certainly questionable and driven by political factors as much as economic. However, it is also intended to produce other refined oil products, lube oil base inputs, and detergent LAB for soap production (Ibid). On-going disruption of the pipeline supply by rebels in the Niger Delta is a further problem. Although employment in the refinery is not regular and reliable, in urban development terms, the establishment of the refinery has led to the establishment and growth of residential settlement in the area near the refinery (south east of Kaduna).

## Conclusions

Nigeria's highly volatile economic development trajectory, made worse by apparently poor policy decisions taken in both the good times and bad, have resonated in Kaduna, where the some of the impacts have been particularly acutely felt. While Nigeria's economy as a whole has diversified in recent years and become less dependent on oil, this has certainly not been the case with the governmental sector. Although substantial foreign borrowing will

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<sup>29</sup> Akpan, 2007

<sup>30</sup> Ibid.

be necessary, there is some confidence that Nigeria will weather the current storm wrought by the collapse in oil prices. The national economy is seen as more resilient than it used to be.

However, the greater part of the benefits accruing from the economic growth of the past 12 or so years have been in the south of the country increasing the wealth and poverty gap with the north. This has meant that, although there has been some evident growth in higher value service industries in Kaduna (it continues to be an important media, publishing and growing financial services centre) on the whole it has fared worse than other cities. In general terms, it seems little better off than it was at the beginning of the study period some fifty years ago. However, though there has been some recovery, there is good evidence, as noted in the following chapter, that any benefits accruing are increasingly unequally shared between a better off middle and upper class, and a more impoverished lower class that is growing in size and insecurity.

In policy terms, Kaduna faces three key simultaneous urban development challenges. There needs to be investment in local economic development and the regeneration of neighbourhoods, infrastructure and buildings that have suffered neglect, including renewal where original functions have been lost and/or decline has progressed to the point of no return. There needs to be upgrading of low income neighbourhoods, with greater public investment in social and physical infrastructure in low-income, informal neighbourhoods to bring them up to a basic living standard. And there further needs to be planned physical extensions to accommodate the still expanding population properly serviced areas to stop things getting worse and control and direct the expansion of the city at and beyond its current borders.

# 7. SOCIO-ECONOMIC AND DEMOGRAPHIC CHANGE KADUNA (1967-2010)

## Introduction

Chapter 7 analyses the demographic and socio economic changes in Kaduna in the last 50 years based on a range of statistical sources and methods of analysis. This includes an examination of the place of rural-urban and inter-urban migration in the demographic profile of the city.

## 7.1 URBAN POPULATION AND ITS RECENT GROWTH

Based on a city wide sample household survey, the 2015 Max Lock Master Plan Review study estimated the population of Kaduna's urbanised area at about 1.2 million inhabitants.<sup>31</sup>

A number of other population estimates for Greater Kaduna and for population growth rates for the subsequent period from 2010 to 2015 exist and have been compared for this study. These include the UN Departments of Economic and Social Affairs (UNDESA) World Urbanization Prospects, the World Bank, Citypopulation.de project and the France-based e-Geopolis research project.

One indicator, drawing on examination of the satellite imagery is the physical growth of the city. In 2008, Kaduna covered a built up area of about 169 sq. km (see Chapter 8). By 2015, this had grown to 259 sq. km demonstrating very rapid peri-urban expansion. Interpolating an average growth of the area of 6.4% over the 7-year period, the physical extent of the city (built-up area) would have been about 192 sq. km in 2010. If the population had grown proportionately to area (i.e. its density remained constant) and taking the 1.2 million figure in 2010 as a baseline, then the 2015 population would be well over 1.6 million (see Appendix 7.a). However, as this new growth of the city is by and large very low density, it is likely that the overall density has fallen and the actual population lies somewhere below this estimate. Using the average estimate of the annual growth rates derived from the World Urbanization Prospects (2011 and 2014 Revisions) for 2010-15 in Table 7.2 below, the projected population for

<sup>31</sup> The household survey indicated a figure of 1,139,740 inhabitants rounded up to include an estimate of those living in housing associated with the military and other public institutions that were not surveyed.

2015 is 1,351,000 (or just over 1.4 million if a slightly higher 2010 baseline of 1.25 million is assumed).

The UNDESA population projections for Kaduna have been substantially reduced according to the latest 2014 revision to the World Urbanization Prospects. This shows the 2010 population projection for the ‘urban agglomeration’ at 988,000 for 2010 and 1,048,000 in 2015. The population growth rate, which is shown at a steady 1.2% since the early 1990s, however, seems to bear no relationship to the rapid physical growth the city has been experiencing.

Earlier population projections from the same source seem nearer the mark. The 2011 Revision estimated the annual population growth rate over this period at 3.61% with growth rates between 2% and 2.4% for the previous two decades. The 2011 Revision puts Kaduna’s 2010 population at already more than 1.4 million. The UN’s projections are based on a modelling from earlier census data and estimates and are sensitive to a number of external factors that lead to sharp variation when projected over decades. Because the city has expanded well beyond the borders on the central Kaduna North and South local government areas and census figures for smaller subdivisions are not available, it is impossible to gauge such estimates against the most recent 2006 census figures.

|                 | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 | 1990 | 1995 | 2000 | 2005 | 2010 | 2015 | 2020 | 2025 |
|-----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| <b>2011 WUP</b> | 35   | 53   | 99   | 173  | 266  | 408  | 628  | 853  | 961  | 1069 | 1184 | 1311 | 1476 | 1768 | 2167 | 2633 |
| <b>2014 WUP</b> | 35   | 53   | 99   | 163  | 211  | 293  | 407  | 565  | 785  | 832  | 881  | 933  | 988  | 1048 | 1181 | 1438 |
| <b>Average</b>  | 35   | 53   | 99   | 168  | 239  | 351  | 518  | 709  | 873  | 951  | 1033 | 1122 | 1232 | 1408 | 1674 | 2036 |
| <b>2010 KMP</b> |      |      |      |      |      |      |      |      |      |      |      |      | 1250 |      |      |      |

Table 7.1: Comparison of urban population in Kaduna as estimated in World Urbanization Prospects, 2011 and 2014 Revisions.

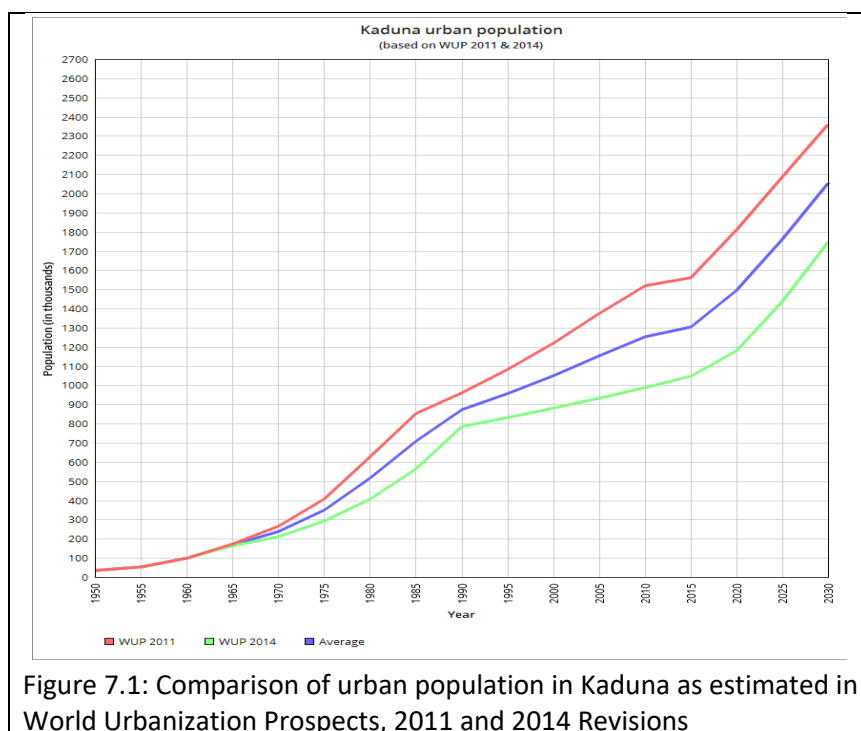
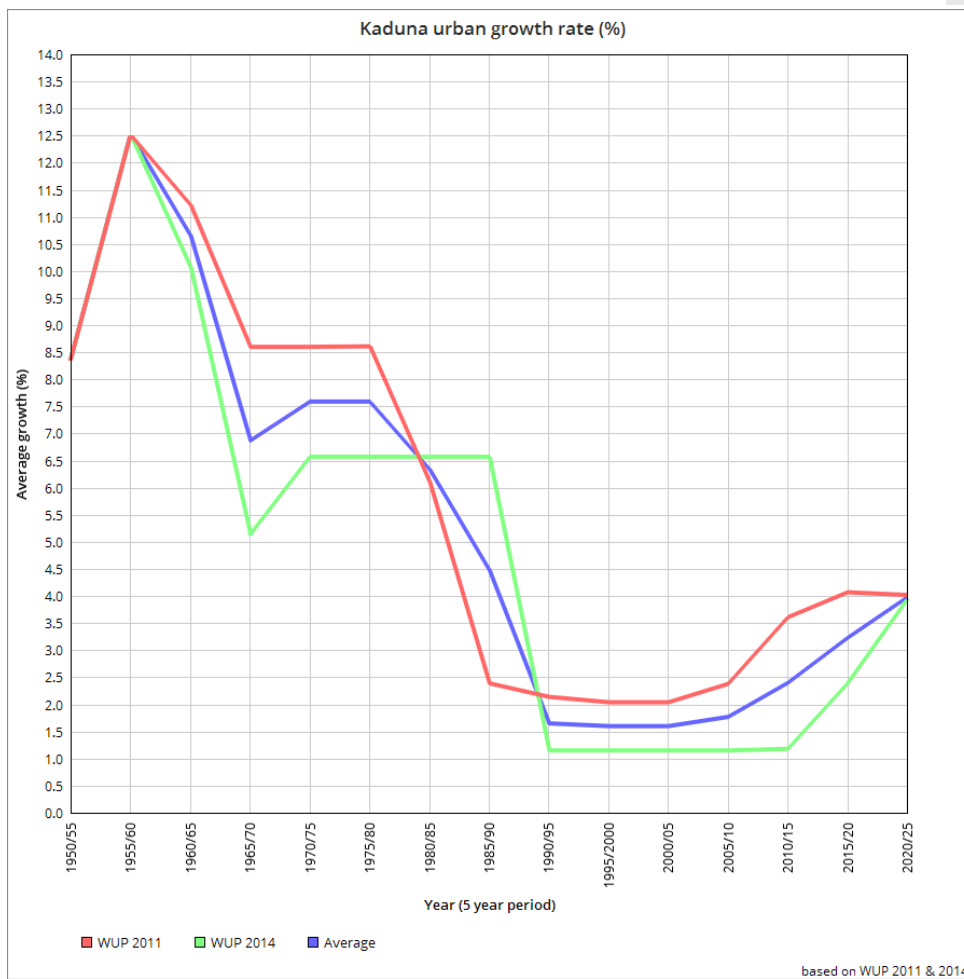


Figure 7.1: Comparison of urban population in Kaduna as estimated in World Urbanization Prospects, 2011 and 2014 Revisions

|      | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 | 1990 | 1995 | 2000 | 2005 | 2010 | 2015 | 2020 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 2011 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| 2014 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| WUP  | 8.37 | 12.5 | 11.2 | 8.6  | 8.6  | 8.61 | 6.11 | 2.39 | 2.14 | 2.04 | 2.04 | 2.38 | 3.61 | 4.07 | 4.02 |
| WUP  | 8.37 | 12.5 | 10.0 | 5.14 | 6.57 | 6.57 | 6.57 | 6.57 | 1.15 | 1.15 | 1.15 | 1.15 | 1.18 | 2.39 | 3.94 |
| Avg. | 8.37 | 12.5 | 10.6 | 6.87 | 7.59 | 7.59 | 6.34 | 4.48 | 1.65 | 1.60 | 1.60 | 1.77 | 2.40 | 3.23 | 3.98 |

**Table 7.2: Comparison of urban population annual growth rate in Kaduna as estimated in World Urbanization Prospects, 2011 and 2014 Revisions**



**Figure 7.2: Comparison of urban population annual growth rate in Kaduna as estimated in World Urbanization Prospects, 2011 and 2014 Revisions**

However, in the case of Kaduna an average of the growth rate estimated for the earlier and later revisions gives a population projection for 2010 very close to the estimate of Max Lock, based on its social survey (Table 7.1).

Other population estimates for the Kaduna urban agglomeration include that indicated on the Citypopulation.de website (Brinkhoff, 2015). This estimates a 2015 population of 1,640,000, growing at 3.06% annually from 2006-2015 (based on a common growth rate for the whole of Kaduna State, apparently derived from a simple inter-census projection). One estimation made by e-Geopolis, a project funded by the French National Agency for Research (ANR), puts Kaduna’s population at 1,360,000 for 2010 and



1,517,000 for 2015 (calculated using an annual growth of 2.2%, rate extrapolated from e-Geopolis 2010-2020 projection and assumed as constant). The e-Geopolis methodology uses a mapping approach similar to that employed by the Max Lock research team. However this is far less rigorous and does not benefit from the data drawn from the comprehensive sample household survey that was available to the MLC researchers.

While the baseline population figure for 2010 is reasonably soundly based, the real uncertainties lie in estimating the rate of change. All aspects considered, it seems likely that the current population is somewhere between 1.4 and 1.5 million and that the population growth rate may well have increased to over 3% following a prolonged period of lower growth.

The UN's population estimate for Kaduna in the 2014 Revision states that it relates to the 'city proper' and draws on censuses of 1953 and 1963; and estimates for 1970, 1980, 1990, 2000 and 2010. There is no reference to the most recent, 2006 census. Equally, in reality, there is no officially defined city proper. The nearest equivalent is the combined Kaduna North and Kaduna South LGAs, which corresponds to the former Capital City territory. However, based on the 2006 census, the population of this area would have been lower in 2010 than the UN's projection. The problem with this definition, assuming that is what is referred to, is that it excludes the half of the urban population who now live in Chikun and Igabi.

According to the Max Lock definition (Chapter 2, 2015 report), the Kaduna Urban Agglomeration is the 'continuous fully or partly built-up area of Kaduna proper and closely located settlements for which data was collected in the Land Use and Household Interview surveys.' The estimate of the population of this area in 2010, based on the results of the Household Interview Survey, is 1,139,740. This estimate does not include all those living in staff quarters on large institutional land uses such as the armed services, educational training establishments, police, prisons and health facilities, which may add a further possibly 100,000 to the overall population of Greater Kaduna in 2010.

The urban agglomeration so defined ('Greater Kaduna') includes the whole of Kaduna North and Kaduna South LGAs and parts of Chikun and Igabi LGAs. By way of comparison, the Max Lock sample survey-based estimates of the population of Kaduna North and Kaduna South are considerably lower than the provisional estimates from the 2006 Census.

|                 | Census estimate<br>2006 | MLCN estimate<br>2010 |
|-----------------|-------------------------|-----------------------|
| Kaduna<br>North | 357,694                 | 291,905               |
| Kaduna<br>South | 402,390                 | 280,780               |

The combined population of all four LGAs, which includes the rural population of Chikun and Igabi LGAs living outside the Kaduna built-up area, is estimated in the provisional 2006 Census at 1,570,331.

The World Urbanization Prospects estimates date back to 1950 with growth rates averaged over 5-year intervals. According to the 2011 Revision,

Kaduna's population grew rapidly from 35,000 in 1950 to an estimated 173,000 in 1965 and 853,000 in 1985. (The Max Lock estimate for 1965 close to that of the 1963 census was 160,000).

These demonstrate the dramatic growth of the city in the early period of this study exceeding 12.5% per annum in the five years to 1960 indicative of the massive in-migration in response to the foundation of the textiles industry in the city.

At the time that Max Lock and Partners were carrying out their study for the 1967 Master Plan, the city had recently reached the peak of its rate of expansion, and was still growing at an annual rate of around 10% between 1960 and 1965. This, of course, was the period of maximum in-migration. In 1965, two-fifths (40.0%) of the township population had migrated to Kaduna from elsewhere in just the previous five years. Almost seven out of ten people had been born elsewhere. Almost all the adult population (92.9%) had been born outside Kaduna.

The city's growth per annum did not fall below 5% until 1990 when there was an equally dramatic slowdown in the growth rate to less than 2%. By 2010 over three-quarters of all of Kaduna residents were born in Kaduna. Kaduna's on going increase in population is thus mainly accounted for by the internal natural growth of the city's population although, in terms of absolute numbers, substantial in-migration is continuing.

This reduction in population growth is in line with the general pattern of change with 'maturing' large cities although, as argued elsewhere in this report, regional and economic change factors have played a role. At no point, however, has the population declined and the growth has picked up again in recent years, which is in line with the observation in the urban growth mapping studies carried out by this research team. The reason for this recent acceleration is unclear but it is anticipated that the influx of refugees from the conflict in the North East may be having an impact.

With regard to Kaduna's future population, Table 7.3 below, drawn from the Kaduna Master Plan Revised 2010, shows the low, medium and high growth rate variants of population and growth rate projections for the Kaduna Metropolitan Planning Area for the next forty years. The methodology used is broadly based on the modelling method and assumptions used by the UN.

The UN's model of urban population estimation assumes that the population growth rate of Nigeria as a whole will continue to decline as it has done over the past two decades and in line with the established global trend toward declining fertility and birth rates. With a declining growth rate, the population of course continues to grow but nearer geometrically (with equal increments over each successive interval) rather than exponentially (if the growth rate were to remain constant). The population as a whole is not expected to level off until well into the second half of this century (not taking into account any out of the ordinary in or out-migration flows or unforeseen conflicts, epidemics or other disasters).

| Population at: | Low             |               | Medium          |               | High            |               | Growth rate (per annum): period |
|----------------|-----------------|---------------|-----------------|---------------|-----------------|---------------|---------------------------------|
|                | Population '000 | Growth rate % | Population '000 | Growth rate % | Population '000 | Growth rate % |                                 |
| 2010           | 1,200           |               | 1,200           |               | 1,200           |               |                                 |
| 2015           | 1,346           | 2.09          | 1,389           | 2.97          | 1,358           | 3.50          | 2010-15                         |
| 2020           | 1,492           | 1.89          | 1,598           | 2.84          | 1,590           | 3.14          | 2015-20                         |
| 2025           | 1,639           | 1.72          | 1,806           | 2.48          | 1,832           | 2.84          | 2020-25                         |
| 2030           | 1,784           | 1.59          | 2,020           | 2.26          | 2,085           | 2.59          | 2025-30                         |
| 2035           | 1,931           | 1.45          | 2,240           | 1.90          | 2,350           | 2.39          | 2030-35                         |
| 2040           | 2,074           | 1.30          | 2,461           | 1.71          | 2,621           | 2.18          | 2035-40                         |
| 2045           | 2,213           | 1.16          | 2,679           | 1.52          | 2,891           | 1.96          | 2040-45                         |
| 2050           | 2,344           | 1.01          | 2,889           | 1.52          | 3,155           | 1.74          | 2045-50                         |

Table 7.3: Projected increase in population of the Kaduna Metropolitan Planning Area until 2050 according to low, medium and high growth variants from World Urbanization Prospects, the 2009 Revision (Source: (Max Lock Consultancy Nigeria et al., 2015)

With on-going urbanisation, the urban population growth rate will continue to be substantially higher than the rural population growth rate (with rural population projected to decline in absolute terms after 2025). In estimating the total population, the urban proportion of the total population and the growth of the major urban agglomerations in proportion to the urban population as a whole, the UN models future change on the basis of projection forward of recent past trends. A 'logistic' model is used in each case. This assumes that there is a tailing off at some point in the future towards an upper ('asymptotic') limit. This is adjusted to reflect established global 'norms' in each case.

The 2009 Revision only projected populations of urban agglomerations until 2025, with a further 606,000 will be added to the population of the metropolitan area by 2025 from a 2010 baseline population of 1.2 million, with a doubling of the population from 2010 by 2040. This is reflected in the medium variant in the table above.

#### Kaduna's age structure and dependency ratio in 2010

A 2010 Nigeria-wide study named "Nigeria – the Next Generation" (Bloom et al., 2010) compares the change in working age to non-working age population from 1991 to 2006 at the state level. (This is the inverse of the 'dependency ratio', which refers to the total number of individuals under age 15 or over age 65 divided by the number of individuals ages 15 to 64). Kaduna State is one of the few states that seem to have bucked the trend of reducing dependency (increasing inverse dependency as described in the Bloom et al. report), its dependency ratio having increased rather than decreased over the 1991-2006 period. This trend of a decreasing dependency ratio is particularly marked in the southern states (especially in Lagos State) but the majority of states in Nigeria have moved in this direction, as has Nigeria as a whole, which is what would be expected for the foreseeable future if fertility continues to fall as it has in recent decades.

40.6% of Kaduna’s population is fourteen years old or younger. This is a change upwards from 1965 when 36.8% were in that age group. The adult population has got older. In 1965, 48.5% was in the young working age group of 15-34 year olds. By 2010 this proportion had decreased to 35.0%. The older working age group had also increased proportionally during the same period from 11.3% in 1965 to almost a fifth 18.6% in 2010. The oldest group of 55 years old or more had doubled from 2.1% in 1965 to 5.7% in 2010. This latter represents a huge increase in actual numbers (estimated at over 60,000 people and over two-thirds being male).

While the older age group in the 2010 social survey, defined as 55 or over, clearly includes many people who are still economically active the ratio of 15-55 year olds to those who are younger or older as a proxy measure of change of inverse dependency in Kaduna. On this basis, as well as getting older, the ‘working age’ population has reduced from 59.8% of the total in 1965 (when there many more single male in-migrants living in the city) to 53.6% now, when there are more families with young children. This increasing dependency ratio in the city reflects what has happened over the past two decades in Kaduna State as a whole and which threatens Kaduna’s potential to benefit from Nigeria’s potential ‘demographic dividend’ (see Box 7.1).

**Box 7.1: Nigeria: The Next Generation - The Report (Next Generation Nigeria Task Force)<sup>32</sup>**

‘Nigeria stands ready to collect a substantial demographic dividend. If it continues with recent positive economic growth, improves health standards, and harnesses a growing workforce, *the average Nigerian’s income will be as much as three times higher by 2030 and over 30 million people will be lifted out of poverty.*

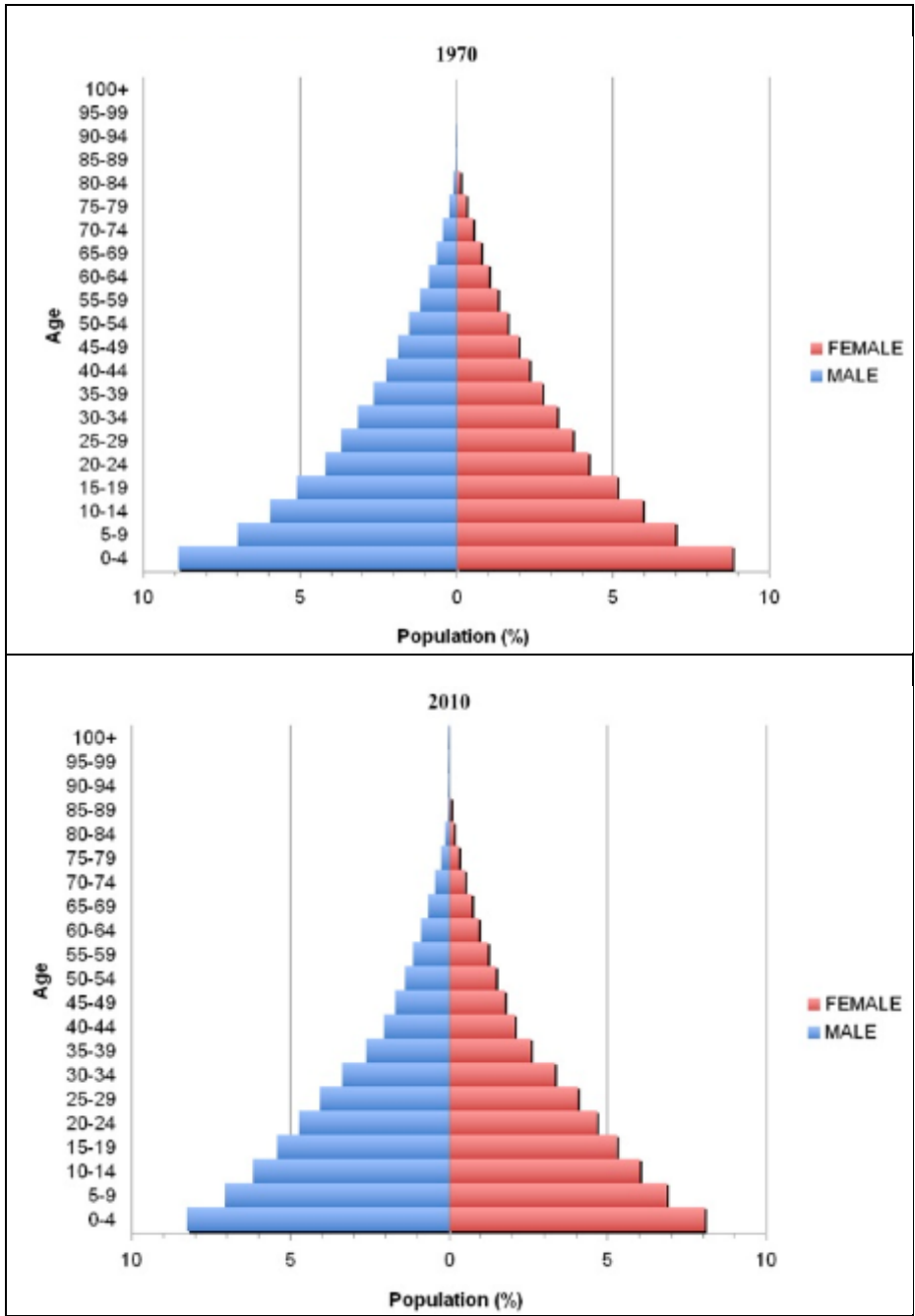
If Nigeria fails to collect its demographic dividend, the seriousness of the country’s predicament should not be underestimated. Its prospects will be bleak and could be catastrophic.

In the worst case, Nigeria will see: growing numbers of restless young people frustrated by lack of opportunity; increased competition for jobs, land, natural resources, and political patronage; cities that are increasingly unable to cope with the pressures placed on them; ethnic and religious conflict and radicalisation; and a political system discredited by its failure to improve lives.’

Over time, according to global trends, the number of older people grows as a proportion of the total dependent population and, at a certain stage reached in some countries in Europe and East Asia; the dependency ratio grows again because of the elderly population. This is some way off for Nigeria if and when it happens, but Kaduna, with life expectancy likely to increase and older people becoming an ever-larger proportion of the dependent population, means there is a need to plan for their provision. Amongst the older age groups the highest proportion was in Barnawa of

<sup>32</sup> [www.nextgenerationnigeria.org/publications](http://www.nextgenerationnigeria.org/publications)

both the 45-54 and 55-64 year age group and lowest proportions in Kamazau and Kujama (Maraban Rido). The highest proportion of the oldest age group (65+ years) was found in Gabasawa and the lowest in Sabon Gari. A more detailed analysis of this age group could reveal areas where there could be implications for targeted policy recommendations concerning the welfare of older persons.



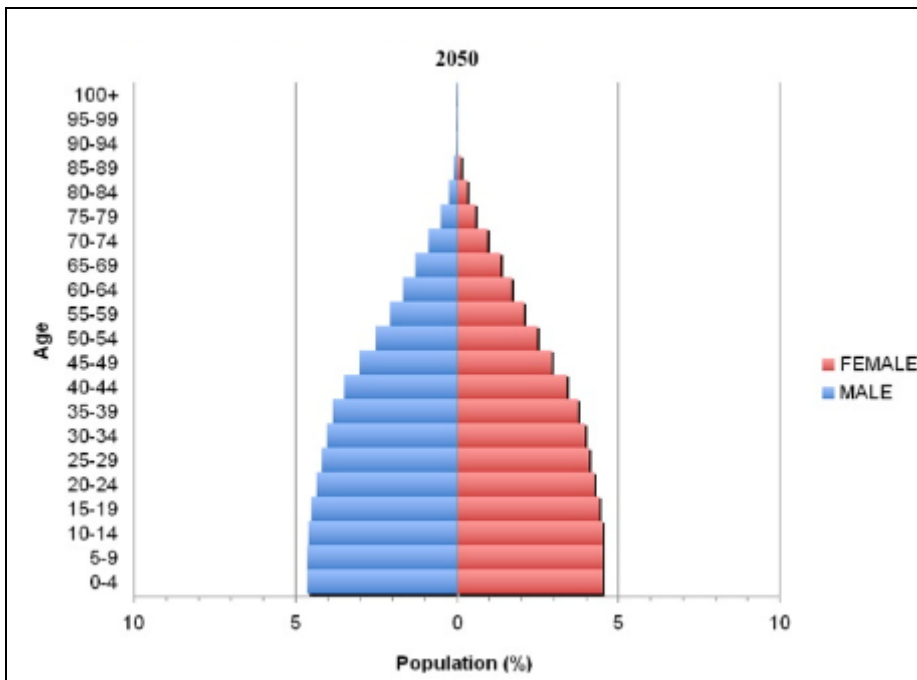


Figure 7.3: Nigeria, population distribution by age groups – actual and projected 1970-2010-2050

(Source: Bloom and Humair, 2010; UN (2008), based on UNDESA World Population Prospects 2008)

The population pyramids for Nigeria in Figure 7.3 reproduced from Bloom and Humair (2010) demonstrate the past and expected future changes in age structure at the national level. Issues of age distribution, family size and dependency ratios are no doubt complicated in Nigeria because of the evident differences between the north and south of the country and the relative mobility of the population. Lagos State, for example, may be benefitting from an influx of young working age male in-migrants as was evident in Kaduna in the 1960s, as well as falling family size. In the case of Kaduna – both the capital and the state – a comparison of in-migration in 1965 and 2010 (see below) suggests that the majority of the more recent in-migrants are from the northern states, particularly the northwest where fertility rates are much higher. In 1965, the majority of migrants came from the south. With a larger proportion of the total population coming from the north, this, in itself, might account for the trends in Kaduna.

This is reflected in the survey returns in the variation between the LGAs and districts. Igabi had by far the highest proportion (47.6%) of its population in the youngest age groups (0-14 years old) as well as the two districts with the highest proportion (Kwarau and Rigasa). These two districts alone had almost a quarter of all Kaduna's 0-14 year olds. In contrast, Chikun LGA had only just over a third of its population in the 0-14 years old age group and Television recorded the lowest proportion of all Kaduna's districts at well under a third.

## 7.2 A COMPARISON OF ECONOMIC AND SOCIAL CHANGE IN KADUNA THROUGH AN ANALYSIS OF THE SOCIAL SURVEY DATA

### Social survey design:

The 1965 and 2010 household interview surveys were some of the most extensive carried out in an African urban area and based on a sample of one in thirteen (1965) and one in twenty (2010) residential parcels recorded during a 100% land use survey of the whole of the Kaduna Built-up Area.

In the 1965 Kaduna Master Plan, the report and planning proposals were based on a full urban-wide sample household interview survey. Compared to many household or living standards surveys, the sample frame used in Kaduna again in 2010 is somewhat unique in that it used the physical environment and provided '100%' coverage of the whole city. Typically similar surveys are based on sample frames drawn from often out-of-date census information which tend to under-report the population particularly of those living in informal settlements in urban areas (Mitlin and Satterthwaite, 2013). As every physical address in Kaduna was enumerated prior to carrying out the household interview surveys the research teams were confident that the data gathered represented a true snapshot of the social conditions of Kaduna's residents

The 1965 survey was the first and largest social survey of its type in West Africa. The current Master Plan Revision has used a similar technique, but the task has been much more complex and would have been all but impossible without modern computer technology and data base software. Additionally, the result can now be accurately 'mapped' on the rectified satellite imagery allowing area analysis of the results.

The selection of the 2010 sample and its size was based on the 2009 Land Use Survey which covered the whole Kaduna built up area from Maraban Rido and Kakau in the South to Afaka and Katabu in the North. All land use parcels were recorded on satellite image prints and prescribed forms and it was from this frame that a 1:20 sample was selected in order to arrive at a large enough sample that would give statistical confidence and adequate geographical coverage of all 24 LGA Districts for both frequency and cross-tabulation at that level.

In all 5,754 compounds were selected and of these 5,490 were interviewed giving a 93.3% response rate. Most of the non-responses were due to inaccurate plotting of selected compounds on the field sheets or misinterpretation of the plotting by the field interviewers. The 5,490 interviewed compounds contained 11,674 households of which 11,409 had successful interviews giving a 97.7% response rate, The main reason for non-responses were that the household had travelled or that the rooms were temporarily vacant. Data was collected on the 54,218 persons found in the 11,409 interviewed households.



Data was collected for all households on the physical aspect of living conditions, number of rooms, source of light and water, cooking, fuel and sanitary facilities and whether these facilities were shared. Further personal data such as age, sex, relationship with household head, education, employment, journey to work and farming activities was collected for all household members.

The surveys themselves allowed a situational analysis of the socio-economic status of residents and the physical conditions in which they live. The sample frame was designed such that statistical analyses would be representative of the city as a whole and at the level of each city district. This would allow comparisons to be made of living conditions within and between city districts, the smallest administrative unit that exists within Kaduna State. The 2010 survey was largely based on the original 1965 survey, although a more comprehensive set of questions was developed particularly around the socio-economic status of all members of a household, and household farming activities.

The following section of the report seeks to compare (where appropriate) changes in the structure and nature of socio-economic conditions in Kaduna between these two periods. In addition this section also provides more detailed analysis of the 2010 data. In some instances considered in the context of other state level and national datasets on social conditions in Nigeria and other relevant literature from Nigeria and the West African region for comparative purposes

### **Why this analysis?**

The social survey was originally conceived as pre-cursor to developing a spatial, urban master plan for Kaduna in 1965, which was then revisited again in 2008-2010.<sup>33</sup>

Scholars have noted the difficulty in assessing poverty and likewise defining poverty reduction/growth strategies for urban areas when many available indicators on poverty reflect only reflect the differences between social conditions nationally, i.e. between rural and urban areas (e.g. Wratten 1995, Moser 1998, Satterthwaite and Mitlin, 2013). Measures of urban poverty have been shown to underestimate deprivation particularly where methodologically they are based on definitions of poverty that primarily reflect rural conditions.

For example, a bias in poverty rates towards rural areas is often shown where food versus non-food household expenditures are used to define poverty lines. Non-food household expenditures in urban areas are frequently shown to outweigh, food-related expenditure, e.g. rental costs associated with accommodation, access to healthcare and education services are generally higher in urban areas than rural areas, with considerable debate being generated around the quality of service

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<sup>33</sup> An urban master plan is essentially a blueprint for meeting the needs of 'the people', a guide to delivering the infrastructure and services necessary to achieve sustainable economic growth.

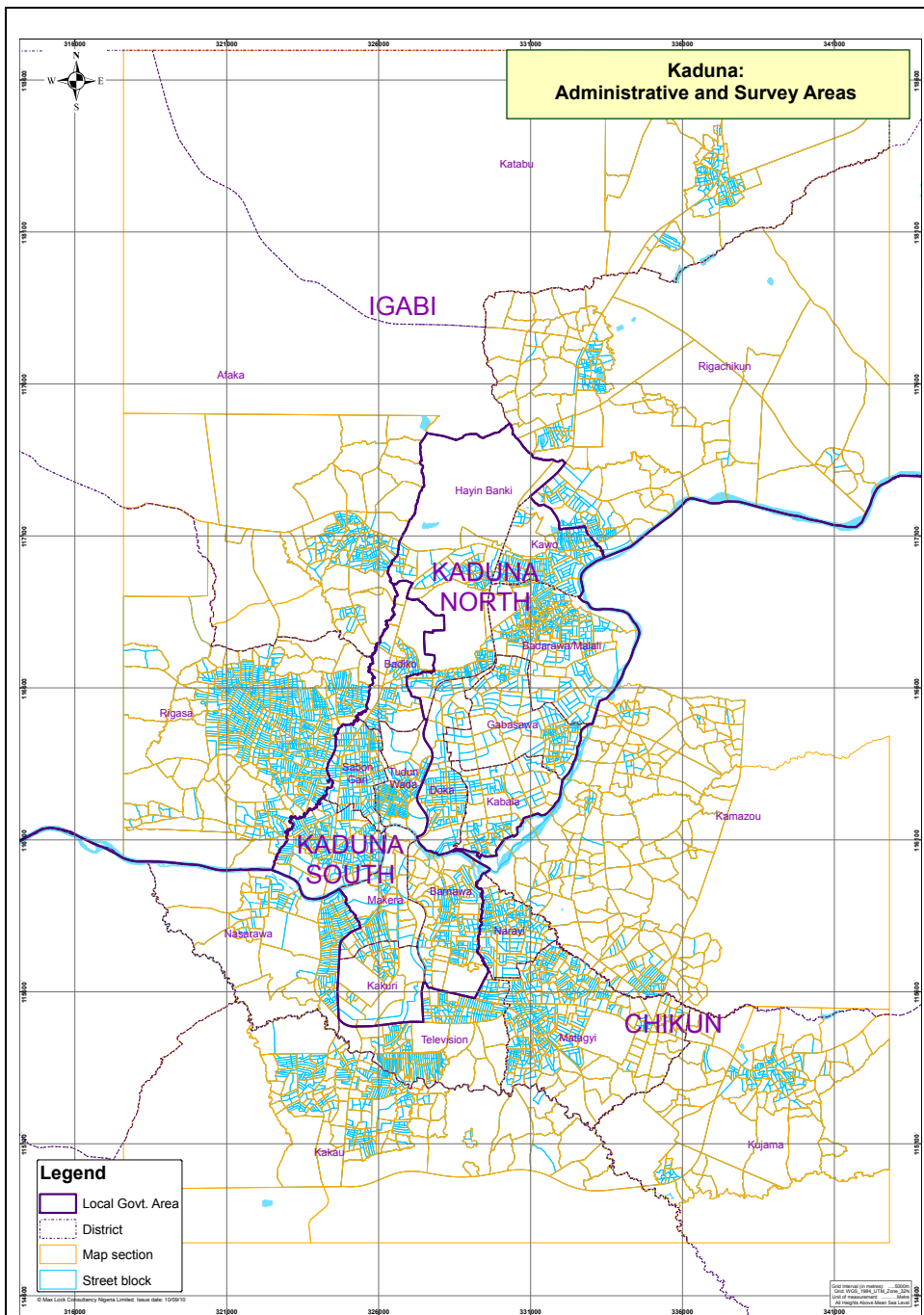


Figure 7.4: Kaduna administrative and 2010 survey areas (Source: Max Lock Consultancy Nigeria et al., 2015)

obtained in urban areas and the development outcomes associated with urban households brought into question.

The analysis that follows provides a unique baseline for Metropolitan Kaduna against which to begin to define a locally appropriate measure of poverty that can be compared to similar national indicators.

### Geographic focus of this analysis

In 1967 four areas were surveyed for the purposes of establishing an urban master plan for the then Kaduna township: Sabon Gari, Tudun Wada, North Villages and South Villages. These areas are shown below within the boundaries of what are now the almost completely built up areas of Kaduna North and Kaduna South LGAs in Figure 7.5.

### Limitations of the analysis and assumptions

Some of the samples in the 2010 sample are relatively small when comparing the areas described above since the sample frame was 1 in 20 as against 1 in 13 in 1965. Although this limits the validity of inferences for comparing the data for individual districts in some cases, as well as being valid for comparing Kaduna, as a whole, in 2010 with the city in 1965, in general these comparisons are still valid in the way they highlight the intra-city spatial differences, similarities and trends taking place in the Kaduna population over the past forty-five years.

### Geographic differences

The 1965 social survey of Kaduna carried out by Max Lock & Partners covered what were then the high density areas developing in Sabon Gari<sup>34</sup>, Tudun Wada, the 'North Villages' of Kurmin Mashi, Abakpa, Ung. Shanu, Kanawa, Ung. Rimi and Kawo, and the 'South Villages' of Makera, Kakuri and Barnawa. These 1965 urban areas have been defined on the 2010 satellite imagery and data from the subsequent, 2010 social survey of Kaduna were extracted and used in the following comparative analysis. Where the characteristics of town wide totals are examined the total sample population for 2010 has been used.

This is not strictly comparable in the sense that the 2010 sample was drawn from the total urban area, whereas the 1965 sample was drawn only from the areas described above and did not include the Government Reservation Areas north and south of the river since these were then almost exclusively government staff housing and we were able to analyse accurate government records of the characteristics of these occupancies and tenancies. The exclusion of these parts of the city has particular implications for cross analysis of employment types or economic activity as in 1965 virtually everybody employed in clerical/managerial trade would have lived in the GRAs and were hence excluded from the original analysis. This is discussed in greater detail below under Employment/Economic Activity section as this fact goes some way to explaining observed differences in the structure of the labour market between 1965 and 2010.

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<sup>34</sup> Not to be confused with the current District of Sabon Gari, which lies to the west of Tudun Wada between it and the Western Bypass. In 1965 this area was largely undeveloped.

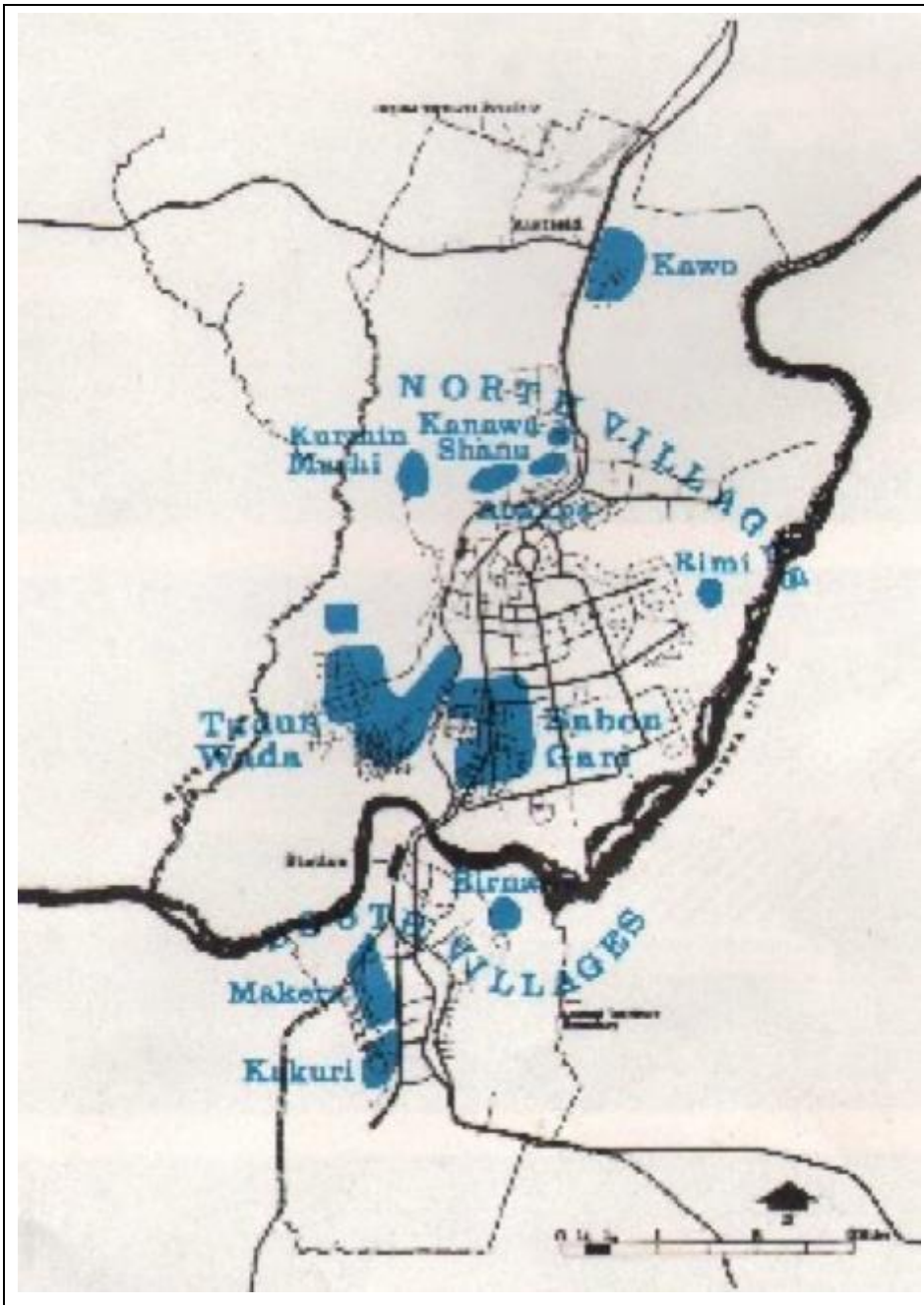


Figure 7.5: Areas covered by the 1965 Social Survey of all householders in every thirteenth compound comprising some 2,300 interviews, representing over 100,000 persons. [Source: Max Lock and Partners 1967].

## 1965 source data

Complete records of the source data from 1965 has not survived the test of time, as such comparative analyses attempted here generally reflect the aggregate summaries of the data given in 1965. Wherever possible more detailed analysis of the 2010 data has been presented to establish a baseline for longitudinal study going forward.

## Nomenclature

Although both surveys were designed and implemented by the same research team (or members of the same research team); there were slight changes made between 1965 and 2010 which if anything reflect broader cultural or social changes over this period. For example, changes in the broad employment/occupation types between these two periods reflect structural changes in the economy of Kaduna. Formerly an administrative centre for the entire northern Nigeria region, the city has seen a boom and subsequent decline in industrial activity over the same period. This has noticeably altered the types and mix of jobs available to those living or working in the city. Attention has been drawn in the text to where the two surveys were incomparable through the introduction of new classifications for employment, migration, education etc. (or through the removal of obsolete classifications).

## Employment/Economic activity

In 1965 there was a much clearer distinction in the educational qualification system as well as general public understanding of certain broad categories of economic activity, for example clerical and the then established apprenticeship, artisan and technical training schemes of skilled and semi-skilled employment. In 2010, there is a greater emphasis on business/management and education. This presents a challenge in directly comparing survey data from 1965 and 2010. In 2010, qualitative survey data was interpreted using the ISIC economic activity classifications<sup>35</sup> A further classification was carried out using the same basic data, but with the following broad classifications: - proprietor, management, professional, administrative, skilled worker, semi-skilled worker, sales/marketing and labourer for those in the formal workforce (employed) and proprietor, professional, administrative, skilled worker, semi-skilled worker, sales/marketing and labourer for those in the informal workforce (self-employed non-trading). These are more in line for comparative purposes with the previous 1965 survey. It should be noted, however, that broad ISIC categories and their constituent activities are not necessarily appropriate for identifying and classifying the many types of employment that are particular to a modern urban economy such as that of Kaduna where informal economic activity is dominant, with over two-thirds of the population not in formal employment.

## Gender sensitivity

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<sup>35</sup> The International Standard Industrial Classification of All Economic Activities (ISIC) published by the UN "is the primary tool for collecting and presenting internationally comparable statistics by economic activity." It can be used "as a guide while adapting their....classifications to the international standard."



Although gender issues have very much taken centre stage in discourse on (economic) development since the MDGs; in 1965, gender imbalances in terms of employment opportunities or broader societal roles were much less widely lamented. Therefore research design in 1965 was perhaps less gender sensitive than that expected today, more limited in the depth of analysis on gender issues.

## 7.3 DEMOGRAPHIC CHANGE IN THE TOWNSHIP AREA

### Population changes in the Township

The most significant change in the total population of the four areas described above is the continued drop in the residential population of the then defined Sabon Gari (see Table 7.4) – the area south of the Central Market on both sides of Ahmadu Bello Way down to Constitution Road and from the railway in the west to the drainage channel separating the area from the Government Reservation Area (GRA) to the east (now part of the Doka District). The population decline noted between the 1963 Census and 1965 (2.8% per annum) was put down to the exclusion of transients and short-term visitors from the 1965 survey. The apparent loss of almost half of the 1965 population by 2010 (47.6% or just over an estimated 19,000 people) is almost certainly due to the increasing commercialisation of the area replacing residential accommodation. This change was also noted in the World Bank funded research carried out by the Max Lock Centre in 2003 trying to trace the compounds and persons interviewed in 1965 as part of a wider longitudinal study (Max Lock Centre, 2003). The other areas of Tudun Wada and North and South Villages show large population increases proportionate to the infilling of areas that were only partly developed in 1965

| Area           | 1963<br>(Census) | 1965<br>(Social<br>Survey) | Change       | %          | 2010<br>(Social<br>Survey*) | Change<br>(1965 –<br>2010) | %           |
|----------------|------------------|----------------------------|--------------|------------|-----------------------------|----------------------------|-------------|
| Sabon Gari     | 42,500           | 40,100                     | -2,400       | -5.6       | 21,032                      | -19,068                    | -47.6       |
| Tudun Wada     | 33,400           | 35,600                     | 3,200        | 9.6        | 84,564                      | 48,964                     | 137.5       |
| North Villages | 15,600           | 16,500                     | 900          | 5.8        | 54,440                      | 37,940                     | 229.9       |
| South Villages | 10,700           | 12,100                     | 1,400        | 13.1       | 30,564                      | 18,464                     | 152.6       |
| <b>Total</b>   | <b>102,200</b>   | <b>105,300</b>             | <b>3,200</b> | <b>3.0</b> | <b>190,600</b>              | <b>85,300</b>              | <b>81.0</b> |

Table 7.4: Population Changes in the Township 1963 to 1965 and 1965 to 2010 [*\*projected population*]

### Sex ratio

There has been a basic change in the overall adult sex ratios since 1965 from 1.4:1 male to female down to 1.1:1 in 2010. This change was noted in the 1991 Census, which also showed a ratio of 1.1:1 for Kaduna State, and the 2006 Census of between 1.01:1 and 1.05:1. Exceptional circumstances existed in 1965 with the high male proportion due to the expanding textile and other employment opportunities attracting young men to Kaduna. The fact that Kaduna was then a tenth of the size it is now so the numbers of

male in-migrants would have had a much greater impact on the average sex ratio.

This is confirmed by the fact that the highest male to female imbalance in 1965 was in the South Villages of expanding settlements around the textile factories while the North Villages further from the work opportunities, reported a ratio of 1.1:1 much closer to the natural norm.

In 1965, the sex ratio of the younger age groups (0 – 14 years old) was close to the norm of 1.1:1 as it is in 2010. There was some minor variation between the four areas in both 1965 and 2010 with the North Villages showing a low male ratio (0.9:1 in 1965 as against 1.1:1 in 2010) and Tudun Wada (1.0:1 in both 1965 and 2010).

### Overall age structure

The proportion of the younger age groups (0 – 14 years old) in the total population has risen slightly since 1965 (36.8%) to almost two in five in 2010 (39.9%) although this is well below the proportion (47.2%) reported for the whole of Kaduna State in the 1991 Census. This is the latest official figure since age groups for the 2006 Census have yet to be published. The proportion of the younger age groups to the older, as reported in 2010, increased in three of the four areas in line with the national trend.

| Adults (15 years and over)         |              |              |              |              |              |              |              |              |                 |             |
|------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------|-------------|
| Area                               | Male         |              | Female       |              | Ratio        |              | Total        |              | % of population |             |
|                                    | 1965         | 2010         | 1965         | 2010         | 1965         | 2010         | 1965         | 2010         | 1965            | 2010        |
| Sabon Gari                         | 1,004        | 359          | 691          | 341          | 1.4:1        | 1.1:1        | 1,695        | 700          | 58.2            | 68.6        |
| Tudun Wada                         | 1,014        | 1,238        | 743          | 1,117        | 1.4:1        | 1.1:1        | 1,757        | 2,355        | 66.1            | 57.1        |
| North Villages                     | 397          | 835          | 354          | 758          | 1.1:1        | 1.1:1        | 751          | 1,593        | 62.5            | 59.0        |
| South Villages                     | 408          | 521          | 223          | 443          | 1.8:1        | 1.2:1        | 631          | 964          | 71.5            | 64.6        |
| <b>Total</b>                       | <b>2,823</b> | <b>2,953</b> | <b>2,011</b> | <b>2,659</b> | <b>1.4:1</b> | <b>1.1:1</b> | <b>4,834</b> | <b>5,612</b> | <b>63.2</b>     | <b>60.1</b> |
| <i>Northern Region 1952 Census</i> |              |              |              |              | <i>0.9:1</i> |              |              |              | <i>58.0</i>     |             |
| <i>Kaduna State 1991 Census</i>    |              |              |              |              | <i>1.1:1</i> |              |              |              | <i>52.8</i>     |             |
| Children                           |              |              |              |              |              |              |              |              |                 |             |
| Area                               | Male         |              | Female       |              | Ratio        |              | Total        |              | % of population |             |
|                                    | 1965         | 2010         | 1965         | 2010         | 1965         | 2010         | 1965         | 2010         | 1965            | 2010        |
| Sabon Gari                         | 634          | 160          | 583          | 161          | 1.1:1        | 1.0:1        | 1217         | 321          | 41.8            | 31.4        |
| Tudun Wada                         | 453          | 884          | 449          | 887          | 1.0:1        | 1.0:1        | 902          | 1771         | 33.9            | 42.9        |
| North Villages                     | 210          | 569          | 240          | 540          | 0.9:1        | 1.1:1        | 450          | 1109         | 37.5            | 41.0        |
| South Villages                     | 130          | 276          | 121          | 252          | 1.1:1        | 1.1:1        | 251          | 528          | 28.5            | 35.4        |



|                                    |            |            |            |            |             |              |            |             |             |             |
|------------------------------------|------------|------------|------------|------------|-------------|--------------|------------|-------------|-------------|-------------|
| <b>Total</b>                       | <b>142</b> | <b>188</b> | <b>139</b> | <b>184</b> | <b>1.0:</b> | <b>1.0:1</b> | <b>282</b> | <b>3729</b> | <b>36.8</b> | <b>39.9</b> |
|                                    | <b>7</b>   | <b>9</b>   | <b>3</b>   | <b>0</b>   | <b>1</b>    |              | <b>0</b>   |             |             |             |
| <i>Northern Region 1952 Census</i> |            |            |            |            | 1.1:1       | 5.           | 6.         | 7.          | 42.0        | 8.          |
| <i>Kaduna State 1991 Census</i>    |            |            |            |            | 1.1:1       | 13.          | 14.        | 15.         | 47.2        | 16.         |

Table 7.5: Age & Sex Ratios: Comparative figures of 1965 Survey and 2010 for the same [Table 7.5] geographical areas of Kaduna (actual sample sizes used)

In Sabon Gari however, the proportion of children to adults has decreased from over two in five (41.8%) in 1965 to less than one in three (31.4%) in 2010. It is assumed that the natural ageing of many of the original occupiers of Sabon Gari combined with the increasing commercialisation of this inner city area has not encouraged young family life.

### Age and Sex Structure

A more detailed breakdown of age groups shows considerable changes in Kaduna's overall population structure between 1965 and 2010. The most significant changes have been in the increase in the younger age groups, and in particular, the 5–14 year olds, which increased from 19.0% in 1965 to 26.4% in 2010; and, the considerable decrease in the proportion of those in the 15–34 year age groups, which fell from 48.5% in 1965 to 35.4% in 2010. In addition, there was an almost two-fold increase in the proportion of the age groups over 35 years rising from 13.4% in 1965 to 24.2% in 2010.

Due to Kaduna's increase in population since 1965 this represents a huge increase in the *estimated number of persons* in the older age groups from about 13,500 in 1965 to around 260,000 in 2010. Furthermore, 41,000 people in Kaduna in 2010 are estimated to be in the over-55 age group. This trend towards an increase in the ageing population at one end of the scale along has wide implications to social policy in health care, education and income support for the non-earning sectors of the population.

