The Importance of Urban Design and Sustainable Urban Transformation in Nigeria

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Abstract:
The unplanned and uncontrolled nature of Nigeria urbanization process has continued to generate myriads of social, economic and environmental challenges that threatens the functionality, conviviality, liveability and sustainability of urban centres in the country. This paper demonstrates the need and importance of urban design as a tool and framework for achieving sustainable urban transformation in Nigeria. Through an elaborate review of concepts and the synthesis of ideas from literature, the paper outlines a four-point agenda for evolving and utilizing urban design by built environment professionals, policy makers and other stakeholders who are interested in coming to grips with the problem of urban sprawl as well as the successful determination of the urban space.
Key Word: Urban Design; Sustainability; Urban transformation; Urban; Importance; Nigeria
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I.   INTRODUCTION

The emergence of cities and other large agglomerations of people in third world countries exhibits a trajectory different from the first world experience. While urbanization in first world
nations are products of massive industrialization and well thought out urban planning systems; the situation in the third world including Nigeria is due to what [1] described as "urban involution", that is, the emergence of cities as a result of massive drift of people from the rural backlands to "assumed cities" which lack the requisite plan, design, infrastructure, amenities, housing, sanitation and economic structures to cater for the need of its inhabitants [2].

In Nigeria, in particular, most cities have grown in an unmonitored and uncontrolled manner leading to various environmental challenges including over-population, overcrowding, traffic congestion, environmental pollution, inadequate housing, unemployment, urban blight as well as deterioration of urban amenities [3]. Essentially, the functionality, conviviality, liveability and sustainability of most Nigerian cities are questionable. The foregoing has continued to necessitate concerns and calls from different groups and stakeholders in the built environment for progressive changes in policies, laws, technologies and development strategies towards enhancing urban quality [4; 3; 5].

Experts believe that good urban design implementation remains the panacea to the problem of urban blight and unsustainable urbanization in Nigeria. According to [5], urban design remains the potent tool and framework for fostering quality in the built and natural environment as a city evolves. [6] believes that the essence of urban design is to guide physical development of a city towards a desired scale and character that is consistent with the social, economic and aesthetic values of the city. [3] also asserted that the design of the built environment plays a significant role in the safety, health and sustainable transformation of an urban space.

Based on [7] report, Urban Design requires a policy framework that designates and regulates the use of land in order to improve a city's physical, economic and social efficiency and wellbeing of the inhabitants. Urban design elements address urban forms and structures through policies aimed at respecting the natural habitats, preserving open spaces and targeting smart growth into compact hinterlands.

It is against this backdrop that this paper seeks to demonstrate further the need and importance of urban design as an effective tool for achieving sustainable urban transformation in Nigeria. Following this section, attempt has been made to review the concept of urban design as it relates to urban sustainability in Nigeria. Section Three of the paper is primarily focused on examining the impacts and core drivers of urban design and sustainability. In Section Four, the specific issues affecting urban design and urban sustainability in Nigeria are x-rayed. The paper ends by highlighting the way forward for creating sustainable cities in Nigeria.

II. CONCEPT OF URBAN DESIGN

Architecture is defined as "the art and science in theory and practice of design, erection, commissioning, maintenance and management and co-ordination of allied professional inputs thereto of buildings, or part thereof and the layout and master plan of such building or groups of building forming a comprehensive institution, establishment of neighbourhood as well as any other organized space, enclosed or opened required for human and other activities" [8]. Urban design, as a specialization within the faculty and distinguished from others like residential, commercial, hospital, interior design, green design, landscape and industrial architecture, is the art of making places in an urban context. It is the art of determining the interaction between people, places, urban form and nature, and shaping the processes which lead to successful villages, towns and cities. In other words, urban design involves the designing of groups of buildings, nodes, paths and street networks in neighbourhoods, districts and cities as well as the spaces and landscapes between them to further the creation of frameworks for sustainable development or redevelopment [9].

It is interesting to note that there were instances where the urban design principles of well-designed, compact, mixed-use, inclusive, sustainable places had been practiced in ancient civilisation. Many ideas about the interpenetration of town and country, for instance, are found in the works of the pioneers of the planning movement like Howard, Geddes and Unwin, as can notions of local social and economic sustainability [10]. However, the discipline was not introduced as a separate profession until after the determinations of 1956 International Conference about the future of cities which took place in Harvard's Graduate School.

According to [11], regeneration of cities after the 2nd world war was urgently required and the body of knowledge that existed in architecture and planning was not strong enough to deliver successful urban regeneration projects at the time through the several overlapping "territories of urbanistic action" which include form-based category of public policy, the architecture of the city, place-making, smart growth, community advocacy, among others. [12] records that city beautification was the fundamental purpose of urban design at the time it was introduced as a separate profession.

