



THE PARADOX OF LIVELIHOOD STRATEGIES AND URBAN LANDSCAPE DEGRADATION IN CONTESTED SPACES: TOWARDS ATTAINING A SUSTAINABLE GREEN CITY IN ADO-EKITI, NIGERIA

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ABSTRACT

Most environmental challenges confronting cities in developing countries emanate from the rapid rates of urbanization, population growth, and increasing space demand for human activities, overstretching land resources. In Ado-Ekiti, Ekiti State capital in south-western Nigeria, people's survival response culminated into encroachment on public spaces, resulting to socio-economic and environmental problems. Bare urban landscape lacking adequate open spaces and greenery heats up in the daytime, thereby making the environment uncomfortable for human activities. This paper examined the city's spatial structure, public space characteristics, the causes and effects of encroachment. Findings established contestation of public spaces, excessive hard landscaping and depletion of greenery. Informal sector development, mostly commercial, was driven by ignorance, high poverty and inequality levels, and the people's livelihood approach to sustain their socio-economic needs. The paradox is that while people make a living in the city, the landscape is degraded. There was majority support for greening as an environmental quality improvement tool. The people favoured the incorporation of socio-economic activities in green areas to boost economy, liveability and inclusiveness. The study developed a Strategic Urban Greening Model and the Greening and Spatial Regeneration Intervention Plan for desirable green products to reinvent Ado-Ekiti as a sustainable future African green city.

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INTRODUCTION

The bane of cities in developing countries is the rapid rate of urbanization, compounded mostly by population influx from the rural hinterland. Ado-Ekiti, like major Yoruba cities in the southwest geopolitical zone of Nigeria, has experienced urbanisation since the pre-colonial era. This trend was heightened significantly after the city doubled as the headquarters of Ado-Ekiti Local Government, and Ekiti State capital in 1996. The emergent centre of socio-political, educational and economic development experienced unprecedented spatial demand for vibrant human activities.

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The resultant pressure on inelastic land resources and the need for the people to meet livelihood and survival challenges led to uncoordinated land use change and encroachment on public spaces in the core area and residential districts of the city. Paradoxically, the spate of space contestation and illegal development mostly derived from informal sector activities driven by the need to devise livelihood strategies, impact negatively on the city landscape. This is manifested in greenery depletion, environmental degradation, low environmental quality, deprivation of recreational opportunities, and poor living standards. Investigation into the spatial structure of Ado-Ekiti, public space characteristics, causes, extent and effects of their encroachment are therefore a major focus of this paper. It examines the socio-economic attributes of residents, causes of informal sector encroachment on public spaces, the paradox of people's survival instincts,

and issues arising from such space conflicts in the city. The paper evaluates the effects of inadequate greenery on environmental quality and explores the means of reclaiming lost spaces and integrating legislatively organised socio-economic needs with the creation of inclusive green areas for a sustainable urban landscape. Interventional research outcomes are expected to eliminate wanton abuse of public spaces, improve quantity and quality of public spaces and green places, and promote green developments such as green economy, green infrastructure, urban agriculture, gardening and equitable wetland usage. These are guaranteed to alleviate poverty and inequality and provide greater opportunities for people's livelihood, survival and inclusiveness. It is hoped that the effective implementation of the Ado-Ekiti Comprehensive Greening and Spatial Regeneration Intervention Plan, based on the Strategic Urban Greening Model developed in this study, will yield desirable outcomes. Improved residential neighbourhoods consisting of orderly and structured green spaces will enhance landscape quality and living standards. Accessible nodal squares and commercial parks serving catchment areas will consolidate commercial, service activities relocated from roadsides, and improve the city economy. Given good governance, planning policy enforcement, and zero tolerance for contravention, it is envisaged that green urbanism, space efficiency, cleanliness, economic diversification and wealth creation will desirable outcomes in the city. The emerging transformation will abate global warming and climate change, strengthen climate adaptation, and reinvent Ado-Ekiti as an ideal sustainable African green city of tomorrow.

Conceptual Underpinning

The landscape is made up of the things that are seen in a locality, such as the physical components of landforms such as plains, hills, valleys, slopes, mountains, as well as water bodies comprising streams, rivers, ponds, lakes, glaciers, seas, and oceans. Other features of the landscape are the biotic elements covering the land such as local vegetation, plantation, green areas, and other short-lived natural phenomena including weather conditions, lighting and thunder claps, as well as anthropogenic entities consisting of diverse land use development and buildings in the built environment (CTI Reviewers 2016). There are two perspectives from which the landscape can be viewed: the first is the particular angle of perception, and the other the general sense. The meaning is applicable to a specific portion of the Earth's surface, while the general perception is relative to the observer (Infogalactic, 2016). Ado-Ekiti comprises of plain, undulating and hilly landscapes, which impact on development in different parts of the city. The natural vegetative aspect of the environment is referred to as the green landscape. The naturally occurring soft landscaping elements, with characteristic cooling effect, include trees, shrubs, hedges, flowers, grasses, ground cover, climbers, prostrates, woodland, forests, vegetation, recreational or organised open spaces, gardens, parks, water bodies, swamps, watersheds and catchment areas. Green landscaping is the utilization or preservation of these soft landscaping elements on the earthscape. On the other hand, hard landscaping connotes the artificial, anthropogenic or man-made aspects of the visible landscape such as asphalt/paved roads, sidewalks, drainage channels, pedestrian walkways, malls, rail lines, paved parking spaces and lots, fences and walls, hard surfaced spaces around buildings and structures, street furniture, sculpture, and graphics. Hard landscaping