However, there appears to be a stark difference with the age/population pyramid of Nigeria as a whole in Figure 7.3. Figures for Kaduna State from the 2006 Census suggest a pyramid that is nearer to the nationwide distribution, although the proportion of under 5s seems to be falling both in the state and the city, suggesting falling fertility rates are having an impact. The proportion of children under 15 in the city has risen from 36.8% in 1965, to 42.4% in 2010, but this is only marginally below the 44% recorded for Kaduna State in the Census. Apart from this, the Kaduna State pyramid is beginning to 'thicken in the middle' suggesting a transition to an older age profile. This is much more pronounced in the city the working age population (using up to 55 years as a proxy) in the middle year range from 25 to 44 (notably females in the 25-34 year range) still represent a substantial proportion of the population, even though it has fallen to 50.6% from 61.1% when the proportion on recently arrive young male in-migrants was much higher.

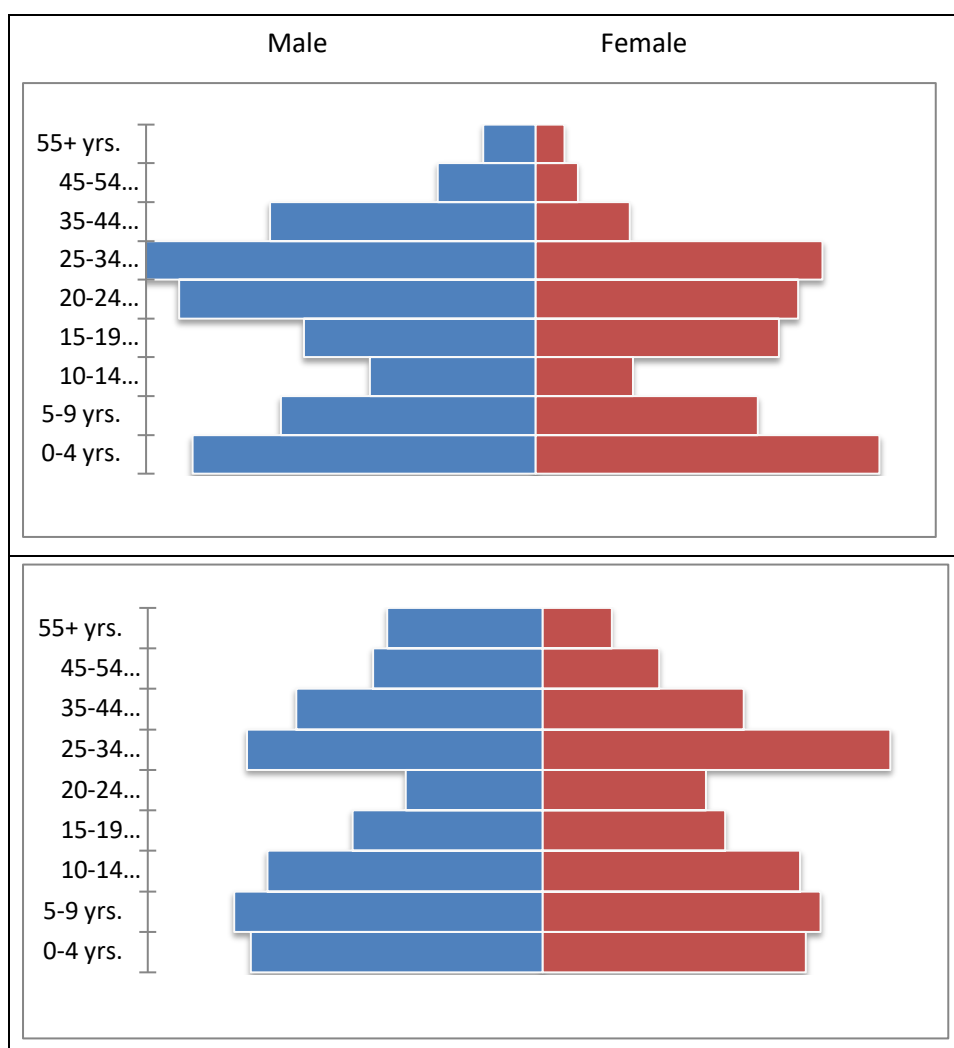


Figure 7.6: Population pyramid comparisons –1965 and 2010

| Age Group             | Kaduna 1965 Survey |          |       | All Kaduna: 1991 Census |          |       | Kaduna 2010 Survey |          |       |
|-----------------------|--------------------|----------|-------|-------------------------|----------|-------|--------------------|----------|-------|
|                       | Male s             | Fema les | Total | Male s                  | Fema les | Total | Male s             | Fema les | Total |
| 0-4 years             | 15.1               | 21.2     | 17.8  | 17.2                    | 18.0     | 17.6  | 14.1               | 14.0     | 14.0  |
| 5-9 years             | 11.2               | 13.7     | 12.3  | 17.4                    | 17.3     | 17.3  | 14.9               | 14.9     | 14.9  |
| 10-14 years           | 7.3                | 6.0      | 6.7   | 12.5                    | 12.0     | 12.3  | 13.3               | 13.7     | 13.5  |
| <i>Total Children</i> | 33.6               | 40.9     | 36.8  | 47.0                    | 47.4     | 47.2  | 42.2               | 42.5     | 42.4  |
| 15-19 years           | 10.2               | 15.0     | 12.3  | 9.8                     | 10.5     | 10.2  | 9.2                | 9.7      | 9.4   |
| 20-24 years           | 15.8               | 16.2     | 16.0  | 8.0                     | 10.6     | 9.2   | 6.6                | 8.7      | 7.6   |

|                      |             |             |             |                           |                           |                           |                         |                         |                         |
|----------------------|-------------|-------------|-------------|---------------------------|---------------------------|---------------------------|-------------------------|-------------------------|-------------------------|
| 25-34 years          | 12.3        | 17.6        | 20.2        | 14.8                      | 16.4                      | 15.6                      | 14.3                    | 18.5                    | 16.4                    |
| 35-44 years          | 11.7        | 5.8         | 9.1         | 9.7                       | 7.5                       | 8.6                       | 11.9                    | 10.7                    | 11.3                    |
| 45-54 years          | 4.3         | 2.6         | 3.5         | 5.4                       | 3.6                       | 4.5                       | 8.2                     | 6.2                     | 7.2                     |
| 55 and over          | 2.3         | 1.8         | 2.1         | 5.3                       | 4.0                       | 4.7                       | 7.5                     | 3.7                     | 5.7                     |
| <i>Total Adults</i>  | <i>66.4</i> | <i>59.1</i> | <i>63.2</i> | <i>53.0</i>               | <i>52.6</i>               | <i>52.8</i>               | <i>57.8</i>             | <i>57.5</i>             | <i>57.6</i>             |
| <b>Total</b>         | <b>100</b>  | <b>100</b>  | <b>100</b>  | <b>100</b>                | <b>100</b>                | <b>100</b>                | <b>100</b>              | <b>100</b>              | <b>100</b>              |
| <i>Sample Number</i> | <i>4250</i> | <i>3404</i> | <i>7654</i> | <i>2061</i><br><i>141</i> | <i>1894</i><br><i>477</i> | <i>3955</i><br><i>618</i> | <i>2822</i><br><i>6</i> | <i>2633</i><br><i>8</i> | <i>5456</i><br><i>4</i> |

Table 7:6: Age and Sex Structure: Social Survey 1965 / 1991 Census (all Kaduna State) / Household Survey 2010 (All Kaduna)

## 7.4 IN-MIGRATION

### Age and Sex Structure of In-migrants

There would appear to have been little change since 1965 in the age and sex structure of the in-migrants over the previous five years. In 1965 the recent in-migrant population was split one-quarter (25.0%) aged 14 years old or less and three-quarters (75%) aged 15 years old or more. In 2010 the proportion of the younger age groups had declined slightly (22.8%) and the older groups correspondingly increased (77.2%).

Compared to 1965, overall the sex ratio of recent<sup>36</sup> in-migrants in 2010 has evened out to *almost* 1:1 from a male predominance amongst the older age groups and a female predominance amongst the younger age groups in 1965. This was particularly pronounced in the 25 – 34 year age group which, in 1965, was male dominated with a ratio of 1:7 men to every woman migrating to Kaduna. By 2010 the sex ratio amongst the same age group had become was around 0.9 men to everyone woman.

<sup>36</sup> Recent means having arrived in Kaduna over the five years preceding the survey.

| Age Group             | 1965         |             |             | 2010         |              |              |                                |              |               |
|-----------------------|--------------|-------------|-------------|--------------|--------------|--------------|--------------------------------|--------------|---------------|
|                       | Past 5 years |             |             | Past 5 years |              |              | Overall In-Migrated Population |              |               |
|                       | Male         | Female      | Total       | Male         | Female       | Total        | Male                           | Female       | Total         |
| 0-4 years             | 5.2          | 8.1         | 6.4         | 4.4          | 4.2          | 4.3          | 0.7                            | 0.8          | 0.7           |
| 5-9 years             | 8.9          | 12.9        | 10.6        | 11.2         | 8.5          | 9.7          | 2.2                            | 2.3          | 2.2           |
| 10-14 years           | 8.6          | 7.3         | 8.0         | 7.3          | 10.1         | 8.9          | 2.9                            | 3.9          | 3.4           |
| <i>Total Children</i> | <i>22.7</i>  | <i>28.3</i> | <i>25.0</i> | <i>22.9</i>  | <i>22.8</i>  | <i>22.8</i>  | <i>5.7</i>                     | <i>7.0</i>   | <i>6.3</i>    |
| 15-19 years           | 17.6         | 27.8        | 21.8        | 9.6          | 13.3         | 11.7         | 3.5                            | 5.8          | 4.6           |
| 20-24 years           | 26.0         | 22.2        | 24.5        | 13.5         | 20.3         | 17.3         | 4.5                            | 8.6          | 6.5           |
| 25-34 years           | 25.0         | 15.1        | 20.8        | 30.6         | 32.3         | 31.5         | 17.2                           | 26.5         | 21.7          |
| 35-44 years           | 6.5          | 3.6         | 5.3         | 15.1         | 6.7          | 10.4         | 24.6                           | 23.9         | 24.3          |
| 45-54 years           | 1.6          | 2.1         | 1.8         | 5.2          | 2.0          | 3.4          | 21.6                           | 17.2         | 19.5          |
| 55 and over           | 0.6          | 0.9         | 0.8         | 3.1          | 2.7          | 2.9          | 22.8                           | 11.0         | 17.1          |
| <i>Total Adults</i>   | <i>77.3</i>  | <i>71.7</i> | <i>75.0</i> | <i>77.1</i>  | <i>77.2</i>  | <i>77.2</i>  | <i>94.3</i>                    | <i>93.0</i>  | <i>93.7</i>   |
| <i>Total Number*</i>  |              |             |             | <i>968</i>   | <i>1,199</i> | <i>2,167</i> | <i>6,504</i>                   | <i>6,089</i> | <i>12,593</i> |

7.7: Age and Sex Structure of In-Migrants within the Past Five Years and Overall In-Migrant Population (%)

*\*total number of people interviewed during the social survey*

### Origin at birth

Kaduna has changed from being a town with the majority of its population were born elsewhere to being a city where population growth has overwhelmingly come from those being born in Kaduna. In 1965, over two thirds (69.4%) of its total population, and over nine-tenths (92.9%) of adults were born outside of Kaduna. In 2010 less than one-quarter (23.3%) of its people were born outside the town and the majority of these were in the older (25 years of age or more) groups (83.9%). Only a small proportion (3.6%) of the 14 years or younger were not born in Kaduna.

Kaduna's future population over the next decades may likely see themselves as Kaduna citizens more than their parents even though there may still be strong links to their family village or Local Government Area outside Kaduna. The fact that such a high proportion of the older generation said they were born elsewhere, but are still living in Kaduna, is also of significance.

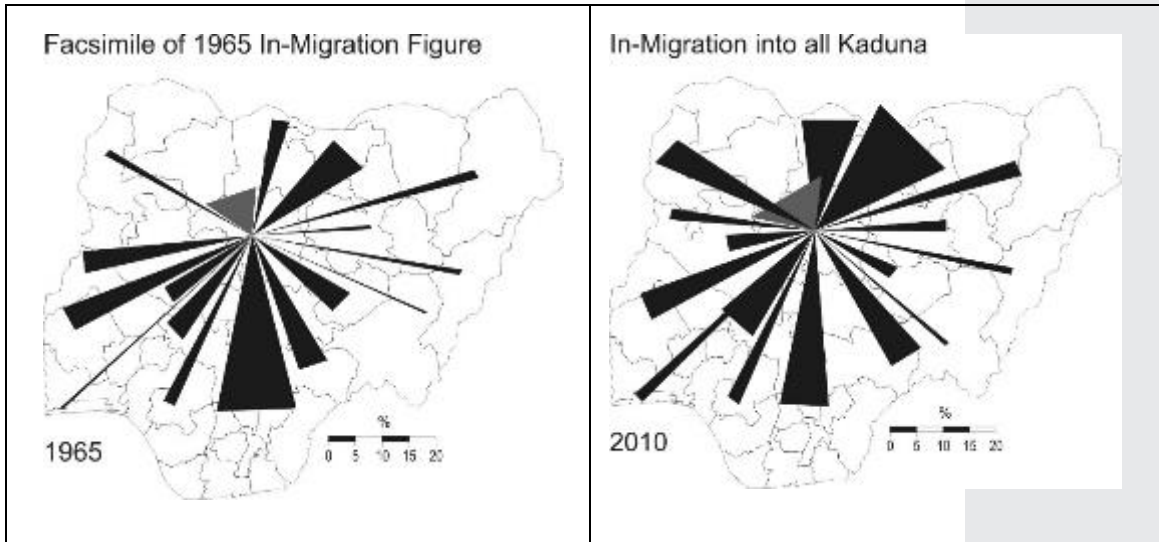


Figure 7.7: Comparison of In-Migration into Kaduna for 1965 and 2010 (Source: Max Lock Consultancy Nigeria et al., 2015)

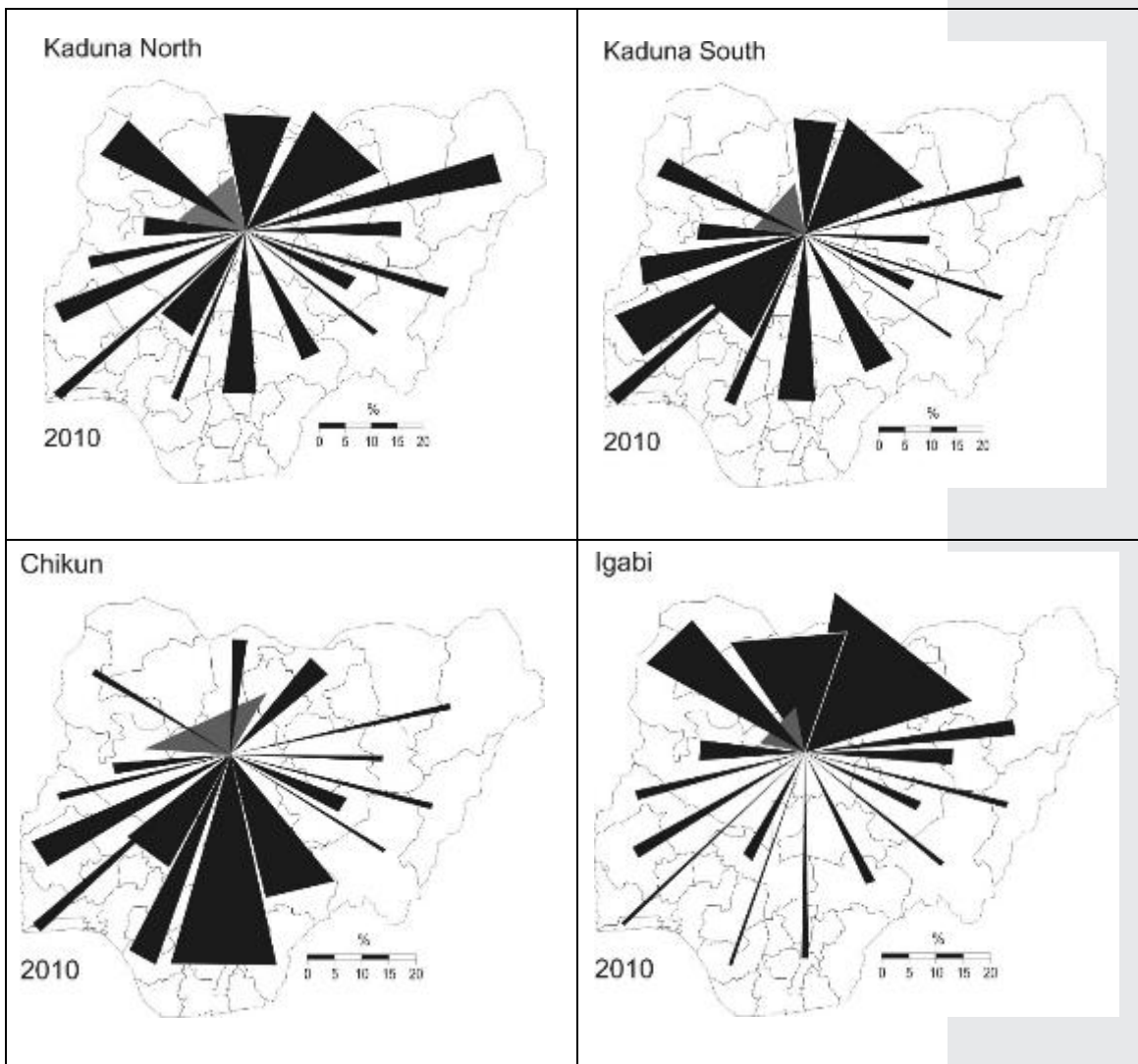


Figure 7.8: Origin of In-Migration into Kaduna Local Government Areas (2010) (Source: Max Lock Consultancy Nigeria et al., 2015)

| Age Group             | 1965         |                |                |             | 2010          |                |                |             |
|-----------------------|--------------|----------------|----------------|-------------|---------------|----------------|----------------|-------------|
|                       | Sample Total | Born in Kaduna | Born Elsewhere | Immigrant % | Sample Total  | Born in Kaduna | Born Elsewhere | Immigrant % |
| 0-4 years             | 1,363        | 1,168          | 195            | 14.3        | 7,572         | 7,479          | 93             | 1.2         |
| 5-9 years             | 941          | 611            | 330            | 35.1        | 8,044         | 7,766          | 278            | 3.6         |
| 10-14 years           | 516          | 217            | 299            | 57.9        | 6,347         | 5,920          | 427            | 7.2         |
| <i>Total Children</i> | <i>2,820</i> | <i>2,096</i>   | <i>724</i>     | <i>25.7</i> | <i>21,963</i> | <i>21,165</i>  | <i>798</i>     | <i>3.8</i>  |
| 15-19 years           | 944          | 149            | 795            | 84.2        | 5,310         | 4,732          | 578            | 12.2        |
| 20-24 years           | 1,221        | 82             | 1,139          | 93.3        | 4,516         | 3,701          | 815            | 22.0        |
| 25-34 years           | 1,546        | 74             | 1,472          | 95.2        | 9,172         | 6,438          | 2,734          | 42.5        |
| 35-44 years           | 694          | 29             | 665            | 95.8        | 6,148         | 3,088          | 3,060          | 99.1        |
| 45-54 years           | 171          | 7              | 164            | 95.9        | 3,917         | 1,464          | 2,453          | 167.6       |
| 55 and over           | 158          | 4              | 154            | 97.5        | 3,081         | 926            | 2,155          | 232.7       |
| <i>Total Adults</i>   | <i>4,834</i> | <i>345</i>     | <i>4,489</i>   | <i>92.9</i> | <i>32,144</i> | <i>20,349</i>  | <i>11,795</i>  | <i>58.0</i> |
| <b>Total</b>          | <b>7,654</b> | <b>2,341</b>   | <b>5,313</b>   | <b>69.4</b> | <b>54,107</b> | <b>41,514</b>  | <b>12,593</b>  | <b>30.3</b> |

Table 7.8: Number Born in Kaduna: Social Survey 1965 /Household Survey 2010 (All Kaduna)

### In-migrants reasons for coming to Kaduna

There were significant differences observed in the motivation for men and women migrating to Kaduna in surveys in both 1965 and 2010. There is a heavy gender bias for the types of reasons given by in-migrants for coming to Kaduna with the differences observed being similar in proportion though for male and female across the same period. In migration to Kaduna for employment was a common reason for men moving to Kaduna. 'In Search of Employment' was the dominant reason given in both surveys and given by almost half of male in-migrants (49.8%) in 1965 and slightly less (43.5%) in 2010. 'Employment secured' was also commonly cited in both the 1965 and 2010 surveys, by almost a third (29.4%) of all male in-migrants in 2010 as against less than a fifth (17.7%) in 1965. 'Employment Fairly Certain' was a relatively minor reason for coming in both surveys and even less so in 2010 than 1965.

'Family Reason[s]' were overwhelmingly predominant for women migrating to Kaduna both in 1965 and 2010 – 93.0% of females gave it as their main reason for coming in 1965 and the proportion rose to 95.3% in 2010. There has been little change in the proportion of women giving work as a reason for coming to Kaduna which has remained low throughout - 'work secured' 4.4%; 'work fairly certain' 7.9% and 'in search of work' 6.7% in 1965 and 5.3%, 7.7% and 5.4% respectively in 2010. The actual numbers of women was, of course, much larger in 2010 than in 1965 although the proportions remained much the same.

Respondents were not given the option of stating 'Education' as being the main reason for coming to Kaduna in the 1965 survey. However, in 2010

almost one in ten males (9.1%) and just less than one in twenty females (4.4%) gave 'Education' as their main reason for coming to Kaduna. Approximately two-thirds (67.4%) of those giving it as their main reason were males and just less than one-third (32.6%) female.

Access to education (educational opportunities) in Kaduna would seem to be a significant factor in attracting people to the city with particular opportunities for women.

|     | Employ. Secured |     | Employ. Fairly Certain |     | In Search of Employ. |     | Family Reason |     | Other Reasons |     | Education |     | Total | Total (Not Edu) | N*    |
|-----|-----------------|-----|------------------------|-----|----------------------|-----|---------------|-----|---------------|-----|-----------|-----|-------|-----------------|-------|
|     | 19              | 20  | 19                     | 20  | 19                   | 20  | 19            | 20  | 19            | 20  | 19        | 20  | 19    | 2010            | 2010  |
|     | 65              | 10  | 65                     | 10  | 65                   | 10  | 65            | 10  | 65            | 10  | 65        | 10  | 65    | 100             | 6,145 |
| M   | 17.             | 29. | 6.                     | 3.0 | 49                   | 43. | 25            | 22. | 1.            | 1.3 | n/a       | 9.1 | 10    | 100             | 6,145 |
|     | 7               | 4   | 4                      |     | .8                   | 5   | .0            | 9   | 1             |     |           |     | 0     |                 |       |
| F   | 1.1             | 1.7 | 0.                     | 0.3 | 5.                   | 2.5 | 93            | 95. | 0.            | 0.3 | n/a       | 4.4 | 10    | 100             | 5,763 |
|     |                 |     | 7                      |     | 0                    |     | .0            | 3   | 2             |     |           |     | 0     |                 |       |
| M % | 95.             | 94. | 92                     | 92. | 93                   | 94. | 27            | 19. | 79            | 83. | n/a       | 67. | 58.   | 50.4            |       |
|     | 6               | 7   | .1                     | 3   | .3                   | 6   | .5            | 6   | .6            | 3   |           | 4   | 4     |                 |       |
| F % | 4.4             | 5.3 | 7.                     | 7.7 | 6.                   | 5.4 | 72            | 80. | 20            | 16. | n/a       | 32. | 41.   | 49.6            |       |
|     |                 |     | 9                      |     | 7                    |     | .5            | 4   | .4            | 7   |           | 6   | 6     |                 |       |

Table 7.9: In-Migrant's Reasons for Coming to Kaduna - % (Social Survey 1965 /Household Survey 2010 All Kaduna) \*number responding

#### Age groups of adult male in-migrants

In 1965 there was a predominance of the younger adult male age group (15 – 34) in the total in-migrant population. By 2010 this cohort bulge (71.7% in the 15 – 34 age group in 1965) had moved up the age groups so that almost the same proportion (73.2%) was now recorded in the 35 year old plus age group (see Table 7 below). These figures are not directly comparable since the age groups involve only the 15 – 34 and 35+ age groups as against the forty-five year gap between the two surveys. However, they do confirm a trend.

| Age          | 1965       | 2010       |
|--------------|------------|------------|
| 15-19        | 13.7       | 3.7        |
| 20-24        | 23.7       | 4.8        |
| 25-34        | 34.3       | 18.3       |
| 35-44        | 18.1       | 26.1       |
| 45-54        | 6.7        | 22.9       |
| >=55         | 3.5        | 24.2       |
| <b>Total</b> | <b>100</b> | <b>100</b> |

Table 7.10: Age Groups of Adult Male In-Migrants: Social Survey 1965 /Household Survey 2010 (All Kaduna)



There is no evidence from the 2010 Household Survey that older people are currently migrating to Kaduna in significant numbers.

As outlined Table 4 above the majority of recent in-migrants in 2010, i.e. those arriving within the five years preceding the survey, are under 35 years of age (83.3%). This would seem to suggest that many of the previous in-migrants have stayed on in Kaduna into their old age.

### Adult male In-migrant's reasons for coming to Kaduna

Employment remains to be the main motive for male adult in-migration. In 1965 over eight-in-ten (84.5%) adult males stated employment as they moved to Kaduna<sup>37</sup>. Similarly, in 2010 although the reasons for coming to Kaduna had become slightly more diversified, over two-thirds (70.7%) of adult male in-migrants said they came for work reasons.

Looking more closely at these figures the proportion of those who came to Kaduna where employment had 'already been secured' increased from around a fifth (20.1%) to over a quarter (27.4%). At the same time there has been a decrease in the proportion of adult male in-migrants who come in 'search of work' representing almost three-fifths (57.0%) of all the reasons given in 1965 whereas in 2010 it had fallen to just over a sixth (40.5%). This was most pronounced amongst those aged 15-34, in particular those aged 15-19 where the proportion of young men coming to Kaduna in search of work had fallen ten-fold since 1965, most likely having been replaced by an increase in those migrating for family reasons.

The proportion of those moving to Kaduna for 'Family Reasons' has almost doubled amongst young adult males aged 15 – 19 (37.7% in 1965 to 66.4% in 2010) and for the 20 – 24 age group has more than trebled (13.1% in 1965 to 47.1% in 2010). Significantly, around a fifth of these two younger male age groups gave 'Education' as their reason for coming in 2010.

| Age   | Employment Secured |      | Employ. Fairly Certain |      | In Search of employ. |      | Family Reason |      | Other Reasons |      | Education <sup>38</sup> |      |
|-------|--------------------|------|------------------------|------|----------------------|------|---------------|------|---------------|------|-------------------------|------|
|       | 1965               | 2010 | 1965                   | 2010 | 1965                 | 2010 | 1965          | 2010 | 1965          | 2010 | 1965                    | 2010 |
| 15-19 | 6.3                | 3.1  | 2.7                    | 0.0  | 51.1                 | 5.3  | 37.7          | 66.4 | 2.2           | 2.2  | n/a                     | 19.9 |
| 20-24 | 13.3               | 5.8  | 7.1                    | 1.4  | 65.6                 | 19.2 | 13.1          | 47.1 | 0.9           | 1.4  | n/a                     | 22.3 |
| 25-34 | 22.4               | 19.5 | 6.9                    | 2.2  | 60.6                 | 38.4 | 9.1           | 21.3 | 1.0           | 0.8  | n/a                     | 13.6 |
| 35-44 | 28.8               | 27.7 | 10.8                   | 3.4  | 50.6                 | 44.6 | 7.9           | 12.5 | 1.9           | 0.9  | n/a                     | 7.6  |
| 45-54 | 34.3               | 33.0 | 9.6                    | 3.0  | 44.4                 | 43.8 | 11.2          | 10.2 | 0.5           | 1.4  | n/a                     | 5.1  |
| >=55  | 27.4               | 35.8 | 11.6                   | 3.2  | 44.2                 | 44.3 | 15.8          | 8.7  | 1.0           | 1.2  | n/a                     | 4.7  |

<sup>37</sup> Where respondents had answered either: 'Employment Secured'; 'Employ. Fairly Certain'; or 'In Search of employ.' – see Table 8 below.

<sup>38</sup> Education was not identified in the 1965 social survey as a reason for migrating to Kaduna so no direct comparison is possible.

|              |             |             |            |            |             |             |             |             |            |            |            |            |
|--------------|-------------|-------------|------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|
| <b>Total</b> | <b>20.1</b> | <b>27.4</b> | <b>7.4</b> | <b>2.8</b> | <b>57.0</b> | <b>40.5</b> | <b>14.1</b> | <b>16.3</b> | <b>1.4</b> | <b>1.2</b> | <b>n/a</b> | <b>8.6</b> |
|--------------|-------------|-------------|------------|------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|

Table 7.11: Percentage of Adult Male In-Migrants as reasons for coming to Kaduna - % (Social Survey 1965 /Household Survey 2010 (All Kaduna)

This implies that the average age of adult males migrating to Kaduna for work has increased, with the average age of men migrating to Kaduna in search of work between 2005 and 2010 being around 30 years old as compared with an average age of 20 for those migrating for education.

Perhaps as access to opportunities for education (polytechnic and universities) has increased, or perhaps as the National Youth Core has become more established. The actual estimated numbers of people involved needs further research.

Either way there are obvious policy implications for both potential student placement and accommodation, which are considered below in the discussion on Access to Education.

### All In-migrants' Reasons for Coming to Kaduna in Past Years

There are many complex issues involved in trying to assess the motives of in-migrants for coming to Kaduna. The emphasis since 1965 has changed and there is evidence already mentioned the trend of older migrants to Kaduna remaining in the city (see **Table 7** above) confirm that there are many still living in Kaduna who first came to the city many years ago and are now settled residents.

The proportion of in-migrants reporting that they migrated because they had '*Employment Secured*' has increased by almost fifty per-cent between 1965 (10.5%) to 2010 (15.7%). The proportion of people migrating in search of work but where employment had not been secured however fell between 1965 and 2010: those responding that '*Employment Fairly Certain*' was 4.4% down to 1.6% and, and, those '*In Search of Employment*' from 31.2% down to 23.3% respectively – with the most pronounced differences being found in those who have migrated to Kaduna in the ten years preceding the 2010 survey.

This would appear to show a less volatile situation regarding employment in 2010 than in 1965 with fewer people being unwilling or finding it unnecessary to move in search of employment. Communication technology and particularly mobile phones could be playing a part in reducing the numbers speculating on coming Kaduna to find work.

The increase in the proportion coming for '*Family Reasons*' (up from 53.0% in 1965 to 58.6% in 2010) needs further research as does the high proportion of the 2010 in-migrants that gave Education as their main reason for coming to Kaduna (9.1% of male and 4.4% of female in-migrants – see table 7.9).

| No. of years in Kaduna | Employment Secured |      | Employment Fairly Certain |      | In Search of Employment |      | Family Reason |      | Other Reasons |      | % of Row |      |
|------------------------|--------------------|------|---------------------------|------|-------------------------|------|---------------|------|---------------|------|----------|------|
|                        | 1965               | 2010 | 1965                      | 2010 | 1965                    | 2010 | 1965          | 2010 | 1965          | 2010 | 1965     | 2010 |
|                        |                    |      |                           |      |                         |      |               |      |               |      |          |      |

|             |      |      |     |     |      |      |      |      |     |     |     |     |
|-------------|------|------|-----|-----|------|------|------|------|-----|-----|-----|-----|
| Less than 4 | 9.3  | 12.6 | 3.6 | 1.9 | 31.1 | 14.2 | 54.8 | 70.2 | 1.2 | 1.2 | 100 | 100 |
| 5-9         | 11.0 | 14.5 | 5.8 | 2.1 | 32.6 | 19.0 | 50.1 | 63.6 | 0.3 | 1.0 | 100 | 100 |
| 10-14       | 12.2 | 13.9 | 3.6 | 1.6 | 31.8 | 23.2 | 51.6 | 60.3 | 0.8 | 1.0 | 100 | 100 |
| 15-19       | 15.4 | 14.1 | 4.7 | 1.2 | 29.4 | 23.4 | 50.0 | 60.6 | 0.5 | 0.6 | 100 | 100 |
| 20-24       | 14.3 | 16.0 | 6.0 | 2.5 | 29.2 | 25.4 | 48.8 | 55.3 | 1.7 | 0.6 | 100 | 100 |
| 25 +        | 12.4 | 18.2 | 6.2 | 1.2 | 25.7 | 27.0 | 53.9 | 52.9 | 1.8 | 0.6 | 100 | 100 |
| Total       | 10.5 | 15.7 | 4.4 | 1.6 | 31.2 | 23.3 | 53.0 | 58.6 | 0.9 | 0.8 | 100 | 100 |

Table 7.12: All In-Migrant's Reasons for Coming to Kaduna in Past Years - %: Social Survey 1965/Household Survey 2010 (All Kaduna: Equivalent Categories)

## 7.5 EMPLOYMENT AND LIVELIHOODS

### Labour market structure

#### Age of unemployed men

In 1965, there was concern over the perceived influx of young males coming into Kaduna and the consequent potential for high rates of unemployment. Hence there was a concentration on this specific issue in the 1965 survey and subsequent analysis in the 1967 Kaduna Master Plan.

In 1965, almost two-thirds (57.3%) of unemployed men were between the ages of 20 – 34. The proportion was approximately the same in the 15 – 19 group at 15.4% in 1965 and 15.9% in 2010, but almost doubling (27.3% in 1965 to 47.8% in 2010) in those aged between 35 and above. The latter could well be a consequence of the general ageing of the Kaduna population discussed earlier (see Tables 2 and 3). A similar shift up the age groups since 1965 is seen if the unemployed are looked at as a proportion of the total adult males Regularly Employed.

However, if the age groups of the unemployed males are seen as a proportion of the *Total Unemployed* for 1965 and 2010 there are some striking differences. For instance, in 1965 the proportion in the 15 – 19 age group was over half (54.8%) of the total unemployed whereas in 2010 this proportion had fallen to less than a sixth (14.8%). There was also a major change in the 25 – 34 age group (up from 14.4% in 1965 to 32.5% in 2010). This implies that the percentage of *females unemployed* (as a proportion of the total unemployed) has actually gone down over the same period for the same age groups – and indeed across all age groups except those females aged 15-19. This perhaps as more women move into the labour market (either formally or informally).

If the proportion of unemployed within each age group is examined there has been a significant shift in the 15 – 19 group downwards (from 42.3% in 1965 to 8.0% in 2010) and doubling in the 20 – 24 group (from 11.2% in 1965 to 21.3% in 2010) and the 25 – 34 group (from 5.1% to 11.3% in 2010).

The ageing of Kaduna's population, as mentioned earlier, is one cause of these changes. Three aspects have been given a preliminary examination for 2010 that were not assessed in 1965. First, is the proportion of adult males 'in Education' which shows that one-sixth (16.4%) of adult males were in education and almost two-thirds (63.6%) of the 15 – 19 age group were, with the assumption that more young men may be more likely to be

pursuing further education than entering the workforce in 2010 as compared to 1965.

Second, is the proportion of adult males stating they were *'Retired'*. Many of these could be on a pension or had made personal provision for their old age. They comprise almost a quarter (23.9%) of the 55+ age group.

Third, a similar proportional analysis has been made of the *Proportion of Total Adult Males not in Education or Retired that are Unemployed*. This emphasises the extent of real unemployment in the younger age groups, at over a fifth (22.1%) of the 15 – 19 group, almost a third (31.9%) of the 20 – 24 group and one in eight (12.6%) of the 25 – 34 group. These are complex issues and depend upon locally perceived definitions and individual concepts of 'unemployment' in a society where there is little definition or legalisation of 'unemployment'.

Certainly when compared to other national measures of unemployment, levels of unemployment amongst young men in Kaduna were comparable, if not slightly worse than the national averages in 2010. Unemployment<sup>39</sup> amongst 15-24 year olds, as reported in the Living Standards Measurement Survey 2010, averages around 10.6 % for men (10.5% for women), nationally, jumping to 19.9% of men (and 13.4% of women) in urban areas of Nigeria. From the 2010 survey figures above, the total proportion of men aged 15-24 who were unemployed was 27.6%. This was as compared to an average of 19.9% in the same age group across all urban areas in Nigeria and the overall national average (men and women) of 6.2% across all urban areas (LSMS, 2010).

Of course unemployment levels may also vary *within* the city determined not only by where employment opportunities are located but the availability of (affordable) housing in proximity to those employment opportunities.

| Age Group    | Proportion of Total Adult Males |       | Proportion of Total Adult males Regularly Employed |       | Proportion of Total Unemployed |       | Proportion of Each Age Group Unemployed |      |
|--------------|---------------------------------|-------|--|-------|--------------------------------|-------|---|------|
|              | 1965                            | 2010  | 1965   | 2010  | 1965                           | 2010  | 1965                                    | 2010 |
| <b>15-19</b> | 15.4                            | 15.9  | 10.0   | 1.2   | 54.8                           | 14.8  | 42.3                                    | 8.0  |
| <b>20-24</b> | 23.8                            | 11.4  | 24.1   | 3.6   | 22.5                           | 28.2  | 11.2                                    | 21.3 |
| <b>25-34</b> | 33.5                            | 24.8  | 36.5   | 26.8  | 14.4                           | 32.5  | 5.1                                     | 11.3 |
| <b>35-44</b> | 17.6                            | 20.6  | 19.6   | 31.9  | 4.5                            | 9.0   | 3.0                                     | 3.8  |
| <b>45-54</b> | 6.5                             | 14.2  | 7.0  | 21.6  | 1.8                            | 5.2   | 3.3                                     | 3.2  |
| <b>55+</b>   | 3.2                             | 13.0  | 2.8  | 15.0  | 2.0                            | 10.2  | 7.5                                     | 6.8  |
| <b>Total</b> | 100.0                           | 100.0 | 100.0  | 100.0 | 100.0                          | 100.0 | 11.8                                    | 8.7  |

Table 7:13: Age of Unemployed: Social Survey 1965 Compared with Household Survey 2010 (All Kaduna) (Males of 15 years and over)

Again the term *'unemployed'* should be used with caution as an indication of the degree of actual unemployed (i.e. earning no income)

<sup>39</sup> Unemployment as defined by the ILO: anyone over the age of 15 who was: without work, available for work, and seeking work at the time of being asked.

or under-employed (i.e. less than 20 hours of formal 'work' per week or, in the unrecorded economy of obligatory service, petty or casual trading, begging or general striving to keep alive). With no system of State social security or unemployment benefit there is no accepted definition of 'unemployment'.

| Age Group    | Proportion of Total Adult Males In Education |      |                | Proportion of Total Adult Males Retired |      |                | Proportion of Total Adult Males Not in Education or Retired That Are Unemployed |      |                |
|--------------|--|------|----------------|---|------|----------------|---|------|----------------|
|              | 1965   | 2010 | % of Age Group | 1965                                    | 2010 | % of Age Group | 1965  | 2010 | % of Age Group |
| 15-19        | Not Assessed                                 | 10.1 | 63.6           | Not Assessed                            | 0.0  | 0.0            | Not Assessed  | 1.6  | 22.1           |
| 20-24        | Not Assessed                                 | 3.8  | 33.1           | Not Assessed                            | 0.0  | 0.0            | Not Assessed  | 3.1  | 31.9           |
| 25-34        | Not Assessed                                 | 2.4  | 9.6            | Not Assessed                            | 0.0  | 0.1            | Not Assessed  | 3.5  | 12.6           |
| 35-44        | Not Assessed                                 | 0.1  | 0.7            | Not Assessed                            | 0.1  | 0.5            | Not Assessed  | 1.0  | 3.8            |
| 45-54        | Not Assessed                                 | 0.0  | 0.2            | Not Assessed                            | 0.7  | 4.9            | Not Assessed  | 0.6  | 3.4            |
| 55+          | Not Assessed                                 | 0.0  | 0.1            | Not Assessed                            | 3.0  | 23.4           | Not Assessed  | 1.1  | 8.9            |
| <b>Total</b> |  | 16.4 | 16.4           |   | 3.9  | 3.9            |   | 10.9 | 10.9           |

Table 7.14: Proportion of male unemployment by age 2010

#### Adult Males in Regular Employment: Type of Work

When comparing broad employment categories between 1965 and 2010 the main feature is the increase in the proportion of *adult males* falling into 'Managerial / Professional' category: up from 2.8% in 1965 to 30.7% in 2010. The huge increase in the proportion of those in regular employment falling into the Managerial/Professional class (up from 2.8% in 1965 to 30.7% in 2010) probably reflects the increasingly important role Kaduna is playing in the regional economy.

A contributing factor though must be the fact that the Government Reservation Areas, or GRAs, (the exclusive home of this class in 1965) were not covered in the 1965 survey. Although the growth of the city, and indeed the dispersal of higher income earners throughout the urban area has scattered those in managerial/professional positions there is some evidence to suggest that the original northern GRA is still home to the highest proportion of adult males in managerial/professional positions<sup>40</sup>.

<sup>40</sup> It must also be noted that following the 'right to buy' policies of the past decades many of the old GRA residential quarters are now occupied by private individuals who are not necessarily in the Managerial/Professional Category, but must be closely associated with this economically wealthier class and economically able to convert and subdivide these previous exclusively residential plots to commercial and renting out developments and largely finding the buyers to take up their urban development activities. For example, the old GRA and commercial areas of Kaduna North LGA have almost exclusively been the

As well as the considerable rise in Managerial / Professional, there would seem to have been a considerable fall in the proportion of 'skilled and semi-skilled' (from 60.5% in 1965 to 24.9% in 2010). This is striking even in the context of the disappearance of the old '*Clerical*' classification from 1965 with the 2010 equivalent of 'clerical' occupations having been reclassified as 'skilled and semi-skilled' economic activities<sup>41</sup> - where in 1965 a considerable proportion (11.9%) of the 1965 sample classed as 'clerical'.

The other marked change, and which has been noted from local observation, is the substantial increase in the proportion of adult males (up from 5.5% in 1965 to 35.5% in 2010) falling into the category of the 1965 definition 'Side Trading Only', the 2010 equivalent of which is 'Small Independent Trader'. This is the highest proportion of any of the 2010 Work Type Classifications.

This shows a major change in the income source for many Kaduna males and confirms any informed observation of trading behaviour in the city. This informal 'trading' is now an essential part of adult male ability to generate income. There have obviously been considerable changes in adult male types of employment over the past forty-five years, reflecting the huge economic changes from a just past colonial regional government headquarters town running a command economy – the textile industry was largely government backed and planned and based on Marketing Board economics for raw material supply and Commonwealth Development Corporation statist backing– to that of the current Federal Government 'free' market and 'privatisation' policies combined with the collapse of the textile industry, reliance on imports and the strains of banking failures and their consequences on international oil price revenues to Nigeria and educational priorities moving towards short-term business management and 'communications' rather than productive skills and long-term investment for sustainability.

This may only tell half the story though as there was no clear distinction between formal and 'informal' economic activity gleaned through the household survey of 2010. However, when looking at the Kaduna labour market structure using the 'basic employment' type ISIC classification, well over two-fifths of Household Heads (43.8%) were classified as 'Small Independent Self-Employed'. Two distinct sub-classifications became clear from the data analysis and these are, those 'self-employed' as 'independent traders' and those 'independent non-trading' i.e. those dealing in 'goods' and those dealing in 'services'.

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destination for developers seeking to build Shopping Malls on land that was previously residential.

<sup>41</sup> Following a detailed review of qualitative data from the 2010 social survey and comparison with ISIC classification.



| Age   | Managerial |      | Clerical |      | Skilled & semi skilled |      | Unskilled |      | Side Trading |      | Total |      | 1965 |
|-------|------------|------|----------|------|------------------------|------|-----------|------|--------------|------|-------|------|------|
|       | 1965       | 2010 | 1965     | 2010 | 1965                   | 2010 | 1965      | 2010 | 1965         | 2010 | 1965  | 2010 |      |
| 15-19 | 0.4        | 7.8  | 8.2      | n/a  | 50.9                   | 29.4 | 35.8      | 27.5 | 4.7          | 35.3 | 100   | 100  | 10.0 |
| 20-24 | 2.2        | 12.2 | 17.6     | n/a  | 61.2                   | 38.0 | 15.2      | 17.2 | 3.8          | 32.7 | 100   | 100  | 24.1 |
| 25-34 | 2.3        | 22.0 | 12.8     | n/a  | 62.2                   | 31.7 | 17.1      | 10.3 | 5.6          | 36.0 | 100   | 100  | 36.5 |
| 35-44 | 5.1        | 32.0 | 7.5      | n/a  | 63.8                   | 26.3 | 17.0      | 6.9  | 6.6          | 34.8 | 100   | 100  | 19.6 |
| 45-54 | 4.3        | 37.0 | 6.2      | n/a  | 57.8                   | 20.6 | 24.2      | 9.1  | 7.5          | 33.2 | 100   | 100  | 7.0  |
| 55+   | 4.6        | 31.1 | 9.4      | n/a  | 49.1                   | 18.0 | 27.5      | 13.9 | 9.4          | 37.0 | 100   | 100  | 2.8  |
| Total | 2.8        | 30.7 | 11.9     | n/a  | 60.5                   | 24.9 | 19.3      | 9.1  | 5.5          | 35.3 | 100   | 100  | 100  |

Table 7.15 Adult males in regular employment: type of work - % Social Survey 1965 compared to equivalent types of work<sup>42</sup> % - Household Survey 2010

### Adult females in regular employment

Female employment was not considered in detail during the time of the 1965 survey and subsequent analysis.

However, the 2010 survey yields some encouraging findings for prospects of females being employed in some form of economic activity in Kaduna. Where women were employed, the majority 41.7% were categorised as ‘Semi-skilled workers’, compared to only 9.1% of men. The next largest proportion of employed women were categorised as ‘Student, trainee or apprentice’ at 18.4% which was a similar proportion to men employed (21.1%).

The whole separate issue of the changes in female employment opportunities and practice is discussed in the full analysis of the 2010 survey.

## 7.6 SOCIAL STRUCTURE AND NETWORKS

### Close Family Households<sup>43</sup>

In 1965 a ‘Close Family’ was defined as a man and woman with their own children only living together as a household with no other persons as part of the household. A household was defined as all people ‘eating out of the

<sup>42</sup> An analysis of the 2010 data has been made to get as close a comparison as possible to the broad 1965 employment type classifications shown in Table 10 above. However, the following issues have made them not directly comparable. The 1965 term ‘Clerical’ was, at that time, well understood by the population at large and in government and other employers’ records. The term has now lost its earlier significance with changing work patterns and management so no comparison has been attempted. As such those in 2010 that might have fallen into the Clerical category have been classified into the nearest of the remaining 1965 categories from the detailed work descriptions given by respondents in 2010. The terms skilled, semi-skilled and unskilled were also clearly defined and understood in 1965, but have now become somewhat blurred through changing standards. However, in the 2010 Survey those interviewed were asked to give as detailed a description as possible of their type of employment and this too has been interpreted into the 1965 classifications with some degree of accuracy.

<sup>43</sup> The sociological term for this type of household is ‘nuclear family’. In 1965 this term had particularly strong connotations and the term ‘close family’ was used. Its use here has been retained for continuity.



same pot'. These definitions were carried forward in the research design for the 2010 Household Survey. This analysis was originally carried out in 1965 in order to try and establish a factual basis to replace the many apocryphal theories that were circulating at that time about the changes that were undoubtedly taking place in Nigerian urban areas and particularly Kaduna concerning 'close' as against extended family living. This did not imply that extended family obligations were being abandoned, but that the new in-migrants to Kaduna from all parts of the Federation wished to set up close family households in their own accommodation, whether rented or owner-occupied. This had major implications for housing policy in 1965 when the State was still seen as the major provider of housing.

In 1965 it was established that the majority of households (68.7%) had set up on their own as close family households only, with no addition persons, and by 2010 this proportion had increased (84.8%). This shows a continued trend noted in 1965 towards an increasing majority of Kaduna's households living as close family.

There were some differences to this pattern according to the size of the family. In 1965 seven person close family households made up only just over half (52.3%) of all seven person households, well below the town average. By 2010 this proportion had risen to almost nine out of ten (88.8%).

In contrast, single person close families<sup>44</sup> living on their own made up just over two-thirds (68.4%) of single person close families in 1965 and this had risen slightly to just under three-quarters (74.0%) by 2010. The proportions of single person close families having one or more additional persons living with them (who by definition cannot be 'close family' relatives) has proportionately remained fairly constant between the two surveys as the following Table 7:13 shows.

| Year of survey | Additional Number of Non-close Family Persons |      |     |     |     |     |     |
|----------------|---|------|-----|-----|-----|-----|-----|
|                | Alone   | 1    | 2   | 3   | 4   | 5   | 6+  |
| 1965           | 68.4  | 22.2 | 6.5 | 2.1 | 0.4 | 0.4 | -   |
| 2010           | 74  | 16.6 | 5.5 | 3   | 0.4 | 0.3 | 0.2 |

Table 7:16: Single person close families with additional persons living with them %

This indicates there is still a real need for single persons to bring additional persons into their household, who as pointed out earlier, by definition, cannot be close family. The reasons are almost certainly mostly economic (sharing the accommodation costs), but can be due to family or village obligations to extended family or other friendship obligations. Or just that many people do not like living alone. This needs more detailed analysis of the two data bases, but particularly for 2010 where the proportional percentages though seemingly small represent large actual estimated

<sup>44</sup> In technical terms a single person living on their own is classified in this context as a 'single person close family' although this sounds contradictory.

numbers of people involved in sharing accommodation, that with rising incomes and expectations of standards of individual privacy, could have a considerable effect on the demand for appropriate accommodation with its knock on effects to planning and housing policy and property investment. (See Appendix Table 7.b.1).

A further analysis of this close family issue was examined in 1965 by comparing the size of household and the number of additional non-close family people living in that size of household. With only one exception (i.e. nine person households having only one additional non-close family person living with them – up from 10.6% in 1965 to 16.3% in 2010 of all nine person households), there was a consistent fall in the proportion of non-close family persons living in all sizes of households between 1965 and 2010.

However, the actual estimated numbers of persons outside of the close family involved in sharing accommodation with a close family has increased hugely. This needs further detailed research (See Appendix Table 7.b.2)

The whole trend of an increasing proportion of households of all sizes to live as close family only with no additional persons outside of the close family with them is being met for many by natural and economic circumstances. Many families (as has been shown in the foregoing analysis) have yet to reach this standard and there will always be some that do not wish to. However this is a dynamic process and new families are being added daily to the city's population through marriage and in-migration.

It is important that government at all levels is aware of the extent of this process and does not take any action, such as 'improvement' or slum clearing schemes, that may cause demolition of housing accommodation that is essential to the many who wish to achieve close family living standards. The possibility of establishing a rent tribunal to hear and adjudicate on disputes between landlords and tenants and establish 'fair' rents for classes and location of accommodation could also be considered.

Government should also play an active role in encouraging their own production of appropriate, serviced layouts as well as encouraging this development by the private sector with positive control and example of social and physical infrastructure in these privately financed layouts.

### **Close family Households Living Without Additional Persons 2010**

Close family living was examined in some detail in the discussion of and comparison between the 1965 and 2010 surveys. The 2010 results are looked at in more detail here with particular regard to the Districts that have the highest and lowest of their populations living as close family only. This is followed by an examination of the Districts that have the highest and lowest proportions of the total Kaduna population for each size of close family.

There is considerable difference between the Districts and this should act as a guide to the practical implementation of the development policies outlined after the discussion on the 1965 and 2010 comparison.

The following two Tables (See Appendix Table 7.b.3 and 7.b.4) show first, the 'Districts with the Highest and Lowest Proportions of Households Living as Close Family Only by Size of Family as a Proportion of All Such Households

in Each District'. Second, 'As a Proportion of All Kaduna Close Families of the Size Living Without Additional Persons'.

Overall Rigasa had both the highest proportion and largest numbers, by far, of all the Districts in Kaduna (15.2%) of close family households living on their own followed by Badarawa/Malali (7.8%) and Television (6.8%). Those with the lowest were Kamazou (1.4%), Kujama (1.5%) and Kabala (2.0%). To give some scale to these percentages, the estimated actual number for the highest (Rigasa) is almost 30,000 close family households living on their own and the lowest (Kamazou) is over 2,600.

Doka had the highest proportion (29.5%) of their close family households living on their own as single person households followed by Kakuri (26.3%) and Television (21.8%). These significant proportions mean large numbers of people living as single person households in these locations. Closeness to work opportunities is probably a factor. Rent levels could be another. The many issues raised by this require much more research. In principle, such high proportions of single person households do not lead to a balanced community life.

Overall, the proportion of two person close family households living on their own is low at around one in seven (13.7% Matagyi) of close family households at the highest proportion. Does this indicate that married couples with no children need, or are obliged, to take in additional persons? Or does it indicate single parents with one child taking in additional persons? There are many other possibilities, which need further examination.

Three, four and five person close families had similar patterns with around a fifth living on their own in Badiko (21.8%), Barnawa (21.0%) and Kakau (20.2%) respectively, at the high end and just over half that proportion at the low end in Ung. Muazu (12.4%), Doka (11.5%) and Kujama (11.2%) respectively.

On average, in the close families with six or more persons there were much lower proportions living on their own than in the smaller close family households. These are set out in detail District by District in Table 7.a.3 (Appendix 7.b.3).

Close families living on their own are now examined by their size and compared for each District to similar sized households for the whole of Kaduna. Rigasa has the largest population of all Kaduna's Districts and this is reflected in the fact that Rigasa has by far the highest proportion of close families living alone in all sizes of households except single person close families where Television had the highest (11.7% of all Kaduna's single persons living on their own).

In terms of sheer numbers, Rigasa is seemingly a favoured area for close families to set up on their own (See Appendix Table 7.b.4)). However, in the earlier analysis of close families living on their own as a proportion of the District population, Rigasa appeared only three times in the top three Districts with high proportions of close families living on their own and these were in the categories of the three largest eight, nine and ten plus sized close families. This would indicate that Rigasa is a favoured place for the largest close families to set up house. These are all aspects that need to be

understood and respected when drawing up detailed planning policies and require further analysis of the data.

## Conclusions

This chapter has provided a close and detailed analysis of the demographic and socio-economic change in the city over the period of the study and drawn out some key findings based on the evidence base as follows:

- **Urban population change has followed a turbulent pattern:** The city underwent an extreme urban population growth due to substantial in migration during the 50s 60 and 70s with an equally dramatic falling back in subsequent decades.
- **However, the population has continued to grow albeit at a slower pace.** There are sign of a recent upturn in the growth rate.
- **The age profile of the city is very different from the country as a whole:** There is a ‘bulge’ in the young to middle adult years although the proportion of children has not fallen substantially.
- **Resident population of the original township areas has contracted** – The numbers living in the central city areas that were originally Sabon Gari and Tudun Wada have fallen due to land use conversion and commercialisation of the core area.
- **The original core areas of the city have been subject to densification** with an overall increase in the total number of compounds in the original four areas of Kaunda studied in 1965 as a result of infilling of un-developed plots and general intensification of development.
- **Migration, origin at birth** – more people are born in Kaduna now than migrating to it as compared to 1965, unsurprising given that in 1965 Kaduna was a ‘new town.’
- **Employment was and continues to be the primary reason why men move to Kaduna** – both in 1965 and 2010 this was the overwhelming response given by men taking part in the social surveys. Conversely the vast majority of *women* stated that they moved to Kaduna for ‘family reasons’ of one sort or another.
- **Young men migrating Kaduna (15-19 years old or 20-24) are far more likely in 2010 to have done so for family or educational reasons as opposed to employment** – The average age of men migrating to Kaduna in search of work is around 46 years old in 2010; and 34 years old for those coming for education.
- **There may be a less volatile situation regarding employment in 2010 than in 1965 with fewer people being unwilling or finding it unnecessary to move in search of employment** – In particular, those arriving between 2000 and 2010, were less likely to have migrated to Kaduna in search of employment than their counterparts in the ten year preceding the 1965 survey.
- **The highest rates of unemployment amongst men have shifted away from those under 20, towards those in the 20-24 age group**

**who tend have a higher level of education than in 1965** – More young men (ages 15-19) are entering education in 2010 as compared with 1965. The percentage of *females unemployed* overall has gone down over the same period for the same age groups, implying that more women are entering the labour market in 2010 compared with 1965.

