AN OVERVIEW OF THE ROLE OF BUILT ENVIRONMENT PROFESSIONALS IN SUSTAINABLE URBAN CENTER MANAGEMENT

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Abstract
21st century is regarded as century of cities and urbanization with an estimated 3.9 billion people to live in the cities by 2015; the quest for sustainability in all aspect of human activities within his immediate environment and beyond to suit his essence on the planet earth, needs and requirement has been attracting a global attention for its associated effect. Development and management of urban centers is becoming a herculean task to both policy makers and other stake holders of the built environment particularly the professionals such as Planners, Architects, Engineers and Surveyors among others. Cities/Urban centers have continuously been the receptors of population explosion and its attendant consequences. This paper aim to examine the challenging roles of the custodians of the built environment (as referred to in this paper) vis-à-vis the emerging needs for sustainability and best practice approach management. We conclude that, For a well plan and sustainable cities to be attained, the input of built environment professionals can not be over emphasized, as glaringly suggested from the evidences of successful cities indicates. We further highlights on the need to evolve the 5 key stake holders model as best practice approach in urban center management.

Keywords: Urban Center, Sustainable Management, Built Environment Professionals, Best practice.

1.0 Introduction
The global demographic trend and the attendant implication is increasingly becoming a source of concern for to the doctrine and principles of sustainability and its challenging management requirement. The exponential growth of the world population and the increasing rate at which societies are urbanizing presents a monumental challenge to all major cities,
particularly that of the developing world. As at 2001 the world population living in urban areas was about 2.8 billion and is expected to reach 3.9 billion within the next 3 years (McLaren, et. al.2005), and will increase the number of cities from 39 to 59 (Kotter, 2004). In fact, it has been postulated that by 2015 more than half of the world population would be leaving in the urban centers (UN Population Division, 2002) with a lot of mega cities springing up. And it keep increasing as increasing amount of world economic activities concentrates in urban centers (Waite, 2003).

**Fig. 1:** Some world cities population (2007)

<table>
<thead>
<tr>
<th>Cities</th>
<th>Population (Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hong Kong</td>
<td>7.2</td>
</tr>
<tr>
<td>Shanghai</td>
<td>15</td>
</tr>
<tr>
<td>New Delhi</td>
<td>15.8</td>
</tr>
<tr>
<td>Calcutta</td>
<td>14.8</td>
</tr>
<tr>
<td>Lagos</td>
<td>9</td>
</tr>
</tbody>
</table>

**Source:** (Okoli, 2008)

**Figure 1.1** (see page 3) shows world urban population growth. The high rate of population explosion which requires high quality environmental management strategies for sustainability purposes is only realizable when expert and professionals in the built environment and their role are appreciated, only then issues like sustainable cities, creative cities, mega cities etc will conform with the universal focus on sustainability. The high rate of population explosion requires best practice approach for environmental sustainability purposes is only realizable when expert and professionals in the built environment and their role are appreciated, only then issues like sustainable cities, creative cities, mega cities etc will conform with the universal focus on livability. The discipline in design and planning, engineering and construction are the most influential that shapes the resilience of the built environment (Bosher et al.,2007). The professionals within the built environment are indispensable in the attainment of sound, pleasant, healthy and well integrated environment. This paper reviews the contemporary as well as the emerging challenges in urban centers including disaster, population within the built environment and the challenges poses to these professionals’ in order to highlight on the silent areas that requires reasonable attention by policy makers for attainment of the global sustainability and livability of our cities.
2.0 Overview of the Dilemma In Urban centres

Urban center or a city is a differentiated community with a large enough population and resource base to allow for specialization in Arts, Craft, Science and profession (Cunningham and Saigon, 1997). It is therefore means that a settlement with large population but without corresponding functional services and specialization is not qualified to be called a city. This may explain why Turner (1968) describes Ibadan (South West Nigeria) with a population of 800,000 in 1968 as the largest village on earth. Based on this Dickson (1972), defined urban center as any settlement where more than 50% of its population are engaged in non-Agricultural occupation. It should be noted that a city is created to serve a human needs and therefore suppose to meet the need by permitting all its function as a city, which includes Ease of transportation, availability of affordable housing with high standard of hygiene, availability of public services and facilities, recreational facilities and open spaces, assurance of social order and security. The point here is that a city should be meant to perform these functions through sound and adequate urban development and management strategies and institutional framework.