elements are generally inorganic in nature and have the tendency to retain or radiate heat. Engineering landscape refers to interconnecting man-made infrastructure of various forms and features. Ayorinde (2004) defines it as "the powerful man-made lines of force" such as highways, minor roads, streets, railroads, high voltage power transmission lines, underground sewers, water and gas mains, bridges and drainage channels. Others include the use of water in the landscape such as fountains, cascades, and artificial waterfalls. The rural landscape consists more of soft landscaping elements, while because of the pressure of urbanisation, the urban landscape tends to be characterized by hard and engineering landscape elements. This trend is clearly observable in Ado-Ekiti, whereby natural vegetation is continuously depleted by concrete development, encroachment, contestation and sprawling. However, the proportional combination of the various types of landscape entities is ideal. Hence, this study aims to advocate for reclaiming contested public spaces, breaking up hard surfaces, and salvaging degraded land. It employs landscape planning and urban design skills to incorporate more inclusive soft landscaping and green infrastructure to attain the goals of the green city and sustainable urban landscape in Ado-Ekiti.

Space is a generic term that refers to a specific area with definable dimensions, attributes and usage. Norberg (1979) cited in Moriango (2017) views space as the relationship between objects, while Zeleza and Kalipeni (1999) categorise it to include real space, architectural space, imaginary space, and symbolic space. The world is globalised and continuously globalising by the day. The reality is that more than half of the world's population has been living in urban areas since 2015. Urban population increased to 55.7% while rural population decreased considerably. The proportion of people living in cities may reach 60% by 2030 (Boundless 2016). This situation increases land use demand in urban centres, and Moriango (2017) argues that it leads to informal activities contesting for space use, particularly along major streets and downtown areas of cities. Contested spaces refer to socio-economic spaces that provide avenues for people of various origins and diverse cultures to "meet, clash, and grapple with each other, often in the context of highly asymmetrical relations of powers". Such encroached spaces can be equated with places where people, ideals or functions collide, leading to individuals or groups competing to occupy temporary spaces, thereby giving rise to a clash of interests, friction and tension (Pratt, 1990). Contested space therefore refers to any terrestrial setting where land use activities compete for location and seek to dominate the place. This trend is particularly noticeable along major streets and downtown areas in Ado-Ekiti, where informal sector activities, driven by poverty and engagement in livelihood strategies, struggle to gain control of public spaces and subtract greenery (Ojo-Fajuru, 2018). The argument for public space contestation is that the city belongs to all; hence those that display their goods in public spaces should be allowed the right to the city. The need thus arises to provide accessible and organised space to integrate the informal sector as part of the organic entity of the city to protect greenery, alleviate poverty and inequality, and thereby strengthen social cohesion, promote economic empowerment, while ensuring environmental sustainability. This research is aimed at advocating for the selective integration of the informal sector into revitalized green places. The central focus to this study encompasses the issues of inclusive green places, climate change mitigation and

adaptation, livelihood strategy sustenance, socio-economic integration, segregation and protection of pedestrians, and free flow of traffic along movement corridors in downtown areas in Ado-Ekiti to attain a liveable African city. Chambers and Conway (1992) define livelihood as the capabilities, physical and social assets, as well as activities that are essential to make a living. The Department for International Development simply put it as a combination of the resources used and the activities undertaken to live (DFID 2000). Livelihood becomes 'sustainable and resilient' when it can surmount shocks and stress, and maintain or enhance its capabilities and assets, including the natural resource base both currently and in the future (Chambers & Conway 1992; DFID 1999). Hence, livelihood strategies have been viewed as the array of activities and choices, which people make to attain their goals in life, such as productive activities, investment strategies, and reproductive choices, among others (DFID 1999). According to Ellis (2000) livelihood strategies comprise of activities that generate the means of household survival and are the planned activities that men and women undertake to build their livelihoods. Walker, Mitchell and Wismer (2001) posit that the bundle of "organized set of lifestyle choices, goals and values, and activities influenced by biophysical, political/legal, economic, social, cultural, and psychological components form livelihood strategies". They are those activities, which are diverse at every level, and carried out by households to provide a means of living (Eneyew & Bekele 2007).

The livelihoods framework provides an insight into how livelihood strategy works towards the attainment of individual or collective household goals of livelihood. Kanji, MacGregor and Tacoli (2005) assert that a livelihood framework offers a wide-ranging and intricate method of understanding the way and means by which people make a living. It is useful for a casual assessment of a variety of essential issues of livelihood or for a comprehensive examination of the complex aspects. Livelihood approaches underscore the understanding of the people's livelihood framework in terms of available resources, livelihood strategies employed regarding existing guiding principles and institutional settings, while taking into consideration their intended livelihood products (DFID 2000). The concept of livelihood strategy is very important to this research as it provides the window through which the behavioural pattern of the informal sector and the social setting within which it operates in the central business district and public spaces in Ado-Ekiti can be critically examined and understood. It also enables the thrust of this research to analyse the paradox that, while the informal sector is propelled by livelihood strategies, its activities impact negatively in terms of vegetal depletion, environmental pollution, landscape degradation and carbon footprints on contested spaces in the city centre. This is in consonance with the views of Finsterbusch (1995), and Burdige and Vanclay (1996) that critical examination of livelihood strategies emphasises the morals, objectives, choices, and activities which matter to local people, who are the central focus of data collection and analysis, thereby culminating to healthier planning and well-informed decision making. This will aid the selective integration and control of informal sector and socio-cultural activities into green spaces to strengthen the attainment of livelihood strategies and thereby promote social cohesion, economic empowerment, liveability, climate resilience and environmental sustainability in the capital city.