- **Kaduna exhibits rates of unemployment in men aged 15-24 which are significantly higher than the national average for urban areas in the same age group** – Unemployment rates were found to be as high as 27.6% for 15-24 year old males (MLCN survey, 2010) as compared to the national average in the same age group in urban areas of 19.9% and overall national average (men and women) 6.2% across all urban areas (LSMS, 2010).
- **The labour market has restructured between 1965 and 2010 with a significant increase in the proportion of managerial/professional economic activity that partly explains the fall in skilled and semi-skilled economic activity** – Fewer than 3% (2.8%) of adult males in regular employment in 1965 were engaged in managerial or professional roles as compared to 30.7% in 2010; whilst skilled and semi-skilled employment had fallen from 60.5% to 24.9% over the same period.
- **The rise of informal economic activity is another prominent feature of the labour market in Kaduna, as indeed urban centres across sub-Saharan Africa** – This is evidenced by the growth in '*Side trading*' or informal trading activities which rose from 5.5% in 1965 to 35.3% in 2010. It is estimated that the informal sector as represented approximately 50:50 by the self-employed in the trading and non-trading sectors represented 58% of the employed workforce in 2010. Small-scale service employment represented 44% of the workforce in 1965.
- **The contribution of the manufacturing sector has risen and fallen** 14% were employed in manufacturing in 1965 and about 11% in 2010. But while 6,000 were employed in this sector in 1965, this now represents around more than 30,000 people
- **The public sector remained the major employer**, employing 24% of the workforce in 1965 and 27% in 2010.

# 8. LAND GOVERNANCE AND DEVELOPMENT

## Introduction

The situation with regards to land tenure in 2015 remains much as it did in 1967. In principle, the State owns all land: ‘all land is vested in the Governor. Individuals only have the right to occupy land and this right is granted by various authorities under powers delegated by the Governor’ (Max Lock and Partners, 1967, p86). As there is no concept of individual ownership in traditional land occupancy, this system of land tenure was brought into being in the early days of British rule in part to protect this tradition against land grabs by outsiders (Ibid) and was one of the prime reasons for the introduction of the 1978 Land Use Decree (later 1990 Land Use Act). Understanding the system of land governance provides many clues to the political economy of land that is driving the malfunctioning system of urban development in Nigeria, today as it has since colonial times.

Customary land rights norms still hold sway in much of rural Nigeria, as across much of Sub Saharan Africa. Despite the nationalisation, following colonial practice, of land in the ownership of state governments to be held in trust for the people, the tension between ‘modern’ statist urban and customary rural land rights remain a key factor in Kaduna’s and Nigeria’s urban development.

On the urban periphery the attendant uncertainty facilitates rampant speculative urban land development. In some ways the progressive legislation intended to curb these excesses has only served to reinforce them. The lucky participants benefit and few have an interest in curtailing this phenomenon, with the resulting un-serviced urban sprawl adding to the ever growing infrastructure deficit and challenges of instituting proper land planning.

This chapter describes the historical and legislative background to land tenure and governance in Nigeria and analyses the impact in terms of recent very rapid land sub division and development on Kaduna’s urban periphery and the related housing market impacts.

## 8.1 HISTORICAL LAND OWNERSHIP AND GOVERNANCE IN NIGERIA

According to Omuojine (1999, cited in Udoekanem et al, 2014), land was deemed not owned by individuals but by communities and families in trust for all the family members (including, according to one traditional ruler in former times, those who have already died and those not yet born)(Ehi Oshio, 1990). During the pre-colonial period, customary land tenancy was the prevailing land tenure system across Sub Saharan Africa including Nigeria. “Nigeria’s system of customary land tenure provided families and individuals with use rights to rural land for agriculture and urban/town plots



for housing that were heritable within families and lineages”(USAID, 2010). Under customary land tenancy, the land right is vested in the family or community as a unit. “Thus individuals had no such interest as the fee simple absolute in possession as the actual ownership of land or absolute interest was vested in the community itself” (Udoekanem et al., 2014)

The land ownership structure in Nigeria under colonial rule was designed to suit the motives of the ruling British. According to Udoekanem et al (2014) citing various authors these were initially economic interests of the British traders and later those of the colonial government.

“The colonial authorities initiated laws and regulations intended to govern land ownership, land use and development among others to enable them acquire and convey titles to land for the purposes of commerce and governance. Principal among these legislations were the Treaty of Cession (1861), Land Proclamation Ordinance (1900), Land and Native Rights Act (1916), Niger Lands Transfer Act (1916) and Town and Country planning Act (1947). The Treaty of Cession of 1861 became the principal of all the treaties signed by the colonialists with traditional chiefs in Nigeria. According to Elias (1971), the legal effect of the cession of 1861 was that the root title of the land comprised in the Treaty was passed to the British Crown.” (Udoekanem et al., 2014).

In 1900, the Land Proclamation Ordinance was enacted by Lord Lugard. The legislation disregarded the principles of native law and custom and provided that title to land can only be acquired through the High Commissioner (Udoekanem et al., 2014). In 1910 the “Northern Nigeria Land Committee” in its Report recommended that Northern Nigeria should not adopt the British concept of private ownership of land. As a substitute, the committee recommended that all the land should be owned under the control of the Government in trust for the natives. The recommendation was accepted and enshrined in the “Land and Native Rights Proclamation” of 1910, which was the forerunner of the Land Tenure Law of 1962 (Max Lock Consultancy Nigeria et al, 2015 - Annex F.14).

In 1916 the Land and Native Rights Act was enacted to vest in the colonial Governor all rights over all native lands in Northern Nigeria. By contrast, in the Southern States, with the exception of a few parcels of State Land, private landlordism was the norm until recently. The 1946 Town and Country Planning Act was enacted to make provision for the re-planning, improvement and development of the different parts of Nigeria. The law provided for the establishment of planning authorities to regulate land use, planning schemes and development control. However, while these laws were enacted to make lands available for use by the colonial government, they were implemented to eliminate the pre-colonial land tenure system in the country and facilitate private ownership of land, particularly in Southern Nigeria. (Udoekanem et al., 2014)

### **Land ownership in Nigeria since Independence**

The 1916 Land and native Rights Act was replaced by the Land Tenure law of 1962. This law nationalised and governed land in Northern Nigeria and the new states which have evolved from it. Rights of occupancy (not rights of ownership) could be granted by the governor and. the permission of the



governor was required before any alienation of interest in land could take place (Oseni, 2012). To all intents and purposes, these enactments nationalised land in the protectorate of Northern Nigeria.

Individuals thus only had the right to occupy land and this right is granted by the governor. This form of land tenure was legalised since the earliest days of British rule to conserve the tradition they found of land occupancy where there was no concept of individual ownership and to preserve this tradition against any takeover and exploitation by persons non-indigenous to Northern Nigeria. These variously codified basic principles of a right to occupy but not own land were:

- The statutory right which is granted directly by Government for a period up to ninety-nine years with security of title.
- The statutory right which is granted for a period not exceeding thirty years but without great security of title, and
- The customary right which is predominantly rural in character and granted locally by the village head. (Max Lock and Partners, 1967)

It is pertinent to note that as early as 1912, the West African Land Committee recommended that the philosophy of the 1910 Proclamation should be extended to Southern Nigeria. The promulgation of the Land Use Decree on March 1978 proved how long the need had existed but how powerful the anti-nationalisation lobby has been (Max Lock Consultancy Nigeria et al, 2015).

#### **Land Use Decree 1978 (incorporated as the Land Use Act 1990)**

The end of the civil war in 1970 saw an unprecedented rate of development in Nigeria. Investment in construction was quickly understood to be one of the most rewarding avenues of investment. Consequently, development land demand increased tremendously, and so did land prices in a period of a sharp rise in the oil price that led Nigeria to a significant economic growth. Government activities in the realms of infrastructure development and public buildings were certainly the greatest factors leading to the fantastic increase in land values, for accessibility to and proximity with centres of activity (Ibid).

As a consequence of the government development activities, the cost of land became a problem for the government who started to see itself as victim of its own development effort. Added to these soaring land prices were the difficulties resulting from fragmented ownership of land and the consequent difficulties of ascertaining the genuine owners in the event of compulsory acquisition. There was therefore no doubt that land has become a constraint to development.

In the bid to remove such constraints, the Federal Military Government led by Obasanjo set up the 'Anti-Inflation Task Force' in 1977. The works of these ad-hoc bodies and the country's pursuit of an egalitarian society led to the promulgation of the Land Use Decree on the 29th March 1978 (Ibid). The law was originally promulgated by the military government in order to give the government the power to acquire land for nation-building projects under the 3rd National Development Plan (1975 to 1980). The gist of the 1978 Decree was mainly to extend the northern land use system to the

southern parts of the country as a means of ensuring easier access to land for government and for individuals (Mabogunje, 2010).

On 29th March 1978, while announcing the promulgation of the Land Use Decree, the Head of State, Lt. General Olusegun Obasanjo said inter alia (Max Lock Consultancy Nigeria et al., 2010 - Annex F.14): “The appropriation of rising land values by a few so-called land owners and speculators, especially in our urban areas, is one of the main sources of social and economic inequality in this country. But more importantly, it is a disincentive to development.”

Thus, it was a major aim of the Decree to eradicate the land speculation source of socio-economic inequality and an obstacle to development with the belief of government of that time that land nationalization was one of the ways of eroding some of the ills of capitalism. Through the Land Use Decree it is also the aim of the Government to ensure that (Max Lock Consultancy Nigeria et al, 2015 - Annex F.14):

“Land is made available promptly to all those who are willing, ready and able to use it for all purposes in the interest of the economy.”

The aims of the Land Use Decree may be classified into four categories (Ibid):

- To stifle land speculation and rid the country of one of the sources of social and economic inequality;
- To evolve a fair, quick and expeditious land allocation system;
- To protect and strengthen the farming industry; and
- To create a uniform and simple tenure system for Nigeria.

The 1978 Decree enjoins the governor of each state to designate land within his domain into urban and non-urban land. ‘Land in urban areas is under the control and management of the Governor who may delegate part or all of his function in appropriate circumstances. All land outside urban areas should be under the control of and management of the Local Government Council in whose area the land is situated. On application, the State Governor or the Local Government Council as the case may be, may grant a statutory or customary right of occupancy. It is the prerogative of the Governor to grant statutory rights of occupancy, while the Local Government has the right only to grant customary rights. Statutory rights of occupancy extinguish a customary right which existed prior to the grant of the statutory right.’ (Max Lock Consultancy Nigeria et al, 2015 - Annex F.14).

The Decree stipulates that two committees shall be established in each state (neither of which are functioning in Kaduna State):

1. The Land Use and Allocation Committee (LUAC), with the following responsibilities:
  - Advising the Governor on land management;
  - Advising the Governor on resettling persons affected by unprovoked revocation of rights of occupancy; and
  - Determining disputes as to the amount of compensation payable for improvements.

## 2. The Land Allocation Advisory Committee (LAAC)

- The function of this committee is purely advisory and its composition is at the discretion of the Governor after consultation with the relevant Local Government Council. Unlike the LUAC, the Governor is not under obligation to include estate surveyors and a legal practitioner in the membership of LAAC (Ibid).

It was the intention of the 1978 Decree that land administration shall be in accordance with the state law in the southern states or in harmony with the Land Tenure Law, which operated in the former Northern Region of Nigeria and was inherited by states created from that region. ‘Where either the State Land Law or Land Tenure Law conflicts with the general intendment of the Land Use Decree the latter shall prevail’ (Ibid).

Like the Land Tenure Law, the grant of a statutory right of occupancy over an area of land extinguishes all rights that hitherto existed without prejudice to the right of compensation in appropriate cases. In general, the governor has power over urban and non-urban or rural land (Ibid):

- To grant statutory rights of occupancy to any persons for all purposes;
- To or not to demand rental, and if rental, to revise such rental and where there has been a breach of covenant, to impose penal rent; and
- To waive covenants in appropriate circumstances.

Local Governments have power to grant customary rights of occupancy for all purposes in rural areas. The grant is subject to the following (Ibid):

- For agricultural purposes maximum grant per person is 500 hectares; and
- For grazing purposes maximum grant per person is 5,000 hectares.

In general, the State retains its usual right of eminent domain. On the issue of a notice by or on behalf of the Head of the Federal Government, the Governor may revoke any right of occupancy if the subject land is required for “public purposes”. The phrase “public purposes” is defined in such a manner that it encompasses virtually any practical purpose for which the Governor may want to take land for public use.

It has been argued that whereas the ‘land allocation’ aspects of the law have been applied, the ‘land use’ (or urban planning) component less so. This has manifested in the form of the unplanned, informal, expansion of urban areas to accommodate the growing urban population across the country (Mutter et al., 2014).

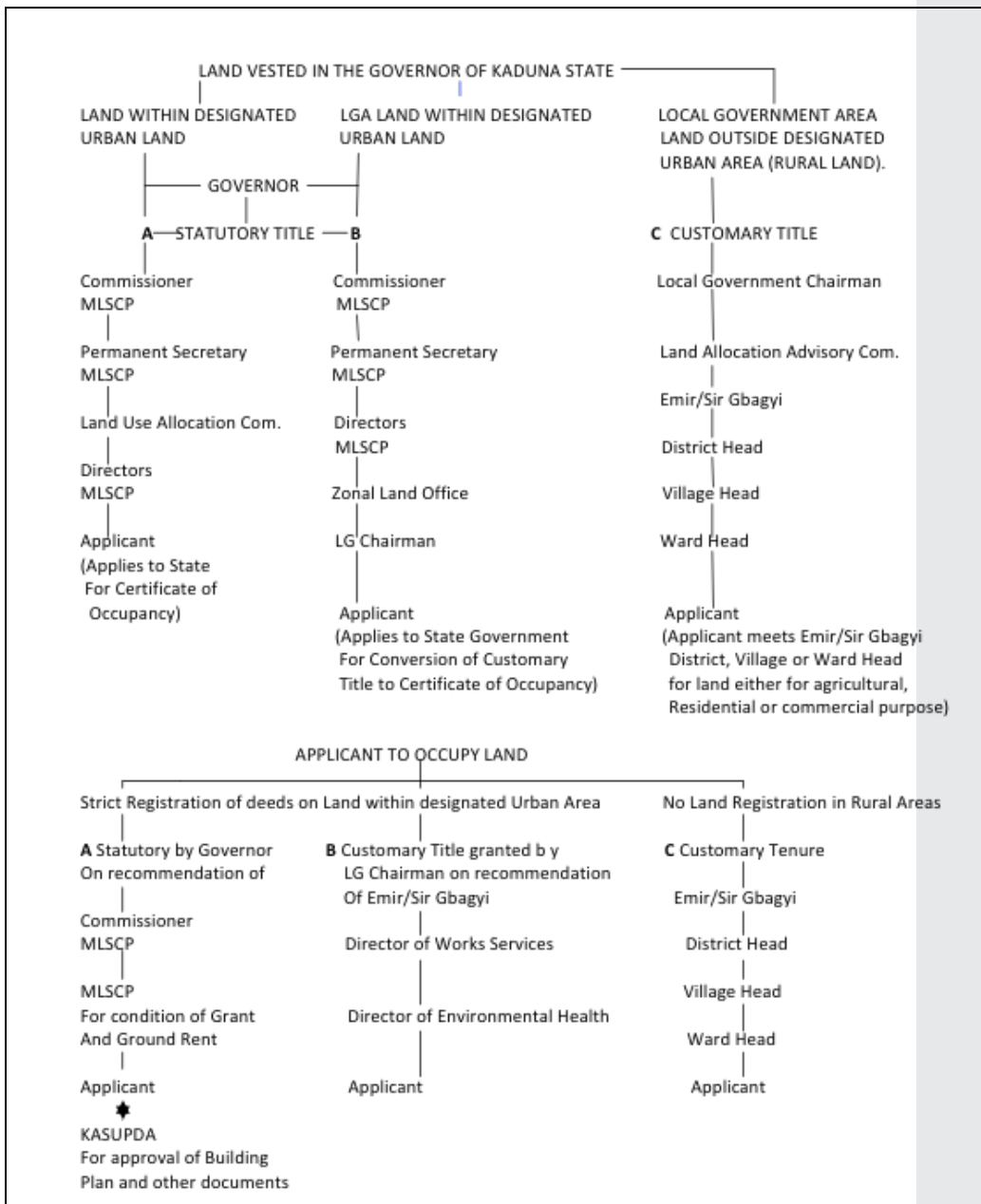


Figure 8.1: Land rights and governance in Kaduna (Max Lock Consultancy Nigeria et al., 2015)

An unintended consequence of the Land Use Decree and its provisions to limit compensation for compulsorily acquired land to improvements and economic trees and crops only (rather than a negotiated or agreed market valuation) is that it has stimulated the informal land market it was intended to curb.

Land holding communities on the peri-urban fringes of growing urban areas are not waiting for the government to create layouts, pay compensation and allocate plots, but are selling land (in contravention to the provisions of the Decree) directly to mostly lower to middle-income builders and developers. The government allocation system tends to favour the more established formal developers, who have the means and connections to benefit from the formal land allocation process. However, for those at the lower end of

the income scale there is more certainty and control by negotiating directly with land-holding communities, despite the inherent risks of working outside the letter of the law. (Ibid)

Udoekanem et al (2014) indicates that only an average of 23.1% of households in Nigeria own land while according to USAID (no date) an estimated 80% of urban land holdings in Nigeria are in informal settlements and considered by residents to be governed by customary law. The landholdings are individualized at the family or individual level, and landholders routinely exercise the rights of owners, asserting rights of exclusive possession and control over the land and freely transferring the holdings.

In many cases across the country the LUA is not being implemented in letter, and what has emerged are variations of informal but generally accepted practices, which differ in interpretation and application in the various land use jurisdictions (the State governments and their Governors).

In Kano, for instance, the Dilalai (local land agents) have been engaged by the State Government's Ministry of Lands and Physical Planning and even provided office space, in an attempt to provide a bridge between government land policy and local communities land market practices. In Enugu, the indigenous Nike community's rights are respected, as original inhabitants, which is similar to the Gbagyi and other indigenous communities of the Abuja FCT.

There are regularization (or formalization) provisions in State government land statutes, which provide a path for informal settlements to achieve formal status and secure title. Thus there are any number of 'work-arounds', which have evolved across the country to circumvent the LUA and its implementation (or lack of). Yet despite general agreement on the imperfectness of the LUA, there is no consensus on how it should be reformed, as the debate at the 2014 National Conference demonstrated (thisdaylive.com, 2014)), where the final recommendation was to retain it with in the Constitution with minor amendments only. (Ibid)

## 8.2 LAND SUB DIVISION AND ALLOCATION

Kaduna, despite the current economic and political problems, is still expanding rapidly, in population terms, through natural growth combined with in-migration and physically, through speculative land development. The evidence from planning studies is that informal housing development on the urban periphery in both cities is increasing at a stupendous rate and this is where most new households in these cities are being housed.<sup>45</sup>

Land in customary tenure/ownership is being sold on the 'free' market and turned into 'informal' layouts without the official recognition of or approval by government. These 'layouts' are illegal until they are registered with and

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<sup>45</sup> This section is adapted from "The informal housing development process in Nigeria – the case of Kaduna" (Lloyd-Jones et al., 2014)

approved by the state government. Statutorily it is up to each individual plot holder to apply to government for a Certificate of Occupancy (CofO) before building, and ensure their CofO is designated residential use, if they require security of tenure and title that is valid for use as collateral.<sup>3</sup> It gives the title holder much stronger legal rights concerning compensation should the State Government need to take over the land.

In practice however, because the formal process of obtaining a CofO is cumbersome, expensive and, ultimately, at the whim of the Governor, most informal self-builders don't bother getting title. For a land transaction to take place the buyer and the seller usually consult with the local Village Head, who witnesses the transaction and issues his 'paper', which he signs his approval of the sale in return for a payment or token. This local approval is then taken to the next chiefdom level, the District Head, who also adds his seal of approval to the transaction, and again takes a small commission.

In some cases the local government health department weighs in, for a fee, by insisting on issuing a certificate to say the building plan meets health standards. Land is bought, sold and re-sold on the basis of the first three documents listed above, mostly without title documents.

This works because for the most part buyers and sellers (the 'market') all acknowledge the legitimate role of the traditional rulers in land transactions, even though this role is not formally recognised under land law and policy. The local chiefs are therefore the approving authority, transaction witnesses and they arbitrate in disputes in the informal land market.

Obviously these locally issued land exchange documents will not have the same collateral value with commercial banks and mortgage agencies as an official CofO issued by Government under the Land Tenure Laws and Land Use Act. Further research needs to be conducted into any changing commercial practice concerning acceptance and value of these informal papers in gaining access to mortgage and loan facilities for housing development.

According to the Max Lock study of 2010, In Kaduna the past official system of layouts (TPOs – Town Planning Orders) being drawn up on compulsory acquired land at agricultural values by Government as custodian of all land in the public interest, has fallen apart. This is due mainly to ministry inefficiency in the face of overwhelming demand (although possible corrupt practices may also have played a role). This process has been usurped by the private sector agents negotiating purchases of blocks of land from traditional landholders or traditional rulers as custodians of community land – 'rights of occupancy' – which legally do not exist within defined 'urban areas' under the planning laws.

People are simply by-passing the formal system and 'getting on with it', by buyers and sellers striking deals outside of the government process, based on the validation of the local chiefs and District Heads. Often, the informal process is not necessarily cheaper than the formal, rather it is quicker. Also, sometimes the landowners feel they will get a better price on the open market, than government's restricted compensation rates.



Following their purchase of the land, the developers subdivide it into regular, normally standard size plots, hopefully with some provision for access and with the use of appropriate professional and technical expertise, but with no relationship to any larger officially sanctioned physical plan. The individual plots are then sold off to individual purchasers.

### **The Informal land sub division and development process in 1967**

Long established informal developments in such areas as Badarawa and west of Makera (now Nasarawa) in Kaduna South were starting to develop in 1965 as observed in the 1967 Master Plan (Max Lock and Partners, 1967). At the time, being within the designated township area, these were technically 'illegal' but not stopped. These and other areas developed in the following decades to the full extent of their physical boundaries and have become established urban areas with individuals applying for and being granted title deeds over developed plots, with unchallenged occupancy after a number of years giving the occupier a legitimate right to occupancy.

### **Recent peri-urban development:**

As reported in the Kaduna Master Plan Revised 2010 (2015), during the 2009 Land Use Survey, the field surveyors came across many open and farmed areas where there was evidence that the land was undergoing the first stage of urban development i.e. the land had been sold to individuals who would soon develop the plots they had bought.

Land in customary occupancy was being sold on the 'free market' and turned into informal layouts without the official knowledge of or approval by government. These layouts are illegal whoever has produced them and whether they are on land held under a CofO or not, until they are registered with and approved by government. It is up to each individual plot holder to apply to government for a CofO before building, and ensure their CofO is designated residential if they require security of tenure and title that is valid for use as collateral.

The field surveyors distinguished between land in agricultural use but had, in fact, been sold off as plots for development, referred to in Figure ... as 'agricultural land sub-divided for development'. (This is distinct from land subject to an official government approved Right of Occupancy (RofO) supported by a Certificate of Occupancy (CofO) issued by government, which will have a designated use such as agriculture or residential attached to it).

Land was also identified that had already developed with buildings into emerging 'layouts' with many obvious plots definable on the ground that were not developed. These areas were defined in the Land Use Survey as 'areas of vacant plots' or individual plot parcels defined as 'vacant plots'. These are identified in Figure 8.1 as 'partly developed subdivided land'.

This gave two clear classifications of land. First, large areas that had clearly been marked on the ground with corner blocks on agricultural or open land and was about to be developed – 'Agricultural and sub-divided into plots', and second that which was already under development within an existing street block pattern of emerging but with many plots still undeveloped – 'Partially developed land with vacant plots'. It became increasingly obvious that this is where and how the real development and expansion of the city



was taking place. It is important to establish the extent of these land uses since they will determine the basic brief for land administrative reform and existing population capacity of the urban area and the development areas within it.

At the time of the survey and plan, these two types of informal development were rapidly increasing on a daily basis and the more recent satellite image-based analysis indicates the process is continuing apace.

Officially these 'layouts' may not exist because they had not received official Ministry approval, but they were on the ground and being developed representing major personal investment.

In areas where there were parcels already under construction and further plots were likely to be built, whether there was a 'layout' or not, each identifiable plot was given a parcel number and recorded separately. All undeveloped land between the plots under construction, except where obvious attempts at road reservations were being made, was identified on the field sheets and classified as 'vacant plots' if they were obviously part of an emerging development.

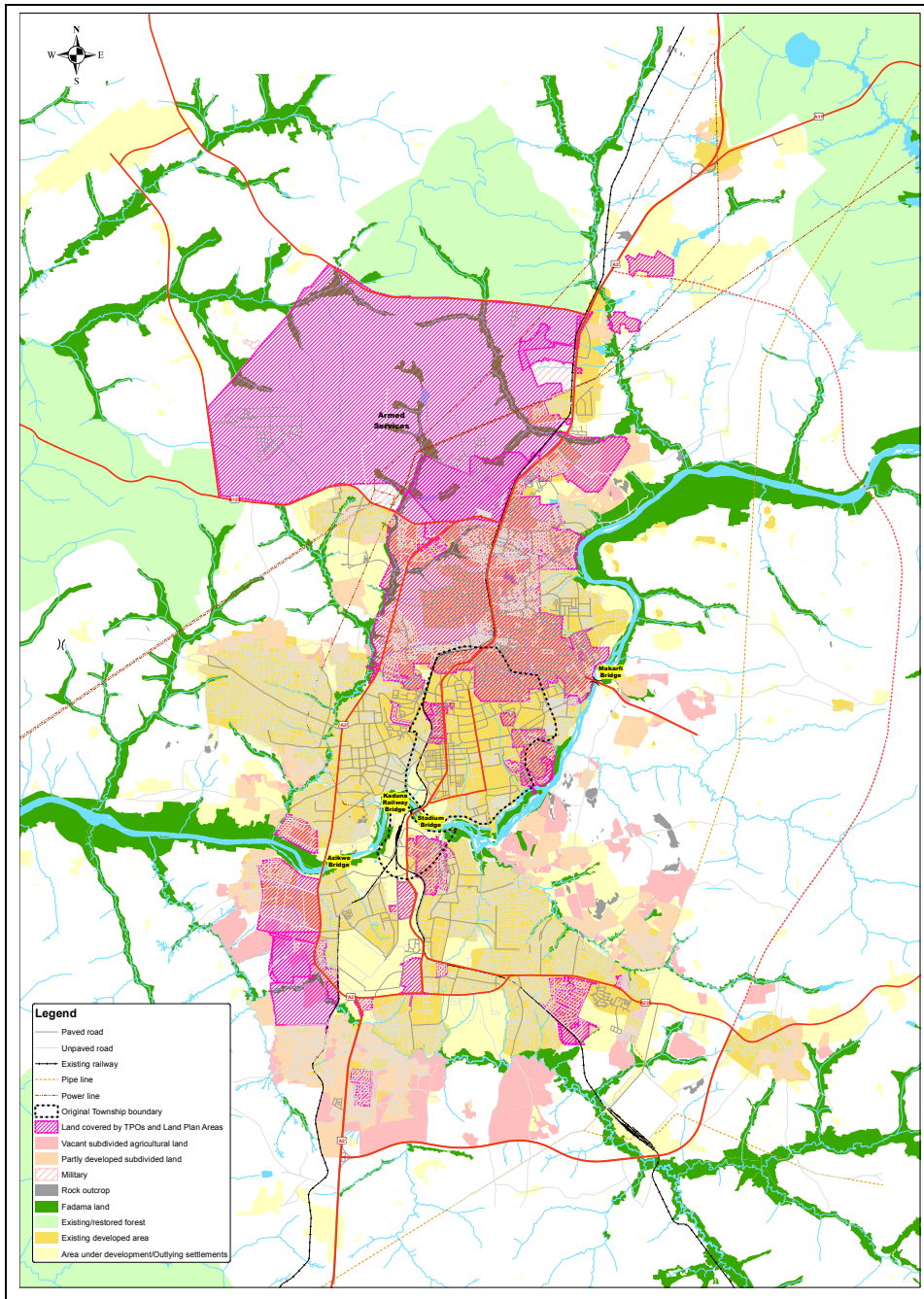


Figure 8.2: Classification of urbanising land in Greater Kaduna in 2009

What was being recorded at the time of the survey as areas of ‘vacant plots’ would most likely have been recorded five years earlier as ‘land sub-divided into plots.’ Many of these areas now being classified as areas of ‘vacant plots’ would have been development free land five years ago. In fact, the land had been sold off by the customary title holders as plots to individuals or in larger areas to layout developers for sub-division. This is a continuous and evolving process where rural land is being taken over by urban uses to meet individual demands for living and working space.

Instinctively, current buyers of plots from both customary occupiers and those purchasing from developers must be aware of this natural human process of unchallenged rights even if government legally claims ultimate

rights to all land. Where the rights are accepted there is also a clear right to inherit. It would be politically challenging for government now to claim and act on rights over land, even for public purposes, with compensation based on agricultural value in such areas developed to 'urban' standards. This would be the logical and legalistic approach. However, this form of urban development has gone on for years, without challenge by government, and has become a commonly accepted practice whether strictly legal or not.

At Kudenda, for example, government has legally challenged the rights of landholders with a CofO restricted to agricultural use over the selling of their land as plots for residential or other urban use. Legally government need only pay agricultural compensation rates to the legal holders of the CofO of the land on revocation of that 'agricultural' CofO for 'public purposes'. This leaves the purchasers of the plots with nothing other than the principle of 'buyer beware', which they should have heeded. In this particular case there are hundreds of millions of Naira at stake paid out by the 1000+ plot holders.

All land outside of an identified 'layout' and designated 'land sub-divided into plots' was entered onto the GIS database. These areas were measured and tabulated by District and LGA and presented in map form showing their locations and boundaries. To implement some kind of planning control, these areas would need to be more accurately defined by the Land Administration Officers of the Ministry, KASUPDA and new areas coming on to the market identified.

These are clear areas of land that would appear superficially to be in non-urban or agricultural use, but, in fact, are already 'committed' for development and need to be included in any calculation of land committed to development and taken into account as such within the Master Plan provisions. They are also areas that can now, generally, be excluded on financial and political grounds from acquisition by Government at all levels under the existing system of acquiring land for official development layouts. For the purpose of estimating future population capacities, it was assumed that these committed areas would be developed with standard 30m x15m (i.e. 450 sq. m). In estimating the number of plots that would be built on each of these defined 'land sub-divided in plots parcels', it has been assumed that each 450 sq. m plot would, in fact, need a gross area of 600 sq. m to allow for access and other community uses. Overall 2,286 ha of land were identified as being sub-divided into plots and it is estimated that this land when fully developed would accommodate over 38,000 plots of this size.

### **The house building process**

There is evidence of some land subdivisions being ill-conceived and in obscure locations, such that they are not being developed and may not have even been sold to individual investors. On the other hand, reasonably well-located land subdivisions on the urban periphery are being developed at a very rapid rate in Kaduna (and most other large urban centres in Nigeria, besides). The image below shows the rapid pace of housing development in the space of one year. In a peri-urban area of Kaduna, with an initially undeveloped area being subdivided and developed to probably 10-20% of

its capacity within the space of a few years, and the going densification of the neighbourhood immediately to the south.

Typically, in order to establish presence and ownership, a plot owner will erect a dwelling shell, with or without a compound wall around it (and according to cultural practices) as soon as they can afford it. Thereafter, investment will occur as and when funds are available in the way of 'incremental' or 'progressive' housing described elsewhere in this study.

**Box 8.2: Rafin Guza – a case of rapid informal free market development in the five years to February 2009**

The extent of the development shows the complete lack of coordination of planning leading to lack of proper drainage and access with the existing development as well as within itself. The clearly bounded empty land in the top left hand is the fenced southern part of the Army Signal Corps site.





### **Implications of the informal land development process**

Around the edges of the Kaduna built up area there are significant parcels of land already committed to development in the sense that individuals have paid often-substantial sums of money for plots to develop their houses, community buildings such as schools, mosques and churches as well as businesses. A population estimate of the undeveloped but already committed capacity was made using the compound occupancy rates established for each district from the household interview survey and applying that rate to the number of undeveloped plots in each district

The MLCN surveys of 2009 did not attempt to establish whether these developments have been legalized or not as this would have been a too time consuming a process. They are there on the ground and presumably paid for and concentrated particularly in the newly developing districts of Kakau, Kamazau, Rigasa, Rigachikun and Kujama.

Taking both the categories of ‘land subdivided into plots’ and ‘partially developed land with vacant plots’ together, there is a committed area of land to accommodate an additional estimated almost eighty thousand (78,267) standard 450 sq. m plots –enough to accommodate and additional population of more than 700,000 people at current rates of occupancy (see Chapter 11). Furthermore, an estimated 12,219 plots on these areas of land have already been developed or are under construction – a considerable investment by the plot occupiers.

Verified hearsay evidence indicates that comparatively large sums of money are being paid – often by the not so wealthy through private loans of various kinds – in ‘purchasing’ plots of land (figures of N100,000 to N500,000 per plot have been quoted in different areas) let alone the investment involved in the over twelve thousand plots with already built investment.

Further detailed research is required, but indications are that individual investments totalling anywhere from N15bn to N25bn or more in the purchase of plots alone have been made in these areas by individuals whether legally or not. The extent to which the motive for buying plots is for personal use or as investment in the hope their value will increase is a further area for immediate study.

The relatively undeveloped peri-urban areas described in this chapter aside, hitherto, the expansion of Kaduna from its village origins and the planned layout of it early days, described in the next chapter, has resulted in a massive expansion of informal urban development particularly in recent years. Currently about 60% of the land within the continuous built up area of the city is outside the original township area and not covered by official Land Plans and Town Planning Orders, while beyond the current limits of the built up area, half as much land again is subdivided or already starting to be developed.

### **Policy implications**

These efforts demonstrate the extent of professional planning inputs and the training necessary to the task of bringing this type of development into some kind of formalised planning framework. Specific professional training curricula and a methodology for community involvement can be designed to ensure that these ‘committed’ developments are successfully brought

into the 2015 Revised Master Plan implementation and standards at a scale that is affordable and agreeable to the communities themselves and, most importantly, that the plot occupiers should be assisted to obtain proper and secure title to their land for use as collateral.

This is a high priority of the Master Plan Revision proposals, which is to find a way of upgrading, improving and bringing legally into the Master Plan framework the large areas of land already and inevitably in the process of development, or soon about to be, whether the government or planning authority or anybody else likes it or not. Fundamental land administration reform needs to take place urgently.

Government residential layout plans (TPOs) can take years to appear on the ground and are then uncertain as to their reality to meet the real demand. The 'free' market is providing instant plots that individuals can develop (if they have the money), but the 'layouts' have no decent space standards for sustainable living and have questionable legality so are creating the slums of today.

The poor are by definition excluded from this anarchic development process to gain their own plot. They still have to rely on overcrowded rental accommodation (over half of all Kaduna households are tenants). The process has been taken over by those with access to money for purchasing plots (legally or illegally). However, there is evidence that rental housing accommodation in the town is being released by those who are purchasing and building their houses on the outskirts.

Anything that releases more housing units on to the market must take the pressure off prices as well as increase the supply of accommodation and be beneficial to all. If this does not happen a situation can be foreseen that those without access to funds may take to squatting and building on property that is not their own but is seen to be empty. It might be quite difficult for government to control any such undesirable movement while the land and land title administration and, in particular development control, remains in its current chaotic state.

### **Land use and natural resource management in the wider city region**

The Kaduna City Region is located in an ecological zone generally described as the northern Guinea Savannah Zone. It is characterised by a mono-modal rainfall system with an average annual rainfall of around 1,200 mm and a growing period of 150-180 days. There are reasonably good soils and a fairly reliable rainfall pattern, and since Kaduna State comprises undulating terrain with rock outcrops, dominated by the seasonably variable, but perennial, Kaduna River, a rich source of alluvial soils and sands, subject to annual flooding. There is a great deal of scope for agricultural development. Kaduna's central location renders communications with the rest of the country relatively easy and facilitates the flow of agricultural inputs and produce.

Both the 1967 Plan and its later 2010 Review placed great emphasis on the land use, natural resource and environmental management in the wider city region of Kaduna. The 1967 Plan talks of two complimentary plans for the city, the first dealing with the rationalisation and reorganisation of traffic and land use, the second recommended consideration of a much wider

definition of the Capital Territory, its 'city region' an area some 111 km square encompassing more than 12,000 sq. km and about 25% of the physical extent of the state:

*'The Capital Territory, now merely a "municipal boundary" or "urban fence" drawn tightly around Kaduna's developable area will in the plan be extended to take in all the Capital's basic physical resources of water, food and wood. This boundary should be cast sufficiently widely beyond the daily commuting distance to the centre of the capital to prevent further irresponsible and harmful ribbon development and squatter's communities along the roads to the city.*

*Under the control of one authority over such a Capital Territory local autonomy could be fostered as well as a true interdependence between the industrial city and its rural population and industries. Thus the cost will be reduced of food and country products which now come in expensively from far afield and, by peopling the farms and villages with young farmers trained in the region, it could help to reserve the trend that robs the countryside of good human stock only to cast it among the unwanted ranks of the unemployed in the city.'* (Max Lock and Partners, 1967)

Of course, this proposed extension of the Capital Territory never occurred, for predictable political reasons, and in fact the territory itself disappeared in the later administrative reorganisation, demoted first into a single and then into two local government areas. Thus the planned, integrated approach to rural-urban linkages, complimentary urban and rural development and natural resource management was also foregone.

However, the need for the city to relate to its wider catchment area and regional sphere of influence remains as important if not far more so now than in 1965 when the city was far smaller. This was addressed in the 2010 Natural Resources study that formed part of the larger Master Plan Review.

For example, the rapid expansion of Kaduna urban area is the main threat to food production in its surrounding areas. One study has estimated that between 1990 and 2000 the Kaduna Urban Area had expanded by some 170 ha/pa and nearly 300 ha of vegetation cover were being lost annually. Bare land, a component of urban expansion, was increasing at 183% pa. (Ishaya et al., 2008) At the same time the peri urban areas of the city provide a mix of expanding settlement and traditional compounds within long established settlements still relying on farming activities, whilst the 'fadama' areas that stretch along the Kaduna river and many of its tributaries, provide for rich market gardening activities that should be protected.

The Kaduna drainage system is dominated by the Kaduna River with its seasonal variation between flood conditions and almost dry exposed river beds. Its tributaries provide useful recharge opportunities and traditional 'fadama' development. The Kaduna River provides all the water requirements of the City Region.

However, climate change is likely to have an increasing impact on the city with informal development impinging on the flood plains of the Kaduna River already subject to periodic severe flooding and poor drainage across the rest of the city resulting in localised flooding risk. The likelihood of more erratic and intense rainfall patterns will increase these risks.



Changes in land use upstream of Kaduna over the years have increased the flood risk in the Kaduna Urban Area. In the 1970s the predominantly shifting agriculture and nomadic pastoralism had a very small impact on vegetation and soils. Rapid changes can be observed since the 1980s. With an increasing proportion of land under permanent cultivation, it is very likely that the more recent cultivation has taken place on less well-drained soils in comparison with earlier practice. The flood risk is therefore high and needs to be taken into consideration when planning new development areas of the city. The extent of flood risk areas based on the major flood of 2003 are indicated in Figure 8.xx

Much of the supply of forest products has already started to come from areas outside Kaduna State. As the population increases, more land is being brought under cultivation and more wood is being harvested for cooking fuel and building purposes. The loss of vegetation cover produces bare surfaces susceptible to water and wind erosion and general environmental degradation, particularly a loss of biodiversity. The situation is exacerbated by drought, uncontrolled burning, overgrazing and flooding. Similarly, at a country level forest and woodland resources are declining at an alarming rate. The impact of deforestation is seen most seriously in the north where the Sahara desert is estimated to be encroaching southward at the rate of around 1 km per year (Dregne and Tucker (1987)<sup>46</sup>, cited in Morris, 1995), which the planned continent wide 'green wall' which stretches across the northern states of Nigeria, is intended to check. Lack of a coordinated Land Use Policy together with out-dated and un-enforced forestry legislation is accelerating the process.

It is not possible within the scope of this study to investigate this aspect of environmental change and impact in the larger city region of Kaduna. Nevertheless, the data sources existing more a fuller investigation of this critical areas of planning and land management in future research.

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<sup>46</sup> Dregne and Tucker (1987) note that 'Stebbing quoted a French political officer who served in Niger and Mali as saying that the Sahara had advanced toward the south at a rate of 1km per year for the past 300 years' as cited in Morris, 1995, p18.

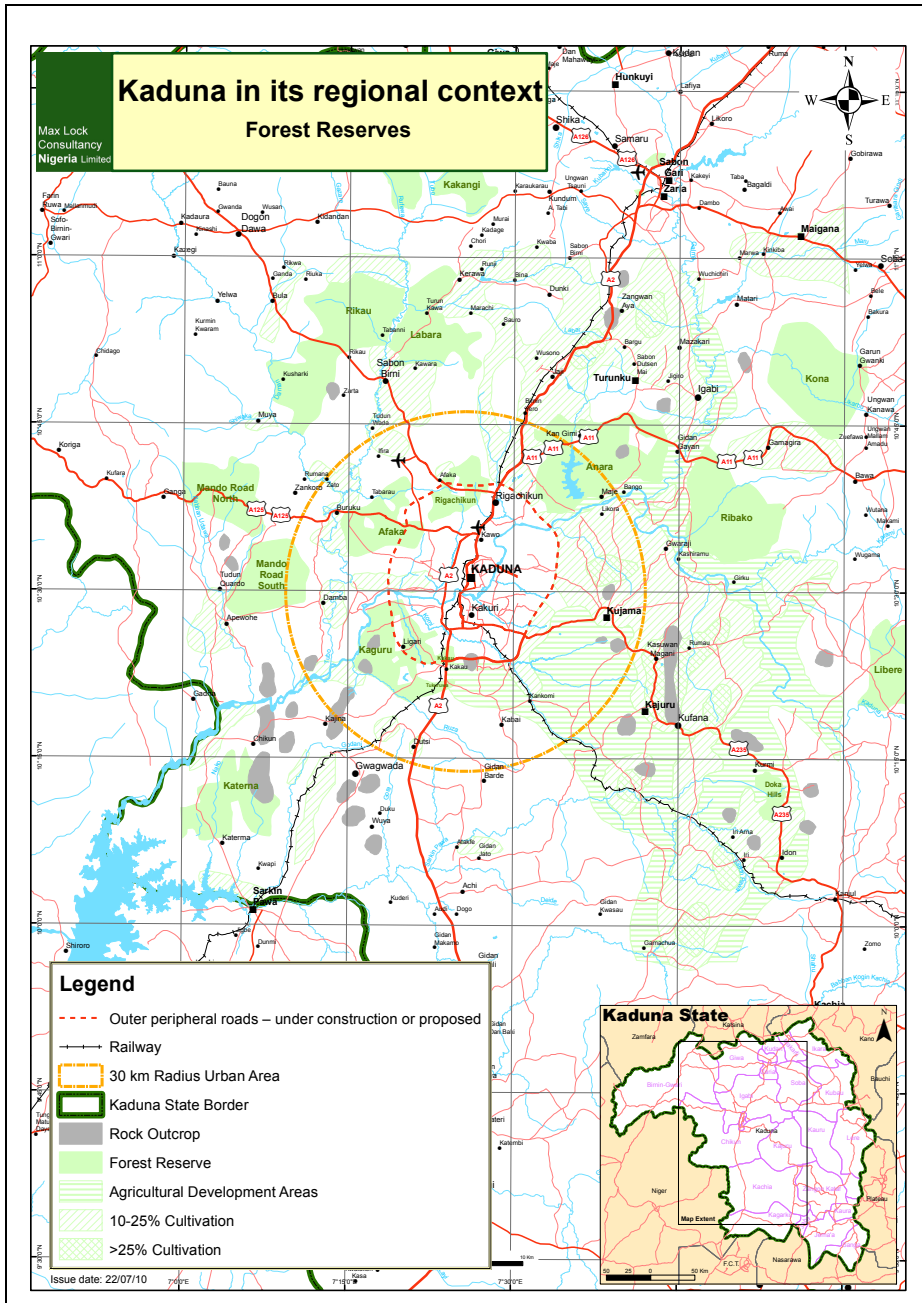


Figure 8.3: Kaduna in its regional context: forest reserves and agricultural areas (Source: Max Lock Consultancy Nigeria et al., 2015)



Figure 8.4: Kaduna Spatial Development Framework: green space network (Source: Max Lock Consultancy Nigeria et al., 2015)

**Box 4.2: The Issues of climate change**

The ability to predict the nature of climate changes, that all agree will occur in West Africa as a result of global warming, is compromised by a current poor data recording network throughout most of the region and technical limitations within the currently available techniques. This makes firm predictions, within what is acknowledged as a region of quite complicated weather patterns, difficult to achieve compared to other areas of the world.

The consensus is, however, that West Africa will not escape the effects of global warming<sup>2</sup>. Higher temperatures will definitely be the case although the degree of warming and its rate of change cannot yet be predicted with satisfactory accuracy for planning purposes<sup>3</sup>. Changes in rainfall predicted under various modelling scenarios currently suffer from a distressingly greater degree of variation to those for temperature. The majority of studies indicate it would be prudent to infer a lower rainfall for the study area in the near future. But the degree to which rainfall may change in its amount, its seasonal distribution and in the number of extreme rainfall (and wind) events is, however, unclear.

What is common to all predictions, though, is that there will be much greater variation in climate parameters and a greater frequency of extreme events associated with this - drought / flood / windstorm; heat-wave / abnormal cold. These events are expected to trigger secondary stresses in the environment and threats to household well-being such as the spread of pests, infectious disease organisms, degradation of natural resources, competition for resources, biodiversity losses, food price and employment risks, displacement and potential conflicts

**Conclusions**

The situation with regards to land tenure in 2015 remains much as it did in 1967. In principle, the State owns all land: ‘all land is vested in the Governor. Individuals only have the right to occupy land and this right is granted by various authorities under powers delegated by the Governor’ (Max Lock and Partners, 1967, p86). As there is no concept of individual ownership in traditional land occupancy, this system of land tenure was brought into being in the early days of British rule in part to protect this tradition against land grabs by outsiders (Ibid) and was one of the prime reasons for the introduction of the 1978 Land Use Decree (later 1990 Land Use Act).

Understanding the system of land governance provides many clues to the political economy of land that is driving the malfunctioning system of urban development in Nigeria, today as it has since colonial times. As well as the wider political impacts of related ethnic and community concerns, these have profound policy implication for managing the uncontrolled manner in which the city has expanded and continues to grow, both in terms of the growing deficit of basic infrastructure and services, and for the environmental management of its wider city region.

# 9. HISTORICAL ORIGINS AND PHYSICAL GROWTH OF THE CITY

## Introduction – Kaduna’s physical growth and development

This chapter is primarily concerned with the growth and changing form of Kaduna in the period since its foundation in 1913 and more particularly with analysing the factors driving and the morphological characteristics of the Kaduna urban and urbanizing area since the Max Lock Survey and Plan, 1965-67. As described in some detail in the original 1967 report, the historical governmental functions of Kaduna have strongly influenced its spatial development and form. From the mid-50s onwards, based on records available in the Survey Department, the Army drew up a series of plans for the rationalization of its land (Max Lock and Partners, 1967, p85). ‘The basic decision was taken to concentrate Army development in one cantonment in the north of the town and give up for civilian use the many scattered sites throughout the town. It was the availability and location of these sites that did more than anything to set the pattern of development’ (Ibid).

The basic pattern of gridiron plot development in the original residential settlements of Sabon Gari and Tudun Wada set the pattern for the majority of land development in the city, both formal and informal, ever since. As the 1967 report puts it in reviewing the historical background, ‘the separate subjects of land use, land tenure and land administration are closely related not only in space but also in time’ (Ibid, p84).

The chapter traces the historical origins of the city and their subsequent impacts and lasting influences on its pattern of physical development. It explores the impacts of the various urban plans for the city, how it has expanded outwards from its historic core and the factors conditioning this growth.

### Origins of the city and colonial and post colonial period up to 1965:

As noted in the 1967 Report: ‘Lugard’s choice of Kaduna as the new capital of the Northern Provinces was dictated by its strategic location. There was the convenient river crossing for the railway, the abundance of water from the river, the large areas of land suitable for urban development, and freedom from local political influences. The town he laid out was generously proportioned with wide straight avenues later to be planted with fine avenues of trees. But the social classes and land uses were rigorously segregated, each with their own area and this set the pattern of future growth. The military, the administration and the railways remained the dominant stabilising influences on the town until the establishment of the textile industry in 1957 and its subsequent rapid expansion.’ (Max Lock and Partners, 1967)

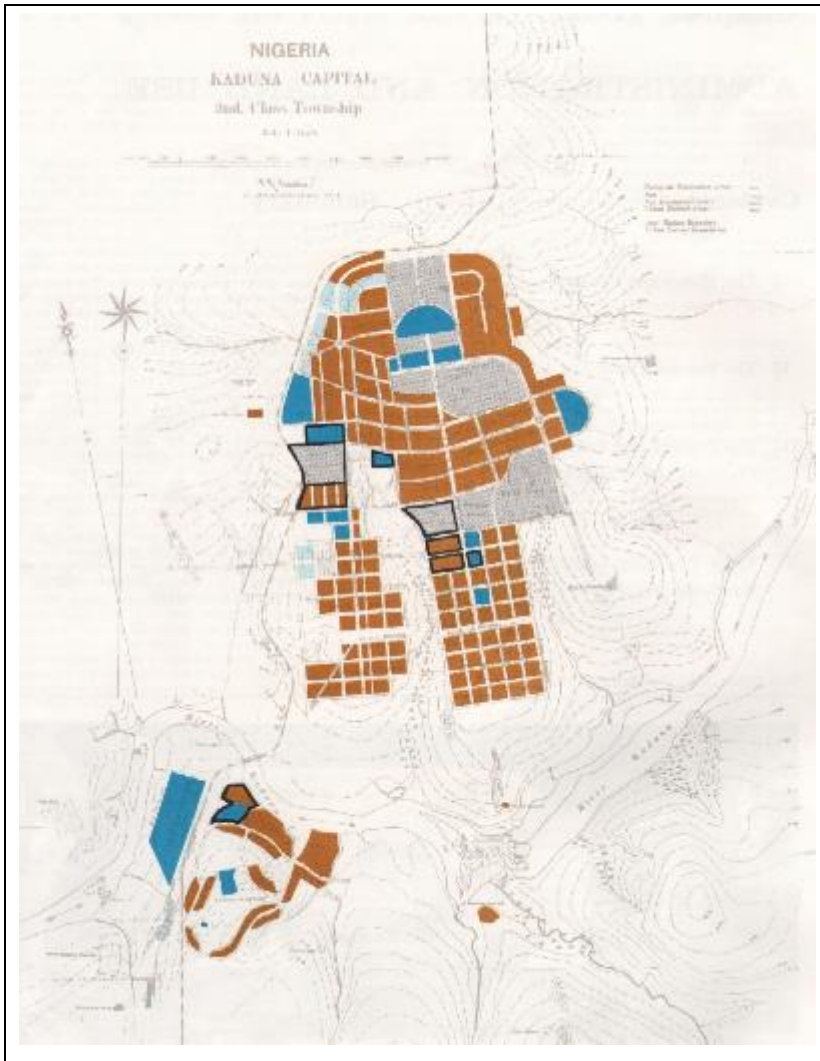
The issues of ‘freedom from political influence’ are covered more fully elsewhere in this report but it is clearly a key factor in determining the original plan for the city, following the classic European colonialist separation of the highly planned and graciously laid out European quarters, in this instance to house the administrators of Nigeria’s northern provinces, and the ‘native quarters’ (of which in the case of Nigeria there were two classes – the native ‘natives’ and the ‘strangers’ or ‘foreigners’ that came from outside the province who were intended to be housed in the main in a planned, high density area (the Sabon Gari).

The heart of the city, as conceived in Lugard’s original plan (Figure 9.1) remains, in basic form, much as he and his team of planners conceived it. Figure 9.2 shows the subsequent growth of the city up to and including Max Lock’s survey of 1965.

Quoting again from the 1967 Report:

‘Kaduna before the war was a small town limited to a partial completion of Lugard’s original plan. The large sites in the centres of the town shown black on the map had been developed and contained the senior service quarters of the Government Residential Area along with the racecourse and the beginnings of the central administrative offices. Spreading south along the two main avenues, the Clerks Quarters on the east had been started and the Sabon Gari on the west was already well established. The small labourer’s quarters to the west of the railway were yet to spread and become the present Tudun Wada.