Traditionally, urban design has been conceived as a discourse in design and has been practiced as an extension of architecture, urban planning, and civil engineering. In this predominant paradigm, urban designers are trained as architects, planners, or engineers, each having one's own design bias. However, the scope and objectives of the profession have changed over the past few decades so much that urban design presently plays a vital role in city development by functioning at the crossroads of mainstream architecture, landscape architecture and city planning.

Urban design is therefore essentially concerned with establishing the connecting fabric of urban areas that allows them to become real places for people rather than simply collections of unrelated projects [10]. As a multi-collaborative discipline with a sound grasp of of how design decisions in one discipline can have impacts in other areas, it ultimately creates structurally stable, aesthetically pleasing 3-dimensional forms and spaces to enhance the life of the city and its inhabitants in socio-economic & environmental terms [13]. It also plays a critical role in understanding all relevant interrelationships, integrating pragmatic solutions and raising overall aspirations.

More so, the concept of sustainability has become integrated with urban design in terms of green design to the point that the key task of the urban designer is the delivery of sustainable places in terms of the "triple bottom line" covering the economic e.g. well-paid jobs; social e.g. good schools and sports facilities; and environmental e.g. clear air, clean rivers and beautiful places to live, work and play [14].

III. URBAN DESIGN AND SUSTAINABILITY: IMPACTS AND CORE DRIVERS

This section seeks to identify and agglomerate the connection between urban design & sustainable development. Research have established that the issue of sustainable development is the social foundation of urban design [15]. In the same vein, [16] agree with [14] that urban design both in policy and in practice is a discipline to create sustainable communities. To them, sustainability is not merely environmental sustainability because it embraces economic and social aspects as well. The authors present the EGAN wheel [17] as a good framework to create sustainable communities in urban design (see Figure 1).

From the work of [17], it can be deduced that sustainable communities are not byproducts of chance but of work over time. [18], [19] and [20] also corroborate that urban design and development is about creating sustainable urban transformation using statistical model factors, design elements and their weights. These imply that urban design professionals must also take full cognizance of a wider range of issues of economy, politics, culture and the community life ideals of each peculiar context.

Figure 1: EGAN Wheel (Source: [16])

When placed against the background that the strategic importance of urban areas as growth centres of the emerging global service economy in relation to sustainable development has increasingly been given credence to [2; 21; 22; 23; 24; 25] and that urban sustainability problems are not necessary characteristics of urbanization but could rather be considered as fallouts of poor governance and planning [26; 27; 28], urban design presents many possibilities to improve the situation [7]. Further research graphically shows that the world is urbanizing at an unprecedented rate, and that two-thirds of the world's 9.8 billion people will live in urban areas by 2050 [29]. The corresponding increase in global urban land cover during the first three decades of the 21st century is also touted to be greater than the cumulative urban expansion before the year 2000 [30].

The design of cities plays a significant role in relation to the impacts of urban development as well as how urban citizens interact and live together. Though the development opportunities for individual cities vary over time due to the constant influence by diverse forces like a changing structure of population, geography, economic vulnerabilities, culture, lifestyles and national policies that may lead to altered urban functions and new local needs and opportunities, the process of identifying, interpreting, responding and realizing such opportunities and priorities are constant challenges for urban governance and planning [2].

In fact, creating places that meet all aspects of the sustainability agenda can appear scary as design professionals struggle to integrate good urban design with issues such as orientation for solar gain, higher density and the conflicting needs of a mix of users [16]. Other formidable, yet, surmountable barriers to optimum delivery include established patterns of living; public awareness and aspirations; lack of political will to enlist it among first priorities; lack of choice, skills and vision; selfishness; the scale of the problem, among others.