Larkham (2005) describes some changes brought about by rapid urbanisation as disastrous in swiftness and magnitude. Globally, urbanization is the bane of town and city regions, which continuously grow with attendant socio-economic and environmental problems that culminate in the degradation of urban landscapes (Ojo-Fajuru, 2008). Adetokunbo (2010) observes that the pattern of urbanization in the Nigerian post-independence era led to haphazard changes and subsequent deterioration of the urban landscape. Genske (2003) points out that the processes that lead to urban land degradation such as the extraction and transformation of resources into goods, waste generation and conflicts in land use and allocation result in environmental pollution and urban sprawl. Environmental degradation is described as the assertion of pressure on the environment leading to alterations that affect people's livelihood (Touray, 2014). Buyantuev et. al. (eds, 2018) note that ecological processes and human health become more and more vulnerable and matters of concern because of urban landscape degradation arising from increasing air, water, soil and thermal pollution, vegetal depletion and loss of biodiversity. The implications of urban landscape degradation pose serious challenges to resource management, which go beyond the immediate urban environment into peri-urban precincts.

The consensus that poverty is a major cause of environmental degradation was mooted in the Brundtland Commission Report, which states *inter alia* that: "Poverty is a major cause and effect of global environmental problems" (WCED, 1987, p. 12). The World Development Report observes that poor families resort to excessive deforestation to meet their basic survival needs and thereby deprive the soil of its nutritional replenishment (World Bank, 1992). Jalal (1993) corroborates this with the general opinion that environmental degradation, rapid population growth and stagnant production in many Asian countries have close links with widespread acute poverty, but Leach and Mearns (1995) disagree that the problem goes beyond the singular issue of poverty to multi-dimensional variables revolving around cultural, demographic and institutional settings. The controversy attending the poverty-environmental degradation nexus was evaluated and analysed; both poverty and environmental degradation were found to be increasing in many developing countries, and policy options were prescribed to alleviate the problems and bring some order out of the chaos (Duraiappah, 1998). In the on-going debate, Hollander (2003) insists that while affluence is often blamed for environmental degradation, poverty is the true cause, in the sense that the poor, in an effort to survive, overuse resources and pollute their environment. He argues that poverty is the environmental villain, while the poor people are its victims. These views correlate with the opinion that poverty and environmental degradation are inter-linked. Much pressure on the immediate environment for daily livelihood lead to more poverty and environmental related problems such as draughts, famine, air and water pollution, deforestation, land encroachment and poor sanitation (Touray, 2014). Pope Francis (2015, p. 83) submits that "many intensive forms of environmental exploitation and degradation not only exhaust the resources which provide local communities with their livelihood, but also undo the social structures which...shaped cultural identity and...community". Informal sector activities, brought about in the pursuance of livelihood strategies in order to reduce the effects of poverty, aggravate landscape degradation of contested spaces in urban centres as established in Ado-Ekiti (Ojo-Fajuru, 2018).

The position of the World Commission on Environment and Development (WCED, 1987) that it is ineffective to tackle environmental problems without understanding the factors underlying world poverty and international inequality becomes relevant in the current realities. Agostini and Purdie (2017) point out that Sustainable Development Goal 15 recognizes that efforts to restore degraded areas should benefit both livelihoods and biodiversity. A better understanding of the urban landscape degradation and the causal factor relationship is indispensable for this study to strategize on mitigation measures geared towards re-establishing vital green elements, important ecosystem services, biodiversity propagation and socio-economic integration to attain sustainable urban landscape in the capital city of Ekiti State.

The strategy that protects, restores, and maintains nature and an ecological balance within urban communities is collectively the green city development. It connotes the intermixing of nature with urbanism to create healthy and enriching living places. Such a living area is governed more by nature than legislation, and is a sustainable human habitat built upon stable ecology, independent society, and an inclusive democratic system (Williams, 2000). A city with opulent and superb greenery is the result of holistic planning, and consistent management and maintenance, which guarantees lush green verdure, flourishing fauna and a healthy human environment (Adams and Leedy, 1987). Such a city offers psychological attachment to the beauty of nature and it is a source of national pride. The green city concept is relevant to the management of urban landscape development in the study area as it harmonizes the setbacks and open spaces reclamation exercise with greening and beautification programme, and efforts to abate the effects of climate change in Ado-Ekiti. Green city initiatives will also ensure that the state capital retains abundant naturalness and cleanliness, which enhance city aesthetics and preserves the ecological system that makes the city liveable. A lush green landscape will also reduce glare and the intensity of the high temperatures in this tropical climate, thereby ensuring an ecological balance, urban comfort and improved liveability in the capital city.

