



Building Clean Cities in Nigeria

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Building Clean Cities in Nigeria

Edited by:
Bolanle Wahab
Nathaniel Atebije
Ibrahim Yunusa



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Bolanle Wahab
Nathaniel Atebije
Ibrahim Yunusa
Okey Ozougwu

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Building Clean Cities in Nigeria: An Overview

Bolanle Wahab and Olusegun Falola

1.1 Introduction

The growth of contemporary towns and cities is always accompanied with a lot of problems, such as high birth rates, high unemployment and or underemployment, high rate of crime, disintegrating or lack of infrastructural facilities and the growth of slums and squatter settlements. Slums and squatter settlements are characterized by 'housing poverty, that is, the individuals and households who lack safe, secure, and healthy shelter with basic infrastructure, such as piped water and adequate provision for sanitation, drainage and the removal of household wastes' (UNCHS, 1996:109).

As cities continue to grow in population, heaps of waste generated will increase, space to dump legally will decrease. Waste will, therefore, be dumped anywhere everywhere, thereby lowering the aesthetic value

of city environment, polluting land, air and water, and serving as breeding ground for disease-bearing vectors. This will make the city very unattractive, ugly and repel investors and lower the revenue of the city government and consequently reduce its capacity to provide the required infrastructural facilities.

As noted by Kadanoff (1971), the attractiveness principle in urban dynamics implies that all cities tend toward attractiveness equilibrium with their external environments. People migrate to areas that they perceive as being relatively attractive and their migration swells cities' population. This results in degradation of other components of attractiveness, such as job availability, public open spaces, pedestrian walkways, urban parks and public convenience.

Generally in Nigeria, the growth and complexity of human settlements and particularly the process of urbanization have been phenomenal. Since urbanization is increasing at a greater rate than the capacity and capability of urban managers, city dwellers, especially migrants, retire to what planners and city managers call slums but which the inhabitants call homes (Agbola et al., 2011). There are Nigerian cities where more than 80 per cent of the population live in slums and squatter settlements (*Awake*, 2005).

The handling of solid and liquid wastes in Nigeria is unimpressive. Most of the cities (except Abuja, which has a central sewage system) do not have integrated sewage handling systems and households and building complexes are served by individual septic tanks and soak away pits. This is not a healthy way to dispose of wastes, especially where the construction of the pits are not closely supervised for quality control. With little by way of recycling of waste products, plastics clog the Nigerian urban environment, causing serious nuisance and drainage blockages which results in flooding.

Improper solid waste disposal has been identified as a major cause of flooding in rural, and also urban settlements in Nigeria, in recent times. In 2012, for instance, over 80% of the thirty-six states in Nigeria

experienced flooding (Wahab, 2013). Floods and erosion have become very serious environmental problems in Nigeria in recent years. Gully erosion in Eastern Nigeria has wreaked havoc on communities, leaving yawning gaps on soil once held together by thick vegetation, swallowing houses and submerging farmlands. It is estimated that 35 million tonnes of soil are washed away by erosion annually in Nigeria (Environmental Rights Action/Friends of the Earth Nigeria (ERA/FoEN) and Oilwatch Nigeria, 2009). The northern Nigeria is severely threatened environmentally by drought and desert encroachment. The area is semi-arid and experiences variable and unpredictable rainfall, overgrazing and seasonal fires.

A recent study of the discharge of heavy metals into the Challawa River in Kano can be taken as an indication of the level of pollution of water bodies by industries in Nigeria's key cities (ERA/FoEN and Oilwatch Nigeria, 2009). Levels of heavy metals in such rivers exceed the maximum permissible limit of Nigeria and WHO (Dan'Azumi and Bichi, 2009).

1.2 Rationale for the Book

In the face of the uncontrolled expansion of Nigerian towns and cities since independence, planners, urban managers and other stakeholders have accepted that development policies for urban and regional areas have failed or have not worked as expected. Consequently, the failing of planning administration, planning and planners is a challenge to the collective intelligence of planning professionals and a general affront to the operations of their professional calling.

Despite many efforts aimed at ameliorating the urban problems through the enactment of different planning laws and regulations, the administration and implementation of these laws and regulation have been problematic. The challenges to most planners could be attributed to lack of political will to act according to the dictates of the profession (Agbola, 2005).

