Journal of Construction Project Management and Innovation Vol. 2 (1): 190 - 207, 2012
ISSN 2223-7852

ANALYSIS OF INFRASTRUCTURE DEVELOPMENT FOR SUSTAINABLE HOUSING IN LAGOS MEGACITY, NIGERIA

Adetokunbo O. Ilesanmi

Department of Architecture, Obafemi Awolowo University, Ile-Ife, Nigeria, Tel. +234-8058009879
Email: aoikcom@yahoo.com *****

Abstract
Studies which confirmed the huge urban housing and infrastructure deficits in Lagos, Nigeria have often considered urban housing in isolation from its infrastructure. This paper analysed the link between infrastructure development and sustainable housing through the comparative case-studies of three housing sectors in Lagos megacity. The study stressed the importance of infrastructure to human and economic development, with the objective of determining the sustainability of urban housing development in the context of neighbourhood infrastructure provision in the study area. It analysed the state of physical and social infrastructure especially as they relate to urban housing, distinguishing between public, organized private and popular housing sectors. Primary data were obtained from an on-going research project on the Lagos megacity, complemented by secondary data from related literature. The paper identified the associative factors for the housing deficit and those implicating deficiencies in infrastructure development, to include: one-off and ad-hoc approaches to housing problems; inappropriate implementation of housing and urban policies; inaccessibility and high costs of lands; under-investment in infrastructural expansion; poor maintenance and upgrading culture; systemic failures in mortgage schemes for home-ownership; and problems related to urban governance. The paper offered recommendations of options to consider in addressing the issues of housing and infrastructure deficits. It concluded on the need for housing developments that enhance mixed neighbourhoods, cost-efficient infrastructure management, and an integrated approach to resolving the deficit challenges in the built environment.

Keywords: Infrastructure, Infrastructure development, Lagos megacity, neighbourhood, sustainable housing

INTRODUCTION

Studies which confirmed the huge urban housing and infrastructure deficits in Lagos, Nigeria, have often considered urban housing in isolation from its infrastructure (Abiodun, 1997; Aribigbola, 2000). This is notwithstanding the fact that basic modern infrastructure (roads, water and electricity)

generally constitute up to 30 per cent of the cost of housing estates (Lawal, 1997). This paper therefore analyses the vital link between infrastructure development and sustainable housing through the comparative case-studies of three housing sectors in Lagos megacity.

DEFINING INFRASTRUCTURE AND INFRASTRUCTURE DEFICIT

Infrastructure in a broad sense refers to the basic structure of a system or organisation (Collins English Dictionary, 2003). It is often categorized into two broad forms: physical and social, or what has been termed 'hard' and 'soft' infrastructure (Kumar, 2005). Fulmer (2009) describes physical infrastructure as the physical components of interrelated systems providing commodities and services essential to enable, sustain, or enhance societal living conditions.

Infrastructure is critical to social and economic development, and is a crucial catalyst for attracting investment (Agbola and Olatubara, 2003). Infrastructure development based on good governance provides the possibilities for public policies and interventions to maximize finite resources in the creation of jobs, enhancement of living standards and attracting of foreign investments. Malik (2009) reiterates the significant role of reliable and affordable infrastructure in poverty reduction and in the achievement of the Millennium Development Goals (MDGs). Investments to maintain and improve physical infrastructure are central to sustained economic development. Infrastructure therefore plays a central role in facilitating economic growth and international competiveness (Malik, 2009).

Physical infrastructure such as electricity, transportation and communication networks are indispensable for the sustainability of a functioning market economy and the facilitation of good governance. They constitute the bedrock of sound economic development, social progress and human security. In the absence of stable electricity, industrial activities such as manufacturing, mining and agriculture – which are usually the prime employers of labour in developing economies – cannot survive and thrive. Without efficient and affordable transportation networks, markets disconnect and fail, rural-urban movement of agricultural products is hindered, price differentials between points of production and consumption widen, and public administration becomes problematic.

Social infrastructure as a subset of the infrastructure sector typically includes assets such as: educational institutions; health or medical facilities; state, community or council housing; local markets; civic utilities (community and sports facilities); prisons and court-houses (NZSIF, 2009). Social infrastructure is also vital for balanced human development and sustainable quality of life. Infrastructure deficit refers to the gap between, or the shortfall of infrastructure supply to demand, which often undermines economic efficiency, lowers quality of life, and is a key indicator of underdevelopment. In many developing countries the demand for infrastructure has increased due to urban growth, urbanisation, and shifts towards greater consumption of services. This demand is accentuated by: fiscal crisis, financial constraints, and inefficiencies in public sector infrastructure provision. Infrastructure deficit usually results from a steady decline in government infrastructure spending, combined with an increase in the cost of building additional infrastructure. In Nigeria for example, infrastructure deficits in terms of electricity supply, transportation networks, water supply and waste management have assumed critical dimensions. These shortages have accumulated over the years due to continuous under-investment in expansion and maintenance.