By 2003, the world’s urban population has reached 3billion, this is almost the same size the world total population in 1960 (UN Population Div, 2002) and by 2015 this number would have risen to 3.9billion. close to half of the world population now lives in the urban centers.
compared to less than 15% in 1900 (Satterthwaite, 2003). During the 20\textsuperscript{th} century, the world urban population increased more than ten fold, and many aspects of urban change over the last fifty years are unprecedented, and these includes not only the world level of urbanization and the size of its urban population but also the number of countries becoming more urbanized and the size and number of every large cities most of which are in Asia (McGranahan and Satterthwaite, 2003). Cities are abode of abodes; an enclave of enclaves. It represent a set of human beings and their institutions interacting in a densely settled finite space, producing and distributing economic resources, services and other values, hence often referred to as distributional mechanism (Ozigbo and Ozigbo, 2008). Nevertheless, cities can be interpreted as the organize inter relationship between various components of the built environment and the socio economic behavior of the operators.

Urban centers are important segment of national and world economic development, but many faces severe challenges ranging from low energy efficiency to degraded environmental quality. The most crucial environmental, economic and social issues facing cities today particularly in the developing countries includes:

- The Urban Environment
- Housing issues
- Population Explosion
- Transportation and Traffic Congestion
- Urban Poverty
- Infrastructures
- Social menace and vices

2.1 The Urban Environment

Urban centers are known for creating their own microclimates as a result of clustering of hard surfaces that are heated by sunlight and channel rain water into the under ground ducts. This makes city weather to be hotter, windier and cloudier than the weather in the surrounding areas. Garbage and sewage are two other major problems, for instance in Nigeria most cities are covered with piles or heaps of garbage, specifically polythene have taken over most places in the cities, sewerages are fill with refuse thus preventing waste and run off water from discharging. Built environment is increasingly contributing significant share of urban energy consumptions and related emission (SEI, 2009). In London for example, the energy used within London's buildings — residential, commercial, public, industry — accounts for nearly three quarters of the city's total carbon footprint (Siemens, 2008).
2.2 Housing

According to the United Nation Center for Human Settlements (Habitat, 1996) about 500 million urban dwellers are homeless or live in inadequate housing. The houses in cities are not only short in supply, they are poor in condition or generally sub standard. The problem is getting worth as housing development is not keeping pace with the exploding urban population. Homelessness is a problem in both developed and developing countries. An in-depth trip into most of the cities will reveal a shocking situation certainly. In the same vain housing development further going out of the development control framework without basic infrastructures. In Dar as Salam three out of every housing development are in unplanned and unserviced settlement (Rutsch, 2001).

2.3 Population Explosion

Population explosion in cities threatened national economies. The United Nations report that ten most populated countries in the world will be in Asia, Latin America, and Africa by 2015 and nine of them will be in less developed countries. Rapid urbanization is occurring as a result of un-abated rural-urban migration as well as the gradual transformation of rural areas to urban centers. Higher population leads to more demand for housing and services. These are likely to face further pressure from the trend towards smaller households due to changing family models and aging, as well lifestyle changes as such as the demand for more living space per person (EEA, 2010).

**Table 1:** population of the 10 largest cities in the world by 2015

<table>
<thead>
<tr>
<th>S/NO</th>
<th>City</th>
<th>Country</th>
<th>Population (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bombay</td>
<td>India</td>
<td>27.4</td>
</tr>
<tr>
<td>2</td>
<td>Lagos</td>
<td>Nigeria</td>
<td>24.4</td>
</tr>
<tr>
<td>3</td>
<td>Shanghai</td>
<td>China</td>
<td>23.4</td>
</tr>
<tr>
<td>4</td>
<td>Jakarta</td>
<td>Indonesia</td>
<td>21.2</td>
</tr>
<tr>
<td>5</td>
<td>Sao Paulo</td>
<td>Brazil</td>
<td>20.8</td>
</tr>
<tr>
<td>6</td>
<td>Karachi</td>
<td>Pakistan</td>
<td>20.6</td>
</tr>
<tr>
<td>7</td>
<td>Beijing</td>
<td>China</td>
<td>19.4</td>
</tr>
<tr>
<td>8</td>
<td>Dhaka</td>
<td>Bangladesh</td>
<td>19</td>
</tr>
<tr>
<td>9</td>
<td>Mexico</td>
<td>Mexico</td>
<td>18.8</td>
</tr>
<tr>
<td>10</td>
<td>Tokyo</td>
<td>Japan</td>
<td>28.7</td>
</tr>
</tbody>
</table>