The burning question include: why have these problems remained intractable in the face of many physical planning tools? Who is to build the envisaged/much needed clean cities in Nigeria? It is everybody who has a stake (directly or indirectly) in the city whether as a resident or a visitor. But, how will the city be created? What are the roles and responsibilities of individual groups and agencies, the government and the governed, the public, organised private and popular sectors, and the professionals in the built environment? Much more importantly, what must planners do to build clean cities in Nigeria which are sustainable economically, liveable, and socially and aesthetically pleasing to the eyes in their morphology? All these questions, and many more, are answered by the highly experienced and knowledgeable course facilitators drawn from academia, professional practice and relevant public agencies saddled with the responsibility of protecting the functional efficiency, cleanliness, aesthetics and health of towns and cities in Nigeria.

This book comprehensively brings these issues to the attention of planners, policymakers and corporate organisations as well as the Nigerian public. It is expected to arouse the consciousness of and enable planners to chart a framework to initiate the creation of clean neighbourhoods and cities that are sustainable for the overall health, and socio-cultural and economic growth of Nigeria.

The main objective of this book is to equip planners and policymakers with the required information, strategies and skills that will enable them to improve the living conditions of the populations living in Nigerian cities while ensuring better management and conservation of the environment. It aims at improving the capacities of local and national actors to promote and manage clean cities, promoting the implementation of integrated action plans for environmental management and sustainable development of cities at the local level, and proffering policy and practical recommendations for the policymakers on sustainable city management.

1.3 Social Movement for Cleanliness: The Origin of Modern Town Planning

Prior to the 18th century, the vast majority of cities and towns had populations of about two to three thousand people, with 85-90% of the population living in small agricultural hamlets and villages of 300-400 people scattered across the countryside (SimCity Central, 2005). Toward the latter half of the eighteenth century, particularly in America, the city as a setting for commerce assumed primacy. Within 100 years, Britain moved from a predominantly rural population to predominantly urban (Lines, 1990). Simultaneous to this large-scale migration was a rapid population increase, most commonly attributed to an increased birth rate in response to an expanding economy and earlier marriage due to urbanization (Lines, 1990).

The lack of 'on-time solutions' to deal with rapid urbanization culminated in unclean urban settlements characterised by intense overcrowding, substandard housing, subsequently poor sanitary and environmental conditions and disease on an unprecedented scale (UNFPA, 2013). Migration to the cities caused jerry-built districts to emerge with unhealthy housing, which usually had minimal light and ventilation, lack of open space or gardens, communal privies and shared water supply. Overcrowding grew progressively worse with more dwellings per acre and more people per room (Morgan, 2004).

One key planning measure in instigating change was the introduction of new legislation to set sanitary, building, and pollution standards, and introduce new planning practices, which were hitherto non-existent. This 'promoted the case for planning to avert the worst as well as to produce the best' (Corfield, 1982). The slums, congestion, disorder, ugliness, and threat of disease provoked a reaction in which sanitation improvement was the first demand. As a result, the earliest solution came in the form of the Public Health Act 1842 in Britain, which served as a 'complete code' of sanitary self-government law for keeping the city clean and healthy. The Act created regulations.

regarding lighting, cleaning, roads and water supply. Affirming the effectiveness of the Public Health Act 1842, the 19th century saw a decrease in disease, bad health and sanitation which halted and then reversed (Cherry, 1988).

Early sanitary measures later extended into the provision of specific town planning regulations. As well-summarised by Benevolo (1967), the main impulse toward town planning did not come from large-scale public works but from minor sanitary defects in the large industrial towns which necessitated special legislation. The legislation later spread from sanitation to the field of town planning in general.

Based on the foregoing, it is apparent that the modern origins of town planning lie in a social movement for cleanliness (sanitation) that arose in the latter part of the 19th century as a reaction against the disorder of the industrial city. Many visionaries of the period sought an ideal city, yet practical considerations of adequate sanitation, movement of goods and people, and provision of amenities also drove the desire for planning. Contemporary planners seek to balance the conflicting demands of settlement expansion, social equity, economic growth, environmental attractiveness and sensitivity, and aesthetic appeal.