The establishment of public places such as community parks is the starting point in creating sustainable green spaces, in that they offer a variety of ways to reduce the impact of environmental vagaries on cities. The restoration and preservation of open spaces is another effective green initiative. The use of asphalt roads, concrete sidewalks, paved walkways and concrete-block property boundaries in most urban neighborhoods calls for the introduction of more greenery for atmospheric cooling, enhanced aesthetics and community value, biodiversity propagation, and bringing nature closer to the people at street-level. A study carried out on the cooling effects of greening in a high-density area in Hong Kong (Ng *et al.* 2011) identifies greening as an indispensable planning strategy to provide shade, cool the air, and reduce energy usage in buildings. It concurs with previous studies that highlight the efficacy of greening as a strategy to mitigate the harmful effects of urban heat island syndrome. Apart from suggesting that trees are more versatile than grasses in cooling pedestrian areas, the study also establishes that about 33% of the urban area needs to be devoted to tree planting to reduce ground level air temperature by around one degree Celsius (1° C). Whatton (2017) argues that although paved surfaces play vital role in the day-to-day functionality of the cityscape, they also have negative effects on the urban

environment with increased pollutant-laden runoff, urban heat island syndrome and reduction in green spaces, thereby contributing to rising urban disconnection from nature. Green space refers to a piece of land covered by natural or artificial vegetation. A green space also evolves when areas in a natural or semi-natural ecosystem are converted to urban space through anthropogenic influence. Urban green spaces, including aquatic resources such as pools, fountains, streams, rivers, swamps, waterfronts and beaches, perform a number of functions that enhance the quality of urban life. Apart from being desirable, sustainable urban green space is also profitable as it supports livelihoods by creating opportunities for employment and trade. It plays an important role in city sustainability by curtailing soil erosion and flooding, absorbing carbon dioxide, providing oxygen, and modifying the microclimate. It is for these reasons that Oduwaye (2014) asserts that “the design, provision, management and protection of urban green spaces are at the top of sustainability and liveability agenda”. This forms the major focus of this study, aimed at using green landscaping techniques as intervention measures to revamp contested spaces in downtown areas of Ado-Ekiti into inclusive green places and transform the state capital to liveable green city.

A clean city is endowed with beautiful natural landscape and green spaces integrated with nodal points for controlled informal sector activities, clean, garbage- and litter-free streets, clean and unpolluted air, clean potable water, and effective solid waste and sewage management. The concepts of sustainable development and sustainable city form the cornerstone of this study. It is widely accepted that unplanned urban physical development has undesirable implications, especially in urban settlements. The issue of sustainable human settlement has become so paramount that its principles were entrenched in the Millennium Development Goals (MDGs) adopted by world leaders in 2000 and revisited at the World Summit on Sustainable Development in 2002. In the planning of a sustainable city or eco-city, the impacts that it will have on the environment are considered from inception. Its inhabitants are dedicated to minimizing energy, water and food inputs, as well as reduce waste outputs such as heat generation, gaseous emissions, and liquid discharge into the environment. The term ‘ecocity’ was first used by Richard Register in his book titled: *Ecocity Berkeley: Building Cities for a Healthy Future* published in 1987 (Shmelev and Shmeleva, 2009). Thereafter, the sustainable city concept was disseminated by Paul Downton (2008), Timothy Beatley (2009) and Steffen Lehmann (2010), in their various works and publications. With the application of industrial ecology in its planning, the sustainable city is designed to be self-reliant and self-sufficient in food supply and renewable energy sources. The sustainable city aims at making minimal input into the climate change syndrome by lessening its carbon footprints through land use efficiency, pollution abatement, waste reduction, recycling and conversion to energy.

The concept of the sustainable city is central to this study as it seeks to strike a balance between all sectors of the city, using its social, economic and environmental attributes to provide and ensure healthy, equitable, efficient and inclusive living for present and future residents in Ado-Ekiti. Given its definition as development that caters for the survival requirements of the present generation while safeguarding the interests and needs of future generations (WCED, 1987), sustainability embraces cultural, social, economic, political and ecological issues of

human survival in an enduring global environment. The implication of sustainability is that the world and its sensitive nature should be enjoyed and conserved by mankind, and passed on from generation to generation. The tenets of sustainable development are applicable to curtail these challenging problems and to guarantee a secure future in Ado-Ekiti.

A model is a simplified description of a system or process to assist calculation, operation or prediction. The need arises to develop in this study a strategic model for comprehensive greening and urban spatial intervention in Ado-Ekiti to guide the drawing up of an overall city greening masterplan for achieving the ultimate goals of a clean, green, economically viable and liveable city (Ojo-Fajuru, 2018). This is necessary to depart from earlier practices whereby nearly all spatial models adopted in Nigeria have not yielded appreciable result as “they were state-centered and foreign driven” (Akinola, 2014). Given the assumption that communities and cultures vary from place to place, and “people always bear some marks of their origin” (Tocqueville, 1966 cited in Akinola, 2014), the fact that a model worked in the Western World is not a guarantee that it will work exactly the same way elsewhere (Akinola, 2008).