Nigeria's infrastructure deficit is estimated at $200 billion (30trillion Naira) (Oyinloye, 2011). In addition, addressing Nigeria's infrastructural challenge will require sustained expenditure of almost $14.2 billion per year over the next decade, or about 12 per cent of GDP, compared with about $5.9 billion the country presently spends (Foster and Pushak, 2011). Research needs to respond to pertinent questions about the nature, magnitude, causes of, and solutions to deficits in sectors such as electricity, railways, roads, communications, health, education, and security. More important to the grassroots however, is the provision of basic infrastructure for sustainable housing at the neighbourhood level; hence this study.

INFRASTRUCTURE DEVELOPMENT AND SUSTAINABLE HOUSING

Housing is one of the fundamental necessities of mankind, which has a major impact on health and well-being (Ilesanmi and Ogunshakin, 2010). It is widely acknowledged that adequate and affordable housing is critical for a good life, is an essential requirement for an efficient labour force, and the foundation of satisfactory community life (Aribigbola, 2000). Many of the urban areas in Nigeria are characterized by severe decay in both housing and physical infrastructure, accentuated by the

economic downturn in recent decades. Unlike developed nations, the mortgage industry is still in its infancy with the real estate sector contributing less than one percent to the nation's GDP. Nigeria is yet to adequately provide institutions that would drive a vibrant mortgage platform which will in turn aid house ownership. This infers that the primary means for many Nigerians to become home owners is through the traditional tortuous method of self-help from life savings. The Federal Housing Authority of Nigeria (FHA) which has the statutory responsibility of providing housing has only built about 36,000 houses nationwide since its inception in 1973, resulting in an estimated housing deficit of between 16 and 25 million houses. Within the wider spectrum of infrastructure development therefore, this study examines infrastructure for sustainable urban housing in three housing sectors of Lagos megacity. It evaluates the sustainability of urban housing development in the context of neighbourhood infrastructure provision.

METHODOLOGY

A case-study research approach was adopted, involving qualitative analysis of archival materials, publications of the Lagos State Government and its agencies, and other relevant secondary data, including available census data. Additional primary data were obtained through researcher-observation during successive time-frames spent within the Lagos metropolis between 2005 and 2010. These research techniques were complemented by a review of related literature. The analysis of this body of data provides an insight into the evolving state of infrastructure in the mega-city.

Within the framework of the case-study, and in order to evaluate the sustainability of urban housing in the context of neighbourhood infrastructure provision, a survey of six purposively selected neighbourhoods was conducted. The objectives were to analyse the state of housing and infrastructure quality, distinguishing between public, private and popular housing sectors. This involved collecting data through expert rating of the selected neighbourhoods, namely: Iponri and Isolo estates (public housing sector); Goshen estate, Lekki and a Surulere neighbourhood (private housing sector); Badia and Makoko (popular housing sector). Each of these was independently assessed by five trained evaluators using a rating instrument developed based on indicators derived from the literature. Uniform weights were assigned to each of the factors because of the comparative focus of the evaluation.

Multiple assessors were employed in order to reduce the subjectivity of the process. These operated independently, but within similar time frames. Neighbourhood infrastructure was scored between the range (0) to (5), where (0) indicates "infrastructure not provided", (1) indicates "infrastructure provided but not maintained", (3) "fairly maintained"; and (5) "well-maintained". The assessment was done for 10 items of physical infrastructure (access, roads, parking, walkways, landscape, water supply, sewerage system, refuse disposal, street lighting, and drainage) and 5 items of social infrastructure (access/proximity to primary school, a public health facility, local market, security facility, and open space for recreation or social events). Housing quality was assessed based on 5 indicators (adapted from Ilesanmi, 2010b): External visual quality; maintenance quality; structural quality; performance quality; and quality of building services. These housing quality indicators were scored in terms of whether for majority of the houses they were evidenced in good state (5 points), in fair state (3 points), in poor state (1 point), or not evidenced (0 point). The summation gave the value for each surveyed neighbourhood pro-rated to a scale from 0 to 10 (Table 2). The maximum possible rating for any of the neighbourhoods was therefore 10.