Furthermore, sustainable urban transformation essentially requires that cities be understood as a source of quality and adaptability of built forms, for effecting diverse private and public stakeholder participation and management, and for integrating different applicable perspectives and bodies of knowledge and expertise through design [10; 31; 32]. According to [24], it systematically brings to the fore "opportunities to enhance human well-being and local natural resources, while reducing future costs, ecological scarcities and environmental risks." Interestingly, [28] suggests that sustainable urban transformation is defined in two dimensions – drivers of change and sustainable urban structures (see Figure 2).
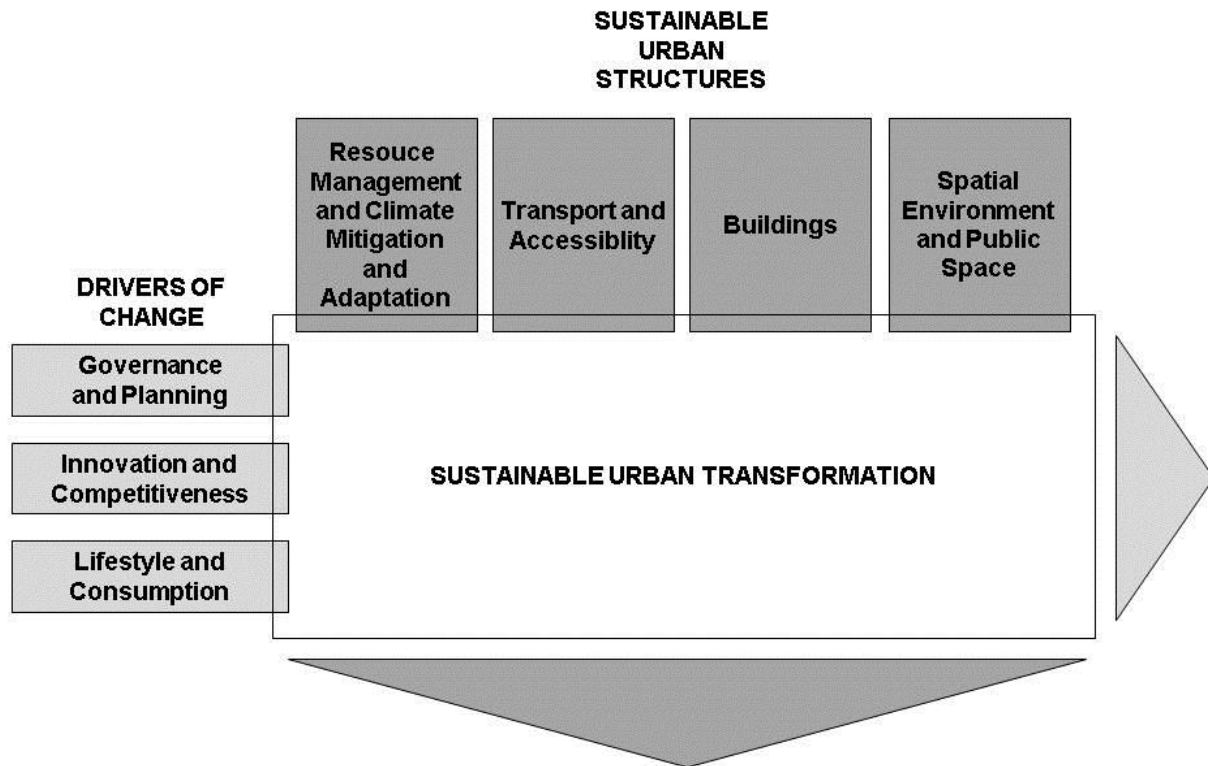
Figure 2: Dimensions of Sustainable Urban Transformation (Source: [28])

It is worthy to note at this juncture that the whole concept of sustainable urban transformation places a stronger emphasis on structural change processes which are comprehensive, multi-dimensional and radical that can successfully direct urban development towards sustainability [33]. This is different from sustainable urban development which according to [34] is "a process of synergistic integration and co-evolution among great subsystems making up a city (economic, social, physical and environmental), which guarantees the local population a non-decreasing level of well-being in the long term, without compromising the possibilities of development of surrounding areas and contributing by this towards reducing the harmful effects of development on the biosphere."

Put more succinctly, sustainable urban transformation can be considered as a design problem on a grand scale given that intelligently designed cities do respond positively to the major environmental, social and economic challenges of the 21st century [35]. Ultimately, achieving these goals demands a deliberate manipulation of the sustainable urban structures as highlighted in Figure 2 which are resource management and climate mitigation and adaptation; transport and accessibility; buildings; as well as spatial environment and public space.

On resource management and climate mitigation and adaptation, thorough resource management and design of urban structures which could mitigate and adapt to climate change and should be both multi-functional and able to integrate ecological, economic, recreational and aesthetic values is a necessity in all urban settings [36; 37]. Relevant applications include increasing energy and material efficiency using renewable sources; sustainable and sufficient water supply management mechanisms; and green city waste recycling into safe, reusable material and energy use.

Whereas transport and accessibility accounts for significant environmental and social impacts hence the need to create sustainable mobility in the urban context using a more integrated approach that could simultaneously address energy security, environmental and social impacts, accessibility issues, urban conditions, and equitable economic development; the challenge for the building and construction sector is to create

affordable, attractive, comfortable and sustainable urban forms that should enable their occupants to mitigate carbon and other greenhouse gas emissions, reduce excessive material consumption as well as incorporate principles of reuse throughout the life cycle of the buildings and related civil infrastructure [38].