Key: Residential  
 Army  
 Governmental/institutional  
 Open Space  
 Industrial/commercial



Figure 9.1: Lugard’s Original Plan for Kaduna

Kaduna South, on the other hand, only consisted of the railway station and the Survey Department with their senior service houses to the east. The two village communities of Makera and Kakuri in the far south were then outside of the Township boundary and had already become established settlements.” (Max Lock and Partners, 1967)

The growth in the intervening twenty-two years up to 1954 shown grey on the map was concentrated almost entirely in Kaduna, north of the river. The extension of the Government Residential Area reflected the increasing importance of the capital in a growing Region. In the Sabon Gari most of the plots had been developed and the outlying villages of Abakpa. Ungwan Shanu and Kawo were well started.’ (Ibid)

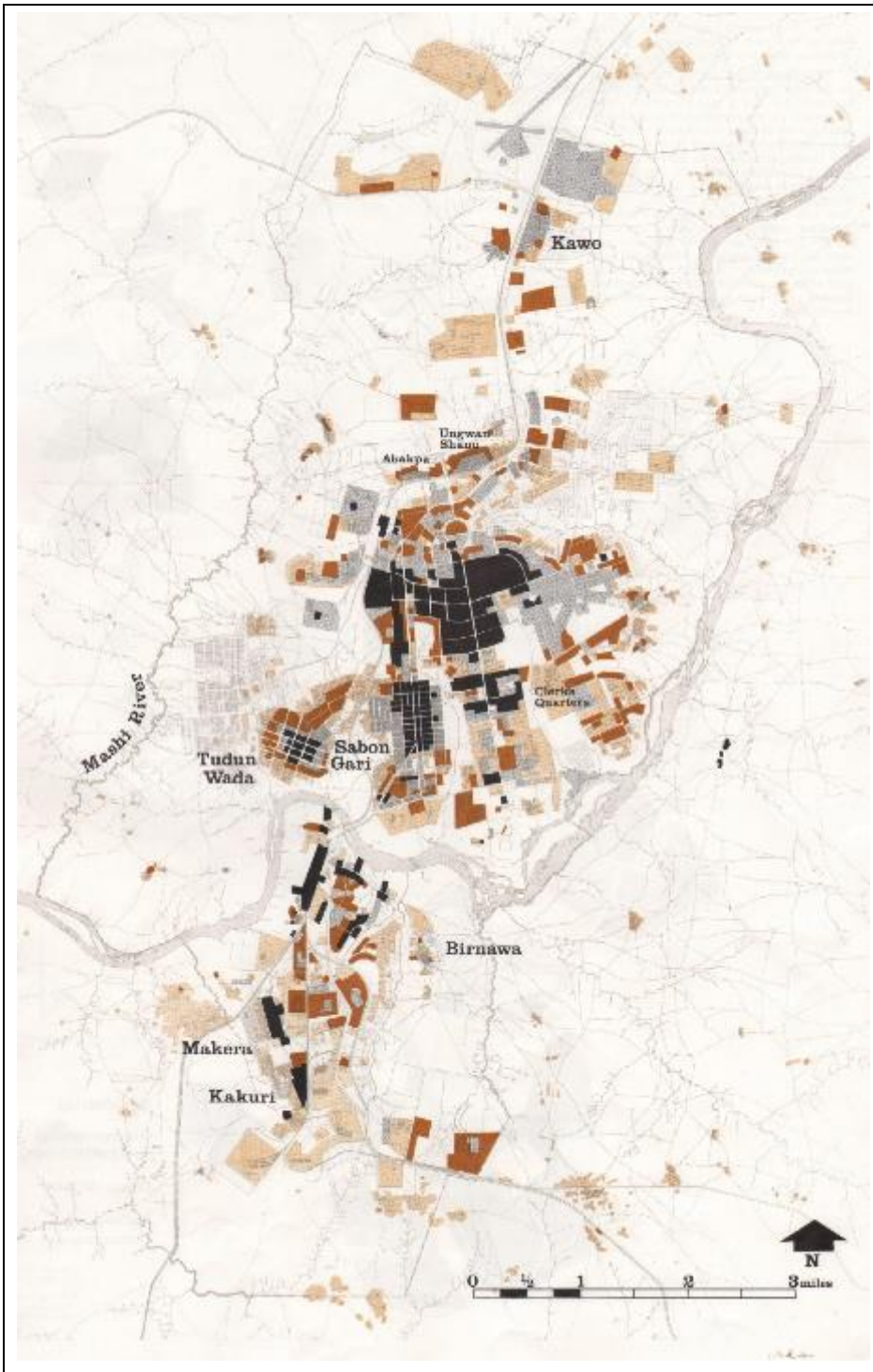


Figure 9.2: Growth of Kaduna from 1913 to 1965

‘...So rigidly was the concept of 'Native Authority' respected outside of the 'township' boundaries that Lugard's original plan for Kaduna shows no development at all beyond the immediate boundaries of the Sabon Gari and the Government Reservation Area. One must suppose that being a logical man, he as 'indirect ruler' could not show what form 'native development' should take when he had by definition made such development strictly the affair of the Native Authorities. But obviously the town would attract many local people who would have to live somewhere outside of the township. Hence the largest of these indigenous developments now got under way and was in fact given an unofficial helping start with orderly British advice.’ (Ibid)

The township boundaries referred to here are uncertain but are indicated in Figure 9:3. The original ‘township’ status was granted by Lugard, with intention that development within its boundaries should be planned and controlled.

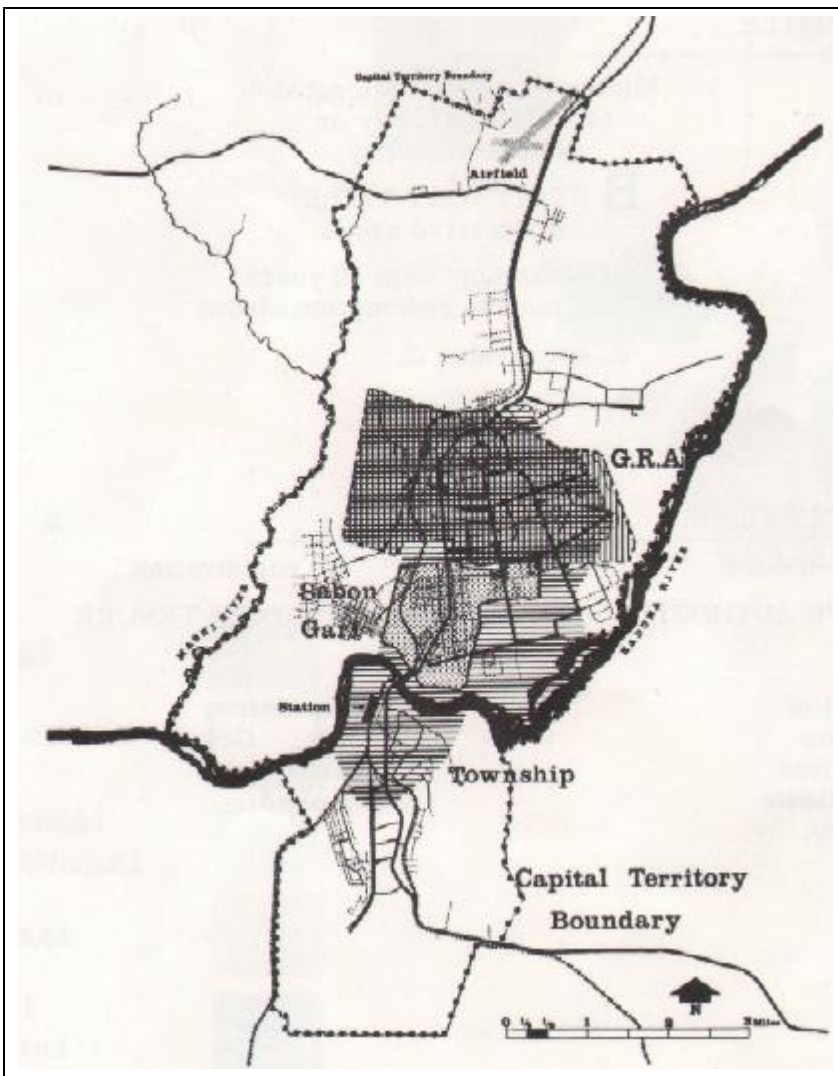


Figure 9.3: Administrative area boundaries of Kaduna in 1965

The report notes the ‘phenomenal growth’ in Kaduna south in the period from 1957. This was when the first cotton textiles mill was established, Kaduna Textiles Limited, joined by others driving the dramatic population



growth of subsequent decades. The industrial estates aside, little of the related residential development in Kaduna South was planned but rather took the form of informal development, characteristic of the original 'native quarters'. As the report further notes 'the sprawl of the many outer village settlements both inside and outside the present Capital Territory boundary has continued. The many uncoloured plots and sites illustrates only too well difficulties involved in the phasing of land allocation and its actual physical development.' (Ibid)

Thus it was that, by 1965, the physical structure of the town was established in broad outline and determined the work of the Max Lock team would take in carrying out their social survey would take focusing on the four identified areas:

1. Sabon Gari: Strangers Town (Central – population 42,000 in 1963)
2. Tudun Wada: Native Town (near Central –population 34,000 in 1963)
3. North Villages: Service Communities (Kawo, Kanawa, Abakpa, Unguar Shanu, Unguar Rimi – population 15,600 in 1963)
4. South Villages: Industrial Suburbs (Makera, Kakuri Hausa, Kakuri Gwari, Birnawa – population 10,700 in 1963)

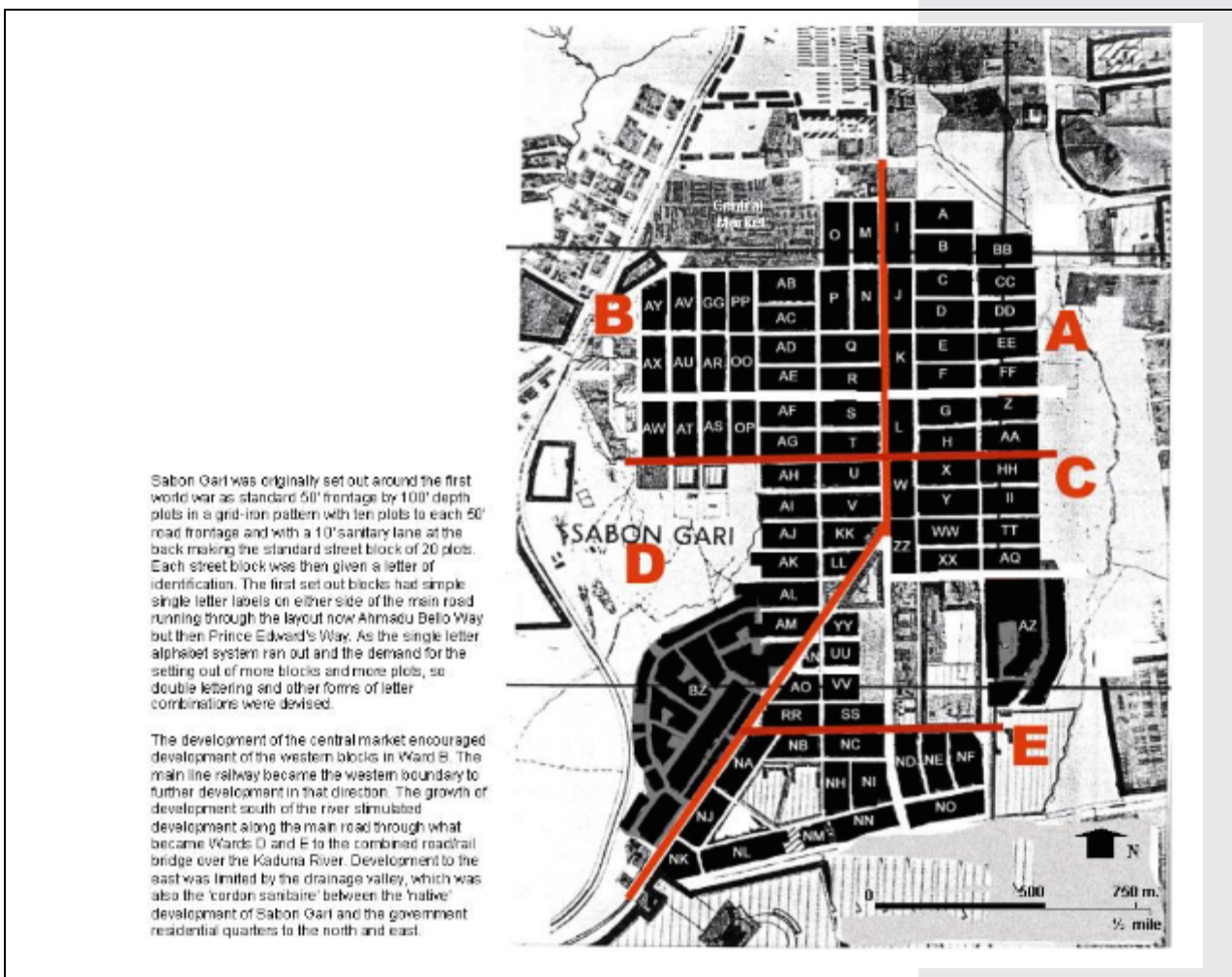


Figure 9.4: Sabon Gari street block structure in 1965

Together these surveyed areas contained the bulk of the town's population, estimated at nearly 100,000 people in the 1963 census and by Max Lock and Partners on the basis of their sample household survey at 105,000 in 1965. As noted, the population consisted of 'all classes and income groups of persons (almost exclusively Nigerian), from high government officials and wealthy traders down to the lowliest labourer and beggar.' (Ibid. p...) Additionally, about 10,000 people lived in outer villages 'predominantly agricultural in character and employment' and a further estimated 5,000 'transients in motor parks & railways stations and regional spending.' (Ibid) Additional to these popular, largely unplanned areas, another 34,500 people were estimated to live in the planned largely middle and upper class areas in 1965:

1. Government Residential Area (GRA – former European Reserve Area) – high cost, low density housing occupied by senior government and commercial staff with a European standard of living (approximately 10, 000 population in 1965).
2. Institutional housing areas – mainly clerks' quarters and middle income white collar workers in establishments – army, schools, prisons, etc (about 20,000 population).

The GRA and the clerk's quarters were well documented from Government sources and previous surveys so it was decided to exclude them from the 1965 survey (Figure 9.5).

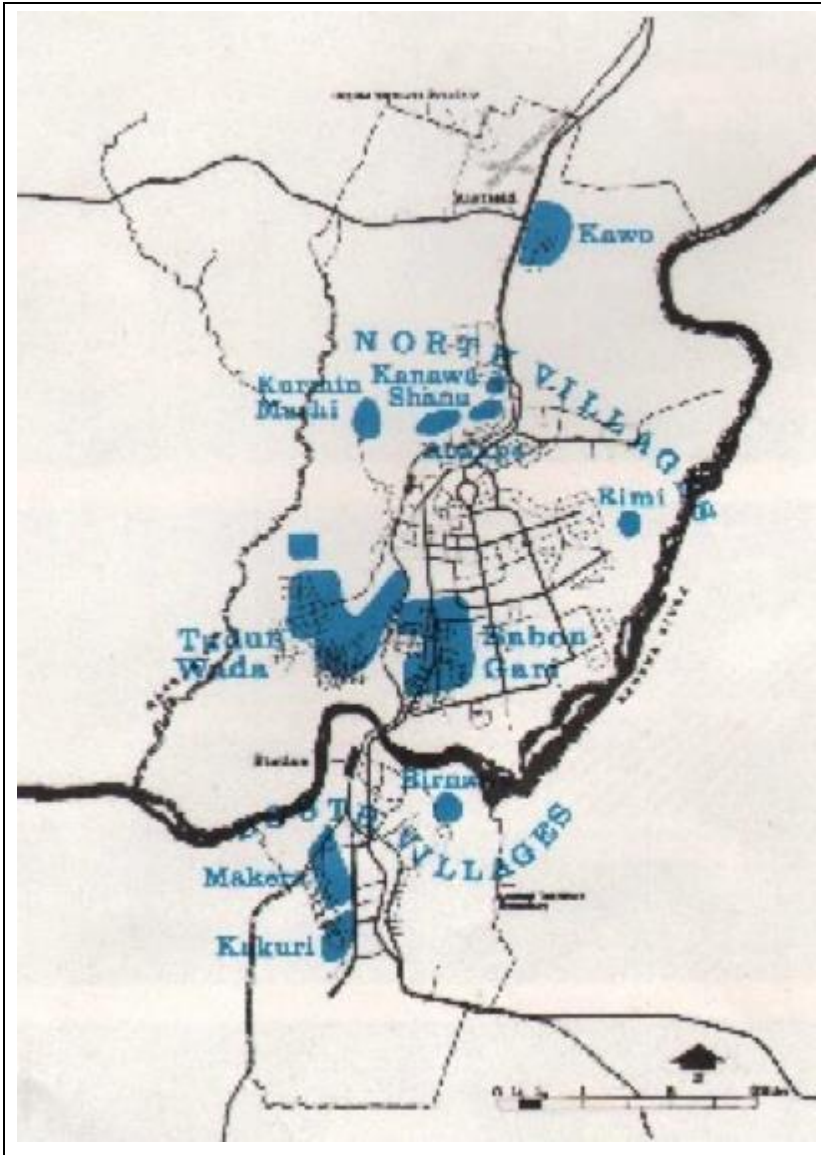


Figure 9.5: Areas covered by the 1965 Social Survey of all householders in every thirteenth compound comprising some 2,300 interviews, representing over 100,000 persons [Source: Max Lock and Partners 1967].



The economic base of Kaduna by 1967 (Figure 9:6) rested on ‘three legs’ – the military garrison, the government administration in the city centre and the growing industrial district south of the Kaduna river (with water to supply the textile mills drawn from the river and the railway to connect the factories to the port in Lagos). These three drivers employed people to work in them or service them or the people working in them and help generate the daily patterns of movement (as described in the transport chapter) as well as generating the need for new residential development around them.

The military land (actual and proposed, later realised) was largely located to the north of the city with important sites in the city centre and in Kaduna South maintaining a military presence across the city and ever present reminder of its prime role as a garrison town (Figure 9:6).

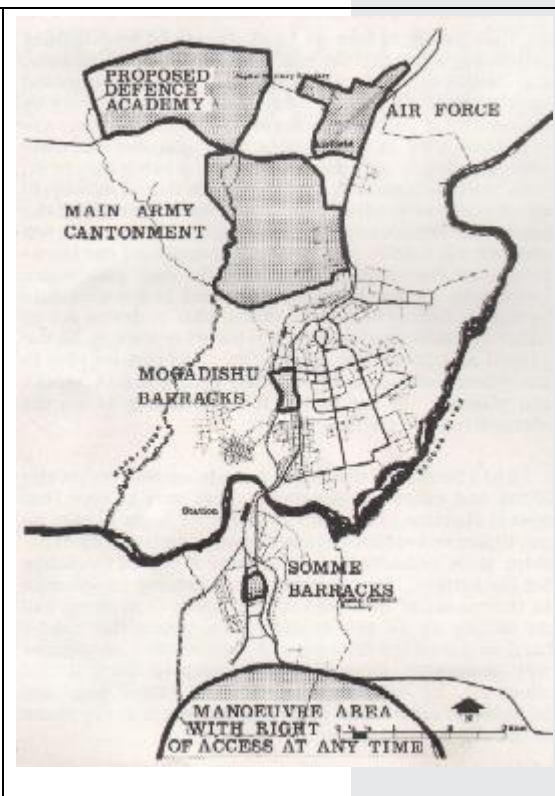
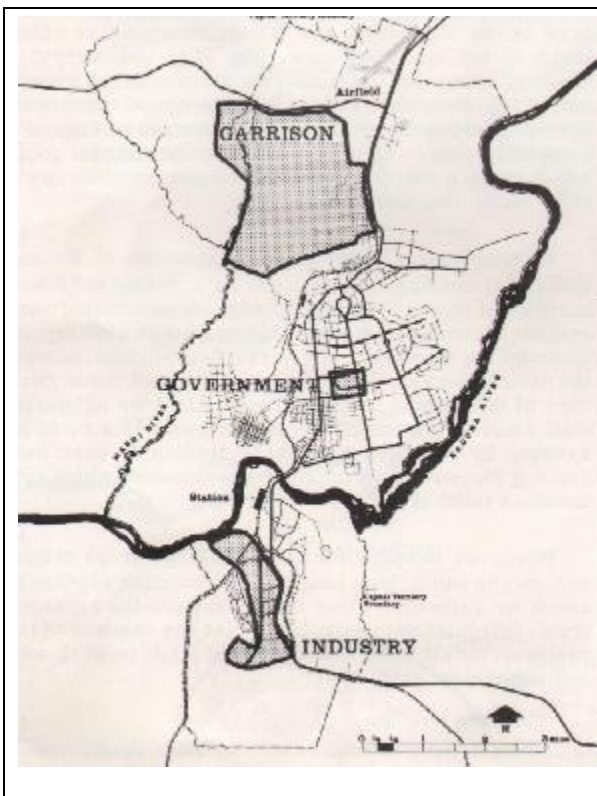


Figure 9.6: The three ‘legs’ of Kaduna’s economy in 1967 [Source: Max Lock and Partners 1967].

Figure 9.7 Military land holdings in 1967 [Source: Max Lock and Partners 1967].

### Kaduna’s proposed Master Plan 1967

The Master Plan for Kaduna, published in the 1967 Max Lock report (Figures 9:8 and 9:9), reflected the aspirations and potentialities of a city undergoing transformation into a major Nigerian industrial and commercial centre. Its political, administrative and military functions as, by origin, a colonial territorial capital city, however, were continuing to provide the anchor for the city’s economy.

The plan gave particular prominence to developing a rational transportation network for the city and one of its key recommendations was that the railway that ran so close to the developing commercial centre of Sabon Gari and that constrained the development of the city westwards, should be re-

aligned further to the west with a new road by passing the west of the city and re-routing the main Federal A2 route away from its location along Ahmadu Bello Way through the centre of Sabon Gari.

In the event, negotiations that were progressing successfully with the Chair of the National Railway Corporation were cut short by the deadly military coup of January 1966 and the railway was never diverted.

The second key recommendation regarding the construction of a new western artery was scuppered by requirements of the World Bank-funded programme for major national road improvements in the later 1970s that required that improvements should be limited to upgrading of existing road infrastructure. This resulted in Ahmadu Bello Way being turned into a dual carriageway cementing its position as the main artery through the town rather its redevelopment as a 'civic spine' as proposed by Max Lock and Partners (Figure 9.8).

Given the inappropriateness of this route as both a major central distributor road and national artery, a western bypass, the Nnamdi Azikiwe Expressway, duly followed in the 1980s, beyond the proposed railway realignment, but without providing the improvements to the central area traffic circulation that this and other road improvements proposed by the Max Lock team would have realised. The so called Western Bypass was rapidly followed by the construction of an Eastern Bypass by the Federal Government and again its design and alignment is divorced from the urban structure. It has been ten years in construction and is yet to be completed. What is evident is a lack of coordination of such major Federal Government road projects that take place and are designed without proper ground and traffic survey or recognition of or connection to existing road plans and land planning needs.

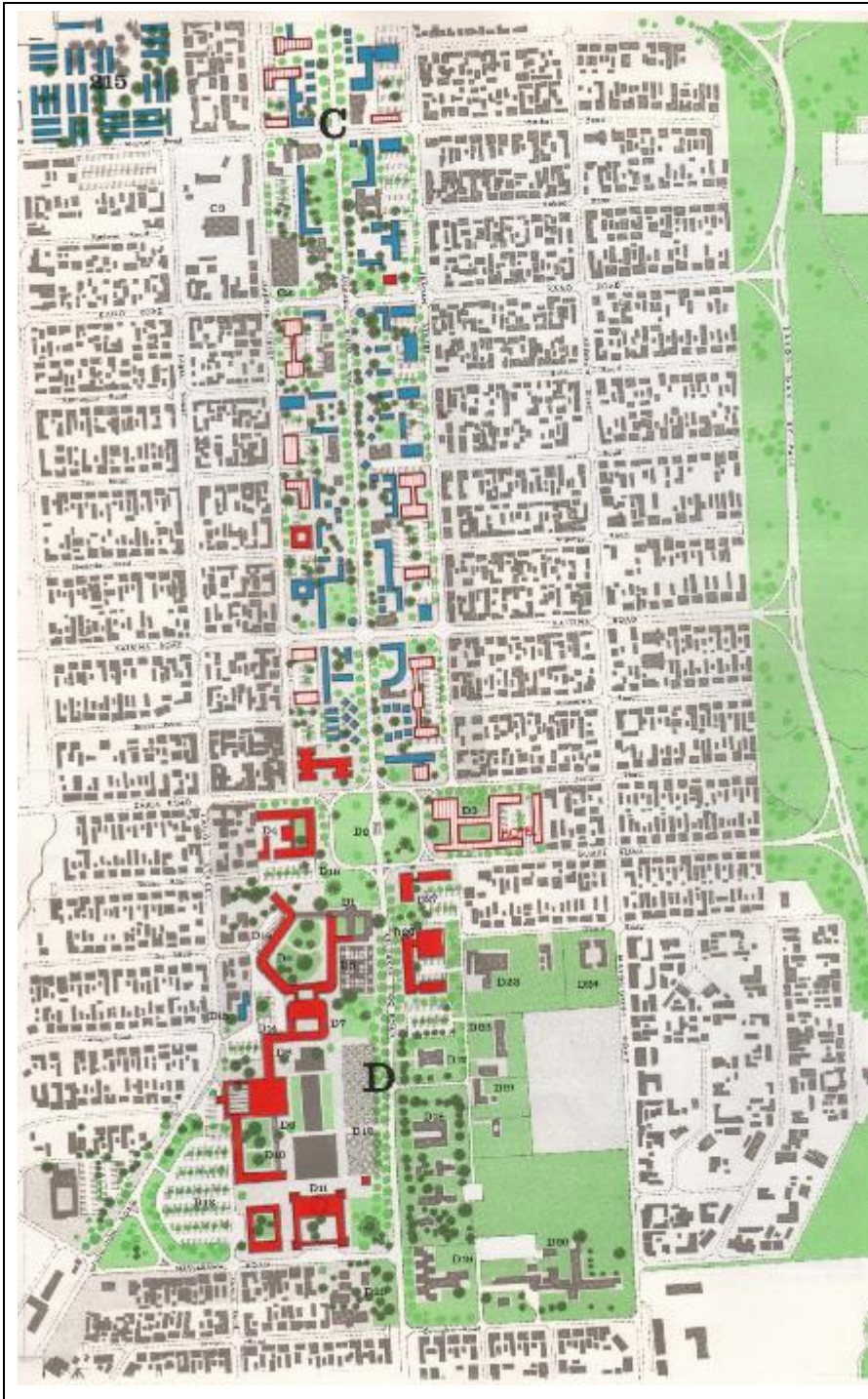


Figure 9.8: 1967 Kaduna Master Plan – Civic Spine proposal [Source: Max Lock and Partners 1967].



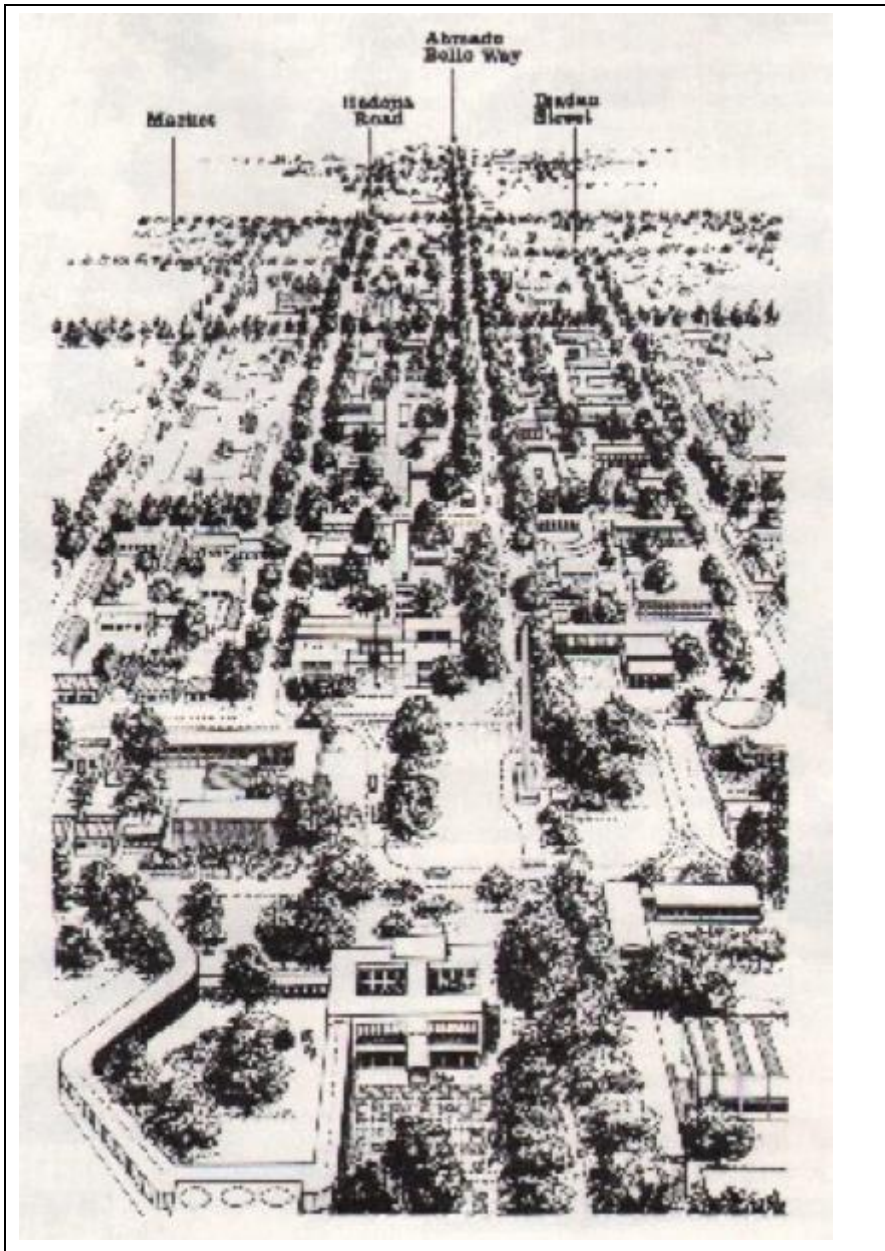


Figure 9.9: 1967 Kaduna Master Plan proposed redevelopment of Ahmadu Bello Way as a 'civic spine' [Source: Max Lock and Partners 1967].

The team was more successful in their negotiations within the Army, despite the loss of a key military negotiator who was murdered in the 1966 coup. They managed to secure the release of the Mogadishu Barracks in the city centre in return for the military securing a much larger parcel of land for the proposed Defence Academy adjacent to Mando Road to the north of the city (Figure 9.9). Similarly, the Army's rights to a free fire zone for a range of 25km to the south of the city out of the existing artillery barracks was curtailed with the negotiated move of the artillery school and barracks out of the city to a non-agricultural site in the hills north of Keffi.

Another key aspect of the plan was to improve the links between the northern and southern parts of the city with a number of new bridges. This would facilitate opening up Kaduna South to major planned new housing

developments whilst improving its connections to the public and commercial city centre to the north. This part of the plan was not implemented and it is only in the past ten years or so that two new crossings have been realised (Makarfi and Gobarau bridges) opening up the east bank of the Kaduna river to new development – as yet very little of it planned.

Sites for planned new housing were identified throughout the city and layouts for several of these indicated in the planning report. How these schemes were implemented in practice in the districts of Barnawa, Malawi and Kabala are detailed in Appendices 9a-c.

### **Urban growth from 1967-2015**

The Ministry of Lands, Surveys and Country Planning allocated large tracts of land for new development in and around Kaduna over the years since 1967 through formal TPO (Town Planning Order) and Land Plan procedures. However, those covering the military areas aside, these represent well under half of the urban and urbanising of the city, with ‘informal’ development taking up the rest.

Long established informal developments in such areas as Badarawa and west of Makera (now Nasarawa) were starting to develop in 1965 as observed in the 1967 Master Plan. These were technically ‘illegal’ but not stopped. These and other areas developed to the full extent of their physical boundaries and have become established urban areas with individuals applying for and being granted title deeds over developed plots, with unchallenged occupancy after a number of years giving the occupier a legitimate right to occupancy.

In the period of growth between 1967 and today the committed and developed land in Kaduna has grown to cover an area about seven times greater than it was then (six times if the armed services land is included), accommodating a population that has grown by more than seven and a half times.

Figure 9.10 shows comparisons of 2010 development and planned developed land according to the 1967 Master Plan. The proposed future growth in the 1967 Master Plan was mostly composed of urban infill resulting in greater density. New industrial and residential development was planned south of the river accessible by existing bridges but the possibility of extensive development, especially to the east, was still largely constrained by the absence of bridges crossing the River Kaduna. Actual development by 2009 shows a far greater extent than was envisaged in the 1967 plan.

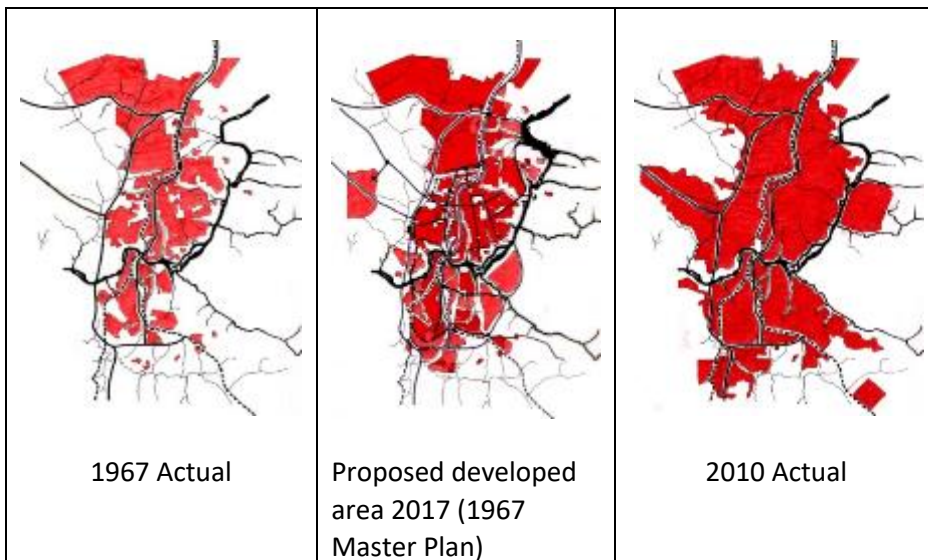


Figure 9.10: Comparisons of planned developed land according to the 1967 Master Plan and 2010 actual land development

Figure 9.11 shows the growth in the extent of the built up area from 1965 to 2015. Most noticeable is the rapid pace of recent expansion, although this has been at a particularly low density and characterised by scattered development.

### Conclusions

This chapter has shown how the factors conditioning the historic settlement of Kaduna have influenced its subsequent growth. Kaduna is continuing to expand at a rapid pace. However, as there is little effective land use planning or accurate mapping, this physical expansion of the city is largely unmanaged, going unrecorded and not well understood. Increasingly readily available remotely sensed images (satellite imagery) and its innovative use are helpful in providing spatial data and mapping the pace and extent of urban expansion but give little in depth of insight into the nature of the activity taking place. This study of urban change seeks, among other things, to combine data from established ground based survey techniques with the interpretation of Google Earth images to derive estimates of urban growth and demand.



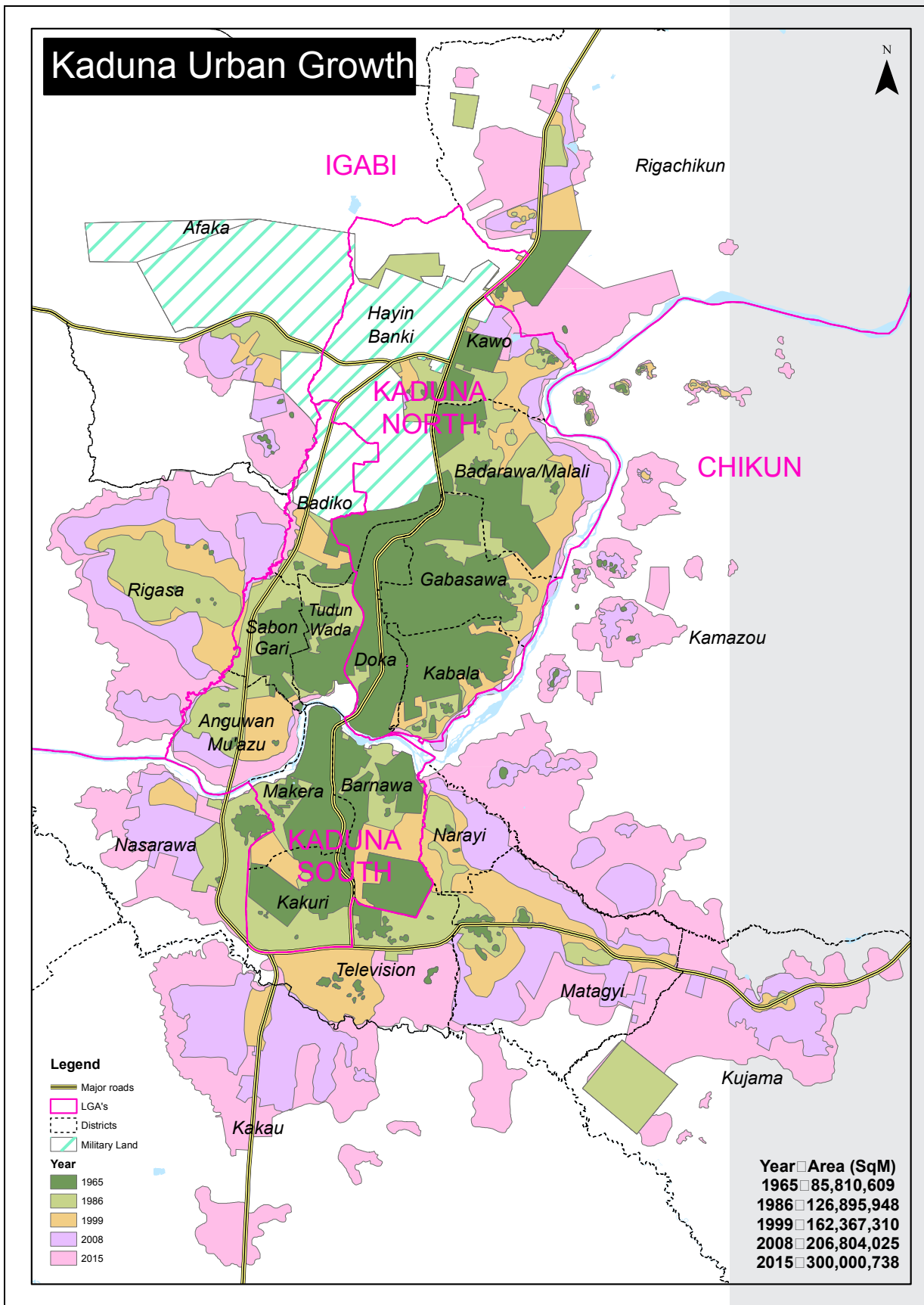


Figure 9.11: Map of Kaduna urban growth from 1967 to 2015. An estimate of the urban area has been produced based on satellite and landsat imagery.

# 10. URBAN MORPHOLOGY AND LAND USE

## Introduction

This chapter sets out a framework for understanding and analysing the pattern of land development and land use based on the theoretical tradition of urban morphology. Drawing on this framework and the concept of ‘transect analysis’, the final section presents a morphological analysis of the city as it was mapped and recorded in 2009 as part of the Review of the Master Plan by Max Lock Consultancy Nigeria Ltd and the Max Lock Centre in London (finally presented to the Kaduna State government in 2015). This defines different settlement types, their characteristics and evolution, and distribution across the wider Kaduna urban area.

## Theoretical framework: urban morphology as a tool for urban analysis

Built urban form is one of the most obvious features that can be distinguished in remotely sensed images. Consequently, this study draws on the theoretical tradition of urban morphology in order to derive a methodology for the interpretation of images for understanding changes in the urban form of Kaduna. At the centre of this approach is the assumption that any settlement is a cultural artefact resulting from established social practice within a given economic and physical (and historical) context. As is the case with Kaduna, historical influences can result in remarkably consistent urban form, irrespective of whether this results from an unmanaged or ‘planned’ process of land development. The aim of the research presented in this chapter of the study is to better understand the process of rapid urban morphogenesis so that remotely sensed imagery can be more accurately interpreted and associated with datasets drawn from social and economic surveys.

Urban form and expansion have long been the target of academic study (see, Gauthiez, 2004). However, much of this work has been focused on the understanding of historic landscapes, mostly in Europe (Caliskan and Marshall, 2011). Known under the collective heading of ‘typo-morphological analysis’ the resulting methodology has been adopted within planning practice, for example in the conservation of historic cities. It has been extended as a planning tool for regulating new development using form-based coding techniques, especially in the United States, for example the ‘smart code’ of Duany et al (2010).

As the approach usually relies on accurate cadastral mapping, it has been seldom applied in the context of rapid urbanisation where such data is not normally available. However, in this study we hope to show how similar methods, even where lacking accurate cadastral information about an area, can be employed to facilitate basic data gathering and, when combined with

other social survey data, more sophisticated and in-depth understanding of the urbanisation process and the changes it engenders.

The typo-morphological approach relates buildings, open spaces (streets) and property divisions (plots) to one another in a coherent structure (Çalışkan and Marshall, 2011). Kropf (2011) identifies three features that distinguish urban morphology: form derived from process, urban elements classified as types with generic characteristics, and these characteristics being related to one another at various scales in a structured way. This allows key features of the urban dynamic process to be related to one another and building (property) development, activity and movement, to be associated in a coherent manner, open to systemic analysis.

The elements of these morphological structures include the following:

- Construction material: the availability of building materials can have a significant impact on urban form. The choice of materials may be influenced by economics, logistics, cultural practice or skills base and can have a major impact on the utility building (See Housing Section).
- Plots: the land on which the building sits and associated with legal definitions of ownership. The identification of plots and their associated rights can be problematic in areas with weak governance and rapid change, and/or where traditional forms of communal land tenure clash with modern ideas of private property and markets. Often there are no evident plot demarcations, or the beacons which define the boundaries at the outset, have been lost over time.
- Buildings: the most obvious feature of any urban landscape in most studies classified in several broad categories most crucial being dwellings or other types of building. Occupants constantly adapt buildings and these small scale changes can have significant impact on the capacity of the city as a whole.
- Roads: the essential function of roads is to provide access to plots in addition they form part of the movement network and as an open space usually have a role as social space. Some studies distinguish between road as movement corridor and street as an identifiable space.
- Street blocks: a number of plots, partially or fully built on, surrounded by access roads. The manner in which blocks are set out can vary a great deal and the process which determines their form may not be obvious.
- Character area or plan unit: These are 'culturally-defined' areas consisting of contiguous street blocks of the same type forming an identifiable district or neighbourhood of the city. 'Neighbourhood' would probably be the nearest equivalent popular term. A 'district' in Kaduna is the largest administrative sub unit of a local government area. In general, most districts would contain a number of plan or character areas, which may or may not coincide with wards or villages which are the next administrative level down.
- Grid: essentially this is the network of roads that enable communication and socio-economic interaction across the city.

However, there may also be off road connections via paths and through open spaces.

- City: the urban area constituted by the above. May be referred to as urban landscape, but including natural and artificial features.
- Metropolitan region: Includes influences over a wide functional catchment area including rural activity.

These physical components of the city combine and interact resulting in complex arrangements can be seen to emerge from the superimposition of several structures working at differing scales. Panerai et al (2004) identify these as:

- The development logic of plot subdivisions where landholdings are established and public or private development initiatives take place;
- The development logic of building and site where activities take place, and;
- The development logic of roads in their roles in distribution and movement.

However, the scale at and manner in which this 'logic' acts varies depending upon social factors, and especially the institutional context of the city (Erickson and LLOYD-JONES, 1997). In urban areas where strong town planning regimes operate reasonably effectively, control cascades downwards from national governments to metropolitan or other sub national authorities (in the case of Nigeria, state governments and their urban development authorities), to local authorities, to developers and finally to building owners. However, in Nigeria, as in many Sub Saharan African countries, although these procedures are set out in the national legislation they have limited application at the local level where other forms of more localised negotiations apply.

| Scale                  | Local                        | Local   | District           | City             |                  |
|------------------------|------------------------------|---|--------------------|------------------|------------------|
| Decision maker         | Householder/<br>smallholders | Developers/<br>Communities/Large<br>landowners/<br>Institutions | Local<br>authority | Planner<br>State | Planner<br>State |
| Materials              |                              |   |                    |                  |                  |
| Building               |                              |   |                    |                  |                  |
| Plot                   |                              |   |                    |                  |                  |
| Road                   |                              |   |                    |                  |                  |
| Block                  |                              |   |                    |                  |                  |
| Quarter                |                              |   |                    |                  |                  |
| Grid                   |                              |   |                    |                  |                  |
| City                   |                              |   |                    |                  |                  |
| Metropolitan<br>region |                              |   |                    |                  |                  |

Table 10:1: variations in scale of decision making

At each scale particular decision makers are likely to seek an optimal layout to respond to the development demand as they understand them: the householder will seek to maximise utility of the plot, the land developer will wish to maximise the number of plots any subdivision may yield, the local authority may wish to distribute amenities efficiently while the regional authority may seek to maximise the efficiency of the road network or availability of development land. The scale of decision making is related to ownership and governance but can be broadly characterised as in table 10.1.

Priorities may conflict across scales and these conflicts are most commonly displayed in streets. A householder may see the street as space to occupy in order to expand their domain or sell their wares; the developer will seek to reduce the size and number of streets to increase the land available to build on; the local authority may seek minimum standards in order to manage streets while the regional authority may have an interest in road hierarchies in order to create an efficient movement network.<sup>47</sup> A central aim of any planning system is to resolve such conflicts, usually by negotiation between parties at the different scales but predominately within a top down regulatory process.

In the absence of an effective overall planning regime the importance of roads, plots and buildings remains, but decisions tend to be made from the bottom up. Individuals make buildings, these expand and patterns of ownership are negotiated with neighbours. Buildings aggregate to form clusters or blocks and streets form between them. Overall, the street pattern may exhibit features such as long narrow streets, and the best connected streets become the main thoroughfares irrespective of their size, capacity and intersection design. As a consequence of this emerging, ad hoc street hierarchy, the system as a whole may be inefficient (Erickson and Lloyd-Jones, 1997). The initial settlements such as villages expand to form urban quarters ('urban villages') and eventually, amalgamate to form large urban conurbations with no overall plan. The resulting urban form of such a process is often described as 'organic' and emerges from a process of locally based decisions with little or no control at district, city or metropolitan scale. What structural features the resulting network exhibits are a consequence of this emergent process.

This model of urban development contrasts the two extremes of a top down, planned and strictly regulated development process with one that is informal and locally-driven. Within a regulated process individual development is managed in conformance with an overall plan which allocates specific types of land use within a framework drawn up at the larger scale. In the unregulated process the any obvious larger scale features

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<sup>47</sup> In Kaduna, there is some uncertainty as to the division of responsibilities for roads between local government administration and the Kaduna State Government, which is the 'regional authority' in this instance. In practice, local governments extract certain tariffs from passing motorists and have some responsibility for managing local streets and access roads, including within the urban areas where the state government ministries and agencies assume control of the main streets.

are not likely to be planned or designed but simply emerge from the locally based decision-making process.

The process of 'organic', bottom up urban land development around existing village hubs or in many peri-urban (city fringe) areas, normally occurs in the context of traditional or customary systems of (mainly rural) land tenure, where the land around the hub may be in marginal subsistence farming use or uncultivated, open bush land and therefore relatively easily converted in a piecemeal basis to residential development by a growing community. The particular form of customary tenure varies on a regional basis, and Kaduna sits within the state boundaries with largely correspond to the historic Zaria Province, where land governance falls under the influence of the Emir of Zaria (formerly Zazzau) exercising semi-feudal land rights. In general, however, land is held in common by the local community and use rights are allocated by a local chief (not the 'owner' but holding the land in trust for the community and normally answerable to a higher order tribal king or emir) with the possibility these will be revoked if the land is not used accordingly.

In reality, the process of urban land development occurs within an established framework of land ownership, tenure and use where the parcels of land being developed are often much larger than those developed on an ad hoc basis on the edge of a village. The pattern of large cultivated fields or other large land subdivisions acquired by wealthy individuals (and increasingly institutions) provides a pre-existing framework for land subdivision.

The spatial pattern of fields and individual land holdings is predominantly the consequence of a pre existing historical political and rural development process of land allocation conditioned by natural geographical features, type of farming use and land 'gifting' and conflicts (over individual or inter-tribal land rights and especially between herders and cultivators) as well as customary practice. The more recent arrival and intervention of a monied elite and urban middle class has added a further dimension of complexity to the land development process across the board, particularly within urban areas and at the rural-urban interface.

Large land holdings may be contiguous or sit as 'islands' within a more open, communal land context. The resulting largely unplanned and complex land patterns form the 'ground' for subsequent urban development with an emergent structural form sometimes characterised as 'collage city' (Shane, Rowe and Koetter 1978)

While land within large land parcels may be divided up and sold off on an ad hoc basis, the main feature of such a pattern which is common in one form or another in cities throughout the world (and much more common than planned cities – see Kostoff) is that, while this larger pattern is not strategically planned or well ordered, the subdivided land within the larger land holdings more often than not follows a planned layout, as the individual 'owner' or land developer seeks to maximise land use efficiency and economic return.

A hybrid system may thus be observed where decisions are made at an intermediate scale, typically the subdivision of large allocations of land with



little regard for neighbours or the final allocation of plots to urban households within them.

The Kaduna State Ministry of Lands, Surveys and Country Planning has allocated large tracts of land for new development in and around Kaduna over the years since 1967 through formal TPO (Town Planning Order) and Land Plan procedures. Military areas aside, these represent well under half of the urban and urbanising of the city, with 'informal' development taking up the rest (see Chapter 9) Some of these sites have been subdivided according to planned layouts into plots in standard sizes (normally 50' x 100' sometimes smaller sizes such as 50' x 50' for low cost developments) which are then allocated to individuals on a less than transparent process. Others have been allocated en bloc and on request to institutions from various Federal agencies down to local organisations like colleges and hospitals.

In Kaduna a range of types of residential and other land use development can therefore be observed demonstrating how decision making operates at the different scales depending on the context;

1. **Informal scattered subdivision:** unregulated development of marginal land where householders develop buildings in the absence of any obvious land tenure (plots) and roads developed to maintain access with no regard to their spatial efficiency. The urban form is determined at the scale of the building and plot following established practice regarding plot size and anticipated compound development. There is evidence of scattered peri-urban development around Kaduna, especially in the north, following this pattern.
2. **Ad hoc informal subdivision** of existing land parcels into smaller (semi) regular sized units resulting in informal development of plots but with more organised subdivision of land into emergent street blocks. This is typical of urban fringe where larger rural holdings are subdivided for housing. In this case the plot becomes the main determinant of urban form but pre-existing practices of street block formation also guiding the land developers. Pre-existing rural pathways may be retained as nascent urban streets and final road network emerges from a pattern of usage or minimal localised and contingent planning.
3. **Traditional village extension development:** While the urban form is dominated by house form, the need to recognise plot occupancy and maintain streets in a dense settlement context is necessarily negotiated.<sup>48</sup> Here the logic of the urban form is at the level of the building or building plot but the significant role of streets is recognised. An irregular form of street blocks and grids emerges from this process. This is seen both in extensions to existing, high density, often long established village settlements (the 'urban

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<sup>48</sup> All informal development requires households make development decisions with the negotiated agreement of the traditional authorities but the pressures are likely to be greater in and around existing or emerging 'nucleated' village settlements than in more remote rural locations.

villagers' identified in the 2015 Kaduna Master Plan Revised), and in emergent low density urban villages on the urban periphery.

4. **Developer planned layouts;** normally 'field-size' areas of land acquired by land developers who then subdivide them into plots to sell on (normally in Kaduna without land title<sup>49</sup>) to the final occupants. Frequently plots conform to a 100' x 50' plot size with a 50' road reservation (see box above). While this may result in a gridiron street pattern it is concern with the plot sub division which is the main determinant of form. However, and resulting local access road grid is unlikely to relate to any city wide road hierarchy or land use plan. These areas result from the intervention of professionals with surveying skills but tending to follow an established procedure regarding plot subdivision rather than a considered urban design of the layout.
5. **Institutional land allocation:** (See Figure 10.1) Large institutional developments normally follow professionally designed layouts with buildings, including housing, planned within a 'site' frequently with a single entry point or few points of access. Such developments tend to form enclaves and disruptions in the continuity of the urban grid. Military land in Kaduna, which still represents ...% on the total area in 'urban' land use of one type or another is the major constraint to movement permeability in the north western part of the city. A number of institutions are now subdividing parts of their land allocations for unauthorised to sell off for residential development.
6. **Formal planned subdivision of public land holdings:** the allocation of large plots for planned layouts, according to officially countenanced Town Planning Orders and Land Plans produced by the Kaduna Urban Development Authority as described above. There are a some instances of government-built housing mostly dating from the seventies and eighties but some more recent low cost housing. Depending on the type of housing, this may be plot based or site based (e.g. blocks of low rise flats).
7. **Planned quarter:** areas that benefit from an integrated planning and urban design process at the larger scale but the needs of users at local scales are also considered. In Kaduna, this applies uniquely to the colonial-era planned parts of the capital, the European, more latterly Government Reserve Area, and the original 'Sabon Gari' or strangers quarters (see Chapter 9)
8. **Infrastructure and industry;** large site allocations and other areas dominated by manufacturing or are infrastructure-related. Southern Kaduna has very extensive industrial estates dominated by large textile factories now mainly dormant. In terms of basic infrastructure transport is the most significant, with roads (and

<sup>49</sup> In other cities in Nigeria, particularly cities wealthier than Kaduna such as Lagos or Abuja, it is more common for land developers to sell serviced plots with title (C of O) within better-planned layouts. Moreover, a market for privately developed urban or suburban 'condominium' type housing for sale or rent is evident in those cities but is yet to emerge to any significant degree in Kaduna.

associated bridges) being the most important site use but historic rail infrastructure related areas are still significant.

9. **Other land uses:** smaller site developments allocated to a range of other land uses including commercial and government developments as well as social infrastructure such as schools, clinics, sports and recreation and green spaces, religious and community uses are found throughout the city, particularly in the city centre. With a few exceptions, such developments do not contribute to shaping the developing city form

### **Planning practice and emergent form**

Emergence is the state where organised local actions produce an organised pattern at a larger scale rather than a chaotic state, which is more common result of locally based systems. Marshall (2009) suggests the city is a product of adaptive emergence, a kind of non-biological evolution, where existing patterns of development are copied, reused and adapted for improvements. He points out that purposeful local interventions can lead to an emergent order at the macro scale and this is quite different from the functional order that results from a top down design process (p175).

Established practices influence the evolution of urban components over time producing identifiable typologies based on a process where existing models are reinterpreted and adapted. Popular models of technical practice are reapplied in different contexts resulting in 'best practice'. This is evident in much of Kaduna's development where typical plots and roads are laid out copying established practice, differing from traditional/vernacular practice in as much as it needs specialist technical/professional knowledge, such as surveying.

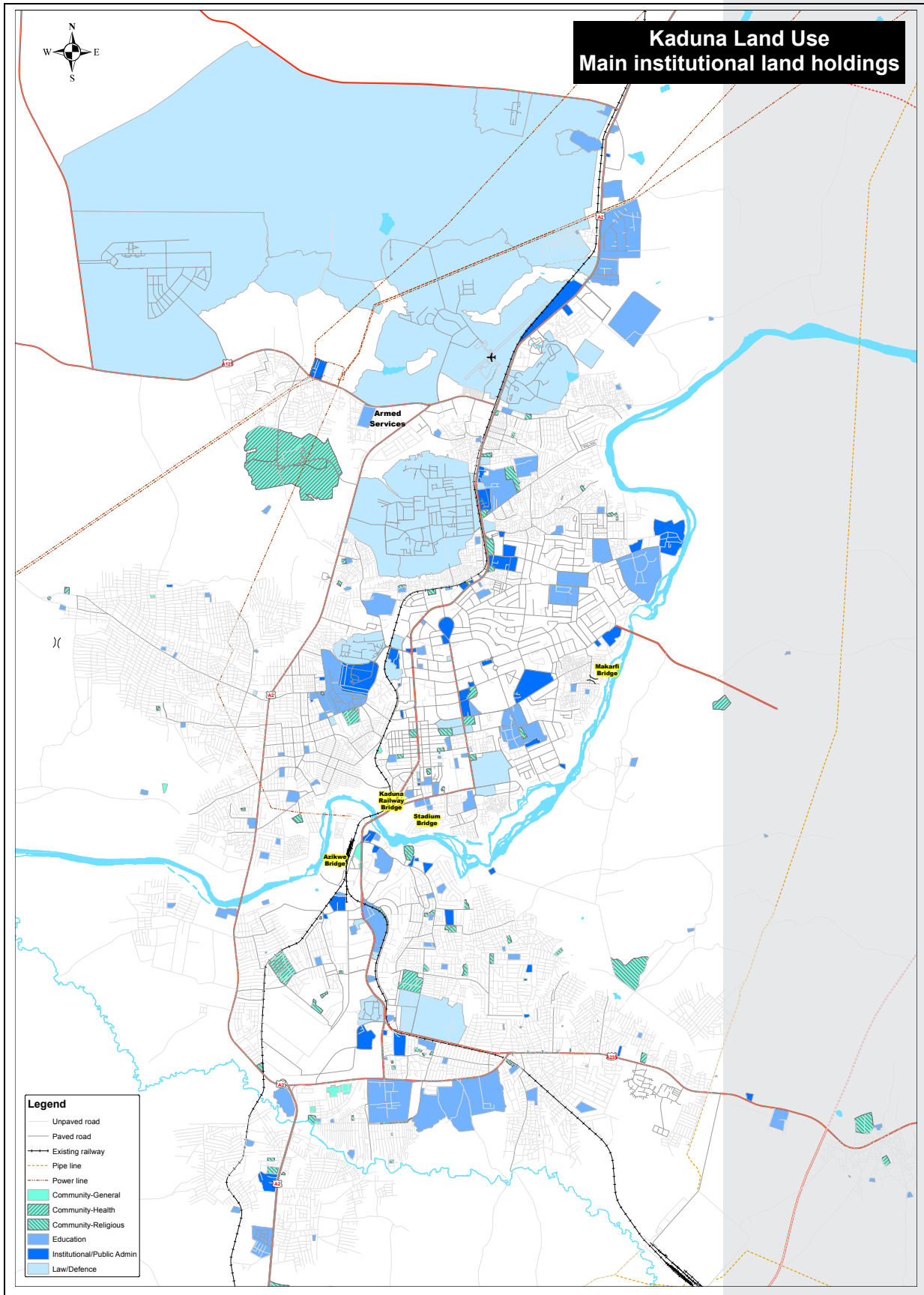


Figure 10.1: Institutional land holdings in Greater Kaduna

Some planned typologies may be designed to function at different scales. Incorrectly interpreted, these may have unintended emergent properties. Thus while the roads and plots are laid out according to established practice the organisation of blocks into a grid of roads is less obvious on the ground and poorly interpreted in the unplanned expansion of the city. The uncritical application of technical practice gives the impression of planned system but, in reality, it is only half planned. Parts of the city appear to have a regular planned layout but the development of the street pattern, and as a consequence the movement pattern, is more chaotic and lacks the planned hierarchy needed to make the system efficient.