THE STUDY CONTEXT

Lagos mega-city, currently the fifth largest city in the world, is one of the most rapidly urbanising areas in the world, and Nigeria's most populous conurbation. The growth of Lagos has been phenomenal, demographically and spatially. From a population of about 25,000 in 1866, it grew to 300,000 in 1950, reached 665,000 by 1963, covering 69.9 km2, and over ten million in 2010, attaining by UN definition, the megacity status (Table 1). Although population figures are widely disputed, the UN projects for Lagos, a figure of 12.4 million by 2015, which would just exceed Cairo (UN-Habitat, 2010).

Lagos exemplifies many of the cities of the global South, which face an escalating crisis in terms of the provision of basic services. The striking paradox is that vast demographic expansion over the past three decades has occurred in a context of extensive economic decline. Lagos portrays 'the paradoxical characteristics of the contemporary African city as a dysfunctional yet dynamic urban form' (Jameson, 2003; Gandy, 2006).

Table 1: Population of Lagos: 1866 – 2006

Year	Area covered by the census (km^2)	Total population
1866	-	25,000
1901	-	40,000
1911	46.6	73,766
1921	52.3	99,690
1931	66.3	126,108
1952	69.9	272,000
1963	69.9	665,000
2006	3,345	9,113,605

Sources: Adapted from Abiodun (1997); *Ayeni (1981); National Population Commission of Nigeria (2006).

Except for recent efforts of the current Lagos State Government in infrastructure development, there had been a notable deterioration in the infrastructure of the city since the post-independence euphoria of the early 1960s, through the era of the 1990s when Lagos assumed the dubious label of being regarded as one of the worst cities in the world, up to this transformational phase. The history of Lagos in the last two decades of the 20th century was marked by severe deterioration in quality of life; high level of poverty; proliferation of slums; environmental degradation; dilapidated and congested road system; massive flooding and disrupted sewerage network (George, 2010; Olukoju, 2003). In terms of spatial expansion, from its original lagoon setting, the sprawling city has engulfed a vast expanse of surrounding areas including over 100 different slums. Abiodun (1997) affirms that the vitality of the economy of Lagos and its nodal position in the national economy and transport networks explain its growth, despite the breakdown of many basic infrastructure services and the difficulties caused by this for both economic enterprises and individual residents.

GENESIS OF THE INFRASTRUCTURE DEFICIT

The genesis of the apparent dysfunctions has been historically traced to the failure of successive colonial administrations to tackle the problems of overcrowding, inadequate and deteriorating urban infrastructure (Gale, 1979); and the concomitant strategy of segregation between wealthy enclaves and the indigenous population (Home, 1983; Peil, 1991). The cultural dualism between ‘modernity’ and ‘tradition’ was reflected in a disproportionate concentration of urban infrastructure in the colonialists’ wealthy enclaves at the expense of the African majority (Olukoju, 1993, 2003).

This, in part, led to the devastating public health crises which climaxed in the bubonic plague outbreaks of the 1920s, the establishment of the Lagos Executive Development Board (LEDB) and the clearance-driven urban renewal.

The rapid population growth of Lagos metropolis since independence in 1960 has resulted in tremendous pressure on the land, and a consequent inadequacy of basic infrastructure such as access roads, effective drainage and sewage system, public transport, recreational and other communal facilities. In many cases, individual developers provided septic tanks and soak-away pits for sanitary management (George, 2010). In addition, the physical impact of migration is visible in the urban core and fringes of Lagos mega-city, with the proliferation of informal settlements. Plans and efforts to stem, control, upgrade or regularize these settlements have failed to keep up with the increasing housing demand.

For reasons of accessibility, the majority of these settlements emerge along the transport corridors entering the mega-city from different directions. The resultant corridor development along the main arteries poses serious problems for infrastructure development. With the increasing demand for land for urban housing, informal settlements are increasingly farther away from their residents' places of work, recreation, entertainment and social-sector infrastructure. As a result, transport has become a major issue in terms of both cost and commuting time.

FINDINGS

Table 2 summarizes the average of ratings for housing quality and neighbourhood infrastructure for the six neighbourhoods. The figures for 'Neighbourhood Infrastructure' have summed up the 'Physical' and 'Social' dimensions in order to simplify the analysis. The neighbourhood surveys reveal a number of findings as further illustrated in Figure 1. The ratings 0 to 10 represent pro-rated summarized averages of the five assessors.