The utopian concept of the garden city, first described by British social reformer Ebenezer Howard in his book *Garden Cities of Tomorrow* (1902) shaped the appearance of residential areas in Great Britain and the United States (Howard, 1902). Also, similar to Howard's, Le Corbusier, in his *Contemporary City for Three Million People* of 1922 and *Radiant City* of 1935, advocated a high-density urban alternative, with skyscraper office buildings and mid-rise apartments placed within park-like open spaces. Likewise, Frank Lloyd Wright envisioned a decentralized low-density city in keeping with his distaste for large cities and belief in frontier individualism (Fishman, 1982).

Many city governments established planning departments during the first third of the 20th century. According to *Encyclopaedia Britannica*

(2014), the year 1909 was a milestone in the establishment of urban planning as a modern governmental function: it saw the passage of Britain's first town-planning Act and the appointment of Chicago's Plan Commission. The first recognized planning agency in the United States, however, was created in Hartford, Connecticut, in 1907 (*Encyclopaedia Britannica*, 2014). Germany, Sweden, and other European countries also developed planning administration and law at this time.

The colonial powers transported European concepts of city planning to the cities of the developing world. The same pattern repeated itself throughout the British-ruled territories, where African capitals, such as Nairobi (Kenya), and Lagos (Nigeria) were similarly designed to accommodate their white colonial rulers.

Town planning emerged as a scholarly discipline in the 1900s (Cherry, 1996). In Great Britain the first academic planning programme began at the University of Liverpool in 1909, and the first North American programme was established at Harvard University in 1924 (*Encyclopaedia Britannica*, 2014). The discipline's theoretical core, being somewhat amorphous, is better defined by the issues it addresses than by any dominant paradigm or prescriptive approach. Since this period, scholars have come up with different definitions of town planning. Lewis Keeble (1969) describes town and country planning as the art and science of ordering the use of land and the character and the siting of buildings and communication routes so as to secure the maximum practicable degree of economy, convenience and beauty.

1.4 The Structure of the Book

The book, *Building Clean Cities in Nigeria*, comprises fourteen chapters, organised (based on the major thrust of the chapters) into five sections – introduction, concepts and principles, policy and programmes, practice, case studies, and policy recommendations. The remaining paragraphs in this opening chapter (chapter 1) provides a synopsis of the remaining thirteen chapters.

a. *The Concept and Principles of Clean Cities*

A clean city (almost an ideal city) is one with: readily available and decent housing at low cost; functional basic services and infrastructural facilities; no smoke or pollution (air, land and water), no electricity generator streets or avenues, no filth, no stench; beautiful streets, green frontages, green wedges, hanging gardens, beautiful parks, neat bus stop shelters, organised loading and off-loading areas (for bicycles, motorcycles, tricycles, taxis, mini buses, lorries and trailers) efficient and functional public toilets/comfort stations, litter and waste bins, cleared drains and canals, as well as adequate, standard, functional, and interconnected network of roads and pedestrian walkways that are beautifully lit at night. An aesthetically satisfying city is one that has its decaying component parts routinely renewed, including repainting of ugly buildings along the streets (as being experimented through legislation in Lagos).

The core concept of the clean cities emerged from the UN plan to look at the emissions of about 25 activities typically found in urban life, such as waste management, electricity use or transportation, and then calculate the per capita emissions (GlobalResourcesNews.com, 2014). The draft document of the plan listed the variables and sub-variables for these activities and specifies which units of measurement to use when studying them.

In chapter two, M.K.C. Sridhar provides the conceptual meaning and global review of clean cities, as well as qualities of clean cities from the public health, water and sanitation perspectives. Sridhar traces the history of city development and city planning in chronological order from the medieval times through the period of industrial revolution in the 19th century, and the subsequent development of technological innovations, to the late 19th century, and finally the 20th century. He conceptualises 'healthy cities' and 'clean cities', and postulates that, a country has to be rich to be considered on the clean country list.

Sridhar discusses such other issues as stakeholders in city development, biodiversity guidelines, and sustainable city development. In the final parts of chapter two, he highlights the challenges in the cities as urban safety and security, emergencies and disaster preparedness, climate change and urban climate, societal inequities, cities and the aging populations, and urbanization and increased migration. Identifying the concept of clean city as a process, Sridhar concludes that what is clean today may not be forever, as the degree of cleanliness changes from time to time.

b. *Policy and Programme*

The health of the environment is a good indicator of the health of any nation (ERA/FoEN and Oilwatch Nigeria, 2009). Every Nigerian expects and deserves a clean, healthy environment – not just for themselves, but also to pass on to future generations. The government sets standards where appropriate so everyone in the country has clear air to breathe, clean water to drink, and clean land to live on. We call these standards 'national environmental standards.' Activities of corporations require adequate environmental regulation, monitoring, inspection and evaluation in order to check and ensure proper environmental governance such that dangerous pollutants are avoided from hurting people and the environment. Nigeria has numerous environmental laws and regulations that could help to achieve this. There are several institutions with responsibilities for environmental protection.