In order to attain the objectives of spatial and administrative models for meaningful polycentric development in Ado-Ekiti, as applicable to other Nigerian growth centres, cultural values and socio-economic needs of the local people should be considered from the early stage of planning. This underscores the indispensability of proper planning policies, development control mechanisms, and effective monitoring and maintenance strategies. The model provides interventionist approaches and tools for eliminating negativity for positivity and thereby ensures checks and balances toward the attainment of a clean and liveable city environment. Products of the Model include deliverable green products such as orderly and structured urban spaces; space efficiency, cleanliness and aesthetics; green growth and green spaces; green urbanism and new pedestrianism; green infrastructure; and green economy. Others are inclusive growth inherent in regulated informal sector activities within designated commercial precincts in the green areas, economic diversification and wealth creation (Ojo-Fajuru, 2018). The model is indispensable to the attainment of sustainable city environment and food security in Ado-Ekiti through urban agriculture, gardening and equitable wetland usage, carbon sequestration, and the abatement of global warming and climate change.

MATERIALS AND METHODS

The specification of data collected from primary and secondary sources started the research methodology. Literature review complemented empirical evidence generated firsthand from target groups and selected participants in the field survey of the study area. The multi-stage sampling technique involving taking samples from samples was adopted for the research. In the spatial analysis of places carried out during reconnaissance survey in Ado-Ekiti, neighbourhoods were categorized along morphological lines into old unplanned traditional core areas (COAs), new or recent neighbouring colonial development areas (NDAs), and planned post-colonial or contemporary residential estates (PREs). The sample frame was delineated and encompassed the districts abutting some major roads in the three zones of city. The delineated districts

were subdivided along ward boundaries. Streets were selected in each ward and one in every five houses in each street was systematically selected. Finally, one person randomly picked in each of the selected houses was interviewed using the questionnaire. An unstructured interview schedule was used to collect information from randomly chosen shop owners and informal traders in the selected wards. Instruments of research used for the field survey were comprehensively structured questionnaires, key-informant interviews, focus group discussions and direct observations. Information elicited included the socio-economic background of respondents, the typology, spatial distribution and existing situation of public spaces in relation to distance from residence. Selected key officials of Ado-Ekiti Local Government Area, Ekiti State Ministries of Lands, Housing and Urban Development, and Environment, other relevant parastatals, and special task forces were interviewed and engaged in discussion on the dimensions of space contestation and government intervention in the city. Focus group discussion participants were stakeholders such as district chiefs, chairmen of landlords' associations and trade union leaders. Pilot studies were carried out in the study area to test the appropriateness of questionnaires and the timing of administration that may necessitate adjustments prior to the full-blown surveys. Field enumerators and supervisors were trained on how to administer the questionnaires. The Statistical Packages for Social Science (SPSS) was used to collate and process survey data. Descriptive statistical tools such as tables, charts, frequency distribution, and measure of central tendency were used to analyze the data. Analysis, interpretation and comparison of data obtained on the dimensions of public space contestation and encroachment in different zones of the city culminate to recommendations made to restore greenery, equitable space usage and socio-economic integration to the landscape of Ado-Ekiti. Secondary data sources such as published and unpublished works, theses and dissertations, research reports, journals and conference proceedings used to build literature and establish research gaps were obtainable from libraries and the Internet. Updated maps, information and empirical data on Ado-Ekiti were extracted from Ojo-Fajuru (2018) and other relevant sources. Aerial photographs and satellite images derived from remote sensing techniques were accessed through the Internet.

Research Results Analysis & Findings

A total of 3,756 questionnaires were administered out of which 3,708 were collected. These were sorted and only 3,324 questionnaires were accepted for SPSS collation and analysis, translating to a response rate of 88.50%. In 1996, following the creation of Ekiti State from the old Ondo State, Ado-Ekiti assumed the dual role of headquarters of Ado-Ekiti Local Government and the state capital. The city experienced unprecedented concentration of land use activities that stimulate population growth and generate a high volume of vehicular and pedestrian traffic. Economic activities in Ado-Ekiti fall within primary production like farming, fishing, and hunting; secondary production like manufacturing and processing; and tertiary employment such as the civil service and professional service. The fourth category is the informal sector dominated by the self-employed engaged in trading and service activities as survival strategies in response to widespread youth unemployment and economic downturn. Many economic activities are concentrated in the CBD and other major streets and hierarchies of roads. The space required for human activities and movement puts pressure on

land resources, and in the face of ineffective policy enforcement, leads to encroachment and contestation on public spaces in the fledging capital city (Ojo-Fajuru, 2018).