Unlike modern industrial societies where top down planning has an established role, settlements managed by traditional societies are typically characterised by a bottom up process where matters of collective interest are negotiated. Interestingly, much of the theory of morphological analysis is derived from the study of this type of settlement dating, in particular, from the pre modern age in Europe. Providing useful descriptors of these processes is problematic in that, typically, they are defined in contrast to one another: 'formal/informal' or 'planned/organic'. It seems, however, that both result from rational decision making processes and the real issue is the scale at which decisions are made and the degree to which an understanding of implications of these decisions other scales is admitted in the process (Erickson, Lloyd-Jones, 2001).

In Kaduna, both types of development can be observed in different proportions as noted below, while the proposals to establish a comprehensive master plan for the city in 1967 and from 2010 until 2015 have met with insufficient institutional capacity and a lack of political will to pass the related policies into state law and implement them. Informal or traditional development can also be observed, as noted above. However, much of the urban area of Kaduna exhibits a form where decisions are made at a more intermediate scale and results from the indiscriminate application of poorly interpreted planning and surveying practice.

### **General morphological features of the city**

As population grow cities expand in two principal ways, firstly by adding new development plots through accretion thus appropriating new land into the urban system and secondly by expanding or redeveloping buildings on existing plots. The former increases the physical extent of the city and the latter its density of development and, in general, its population. This is explored in more detail in the next section.

As noted, the overall pattern of street blocks and streets can be influenced by decisions made at the larger scale, such as a master plan or may emerge from purely locally-based practice (Canaglia and Maffei). However, Kropf (2006) argues many techniques of urban analysis such as the morphological interpretation of remotely sensed satellite imagery or figure ground studies tend to give undue prominence to the urban block as the dominant element of analysis. He describes the block as a 'satisfying' element of analysis but suggests the street is more fundamental. Inaccessible plots have little value and main function of the street is to provide access, rather than to form blocks. The arrangement of plots, in series, facing streets is the principal

determinant in much urban development. This is certainly the case in much of Kaduna.

The development of blocks can be seen as the bi-product of the developers' practice of forming plots in series aligned to streets, typically on both sides, with uniform plot size leading to mainly parallel streets. This is a more locally based process than that the formal planning of a grid at district or citywide scale.

In an area of Kaduna such as Rigasa one can see the evolution of the block typology tending towards a less organised and less efficient system as it grows outwards. In the central areas where the city was planned grids were laid out in order to allow the subdivision of typical plots. The logic of laying out the plot series along streets has been maintained but the practice of laying out blocks is hardly observed except as an emergent property. Central areas seem to have a regular grid but as streets are extended the blocks become less regular with fewer cross streets and the connection between cross streets becomes less regular while the overall form of the development is more like an irregular tessellated matrix or field.

It would appear that the primary determinant of development in this area is the building plot. These by necessity are aligned to roads (or road alignments). The development practice requires enlisting a degree of technical expertise; the location of plot beacons to form regular series and the alignment of roads. The fact that so much of the development assumes a standard plot size and standard road reservation indicates a well established technical practice. However, the emergent form of the road network suggests the application of the expertise is limited to the local and intermediate scale or that there is insufficient institutional capacity to negotiate priorities between scales.

This type of development has been described by Ünlü (2011) as plot-based urbanism, targeted at the rapid distribution of land occupation and related development opportunities rather than creating an adequate and efficient street grid. This is symptomatic of failure to manage rapid urbanisation and 'ensures a similar urban tissue across the city, and consequently, the city as a whole emerges as a collation of identical plots and a clutter of buildings' (Ünlü, 2011, p447).

### **Morphological analysis of Kaduna in 2010**

Residential development in Kaduna is highly varied and grows out of an underlying process of land allocation and subdivision involving planned, semi-planned and unplanned procedures. These in turn relate to the structure of land governance, and the respective roles of state and local government institutions, traditional authorities, land and housing developers and individual housing developers and property owners.

In reality, analysis of the land use survey data from 2010 shows that at every scale of the city, down to the most local scale, apart from large land allocations for industrial, institutional or commercial purposes, in land use terms there are only degrees of mixed-use development arising out of the land development process. Whereas, apart from the central business district of the city where commercial land uses predominate, most of the land area of the city is given over to predominantly residential land uses,



these are nearly always interspersed with other uses occupying the same land subdivisions, and very frequently lock up shops and dwellings occupying the same plot.

Kaduna, in common with most cities in Nigeria, has a mix of planned and organic development, old settlement patterns as well as rapidly developing suburban and peri-urban areas, with a mosaic of areas characterised by different income levels (Figure 10.2). Certain settlement/land development types, as defined and classified in the following section, prevail in the city and can be regarded as commonplace in terms of their frequency, such as settlement type 3. Each category within the typology can be found in various stages of development with low, medium and high site coverage by buildings, and related levels of population density, as well as subdivision and amalgamation of individual plots.

The urban morphology and typological approach adopted in this part of the study has enabled the identification and (simplified) classification of five different settlement types. This helps to give a perspective on the urban and socio-spatial structure of the city's urbanised area at the different scales. With reference to historical data, the analysis can be used to inform our understanding of the likely trajectory of future developments and plan for them. Policy decisions can then be made to give a planned direction to settlements in their initial lower density of development phase in order to avoid anomalies and drawbacks observed in similar typologies at higher densities/degrees of site coverage.



Figure 10.2: Kaduna – urban village (traditional, informal layout), lower middle income (50' x 100' lots – informal) and upper income (GRA – formal 100' x 100' lots) housing areas

Drawing on the city-wide household interview survey, social and economic characteristics including household size, housing conditions, indicators of income level and education, employment and place of work can be can be

correlated with the urban typology provide new techniques for socio spatial analysis.

This adds considerable depth to the analysis of urban change in the city, including identifying the relationships between physical and social aspects through urban morphology. e.g. the concentration of lower income groups and urban poverty in high block coverage, fine urban grain areas. Furthermore, the use of the settlement typology classification combined with data from the household survey can provide a basis for estimating and projecting the population of the urbanising area city.

### **Typological classification**

In this study we use the term settlement typology to refer to those areas of the city that have been laid out primarily for residential use. In many cases individual properties are used for economic purposes (exclusively or in combination with residential uses) and individual plots may have been developed specifically for such purposes. In general, it is not easy to decide what the land uses are from visual examination of the satellite imagery.

The typologies have been classified on the basis of their plot sizes and shape, and secondly by street pattern, starting with the smallest plots with regular street layout through to large plots with irregular street layouts. In order to simplify the analysis, density has not been taken into account to classify the different settlements types in Kaduna. Certain physical aspects of a typology are not quantified such as, built form, location, and extent. These are briefly described for each typology in the following pages.

It is important to understand the relationship between each of the attributes in the context of the development of the typologies over time. In this study, the plot size is assumed to be the basic attribute from which the typology develops. The street pattern is an attribute that is laid out in the initial stages of development.

We can discern two different types of street pattern in Kaduna: regular and planned, and irregular and organic. Regular street patterns are those that are laid out according to geometric rules, generally, in the case of Kaduna where they predominate, a gridiron with street blocks subdivided into plots of more or less equal size and shape. Irregular street patterns are those that follow existing rural paths and routes and which have generally developed slowly over time, with a more gradual, incremental process of development of traditional land holding (I.e.; not mediated by regulatory or larger scale land market processes).

As areas start developing, the density of development increases over time. Thus the street blocks are observed to have increasing site coverage. Over time, subdivision and amalgamation of plots is also sometimes observed.

### **Classification criteria**

Initially, the plot sizes and their length to width ratio area, whether they are square (regular-sided) or rectangular (elongated) are considered. Street patterns, normally laid out at the initial stage, are important factors in determining the morphology. The plot sizes of typologies may be similar but the street patterns – regular or irregular – distinguish them. Though street block sizes were considered while determining the classification criteria, in

many cases, standard sizes could not be determined where the street patterns are irregular (Figure 10.3).



Figure 10.3: Irregular urban street block pattern

### Classification range

The plot sizes of each character areas were noted. The length to width ratio of the plots was also considered to distinguish between rectangular/elongated or square/regular-sided plot shapes. The geometrics reflect on the urban street block widths as well as the proportionate area available for a certain built form. The plot sizes were divided into three ranges of size based on the visual evidence.

- (0m-15m) x (0m-20m)
- (15m-20m) x (20m-35m) – primarily 15m x 30m
- (20m-50m) x (35m-70m) – mainly 30m x 30m

Both the square and rectangular plots now can be grouped in the range mentioned above. The range helps to classify the plots into three categories of small, medium and large plots. The shape of plots is a further criterion that distinguishes one typology from another within these ranges.



Figure 10.4:  
Rectangular/elongated plots

Figure 10.5: Square/regular-sided  
plots

### Typology and legal status of subdivision

It is likely that the legal status of the subdivision may have an impact on the resulting urban form (not considered here as the relevant data was not

available). However, in certain instances in the case of Kaduna, this is not as clear cut as it may first seem.

Legal layouts are the subject of Town Planning Orders and Land Plan Maps. They are intended to form co-ordinated, planned areas according to laid down standards at the neighbourhood and district level. In practice, lack of co-ordination within the relevant departments of the regulatory authority means that this may not happen. Illegal subdivisions may be planned or unplanned at the local level, but are almost never planned and co-ordinated at the neighbourhood or district level. Because of lack of co-ordination within government, and because professionals engaged in producing legal layouts are often also involved in producing illegal layouts, using the same approach, it may be difficult to distinguish legal and illegal sub divisions simply by their layout and urban form.

Where areas are regularly laid out at the local level but not co-ordinated at the neighbourhood or district level, whether based on legal or illegal subdivisions, there are often 'gaps' between such areas in which more disorderly development takes place.



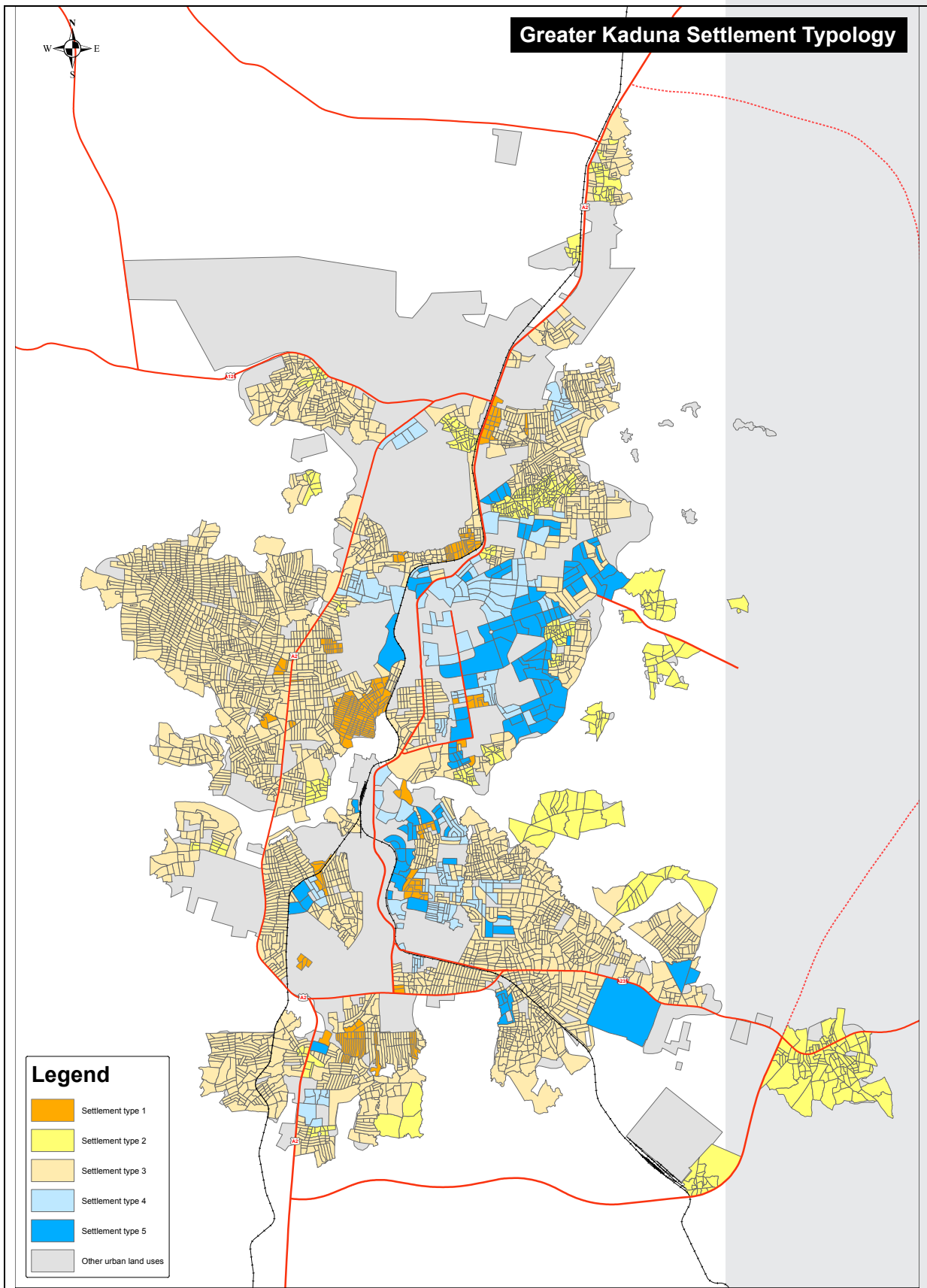


Figure 10.6: Urban typology map of Greater Kaduna

The map in Figure 10.6 shows all the 2009 land use survey map section settlement areas classified according to the five (mainly residential) land development types shown in Table 10:2.

| Settlement type | Characteristics   | Area sq. km | Percentage of total settlement area |
|-----------------|---|-------------|-------------------------------------|
| Type 1:         | Small (up to 15m x 20m) uniform plots sizes with regular gridiron pattern street layouts  | 5.2         | 1%                                  |
| Type 2:         | There are no common plot size and shape for this settlement type. If any plots at all are evident at all, they are generally small. The street pattern is irregular and organic.        | 23.2        | 13%                                 |
| Type 3:         | Rectangular (15-20m x 25-35m), broadly adapted from the 50' x 100' standard plots characteristic of British colonial development (see Figure 3).  | 98.1        | 56%                                 |
| Type 4:         | Large plots, either rectangular or square in shape, generally 30m x 30m, this is typically found in the GRA. The street layout is regular and generally laid out in a gridiron pattern. | 10.6        | 13%                                 |
| Type 5:         | [Site-based planned housing layouts.  | 37          | 21%                                 |

Table 10.2: Kaduna's five (mainly residential) land development types



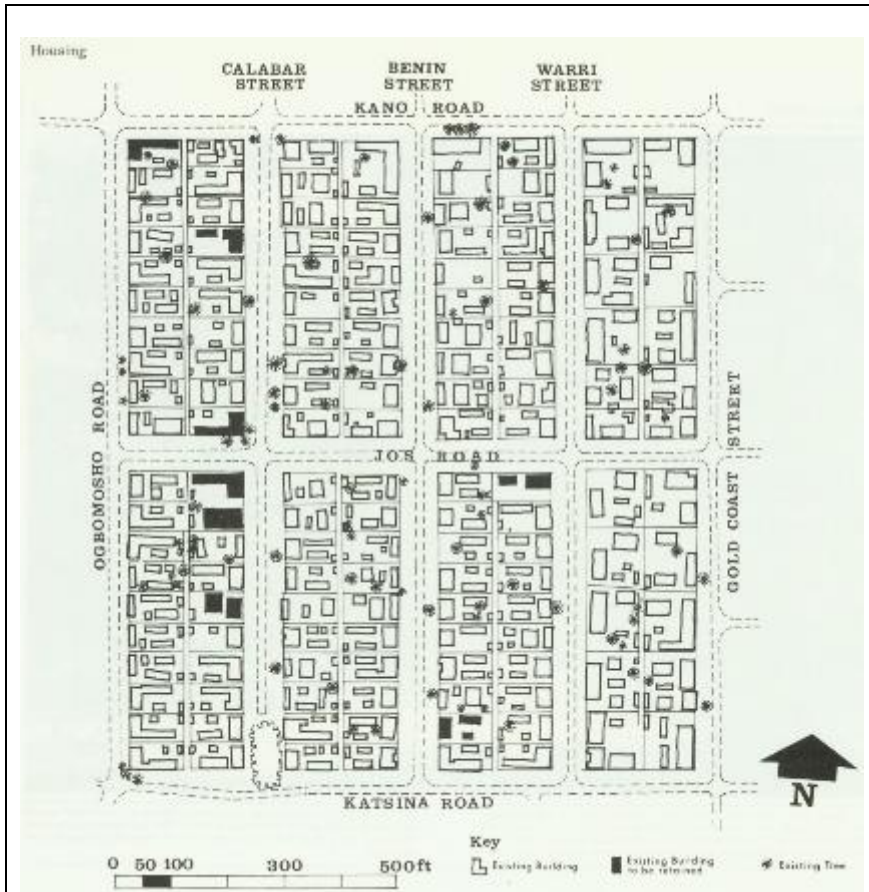


Figure 10.7: Morphological development in the central Sabon Gari area of Kaduna

Above: Original layout in 1967 in 50' x 100' (c15m x 30m) or 100' x 100' (c30m x 30m) plots (Max Lock 1967, p183) (above); satellite image of Sabon Gari in 2008 (below - the white boundary represents the area shown in the plans above) with evidence of subsequent plot amalgamation and subdivision.

### Settlement type 1

Type 1 is characterized by small uniform plots sizes with regular gridiron pattern street layouts. The plots are small, in the range of (up to 15m x 20m). Courtyards and multi family units characterize the built form. This type is mainly found in the high-density range, as per the transect analysis example of Tudun Wara shows. Areas with this typological classification are generally found in consolidated more central parts of the urban area. As per the transect examples, the development index in these areas do not indicate evidence of substantial change as they were initially developed at an early stage in the period of change under review, and there are few if any examples found of new urban developments reflecting this classification.



Figure 10.8: Settlement type 1 – subdivision into small plots

### Settlement type 2

Type 2 is an example of an informally laid out development that can be observed in different parts of the city, central, suburban and peri-urban. Within the urban area, this type is typically formed by the addition of organic (by accretion), interstitial settlement to fill land voids left by more planned developments (pocket developments), and where regular layouts do not suit the shape of the areas so formed. Typically these are found in are poorly drained, flood valleys of river streams and other areas eschewed by formal land developers. This settlement type also includes expanding, organically developing traditional village settlements on the urban periphery or enclosed 'urban villages' within the city itself. They are

generally surrounded by planned or semi planned developments and are engulfed by the city expansion. In certain cases rivers, streams or railway lines define the edge of the settlement area.

There are no common plot size and shape for this settlement type. If any plots at all are evident at all, they are generally small.<sup>50</sup> The street pattern is irregular and organic. The density of this type varies, although is the most dense settlement type within the city as a whole when the development reaches its full potential.



Figure 10.9: Settlement type 2 – 'organic' accretive development

### Settlement type 3

Settlement type 3 is the most common land development classification of Kaduna and covered more than 50 sq. km of land of in the city in 2008-10. It is found in all ranges of density, from low density when is at early stages of development to high density when all the plots are occupied, with subdivision and amalgamation of plots in some high-density areas. One of the areas where the typology is found in abundance is Rigasa.

<sup>50</sup> Land registration activities currently being undertaken by DFID-supported GEMS3 programme (<http://gemsnigeria.com/>) indicates slightly more regularity inn compound size than is evident from the satellite imagery (see Appendix 11.a). Although varying in shape and size, an average plot size seem to be about half the size of the common 15mx20m Type 3. A random selection of 500 land parcels in the neighbourhood of Unguwan Dosa suggests an average size 223 sq.



The plots are generally rectangular (15-20m x 25-35m), broadly adapted from the 50' x 100' standard plots characteristic of British colonial development (see Figure 3). They are usually formed in long rectangular street blocks and with a regular or deformed gridiron street pattern.



Figure 10.10: Settlement type 3 – regular or semi regular 50' x 100' (c15m x 30m) plot development

#### **Settlement type 4**

Large plots, either rectangular or square in shape, generally 100' x 100' (30m x 30m) but sometimes larger or smaller, characterize settlement type 4. This is typically found in the GRA (originally Government Reserve) areas. The street layout is regular and generally laid out in a gridiron pattern. This settlement type is found in the original central area of Kaduna as planned development, characterized by large plots and detached houses with green space around them (suburban type). This typology presents as relatively low density higher and upper middle class development north of the river.

This type is also recognizable south of Kaduna, although is characterized by smaller middle class plots and higher densities than the north of the river. Shagari Housing State, a planned neighbourhood, is included within this typology although it has been filled up with small buildings within each plot creating a high dense area.

Although a small area of the city is covered by this typology and no repetitions of schemes are observed, this typology can be found throughout Kaduna as seen on the transect analysis. High density areas are not found in this category even though some developments occur in strategic locations such as the city centre.

There are no common street patterns as they varied from regular gridiron pattern to cul de sacs depending on the nature of the development. The plot

shapes can vary but include the largest individual residential plots found in the city. It is understood that higher income groups are concentrated in these areas.



Figure 10.11: Settlement type 4 – GRA type higher income development

### Settlement type 5

Typology 5 is a residual category including a variety of planned site based housing layouts including institutional housing and developers' schemes with multi family units. Although a small area of the city is covered by this typology and no repetitions of schemes are observed, this typology can be found throughout Kaduna as seen on the transect analysis. This type of development is more common in larger metropolitan areas such as Abuja and Lagos.

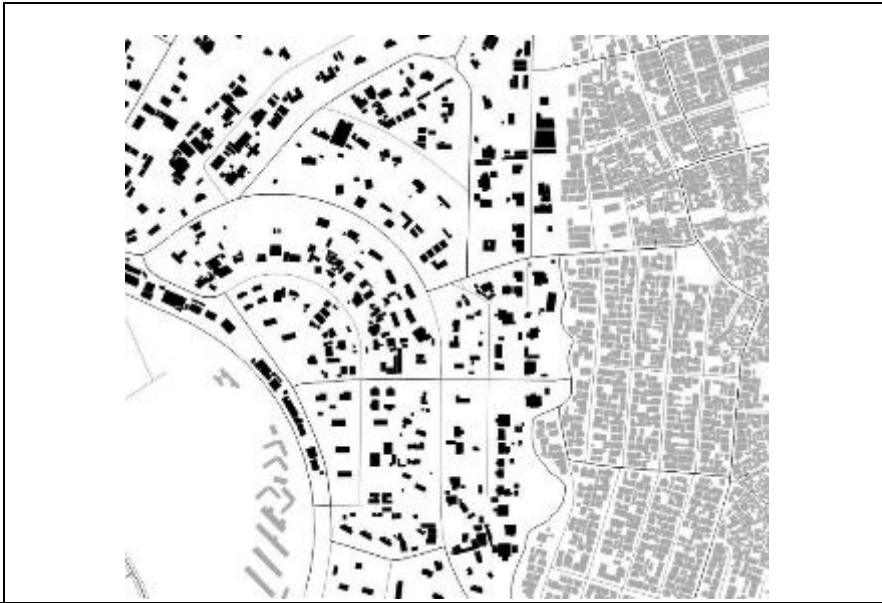


Figure 10.12: Settlement type 5 – Site-based planned housing layouts.

**Development process:**

Figure 9 below shows the development of the map section 91 in Rigasa, west of Kaduna, over a 12 years period. Please note that the street block layout is based on the 2015 satellite image. The sequence shows how fast urban development is occurring in Kaduna.

Map section 91 is located (MAP to be added) in Rigasa, adjacent to the main east-west link that connects Rigasa with Kaduna. Unfortunately there are no satellite imagery prior to 2003 however we could assume that area was an undeveloped area between the original villages of Rigasa and the city of Kaduna, before the area was engulfed for the city. It is possible that its strategic location has increased its development pace, as the area had low density in 2003 and is fully developed 12 years later.



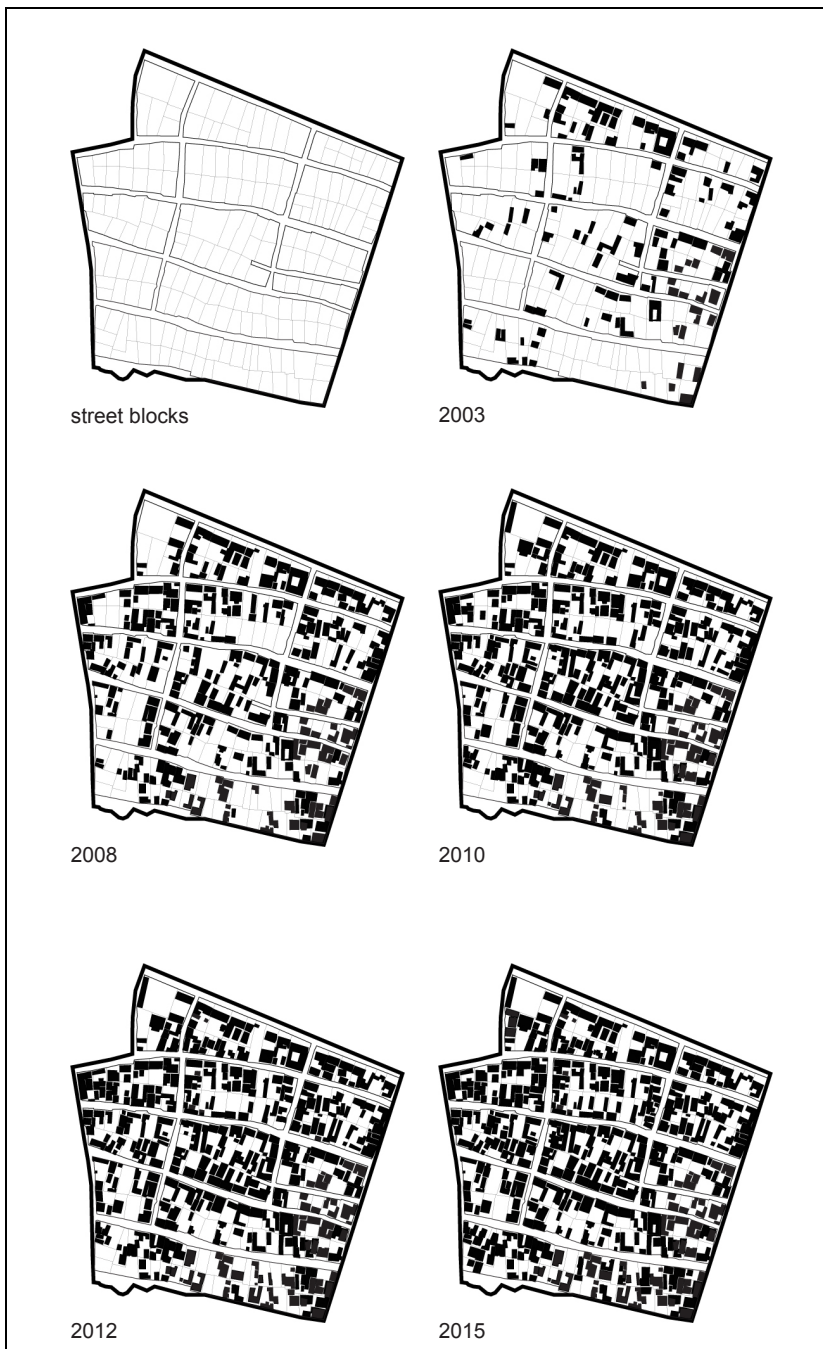


Figure 10.13: Rapid development in a map section located in Rigasa, west of Kaduna.

### Example of uncoordinated urban development in south east of Kaduna

This example shows the various phases of development captured at one time. The image shows several distinct plan units. The area is in the south of Kaduna and connected to the state highway and the city centre by the main road visible running north at the top of the image (figure 10.14).

At the top of the image undeveloped land can be seen with the traces of the original land use discernable. This land is now in institutional occupation and more or less vacant. The release of this land in stages gives rise to this phased development. The rest of the image shows several distinct housing areas each with a regular grid of streets. The impact of topography can

identified, while the terrain has little influence, the location of watercourses is a significant determinant on the pattern of urban growth as the low-lying areas on either side are flood prone and marginal as building sites while the cost of culverts is avoided where possible.

On the left is a district in the mature phase of development, all the small square plots are fully developed. An orthogonal grid of streets can be seen at the core but these have been extended to the south, becoming increasingly irregular. Surrounding this area is a belt of informal settlement infilling the marginal land where plots and streets are far more disorganised.

In the lower half of the image a formal orthogonal grid is evident with a main road running east-west at its northern margin. This area clearly demonstrates the logic of plot based development. All the plots are the same size while in some cases they are amalgamated for larger buildings. Closer inspection reveals in fact two separate layouts, each conforming to the same model but with little regard for the other despite their apparent similar ages. On the left the blocks are smaller and aligned to the main road to the north but ignore the existing development to the west resulting in a series of informal connections.

On the right to east the blocks are much longer but not aligned to the main road and in the case of the street in the extreme right of the image, not even connected to it creating a junction forcing traffic to turn back on itself. Between these two sections the blocks are orientated north-south with few east-west connections. Those that exist seem to be located according to the subdivision of plots rather than a need to provide continuity with the neighbouring streets. Where land has not been developed a number of tracks can be seen along clear desire lines suggesting how awkward the road layout is for movement.

Towards the top of the image a new layout can be seen in the early stages of development. Roads have been made and plots laid out, a handful of buildings are underway and in some cases plots have been enclosed. The whole area is part of a large institutional land holding and is surrounded by a fence, with two road entrances at opposite corners. A perimeter road has been constructed and the whole area laid out to maximise the number of standard building plots. While this conforms to the gridiron model seen in other sections of the image, it is clear local impediments, most significantly the watercourse, the geometry of the existing fence and several inconvenient trees, have caused a number of adaptations in an uncoordinated way resulting in a road network that provides access to each plot but is poorly integrated both internally and externally.

It seems the imperative to establish plots drives the logic of the layout. Ironically these plots are not always maximised for buildings. A preference for rectangular blocks is evident but frequently abandoned. While roads are parallel, where they form a grid they are not always perpendicular and while plots have a standard size they are not always rectangular. This maximises the amount of land available for plots but is inefficient in terms of fitting buildings on all the plots.

There is evidently little importance attached to creating an integrated road network, it would have been a simple matter to extend most of the roads

running north/south in the lower section. While gridiron patterns are laid out this tends to happen in discrete units and the long thin blocks are the result of the block formation, streets in the nominal grids tend to be extended over time

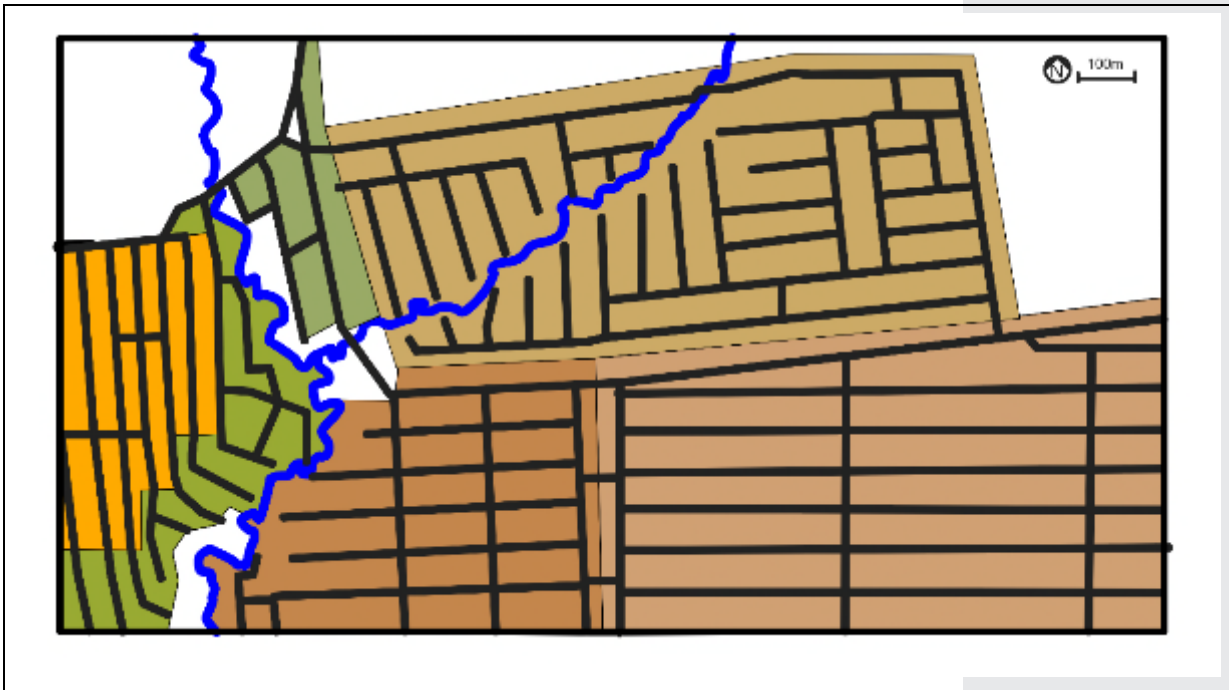


Figure 10.14 Example of urban development in south east of Kaduna

#### **Transect as a measure of urban development**

The morphological analysis of Kaduna that follows employs the technique of the 'urban transect'. With its origin in biogeography the idea of the transect is borrowed from Patrick Geddes 'valley section', where the topography determined types activity and society each located depending on their location in a nominal valley; highland hunters, foothill farmers, riparian traders (Bosselmann, 2011). The notion of an urban transect emerged in the 1990s in the USA as a planning tool. It defines urban to rural gradient, assuming a dense urban core and a series of increasingly less dense concentric suburban zones. It was linked to aims of reducing urban sprawl and achieving transit-oriented development (Ellis, 2002). The so called 'smart code' allocates particular building and street typologies according to their location in the nominal transect (Duany, 2002). Linked to form-based coding and so based on a morphological approach to planning the transect represents an ordering system rather than a actual slice of the of the city.

As Bosselmann (2011) points out the metropolitan landscape is more like a patchwork rather than a series of concentric rings. He suggest a method of using the transect as a series of samples each illustrating a typical form of development. This technique helps locate the way in which change is taking place across the city. In this way specific typologies can be identified together with the manner in which they are adapted or in filled (with appropriate urban design strategies developed to meet the particular challenges of those typologies).

## Kaduna transect analysis

Our approach to the transect analysis follows Bosselmann (2011) idea, as so the areas selected for analysis represent a patchwork of the city rather than a linear organization (from centre to periphery). Each unit of analysis (named map section) represent the evolution of the urban fabric at certain period of time, with similar density and land use characteristics to other parts of the city. It is the sequence of map section over a period of time that informs the transect analysis.

These characteristics were identified in our typological classification, hence the transect analysis has been carried out analysing each of the five types previously mentioned. The study intents to show the pace of development (development index) that have occurred in Kaduna, and by doing so, to produce a tool that could estimate how long would take for each unit of study to reach the next phase of development. Although it is impossible to predict the future, analysing what has happened in other areas of the city could give information of what could happen in other parts that share some characteristics at certain period of time.

For instance, the transect analysis shows that for the map section 84, located in a high density area of Rigasa, it took 12 years to evolve from low development index (DI) to high DI. However it took only 6 years for the map section 74, located next to the previous one, to increase its density from low DI to high DI. As so, we could expect map section 24, currently located in the periphery of Rigasa with a low DI, to become highly developed within 6 to 12 years (Please see Appendix 10.a). This methodology would provide invaluable information to the city planners to understand how, where and when the city would growth in the future.

## Development Index

The development index is a measure of site coverage and plot development that indicates the stage of development of a particular settlement type. This rural-urban transition has been divided into six phases, commencing with the rural phase where any urban feature is recognisable within the map section and ending where each plot of the map section is occupied and in-filled (if corresponding for each typology).

1. Rural: agricultural land use is recognisable, scattered houses could be presented but no plot division/street layout is yet present.
2. Land subdivision: This is the initial stage of proto-urban development referred to as 'vacant subdivided agricultural land' in Chapter 6. This land may well still be under cultivation but has been subdivided for sale to developers who may or may not have yet bought a plot but little or no physical development is yet evident. A street block subdivision may be identifiable from the aerial image but 'ground truthing' through a close physical survey may highlight such areas that are not visible through remote sensing. An association with the existing low dense peri-urban area is normally evident.
3. Low DI: At this stage the map section clearly becomes peri-urban with a low-density occupation (houses built per number of plots). As per Darshana typology analysis, an occupation ratio of less than

30% is considered low density. Number of plots per area would vary from each typology.

4. Medium DI: When the built/plot ratio is between 30% and 65%.
5. High DI: A built per plot ratio bigger than 65% is considered high-density occupation, the urban area is consolidated.
6. Infill: This is the final phase of development and will be more noticeable in the organic and semi-planned group, as the whole extent of the plot is built with a second or more properties.

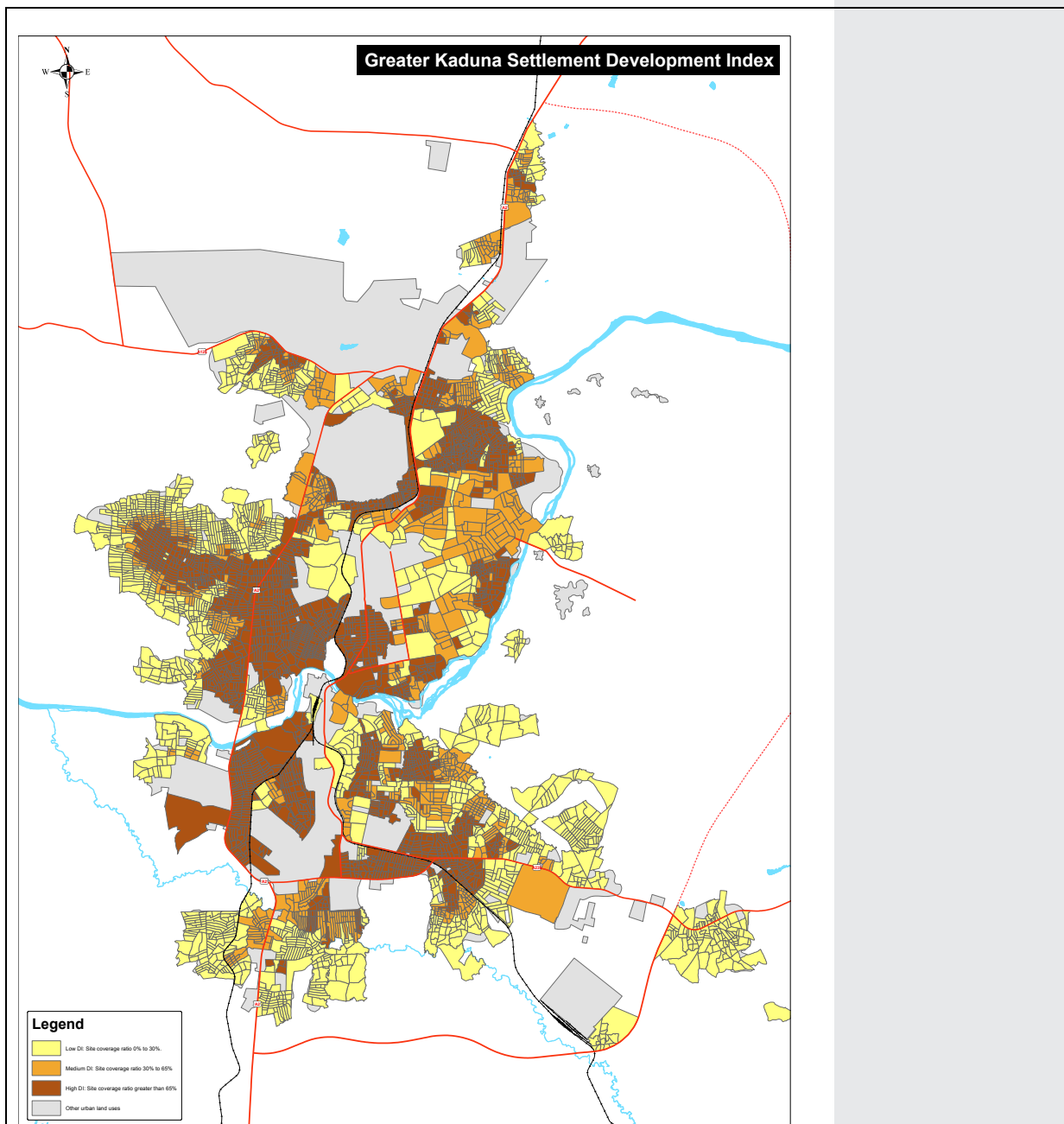


Figure 10.15: Settlement Development Index for Greater Kaduna

### Other Land Use considerations

Figure 10.17 shows a map of all the land uses of Greater Kaduna as recorded in the 2009 land use survey. The primarily residential settlement areas are characterised by their population density with both upper income GRA-type settlements and peripheral informal settlements being low density. It should be noted that all the settlement areas, excluding any major site allocations for other land uses within them are mixed use. A breakdown of the land uses by typology is given in the following table:

| Land Use                             | Area sq. km |
|--------------------------------------|-------------|
| Agricultural Land                    | 7.00        |
| Agro-Industry                        | 0.20        |
| Cemetery                             | 0.70        |
| Commercial                           | 9.10        |
| Community-General                    | 0.23        |
| Community-Health                     | 1.53        |
| Community-Religious                  | 1.19        |
| Education                            | 9.20        |
| General Industry                     | 11.36       |
| High Density Residential/Mixed Use   | 45.70       |
| Infrastructure                       | 0.50        |
| Institutional/Public Admin           | 3.75        |
| Law/Defence                          | 31.68       |
| Low Density Residential/Mixed Use    | 33.32       |
| Market                               | 1.41        |
| Medium Density Residential/Mixed Use | 41.36       |
| Motor Park                           | 0.04        |
| Open Space                           | 0.44        |
| Orchard                              | 0.36        |
| Parks                                | 0.11        |
| Petrol/Energy-Industry               | 3.41        |
| Rail Station                         | 0.46        |
| Rock Outcrops                        | 0.15        |
| Sport                                | 0.93        |
| Total                                | 204.23      |

The fine grain plot subdivisions allow for land use changes within individual plots over time that can gradually transform the character of an area over time. The most obvious example of this which has been remarked on elsewhere in the report is the transformation of the centre of town (old Sabon Gari now Doka) from largely residential to mainly commercial land use. This is brought out quite clearly in Figure 10.16 along with the widespread distribution of retail activity throughout the city. These activities have developed along particular streets and emerged in local clusters creating informal neighbourhood centres.

The commercial spine that runs through the centre of the city both north and south of the Stadium Bridge is very evident in this map along with the large industrial areas of Kaduna South and the oil refinery close to Maraban Rido in the south east.



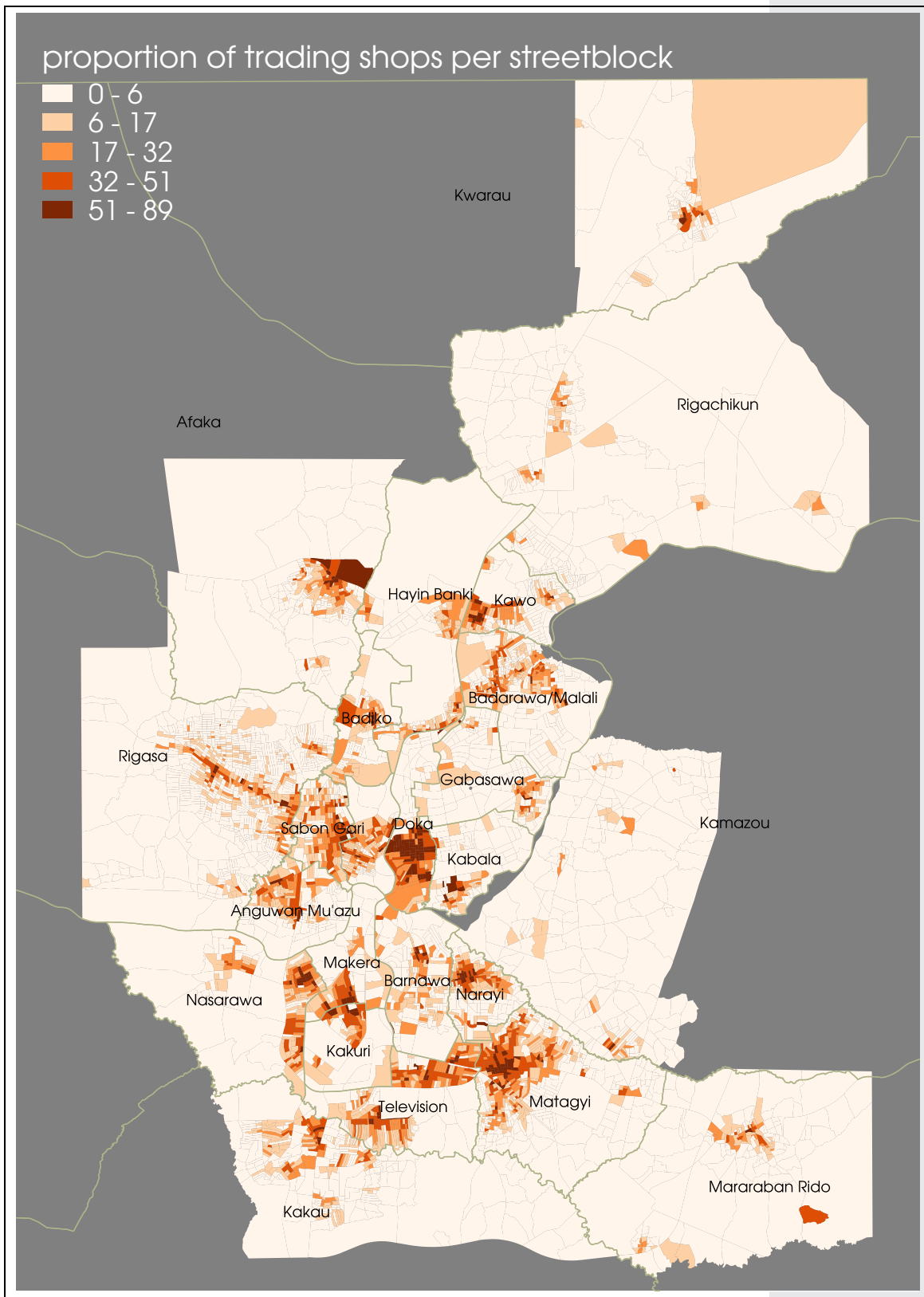


Figure 10:16: Distribution of retail activities throughout Greater Kaduna

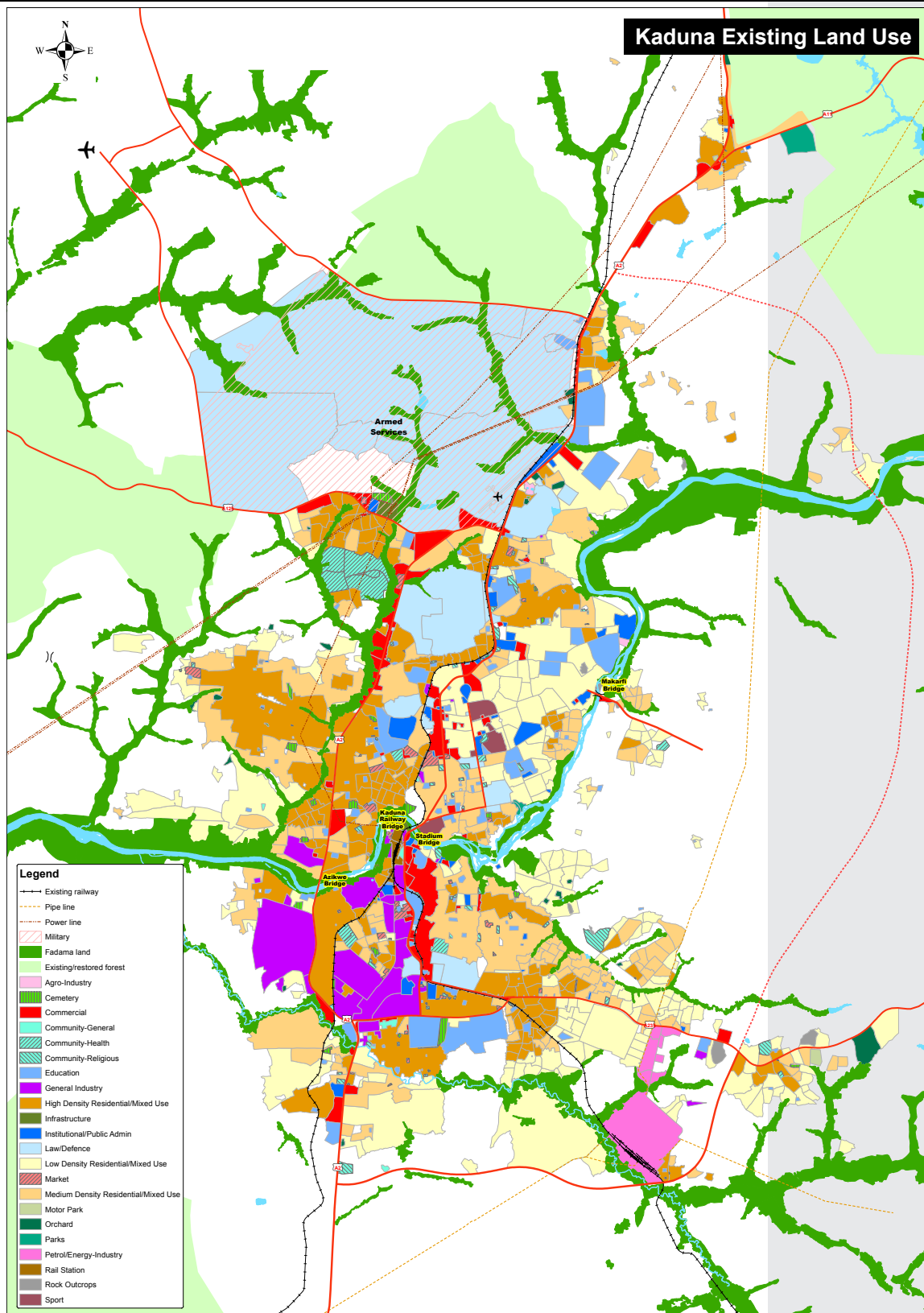


Figure 10:17: Composite land use map of Greater Kaduna

## Conclusions

Drawing on the theoretical concepts of urban morphology and employing a number of related techniques including ‘transect analysis’, the chapter has presented a morphological analysis of the city defining a range of

different settlement types, their characteristics and evolution, and distribution across the wider Kaduna urban area. The chapter presents an innovative approach to understanding the underlying physical structure of the city and the development processes that shape it over time. It facilitates a new understanding of the geography of the socio-economic and housing characteristics of the city (see Chapter 11).

# 11. HOUSING CHARACTERISTICS AND CONDITIONS

## Introduction

As elsewhere in Nigeria and indeed across sub-Saharan Africa housing services<sup>51</sup> represent the satisfaction of basic needs on one hand (shelter) whilst providing an indicator of overall levels of wealth, economic well-being and consumption. New ways of measuring housing service provision in developing economies such as Nigeria, where the informal sector plays a major role, could serve to improve our understanding of the dynamics of wealth and poverty in such contexts.

Where shelter is lacking in basic amenities, a regular clean water supply, good sanitation, sufficient living space, a robust form of construction and security of tenure, then these housing characteristics designate a degree of deprivation and correlation with urban poverty and inequality. The term that the international development community applies to such condition is ‘slums’, with national level data on conditions in which slum dwellers live being reported to the United Nations as part of its monitoring of the Millennium Development Goals (Goal 7D)<sup>52</sup>. The profile of housing characteristics across Kaduna makes an interesting reflection on this goal and the extended commitments under the post-2015 Sustainable Development Goal 11 to ensure access *for all* to adequate, safe and affordable housing and basic services and upgrade slums by 2030.

This chapter looks at the development of housing markets in Kaduna – both formal and informal. It explores the way that people go about housing themselves in the absence of an affordable formal system of housing finance and defective urban land governance and management, and the continuities and discontinuities between the situation in 1965 and that in 2010. The resulting lack of access to basic services and changes in housing conditions are charted.

## 11.1 HOUSING AND WEALTH

The expansion of housing stock and the form it takes is largely the result of investment decisions made by businesses (developers, house builders) and

<sup>51</sup> Housing services represent the output or product of housing value chains – whether produced by formal or informal markets. As such investment in housing is by definition productive: producing a flow of housing *services* over time Stephen Malpezzi, ‘Global Perspectives on Housing Markets and Policy’, 2012

<sup>52</sup> MDG target Goal 7D was exceeded ahead of its 2020 target where the UN reported the improvement of the lives of 320 million slum dwellers globally, despite the overall increased in the number of slum dwellers during the monitoring period (2000-2015).

more commonly, in the Sub Saharan African context, by individuals and families (drawing on personal saving and loans from family and friends rather than the formal finance sector).<sup>53</sup>

Private sector housing developers are becoming more common in wealthier cities like Lagos and Abuja. Data on the housing market in Nigeria is limited but statistics from the national 2006 Population and Housing Census on housing type is one indicator (Figure 11.1). For example, the proportion of households living in flats in the mainly urban territories of Lagos State and the Federal Capital Territory is much higher than in the rest of the country. Not all flats are purpose-built by any means but the demand for this type of accommodation tends to be a key driver of such developer activity. By comparison the proportion in Kaduna State is much lower.

The urban population of Kaduna State is under 40% compared to more than 90% in Lagos and FCT. Even allowing for this factor, there is little evidence of new apartment construction on any scale as yet in Kaduna compared to, say, Abuja, where both new detached housing and apartment condominiums are proliferating. There is no extensive secondary housing or primary housing developer-led market in Nigeria. Any nascent market that exists is concentrated in a few cities, primarily Lagos and to a lesser extent, Ibadan, Abuja and Port Harcourt. These cities are far from typical from Nigeria as a whole, and represent around 10% of the total population, and 20% of its urban population (Mutter et al., 2014). Another indication of the limitations to the formal housing market is the evidence of new housing for sale on web sites (e.g. <http://www.privateproperty.com.ng/>), which is largely limited to the previously mentioned cities, and affordable only to the very much better off (Ibid, p32-34).