The specific adoption of interlocking urban design principles as well as sustainable tenets on spatial environment and public space on the other hand leads to enhanced focus on the revitalization of districts and city centres, urban public spaces and the interconnection of fragmented landscapes, for instance, for improved life quality within the urban sphere [10; 21; 39]. [16] noted that the strong links between quality of place and quality of life are widely recognized. This encompasses preserving existing green areas like parks, conservation areas and gardens as well as 'blue' features like natural or artificial ponds, rivers and canals, and integrating new green and blue infrastructure into cities in innovative ways that stimulate social interactions and engenders a legacy of accountability for future generations.

IV. DISCUSSION

The Nigerian urban population has been experiencing a rapid rise since 2010 and is expected to grow further from 60 million to almost 300 million inhabitants by the year 2050 [2]. This upsurge in urban population in Nigeria has created what [40] describes as "false urbanization", a term that explains the situation where urban growth is faster than economic growth and increasingly outpaces the ability of the country's health and social services to provide appropriate and necessary care.

The attendant consequences of false urbanization in Nigeria is evident in the manifestation of slums, overcrowding, indecent housing, traffic congestion, litters of waste dump sites in city centres, unemployment, flooding, decay of amenities and infrastructure as well as the general depletion in the quality of life of the urban dwellers termed urban poverty. Despite the enactment of the Urban and Regional Planning Law in the country, the formulation of urban master plans for different cities and the country's alignment with international protocols for creating healthy and liveable cities such as the Sustainable Development Goals (SDGs) and other UN-Habitat initiatives, Nigeria still grapples with enormous issues that have undermined the proper utilization of urban design for the creation of sustainable towns and cities. Some of these issues include:

i. Reluctance of city planners and managers to confront and reorganize existing patterns of settlements in many cities. This situation is an offshoot of a dearth of mandated studies, monitoring and supervision of urban development patterns.
ii. Flagrant flouting and compromise of existing urban master plans for political patronage by government officials and in lieu of other wealthy Nigerians.
iii. Adoption of top-down planning approaches with little or no room for grassroot participation. These generate avoidable tension and resistance from the general population who feel excluded, isolated and only considered as pawns of a pre-determined process.
iv. Legitimatized cover-ups of otherwise illegal incursions and conversions of green/ conservation/ reservation areas to private residential, commercial and industrial uses with resultant breaches on the security, safety and health of the surrounding urban population.
v. Inadequacy of skilled manpower as well as a lack of synergy between the major internal stakeholders in urban transformation. Insufficient number of vested professionals to man the large urban coordination, planning and monitoring responsibilities undermines the purpose of urban design and urban transformation. Urban design activities require well qualified architects, town planners, surveyors, engineers and other allied experts in the built environment.

V. RECOMMENDATIONS

To maximize the importance of urban design and fast-track the attainment of sustainable urban transformation in Nigeria, the following four-point agenda are recommended:

i. Adopt a participatory planning model involving both the private sector and the target population. This approach defines the concept of "planning for the people" against "planning for profits" - a situation where a project is introduced only to attract investors' profit with next to no regards for the needs and interests of the citizens, hence its sustainability.
ii. Implement a Green Infrastructure Development Agenda by creating a well-planned network of natural and semi-natural areas which would serve as carbon sinks in the form of open spaces, mini-green belts, urban buffers and sub-centres for suburbs at the neighbourhood level.
iii. Develop a comprehensive Slum Upgrading Plan whose process should actively engage the government at the grassroot level in health development by ways of political commitment, institutional change, capacity building, partnership-based planning, innovation projects and effective community participation. Slum upgrading specifically targets the improvement of basic services such as access to clean water, sanitation, energy for cooking and lighting, sewage/ drainage systems, security and transportation planning.

iv. Deploy the Geographic Information System (GIS) and remote sensing technology such as closed-circuit televisions to monitor and check the growth/ expansion patterns of urban and peri-urban areas for effective development control and infrastructure projections.

VI. CONCLUSION

There is no gainsaying the fact that a good urban design model would be instrumental to the solving of the myriads of environmental challenges confronting urban centres and to fostering the agenda of creating healthy, liveable and sustainable cities in Nigeria. This paper has contributed ideas towards the need for the country to evolve a workable urban design process that objectifies the satisfactory goal of building cities that are attractive to outsiders without compromising the bottom-line interests of the citizens. The participatory planning method remains the robust approach to harnessing all the available resources of a veritable public-private partnership and energies of the general population for the sustainable transformation of the blighted urban scenarios within Nigeria.

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