Infrastructure provision was found to be generally not sustainable in the study areas. There was substantial infrastructure deficit overall, the most acute being in the popular housing neighbourhoods of Badia and Makoko (more than 80 per cent in both cases), followed by the public housing estates

in Iponri and Isolo (70 and 55 per cent respectively). That is, the popular housing sector reported significantly lower levels of housing and infrastructure quality (ratings of between 1.5 and 2.5) than the private (5.5 – 8.5) and public housing sectors (3.0 – 6.0). Housing and neighbourhood environments in the predominantly low-income popular settlements evidenced the most deficient housing quality, as well as physical and social environmental conditions.

Table 2: Averages of Ratings for Neighbourhood Infrastructure and Housing Quality

Neighbourhood	Neighbourhood Infrastructure	Housing Quality
Popular housing		
Maroko	1.5	2.0
Badia	2.0	2.5
Private housing		
Surulere	5.5	6.5
Goshen Estate	8.5	8.0
Public housing		
Isolo	4.5	6.0
Iponri	3.0	4.5

The private housing sector (Goshen estate and Surulere neighbourhood) recorded a higher rating than the public housing, both for housing quality and neighbourhood infrastructure. However, it was only in the Goshen estate that the rating for infrastructure slightly exceeded that of housing quality (8.5 and 8.0 respectively). In all other cases, infrastructure was rated to be of lesser quality than housing. The Goshen estate example is therefore considered the only sustainable case; it also indicated a slim margin of infrastructure deficit of 15 per cent. This implies that quality of infrastructure in the study area was generally poorer than the quality of the actual housing, with the exception of the Goshen estate case. The sustainable alternative is for adequate attention to be given to both infrastructure development and housing quality, since the former is ideally meant to be the indispensable basis for the latter. This was however not the situation in this case-study of Lagos mega-city, indicative of the need for appropriate policy and programme interventions.

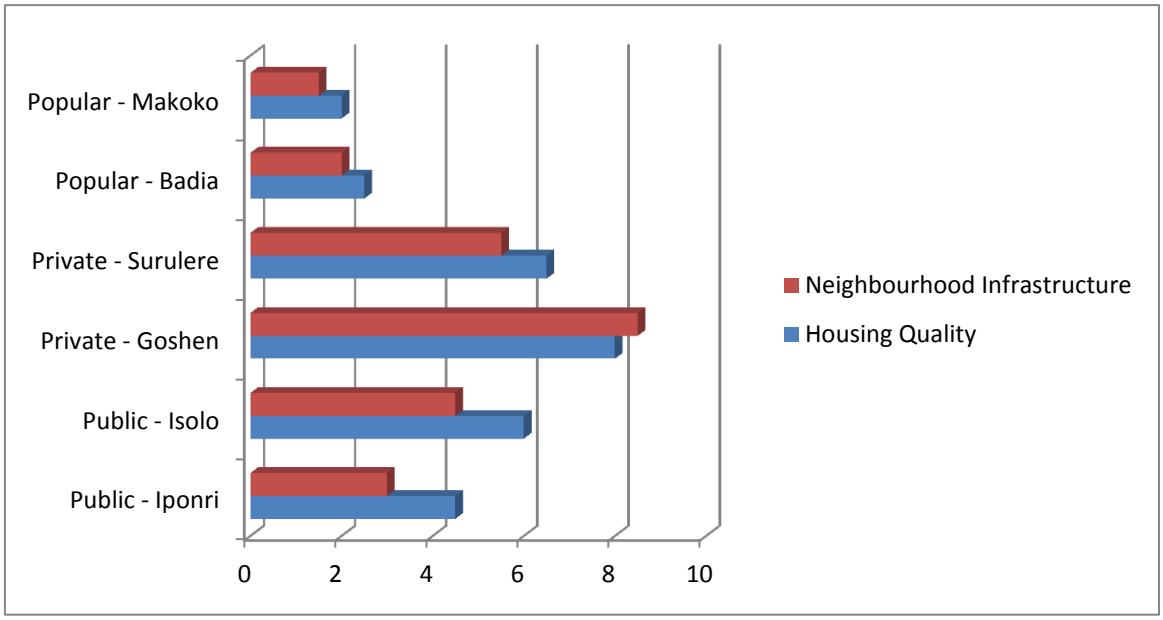

Figure 1: Expert Rating of Infrastructure & Housing Quality in Selected Neighbourhoods

The associative factors for the housing deficit and particularly those implicating deficiencies in infrastructure development were identified from secondary data to include:

1. One-off and ad-hoc approaches to housing problems;
2. Inappropriate implementation of housing and urban policies;
3. Inaccessibility and high costs of lands;
4. Under-investment in infrastructural expansion;
5. Poor maintenance and upgrading culture;
6. Systemic failures in mortgage schemes for home-ownership; and
7. Problems related to urban governance.