Against this backdrop, this section provides an overview of the four chapters (chapters 3, 4, 5 and 6) that deal with issues pertaining to policy and programmes in clean city development. First, in this section, is Asani Afolabi, who discusses "regulations and standards guiding clean cities and the nature of their enforcement in Nigeria." In chapter 3, Afolabi starts by justifying the need for adequate enforcement of environmental regulations in Nigeria. Following this, he reviews the concepts of clean cities, standards, regulations and environmental

regulations, noting that there are several laws and regulations meant for attaining clean cities. Afolabi briefly discusses the Nigerian Urban and Regional Planning Law, Decree No. 88 of 1992 and the Environmental Impact Assessment Decree No. 86 of 1992. Other environmental regulations highlighted include the Endangered Species Act. Cap. E. 9 LFN 2004, the Quarantine Act. Cap. Q. LFN 2004, the Associated Gas Re-Injection Act. Cap. A. 25. LFN 2004, the Civil Aviation Act. Cap. C. 13 LFN 2004, the Oil and Navigable Waters Act. Cap. O. 6. LFN 2004 and the Harmful Waste. Act. Cap. H. 1. LFN 2004.

Further, Afolabi examines the National Environmental Standards and Regulations Enforcement Agency (NESREA) in terms of its structure, mandate, enforcement mechanism, challenges and prospects. He goes on to highlight twenty-four (24) Environmental Regulations which the Federal Government has developed, through NESREA, in attaining clean and healthy cities. He considers it necessary to review the activities of the institutions put in place for the management and protection of the environment. He concludes that greening should be made a compulsory requirement as part of project design requirements before approval could be granted by town planning agencies at all levels.

Chapter 4 focusses on the “Contribution of Corporate Social Responsibility (CSR) to Clean and Green Cities (CGCs) in Nigeria.” In his introduction to this chapter, Femi Olokesusi gives several definitions of CSR. He gives a conceptual clarification of CSR and traces the origin of the concept from different perspectives. He examines the voluntary initiatives undertaken by corporate entities to make Nigerian cities clean and green as part of their social responsibilities. From the extant literature, he identifies four types of social responsibilities – economic, legal, ethical and philanthropic responsibilities – as constituting total CSR. Olokesusi identifies ten (10) corporate organisations and enumerated their activities in the process of fostering CGCs and green culture in the country. These are Guarantee Trust Bank Plc., MTN Nigeria Ltd., First City Monument Bank Plc., Zenith Bank Plc., First Bank Plc., Flour Mills

of Nigeria Plc., Lafarge Cement WAPCO Nigeria Plc, Multipro Enterprise Ltd., Unilever Plc. and Shell Nigeria Plc. Olokesusi concludes that the contributions of corporate entities to CGCs through CSR initiatives recorded seem minimal, considering the enormity of the challenges posed to realisation of CGCs in the country and the declared profit-after-tax by most of the selected firms.

Kabir Yari takes up “Building Clean Cities: Bridging the Green and Brown Agendas” in chapter 5. Keeping cities clean and green is not only a long term, but also a continuous exercise. The crux of the chapter is to examine the green agenda and the brown agenda, and how the different sets of concerns can be integrated to achieve sustainable urban development. Yari argues that the Brown Agenda addresses the human environment and helps cities in issues of sustainable management of solid and liquid wastes in order to create a clean and environmentally healthy society. The green agenda, according to him, addresses the issues related to sustaining the natural ecosystem, such as green open spaces, preserving wetlands, urban forests, green landscaping of cities and green economy as well as issues of energy efficiency in urban design.

After a comparative analysis of the agendas, Yari discusses the major issues in the agendas to keep cities clean. These include the UN-Habitat-proposed tools and instruments that can be used to make cities clean and green, such as Environmental Planning and Management (EPM), Participatory Slum Upgrading Programme (PUSP), Urban Development Plans, and climate change and urban resilience. He examines the Local Agenda 21 Project in Bayamo, eastern Cuba and Singapore clean and green programmes as two notable examples of successful implementation of the green and brown agendas.