Spatial structure and availability of public open spaces in the city

Typical traditional Yoruba cities experienced steady growth and development since the pre-colonial era that preceded the advent of planning. This led to the replacement of vegetal cover by buildings and agriculture, and amorphous expansion to the outlying forests (Ojo-Fajuru & Adebayo, 2014a). Ojo-Fajuru & Adebayo (2014b) established that the spatial structure of Ado-Ekiti reflects this lack of planning in the morphology of the urban web apparent in the high density old core or inner city residential areas. On the other hand, the new development areas around the core and periphery areas in the suburbs that developed during the post-colonial era show a limited degree of planning. Data analysis shows that residential land use is dominant, representing 57.40% of the total land use in the core/old areas (COAs), translating to 32.13% of land use in the delineated study area. In the new development areas (NDAs), residential land use occupies 33.08%, amounting to 15.52% of total land use; while within the planned residential estates (PREs) residential land use represents 68.35% or 9.74% of total land use in the delineated study area. Generally, there is scarcity of green landscaping elements like trees, hedges and grass within the residential districts of the city, which is more obvious in the COAs and NDAs than the PREs. Setback spaces meant for greening are either inadequate or have been converted to commercial or other sundry uses. There is virtually no provision for parks, open spaces and children's playgrounds, while there are few or no spaces around buildings for recreation and parking. Findings revealed that environmental pollution emanating from poor ventilation, open fires or stoves, waste management challenges, public utility deficits, and shortage of space for recreation decrease air quality and cause urban discomfort. This poor condition of housing environment is susceptible to the transmission of communicable diseases with serious implications for health, liveability as well as private and public expenditure. The use of contested spaces for business-related activities, which developed in response to urbanization and commercialization, constitute the second largest in the spatial structure of the city's morphological zones.

Findings show that commercial land uses such as markets, wholesale and retail outlets, banks, petrol stations and business centers constitutes 14.42% within the COAs, and 5.60% of the overall land use, but higher in the NDAs with 51.92% within the zone and 24.37% in the total land use. With the non-availability of markets, banks and petrol stations in this zone, the PREs have the smallest commercial land use, making up only 12.68% of the district and 1.81% of overall land use in the study area. Commercial land use constitutes a significant 31.78% of overall land use in the study area. The sectoral percentage of commercial land use in the study area is 17% for the COAs, 77% in the NDAs, while the remaining 6% is available in the PREs. It was observed that there is no provision for planting and green spaces within the commercial uses. The study revealed that all the three morphological zones are characterized by informal commercial activities, driven by livelihood strategies, operating in encroached and contested spaces on setbacks, sidewalks and open areas along roadways

as shown in Figure 1. Such include major streets as Ijigbo, Ajilosun, Mathew, Orereowu, Igbehin, Irona, Okesha and Ogbon Oba. The informal sector activities have intensified urban development and subtracted all elements of greenery from the city, since they indiscriminately occupy spaces that should be treated as green areas. This is evident in the acute shortage of the green areas in the city. The implication is the aggravation of carbon footprints, urban heat radiation, and landscape degradation that impact negatively on liveability and overall quality of the city environment.



Source: Field survey, July 2015.

Figure 1. Commercialisation of building frontages, setbacks as well as sidewalk and roadway at Orereowu Street in the new development area is common sight throughout the capital city

The baseline survey that examined the socio-economic attributes of residents in the study area found more males than females in the sampled districts, mostly within the 30 to 59 years' age group. The skewed gender composition of 58.84% male to 41.16% female is connected to the fact that household heads were given preference in the selection of respondents. It is implied that in the demography of the study area with patriarchal structure, there are more males than female household heads. Literacy levels are relatively high in the study area, especially in the PREs where civil servants, professionals and high-class citizens live. However, they are lower in the NDAs and lowest in the COAs of the city where a larger proportion of the aging population resides. Employment and income levels are highest in the PREs, moderate in the NDAs, and comparatively low in the COAs, while informal activities are the predominant occupation as shown in Table 1. The correlation of educational background and income revealed that respondents having no formal education added to those with primary and secondary education constitute 59.86%. These categories of residents, mainly found in the COAs and NDAs, fell within the lowest income category (59.95%) earning less than ₦50,000.00 per month (USD138/month at the current exchange rate of ₦362 to USD 1). Respondents with tertiary education (39.38%) dominate the PREs where those within the highest income bracket (4.40%) of more than ₦200,000.00 per month (USD553/month) live. It is inferred from the study that the incidence of poverty is higher in the COAs and NDAs with informal employment as the leading occupation. This implies that residents in the two zones engage in livelihood and survival strategies that have a higher tendency to encroach on and contest public spaces in the city. It is also established that there is a connection between poverty level and livelihood approaches.

The extent of encroachment and contestation on public spaces in the city: The study found that houses with less than 4.5m minimum front setbacks and not up to 3m left side, right side, and rear standard air spaces made up about two-thirds of

around buildings as against 63.3% for hard landscaping. Evaluation of organised open spaces such as Oluyemi Kayode Stadium Complex and Fajuyi Memorial Park revealed qualitative adequacy of facilities and diverse activities.

Table 1. Employment status revealing informal sector activities as the major occupation in Ado-Ekiti

Employment Status	Student	% within zone	Unemployed	% within zone	Retired	% within zone	Employed Informal	% within zone	Employed Formal	% within zone	Others	% within zone	Total	% of Total
COAs	156	12.15	203	15.81	96	7.48	331	25.79	318	23.77	180	14.02	1284	38.70
NDAAs	149	9.55	235	15.06	144	9.23	691	44.30	198	12.69	143	9.17	1560	47.01
PREs	42	8.86	31	6.54	41	8.65	167	35.25	162	34.18	31	6.54	474	14.29
Total	347	10.46	469	14.14	281	8.47	1189	35.83	678	20.43	354	10.67	3318	100.0

Source: Field survey, July 2015.