The following section briefly discusses these findings in the light of the literature and with specific emphasis on Lagos mega-city. Issues related to the sustainability of urban housing in the context of neighbourhood infrastructure, the challenge of neighbourhood infrastructure deficit, and some of the associative factors are discussed.

DISCUSSION

The survey reveals a wide variation in housing quality and infrastructure between the six neighbourhoods within the same mega-city, reflecting the inequality and severe lopsidedness in the provision of qualitative housing and distribution of infrastructure.

Sustainable Urban Housing

Infrastructure, by definition is expected to be supportive to the actual 'shelter', following the norm that 'housing is more than shelter'; hence where the rating for neighbourhood infrastructure is less than the housing quality, sustainability is threatened. This happens to be the situation in five of the analysed neighbourhoods, with the singular exception of the private Goshen Estate, Lekki. This is a gated community that was developed under a private governance arrangement. A collective legal and social framework forms the constitutional conditions under which residents subscribe to the occupation of the estate (Atkinson & Blandy, 2005; Blakely, 2007). On a cursory look, this high level of quality suggests the potential of the gated community as a sustainable form of contemporary urban housing development. A closer view of the estate may however admit a contrary opinion. Goshen Estate was conceived as an ultra-modern exclusive low-density residential estate, with some of the detached residences enjoying a water-front view. Generally, the residences were owner-occupied and in few cases leased to corporate bodies for the accommodation of their staff. It is a fully-fenced community with centrally maintained landscape, network of tarred roads, paved walkways, covered concrete drains, dedicated transformers and boreholes with treatment plant for electricity and water supplies respectively. It is managed by its private developers and their allied maintenance managers. The residents are only responsible for the maintenance of internal lawns behind their gates. It may thus be argued that because the residents of this estate are predominantly high-income, it may not be a justifiable model. Moreover, the debate is ongoing as to whether gating contributes to residential integration or is a form of exclusion and segregation. Further empirical evidence is required to authenticate either claim in our context (Manzi and Smith-Bowers, 2005).

Neighbourhood Infrastructure Deficit

The substantial infrastructure deficit revealed in this study highlights a challenge of wider magnitude and implications. Recent secondary data point to a keen awareness and an active effort on the part of the current administration in Lagos State regarding the infrastructure needs of the mega-city. It seems however that much of the effort is focused on the 'macro' dimensions of infrastructure development, with the grand ideas of the Lagos Mega-city project (LMCP).

Essentially the LMCP involves providing infrastructure, housing and tourism, as well as linking the adjoining town of Badagry to the rest of the state with a modern transportation system. Other notable features of the proposed LMCP are: beautification and landscaping projects; development of recreational parks; construction of new roads and a light rail-road system; development of water routes to facilitate marine transportation; construction of a fourth mainland bridge; construction of 10,000 housing units in the Lekki Peninsula; reconstruction and expansion of the Lagos-Badagry expressway into a trans-regional eight-lane conduit with a light rail; construction of a water-way and the proposed Eco-Atlantic City on Badagry water front – "the New City on the Atlantic" (Lagos Energy City, 2007). Achieving all of these without due attention to the grassroots infrastructure development and social equity at the level of the residential neighbourhoods would only amount to glossing the surface of the debris and perpetuating past unsustainable and ineffective approaches.

The mega-city's challenge is rooted at the level of popular housing neighbourhoods such as Badia and Makoko, which in spite of their severe infrastructure deficit have remained and continued to grow in population and spatial spread. These seem to have surpassed the possibility of outright clearance and demolition, unless the authorities are prepared for a social revolution of no small magnitude. The reasonable option would be to upgrade these predominantly low-income urban popular settlements. The same can be said of the public housing estates such as Iponri and Isolo, which may only require some form of routine maintenance of infrastructure and housing to become sustainable.