**Source:** Center for Human Settlements (Habitat, 1996)
For instance, Bangkok which covers an area of about 67 square kilometers in the 50’s, by early 90’s it has reached 426 square kilometers.

### 2.4 Transportation and Traffic

There are several problems facing transportation systems in our cities such as inadequate parking spaces for vehicles and poor roads. These transportation problems includes; Congestions, Longer commuting, Public transport inadequacy, Loss of public space, Environmental impacts and energy consumptions, Accident and safety, Land consumptions and Freight distribution. The increasing transportation demand in the cities is equally dependant upon the socio-economic variables (Bannister, 2007; Clifton et al., 2008).

### 2.5 Infrastructure

Canadian cities are suffering from a $60 billion infrastructure debt. Every year, all levels of government face pressures to build/update transit, drinking water and sewage systems, and extend urban road networks. Deteriorating infrastructure entails massive loss of potable water, substandard sewage treatment, congested roads, inefficient transit systems, and other consequences with important environmental dimensions.

### 2.5 Urban Poverty

Westendorf (undated) argues that a growing number of world poorest live in cities, in poor quality housing on dangerous sites, lacking even basic services. In many countries, budgetary constraints, structural adjustment process, increasing wealth inequalities and lack of popular participation in governance are worsening the position of the urban poor. City development have focused on political, social and economic viability rather than aiming at increased access to adequate level of basic services and healthy living and working conditions for all residents. The resultant effect is the creation of poverty in cities. For instance it is estimated that Hyderabad’s urban poor constitutes about 35% of the population with many living in slums along polluted water course and drainage ways.

### 2.6 Social menace and vices

Cities exhibit the origins, nature and manifestation of the impact of ethnic, religious, or ethno-nationalist conflicts the world over. In the contemporary era of globalization which has challenge nations states and national identities as a legitimate source of authority, struggles over sovereignty and of recognition often un fold among sub-nationals. Since cities are more likely to draw and host populations of different ethnic and religious groups, conflict often arises. This means that ethnic and ethno-national identity conflicts would be increasingly
transferred to the built environment and local governing practices. The religious crises in Nigeria over the years originate and occur in cities. Crime rate is equally higher in urban centers, and the socio economic cost of crime is greater for big city residents which are attributable to increasingly impoverished inhabitants resident in restricted areas.

3.0 The custodians of Built Environment and Their Role

The term built environment refers to human made surroundings that provides the settings for human activities, ranging from buildings and parks or green space to neighbourhood and cities which includes their supporting infrastructures such as water supply and energy works. The built environment is a material, spatial and cultural product of human labour that combines physical elements and energy in form of living, working and playing. Thus, it has been defined as “the human made space in which people live, work and recreate on a day to day basis. It encompasses places and spaces created or modified by people including buildings, parks and transport systems” (www.wikipedia.org). It is used to describe interdisciplinary field that addresses the design, construction, management and use of these man made surroundings as an interrelated whole as well as their relationship to human activities over time.

According to the current draft version of the International Labour Organization’s International Standard Classification of Occupations, ISCO-08, the built environment professions are included in two main categories of professionals: ‘Engineering professionals’ and ‘Architects, planners, surveyors and designers’. The main category under engineering is civil engineering. Other engineering categories that are relevant in the ISCO classification are environmental engineering and mechanical engineering, where this relates to building and infrastructure services. The second relevant ISCO category includes architects, landscape architects, town and traffic planners and cartographers and surveyors (ILO, 2007).

The built environment, defined by the facilities and civil infrastructure systems that people use, is the fundamental foundation upon which a society exists, develops, and survives. As the main provider and the life cycle custodian of the built environment, the Architecture, Engineering, and Construction (AEC) industry plays a critical role in determining the quality, integrity, and longevity of this foundation. In the execution of these two roles, provider and custodian, the AEC industry has had a major direct and indirect impact on the natural
environment, contributing both directly and indirectly to natural resource depletion and degradation, waste generation and accumulation, and environmental impact and degradation (Vanegas, 2003).