Lastly in this section, Timothy Gyuse considers the “Pivotal Role of Land Use Planning in Building and Sustaining Clean Cities.” He starts chapter 6 by analysing many definitions of land use and land use planning, and claims that land use planning plays a relatively minor

role in shaping the development of the city. He argues that land use patterns are a product of very complex interactions of many players of which the land use planner and land use planning are only a part. Gyuse establishes a link between land use and clean cities. According to him, land uses and land use planning create opportunities where the interacting interest and activities combine to make the city clean or unclean.

Gyuse identifies five groups of stakeholders involved in building clean and sustainable cities: federal government, state governments, local governments, the communities, and project facilitators and technical experts. The federal government has an overarching role and responsibility to set the overall policy for urban development. Such policies include environmental law, policy on housing, and the National Building Code. The state is expected to perform similar functions as the federal government. Gyuse identifies the roles of project facilitators as agents of different levels of governments. He observes that the community is not always carried along in the implementation of policy on clean city.

Gyuse singles out lack of implementation as one of the links that is missing in Nigeria's land use planning and this makes the possibility of planning contributing to the creation of clean and beautiful cities difficult if not impossible. He concludes that land use planning sets the stage for all human interactions in the city, but the role is limited as other players take the plan and use it for their benefit at their own time. It is this interaction, not just land use planning, which produces and sustains a clean city.

c. *Practice and Institutional Framework*

This section examines the administrative structure and practices that aim at keeping Nigerian cities clean. Chapters 7 and 8 fall under this category.

Francis Bisong takes up "Institutional Framework and Strategies for Building Clean Cities in Nigeria" in chapter 7. He begins by attempting operational definitions of concepts of clean, green, just and sustainable city, leading to the concept of green growth. He then highlights the institutional framework which includes laws, regulations and institutions and organizational framework at the three levels of government for achieving clean cities in Nigeria. At the federal level, the MDAs with mandate for greening the city environment include: the Federal Ministries of Environment, Lands, Works, Information, Housing and Urban Development; the Department of Urban and Regional Planning, Department of Survey and Mapping; and the National Environmental Standards and Regulations Enforcement Agency (NESREA). Similarly, at the state level, Bisong identifies the State Ministries of Environment, Works, Lands, Housing and Urban Development; the Waste Management Agencies; Urban Development Authorities/Boards; and the Department of Transportation. The Local Planning Authorities and the Environmental Task Force are the local government entities that work towards achieving clean cities.

Furthermore, Bisong divides the strategies for building clean cities into macro- and micro-level approaches. The macro level approach involves implementing the green agenda in the transportation, housing and energy sectors; and issues such as vegetation and landscape, food footprint, integrated solid waste management, and infrastructure and digital technology. The micro approaches considered by the author include walking and biking, clean energy (such as district heating, micro wind turbines, personal rapid transit, pneumatic garbage collection and green rooftops), enhanced environmental information system, information and awareness building, incentives for green investment in cities, participatory stakeholders engagement, parks and green areas, watershed management and financial sustainability. Bisong recommends institutional strengthening, curbing of corruption, collaboration among the MDAs and strong political will for effective urban environmental governance in Nigeria.

Leke Oduwaye, in chapter 8, examines the significance of the greening culture in contemporary cities in Nigeria. He begins with the review of conceptual issues – green cities, green technology, green growth, green building, green roof, green wall, xeriscaping and permeable paving – that are relevant to this discourse. He, then highlights the nature of urban environmental problems in Nigeria. The author conceptualises these problems in terms of legislative framework, managerial and technical inadequacies.

Oduwaye discusses many functions of urban green spaces that benefit quality of life, and concludes that they are important components of housing, business, leisure and other developments. He argues that there is a wide consensus about the importance and values of urban green spaces in planning for sustainable cities. He cites the Netherlands and Portland, Oregon, USA as examples of global best practices of the greening culture. Finally, in chapter 8, Oduwaye examines the current efforts in Nigeria towards clean and green cities. He establishes that various governments have made deliberate efforts to improve the environmental qualities of their dominant cities through creation of parks and gardens and planting of trees, shrubs and grasses.

c. *Case Studies*

In this section, four chapters present case studies of the best efforts towards building clean cities in Nigeria. These include chapters 9, 10, 11 and 12. The authors examine the various aspects of policies, programmes, strategies and activities that have been adopted in Abuja and Lagos in terms successes, challenges and prospects.