According to the 2006 Census, around 50% of Nigeria's 24 million households live in houses on a separate stand or yard (i.e. in a compound) – see Figure 11.1. Less than 10% live in flats in blocks of flats and only 6.8% in Kaduna State. In Lagos State, FCT/Abuja and Rivers State the proportion is much higher.

These figures, however, do not indicate the number of households renting flats. For example, many of those who live in individual houses may have a flat within an owner's house or otherwise rent a building within a compound. The category 'living in rooms/let in house' represent 13.7% of the total for Nigeria but only 8.5% in Kaduna State, which does not even cover the numbers of household renting accommodation in other people's compounds in Kaduna, itself, let alone the rest of the state. By contrast, 53% of households in Lagos are recorded in this category, which together with the 19.7% of households who live in blocks of flats represents more than 70% of the total. Similarly, Kano State has more than double the proportion of households living in semi-detached houses, which may be another geo-cultural interpretation of living on shared compounds. In the case of Kaduna, this is an area of future research that was not possible within the scope of this study, but which the urban morphological approach detailed in the preceding chapter, could facilitate.

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<sup>53</sup> (The World Bank, 2015)

| State     | Total      | Type of Housing Unit              |                           |                        |                     |                    |                            |                 |
|-----------|------------|-----------------------------------|---------------------------|------------------------|---------------------|--------------------|----------------------------|-----------------|
|           |            | House on a Separate Stand or Yard | Traditional/Hut Structure | Flat in Block of Flats | Semi-detached House | Rooms/Let in House | Informal/Improved Dwelling | Other           |
| Kaduna    | 1,115,974  | 696,142<br>62.4%                  | 140,557<br>12.6%          | 75,355<br>6.8%         | 94,473<br>8.5%      | 89,966<br>8.1%     | 4,639<br>0.4%              | 14,842<br>1.3%  |
| Kano      | 1,603,335  | 730,211<br>45.5%                  | 332,224<br>20.7%          | 85,580<br>5.3%         | 314,295<br>19.6%    | 87,540<br>5.5%     | 17,797<br>1.1%             | 35,688<br>2.2%  |
| Lagos     | 2,195,842  | 438,103<br>20.0%                  | 11,040<br>0.5%            | 433,613<br>19.7%       | 96,831<br>4.4%      | 1,174,972<br>53.5% | 7,818<br>0.4%              | 33,465<br>1.5%  |
| Rivers    | 1,123,998  | 654,113<br>58.2%                  | 63,796<br>5.7%            | 198,513<br>17.7%       | 58,114<br>5.2%      | 132,714<br>11.8%   | 6,408<br>0.6%              | 10,340<br>0.9%  |
| FCT Abuja | 303,592    | 139,708<br>46.0%                  | 5,568<br>1.8%             | 68,410<br>22.5%        | 22,678<br>7.5%      | 64,014<br>21.1%    | 1,466<br>0.5%              | 1,748<br>0.6%   |
| Nigeria   | 28,197,085 | 14,274,444<br>50.6%               | 3,944,091<br>14.0%        | 2,762,955<br>9.8%      | 2,638,932<br>9.4%   | 3,861,592<br>13.7% | 158,022<br>0.6%            | 557,049<br>2.0% |

11.1: Households by type of dwelling unit – Nigeria and various states (Source: Housing and Population Census 2006)

Limited mass house building elsewhere tends to be government-led, whilst private sector investment is largely channelled into (frequently illegal and certainly informal) land purchase and sub divisions into plots. The role of property developers, therefore, is as middle-men in the housing value chain, whilst housing development tends to be undertaken by individuals who purchase land from the middlemen on a ‘self development’ basis.

For those who make the decision to invest in ‘bricks and mortar’, this will invariably represent the largest household asset. General data on housing conditions obtained during the two 1965 and 2010 land-use and household surveys allows for some comparison of changes in housing and living conditions in Kaduna over this period.

More detailed analysis of the 2010 data and hi-resolution satellite imagery facilitates intra-city comparisons of the form and condition of housing across Kaduna. Aside from providing a more detailed snapshot of the range of housing available to those living in the city, this data could also be used in future studies, to make some assumptions about the level of aggregate consumption within Kaduna – a proxy for assumed levels of city-level economic growth

**Housing as a proxy for change in economic welfare (from Mutter et al., 2014)**

For households who so choose to do, investing in housing is the single largest expenditure they will ever make. Investment in appropriate housing that is located in close proximity to urban attractions such as employment opportunities, schools and other social infrastructure can provide households with enhanced quality of life and the opportunity to appreciate wealth through the increase in property values over time.<sup>54</sup> This can reduce

<sup>54</sup> Depending on location and the property cycle, housing prices tend to increase over time in line with rising incomes often more than proportionately as households place a higher



the intergenerational transmission of poverty.<sup>55</sup> Equally, in terms of productivity and employment, firms require well-functioning labour markets requiring equally well-functioning housing markets e.g. the ability for people to live within reasonably easy access of locations that enterprises also find attractive.<sup>56</sup>

The housing sector often represent an important component of national economic growth either through housing stocks, and supporting market systems such as building and construction and finance. In Nigeria the housing sector is said to represent 3.1% of GDP (Okonjo-Iweala, 2014) although this almost certainly represents only the formal housing sector. OICP, in an index of real expenditure per capita for 2011 put housing services (including utilities) at 8% of GDP for Nigeria. Adding furnishings, household equipment and maintenance raises this figure to 13% for all housing services. This compares to a global average of 12 % and 14%. As a proportion of total consumption expenditure for households alone the figures for Nigeria is 15% and 23% respectively compared to a global average of 23% and 27% (The World Bank, 2016).

Housing tends to 'lead' the economy, increasing consumption more generally for example where increases in investment in housing will then be accompanied by increases in consumption.

There is a very high level of uncertainty about national statistics on income and expenditure and their distribution as noted in the World Bank's Nigeria Economy Report No. 2 for 2014. Without reliable datasets covering these matters, it is difficult to get and hard and fast facts on housing. However, what data there is suggests that for urban households that rent, around 25-30% of their expenditure goes on rent, and possibly around 50% on food (with 23-25% of urban households also reporting food inadequacy, more than in rural areas),<sup>57</sup> leaving relatively little for other essentials including transport, clothing and healthcare. The proportion of urban households that rent varies widely across the country, is typically around 50% (much higher in Lagos, at 74%, and much lower in the far north).

Similarly, there are extreme variations in the level of rents that are paid. In Kaduna, where 50% of households were renting, the household survey of 2010 indicated a median rent of just \$8 per month, about \$11 per month in current terms. More than 70% of households paid less than \$12/month

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value on housing as an end in itself, but also as a store of value, and speculatively as an investment for the future. The property price increases that ensure are essentially a function of the increased rental value of the land on which the property sits, since the value of the building is likely to decrease over time. It should be noted that; 'Nigerians tend not see their homes as 'collateral assets' (something to be traded or financed against), but rather as intergenerational 'use' assets (valuable for their utilization, not for their resale) to be preserved in the family. The concept of a 'property ladder', where people trade up their home as their income base grows, is uncommon.' Ibid. On the other hand, all the evidence in Kaduna points to a highly evolved and dynamic speculative market for development land on the urban periphery of Kaduna itself.

<sup>55</sup> Ibid.

<sup>56</sup> (Malpezzi, 2012)

<sup>57</sup> National Bureau of Statistics in Collaboration with the World Bank Living Standard Measurement Study Group Select Tables from the General Household Panel, Survey Wave 2 2012/13.

(more than \$12 now, adjusted for inflation). On the other hand, nearly 12% of the population were paying more than N5,000 per month (\$31/\$43 at current rates). A little over 5% were paying N10,000 or more (\$85 per month at current rates, around \$1,000 or N160,000 per annum). This is very little more than the cheapest on-line properties found in Lagos and Ibadan, noted above.

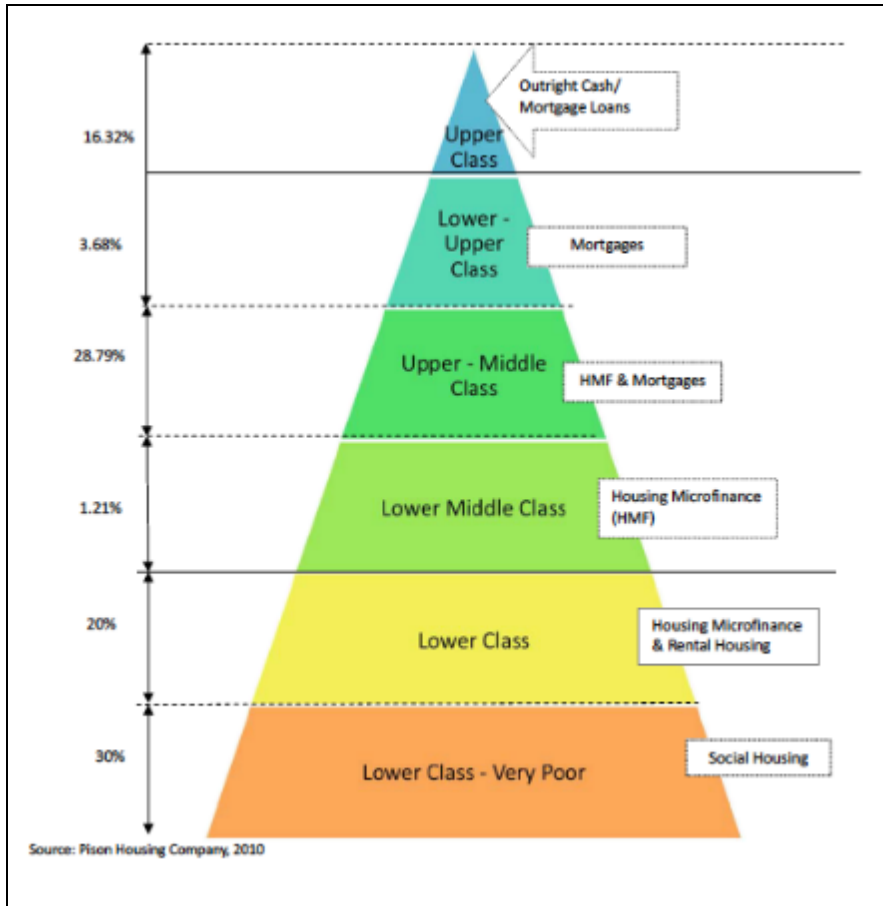


Figure 11.1: Housing Accessibility Pyramid for Nigeria (Centre for Affordable Housing Finance in Africa, 2013)

### The characteristics of formal and informal housing markets in Nigeria

The formal provision of housing in Kaduna, as elsewhere across Nigeria, has been subject to severe market and policy failures. Inefficient and cumbersome land administration systems and weak urban governance have played a strong part. However, very rapid urbanisation unaccompanied by lack of sufficient investment in economic development and business opportunities that offer higher, regularly-paid jobs has meant that the majority of the population is thrown back on irregular self-employment in the informal sector. All this ensures that housing supplied by formal markets is unaffordable to all but the top income quintile. Official estimates are that official production of housing services is around 100,000 units per year – compared to housing demand of 700,000 units per annum. It is estimated

that informal land and housing markets deliver up to 90% of the supply of new housing annually in Nigeria.<sup>58</sup>

### Household wealth and inequality<sup>59</sup>

The Nigeria Demographic and Health Survey (2013)<sup>60</sup> uses a 'wealth index' to indicate inequalities in household characteristics in Nigeria. The following table from the main report shows wealth quintiles by residence and geographical zone. In urban areas, 43% of the population is in the highest wealth quintile, compared to rural areas where only 5% of the population is in the highest wealth quintile. The wealth quintile distribution varies greatly according to geographical zone, indicative of the scale of regional inequality across the country. Nearly half of the population in the South West is in the highest quintile, with 31.3% in the South-South zone and 27.9% in the South East. Only 7.4% of the population in the North East and North West zone (where Kaduna is located) falls into this category. A significant proportion of households in the North East and North West are in the lowest quintile (40% and 35%, respectively).

The Gini coefficient indicates a much greater inequality in rural as opposed to urban areas and lesser inequality in the most developed zones of the South West and South-South compared to the rest of the country.

This data needs further research and relating to the findings of the 2010 Household Survey. Indicatively, applying the national ratio of urban to rural, and accepting that large cities like Kano and Kaduna are much wealthier than their smaller counterparts in the North West Zone, this would indicate that nearly 22% of city dwellers in the region fall into the top quintile and the third quintile, with the largest proportion in the second quintile (29%) and smaller proportions in the fourth (17%) and fifth (10%) quintiles as defined by the nation as a whole. This would be in line with the accessibility pyramid for Nigeria as a whole in Figure 11.2, with just over 20% of the population able secure a mortgage, if needed, and falling into the category of 'upper class'.

For the rest of the population, 'self develop' is the only option, with the resulting rapid growth of large areas of informal housing to meet the demands of a rapidly growing population. In Kaduna, the result will be a locally planned housing layout, subject to some form of building control by local governments, but will certainly lack provision of basic services or supporting social infrastructure such as schools and health facilities. More often than not it will be located in the periphery of the city, far from formal employment opportunities. In Kaduna, the form and appearance of what is described above as 'informal' is often on the surface not radically different from housing that has been formally constructed and has been subject to formal approval processes e.g. land title registration and town planning regulations. Plot sizes of even the highest density areas of Kaduna tend to reflect standard plot sizes required under planning regulations. However closer inspection often reveals that plots have been subdivided over time to

<sup>58</sup> (The World Bank, 2015)

<sup>59</sup>

<sup>60</sup> <http://dhsprogram.com/publications/publication-FR293-DHS-Final-Reports.cfm>

accommodate multiple dwellings on the space typically set-out for a single dwelling. This is undoubtedly at the expense of making provision for basic infrastructure such as drainage and (road) access.

| Residence/region | Wealth quintile |             |             |             |             | Total        | Number of persons | Gini Coefficient |
|------------------|-----------------|-------------|-------------|-------------|-------------|--------------|-------------------|------------------|
|                  | Lowest          | Second      | Middle      | Fourth      | Highest     |              |                   |                  |
| <b>Residence</b> |                 |             |             |             |             |              |                   |                  |
| Urban            | 3.0             | 6.6         | 16.3        | 30.9        | 43.3        | 100.0        | 70,422            | 0.18             |
| Rural            | 31.3            | 28.9        | 22.5        | 12.8        | 4.6         | 100.0        | 106,541           | 0.35             |
| <b>Zone</b>      |                 |             |             |             |             |              |                   |                  |
| North Central    | 11.3            | 21.3        | 32.1        | 20.5        | 14.8        | 100.0        | 27,368            | 0.32             |
| North East       | 40.4            | 26.1        | 15.0        | 11.2        | 7.4         | 100.0        | 26,927            | 0.25             |
| North West       | 35.4            | 28.7        | 15.9        | 12.7        | 7.4         | 100.0        | 56,512            | 0.28             |
| South East       | 4.7             | 13.3        | 25.5        | 28.5        | 27.9        | 100.0        | 18,777            | 0.24             |
| South South      | 0.5             | 10.1        | 25.9        | 32.2        | 31.3        | 100.0        | 19,893            | 0.29             |
| South West       | 1.7             | 6.6         | 13.4        | 28.5        | 49.8        | 100.0        | 27,486            | 0.18             |
| <b>Total</b>     | <b>20.0</b>     | <b>20.0</b> | <b>20.0</b> | <b>20.0</b> | <b>20.0</b> | <b>100.0</b> | <b>176,963</b>    | <b>0.29</b>      |

Table 11.2: Per cent distribution of the de jure population by wealth quintiles, and the Gini coefficient, according to residence and region, Nigeria 2013 (Source: The Nigeria Demographic and Health Survey, 2013)

The social survey data for 2009 show that on average compounds (plots) in Kaduna house just over 2 households with some but not huge variance across the city (see Table 11.3). This average is representative of a normal type distribution of households per compound with a small number of compounds with very large numbers of households.

Given that around half of all households rent and around 35% of these households rent from landlords who live on the same compound, the informal housing market still continues to be working in part by people building their own house on a sizeable compound and then extending part of the compound to rent out to other households. In this way, they secure a rental income with which to repay their initial borrowings and gain an additional income. That said around a quarter of households in Kaduna rent shared property e.g. a house on a compound with at least one other household; where the owner lives elsewhere and only a very small proportion (less than 3%) rent a single occupancy compound. The informal housing market is clearly complex and players may engage in the market in a variety of ways either as owner-occupiers or as landlords who live elsewhere.

|                              | Household size | Households per compound | Estimated Total Population | Total residential land area ha | Average density pph |
|------------------------------|----------------|-------------------------|----------------------------|--------------------------------|---------------------|
| <b>Kaduna North</b>          |                |                         |                            |                                |                     |
| Kawo                         | 5.2            | 2.1                     | 49,042                     | 468.2                          | 104.7               |
| Badarawa/Malali              | 5.1            | 1.8                     | 96,540                     | 947.4                          | 101.9               |
| Gabasawa                     | 4.8            | 2.0                     | 40,608                     | 759.9                          | 53.4                |
| Kabala                       | 4.4            | 1.8                     | 23,421                     | 462.7                          | 50.6                |
| Doka                         | 3.8            | 3.3                     | 26,097                     | 370.3                          | 70.5                |
| Hayin Banki                  | 4.5            | 2.5                     | 56,431                     | 954.4                          | 59.1                |
| <b>Total</b>                 | <b>4.8</b>     | <b>2.1</b>              | <b>291,905</b>             | <b>3,962.9</b>                 | <b>73.7</b>         |
| <b>Kaduna South</b>          |                |                         |                            |                                |                     |
| Badiko                       | 5.1            | 2.2                     | 34,820                     | 238.8                          | 145.8               |
| Sabon Gari                   | 5.4            | 2.4                     | 62,767                     | 394.6                          | 159.1               |
| Tudun Wada                   | 5.3            | 2.6                     | 51,008                     | 259.7                          | 196.4               |
| Ung. Muazu                   | 5.6            | 2.1                     | 52,254                     | 522.5                          | 100.0               |
| Barnawa                      | 4.4            | 1.6                     | 26,110                     | 387.9                          | 67.3                |
| Makera                       | 4.1            | 3.8                     | 29,804                     | 143.8                          | 207.2               |
| Kakuri                       | 3.7            | 3.5                     | 23,305                     | 127.7                          | 182.5               |
| <b>Total</b>                 | <b>4.9</b>     | <b>2.4</b>              | <b>280,780</b>             | <b>2,075.1</b>                 | <b>135.3</b>        |
| <b>Kaduna N&amp;S Chikun</b> |                |                         | <b>572,685</b>             | 6,038.0                        | 94.8                |
| Nasarawa                     | 4.2            | 2.9                     | 64,008                     | 560.7                          | 114.1               |
| Kakau                        | 4.5            | 1.5                     | 30,629                     | 2,069.6                        | 14.8                |
| Matagyi                      | 3.8            | 1.9                     | 60,491                     | 1,618.1                        | 37.4                |
| Narayi                       | 4.0            | 2.1                     | 34,702                     | 473.8                          | 73.2                |
| Kamazou                      | 4.8            | 1.6                     | 16,720                     | 1,000.7                        | 16.7                |
| Kujama                       | 5.0            | 1.5                     | 18,507                     | 741.7                          | 25.0                |
| Television                   | 3.7            | 2.4                     | 62,198                     | 519.2                          | 119.8               |
| <b>Total</b>                 | <b>4.1</b>     | <b>2.1</b>              | <b>288,129</b>             | <b>6,983.7</b>                 | <b>41.3</b>         |
| <b>Igabi</b>                 |                | #DIV/0!                 |                            |                                |                     |
| Rigasa                       | 5.8            | 1.8                     | 196,628                    | 1,700.1                        | 115.7               |
| Afaka                        | 4.5            | 1.6                     | 26,334                     | 635.5                          | 41.4                |
| Rigachikun                   | 5.4            | 1.6                     | 29,860                     | 918.3                          | 32.5                |
| Kwarau                       | 5.1            | 1.8                     | 25,979                     | 811.1                          | 32.0                |
| <b>Total</b>                 | <b>5.5</b>     | <b>1.7</b>              | <b>278,929</b>             | <b>4,065.0</b>                 | <b>68.6</b>         |
| <b>All Kaduna</b>            | <b>4.8</b>     | <b>2.1</b>              | <b>1,139,970</b>           | <b>17,086.8</b>                | <b>66.7</b>         |

Table 11.3: Average household size, compound occupancy rate, estimated residential population and density across Greater Kaduna, 2010

## 11.2 COMPARATIVE HOUSING CONDITIONS

Comparison has been made between the 1965 survey areas and their equivalent in 2010 (referred to below as 'equivalent areas') by defining the boundaries of the 1965 areas on the 2010 satellite imagery and those household survey records from within these settled areas.

### Compound living

The term 'compound' is common across much of sub-Saharan Africa and used here to refer to a cluster of buildings on a plot, normally in an enclosure, having a shared or associated purpose, such as the houses of an extended family. Compounds are a developed form of local housing, not to be confused with the demarcation of plots, which precede their

development. Subsequent subdivisions within plots or amalgamation, often means that the original subdivision of land into plots is overtaken by more complex forms of compound establishment and plot and compound boundaries are difficult to discern from remotely sensed images (see Chapter 10).

Overall when comparing occupancy rates of compounds in Kaduna by compound we find there are fewer households per compound in 2010 (2.1) as against 1965 when there were twice as many (4.3). Meanwhile over the same period, the average size of households has increased from 3.4 persons in 1965 to 4.8 in 2010, though overall the average number of persons sharing a compound has declined considerably from 14.6 in 1965 to 10.0 in 2010.

This is indicative of the changing demographic profile of the city. As previously noted, in 1965 Kaduna had a fast growing industrial sector attracting many young migrants to the city, ending up living in rented rooms on compounds. ‘Rooming houses’ on compounds which still exist but which are not so frequent in 2010 were much more commonplace. The ‘long house’ largely filling a compound with single room either side of a central corridor is a dwelling type can still be found in great number in southern cities attracting young migrants such as Lagos and Port Harcourt, often concentrated in very high density clusters (see Appendix 11.a) but not often in Kaduna. Similarly, following the classic pattern of (mainly informal) residential development first noted by John F C Turner in Peru in the 1960s, the preponderance of ‘bridge-headers’ in Kaduna in 1965 has given way to a pattern of more established family households moving successively away from the central area of the city (see Figure 11.3).

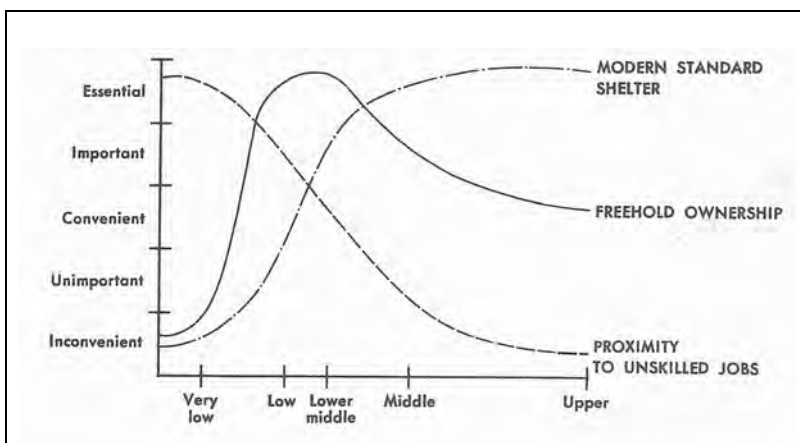


Figure 11.2: Priorities for housing needs x income level (Source Turner 1972)

### Occupancy rates

Although proportionately the numbers have grown single occupancy (household) compounds still only represent 56% of the total. In terms of sheer numbers, households living in compounds with more than one household has dramatically increased by over eight times – 5,837 in Kaduna as it was in 1965 to 49,380 for the Kaduna urban areas it is now.

In 1965 just under two-fifths (38.4%) of households shared a compound with either 2, 3, 4 or 5 other households, a proportion that had risen to almost three-fifths (58.4%) by 2010. However, a substantial decrease was



recorded in the number and proportion of households living on compounds with six or more households per compound. There is evidence across Sub Saharan Africa (Mutter et al., 2014) that housing construction in the formal sector is in part funded through private rental though which individual housing developers repay informal loans.

The traditional colonially originated 50 'x 100 'standard plot which is certainly very large if related to individual nuclear family requirements can comfortably accommodate two HHs and in one way or another fuel the informal housing development process.

In Kaduna about 20% of compounds are set-up with tenants living with the owner (as far as the survey returns indicate, they are the owner). This equates to around 35% of households living with the owner of the compound. Around 25% rent off someone else e.g. for example where a compound is occupied by tenants only with the landlord living offsite. While a large proportion of compound are occupied by singly households, as noted elsewhere, under 3% of households rent a compound on their own.

This data is a bit uncertain as the questionnaire did not specifically ask whether the household rented from the property owner and it only an inference that the owner living on the same compound in their landlord, although this seems very likely to be the case. What is evident though, is that there is a considerable degree of probably petty landlordism in Kaduna. Evidence form research carried out by the Max Lock Centre in other contexts suggest that small landlords often have more than one property (getting in early in the land subdivision process and buying up a few plots). So small-scale landlordism may account for these figures.

On average there are just over two household per compound figure in Kaduna. By no means does this indicate that the single landlord and tenant household is the norm and housing markets are clearly more complicated than that. However, it is a good indicator of the flexibility of the present informal land subdivision process to accommodate 'self develop' housing. This is an area for future research

Occupancy rates across much of Kaduna by 2010 suggest that overcrowding could be a serious issue with almost three-fifths (57.3%) of Kaduna's households living in only one, two or three rooms. One-fifth (20.9%) have only one room - see below at 11.3. This, of course, is only a crude measure and needs to be related to household size and type as well as rent paid, condition of premises and number of households and persons sharing a compound and its facilities which will contribute further to poor and overcrowded living conditions. For example, typically where a single household occupies a compound alone, household sizes are on average larger: 6 persons for those households occupying a compound alone, compared to an average household size of 4 persons where more than one household share a compound. Equally, where households do not share a compound they are more likely to have a greater number of rooms, a median average of four across Kaduna, compared to just two for those households sharing a compound. This suggests that larger households are less likely to share a space with other households though whether their economic position to do so reflects household earning capacity due to its larger size needs further investigation.

Occupancy rates do indicate areas of high population density, which is not necessarily a bad thing in itself if environmental and individual space standards as well as personal, family size, age and sex relationships within the households are taken into account. In the case of Kaduna where the average plot (compound) size is around 450 sq. m or less with most occupants sharing cooking, bathing and toilet facilities and households not necessarily being related to each other, living conditions can be stressful to say the least. On average, compared to many other African or Asian cities, occupancy rates in Kaduna are not particularly high as far as living space per person is concerned.

Variations to the above noted trends in 2010 are observed within Kaduna reflecting local context i.e. the desirability of certain locations and the historic evolution of the city's built environment. For example, the average number of persons per compound has declined slightly in the inner areas of Sabon Gari (17.3 persons down to 14.0) and Tudun Wada (13.0 persons down to 12.8) and increased slightly in the outer North (from 10.4 up to 12.8) and South Villages (from 11.7 up to 14.9) between 1965 and 2010. The average number of households per compound has declined in all four areas but to a slightly greater extent in the two inner areas of Sabon Gari (5.8 down to 3.7) and Tudun Wada (4.1 down to 2.4) than the North Villages (3.1 down to 2.6) and South Villages (4.6 down to 3.7)

The average number of persons per household has remained constant in Sabon Gari (3.9 in 1965 and 3.8 in 2010) whilst the other three areas Tudun Wada (3.2 up to 5.2), North Villages (3.3 up to 5.0) and South Villages (2.5 up to 4.0).

| Area                  | Persons per Compound |             | Household per Compound |            | Persons per Household |            |
|-----------------------|----------------------|-------------|------------------------|------------|-----------------------|------------|
|                       | 1965                 | 2010        | 1965                   | 2010       | 1965                  | 2010       |
| <b>Sabon Gari</b>     | 17.3                 | 14.0        | 5.8                    | 3.7        | 3.9                   | 3.8        |
| <b>Tudun Wada</b>     | 13.0                 | 12.8        | 4.1                    | 2.4        | 3.2                   | 5.2        |
| <b>Villages North</b> | 10.4                 | 12.8        | 3.1                    | 2.6        | 3.3                   | 5.0        |
| <b>Villages South</b> | 11.7                 | 14.9        | 4.6                    | 3.7        | 2.5                   | 4.0        |
| <b>Kaduna Total</b>   | <b>14.6</b>          | <b>13.3</b> | <b>4.3</b>             | <b>2.8</b> | <b>3.4</b>            | <b>4.7</b> |

Table 11.4: Compound living in Kaduna: Average living conditions (taken from the Social Survey 1965 and Household Survey 2010 - equivalent areas)

In essence, the then 'Sabon Gari' area of the city (now forming the southern section of Doka district), largely a 'desirable' residential area with some commercial activities in 1965, had by 2010 largely transitioned to a mainly commercial area mixed with residual run down residential properties. Tudun Wada has changed from being a traditional residential area with a well planned and laid out residential extension area which in 1965 was only partly developed. By 2010 it had become a fully developed inner city area which was under pressure of encroachment from Panteka and Tudun Wada markets and developments associated with Kaduna Polytechnic main campus and other institutional developments.

In 1965 the outer areas of North and South Villages (peri-urban settlements) were becoming under pressure from the expansion of the city’s residential accommodation. By 2010 the same areas were largely residential but extensively mixed use neighbourhoods, characterised by poor quality buildings, weak infrastructure and lack of basic services, that were subject to increasing densification where individual plots were being redeveloped with residential, mixed and commercial land uses because of their now inner-city edge location. As such there was an overall increase in the total number of compounds in the original four areas described above as a result of infilling of un-developed plots and general intensification of development. Overall there has been an increase in the proportion of compounds having a lower number of persons per compound (15 or less) and a decrease in the overall numbers of compounds with greater numbers of persons per compound (see Table 11.5)

By 2010, certain spatial trends are evident as far as compound occupancy is concerned. There are fairly wide variations from the overall averages between the districts, with the highest occupancy rates in Makera in Kaduna South LGA having over sixteen (16.1) persons and almost four households (3.8) per compound at the high end and Kakau, and emerging peri-urban area on the east bank of the Kaduna River in Chikun LGA, with only six and a half (6.6) persons and only over one and a half (1.5) households per compound. Generally, the occupancy rates and households per compound are slightly higher than average in Kaduna North and South Districts as against Chikun and Igabi. This is to be expected since the former are the older more central areas.

| Number of Persons | Number of Compounds |            | % of Compounds |            |
|-------------------|---------------------|------------|----------------|------------|
| <=5               | 80                  | 103        | 14.8           | 16.9       |
| 6-10              | 148                 | 171        | 27.3           | 28.1       |
| 11-15             | 107                 | 145        | 19.8           | 23.8       |
| 16-20             | 82                  | 81         | 15.1           | 13.3       |
| 21-25             | 52                  | 50         | 9.6            | 8.2        |
| 26-30             | 34                  | 29         | 6.3            | 4.8        |
| 31-35             | 20                  | 16         | 3.7            | 2.6        |
| 36-40             | 12                  | 5          | 2.2            | 0.8        |
| 41-45             | 5                   | 2          | 0.9            | 0.3        |
| 46-50             | 1                   | 2          | 0.2            | 0.3        |
| Over 50           | 1                   | 4          | 0.2            | 0.7        |
| <b>Total</b>      | <b>542</b>          | <b>608</b> | <b>100</b>     | <b>100</b> |

Table 11.5: Number of persons per compound (Kaduna Social Survey 1965 and Household Survey 2010 – equivalent areas)

The districts with the highest compound occupancy rates are Makera (16.1 persons per compound), Tudun Wada (13.5), Kakuri (13.1), Sabon Gari (13.3), Doka (12.7) and Nasarawa (12.1). These are all well over the city average of ten (10.0) persons per compound and found in the core area of the city, both north and south of the river. The number of people living on

a compound is obviously only a part of the story of unacceptable living conditions. The number of separate households living in a compound as well as their composition is also important. The overall average throughout Kaduna is only 2.1 households per compound and this average is fairly evenly spread over the four LGAs with Kaduna South (2.4) at the high end and Igabi at (1.7) at the low end. Generally, the highest numbers of persons per room and per household and households per compound recorded in each district were located in Kaduna North and South LGAs.

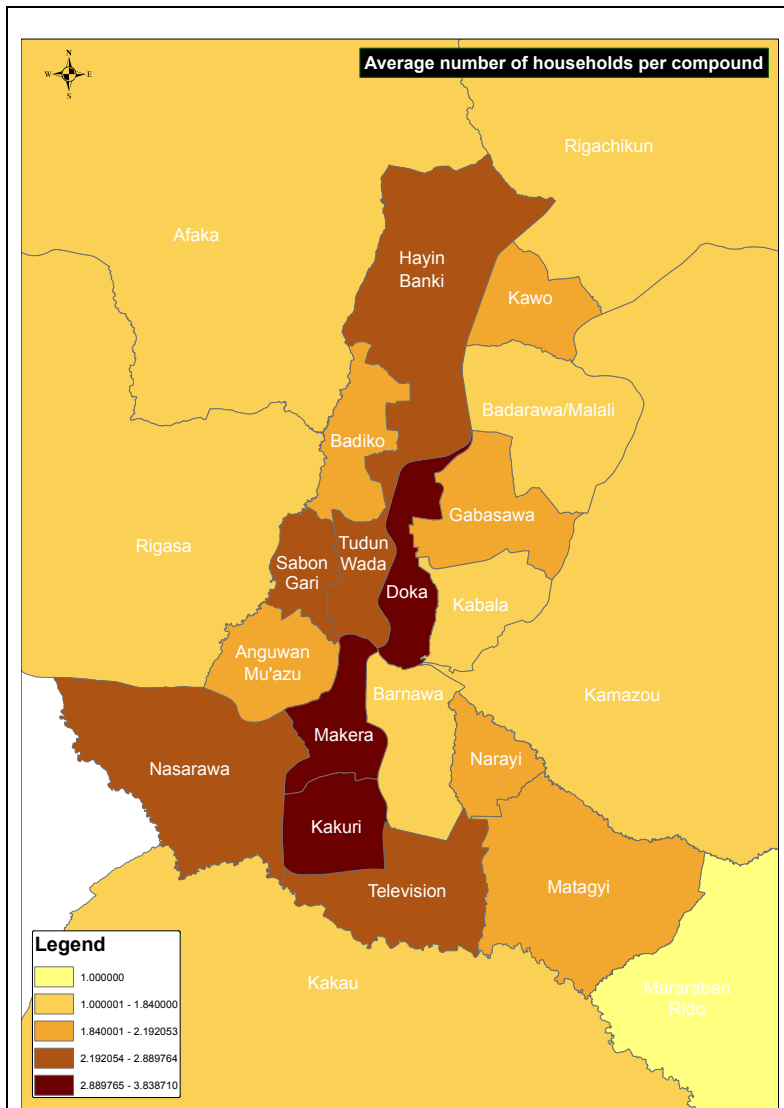


Figure 11.3: Compound occupancy in Kaduna by district.

City-wide there has been a general increase in the proportion of compounds with a household occupancy of just one or two households, whilst the proportion of compounds with household occupancy rates of more than five households has fallen.

Taking this analysis further although the general trend is one of a greater number of single household compounds the dynamics of the relationship between the numbers of household per compound is more nuanced. When analysing the range of household occupancy rates per compound in 1965 the average number of households per compound was relatively evenly

spread from one household per compound (17.2% of all compounds) to seven households (9.0%). By 2010 the proportion of compounds with just one or two households had risen sharply (up to 36.2% in 2010 from 17.2% in 1965 and 19.1% from 13.5% respectively). Compounds with three or four households were similar for both the 1965 and 2010 surveys at around thirteen per cent. There was a general drop in the proportion of all compounds having more than five households per compound, given the broad demographic trends that have been noted.

| H/holds<br>per<br>Compound | Compounds |      |                               |      |                      |      | Households |      |                               |      |                      |      |
|----------------------------|-----------|------|-------------------------------|------|----------------------|------|------------|------|-------------------------------|------|----------------------|------|
|                            | 1965      |      | 2010<br>(Equivalent<br>Areas) |      | 2010<br>(All Kaduna) |      | 1965       |      | 2010<br>(Equivalent<br>Areas) |      | 2010<br>(All Kaduna) |      |
|                            | n         | %    | n                             | %    | n                    | %    | n          | %    | n                             | %    | n                    | %    |
| 1                          | 93        | 17.2 | 220                           | 36.2 | 3040                 | 55.2 | 93         | 3.9  | 220                           | 12.8 | 3040                 | 26.6 |
| 2                          | 73        | 13.5 | 116                           | 19.1 | 953                  | 17.3 | 146        | 6.2  | 232                           | 13.5 | 1906                 | 16.7 |
| 3                          | 73        | 13.5 | 84                            | 13.8 | 669                  | 12.1 | 219        | 9.3  | 252                           | 14.6 | 2,007                | 17.6 |
| 4                          | 69        | 12.7 | 79                            | 13.0 | 396                  | 7.2  | 276        | 11.7 | 316                           | 18.4 | 1584                 | 13.9 |
| 5                          | 53        | 9.8  | 41                            | 6.7  | 196                  | 3.6  | 265        | 11.2 | 205                           | 11.9 | 980                  | 8.6  |
| 6                          | 66        | 12.2 | 32                            | 5.3  | 122                  | 2.2  | 396        | 16.8 | 192                           | 11.2 | 732                  | 6.4  |
| 7                          | 49        | 9.0  | 13                            | 2.1  | 60                   | 1.1  | 343        | 14.5 | 91                            | 5.3  | 420                  | 3.7  |
| 8+                         | 66        | 12.2 | 23                            | 3.8  | 73                   | 1.3  | 623        | 26.4 | 213                           | 12.4 | 740                  | 6.5  |
| Totals                     | 542       | 100  | 608                           | 100  | 5509                 | 100  | 2361       | 100  | 1721                          | 100  | 11409                | 100  |

Table 11.6: Number of households and compounds compared 1965 Social Survey and 2010 Household Survey (equivalent areas and all Kaduna) n= sample size

**In equivalent inner city areas of the city there has been a marked trend towards less intensely occupied compounds areas over the study period. At the same time, there has been an increase in the proportion of compounds found under single household occupancy.**

When comparing only the original settled areas surveyed in 1965 with the whole of the Kaduna built up area in 2010 we find a stronger trend towards compounds with only one household. In 1965 less than a fifth of all compounds in the town as it then existed were occupied by a single household (17.2%) increasing to 55.2% of all compounds having just a single household in 2010. There has been a fundamental change in the way the majority of compounds are now occupied, with the proportion of compounds having *more than one household* falling from 82.8% in 1965 to 68.3% for the equivalent area in 2010 and down further still to 44.2% for the whole built up area of Kaduna in 2010. However, as described above in spite of a declining proportional trend, the actual numbers of households living

in compounds with more than one household has dramatically increased by over eight times for the equivalent areas of Kaduna - those areas occupying a position in what is an inner city suburb of Kaduna within reasonable proximity of central city amenities such as the central market, motor park, and key centres of (formal) employment.

Looked at another way, in 1965 only one in twenty-five households (3.9%) occupied a compound on their own, this as compared to one in ten households (12.8%) in the equivalent areas of what had become the Kaduna's inner city by 2010. Whether the increased prevalence of single occupancy compounds (e.g. one single household) has brought with it increased living space is unclear given the difficulty in ascertaining plot boundaries and thus estimating average plot sizes, although it seems very likely. However, it is likely that households have a greater degree of *privacy* even where the amount of living and amenity space they enjoy has not changed or even fallen.

**During the same period there has also been a considerable increase in the proportion and number of households in these equivalent areas sharing a compound with between *two and five other households*, whilst compounds with six or more households are much less common in 2010 than in 1965.**

In 1965 just under two-fifths (38.4%) of households shared a compound with either 2, 3, 4 or 5 other households, a proportion that had risen to almost three-fifths (58.4%) by 2010. A substantial decrease was recorded in the number and proportion of households living on compounds with six or more households per compound (from 55.6% or an estimated 17,700 households down to 28.9% or 9,900 households). This may represent improved living conditions for many where the implication is that average amount of living and amenity space per household should have increased.

#### ***In summary***

Although the picture is far from clear and consistent, in essence any reduction in compound occupancy rates i.e. the proportion of households sharing a compound with at least one other household, is likely to have taken place without state or other formal government intervention. This may have represented real improvements to living conditions to the benefit households across a range of socio-economic contexts. Superficially at least this may indicate a basic improvement in many household's living conditions, for example where single occupancy (household) compounds are shown to have access to larger living accommodation (greater number of rooms) and potentially greater amounts of amenity space, their own sanitation facilities, and privacy, than for those living on a compound with two or more households. Of course, household sizes vary, as do the size of compounds and amounts of open space available in different parts of the city, and the reality is that given the proportion of compounds which accommodate 2-5 households has also increased that the relative levels of amenity and privacy across the city as a whole are likely to have decreased overall.

When looked at from the point of view of the number of households, it is seen that only just over a quarter (26.6%) of all households in 2010 did not



share a compound with another household. In contrast, over half of all households in 2010 (56.8%) shared a compound with two to five households and a further one in six households (16.7%) shared a compound with six or more households. So although the proportions of households living and sharing a compound in what may have been overcrowded conditions has fallen, the actual numbers of households living in potentially substandard conditions has increased greatly.

At the district level large variations in compound occupancy rates are also observed. The overall average for Kaduna is 2.1 households per compound however, the highest occupancy rates can be found in Makera where almost four households (3.8) per compound (16.1 persons) on average found per compound and in Kakau only 1.5 household per compound or 6.6 persons on average.

Generally, the occupancy rates and households per compound are slightly higher than average in Kaduna North and South Districts as against Chikun and Igabi. This is to be expected since the former are the older more central areas. One striking difference however is observed when looking at the composition of single households that occupy a compound. On average household sizes tend to be two persons larger than where more than one household occupies a compound and the number of rooms available to single occupancy compounds is greater than for those compounds where more than one households reside. This implies that households with a larger number of persons are far less likely to share a compound with another household, as they require extra space.

There are many reasons behind these changes and the effects they will have on the living conditions of the majority of people on low incomes, but they must remain partly speculative since only general overall data on urban densities and typologies was observed in 1965. The highest occupancy rates in 1965 were almost certainly caused by the high in-migration rates at that time with many attracted to the city for its many employment opportunities in the textile and other industries. The opportunities for those many in-migrants from outside the Northern Region to obtain planned land (plots) was severely limited, the allocation of plots within existing urban planned layouts was also restricted and the delivery of 'sites and services' layouts were being superseded by private-sector led housing estate development.

These factors combined to create pressure on existing housing stock and compounds causing high occupancy rates, but smaller average household sizes due to the high proportion of single male immigrants in 1965. Although these factors produced, on average, high density living conditions in compounds, the smaller size of the developing communities such as Makera, Kakuri, Abakpa, Kurmin Mashi and Ungwan Rimi meant that open space was never far away.

The overall density of the urban area with a total population in 1965 of only 150,000 made the living conditions, in spite of high densities within compounds, more tolerable than in 2010, with lower occupancy rates but a much more densely occupied urban development over most of the central and suburban areas of the city. Only the peripheral outer areas have the overall lower densities that existed in the central areas in 1965. Then there was access to free space outside the densely occupied compounds,

whereas by 2010 now there was little access to open space outside the less densely occupied compounds – all available space has been developed. By 2010 even the streets, the city’s primary public open spaces, were crowded with trading, parked vehicles, solid waste dumps and other activities making the street space unattractive to social and recreational activities as many were in 1965.

## 11.3 SPACE STANDARDS (OVERCROWDING)

**The general trend observed in Kaduna between 1965 and 2010 is one of improved living standards for the majority of Kaduna’s households. The quantum of living accommodation (i.e. habitable rooms) has increased for the average household.**

Put another way there is a greater proportion of households who now occupy houses with 2 or more rooms of accommodation. Chronic overcrowding (e.g. where more than 3 persons are sharing a room) has fallen substantially by around a half. Despite the trend towards households occupying houses with a greater number of rooms, actual numbers of households living in ‘overcrowded’ conditions has increased. By 2010 an estimated 250,000 households lived in overcrowded conditions e.g. where more than three persons per household were sharing a single room.

One must not forget that higher urban densities may also bring benefits to those living under those conditions. Living in overcrowded conditions may be preferable to a household if its members are guaranteed access to services, education, and employment opportunities – the result of living within a built-up urban area. Of course access is rarely equitable and some parts of the city will fare better than others.

### Plot sizes

As the city of Kaduna was originally planned, space standards varied according to the intended inhabitants of different neighbourhoods of the city. Sabon Gari was planned and set aside for migrants to Kaduna in the Lugard’s Plan. Sabon Gari was intended as workers dormitory quarters with space standards well below those found in the Government Reservation Areas (GRA) – or neighbourhoods set aside as quarters for those working for the then northern Nigerian Regional Government. For example, average residential plot sizes in Sabon Gari were (and generally remain to this day) **15 x 30m** as compared to those found in the GRA which when planned for single household occupancy measured **X x Ym**.

### Number of Rooms per Household

Superficially, there has been a great improvement in the average number of rooms available to households. In 1965, almost two-thirds of households (64%) were living in only one room and by 2010 only one-fifth (20.4%) were in one room accommodation. In 1965, a quarter of households (25%) were in two rooms as against almost two-fifths (36.9%) in 2010. Households in three rooms or more had gone up from just over one in ten (11.0%) in 1965 to over two-fifths (42.7%) in 2010. One must view these data in the context

of household size though, in 1965 there was a much higher proportion of single person households – represented by a large number of single, male households (economic migrants). In many cases the high proportion of households occupying just one room, were most likely single person households.

These findings are broadly consistent with the national picture on housing standards described in the National Bureau of Statistic’s Living Standards Measurement Survey. In 2010 around 45% of urban households had three or more rooms, rising to just over 50% (51.1%) by 2010<sup>61</sup>. Although regional variations are not significant across Nigeria, when compared to the north west zone (in which Kaduna sits) households in the city of Kaduna had fewer rooms than the average household for the north west zone – 72.8% of households with three rooms or more, compared to just 42.7% in the city. Rural-urban differences though are common throughout Nigeria with rural households in general having more living accommodation than urban households.

| Number of Rooms Occupied by Households | Number of Households in Sample Survey |        | Per Cent |       |
|--|---------------------------------------|--------|----------|-------|
|  | 1965                                  | 2010   | 1965     | 2010  |
| <b>1 Room</b>                          | 1,461                                 | 2,309  | 63.8     | 20.4  |
| <b>2 Rooms</b>                         | 580                                   | 4,164  | 25.4     | 36.9  |
| <b>3 Rooms</b>                         | 91                                    | 1,961  | 4.0      | 17.4  |
| <b>4 Rooms</b>                         | 75                                    | 1,401  | 3.2      | 12.4  |
| <b>5 Rooms</b>                         | 35                                    | 602    | 1.6      | 5.3   |
| <b>6 Rooms</b>                         | 17                                    | 378    | 0.7      | 3.3   |
| <b>7 Rooms</b>                         | 11                                    | 155    | 0.5      | 1.4   |
| <b>8+ Rooms</b>                        | 20                                    | 324    | 0.9      | 2.9   |
| <b>Total</b>                           | 2,290                                 | 11,294 | 100      | 100.0 |
| <b>Unrecorded</b>                      | 115                                   |        |          |       |

Table 11.7: Number of Rooms per Household

### Persons per room

Within the city significant variations in the standards of living accommodation were present in 2010. The Districts with the highest proportions of their households living in two rooms are Makera (54.4%), Kakuri (50.5%), Tudun Wada (48.9%), Hayin Banki (45.2%) and Television (43.8%) whilst the lowest are Barnawa (22.2%), Kamazou (25.0%), Matagyi (28.9%), Badarawa/Malali (29.5%) and Kakau (31.4%).

<sup>61</sup> Living Standards Measurement Survey, General Household Survey Panel 2010 and LSMS General Household Survey Panel 2012/2013 – Nigerian National Bureau of Statistics.

The number of persons per room provides a reasonable indication of the likelihood of living conditions being overcrowded. Definitions of what is an acceptable level of comfort and amenity with regards to persons per room varies locally. UN-HABITAT define a measure of overcrowding, as one of the determinants of slum housing conditions, where: “a house is considered to provide a sufficient living area for the household members if not more than three people share the same habitable (minimum of four square meters) room”<sup>62</sup>. This implies thought that a house may have just a single room. For comparison purposes here *overcrowding* is defined as where the number or persons per room (regardless of the number of rooms in the house) exceeds 3 to 1.

In 1965, half of the sampled population (49,800) were estimated to be living at over three persons per room. This proportion had dropped to less than a quarter (23.8%) of the population in 2010 although this was estimated to represent at over a quarter of a million people (255,000). In 1965, one in seven of the households (14.1% estimated at just over 30,000 people) were living in households at an average of over four persons per room. By 2010 the proportion of households had fallen (9.4% of all households) but the number of people living in these grossly overcrowded conditions had risen to an estimated 130,000. This demonstrates that on the whole chronic overcrowding may have fallen by around half, although a greater number of households live in overcrowded conditions now than in 1965.

The standard for overcrowding used by researchers in Kaduna at the time of the 1965 survey was where a household had on average more than one person per room. This standard has been used here for comparison purposes with the 2010 survey. Taking a standard of more than one person per room as ‘overcrowding’ is not now realistic in the prevailing conditions in Kaduna where much higher average numbers of persons sharing rooms is prevalent.<sup>63</sup> Two-thirds (65.1%) of households were living at more than one person per room in 1965. By 2010 this proportion had risen to 69.4%. Although this is not a large percentage rise, it means that, in actual numbers of households there has been a huge increase in overcrowding up from an estimated 19,400 households in 1965 to 156,800 in 2010.

Since 1965 the proportion of larger households occupying more rooms has increased, but so has the proportion of larger households living in overcrowded conditions. In 1965 less than a quarter of households of five or more persons were living at more than one person per room. By 2010 this proportion of households had almost doubled (42.4%). This proportional increase could be due partly to the inclusion of the GRAs in 2010 that were excluded in 1965. These areas have larger houses on average with more rooms than the rest of the town, but not necessarily more than average larger households. When looked at from the point of view of the number of people potentially involved living in overcrowded conditions, at the 1965 standard of more than one person per room, the

<sup>62</sup> United Nations Millennium Development Goals (2015), <http://www.un.org/millenniumgoals/global.shtml> (accessed 3.6.11).

<sup>63</sup> UN-Habitat has moved from a standard of two to three persons per room to measure progress on meeting the target for MDG 8b.

number is estimated to have increased over ten times from about 86,000 in 1965 to 862,000 in 2010.

| Occupancy Rate              | Number of Households |       | % of Total |      | Number of Persons in Household |        | % of Total |      |
|-----------------------------|----------------------|-------|------------|------|--------------------------------|--------|------------|------|
|                             | 1965                 | 2010  | 1965       | 2010 | 1965                           | 2010   | 1965       | 2010 |
| Over Four persons per room  | 323                  | 1,062 | 14%        | 9.4  | 2,343                          | 6,514  | 31%        | 12%  |
| Over Three persons per room | 674                  | 2,263 | 29%        | 20   | 3,831                          | 12,759 | 50%        | 24%  |
| Over Two persons per room   | 1,283                | 5,118 | 56%        | 45.3 | 5,598                          | 28,233 | 73%        | 53%  |
| Over one person per room    | 1,491                | 7,842 | 65%        | 69.4 | 6,615                          | 43,113 | 86%        | 80%  |
| One person or less per room | 799                  | 3,452 | 35%        | 30.6 | 1,039                          | 10,588 | 14%        | 20%  |

Table 11.8: Persons living in overcrowded conditions: Social Survey 1965 and Household Survey 2010 (All Kaduna)

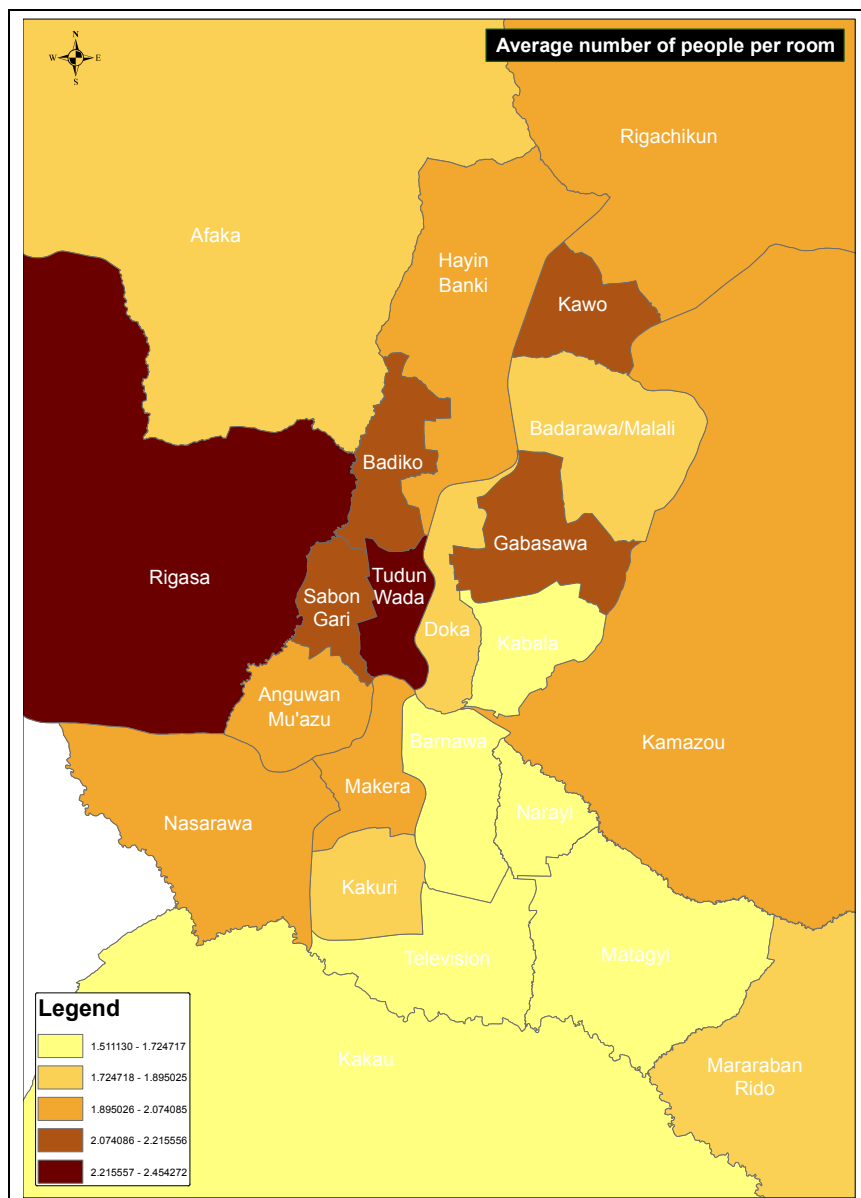


Figure 11.4: Person per room in Kaduna by district.

The missing side of this story though is whether the amount of habitable space available to households has increased or decreased. Data on living space was not captured during either of the social surveys although this would make an interesting study in itself. Intracity variations in the number of persons per room are also present ranging from 1.5 persons in Matagi to 2.4 persons in Rigasa. This can be explained by a combination of average household size, also highest in Rigasa at 5.7 persons per household, and the average size of living accommodation. Rigasa's living accommodation is fairly homogenous, following a similar typology with smaller plots and fewer number of rooms.