**Chart: 3.1** Built Environment professionals, input output relationship

The Scottish Executive has rightly observed the relevant of architecture. “For many, their built environment often does not meet even the simplest of their needs; the need for a decent home, for access to local amenities and open space, for a pleasant and stimulating place to
work, for opportunities for leisure, and for fresh air and a quiet, clean and safe environment. Our ability to meet these needs, to meet our social objectives for an inclusive society that provides opportunity for all, largely depends on the quality of the built environments we make. Good building design and good architecture affirm social values and bring coherence and order to our built environment for the benefit of us all” (ACNI, 2002)

The built environment’s potential as a significant contributor to achieving sustainability goals is well documented and recognized within the facilities management profession (Wood, 2006; Shah, 2007; El Mualim, 2012). For surveyors, it includes mapping out and production, cost estimates and billing of a proposed development, infrastructure management, Development Appraisals, Land and Property based Taxation, Valuation, Property and Facilities Management (Okoli, 2008). Built environment professionals are specialized personnel in the human surroundings and the activities therein; skilled enough to poster a balanced interaction of the human by products in harmonious and sustainable direction with enabling institutional frame work.

3.1 Agenda 21 and the Role of Built Environment Professionals: Examples of Implementations

Agenda 21 is synonymous with sustainable development, it connotes a whole set of mechanism and programmes for the betterment of humanity in the 21st century (a century of cities and urbanization). It is a non binding, voluntary implemented action plan of the United Nations with regard to sustainable development, a product of the UN conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil in 1992. It is an action agenda for the UN, other multilateral organizations, and individual Governments around the world that can be executed at local, national, and global levels.

In Europe the conference on sustainable cities held in Aalborg, may 1994 ended with the drawing up of a chatter, a documents signed by 80 local European administrations. This chatter set out the man principles of sustainable urban management through the local Agenda 21 programme, with public private agreement and public participation as key principles. Most of the participating countries have proceeded as a follow of to Agenda 21 set up their local Agenda 21 in their countries either through their integrated national plan as the case in Malaysia or through local institutions. LA 21 is an action plan for designing strategies of intervention on a local scale to fulfill the existing ten principles as set out in the Aalborg (Vazquez, and Oton, 2010).
Nevertheless, the future of urban centers and cities depends to a large extend on the proactive management of the built environment, the economy as well as the politics. Non cohesive management promotes deterioration of urban living condition and could serve as catalyst to persistency in urban poverty; hence there should be proper and adequate provision for population increase and an allowance for the infrastructural and services adjustment including jobs. For instance, the excruciating traffic congestion along the Victoria Island-Lekki Pennunsila corridor in Lagos, Nigeria owing to poor road and allied infrastructures which had earlier signals the impending explosion in developing along that axis which is easily the fastest growing belt in Africa. There are several approaches to urban center management which includes:- eradication of poverty, urban gentrification, sustainability of cities, creative and social innovation of cities, adequate housing, urban and intra-city infrastructures, life circle costing and engineering, private partnership organization, land information system, land taxation, good governance, adequate security and legislation. In Oviedo a functional implementation of some of the agreements reached in line with Agenda 21 initiatives which seeks to trick down to LA21 involving the local council in infrastructural upgrade in form of urban gentrification of the built environment is achieved through upgrade of rail way station and other transportation infrastructures.

Urban gentrification is the immigration of middle class people into recently renewed urban areas. It is a phenomenon in which low cost, physically deteriorated neighbourhoods undergo physical renovations with an influx of wealthier residents who may displace the prior residents. A building is like a piece of machinery or a motor vehicle that depreciates in value over time. Parts wear out, the roof may need to be replaced after years of exposure to the elements, the building style may go out fashion, and technological changes such as new standard in electrical and plumbing may evolve. Therefore, gentrification or urban renewal of a decaying city will bring renewed investment in physically deteriorating neighbourhoods leading to improved access to lending capital for property owners, as their property values increases and increase revenue to the governments from enhanced property taxes. Urban gentrification or any form of improvement in cities require strategic planning as an input from the urban designers and planners to provide direction, scope and approach, equally the study and analysis of current situation is desirous. The activities of built environment professionals, the planners in particular have provided Oviedo the desired direction to attain the concept and contents of local Agenda 21. The interaction between the international
community, state and local authority; and the synergy with the built environment professionals has indicated the best practice approach to urban center management in Oviedo.