Nathaniel Atebije and Sherif Razak co-authored chapter 9 where they attempt an overview of the root causes of urbanization in Abuja and the efforts of government to restore and maintain sanity in the development process and to recreate the aesthetic pleasantness. In the concept of the plan, the FCT, Abuja was designed to be aesthetically

pleasant, legible and clean. However, in the face of the rapid population growth, the implementation of the plan has been challenging.

Atebije and Razak illustrate the green element of three concept plans – the broad land use plan, the residential district plan and the central area district plan. The green elements of these plans are elaborately discussed. The city plans consist of certain mechanisms that promote cleanliness; these are, a central sewage system, house-to-house collection of solid waste, disposal of these wastes at designated dump sites, and properly engineered landfill sites. Despite these mechanisms, the authors note the challenges militating against the development of a clean FCT. They then single out creation of the Abuja Metropolitan Management Council (AMMC), in 2005, as the major government's response to redressing issues of city cleanness in Abuja. According to them, the effective performance of the schedules of the departments of AMMC has given the FCT the level of sanity and cleanliness it currently has. One major breakthrough of the Development Control Department of the AMMC was the demolition of illegal buildings and shanty structures in various parts of the city.

In a similar, but unique account, Ola Oresanya presents "Lagos State Government's Policy, Programmes and Activities in "Waste Management: Towards Sustaining a Clean Mega City." Oresanya starts chapter 10 with an overview of solid waste management in Lagos. He traces the evolution of solid waste management in the state from the Lagos State Refuse Disposal Board (LSRDB), which was instituted under Edict No. 9 of 1977; the Edict No. 55 of 1991, which rechristened the LSRDB; and, finally, to the Lagos Waste Management Authority (LAWMA), established by the LAWMA Law in 2007. The author discusses the various programmes and projects that LAWMA has introduced towards optimizing the management of solid waste between 2007 and 2014.

Oresanya discusses the process of solid waste management programmes and activities under six stages, namely: collection, containerization,

transportation, processing/treatment, material recovery, and disposal. The collection stage involves waste collection from households, commercial and industrial premises, waste collection from public places, street sweeping, marine waste collection, and collection of medical and other hazardous solid waste. The containerization stage includes containerization of municipal solid waste, marine and coastal solid waste, and medical and hazardous solid waste. Waste transportation stage involves fleet management with telematics and transfer loading station (TLS). Major activities under the processing stage are processing of municipal solid wastes, and medical and hazardous wastes.

In the concluding parts of chapter 10, Oresanya identifies key challenges in Lagos State solid waste management. They are inadequate funding, inadequate infrastructure, critical socio-economic factors (such as unwillingness to pay for service), low technology, and weak and inadequate human capital index.

Chapter 11 focusses on the efforts, successes and challenges in keeping Abuja-FCT Clean, with Uche Agbanusi discussing the driving forces for keeping the city clean, the challenges faced and the way forward. In his study, Agbanusi specifically reviews the roles of Abuja Environmental Protection Board (AEPB) – the body statutorily established for the cleaning, sanitation and maintenance of the environment and keeping the FCT clean. Some of the remarkable efforts recorded by AEPB, according to the author, include deployment of 20 solid waste cleaning contractors in the districts, performance monitoring, increased partnership with the private sector operators, procurement of vegetation control equipment, and resuscitation of the monthly environmental sanitation.

To achieve comprehensive city cleaning, Agbanusi recommends a combination of various approaches, such as public enlightenment, creation of economic incentives to change existing practices, provision

of more public toilets, improvement of liaisons among the FCT departments, provision of more modern equipment, staff motivation and addressing conversion of the employment areas.

The issue of concern in chapter 12 is “City Restoration and Urban Quality Control for Environmental Sustainability in Abuja, Nigeria.” The implementation of physical development plans in most parts of the less developed countries is problematic. In Nigeria, the implementation of the Abuja Master Plan is faced with the problems of illegal squatter settlements and building contraventions. It is against this background that A.M. Jinadu examines physical development problems at the Federal Capital City (FCC) and the ongoing efforts to restore the Abuja Master Plan.