Housing and infrastructure deficit: Associative Factors

The administration of housing by successive regimes had been characterized by one-off and ad-hoc approaches rather than a comprehensive, integrated response. That the current government has recognised the fundamental need for infrastructure development and initiated a mega-city project in that direction is therefore commendable, given the earlier absence of any strategic vision to manage the urban environment in the public interest. To achieve the fullest potentials of the mega-city however, raises other issues. It has been suggested that in the cities of the developing world, the overwhelming problem is not urban growth per se, but the fact that city administrations lack either the political will or resources to manage growth or adopt inappropriate and obsolete planning paradigms (Angotti, 1993).

With respect to the inappropriate implementation of housing and urban policies, the aim of the National Housing Policy of 1991, reviewed in 2004, was 'to ensure that all Nigerians own or at least have decent, safe and sanitary housing at an affordable cost'. The implementation of this laudable objective has however encountered several challenges militating against the attainment of national housing for all Nigerians. The 2005 Millennium Development Goals Report for Nigeria noted that if drastic action is not taken, Nigeria might not achieve the target of environmental sustainability. The country has undertaken several reforms in housing finance and delivery including the re-organization of the Federal Housing Authority, Federal Mortgage Bank of Nigeria and the Urban Development Bank, but these have only yielded modest results.

A particularly relevant aspect of policy relates to private sector participation in infrastructure development. Malik (2009) observes that since the early 1990s, many developing countries have embarked upon public sector reforms, and introduced private investment in physical infrastructure. The objectives behind the policy change were to exploit the benefits of private participation in terms of improved managerial and service-delivery efficiency. Notwithstanding the arguments in favour of private-sector efficiency, there are serious limitations to the wholesale adoption of a private-sector driven model of infrastructure development, particular with respect to targeted infrastructure for low-income groups in which the profit-motive is unsustainable.

Meanwhile, rapid urbanization is exacerbating the problems of rising urban poverty, with severe housing deficit, poor infrastructure and poor sanitation. According to UN-Habitat (2008a), poverty in Nigeria ranges between 52% and 70% and seventy percent of urban dwellers live in slums. About 46% of the population has no access to safe drinking water while an estimated 47% lack adequate sanitation services, making it one of the countries with the most unfavourable social-environmental conditions in the world. Municipal waste management is a major problem as most urban centres lack adequate refuse collection systems and most households resort to open and indiscriminate dumping. In this kind of poverty-laden scenario, the policy of private participation therefore needs to be better contextualized.

The cost of land in most parts of Lagos mega-city is extremely high. Speculation in accessible land causes asking prices to rise so that it often costs as much – or even more – to buy the land as to build the house. Land cost may be three or four times the house cost in the more accessible areas of Lagos. Without a mechanism for bringing land within the range of average workers' purchasing power, such land will continue to be the squatter's target. In addition, land transfer and protection of tenure by registration systems are troublesome obstacles in Lagos, as it is in many cities of the developing world. A single parcel may have multiple heirs, each of whom must be tracked down and his or her consent secured for a sale.

A major cause of infrastructure deficit is the under-investment in infrastructure expansion. Arimah (2005) identifies finance – low income levels and poorly developed tax systems – as a major factor constraining the capacity of city governments in developing countries to provide adequate infrastructure. This is coupled with a poor maintenance and upgrading culture; systemic failures in mortgage schemes for home-ownership; and problems related to urban governance.

As earlier noted in the analysis of the six neighbourhoods, the high rating of neighbourhood infrastructure in the private gated estates suggests a link with neighbourhood governance. Residents of the private gated estates in Surulere and Lekki though not entirely immune from the effects of the general infrastructure decay, have developed micro-governance structures that cater for some of their

basic and common infrastructure needs. Further research may be required into the nature and implications of such governance structures for infrastructure development.

CONCLUSION

This paper analysed the link between infrastructure development and sustainable urban housing, using the case-studies of three housing sectors of Lagos megacity, which involved the expert rating survey of six neighbourhoods. Given its prime position as the nation's economic base, the sustainability of Lagos mega-city is a challenge, not only to the Federal and State governments, but also the local governments. Provision of effective infrastructure development would not only contribute to improving citizens' lives, it will also help to attract investment. In order to minimize the wide variation and disparity in housing and neighbourhood quality in different parts of the mega-city, a case could be made for housing developments that encourage mixed neighbourhoods. Planning policies that deliberately segregate people according to socio-economic status may actually be perpetuating infrastructure deficiencies to the detriment of the poor and low-income.