3.2 Disaster Reconstruction and Management

This refers to the impact of different physical, social, economic, political and complex hazards on vulnerable communities. It includes, therefore, not only disasters associated with extreme natural events such as earthquakes, hurricanes or volcanic eruptions, but also disasters due to war and civil conflict, displacement due to political violence and development projects such as large dams, and disasters due to the collapse of existing social welfare systems as a result of wider economic and political changes. As such, the term disaster is used here in a much wider sense than the conventional definition of “natural disaster” (UNISDR Website).

There has been series of natural disaster occurrence that causes a lot of destruction to both the built environment as well as the inhabitant; the Japan tsunami (2011), Haiti earthquake (2010), Cyclone Nargis (2008) and the Asian tsunami (2004), (Thurairajah, 2012), the Bam Earthquake in Iran (2004), and recently the sandy(2012) in America. This left serious destruction on the affected communities and the built environment. This increasing vulnerability of the built environment and the infrastructures, poses remarkable challenge to the profession. As part of the United Nations requirement for such disaster prone countries, is to adopt disaster resilient city concepts including strategies for planning and construction of the built environment infrastructures (Bosher and Dainty, 2011).

Furthermore, evidence from the recent research indicates the unique role and contribution of the built environment professionals in preventing and minimizing disaster loses (Thurairajah, 2012). The greatest immediate threat to life and property from hazard strike becoming a disaster is in such urban centers, particularly in the burgeoning cities of the developing world where increasing numbers of poor people live in precarious situations (UN-Habitat, 2007).

3.3 The Bam Earthquake 2004 and Reconstruction Of The City

The integration of the built environment professions into the processes associated with emergency management has been largely neglected (Spence and Kelman, 2004). Current and potential threats must be considered when planning, building and maintaining built assets and critical infrastructure (Bosher, et al., 2007, p. 1). The concept of emergency management
begins with the realization that many emergencies are not unexpected but stem from: The predictable result of interactions among three major systems: the physical environment, which includes hazardous events; the social and demographic characteristics of the communities that experience them; and the buildings, roads, bridges and other components of the constructed environment (Mileti, 1999, p. 3).

However, it is particularly important that those professionals who are employed in particular disaster-related situations have the appropriate knowledge and experience. Those dealing with post-earthquake reconstruction, for example, must have appropriate technical knowledge of earthquake-resistance in designing for and managing effective reconstruction (Da Silva, 2009).

Architects, Urban designers and Project managers engaged in Bam reconstruction program. The Mind the Gap report (Lloyd-Jones, 2006) identified the skills that surveyors could bring to disaster risk management and reconstruction:

- Assessing disaster-related damage;
- Land surveying, GIS and rapid mapping of disaster impacts and risks;
- Monitoring funding;
- Valuation, cost planning and spending priorities; development finance;
- Procurement and project management;
- Sourcing construction materials and equipment;
- Building quality audits pre- and post-disaster, particularly resistance to disaster risks;
- Aiding logistical planning;
- Aiding local government land administration, cadastral mapping;
- Knowledge of land and property legislation, providing support on land rights and claims;
- Knowledge of local regulatory frameworks and ways they could be improved;
- Training and knowledge transfer;
- Disaster risk assessment;
- Links with other built environment professions; inter-disciplinary and team working;
- Contacts with local business and industry;
- Knowledge of appropriate forms of disaster-resistant construction and engineering.
Reconstruction programme in Bam was followed immediately after the earthquake, the main concern of the government and local authorities and the NGO’s which take charge of all the reconstruction effort.

In order to take part in the reconstruction of the city, a number of built environment specialties in construction and designing consultancy have either moved to Bam or established a representative office. Beside this HFIR (NGO) has designated an extensive lot for construction companies and architectural firms to build samples of their proposed buildings, to demonstrate their proposed construction methods to the locals. Each building offers earthquake-resistant features, according to the promoters, who try to convince the citizens to use their specific techniques in the reconstruction of their house (Gharaati, 2005).