Jinadu identifies the current development problems to include land use conversion, illegal occupation of undeveloped plots (most especially in phases II and III), illegal erection of structures on sewer mains and under high-tension power lines as well as encroachments on school land, public parks, open spaces and green areas. The author further highlights the city restoration efforts to curb the development problems. These include demolition of illegal structures, greening of the city and relocation of squatter landlords. Between July 2003 and July 2006, according to Jinadu, the development control unit of the Federal Capital Development Authority (FCDA) served a total of 3,212 quit notices, issued a total of 689 stop-work orders and demolished a total of 12,852 structures. He concludes that, although the current city restoration effort has achieved 50% success, the relocation exercise is constrained by low level of response from beneficiaries owing to poor infrastructure on the sites. He, therefore, recommends the reactivation of the existing schemes as well as accelerated infrastructure servicing of the sites to attract settlers and provide an improved living environment for the displaced residents of Abuja.

c. *Policy Recommendations*

In contrast to early-urbanized countries, Nigeria's recent urbanization is occurring at low-income levels and with enormous infrastructure gaps, especially in housing, energy and transport. The lack of infrastructure, together with weak institutions, reduces the positive impacts of cities, while increasing the negative externalities such as pollution and congestion. Slums and divided cities will pose problems in spite of the commitment of the policymakers.

Policy makers have focused recently on how clean cities around the world are. From the preceding sections, it is apparent that an array of other laws on the environment exists, aiming at attaining clean cities. All too often, people argue that environmental laws in Nigeria are inadequate; a key problem with these laws may lie in the failure of policy makers and implementing officials to involve the local community in the policy processes (ERA/FoEN and Oilwatch Nigeria, 2009). This section (which comprises chapters 13 and 14) aims to equip practitioners and, most importantly, the policymakers with policy and practical recommendations in two major sectors of national development – housing and transportation sectors.

Olwasinaayomi Kasim and Tunde Agbola take up the issue of housing in chapter 13. They argue that how cities develop is part of the environmental problem, but it can also be part of the solution. From a policy perspective, the authors warn that the solution is not only about the construction of infrastructure for roads, buses and railways, but also about pricing and management, regulations applying to the location of homes, the use of cars and the design of cities. They note that building a green city goes beyond assembling the latest green technologies or materials. 'Rather, it is a process in which every element of the design is first optimized and then the impact and interrelationship of various different elements and systems within the building and site are re-evaluated, integrated, and optimized as part of a whole building solution.'

Kasim and Agbola opine that designing a workable set of local green housing policy goals and programmes involves ongoing agreement across a broad range of stakeholders. They, therefore, recommend a transparent public process of reaching consensus on a policy framework and setting clear roles and responsibilities for elected officials, planning agency staff, developers, architects, builders, community leaders and other critical stakeholders in green housing development. The authors are of the opinion that the NITP and TOPREC should champion the green housing policy by lobbying the national assembly legislators and advocating to decision makers to recognize the importance of green growth to sustainable development. This will help the policy makers to make public commitment to create green building framework or achieve green building goal.

Kasim and Agbola conclude by pointing out a host of options available to the policymakers in setting green goals. They include “establishing green building requirements for public-assisted housing developments, mandating green building practices on community facilities and public buildings and issuing policy directives that reach the majority of residential and commercial real estate within the jurisdictional boundaries.”

“Green Transport for Nigerian Cities” is the focus of chapter 14. In this chapter, Olusiyi Ipingbemi appraises the current urban road transportation with a view to proposing strategies that will ensure clean (green) transport in Nigerian cities. Owing to higher car ownership, more home-owners are concreting over front gardens to create parking spaces which will increase run-off into drains. This affects both the amount and distribution of green spaces in built-up areas. Ipingbemi notes the enormity of the existing urban transportation challenges—rapid motorization owing to urbanization, poor coordination between land use and transportation, increased congestion and vehicular pollution. He, therefore, calls for a new paradigm for envisioning and implementing sustainable urban transport. The new paradigm, according

to him, must involve strategies for cleaner, safer and more efficient transport systems. In what he calls road to cleaner transport, the author specifically recommends investing in non-motorized transport (providing at-grade and grade-separated safe cross walks, connected walking networks and bicycles facilities); investing in high-occupancy vehicles (e.g. investing in Bus Rapid Transit (BRT), mass transit and trains); phasing out leaded petrol and embracing vehicles with more efficient engines; promoting Intelligent Transport Systems (ITS); and implementing urban designs that favour land use integration. Ipingbemi further recommends transport regulatory policies, such as reducing the age of imported used vehicles, restricting the use of cars in certain circumstances, e.g., congestion and parking pricing.