## 11.4 WATER AND SANITATION

In principle cities provide opportunities for the cost-effective provision of water, sanitation and other basic services where higher concentrations of people living in close proximity to one another lower the unit cost of provision. However, experience from across lower income countries does not tend to reflect these economies of scale. In 2010, UNICEF and the WHO's Joint Monitoring Programme estimated that only 8% of Nigeria's urban population had access to piped water into their premises (Mitlin and Satterthwaite, 2013). On average, 35% of urban households in Kaduna had mains water supply, though in some districts this fell as low as 1.7%. This is a good example of the likely variation of housing conditions and provision of basic infrastructure often found in cities across Nigeria and elsewhere in sub-Saharan Africa. The same is often true for sanitation services, which may meet a definition of 'improved'<sup>64</sup> services in Nigeria, very rarely extend to piped sewerage systems, and more often than not households must share facilities with each other. Aside from the impacts on public and environmental health from the use of unimproved water and sanitation services, where living accommodation lacks on-plot access to these services, households may face additional burdens in terms of time and cost spend acquiring these provision elsewhere.

In general, household access to water across Kaduna appears to have improved between 1965 and 2010 with better spatial distribution and a greater proportion of households having access to a piped water supply. Access is by no means equitable however, with around half of all households in Kaduna north LGA experiencing better access than households in Igabi LGA to the west of the city, where just over 5% have a mains water supply.

Rigasa district in Igabi LGA with close to 200,000 persons has some of the worst access to piped water supply with just over 5% of households benefitting from a piped water supply. Nearly all households in Kaduna use an alternative supply to support the piped mains network. Although the unit cost for water is broadly similar across all sources in Kaduna, areas where access to piped water is less common, saw households spending more on

<sup>64</sup> Improved sanitation services as defined by the WHO and UNICEF's JMP are: safely managed sanitation services means flush toilets; piped sewer system; septic tanks; flush/pour flush to pit latrine; ventilated improved latrines; pit latrine with slabs.



piped water on a monthly basis. Relying in relatively expensive bagged, bottled or ‘mai rua’ water to supplement piped supply is also common across the city, accounting for as much as one third of the cost of total water expenditure.

Sanitation services are still delivered in residential areas as on-plot solutions which shows little change from 1965. The type of solution has evolved to incorporate a greater number of pit latrines and septic tanks, as opposed to bucket latrines which not only required frequent manual emptying, but areas of land set aside for composting. Although, ‘night-soil’ collection services were largely absent by 2010, the city had not migrated onto piped sewerage systems, common the majority of settled areas across Nigeria, and as proposed in the 1967 Plan.

### Water

In 1965, the river Kaduna was considered to provide adequate water resources to meet current and projected levels of water demand although owing to inconsistent yields which accompanied variability in flow throughout the year, storage was considered key to guaranteeing access to these water resources (Max Lock and Partners, 1967). These estimates were made in the context of the continued growth of larger industrial users of water e.g. cotton mills, which by 2010 were long gone.

The piped distribution system of water extended to all of the central areas of the city and ran from Kakuri/Makera in the south to just short of the then village of Kawo in the north. However, piped mains water supplies direct to residential compounds was limited to the Government Reservation Areas and Sabon Gari. Tudun Wada, the residential area to the west of the central area of the city, had a basic grid of water stand pipes, though the remaining residential areas of the city existed without piped water amenities.

By 2010, throughout Kaduna about one third of households had access to piped water in their compounds. Just over two-fifths of these households had to share their piped water services with other households in the compound. However, the often poor quality of the piped water and its intermittent supply and low pressure has resulted in households (where affordable) augmenting their supply from alternative sources such as ‘Mai Ruwa’<sup>65</sup> and bottled and bagged supplies. Almost two-thirds of households (67.2%) relied on well water as a primary or secondary source of water. This low average of piped water in the compound for the city as a whole hides wide differences between the four LGAs. In Kaduna North LGA over two-fifths of the households (44.0%) had access to piped water in their compounds as against Igabi LGA where only a tenth of that number (4.8%) were so fortunate.

The total estimated populations of these two LGAs living within the Kaduna Urban Area (but excluding Army, Air Force, higher education and other such large institutional developments with independent provisions for

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<sup>65</sup> ‘Mai Ruwa’ is the Hausa term for those selling water usually from 10-12 plastic 50 litre containers on a pushcart. In Kaduna most of the water to fill the containers comes from a piped water source and sometimes from private boreholes. It is a highly organised trade, but there is little monitoring of water quality.

infrastructure such as water supply and sewage/drainage disposal and which were not included in the HIS), are almost the same (266,000 persons in Igabi and 278,000 in Kaduna North).

The difference is that Rigasa District in Igabi has an estimated population of 188,000 people where few have access to piped water in their compounds and Kaduna North, which has three of the oldest and best serviced Districts of Kaduna (Gabasawa, Kabala and Doka) with a combined population of around 84,000 – well less than half that of Rigasa, but with close to all households having piped water connections.

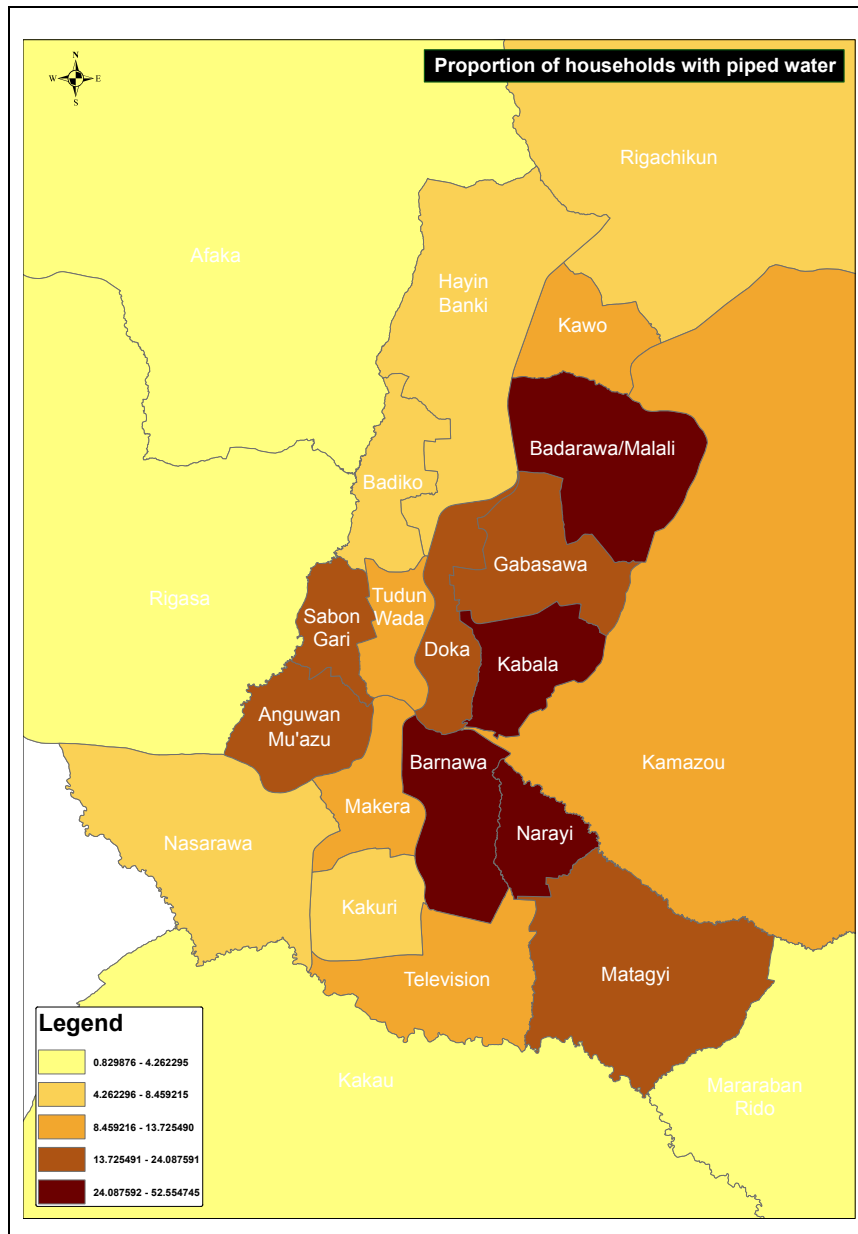


Fig. 11.5: Proportion of households with a piped water supply

The unequal distribution of piped water within the four LGAs is also naturally reflected in the extent of reliance on other sources of water than piped supply. Over three-quarters (75.7%) of Igabi households relied on

wells as a principal or back-up source for their water as against households in Kaduna North where less than half (49.2%) used wells. Conversely, in Kaduna North over a third (35.7%) of households bought water in bottles and bags or from Mai Ruwa. In Igabi well less than a sixth (14.6%) of households bought from these sources. Higher income levels of many residents in the old GRA and its extension layouts in Kaduna North would account for much of this discrepancy. The far lower income levels typically found in Igabi mean many households cannot afford the luxury of additional sources of water. Much Mai Ruwa supply derives from piped water sources and the dearth of these in Igabi would increase the difficulty of households to obtain this source of water. The high reliance on wells as a source of water in residential areas of medium to high density that also rely on pit latrines or septic tank soakaways with their potential high rate of direct pollution of well source water tables is a matter of serious public health concern. This is particularly the case when there is little regular testing and inspection of well water quality. The use of a public tap was significant with more than one in ten households (12.6% in Kaduna North, 12.8% in Kaduna South and 11.5% in Chikun) in three of the LGAs using this service. Due to the lack of an adequate distribution mains network only less than one in twenty (4.9%) had this service available in Igabi. The use of boreholes and hand pumps was small in all four LGAs with less than one in twenty households (3.1%) reporting their use. However, this does represent a significant number of people (estimated at around 40,000) having boreholes and/or hand pumps as a water source.

Access to water in Kaduna was on average better than the national average for urban areas in Nigeria, where only 16.9% of households received water piped into the dwelling as opposed to one third of households in Kaduna<sup>66</sup>. Just over half (51.2%) of households stated they paid for some or all of their water each month. These payments were for the following sources, whether it was their primary or backup source of supply; mains, Mai Ruwa, bagged and bottled water. Generally public tap, well and other natural sources are free of charge at source (other than the cost of providing the source in the first place). Piped water is not metered and a monthly flat rate for a compound is negotiated with the Water Board staff. The unit rates for Mai Ruwa, bagged and bottled water are generally standard throughout the urban area.

### Sanitation

In 1965, 42.5% of households, mainly in the central areas of Kaduna, relied on bucket latrines which were emptied manually on a regular basis in vast composting areas to the south-west of the city. A further 33.5% of households typically in the then peri-urban areas of Kaduna relied on on-plot sanitation in the form of pit latrines. The lower density Government Reservation Areas, housing around 9% of the population in 1965, relied on septic tanks where there was adequate room for soakaways. Only around 15% of the population, mainly though living on institutional accommodation

<sup>66</sup>(Nigerian National Bureau of Statistics, 2013)

such as military camps, training establishments and hospitals were connected to a piped, water-borne sewerage system.

It was largely assumed that as Kaduna grew there would be a need and desire to upgrade existing housing and connect new housing to a water-borne sewerage system – with a recognition that this would be contingent on adequate water resources and treatment facilities to ensure a sustainable sanitation system. The survey of 2010 provided a more in depth look at sanitary conditions than that undertaken in 1965. Although a direct comparison of conditions found in 1965 and 2010 may be problematic owing to very different micro and macro-economic factors, one observes very similar solutions to sanitation reflected in the residential areas of the city. In essence every household in Kaduna currently relies on on-plot sanitation systems either pit latrines or septic tanks. This is common across all of Nigeria – with the exception of limited urban areas of the southern region<sup>67</sup>.

In 2010, around one third (33.3%) of households had access to a WC and just over three-fifths reported the use of a pit latrine (62.0%) with the highest proportions in Kwarau (97.1%), Rigasa (85.6%), Kamazou (78.4%), Maraban Rido (77.1%) and Tudun Wada (76.1%). This represents over an estimated 145,000 households. Only one in twenty (5.2%) reported use of a ventilated or VIP latrine<sup>68</sup>. Only one third (32.9%) of Kaduna households had access to a WC. The highest proportions were in Barnawa (72.3%), Kabala (55.8%), Narayi (53.6%), Matagyi (52.4%) and Doka (52.2%). The lowest proportions were in Kakau (2.9%), Rigasa (11.1%), Kwarau (12.3%), Maraban Rido (16.0%) and Nasarawa (18.0%), all outlying areas with poor mains water supply (if any).

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<sup>67</sup> (Nigerian National Bureau of Statistics, 2013)

<sup>68</sup> Researchers at the time observed that there would appear to be a high state of unawareness of the advantages of this type of improved pit latrine and of its relatively cheap installation costs.

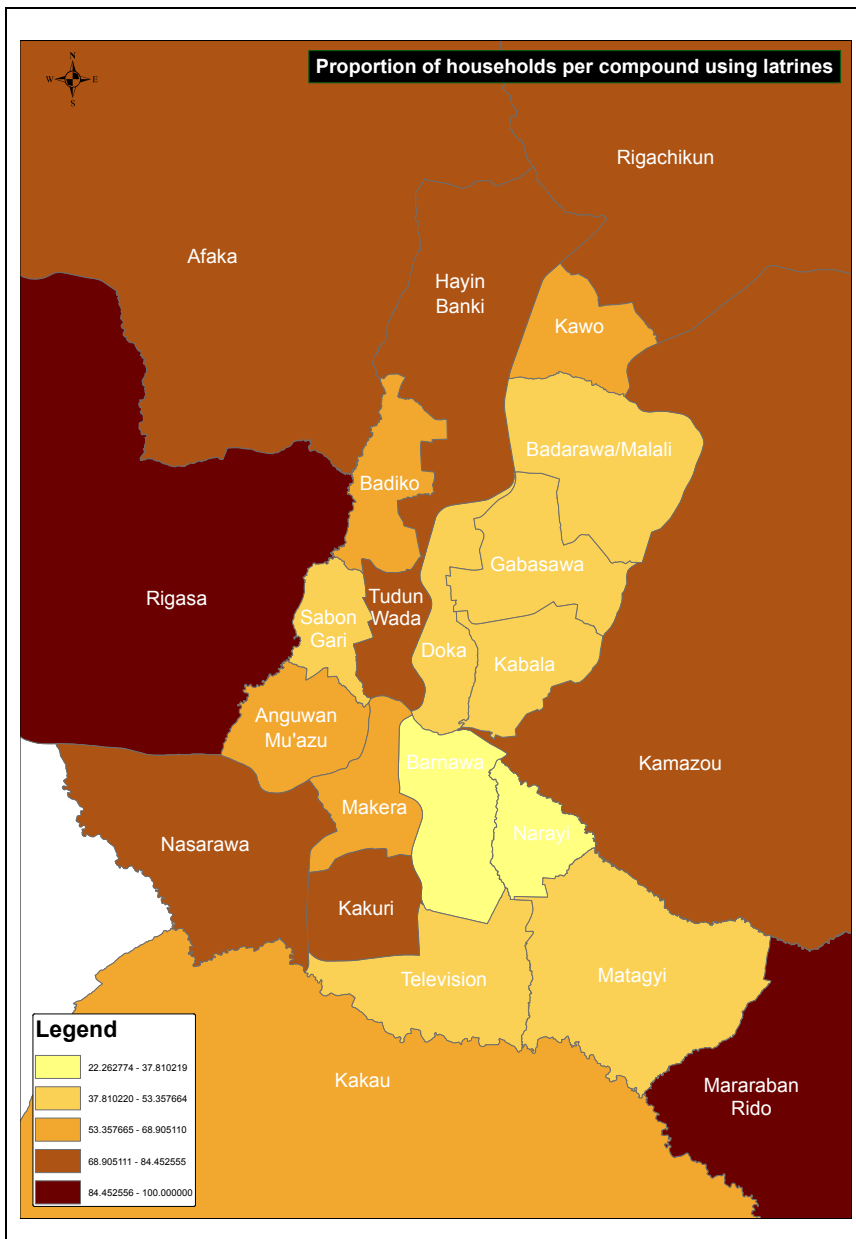


Figure 11.6: Proportion of households with pit latrines (2010)

Septic tanks pits are generally considered to function well as do pit latrines which are emptied every 2-4 years or replaced with new ones. As water is generally not drawn from aquifers, there is no danger of large-scale contamination of drinking water however, during the rainy season there are likely to be dangers of storm-water runoff becoming contaminated, particularly in those areas of high flood risk. There is also potential for pollution of wells with pathogens and chemicals migrating into water sources from latrines. This phenomenon is more likely to occur in areas where there is a high concentration of septic tanks and pit latrines, coupled with high well-water consumption, and/or grey water being discharged directly into the public domain (Max Lock Consultancy Nigeria et al., 2015).

About two-thirds of the WC facilities were located within the household quarters, and the majority of toilet facilities (77.9%), whatever the type, were located on the compound but outside the living quarters of the

household, and one in six of these (15.4%) were uncovered. Regardless of the type of toilet, less than two in five (39.1%) households had the exclusive use of a toilet. Three in five households (60.1%) had to share the toilet facilities on their compound. This overall lack of reasonable toilet facilities was not evenly distributed throughout the four LGAs. As would be expected the presence of WC toilets was much higher in Kaduna North, Kaduna South and Chikun LGAs (all around just less than 40%) than in Igabi where only just over one in ten households (12.8%) had WCs.

The WHO/UNICEF Joint Monitoring Programme (JMP) provides a ‘sanitation ladder’ against which characteristics of household sanitation services can be characterised. Mapping the JMP definitions to the Kaduna household interview survey data we find a story consistent with national averages in the delivery of sanitation services<sup>69</sup>. On average 38% of households across Kaduna received ‘improved’ sanitation services as against 33% of urban households nationwide. This is against overall national trends of worsening service provision for urban sanitation services between 1990 and 2015 - 38% improved down to 33% (JMP, 2015).

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<sup>69</sup> Definitions used across the two surveys are broadly comparable, however it is acknowledged that some categories e.g. open defecation were not used in the Kaduna household interview survey. For the purpose of this comparison just the ‘improved’ JMP sanitation category was used e.g. exclusive (own) use of either a flush toilet; piped sewer system; septic tank; flush/pour flush to pit latrine; Ventilated improved pit latrine (VIP); pit latrine with slab; or composting toilet.





certain forms of housing in 1965 has carried forward to 2010 in terms of plot size, layout, and basic form.

The methodological basis and detailed description of the five typologies has been given in Chapter 10 employing the following settlement typology:

#### **Settlement type 1**

Type 1 is characterized by small uniform plots sizes with regular gridiron pattern street layouts. The plots are small, in the range of (up to 15m x 20m). Courtyards and multi family units characterize the built form. This type is mainly found in the high-density range, in more consolidated areas of the city.

#### **Settlement type 2**

Type 2 is an example of an informally laid out development that can be observed in different parts of the city. There are no common plot size and shape for this settlement type. If any plots at all are evident at all, they are generally small. The street pattern is irregular and organic. The density of this type varies, although is the most dense settlement type within the city as a whole when the development reaches its full potential.

#### **Settlement type 3**

Settlement type 3 is the most common land development classification of Kaduna and covered more than 50 sq. km of land of in the city in 2008-10. The plots are generally rectangular (15-20m x 25-35m), broadly adapted from the 50' x 100' standard plots characteristic of British colonial development.

#### **Settlement type 4**

Large plots, either rectangular or square in shape, generally 100' x 100' (30m x 30m) but sometimes larger or smaller, characterize settlement type 4. This is typically found in the GRA (originally Government Reserve) areas. This typology presents as relatively low density higher and upper middle class development north of the river. There are no common street patterns as they varied from regular gridiron pattern to cul de sacs depending on the nature of the development. The plot shapes can vary but include the largest individual residential plots found in the city. It is understood that higher income groups are concentrated in these areas.

#### **Settlement type 5**

Typology 5 is a residual category including a variety of planned site based housing layouts including institutional housing and developers' schemes with multi family units.

An analysis of various characteristics of these housing types along the same lines as the comparison of housing characteristics between 1965 and 2010 seeks to reinforce the physical criteria used to identify each of the typologies from the satellite imagery.

#### **Housing conditions by typology**

As typologies were defined according to their physical (plan) form it is unsurprising to see distinct differences in measures of this physical form. Typologies 1-3 are exhibit plot densities two to four times higher than typologies four and five and on average building cover a greater proportion

of the land on these plots with typology 2 having an average site coverage ratio of 44% compared to those found in the other four typologies which range from 12–27.6% site coverage.

| Typology            | Count of households | average residential density of street blocks* | median site coverage ratio (%) | median building area |
|---------------------|---------------------|---|--------------------------------|----------------------|
| 1                   | 924                 | 0.0020  | 19.1                           | 135.0                |
| 2                   | 1352                | 0.0018  | 44.0                           | 80.0                 |
| 3                   | 8122                | 0.0012  | 27.6                           | 143.9                |
| 4                   | 243                 | 0.0005  | 18.2                           | 135.6                |
| 5                   | 183                 | 0.0005  | 12.0                           | 145.4                |
| <b>Overall</b>      | <b>10824</b>        | <b>0.0009</b>                                 | <b>18.6</b>                    | <b>131.3</b>         |
| <i>Unclassified</i> | <i>585</i>          |   |                                |                      |

Table 11.9: Physical characteristics of the five residential typologies identified in Kaduna, 2010 (\* density = number of residential compounds divided by the area of the street block)

In addition, the size of the buildings on these plots varies a great deal between typology 2 at an average of 80 square metres and the other four typologies where the average building is at least 135 square metres.

| Typology            | count        | Mean number of households per compound | Mean household size | Mean person per room |
|---------------------|--------------|--|---------------------|----------------------|
| 1                   | 924          | 2.2                                    | 4.8                 | 2.1                  |
| 2                   | 1352         | 2.0                                    | 4.9                 | 2.1                  |
| 3                   | 8122         | 2.1                                    | 4.7                 | 2.0                  |
| 4                   | 243          | 1.4                                    | 4.1                 | 1.3                  |
| 5                   | 183          | 1.3                                    | 4.3                 | 1.4                  |
| <b>Overall</b>      | <b>10824</b> | <b>1.8</b>                             | <b>4.7</b>          | <b>1.9</b>           |
| <i>unclassified</i> | <i>585</i>   |  |                     |                      |

Table 11.10: Average number of household per compound per residential typologies

In terms of occupation, some profound differences occur between the five typologies. The lower density typologies 4 and 5 exhibit lower occupancy rates both in terms of the average number of households per compound (1.4 and 1.3 respectively) and in terms of the number of persons sharing habitable rooms (1.3 and 1.4 respectively) than those found in typologies 1, 2, and 3 which have on average at least 2 households per compound and at least 2 persons per room. Significant differences are found in the average size of each household observed between these two groups with typologies 1-3 having at least 4.7 persons per household on average compared with 4.1 persons in typology four and 4.3 persons in typology five. These differences may reflect variations in socio-economic conditions between households

living in different housing types where it could be assumed that larger, lower density houses found in typologies 4 and 5 are occupied by wealthier families with a greater number of rooms and smaller family sizes.

### Tenure

When analysing the tenure of households living in different housing types we find the highest number of households renting in typologies 1 (52.1%) and 3 (53.8%) this against a Kaduna wide average of 42%. More households in typologies 4 and 5 own their own houses with only 36.2 and 35.5% of households renting respectively. Where households do rent, average rental values range from 1250 naira per month in typology 2 up to 10,000 naira per month. These rental values are likely to reflect the size and standard of accommodation with smaller houses found in typologies 1, 2 and 3 attracting lower monthly rental costs (under 2000 naira per month) than the larger houses found in typologies 4 and 5. Average rental values in Kaduna fall far below those observed across the north west region in the 2012 where through the Living Standards Measurement Survey an average of 3700 naira per month was observed<sup>70</sup>.

| Typology            | count        | Average % of mixed use* | Tenure (rental) (%) | Median rental cost (naira/month) |
|---------------------|--------------|-------------------------|---------------------|----------------------------------|
| 1                   | 924          | 57.3                    | 52.1                | 1830                             |
| 2                   | 1352         | 53.1                    | 43.7                | 1250                             |
| 3                   | 8122         | 48.8                    | 53.8                | 1600                             |
| 4                   | 243          | 47.9                    | 36.2                | 10000                            |
| 5                   | 183          | 54.2                    | 35.5                | 4583                             |
| <b>Overall</b>      | <b>10824</b> | <b>52.2</b>             | <b>42.0</b>         | <b>1600</b>                      |
| <i>unclassified</i> | <i>585</i>   |                         |                     |                                  |

Table 11.12: Tenure of the five residential typologies identified in Kaduna, 2010 (\*the proportion of purely residential plots to commercial)

As discussed above the increasing commercialisation of Kaduna's residential districts since 1965 has resulted in a situation where virtually all of Kaduna's residential areas are to a large extent 'mixed-use'. On average across Kaduna 41.7% of the residential areas are mixed e.g. where there are a proportion of commercial plots interspersed between residential plots or more commonly where changes of use from residential to commercial uses has occurred. This tends to be greater in typology areas 1, 2 and 5 where the degree of mixing exceeds the city-wide average.

### Basic service provision

As could be expected where the physical characteristics of the built form varies across the five typologies so does the presence of basic services. Typically house types found in typologies 1, 2, and 3 have lower levels of water and sanitation service provision e.g. lower than the averages for the

<sup>70</sup> The LSMS survey was carried out two full years after the Kaduna Household survey where inflation may account for some of the uplift in rental values. Equally, misreporting over expenditure data is common in household surveys.

city as a whole. These higher density typologies which in general tend to be less well planned, lacking access and therefore basic service infrastructure, have noticeably lower levels of basic service provision. Less than 15% of households in typologies have access to their own mains water supply. The city average is 30% of households, however the majority of households living in typologies 4 and 5 have their own water supply (52.3 and 63.4% respectively). The reverse is true for *shared* water provision where a greater proportion of households in typology 1 and 3 have access to shared water provision than the average of households city-wide.

In common with water provision, access to improved sanitation provision is unequally distributed. Households in typologies 4 and 5 are overwhelmingly more likely to have their own WC - more than three quarters of households in typologies 4 and 5 (82.7 and 77.6% respectively) as compared with less than a quarter of households in typologies 1, 2 and 3.

### Key findings

Measured across a broad range of indicators, housing conditions are typically better if you happen to live in a house of typology 4 or 5. This is no real surprise. At a glance when studying satellite imagery of Kaduna one sees larger plots, wider streets and paved access, more green space and on the whole more generous, well-designed spaces. This resounds in the levels of basic service provision enjoyed by residents who live in a house within these typology areas. In contrast, smaller more densely packed housing found in typology areas 1, 2, or 3 are more likely to experience lower space standards, lower levels of basic service provision, and rent their property as opposed to own.

How is this information useful to policy makers, urban or economic planners wishing to plan for future growth of Kaduna. Firstly, the variation in the physical characteristics of housing in Kaduna paints a picture of unequal access to decent living accommodation. The majority of Kaduna's housing falls with typology 3. This form of housing is clearly the most accessible to those moving to or within Kaduna but has all the signs of serious market failure where basic infrastructure is an afterthought. For those wealthy enough to occupy a larger house in one of the lower density areas of the city, improved service provision is more than likely enjoyed as are larger more spacious plots and a greater number of rooms per capita. Typically, these areas of the city were well planned and well laid out, with a consideration given to basic infrastructure requirements long before construction began. On a plot by plot basis, overlooking these basic requirements may appear inconsequential, but in aggregate the effects of underproviding decent living accommodation can be severe impacting levels of health and well-being and generating externalities that such as flooding, traffic congestion, the spread of disease, and civil unrest. The data makes the case for proper urban planning and investment in basic infrastructure to support growth. A morphological assessment such as this provides a baseline of evidence against which to design urban development and housing policies which address these inequalities.

Secondly, this approach to studying an urban agglomeration can provide rapid feedback as to the likely spatial focus of inequalities. When prioritising the upgrading of infrastructure or planning for future expansion, policy

makers and urban managers need to know where to get the most bang for their buck. Using remote sensing techniques to spatially analyse settlement patterns provides a timely entry point for urban policy interventions.

Thirdly, lessons learned though this preliminary study of Kaduna can be used to refine basic typologies to be used to inform growth planning elsewhere in Nigeria where culture and socio-economic contexts are similar (see Table 8).

| Typology            | Count        | Own mains water provision*(%) | Shared mains water provision**(%) | % of hh with own WC | Shared sanitary facilities*** (%) |
|---------------------|--------------|-------------------------------|-----------------------------------|---------------------|-----------------------------------|
| 1                   | 924          | 13.2                          | 29.2                              | 16.7                | 70.1                              |
| 2                   | 1352         | 12.5                          | 18.3                              | 14.1                | 65.3                              |
| 3                   | 8122         | 12.2                          | 22.7                              | 23.8                | 61.1                              |
| 4                   | 243          | 52.3                          | 13.6                              | 82.7                | 9.9                               |
| 5                   | 183          | 63.4                          | 11.5                              | 77.6                | 15.8                              |
| <b>Overall</b>      | <b>10824</b> | <b>30.7</b>                   | <b>19.1</b>                       | <b>43.0</b>         | <b>44.5</b>                       |
| <i>unclassified</i> | 585          |                               |                                   |                     |                                   |

Table 11.13: Service provision within the five residential typologies identified in Kaduna, 2010.

(\* improved i.e. mains water piped to house \*\* improved i.e. mains water piped to compound and shared with others n.b. needs to be read in conjunction with the indicator above (own mains water) \*\*\*WHO/UNICEF (JMP) – unimproved sanitation = where sanitation facilities are shared between two or more households even if they are of an improved kind e.g. WC or ventilated improved pit latrine)

### Conclusions

This chapter has outlined an approach to understanding changes in wealth and poverty in Kaduna from the point of view of two perspectives relating to housing.

The first is a preliminary understanding of the workings of the formal and informal housing and land markets in the city, and in the larger national context, identifying the need for more data at the city level and more research of the basis of datasets like those collected in Kaduna in 1965-67 and 2009-10 employing innovative methods of analysis. This needs to be done in the context of a housing market where 80% of housing is supplied informally, on a ‘self-develop’ basis. While there is some evidence of a gradual formalisation in housing delivery, at least in cities better off than Kaduna, but probably in due course in Kaduna itself, the reality of the informal housing market as the main source of supply has to be addressed. Without some attempt to manage the chaotic land administration on the urban periphery, new ‘slums’, deficient in urban infrastructure and services, are emerging on a daily basis and adding to legacy of those in the more central city areas.

The second perspective, therefore, is an attempt to characterise what the level of this deficiency is, focusing on the actual housing conditions in the



city, how these have changed over time and how these vary geographically in the much larger area and population of the city as it was in 2010. The headline findings from this study are:

- i. household composition and living arrangements particularly in the central areas of Kaduna have evolved with just over half of all households in Kaunda occupy a compound without sharing with another household - up from less than a fifth of households in 1965.
- ii. Single occupancy compounds tend to belong to households with a larger number of people, though these households have access to a greater quantum of living accommodation
- iii. actual numbers of households sharing a compound with another household have increased up to eight times suggesting increased levels of overcrowding/decreased levels of personal and amenity space
- iv. Chronic overcrowding (e.g. where more than 3 persons are sharing a room) has fallen substantially by around a half. Despite the trend towards households occupying houses with a greater number of rooms, actual numbers of households living in 'overcrowded' conditions has increased.
- v. household access to water across Kaduna appears to have improved between 1965 and 2010 with better spatial distribution and a greater proportion of households having access to a piped water supply, though access is by no means equitable with around half of all households in Kaduna north LGA experiencing better access than households in Igabi LGA to the west of the city.
- vi. sanitation services are still delivered in residential areas as on-plot solutions which shows little change from 1965 though a greater number of pit latrines and septic tanks what the WHO/UNICEF Joint Monitoring Programme might describe as 'improved' are present, as opposed to bucket latrines which not only required frequent manual emptying, but areas of land set aside for composting.

Target 7D of the 2000 Millennium Development Goals, unlike the other MDGs, has 2020 as its end date and is therefore still operational. The stated aim of the target is to achieve, by 2020, a significant improvement in the lives of at least 100 million slum dwellers<sup>71</sup>. For the purpose of measuring progress towards achieving MDG Goal, UN-HABITAT defines 'slums' by reference to slum households. A slum household is defined as 'a group of individuals living under the same roof' lacking one or more of the following shelter/housing deficiencies:

1. Access to improved water
2. Access to improved sanitation
3. Sufficient-living area

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<sup>71</sup> Between 2000 and 2014, more than 320 million people living in slums gained access to improved water sources, improved sanitation facilities, or durable or less crowded housing, thereby exceeding the MDG target. More than 880 million people are estimated to be living in slums today, compared to 792 million in 2000 and 689 million in 1990.

4. Durability of housing
5. Security of tenure

**Box 11.1: UN-Habitat Definition of Slums**

**1. Access to improved water:**

Improved drinking water sources include: piped water into dwelling, plot or yard; public tap/standpipe; tube well/borehole; protected dug well; protected spring; and rainwater collection.

Unimproved drinking water sources include: unprotected dug well; unprotected spring; cart with small tank/drum; bottled water; tanker- truck; and surface water (river, dam, lake, pond, stream, canal, irrigation channels).

**2. Access to improved sanitation:**

Improved sanitation facilities include: flush or pour-flush to piped sewer system, septic tank or pit latrine; ventilated improved pit latrine; pit latrine with slab; and composting toilet.

Unimproved sanitation facilities include: flush or pour-flush to elsewhere; pit latrine without slab or open pit; bucket; hanging toilet or hanging latrine; no facilities or bush or field.

**3. Sufficient-living area:**

A house is considered to provide a sufficient living area for the household members if not more than three people share the same habitable (minimum of four square meters) room.

**4. Durability of housing:**

A house is considered 'durable' if it is built on a non-hazardous location and has a structure permanent and adequate enough to protect its inhabitants from the extremes of climatic conditions, such as rain, heat, cold and humidity.

**5. Security of tenure:**

Since information on secure tenure is not available for most countries, only the first four indicators are used to define slum household (and then to estimate the proportion of urban population living in slums).

Using the indicators for slum households depends on measuring data that is not currently available - for example security of tenure. However, one indicator, access to improved sanitation, is usually critical. In Kaduna as a whole, access to improved sanitation (non-shared WCs and VIP/VP pit latrine) is 25% of households (slightly less for population). That makes the city population at least 75% slum dwellers by UN-Habitat measure, certainly much higher than the country as a whole, where the figure is about 60%. Access to improved sanitation varies hugely across the city. It is 80-90% in the upper income areas as identified in the typology study.

By contrast the analysis for type 2 (type 2: irregular layout, 'urban village').which accounts for about 16% of the population of Greater Kaduna and 84% of households fall into the definition of slums by the sanitation measure of its own (probably more when you take in overcrowding – more than 3 people per room, lack of secure tenure, and access to improved water (assuming most of the houses are as soundly built as the rest of Kaduna).

In Kaduna State as a whole, only 20% of households have land title. In the Kaduna Urban Area the proportion is likely to be much higher. Although we

have no actual data as yet to go on, a little over 50% of the total areas of the city is covered by formal planning documentation (Town Plan Orders and Land Plans) or are part of the original planned township Area of the city). Excluding military areas the total is just about 50%. Buy no means will pall households in these areas have CofOs, while other households in the 'informal areas' may have obtained such title, bit indicatively probably no more than 40% of households in the city have such a title.

# 12. TRANSPORT AND CONNECTIVITY

## Introduction

Fast growing towns and cities in Africa are expected to contribute 30% of the billion or more people to be added to the world's population by 2050. However, most of the African cities, Kaduna amongst them, are not yet prepared to cater for this fast increasing number of people and increasingly mobile urban population. Strategic planning and more investment in transport-related infrastructure and services are needed to avoid movement in these urban areas coming to a halt and undermining the socio-economic benefits that urbanisation is meant to bring.

While Kaduna's transport system is clearly not fulfilling its purpose of promoting intra-city linkages and people's interaction, continuing rapid growth is intensifying this problem. The Max Lock Traffic in Kaduna 2010 report notes that despite the rapid growth in size and population and increase in the number of vehicles and people circulating on Kaduna's streets since the 1967 Master Plan was conceived, there has been insufficient effort in adapt the transport system to the growth of the city as a whole.

There are many factors behind this, institutional and management-related as well serious policy failures, including the failure to implement the transport recommendations set out in the 1967 Master Plan noted elsewhere in this report, and the early recommendations of the Draft 2010 Master Plan Review regarding the routing of the new railway. In this chapter, however, we focus in particular on the structural analysis of Kaduna's road transportation network and address the question, to what extent is the lack of transport connectivity holding back Kaduna's development?

The 1967 report was mainly focused on planning for traffic organisation and the only reference to public transport related to the existing railway line and its proposed re-routing. The city's subsequent growth has conned apace without really much further attention to public transport policy. Public transport provision has remained primarily delivered through para-transit – informal public transport provision through motorcycle taxis ('okada' – now banned in Greater Kaduna for security reasons), minibuses, three wheelers and 4-wheel taxis. A daily commuter service though the city using the existing narrow gauge railway has been provided intermittently and occasional weekly services between Kano and Lagos stopping at Kaduna Junction station have recently re-started after years of neglect. Ongoing rehabilitation and revitalisation of the existing network and the new Abuja-Kaduna link due to come online should re-establish Kaduna's railway links with other cities in Nigeria.

There are also business flights to Lagos from Kaduna's small airport but most inter-city travel is depended on private vehicles or minibus and occasional full size coach services. Plans are in hand, with DFID support through the

Nigeria Infrastructure Advisory Facility, to introduce a formal bus mass or bus rapid transit system in the city while the new administration is also investigating a tram service for the city.

The need for a modern public transit system has now become urgent, if only because the centre of the city is clogged up with minibuses using a lane either offside of Amahdu Bello Way for pick up and drop off of passengers. However, introducing formal public transport systems requires a number of institutional and policy strengthening measure and negotiations with a range of stakeholders including existing public transport owners, drivers and other personnel.

Among other constraints observed on Kaduna's transport system described in Max Lock Report (2010), the lack of connectivity and continuity of its routes due to informal developments taking place in the outskirts of the city, especially along the east/west direction is disjointing movements around the city. The lack of connectivity of transport network tends to lengthen travel distances and lead to detachment of certain part of the city from its core.

This chapter provides a theoretical perspective on the relationship between the growth of a city and its transport system and a descriptive analysis of Kaduna's transport network, with a brief discussion on the socio-economic impacts caused by the lack of connectivity and continuity of routes.

#### **Theoretical benefits of hierarchical structures in networked infrastructure**

A well-connected, integrated city offers access to a wide range of employment opportunities and residential locations and to specialised services such as a local hospital or university. The more connected the city is, the more people that are within the reach of such services and the more these can become more cost effective and improve their specialist offer. Likewise, whole urban districts can specialise to offer particular functions to the wider population – clusters of specialised goods and service providers, financial, entertainment-related, retail etc. Within these districts specific subcultures and local networks develop, widening the range as well as density of potential socioeconomic encounters. The resulting polycentric city increases the urban benefits of all its citizens, providing all this variety is accessible to all requiring efficient infrastructure networks (Lloyd-Jones et al., 2001).

While there are many urban infrastructures: power, water, communication, fundamental to urban livelihoods, the role of the movement infrastructure (in close association of telecommunications networks) is especially important in facilitating human social and economic interaction. All such physical networked systems develop a hierarchical structure characterised by a dense local distribution network, a series of distributors at district level, and a system of high-speed primary connectors such as water mains, high bandwidth communications, or trunk roads. The overall capacity of the system is influenced by the density of components at the small scale, the size and speed of its primary elements, as well as the interconnectivity of the various components as a hierarchical system. So for example in Tokyo every district has a labyrinth of pedestrian streets but also access to high speed urban trains with an efficient transport system that enables a huge

conurbation of 35 million people and supports not one but multiple ‘downtown’ areas each with a different character.

While the capacity of high-voltage electrical grid and low voltage distribution of power may be difficult to manage it is relatively easy to understand, measure and predict, and related demands are relatively simple to analyse at points of consumption. However, understanding the capacity of the urban movement network to enable neighbourhood interaction on the one hand but high-speed movement across the system on the other is more challenging. Further, the benefit of cities is not simply due to the volume but the range and diversity of social or economic interactions that take place a range of scales and times.

As cities grow, facilitating the transition of a largely distributive network to a more hierarchal one is a challenge for urban management. Using existing resources more efficiently is an obvious first step, for example facilitating buses to replace private transport. Upgrading infrastructure is key but capital intensive; for instance building trunk sewers and highways. However, effective urban governance and management is as important; for example the ability to designate distributor roads and enforce parking restrictions so that traffic can move more freely, while prohibiting through traffic in certain neighbourhoods to enable and encourage local social interactions.

#### **Managing traffic flow in the case of Kaduna**

Attempts by the State Government to improve Kaduna’s traffic flow through the street network have largely been confined to manual control of traffic at important junctions (effective but constrained by human resources; there are some signal controlled junctions in the downtown area but unreliable), and road widening/’dualling’ where space allows, usually to poor design specifications. In addition there has been a relatively ad hoc process of street paving (See Figure 12.1). Currently about 30% of Kaduna overall street and road network of nearly 4,000 km is paved. However, this is particularly concentrated in the GRA and central areas of the city, as well as the northern part of Kaduna South closest to the Stadium Bridge, and in military establishments and other public institutions. Other areas of the city are very thinly served by such infrastructure. Most of the western extension of Rigasa, for example, which houses around 200,000 people is mainly served by a single paved road acting as the central spine.



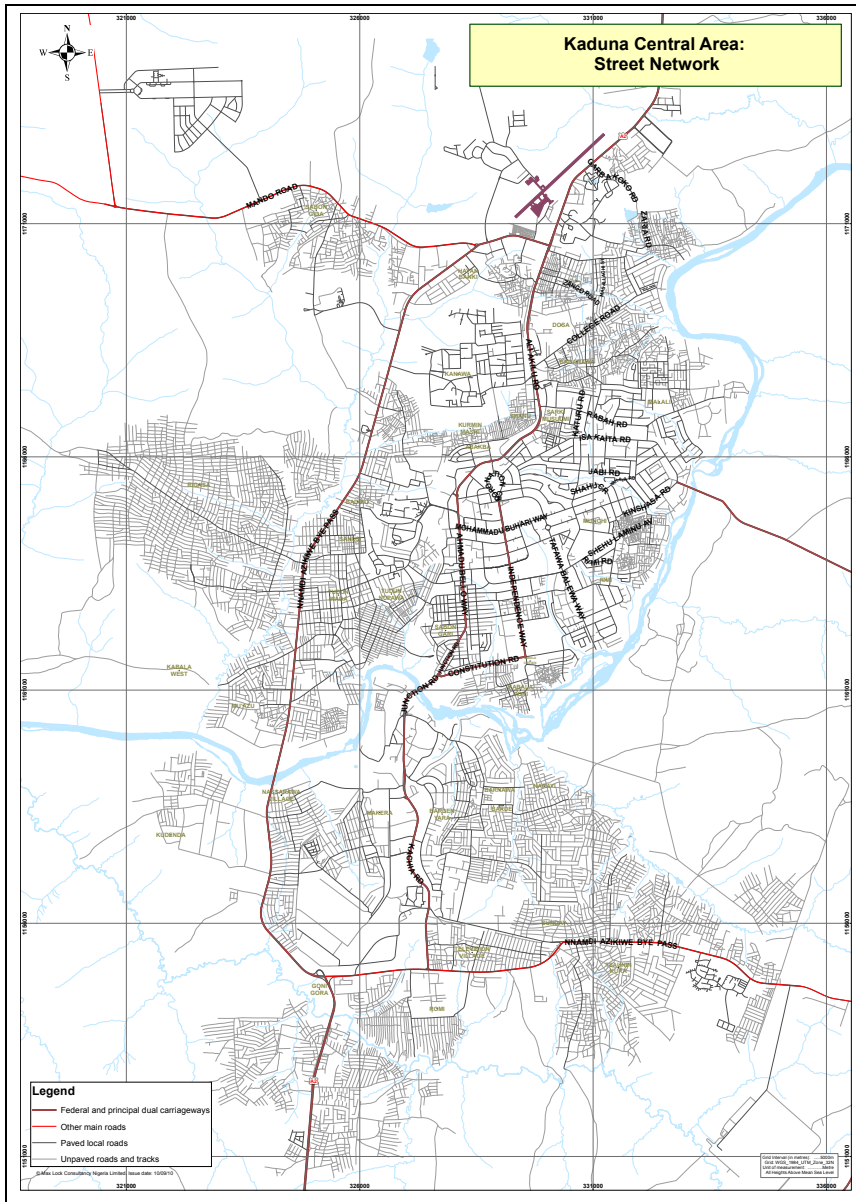


Figure 12.1: Kaduna’s street hierarchy and paved/unpaved road network (Source: Max Lock Consultancy Nigeria et al., 2015)

Some areas of Rigasa and its .... Suburbs lie beyond the 500m limit stated as the social target for urban infrastructure in the World Bank’s assessment of infrastructure report(XXX)

Both the Max Lock and Partners Plan of 1967 and the MLCN and Consortium Master Plan of 2015 proposed imposing a formal street hierarchy on the existing network, and giving rights of way to some streets acting as higher level distributors, with design improvements to related intersections (see Figure 5.7, chapter5, and Figure 12.2). Figure 12.2 shows the structural concept for the road network as proposed in 2010 which addressed the issue of poor permeability and east-west linkages across the city and out into the planned expansion areas around the city. There have been some new road improvements in the central area, on going road widening of the Zaria Road leading north out of the city (C1 in the map) and a new bridge – the Gobarau Bridge built where the route E4 meets the river. Southeast of

the bridge, the proposed alignment in the Master Plan was not followed and instead a new dual carriageway follows the route of the E5 in the map. However, although the connections north of the bridge are not as direct as they might be (limited to indirect and fairly narrow suburban roads through an upper class residential area) this does provide an alternative route from the south east of the city to the city centre. It provides some relief to the main route to the city centre via the Stadium Bridge (route C1).

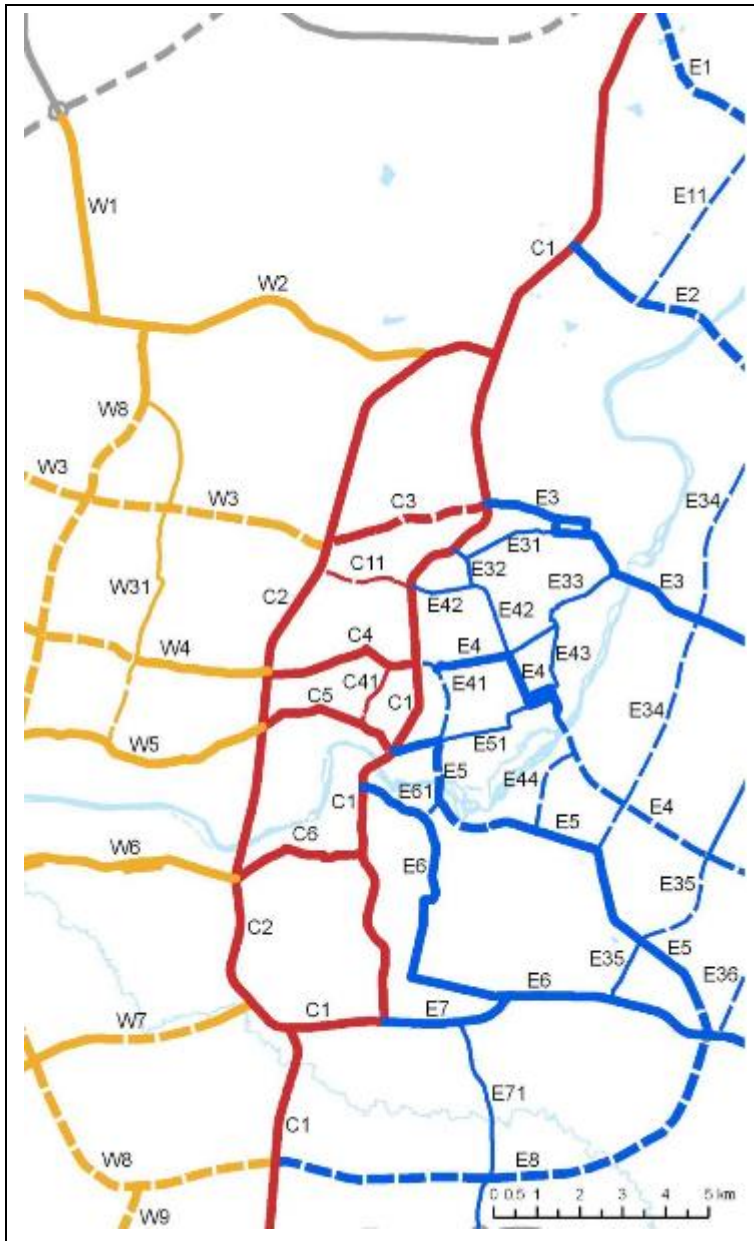


Figure 12.2: Structural concept for the new primary road network in the existing Kaduna built-up area (Source: Max Lock Consultancy Nigeria et al., 2015)

In both 1967 and 2010, the idea is to impose some kind of conventional street grid on the existing, somewhat chaotic network, but subsequent policy decisions about improving the network have been taken on a fairly ad hoc, project-by-project rather than strategic basis. Other traffic management recommendations of the Master Plan Revised 2010 (2015)

and Traffic in Kaduna report (2010) that forms an annex to it are detailed in Appendix 12a.

### **Connectivity, scale and urban benefit**

The ability or inability to adapt the infrastructure into an increasingly deep hierarchy will limit the degree to which urban benefit can increase and in all cases will reach a limit due to transmission or transfer losses (Bettencourt, 2013b). This is when the costs of using the system outweigh the benefits, for example when the time taken to travel across the city outweighs the advantages of offered by arriving at the destination.

Where the network becomes overloaded congestion causes queuing or other forms of failure, especially common in developing regions, due to poor traffic management, resulting in massive delays, increased fuel wastage and monetary losses or even 'congestive collapse' such as gridlock (Jain et al., 2012). When the network fails the city starts to function as a collection of poorly connected districts rather than an integrated whole and results in a subsequent loss of urban benefit. The city becomes a collection of villages. The volume remains high but the benefit of a metropolitan setting is lost. The key issue is not about how much infrastructure there is but about how efficient it is in enabling individuals to interact both at local and urban scale.

Quantifying this phenomenon, which is a qualitative as well as qualitative feature of a movement network, is problematic. One attempt is described by Luis Bettencourt (2013), who argues that cities are multiple interconnected networks that become ever more complex with increased scale, resulting in highly complex dynamic systems that are too complex to understand completely. He suggests that while attempts to determine interdependent causal relationships within these systems are not yet possible there are now sufficient data, from numerous empirical studies of urban properties, to enable a study of statistical relationships and trends rather than causality (Bettencourt, 2013b). Bettencourt shows most cities evolve according to a small set of principles and investigates the mathematics of scaling in urban properties.

Urban properties  $Y$  are a function of city size most normally measured in population  $P$ . As Bettencourt argues, 'Urban properties  $Y$  vary continuously with population size and are well described mathematically on average by power-law scaling' (Ibid, p1438). Bettencourt compares a large number of data sets from various cities as a basis on which to make the following observations:

- Generally, most urban indices increase exponentially with population in the form of  $Y=Y_0 N^P$  where for property  $Y$ , where  $N$  is the size of the population and  $O$  and  $P$  are constant but particular to that location/property.
- When various indices are compared, across many cities, such as urban infrastructure (for example road length, length of cables, etc. per capita) with social qualities (income, intellectual capacity, etc. per capita) are plotted against population size certain clear trends emerge.

- While instances vary, the trend for social and economic indicators is for P to be above 1. This means the larger the city the more social value it generates [given that social value is not defined precisely but identified as a trend across different indicators]. As cities grow, they become denser and more connected so the number of potential social encounters for any individual expands with a corresponding increase in socio-economic potential.

For urban infrastructure the trend is for P to be below 1. As cities expand the amount of infrastructure per capita decreases as economies of scale become apparent. Cities tend to become more densely populated *and* more efficient.

The implications of this are described in Figure 12.1. As the urban population grows over time the amount of socio-economic benefit grows too but at a faster rate, while the amount of infrastructure needed also grows but at a slower rate than the population as the city becomes increasingly efficient. Total urban benefit will be a product of these properties and is represented as the shaded area on the graph.

Taking a point in the city's growth; T1 population P1 produces a total urban benefit 1 later at T2 the population has grown P2 but the total urban benefit is considerably higher, much higher than that the sum of 2 cities of population P1.

### Infrastructure “drag”

Bettencourt's approach explains why cities continue to grow and why larger cities, all other things being equal, become more efficient than smaller ones. This assumes the city can manage to upgrade its infrastructure into a more complex hierarchy (Figure 12.3). Where cities are less efficient at this, such as in developing world economies, the efficiency of infrastructure is less and urban benefit reduced. This is shown in the broken line on the graph. This suggests that it takes longer T' and a larger population to generate the same socio-economic benefit and that this delay, shows as “drag”, in the graph will increase over time.

At some point the city is no longer able to upgrade its infrastructures and the total urban benefit will start to reduce, the upper and lower curve will converge toward the population as infrastructures become less efficient and social-economic output is fragmented. The city will only produce urban benefit in line with population growth. However the amount of urban benefit per capita will start to reduce. Figure 12.4 illustrates this. As the city passes population P2 the scaling benefits of growth reduce toward and indices of around 1.

For any particular urban condition there is a theoretical maximum population where urban benefit per capita is maximised. Beyond this point the population continues to grow but the city is developing more as a collection of localities rather than as a city as a whole. It is likely that Kaduna has been growing in this manner. Moreover (not shown in these graphs) while some benefits may accrue as a result of increasing size, the infrastructure deficit or drag can accumulate to such a degree over time that the resulting inefficiencies will overtake any benefits that are accruing.