the sampled buildings in the city. This applied to more than two-thirds of the buildings in the core areas, nearly half in new development areas, and about one-quarter in planned estates. Between a third and a quarter of the buildings had minimum front setbacks of 4.50m and left side, right side, and rear air spaces measuring 3m and more as required by law. This was more frequent in the PREs, less visible in the NDAAs and rare in the COAs. It was established that more than 50% of these houses are located less than 4.5m from drainage channels and water bodies. Only 47.22% of the buildings met the statutory requirement of 4.5 to 29.9m setbacks, while 2.13% have setbacks of 30m or more. Solid, liquid and human waste is discharged into the channels resulting in the aggravation of carbon footprints, and siltation that reduces drainage capacity and causes flooding when it rains. Similarly, most of the buildings examined fall short of the statutory requirements on setbacks to power transmission lines, whereby houses are erected close to the power lines, under which informal activities are carried out unchecked on contested spaces. The research found that 90.74% of the respondents were not compliant with the laws and regulations on minimum setbacks, while 81.43% did not obtain development permits for the uses identified within setbacks and air spaces in the study area. The high incidence of non-compliance with existing development control laws is associated with brazen impunity, livelihood approaches and weak planning policy enforcement. The implication is that encroachment and contestation on public spaces in the city were interlinked with the need to meet livelihood and household survival strategies.

The study revealed that at a rate of 55.21%, there is a high incidence encroachment, contestation or illegal development of makeshift or permanent structures for commercial purposes on public spaces. Informal commercial activities along major roads including sidewalks and even roadways was recorded in 59.44% and 61.02% of houses in the COAs and NDAAs respectively, while the PREs had a lower rate of 29.34%. Similarly, minor roads and access points were clogged with illegal commercial activities, confirming the findings of an earlier study (Ojo-Fajuru & Adebayo, 2016). Findings show that most illegally built structures were used for informal commercial and other activities and resulted in the heavy commercialization and degradation of available spaces. Furthermore, 15.17% of encroached setbacks and open spaces in the city are used for residential purposes, while informal workshops, light industrial activities and services occupy 9.44%, while religious use account for 8.56%. In addition, refuse heaps occupy 5.12% of encroached public spaces, while sundry uses account for 6.5%. The study established a preference for hard landscaping elements as surface cover, with soft landscaping featuring only on 26.36% of spaces

It was observed that non-leisure activities dominate around these quantitatively deficient recreational open spaces during the day to the extent that they are threatened with space contestation from transport and commercial activities, which render their environment filthy. These findings implied that greenery, circulation spaces, pedestrian movement and recreational areas are steadily reduced in the city.

Factors responsible for encroachment and contestation on public spaces and the effects on the environment in Ado-Ekiti: The development conflict between equity and ecology, the property conflict between equity and economy, and the resource conflict between ecology and economy in the sustainability triangle (Campbell 1996) are evident in the city. It was found that 92.24% of encroachment and contestation on public space resources in Ado-Ekiti is illegal and mostly rampant in the CBD and along major roads. The reasons identified by the respondents included ignorance of development control laws (34.65%), while nearly a third (31.77%) attribute it to people's desire to improve their poor financial situation and circumvent livelihood and survival challenges. Poverty and unawareness of extant planning legislation account for about two-third (66.42%) of the factors responsible for encroachment and contestation on public spaces in the city. Other factors are the failure of government organs to ensure compliance with development regulations (15.19%), increasing human activities that requiring space (13.16%), and the nefarious sharp practices of land speculators (4.48%). The study revealed that encroachment and contestation on public spaces, which manifest in illegal and substandard developments, degrade the landscape, and endanger lives and property of business operation along roadsides. The city has lost to encroachment and contestation, spaces that are supposed to be preserved as green areas around buildings, along transportation corridors, fluvial channels and under power lines. The cityscape is deprived of greenery, aesthetics, comfort, and live ability. The chain reaction is established that poverty instigates livelihood strategies, which lead to space contestation and encroachment that result in landscape degradation threatening environmental sustainability in Ado-Ekiti.

Willingness to participate in a greening and transformation program in the city: Research findings show that 81.51% of respondents agreed that environmental quality would be improved in the city if reclaimed public spaces are greened. Dissenting voices and the undecided made up 18.49% of the sample, implying that the vast majority support greening public spaces in the city as an environmental quality improvement tool. Furthermore, 63.39% of sampled respondents agreed that all reclaimed land should be

established as green spaces. To promote inclusiveness for planning purposes, those that disagreed were given the opportunity to suggest additional uses for green areas, which included recreational use, commercial use, parking, services, farming, and gardening. With the majority (81.43%) of the respondents' expression of strong willingness to participate in such program, the research established the readiness of the people to take active part in a greening exercise and incorporate socio-economic activities into the green areas to achieve overall sustainable landscape development in the city. This is an indication of the people's willingness to engage in concerted effort for city transformation to reinvent Ado-Ekiti as a great, green African city.