1.5 Concluding Remarks

Cities have captured much public attention than before; in principle, cities offer a more favourable setting for the resolution of economic, social, political and environmental problems than rural areas. Cities generate jobs and income and also present opportunities for social mobilization. With good governance, cities can deliver education, health care and other services more efficiently than less densely settled areas simply because of their advantages of scale and proximity (UNFPA, 2013). However, global cities' growth in density, area and number are not only susceptible, but also expose peoples' lives and assets to different hazards, as the concentration of people and economic activities increase, so too does the vulnerability and risk in them. This is one of today's major challenges, particularly in rapid urbanizing contexts, such as Nigeria. The challenge for the next few decades is learning how to exploit the potential the city offers in a sustainable manner. This can only be achieved through committed/rigorous pursuit of clean policy and programmes. The future of humanity depends on it.

To address the present and future problems, the building of an *ideal clean city* is recommended, which could also be called *green city*. A built

clean city is designed with consideration of socio-economic and environmental impact, inhabited by people dedicated to minimization of required inputs of energy, water and food, and waste output of heat, air pollution (CO₂, methane, etc.) and water pollution with improving measures to promote the well-being and living standard of its citizen in a sustainable way. Indeed, it is a functioning resilient city, to enhance the lives and potential of its inhabitants without or with limited negative implication on the environment.

The professionals, politicians, community leaders and others who help to shape the cities have a responsibility to ensure that the developers and designers work hand in hand with the green sector in order to provide enough space for green, whether it is in the form of parks, family or community gardens, green wedge, trees or green roofs on rooftops. The key is to remember that investment in green outweighs the costs.

Urban greening is a mitigating measure to many of the environmental problems associated with expanding urban areas (Long and Nair, 1999). Not only is the quantity of green space important, their spatial context is also important. Green infrastructure is made up of corridors, squares and the overall surroundings. Corridors can contribute to flood storage, as can squares although to a lesser extent. The green infrastructure can aid rainwater infiltration, especially on sandy, faster infiltrating soils. This suggests that there might be a case for restricting landfill development on these types of soil because of the contribution they can make to rainwater infiltration if they are kept as green spaces. Patches of green space and the overall matrix can provide cooling oases.

Open space within towns and cities, rather than as a green belt, might be more effective in providing shade and flood storage, improving infiltration rates and reducing run-off. This clearly has implications for policies to encourage infill development, higher housing densities and the reduction or loss of gardens. Improving the quality of urban green

spaces to ensure they are well-planned, clean, safe and appealing could encourage people to walk or cycle rather than use cars for short journeys; it also provides for recreation and access to nature nearer to home. This would help reduce carbon emissions.

Vegetation can be used to cool buildings, thereby reducing the need for mechanical air conditioning. US research found that shelter and shade from trees can save up to 10 per cent of the energy needed to heat and cool nearby buildings (National Urban Forestry Unit, 2005). To a lesser extent, the use of allotments and community gardens to grow fruit and vegetables could help reduce food miles, albeit on a relatively modest scale, which would again reduce carbon emissions.

Policies could be used to encourage the optimal structure and composition of urban green space through green space strategies. It might also be possible to encourage people to adapt their behaviour through education, social pressure and incentives. However, there are other factors, such as soil type, which it would not be possible to influence. Further analysis on how behaviour can be influenced is needed.

Governments have a duty to give the environment topmost priority beyond mere political pronouncements. The ravages of pollution, erosion, deforestation, desertification and sundry manifestations of environmental degradation show that much still needs to be done to ensure clean cities in Nigeria. A wide gap exists between pronouncements and action and these needs to be urgently closed because the vast majority of Nigerians live close to the environment. In many parts of the developing world, as in Nigeria, calculation of cost and benefits of human activities on people and their environment are hardly comprehensive. Exclusion of local communities in the policy process is the result of the priority given to economic growth over protecting the living environment, the attractiveness of cities, and the health of the human beings who live in them.

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