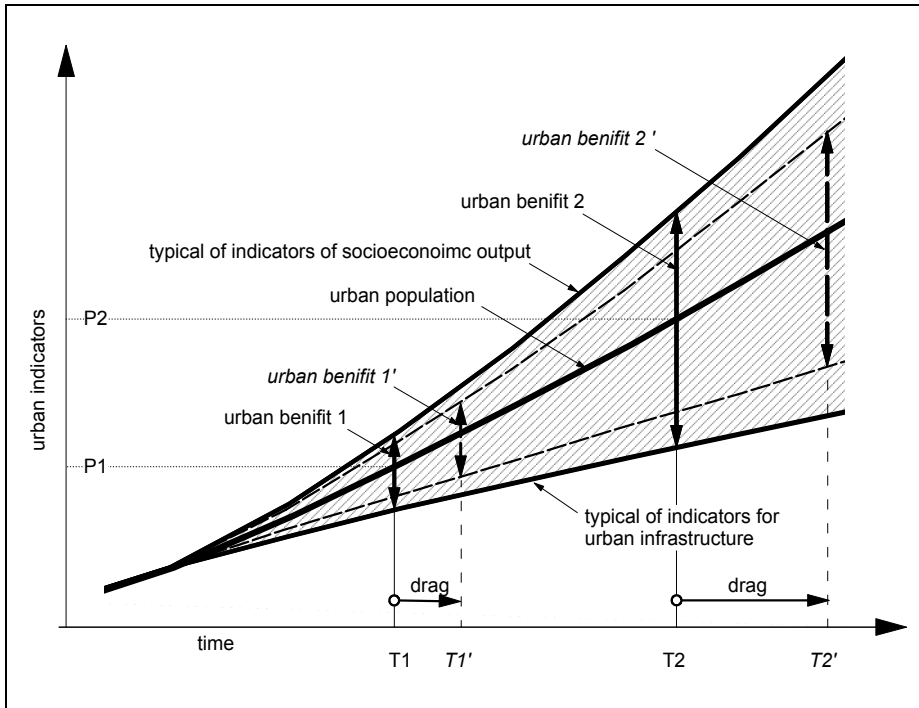


Figure 12.3: Urban benefit and efficiency increase exponentially as population grows

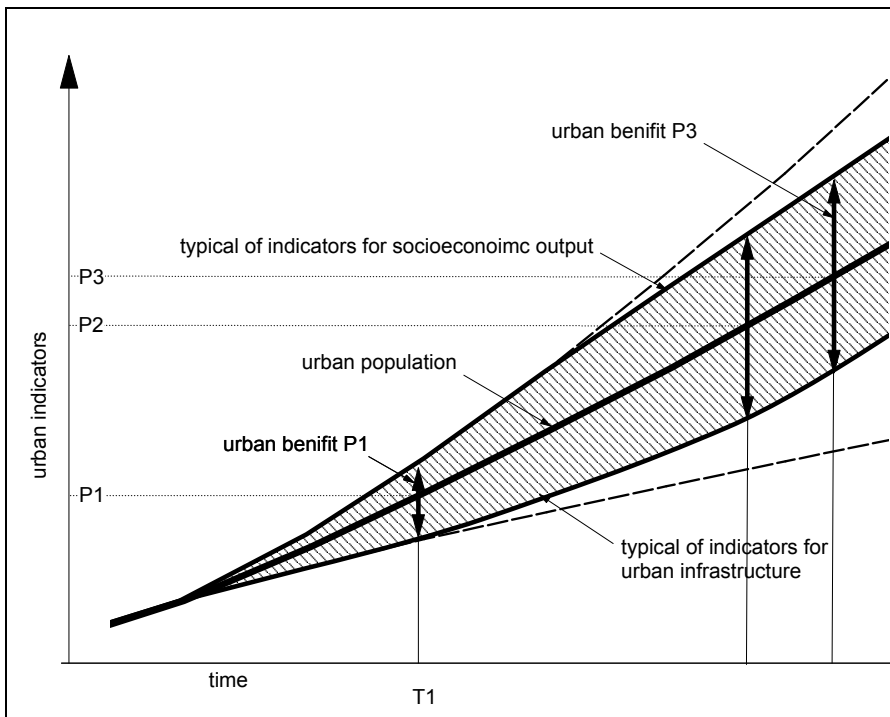


Figure 12.4: Urban Benefit as population grows but where infrastructure is not upgraded

**City development x transport system**

The connectivity of the transport network of a city is a fundamental to the achieving the benefits of infrastructure to promote economic growth and

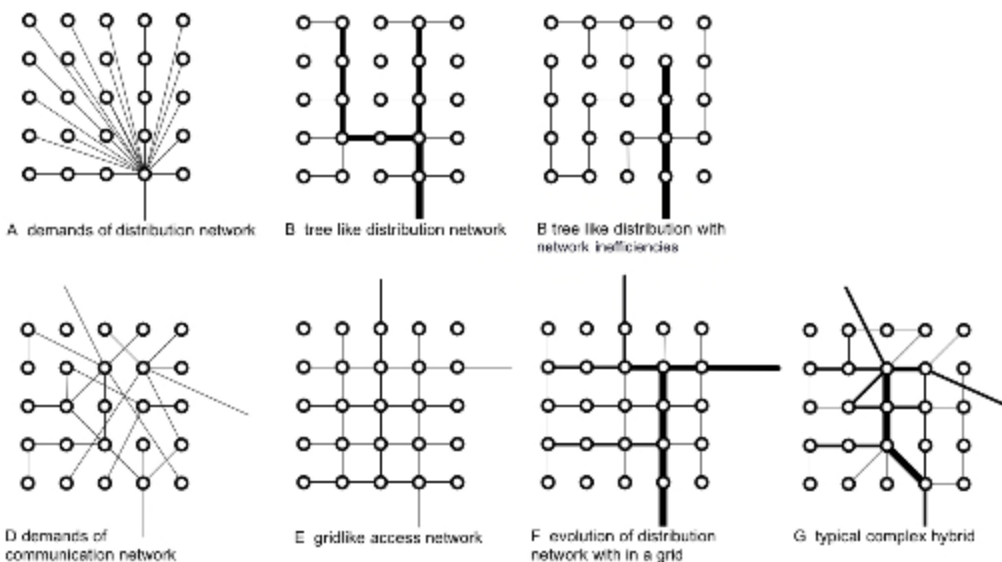


facilitating a diversity of socioeconomic interaction. According to Rodrigue (2013) there is a close relationship between socioeconomic development and the mobility of people/goods within an urban space. Transport infrastructure's ability to cope with the mobility needs of a place is a principle facilitator of economic opportunity. 'Coping with mobility needs' is related to the efficiency, reliability and speed of transportation of either goods or people, and it is only achieved with good spatial connectivity.

The Santa Fe Institute's research on city scaling describe a city as being 'a system of systems made up of many interacting components at different scales that together form a highly complex adaptive system' (Santa Fe Institute, n.d.). This means that the primary function of this 'system of systems' called the city is to facilitate a diversity of arrangement for social interaction - or simply to connect people - thus generating greater economic opportunity. To make this socioeconomic interaction happen more fluidly, distances and travel times need to be optimised and an efficient mobility system with good interconnectivity needs to be in place.

According to Marshall (2004) in a functional urban topology, it is the demand of movement that determine the links between one section of a street to another and to the network as a whole. This connectivity is the motion that promotes the mobility flow needed to generate city development. Marshall describes the road network as an engineering structure made of links and nodes where the lack of continuity of connections can contribute of the blockage of streets as happens with a pipework system.

**Box 12.1: capacity in road network**



A: The demands of distribution network assume all endpoints have a similar value.

B: The analogy of a tree is used to describe this type of network and implies the leaves are all more or less the same and the network has a strong hierarchy.

C: Tree like distribution with network inefficiencies however the physical form of the network can have a dramatic influence on its affect. A network with a poor hierarchy will still provide access to all points but will increase transmission losses.



D: The demands of communication network, are for complex and dynamic.

E: A grid-like access network will provide will provide good access and while it provides distribution across the system there is likely to be a high transition loss.

F: A grid adapted to have a more structured distribution network embedded in it. This can be planned or imposed upon an existing network, or may evolve as a result of ad hoc decisions

G: More typical of most cities is a more complex hybrid of these systems which is mostly the case of Kaduna.

### **Movement economy and the performance of the street grid.**

The relationship between morphology and movement has been the subject of extensive study employing a method of spatial analysis known as ‘space syntax’ (Hillier, 2007). It examines in particular how the configuration of the urban grid, that is the spatial arrangement of movement spaces such as streets in the city, will influence how people make decisions about movement behaviour, and where activity will take place (Hillier, 2014). The research indicates several universal properties of cities irrespective of the scale at which they are planned.

In any street network some streets are better connected than others. Hillier (2014) has shown that this level of connectivity can be measured across the grid as a whole and that it is a key determinant of where activities take place (e.g. the emergence of shopping streets). Hillier and his colleagues have shown that accessibility to any particular building is determined by its location within the grid but also by the nature of the grid as a whole and have developed tools to predict this. As cities expand and consolidate this pattern of connectivity will shift and so privileging some locations over others.

Key to this is the notion of ‘natural movement’ (Hillier et al., 1993). Travellers will make decisions about routes based on their local understanding of the network as a whole and take the most obvious route available. ‘Natural movement is the proportion of urban pedestrian movement determined by the grid configuration itself’ (Ibid). However, this is a locally based decision closely related to properties of the grid itself and can be predicted to a large degree (Hillier, 2014). Thus the arrangement of the movement hierarchy will influence the distribution of uses as activities locate on busier or quieter streets and thus result in the value of particular plots within the system irrespective of any designated use. Hillier describes this a ‘movement economy’ (Hillier, 2007).

In a poorly regulated grid, most traffic is ‘natural’ i.e. travellers (pedestrians, cyclists, motorists) take the route most obvious to them. Improvements in infrastructure; sealing a road, constructing a bridge or culvert, or making a new highway will have obvious and dramatic influences on travel behaviour and on the accessibility of different sites for development potential.

### **Measuring connectivity in Kaduna**

The original research carried out for this study has concentrated on understanding the connectivity of the larger Kaduna urban area, how this is changing over time, and how this impacts of movement patterns in the city. A number of different methods were tested to measure connectivity.

Although the full movement network is recorded in the 2010 spatial database, each of the methods of spatial analysis had limitations. Space syntax in many ways seemed to be the most obvious methodology to use as it is focused on measuring the integration of any moment network.

However, the related techniques have been developed largely in the context of urban design and based on pedestrian lines of sight. Although Space Syntax has been adapted to citywide street networks there were certain conceptual and technical challenges to its use in this case. Various other methods were employed using the 'Urban Network Analysis Toolbox for ArcGIS 10-10.2'. However none of these gave a clear enough picture of the connectivity and level of movement network integration for Kaduna as a whole. Some of these studies are reproduced in Appendix 12.b.

Ultimately we used two of the simpler measures of connectivity in urban street networks that were accessible in the GIS database. These relied on generating data on the number of links, nodes and dead-ends in the network. Two indices were used, the calculations for which are shown in Table 12.1 and in the two maps, figures 12.5 and 12.6:

1. **Street Connectivity index (SCI)** – this refer to the density of the network related to the area of network coverage – in this case the number of street intersections within a given area (see the online transport encyclopaedia: <http://www.vtpi.org/tdm/tdm116.htm>).
2. **Internal street connectivity (ISI)** is the 'ratio of intersections divided by intersections and dead-ends, expressed on scale from zero to 1.0' (<https://www.sustainablecommunities.gov/intersection-density>)

|             | Density of network km/sq. km in 1967 and over interval | Overall density of network km/sq. km | Street connectivity Index = intersections/sq. km in 1967 and over interval | Street connectivity Index: change per annum | Overall street connectivity index |
|-------------|--|--------------------------------------|--|---|-----------------------------------|
| 1967        | 14.0   | 14.0                                 | 88.2   |   | 88.2                              |
| 1967 - 1986 | 6.2  | 9.0                                  | 45.8   | 2.4   | 61.0                              |
| 1986 - 1999 | 2.0  | 4.7                                  | 13.0   | 1   | 31.2                              |
| 1999 - 2008 | 2.0  | 3.4                                  | 12.5   | 1.39  | 22.6                              |
| 2008 - 2015 | 3.0  | 3.3                                  | 14.1   | 2   | 20.3                              |
| 1967 - 2015 | 2.7  | 3.3                                  | 16.5   | 0.3   | 58.3                              |

Table 12.1 Street connectivity index – 1967-2015

As noted, the research team were particularly interested in studying if and how the informal physical development of the city had impacted on its transport network connectivity and patterns of movements. The connectivity of the street network as a whole is relatively high as street blocks following the established pattern are relatively small. The common

partly-planned approach to land development in Kaduna, in this respect, follows the good practice of high permeability recommended by Jane Jacobs (1992) in her classic work, the Death and Life of Great American Cities. However, the very high connectivity in 1967 at the beginning of the study period rapidly diminishes over time (see Table 12.1)

This is reflected in the transect aspects of the city’s development with the outer areas generally having much lower street connectivity than the inner areas. This is shown in Figure 12.5 with the index being higher in the central areas where the street networks are more fully developed and in the area of Rigasa where the pattern of incremental development, although informal, forms an orderly is ‘distorted’ street grid. In other outer districts, there are many very large street blocks that are yet to be developed and subdivided with plots and streets.

| Period      | Intersections & dead ends in 1967 and over interval | Intersections in 1967 in 1967 and over interval | Overall intersections at end of interval | Annual change | Internal street connectivity index |
|-------------|---|---|--|---------------|------------------------------------|
| 1967        | 5498  | 4547  | 4547                                     |               | 0.83                               |
| 1967 - 1986 | 5123  | 4247  | 8794                                     | 463           | 0.83                               |
| 1986 - 1999 | 3768  | 3053  | 11847                                    | 911           | 0.81                               |
| 1999 - 2008 | 4857  | 4022  | 15869                                    | 1763          | 0.83                               |
| 2008 - 2015 | 4853  | 3658  | 19527                                    | 2790          | 0.75                               |
| 1967 - 2015 | 18601   | 14980   | 56037                                    | 1167          | 0.81                               |
| Total       | 24099   | 19527   | 60584                                    |               | 0.81                               |

Table 12.2: Internal connectivity index – 1967-2105

Overall, the level of internal connectivity is relatively high. However, the number of dead ends proliferates as the city expands (see Figures 12.6) and the internal street connectivity index tends to decrease over time (the nearer to 1 the index is, the more connected the system is with 1 representing zero dead ends). Again, the highest number of dead ends are to be found in the newly developing areas (see Figures 12.7).

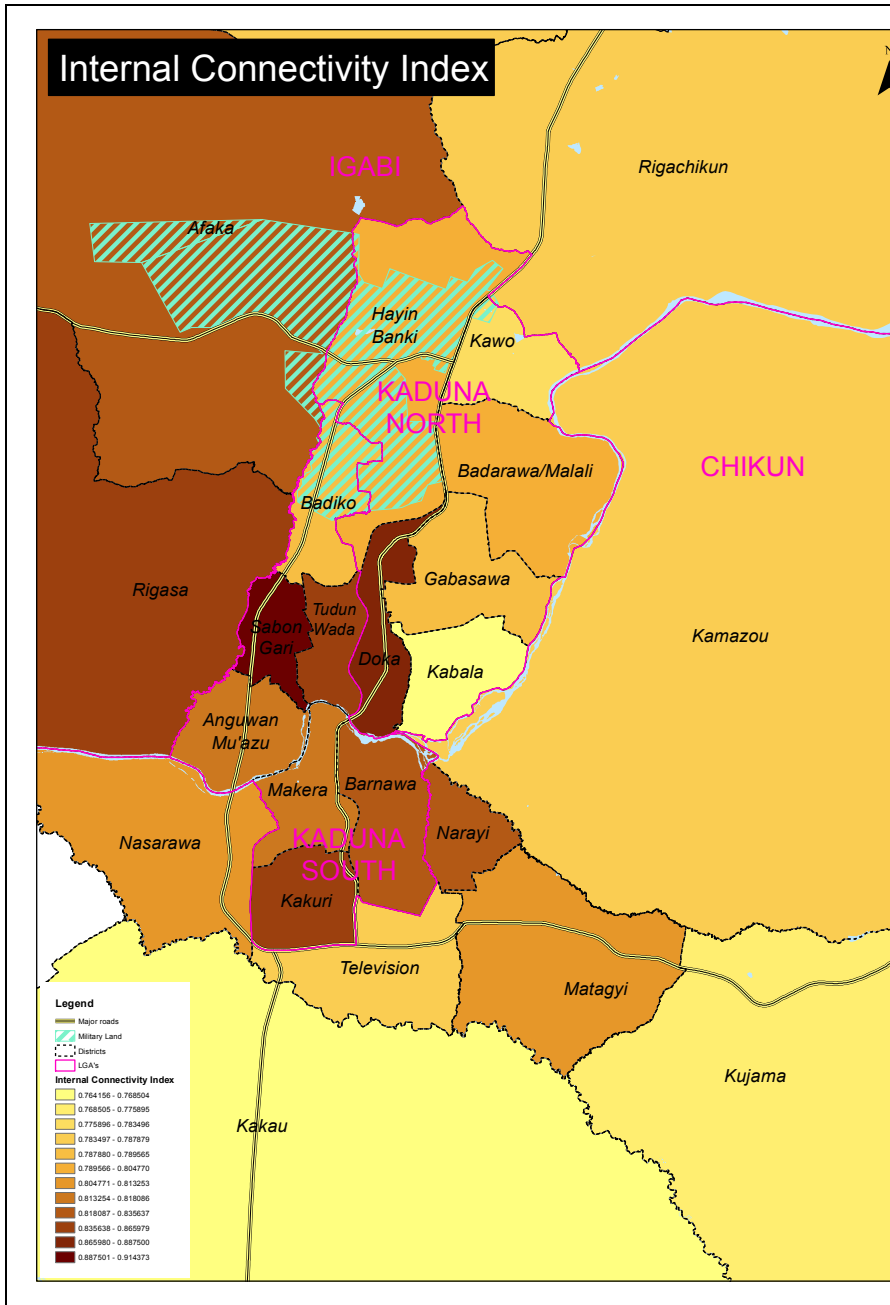
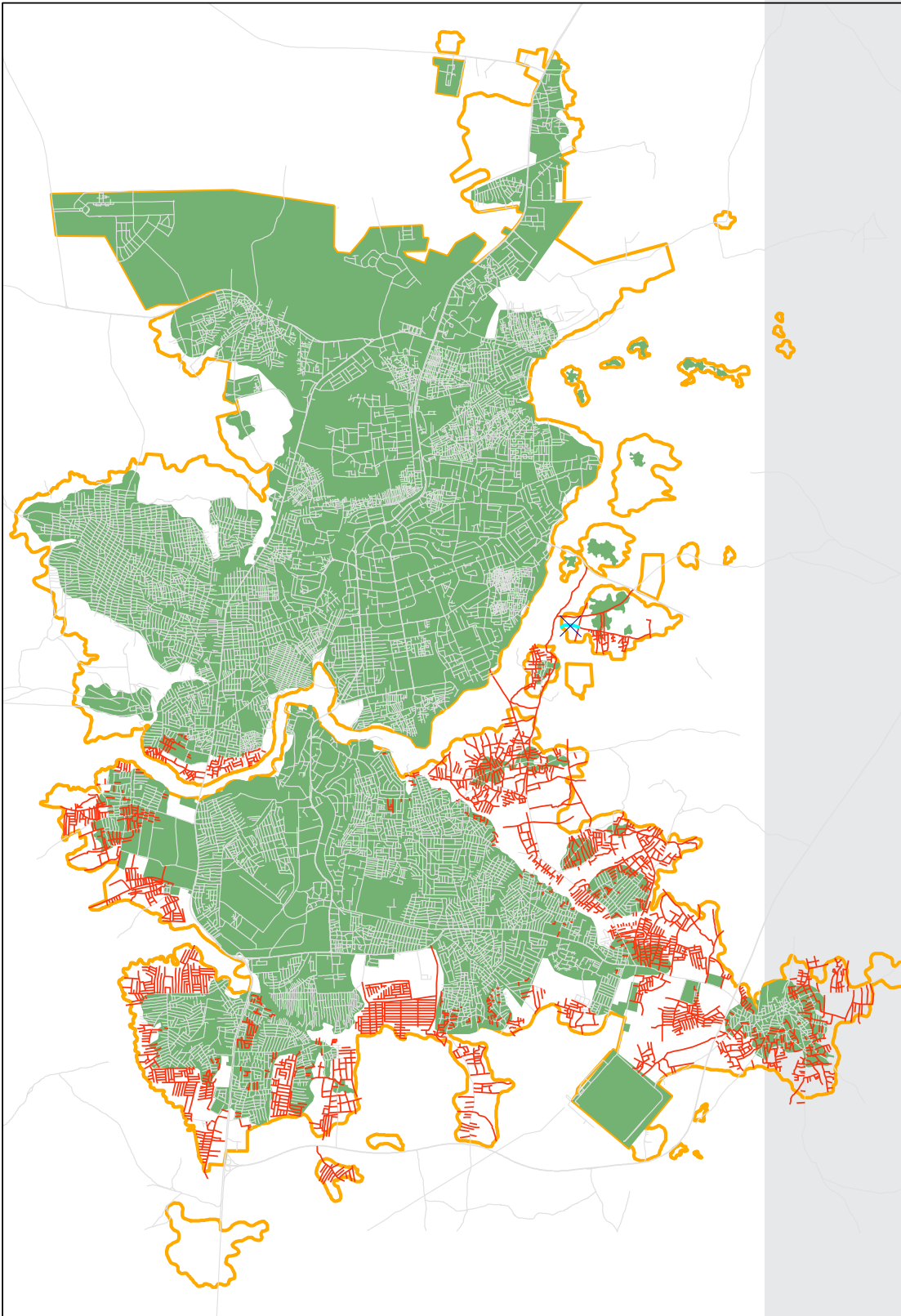


Figure 12.5: Internal Connectivity index for Kaduna by district in 2010

It is not feasible within the resource constraints of this study to carry out a full transport modelling exercise to determine how important the aspect of connectivity is relative to other constraints that intensify as the city expands such as growing distance from the centre, traffic congestion, overall street connectivity, the lack of river crossings or basic traffic management issues. Nevertheless, it is clear that better planned physical expansion, in which full connectivity and an organised street hierarchy form a part, would undoubtedly have a major impact.



**Figure 12.6: Growth of Kaduna's street networks, 2008-2015**

### **Urban land use and transport planning**

In order to promote good connectivity of the city's transport network new developments need to be strategically planned taking into account the relationship of the land use of that particular space to the city as a whole, creating routes between areas and facilitating the specific socio-economic interaction that space requires. The lack of connectivity that follows from a lack of strategic planning generates many problems including traffic congestion, pollution, unsafe environments and delays.

The Max Lock 1967 report notes that 'the control of traffic problems lies in the planning control of land use'. For the most part, traffic is generated solely by the need to connect human activities concentrated in particular places, that is land use. Traffic is a consequence of the movement of people and goods for different purposes in relation to land use activities. The land use activity in an environment determines the type and frequency of traffic generated. While most efforts to manage traffic in cities involves (usually retrospective) interventions in the development road infrastructure, street networks and direct measures such as signals, road marking and restrictions on road speed and use, and the development of public transportation systems, it follows, therefore, that in order to fully manage the type and frequency of traffic generated there must also be adequate planning powers to control the use of land.

Solving traffic problems therefore lies, in part, in the effective management of land use activities. Wherever certain activities generate sufficient traffic, vehicular, and pedestrian and vehicular, conflicts are inevitable resulting in accidents, congestion and delays. In Nigerian cities vehicle generating major land use activities are usually concentrated in the same locations and Kaduna is not an exemption. The requirements of vehicular traffic predominate the interests of human activities. There is therefore the need to plan in order to minimise these conflicts (Max Lock 2010).

A plan would consider community needs, distribute land use in a balanced manner and provide circulation through a complimentary hierarchy of road network in a conducive and aesthetic environment. It would provide harmony between traffic and the environment. Environment is that space where you live, work and trade, relax and walk or drive in pleasant and well connected safe surroundings. Environment needs to be well planned in order to reduce conflict in form and function. A plan should not be static but a continuous evolutionary process based upon the most up to date information available at each stage to accept necessary revisions and modifications to the basic framework (Max Lock Consultancy Nigeria et al., 2015).

### **Implications and local aspects of poor transport network connectivity**

In Kaduna three key inefficiencies are apparent, as much of the system is not well connected. The consequences of this discontinuity are:

- Longer distances - drivers have to travel through many streets to reach destination;
- Orientation - unless the driver is familiar with the area it is easy to get lost;



- Traffic congestion, consequently delay;
- More consumption of fuel, consequently more pollution;
- Parts of the city are at risk of become disconnected from its core.
- The overall efficacy of the system appears to be degrading. That more recent accretions to the city are poorly integrated with the core.

While the core of the city is comparatively well-connected, network distribution routes within the system are poorly structured and overloaded causing capacity issues. The network, especially the newer accretions, create local discontinuities that disrupt local access and neighbourhood interaction.

The overall performance of any street grid is determined firstly by the efficiency of the layout when it is first established and its adaptive capacity to become more hierarchical as the city expands. In any grid some locations will be favoured for specific activity and movement, the movement hierarchy will evolve according to its 'Natural Movement'. That is people will use the most obvious route and over time particular roads become better used and upgraded.

One advantage of the Kaduna road network is that much of it is laid out a regular grid. While this grid is not always continuous it typically provides good access to many properties. The tradition has been to allow a 15m road reservation. This has resulted in much of the city have a comparatively high area of street space, with networks very much under capacity when first developed. Most streets have sufficient space to be upgraded so as to form a local distributor road. However, they retain the additional function of access and so road speeds are slow. These roads also have to preform the role of intermediate distributors and simply don't have the capacity for this. Some few trunk roads have been added to the system but typically these are multi lane dual carriageway highways that do little to improve local accessibility. The resulting road hierarchy is very shallow.

Figure 12.7, shows a suburban section of Kaduna's street plan which illustrate the effect of the informality of the city described in this chapter, resulting in various informal developments forming a patchwork-like pattern of straight streets but with little connection between them.



Figure 12.7: Discontinuity in the street grid at the local level

The plan demonstrates the lack of continuity of the street pattern and lack of connections between what can be assumed to be different semi-informal developments. A stream, which is a common natural barrier in the city, divides the area into at least three distinguished sub-areas with little connection between them.

The areas circled in red are some examples of lack of connections and the discontinuity of urban and street pattern in this extract of Kaduna's street plan:

- In the circled area 1 a driver travelling east/west (or vice-versa) would have to turn the vehicle into four sharp junctions to continue into what could have been a straight road. This phenomenon is called a 'dogleg'. It happens when there is an error on the land survey and it is fixed by realigning the two mismatched sections with a bypass;
- The circled area 2 the sharp corner of the same street lengthen the street and requires vehicles to stop and start various times in a relatively short distance;
- The circled area 3 is an example of cul-de-sacs or dead end streets that in certain cases increase the travel time unnecessarily;
- In the area 4 can be observed two straight roads with a single connection at their eastern making south/north connection very difficult.

This creates obvious inefficiencies the road network causing longer journey times, increased energy consumption and traffic 'pinch points' where delays can easy occur. While these inefficiencies reduce access to goods and services across the city they also have implications at the local scale.

Consider a small enterprise established at location 1. As it grows the local network of streets provides access to larger neighbourhood shown as a broken line. A similar enterprise at location 2 may do as well but is less able to expand as local routes to a larger neighbourhood shown dotted as local routes involve longer local journeys and prohibit its ability to move form a

pedestrian to a motorised basis. Although this is an individual example, and not necessarily typical, it does imply profound implications for the development of the local business economy, and may go some way to explaining the very localised nature of informal economic activity in the city which is outlined in the final sections of the chapter.

### **Movement patterns in Kaduna**

Figure 12.8 shows a comparison of the inter-zonal traffic desire lines for 1965 and inter-district desire lines for 2010, as derived from traffic surveys and household interview survey data, together with the predicted flows for 1985 as indicated in the 1967 Plan. The movements to the central area are more widely distributed in 2010 as the growth of the city has been much more spread out than indicated in the 1967 Plan (see Chapter 9). Although the level of traffic as indicated by the width of line is not directly comparable, and the scales of the smaller and larger plans are rather different, it is the case that the level of traffic, particularly of 4-wheeled vehicles has not grown as rapidly as envisaged in the earlier plan, possibly because the general income levels of the city did not grow in line with the forecast (the population having grown even faster than the forecast).

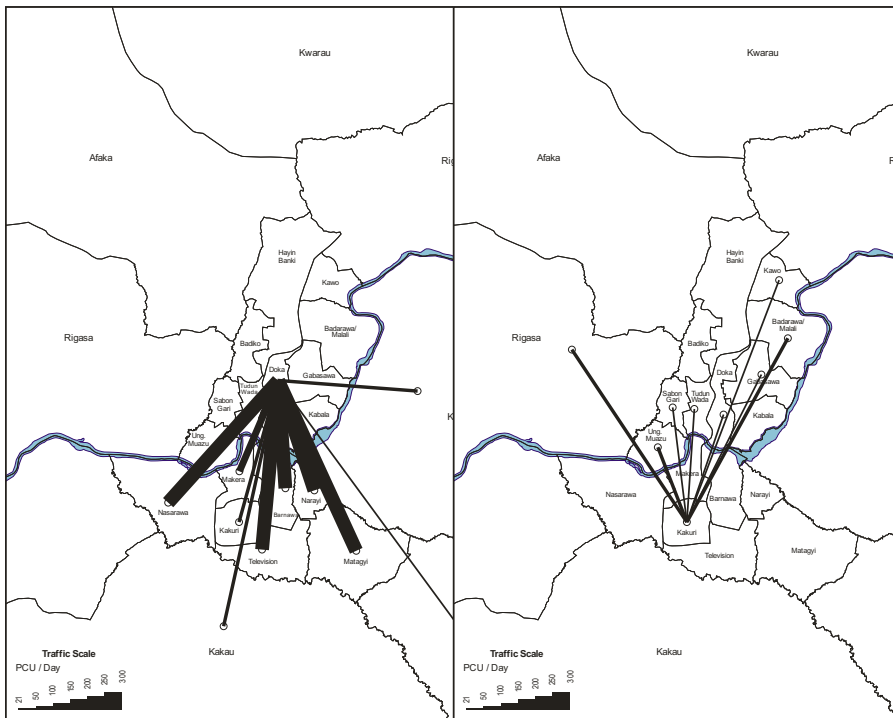
The heaviest traffic flows, both from the north and south of the city are to the central CBD and market and this has not changed a great deal. The most noticeable change is the huge increase in flows to and from the western part of city, with the growth in the district of Rigasa, which was not anticipated in the 1967 Plan.

Figure 12.19 compares the flows from south to north and north to south for 2010. While there were major north-south flows in 1965 to the growing industrial areas of Makera and Kakuri and these undoubtedly grew in line with the prediction for 1985, the subsequent collapse in those industries and the increasing segregation of the city along religious lines has resulted in the north-south traffic flows reducing to a trickle. However, the people in the south continue to work in the central hub of Kaduna economic activity zone in Kaduna North, in the Central Business District, Central Market and in government institutions mostly concentrated in this area.

An analysis of journey to work patterns has been carried out using household survey data from 2010 based on the categorisation of those employed in the formal and informal sector as described in Chapter 7. This estimates the proportion of people working locally (that is within the district itself) for each of the districts. The situation for the two sectors is shown in Figures 12.10 and 12.11. It can be immediately seen that informal sector is much more localised than the formal sector with generally upwards of 80% of informal sector employees working within their own district, highest, as might be expected, in the outer, peri-urban areas. This is also true of those working in the formal sector but here the level of commuting to the centre is far higher. This is reflective both of the limitations of the movements system and its connectivity, as described in this chapter, that informal sector workers are poorer and less able to afford longer commutes, and the fact that income brought into local areas by people working in the formal sector has a multiplier effect on the local economy through the demand for goods and services, locally supplied by the informal economic sector



Figure 12.8: Comparison of the inter-zonal traffic desire lines for 1967 (actual) and 1985 (predicted) and inter-district desire lines for 2010



Movements South to North of Stadium Bridge : Major Desire Vol  
Centre Drawn at Location of Kaduna Main Post Office

Movements North to South of Stadium Bridge : Major Desire Vol  
Centre Drawn at Centre of Kakuri District

Figure 12.9: Comparison of flows from south to north and north to south for 2010

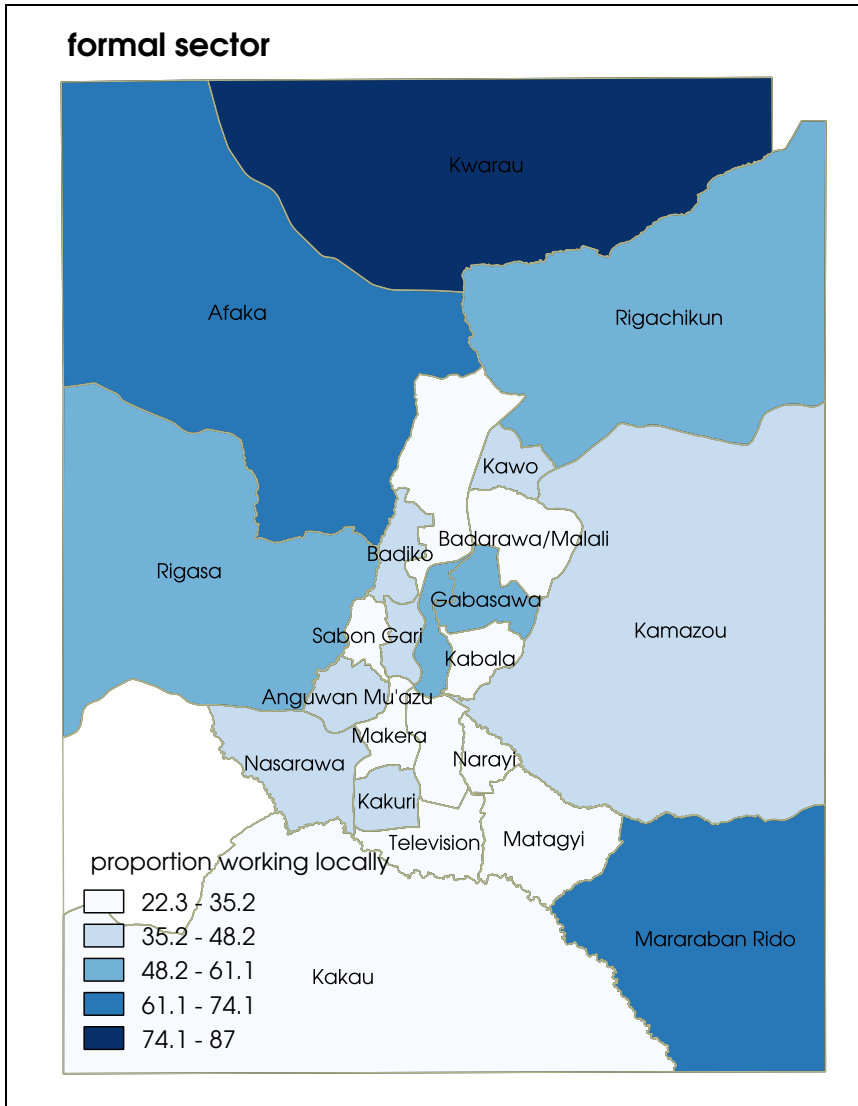


Figure 12.10: People working locally in the formal sector



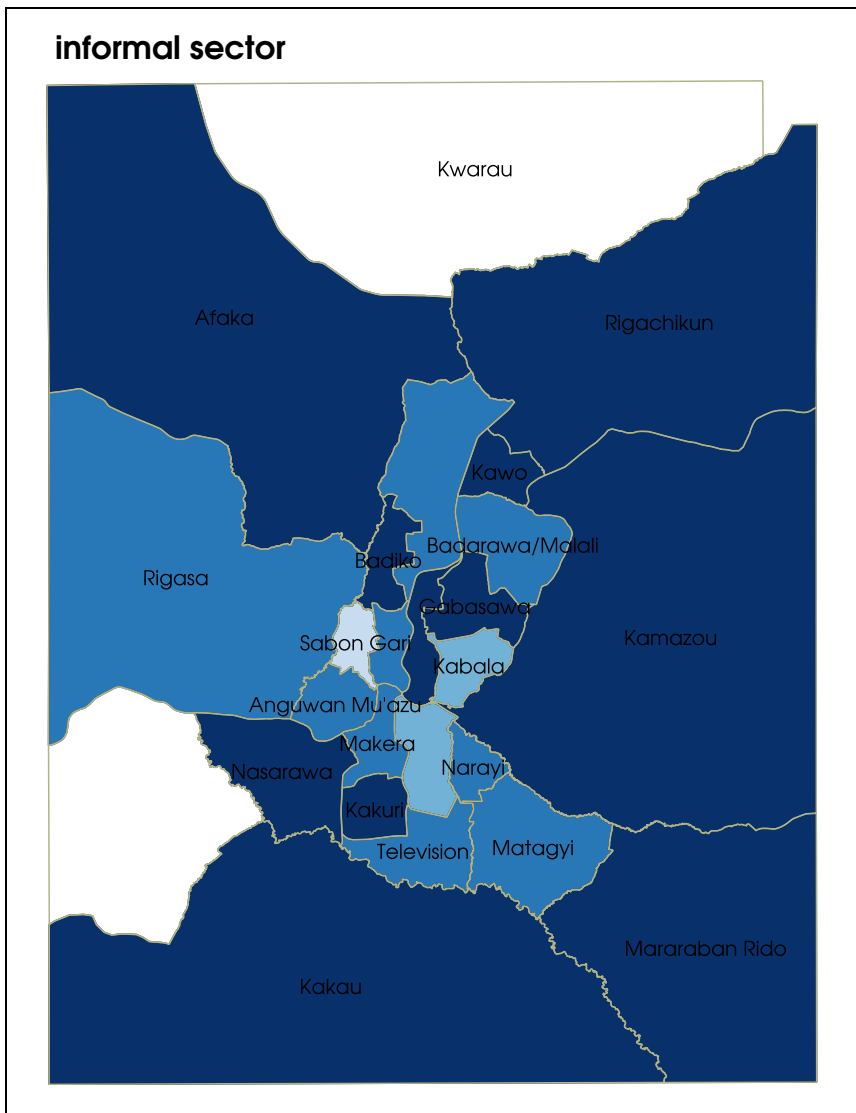


Figure 12.11: People working locally in the informal sector

## Conclusions

The chapter has put forward the argument that, as Kaduna has grown in extent and population, mainly through the informal but often semi planned sub division of land into plots, the efficiency of its transport network has failed to keep pace with the growth. Public transport provision has remained primarily delivered through paratransit and the absence of relevant institutions, technical capacity and transport policies for the city (including instituting those proposed in both the 1967 and 2015 master plans – thus far) have resulted in the city’s movement system developing on a relatively ad hoc basis.

Decisions about major road improvements in and around the city (the central route through Ahmadu Bello Way, the inner Western Bypass – Nnamdi Azikiwe Way) were taken without reference to planning considerations or the wider needs of the city for an improved traffic system. An Eastern Bypass has remained unfinished for many years constraining the planned expansion of the city on the eastern bank of the Kaduna River. Both

the completion of this vital link and a new outer Western bypass to form an outer orbital route as proposed in the 2015 plan are now being pursued by the new State administration.

The focus of the chapter has been on researching the links using various theoretical concepts and techniques, of the likely impacts of the lack of connectivity in the city's movement network on its socio-economic functioning. The evidence, as far as the study has been able to pursue it, is that the lack of attention to the street network and its upgrading on an ad hoc basis, without putting in place the requirements for an efficient intermediate distributor system, is that this has contributed to the 'localisation' of economic activity, particularly in the informal sector. The city is acting more as a collection of villages rather than an integrated whole and this certainly limited the benefits that urban agglomeration can bring to the local economy.

The partition of the city along religious lines and the collapse of the manufacturing industry in the south of the city during the 80s and 90s have also had profound effects on traffic movements in the city although the central business district and government area remains the main focus of activity for all communities in Kaduna North, the resulting city centre congestion is an acute problem. Generating new employment and service-related activities in other new centres in and around the city, as proposed in the 2015 Master Plan, has been adopted as a policy priority by the new governor. This should have the effects of taking some of the transport pressure off the city centre. However, any new planned investment is constrained by the political imperative of achieving a balance between the northern, mainly Muslim communities, districts and LGAs, and those in the south that are mainly Christian.

# 13. CONCLUSIONS

This research has involved a series of related studies drawing on different academic disciplines and theoretical concepts in order to capture the full story of urban change and how different factors, geographical, political, economic, demographic and socio-cultural have worked together to determine its trajectory:

## Historical political and economic development context

Some cities grow from small origins into large towns – Kano, Zaria, Sokoto – all great trading centres that flourished under the Hausa and subsequently Fulani Emirs. Others are the result of political decisions. Kaduna is just such a city – a planned capital. The British colonial power, under Lord Lugard, gave considerable thought to its location. It was strategically located, on the edge of the great northern emirates of what had now come to be called Nigeria, where ‘native authorities’ – by agreement or coercion – were left to manage their own affairs, but under the watchful eye of the British West African military task force.

It was well placed on the new railway network that the British built to bind the country together. The region was a fertile plateau, with a moderate climate and plentiful rainfall. The Kaduna River provided water for the growing city, as it still does, although stresses are beginning to tell with the competing demands of a growing resident population, the need to generate power, provide for irrigation and supply local industry.

Southern Kaduna was sparsely populated, mainly by non-Muslim tribal groups who later mainly converted to Christianity. Initially an advantage to the colonial power, this has become increasingly a source of political polarisation and exploitation by political elites. leading to the current semi-partition of the city, a hurdle to its effective economic functioning. Observers have noted that in many ways Kaduna is a microcosm of Nigeria as a whole, and the recent unfortunate trend towards polarization of the city along religious lines and the on going efforts to counter this are reflective of broader trends in Nigeria as a whole.

To understand the urban geography of Kaduna, then, its complex history needs to be fathomed. Post Independence, Nigerian national power politics has been played out in the administrative sub division of the country but successive regimes, military and civil, and the successive shrinking of Kaduna’s sphere of political influence.

As noted in Chapter 4, the report has set out the political, institutional, geographical, cultural and ethnic context for the development of Kaduna which is critical to understanding the both its origins as a political capital and the changes it has undergone post independence. The different political epochs have clearly framed Kaduna’s development and status within the country as whole. Despite the ‘ratcheting downwards’ Kaduna maintains its residual momentum as a place of great symbolic and actual political importance in the Nigerian context.

Once imagined by Lugard as the nation's capital, it saw this role usurped by the decision in 1976 to create a new capital, some two hours to the south, city which has now been well eclipsed Kaduna is size and importance. However, despite all this, Kaduna remained the capital of Nigeria's third most population state with now more than 8 million inhabitants, and retains its place as a/the political centre of the northern ruling elite.

### **Economic development trajectory**

The strategic, infrastructural, agricultural and natural assets of Kaduna that served its location as a centre of government, also proved critical in the decision by British business interest to locate a major textile producing factory in the town in 1956. With plentiful water and, at that time, power, a good railway connection to the port outlet in Lagos and local cotton growing in the northern part of what was then Zaria Province. Kaduna was well placed to be the focus on new industrial development.

By 1965, when the first of the studies that informed this research was started, Kaduna was in the through of an explosive textiles industry-led growth, later fuelled in the oil-boom public sector dominated era of the 1970s with the decision to locate a car assembly plant and oil refinery in the city. With massive in-migration, the population expanded at a phenomenal rate.

As described in Chapter 6, all this came to an abrupt end in the early 80s with the end of the oil boom and the start of the 'austerity' period of 'structural reform'. Along with Kano and the north as whole, Kaduna was hit particularly badly during the last two decades of the twentieth century and the economic centre of gravity of the country continued to shift southwards as the greater part of the benefits accruing from the economic growth of the past 12 or so years have been in the south of the country increasing the wealth and poverty gap with the north.

This has meant that, although there has been some evident growth in higher value service industries in Kaduna (it continues to be an important media, publishing and growing financial services centre) on the whole it has fared worse than other cities. In Chapter 6, the research attempted within the limits of the data available to answer the How does urban population growth relate to the broader factors influencing economic development?

Although GDP is certainly an imperfect measure, this is the only indicator we were able to find that reached back to 1965 to show how the average welfare of the nation and the city has changed over the intervening period. The indications are that, although GDP per capita probably increased to a peak by the early 1980s, in the 'lost decades' that followed, the collapse was so complete that the city may only now be returning to the level it experienced in its early industrial era days.

Data from the 2010 social survey analysed in Chapter 7 suggest that, while the professional and administrative class in the city has grown as proportion of the whole, inequality has increased with the majority of the population employed in the low productivity informal sector.

The labour market has restructured with a significant increase in the proportion of managerial/professional economic activity partly explains the fall in skilled and semi-skilled economic activity – Fewer than 3% (2.8%) of

adult males in regular employment in 1965 were engaged in managerial or professional roles as compared to 30.7% in 2010; whilst skilled and semi-skilled employment had fallen from 60.5% to 24.9% over the same period.

The rise of informal economic activity is another prominent feature of the labour market in Kaduna, as indeed urban centres across sub-Saharan Africa – This is evidenced by the growth in ‘side trading’ or informal trading activities which rose from 5.5% in 1965 to 35.3% in 2010.

Overall, the labour market has undergone significant changes between 1965 and 2010: Employment in manufacturing, whilst still significant, is a shadow of what is used to be.

Kaduna seems little better off than it was at the beginning of the study period some fifty years ago and though there has been some recent recovery, there is good evidence, that any benefits accruing are increasingly unequally shared between a better off middle and upper class, and a more impoverished lower class that growing in size and insecurity.

The population has continued to grow, however, albeit at a much slower rate, and migrants still continue to arrive, mainly from the north, and recently fuelled by an exodus of refugees from the strife torn areas of the North East. Only now there are few factories left for people to find employment. The economic livelihood base of the city has shifted firmly towards trading and the informal sector, sustained by the public sector – governmental, military – two of three legs of the economy in 1965 – together with a range of other educational and institutional employers.

Northern political interests still hold on to dream of reviving Kaduna’s great industrial past. A revived textiles industry, undermined by decades of infrastructural neglect, especially in the power sector, and cheap, largely smuggled Chinese imports, seems unlikely. Cotton is little grown in the state any more and in any case is being overtaken by polyester as the main textile for garment production.

Despite the misfortunes of recent decades, however, Kaduna, remain a resilient city, with an increasing professional class, entrepreneurial spirit and human capital in abundance. With adequate power supply and improved transport connections, it is likely the economy of the city will take off if new directions, with its location close to Abuja turning from a liability into a positive force for change.

### **Demographic and social change**

Migration has retained its place as a key factor conditioning Kaduna’s population change. In the 60s and 70s when the annual rate of change reached a peak of more than 12% per annum, population growth was almost entirely driven by in-migration, mainly from the northern regions but from all parts of the country as the city took on an increasingly integrated and cosmopolitan character.

In recent times, by far the majority of the population was born in then city, although there is still in-migration, with political factors playing a role as noted above. Employment was and continues to be the primary reason why men move to Kaduna – both in 1965 and 2010 this was the overwhelming response given by men taking part in the social surveys. Although

proportionately, there are more working women, the majority of women migrants stated that they moved to Kaduna for ‘family reasons’ of one sort or another.

Young men migrating Kaduna (15-19 years old or 20-24) are far more likely in 2010 to have done so for family or educational reasons as opposed to employment – The average age of men migrating to Kaduna in search of work is around 46 years old in 2010; and 34 years old for those coming for education. A relatively huge proportion of the population – students and school age children is recorded as in education meaning a continuing high dependency ratio for the city.

With high youth unemployment, Kaduna is in the frontline of the challenge of achieving a demographic dividend rather than a demographic disaster. Kaduna exhibits rates of unemployment in men aged 15-24 which are significantly higher than the national average for urban areas in the same age group – Unemployment rates were found to be as high as 27.6% for 15-24 year old males. However, the percentage of females unemployed overall has gone down over the same period for the same age groups, implying that more women are entering the labour market in 2010 compared with 1965.

There may be a less volatile situation regarding employment in 2010 than in 1965 with fewer people being unwilling or finding it unnecessary to move in search of employment. In particular, those arriving between 2000 and 2010, were less likely to have migrated to Kaduna in search of employment than their counterparts in the ten year preceding the 1965 survey.

At the local level, the resident population of the original township areas has contracted – The numbers living in the central city areas that were originally Sabon Gari and Tudun Wada have fallen due to land use conversion and commercialisation of the core area.

The original core areas of the city have been subject to densification with an overall increase in the total number of compounds in the original four areas of Kaunda studied in 1965 as a result of infilling of un-developed plots and general intensification of development.

### **Land and urban form**

Chapter 8 described the central importance of the traditional systems of land tenure and the 1978 Land Use Decree in shaping the form of urbanisation in Nigeria. Understanding the system of land governance provides many clues to the political economy of land that is driving the malfunctioning system of urban development in Nigeria, today as it has since colonial times. As well as the wider political impacts of related ethnic and community concerns, these have profound policy implication for managing the uncontrolled manner in which the city has expanded and continues to grow, both in terms of the growing deficit of basic infrastructure and services, and for the environmental management of its wider city region.

In Chapter 9 we have shown as shown how the factors conditioning the historic settlement of Kaduna and land governance issues have influenced its subsequent growth. Kaduna is continuing to expand at a rapid pace. However, as there is little effective land use planning or accurate mapping,



this physical expansion of the city is largely unmanaged, going unrecorded and not well understood.

Chapter 10 draws on the theoretical concepts of urban morphology and employing a number of related techniques including ‘transect analysis’. It presents a morphological analysis of the city defining a range of different settlement types, their characteristics and evolution, and distribution across the wider Kaduna urban area. It presents an innovative approach to understanding the underlying physical structure of the city and the development processes that shape it over time. It facilitates a new understanding of the geography of the socio-economic and housing characteristics of the city.

Increasingly readily available remotely sensed images (satellite imagery) and its innovative use are helpful in providing spatial data and mapping the pace and extent of urban expansion but give little in depth of insight into the nature of the activity taking place. The study of urban change undertaken in this research seeks, among other things, to combine data from established ground based survey techniques with the interpretation of Google Earth images to derive estimates of urban growth and demand.

### **Housing markets and conditions**

In chapter 11, these methods are applied to an understating of housing conditions in the city and outlines an approach to understanding changes in wealth and poverty in Kaduna from the point of view of two perspectives relating to housing.

The first is a preliminary understanding of the workings of the formal and informal housing and land markets in the city, and in the larger national context, identifying the need for more data at the city level and more research of the basis of datasets like those collected in Kaduna in 1965-67 and 2009-10 employing innovative methods of analysis. This needs to be done in the context of a housing market where 80% of housing is supplied informally, on a ‘self-develop’ basis.

While there is some evidence of a gradual formalisation in housing delivery, at least in cities better off than Kaduna, but probably in due course in Kaduna itself, the reality of the informal housing market as the main source of supply has to be addressed. Without some attempt to manage the chaotic land administration on the urban periphery, new ‘slums’, deficient in urban infrastructure and services, are emerging on a daily basis and adding to legacy of those in the more central city areas.

The second perspective, therefore, is an attempt to characterise what the level of this deficiency is, focusing on the actual housing conditions in the city, how these have changed over time and how these vary geographically in the much larger area and population of the city as it was in 2010. The headline findings from this study are:

Household composition and living arrangements particularly in the central areas of Kaduna have evolved with just over half of all households in Kaunda occupy a compound without sharing with another household - up from less than a fifth of households in 1965. Single occupancy compounds tend to belong to households with a larger number of people, though these households have access to a greater quantum of living accommodation

Actual numbers of households sharing a compound with another household have increased up to eight times suggesting increased levels of overcrowding/decreased levels of personal and amenity space

Chronic overcrowding (e.g. where more than 3 persons are sharing a room) has fallen substantially by around a half. Despite the trend towards households occupying houses with a greater number of rooms, actual numbers of households living in 'overcrowded' conditions has increased.

Household access to water across Kaduna appears to have improved between 1965 and 2010 with better spatial distribution and a greater proportion of households having access to a piped water supply, though access is by no means equitable with around half of all households in Kaduna north LGA experiencing better access than households in Igabi LGA to the west of the city.

Sanitation services are still delivered in residential areas as on-plot solutions which shows little change from 1965 though a greater number of pit latrines and septic tanks what the WHO/UNICEF Joint Monitoring Programme might describe as 'improved' are present, as opposed to bucket latrines which not only required frequent manual emptying, but areas of land set aside for composting.

Target 7D of the 2000 Millennium Development Goals, unlike the other MDGs, has 2020 as its end date and is therefore still operational. The stated aim of the target is to achieve, by 2020, a significant improvement in the lives of at least 100 million slum dwellers<sup>72</sup>. For the purpose of measuring progress towards achieving MDG Goal, UN-HABITAT defines 'slums' by reference to slum households.

Using the indicators for slum households depends on measuring data that is not currently available, for example security of tenure. However, one indicator, access to improved sanitation, is usually critical. In Kaduna as a whole, access to improved sanitation (non-shared WCs and VIP/VP pit latrine) is 25% of households (slightly less for population). That makes the city population at least 75% slum dwellers by UN-Habitat measure, certainly much higher than the country as a whole, where the figure is about 60%. Access to improved sanitation varies hugely across the city. 80-90% have access to a flush WC in the upper income areas as identifies in the typology study, whereas in poor areas this is around 16%

### **Transport and connectivity**

As Kaduna has grown in extent and population, mainly through the informal but often semi planned sub division of land into plots, the efficiency of its transport network has failed to keep pace with the growth. Public transport provision has remained primarily delivered through paratransit and the absence of relevant institutions, technical capacity and transport policies for the city (including instituting those proposed in both the 1967 and 2015

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<sup>72</sup> Between 2000 and 2014, more than 320 million people living in slums gained access to improved water sources, improved sanitation facilities, or durable or less crowded housing, thereby exceeding the MDG target. More than 880 million people are estimated to be living in slums today, compared to 792 million in 2000 and 689 million in 1990.

master plans – thus far) have resulted in the city’s movement system developing on a relatively ad hoc basis.

Decisions about major road improvements in and around the city were taken without reference to planning considerations or the wider needs of the city for an improved traffic system. The new State administration is now addressing some of the major infrastructure concerns although there is still much work to be done on improving traffic management and integrating the street network within the city.

The evidence, for the spatial analysis undertaken in the study, is that the lack of attention to the street network and its upgrading on an ad hoc basis, without putting in place the requirements for an efficient intermediate distributor system, has contributed to the ‘localisation’ of economic activity, particularly in the informal sector. The city is acting more as a collection of villages rather than an integrated whole and this certainly limited the benefits that urban agglomeration can bring to the local economy.

The partition of the city along religious lines and the collapse of the manufacturing industry in the south of the city during the 80s and 90s have also had profound effects on traffic movements in the city although the central business.

While the central business district and government area remains the main focus on activity for all communities in Kaduna North, the resulting city centre congestion is an acute problem. Generating new employment and service-related activities in other new centres in and around the city, as proposed in the 2015 Master Plan, has been adopted as a policy priority by the new governor. This should have the effects of taking some of the transport pressure off the city centre. However, any new planned investment is constrained by the political imperative of achieving a balance between the northern, mainly Muslim communities, districts and LGAs, and those in the south that are mainly Christian.

#### **Policy implications:**

As a pre-condition, improvements in the national infrastructure are pressing particularly a more reliable power and in the national transport infrastructure. Both of these are being addressed at the Federal level but state government are going to have to play an active role as well.

Within the urban area there needs to be investment in local economic development and the regeneration of neighbourhoods, infrastructure and buildings that have suffered neglect, including renewal where original functions have been lost and/or decline has progressed to the point of no return.

An initiative to improve the public transportation system in the city is under way and is well overdue. This needs to be linked to progressive improvement in traffic management and to the street network as a whole which a full transport modelling study would facilitate.

There needs to be upgrading of low income neighbourhoods, with greater public investment social and physical infrastructure in low-income, informal neighbourhoods to bring them up to a basic living standard. And there further needs to be planned physical extensions to accommodate the still

expanding population properly services areas to stop thing getting worse and control and direct the expansion of the city at and beyond its current borders.

**Further research:**

This study has demonstrated how effective the approach taken to basic land use and social survey data collection at the city level, combined with innovative modern digital techniques and a morphological approach can be. There is certainly more that can be done, both in investigation the data for Kaduna and testing and applying the methodologies employed in this research elsewhere in Nigeria and sub Saharan Africa.

In Nigeria, governments are in a hurry to get things done and shy away from carrying out such surveys. Donors regard them as a luxury at the city scale. In reality, if a basic physical survey land use is undertaken is can be done surprisingly quickly and effectively. In the case of the 2010 Kaduna Land Use Survey more than 100,000 land parcels were recorded over a few months. This type of survey provides a number of key benefits – a register of addresses for the city that can be used for later revenue collection, a detailed database of land use and housing conditions across the city, and a sample frame for carrying out household surveys, which can be also be carried out relatively quickly and cost effectively.

Key to achieving the cost efficacy is the training and employment of young graduates and school leavers as surveyors and enumerators. This helps to provide a basis for expanding the cadre of professionally trained people in the city and country. Following the 1967 study, Max Lock and Associates went on to carry out dozens of planning studies mainly in the northern part of Nigeria. Many of the young people who joined in the activities of the firm at the time went in to become trained planners and administrators, some ending up in high positions of government.

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Urbanisation Research Nigeria (URN) is delivering research accompanied by data collection on key themes concerning urbanisation, urban development and the provision of infrastructure. URN will produce and disseminate thorough, relevant, interesting and readable research outputs which will contribute towards the evidence base for better urbanisation strategy, urban policy, and urban programming and management in Nigeria.

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