To ensure the creation of a sustainable urban future for the growing millions of Lagos mega-city dwellers, current urban conditions and projected trends indicate that continued reliance on contemporary conventional practices may not suffice. Innovative urban practices must be developed to provide local, context-sensitive solutions. Such new thinking about urban futures may focus on: the improvement of existing urban systems and infrastructure; the integration of sustainability principles and practices into the design and construction of buildings and the planning of urban settings; and the reduction or eradication of poverty through good governance. The challenge of having cost-efficient and innovative infrastructure management also infers a need for greater expertise in the related disciplines. An integrated and approach to resolving the deficit challenges in the built environment is also expedient as it is obvious that these issues require an integrated understanding of urban systems based on trans-disciplinary research, participatory platforms and multi-dimension capacity building.

RECOMMENDATIONS

A number of strategic options are offered as recommendations for mitigating the housing and infrastructure deficits in Lagos mega-city. These may take the forms of policy making, legislation, improving the regulatory environment, policy implementation and direct strategic interventions. They may also relate to governance structures at the federal, state, local and community levels.

There is the need to review the policy and institutional frameworks for housing, planning and infrastructure development. For example, some areas may require increased density in terms of number of floors that can be built considering the rising cost of land. Consideration of the supporting infrastructure for the physical implications of such policy reviews must however be integrated.

Context-specific urban regeneration programmes can ensure that more people live closer to their work-places, which would in turn reduce the pressure on transportation networks by people transiting between geographical extremes of the mega-city. Due to high cost and shortage of land in Lagos, many people living in Ogun State and Badagry have their work-places on Victoria Island, Ikoyi, and Lekki, thereby putting much pressure on the inadequate road network leading to constant traffic congestion. With good planning and the political will, slums in and around the mega-city can be regenerated to ensure that many inhabitants who work within Lagos can also live in the vicinity.

There is the need to take a closer look at funding, legislation and budgetary re-prioritization in respect of infrastructure development, particularly at community-level. Allied to this is the need to reduce the infrastructure burden on the federal government, to enable states and local governments and other private stakeholders assume greater responsibility. Urban development is not cheap: through the 1980s, China's Shanghai spent five to eight percent of its GDP on urban infrastructure to redevelop the city; while Beijing and Tianjin spend more than 10 percent of their GDP on roads, water supply and sewerage services, housing construction and transport. China's phenomenal ability to mobilise financial resources for

urban development through domestic credit and foreign direct investment is what keeps the funds for cities coming. Hence, China's cities have coped more effectively with rapid urbanisation than cities in other developing countries (UN-Habitat, 2008b).

The Singapore model is another classical example: At independence in 1965, 70 percent of Singapore's householders lived in overcrowded conditions and a third of the population squatted on the city's fringes. Just over 40 years later, the slums are gone and the city has grown into one of the most productive, creative and functional in Asia. The secret lies in a combination of innovative and forward-looking policies, investments in social and physical infrastructure, and a concerted bid to attract foreign capital and skills (UN-Habitat, 2008b). It is becoming extremely urgent for Nigeria to drastically increase its investments not only in urban and intra-city infrastructure, but also in local infrastructure at the neighbourhood levels.

Private sector participation in infrastructure development is critical, and more coordinated effort is demanded on the part of the Infrastructure Concession Regulatory Commission (ICRC) to promote this approach and reduce the financial and project management weight on the government. The private sector is an indispensable partner for the mega-city's sustainability. Pressing urban challenges require concerted approaches to land, basic infrastructure and services. Affordable housing solutions though not usually within the capability of the private sector, may benefit through accessible housing finance systems that include the private sector as a prime player. Also important are: revitalizing the informal settlements through people-sensitive urban renewal, pedestrian-friendly land-use; and the greater application of Geographic Information Systems (GIS) to monitor the rapidly growing city for better informed policy-making, spatial planning, land administration, and infrastructure development.

REFERENCES

Abiodun, J. O. (1997). The Challenges of Growth and Development in Metropolitan Lagos. In: Rakodi, C. (ed). The Urban Challenge in Africa: Growth and Management of Its Large Cities. New York: United Nations University Press.

Agbola, T. and Olatubara, C.O. (2003), Private sector driven housing delivery (in Nigeria): Issues, constraints, challenges and prospects, a lead paper presented at the 2nd Annual National Workshop on Private sector Driven Housing Delivery in Nigeria, University of Lagos, Lagos, 30th – 3rd July.

Angotti, T. (1993). Metropolis 2000 – Planning, Poverty and Politics. London and New York: Routledge.