A Model for Comprehensive Greening and Urban Spatial Intervention: Models of urban greening are descriptive analyses of the workings and interrelationship of existing and proposed environmental systems within the larger ecosystem such as those of New York City, Curitiba, Cape Town and Durban, which are used as reference points in this study (Ojo-Fajuru, 2018). The proposed Strategic Model for Comprehensive Greening and Urban Spatial Intervention in Ado-Ekiti is structured into successive segments such as the dysfunctional policy zone, the negative zone, the intervention zone, and the positive zone. The indigenous model is developed to guide the drawing up of an overall city greening plan to provide intervention strategies for deliverable green outcomes and achieve the ultimate goals of a clean, green, economically viable and liveable city.

Policy statements and recommendations for the implementation of the Ado-Ekiti Comprehensive Greening and Spatial Regeneration Intervention Plan: Deriving from the Model, the Ado-Ekiti Comprehensive Greening and Spatial Regeneration Intervention Plan is developed as a green landscaping tool to transform recovered public spaces to create parks, squares, gardens and promenades. These green spaces are designed to enhance environmental quality and promote aesthetics, liveability, inclusiveness and sustainability in the capital city. The research applies the concept of catchment area to locate newly created squares in the three morphological areas of the city. The sphere of influence in the COAs is larger than those in the residential neighbourhoods of the NDAs and PREs, given the centrality and wider array of high-level services offered in the former. In effect, the size of the squares created is related to the population threshold in the catchment areas whereby those in the high density populated CBD are larger than those located in the residential neighbourhoods and suburbs of medium and low density population.

The entire commercial activities and services previously operating on reclaimed setbacks and open spaces along the linear corridors, defacing the city, are relocated at these organised convergent places at nodal points in the three morphological areas. The determining factor for the location of the nodal points also takes cognizance of the minimum walking distance between 300m to 500m, which can be covered by foot within three to ten minutes. The nodal points would be accessed by major roads and serviced by public transport system. This addresses the challenges of transportation by ensuring unhindered ingress and egress to enable people carry out commercial and shopping activities within the vicinity of their homes. This is to ensure convenient access, shared use and a variety of services in the squares and parks to accommodate the activities taken away from the

roadsides and streets in the green layout. The longer the distance to the facilities, the greater the tendency would be for the people to return to the streets. This provision also satisfies the need to create modern markets that improve on the traditional ones by giving room to a wide range of commercial activities to take place simultaneously within their spaces. This model of integrating clusters of informal activities structured and grouped according to their trade is to promote complementarity and intervening opportunities. In Ado-Ekiti, socio-economic aspect and livelihood strategy cannot be divorced from the success of any planning instrument and regulation, failing which the people will resort to open space encroachment along the streets and activity areas, thereby resulting to environmental pollution. In effect, these nodal points are proposed to accommodate the relocation of informal sector activities from the streets and along roadways in the city. This sector constitutes an integral part of the community and makes an important contribution to the economy. The integration of regulated socio-economic activities into green areas and the inclusion of the informal sector in the city economy would ensure the restructuring of the typical African system from a negative hindrance to a contributing factor in the functionality of the built environment, and thereby discourage the phenomena of motivated linkages inherent in the recurrence of public space contestation, encroachment and degradation.

The incorporation of the informal sector into the greening plan establishes the sanctity of the people's opinion that the greenery alone is not complete without the socio-economic and livelihood aspects, which are very important to the success of a smart city that maintains the green setbacks and open spaces in accordance with building regulations and bye-laws. It is also recommended that the instrument of garbage sorting (from source) and collection, as practiced in other green cities like Durban and Curitiba, be strengthened in the business districts, activity areas and residential neighbourhoods of the city to turn waste generation constraints to economic opportunities. These proposals would enhance inclusive green places, propagate biodiversity, reduce carbon footprints, inculcate effective environmental protection, ensure convenient transportation, promote sustainable socio-economic development and facilitate the reinvention of Ado-Ekiti as great African green city.

Conclusion

The study examines the emergent spatial structure of Ado-Ekiti consequent upon public space encroachment and contestation occasioned by poverty-driven livelihood strategies in disregard of statutory development control regulations. The research establishes an acute dearth of urban greenery, and the anomaly that the city landscape and liveability are negatively impacted while the people aspire to survive in their immediate environment. The people are aware of the law, but they violate it with impunity to access the space required for livelihood, which resulted to illegal structures clogging available spaces in the urban matrix. This renders the city environment formless, degraded, unattractive and unfriendly. It is apparent that government agencies set up to control development are ineffective in preventing encroachment and amorphous expansion. Intervention strategies are urgently required to turn this situation around by recovering lost spaces and using them to green the city. The reclamation of encroached public spaces, their utilization for green landscaping and the incorporation of

socio-economic activities to create great places that promote liveability, inclusiveness and a sustainable landscape in Ado-Ekiti is the main thrust of this research study. The research shows that the people desire inclusive greening and are willing to participate in green city transformation programs. The study argues that the integration of the informal sector is germane to the success of the greening programme, and should be entrenched in the city master plan to strengthen livelihood strategy, embrace inclusiveness and boost green economy, failing which the people will return to the streets and continue to aggravate carbon footprints. The development of the intervention model and greening plan are aimed to resuscitate biodiversity and promote efficiency, economy, inclusiveness and liveability. With appropriate public support and participation, the ugly state of the environment would be addressed with reclaimed spaces re-established and maintained as inclusive green places in the capital city. The Model for reinventing Ado-Ekiti as a future African green city are replicable in other cities with similar challenges in Nigeria and the Global South.

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