Aribigbola A. (2000). Conceptual issues in housing and housing provision in Nigeria. In Effective Housing in the Twenty-first Century. Akure: The Environmental Forum, School of Environmental Technology, Federal University of Technology (FUTA), Nigeria, pp. 1-8.

Arimah, C. C. (2005). What Drives Infrastructure Spending in Cities of Developing Countries. Urban Studies, 42(8): 1345-1368.

Atkinson, R. & Blandy, S. 2005. Introduction: International perspectives on the new enclavism and the rise of gated communities, Housing Studies, 20(2), 177-186.

Ayeni, M. A. O. (1977). Living conditions of the poor in Lagos, Ekistics, (February). 255: 77-80.

Blakely, E. J., 2007. Guest editor's introduction: Gated communities for a frayed and afraid world, Housing Policy Debate, 18(3), 475 – 480.

Collins English Dictionary (2003). Collins English Dictionary – Complete and Unabridged. HarperCollins Publishers.

Foster, V. and Pushak, N. (2011). Nigeria's infrastructure: A continental perspective. Policy Research Working Paper WPS5686. The World Bank Group. Online at: http://go.worldbank.org/Y11Ai6M210, accessed on 28-09-2011.

Fulmer, J. (2009). What in the world is Infrastructure? PEI Infrastructure Investor (July/Aug): 30-32.

Gale, T. S. (1979). Lagos: the history of British colonial neglect of traditional African cities. African Urban Studies, 5: 11-24.

Gandy, M. (2005). Learning from Lagos, New Left Review, 33: 36-52.

Gandy, M. (2006). Planning, anti-planning and the Infrastructure crisis facing Metropolitan Lagos, Urban Studies, 43(2): 371-396.

George, C. K. (2010). Challenges of Lagos as a Mega-city. Online at: http://www.allafrica.com/stories/201002221420.html, accessed on 12-07-2010.

Home, R. K. (1983). Town planning, segregation and indirect rule in colonial Nigeria, Third World Planning Review, 5(2): 165-175.

Ilesanmi, A. O. (2010). Post-occupancy evaluation and residents ' satisfaction with public housing in Lagos, Nigeria. Journal of Building Appraisal, 6:153-169.

Ilesanmi, A. O. and Ogunshakin L. (2010). A review of literature on housing and health in the developing world", in Fadare, S. O. & Adesanya, D. A. (eds.) Sustainable Environment, a Book of Readings. Faculty of Environmental Design and Management, Obafemi Awolowo University, Ile-Ife, Nigeria (pp.56-75).

Jameson, F. (2003). Future City. New Left Review 21, May-June, p.66.

Kumar, D. (2005). Infrastructure in India. MBA Review, June: pp. 18-19.

Lawal, M. I. (1997). Principles and Practice of Housing Management. Lagos: ILCO Books.

Lagos Energy City (2007). Lagos Energy City – In the Internet at: http://www.lagosenergycity.com:80/Default.aspx?tabid=765, accessed on 19-01-2009.

Malik, A. (2009). Effects of Private Initiatives in Infrastructure on the Macro Economy of Asia. European Journal of Economics, Finance and administrative Sciences, Issue 16: 50-65.

Manzi, T. & Smith-Bowers, B., 2005. Gated Communities as Club Goods: Segregation or Social Cohesion? Housing Studies, 20: 2, 345 – 359.

NZSIF (2009). What is social infrastructure. Online at: www.nzsif.co.nz/Social-Infrastructure, accessed on 02-10-2011

Olukoju, A. (1993). Population pressure, housing and sanitation in West Africa's premier port-city: Lagos, 1900-1939. Great Circle. 15: 91-106.

Olukoju, A. (2003). Infrastructure development and urban facilities in Lagos, 1861-2000, Occasional publication No.15, Ibadan: Institut Francais de Recherche en Afrique.

Oyinloye, A. (2011). Keynote Address at a Workshop on "Pension funds investment in infrastructure", organized by Urban Development bank of Nigeria (UDBN) in collaboration with the National Pension Commission (PENCOM) on 18 – 21 July, benin, Edo state.

Peil, M. (1991). Lagos: The City Is the People. London: Belhaven.

UN-Habitat (2008a). Country Programme Document 2008-2009: Nigeria. Nairobi, Kenya: UN-Habitat.

UN-Habitat (2008b). Urban World: Harmonious Cities, China and India in Focus. Nairobi, Kenya: UN-Habitat.

UN-HABITAT (2010) The State of African Cities 2010: Governance, Inequality and Urban Land Markets. London: Earthscan.