It is pertinent to stress here that the professional’s role requires additional and in-depth knowledge and training on disaster preparedness and avoidance and mitigating the adverse effect it might generate to the built environment infrastructural facilities (Hamelin and Hauke, 2005). This include pre-disaster observations, immediate response at it occurs, rehabilitation and reconstruction.

Emergency management should be concerned with people’s capacity to manage their natural and built environment, and to take advantage of it in a manner that safeguards them, and their children’s, futures (Walker, 1989). This shared responsibility can be achieved partly by integrating with built professionals who possess knowledge and experience of how to design, build, retrofit and operate what are typically bespoke built assets (Bosher et al., 2007).

One way in which emergency managers can become more proactive is by adopting an agenda that encourages the integration of professions from the built environment. There is currently little commentary from emergency management, construction or civil defense-related literature on the contribution of the built environment profession to the mitigation of natural and human-induced hazards. Nonetheless, it is fair to state that the construction industry has not been sufficiently involved with emergency management (Bosher et al., 2007).

Bam earthquake reconstruction effort has witness the participation of professionals in the built environment, the government at all levels, the Non-governmental Organization but locally and internationally, the participation of the affected community, thus confirming the need harmonize the integration and adoption of appropriate approach for best practice management of urban infrastructures. Architectures, civil engineers, planners, builders were key participant in Bam post disaster management and reconstruction. The Architects are to coordinate and control all aspect of the design process for adequate protection of public
health, welfare and safety (Philip, et al., 2012) as this is a key issue to the universal focus on sustainability.

3.4 Built Environment Professionals Instrumental to Sustainable And Successful Cities

The concept of sustainable cities deals with the process need to make urban regions more sustainable (Okoli, 2008). It is the city where improvement in quality of human life is attained in harmony with improving and maintaining the health of ecological systems and where a healthy economics’ industrial base supports the quality of both human and ecological system (Ozigbo and Ozigbo, 2008). The Urban Task Force identified three factors currently influencing change in the development process. The ‘technical revolution’ removes the need for the separation of work and home that has its roots in the industrial revolution. The ‘ecological threat’ to finite resources will impact upon sustainable development. ‘Social transformation’ in changing life styles and improved health has resulted in increasing life expectancy and new ways of living. These factors are changing the way society thinks about cities. Sustainability in itself became to the lime light and as a key issue during the United Nations Conference on Human Environment in 1972 at Stockholm. It suggests the possibility of achieving economic growth and industrialization without environmental damage. It further became more popular after the publication of Brundtland report and development in Rio de Janeiro in 1992 in which it defines “sustainability” as Development that meets the needs of the present without compromising the ability of the future generations to meet their own needs (WCED,1987:43). It is improving quality of human life while living within the carrying capacity of supporting ecosystems (IUCN/UNEP/WWF, 1991). It is the ability of the earth various natural systems and human cultural systems and economies to survive and adapt to changing environmental conditions indefinitely (Miller & Spool man, 2010). However, sustainable communities in other words are communities planned, built or modified to promote sustainable living. This may include sustainability aspects relating to reproduction, water, transportation, energy and waste and materials (James. P.et. al, 2012). The issues of sustainable urban centers includes question on planning, democracy, environmental justice, and participation. The other is concern with the urban form and design, technological change and infrastructure. Both deals with change, gears towards the redirection of urban metabolism. Urban sustainability will strengthen the contributions of cities and towns in any country towards economic growth, social development and the alleviation of poverty. Haughton & Hunter’s (1994) defined sustainable city as “one in which its people and businesses continuously endeavour to improve their natural, built and
cultural environments at neighbourhood and regional levels, whilst working in ways which always support the goal of global sustainable development.”

3.5 The Curitiba BRT

The city of Curitiba is world renowned for the transportation network and urban planning throughout the city. This has for instance informed the decision why the chairman of urban planners in Istanbul describes Curitiba as “the most innovative city in the World”. Great leadership and adherence to smart transportation planning tenants has helped Curitiba, Brazil strive towards becoming a sustainable city while gaining its strong reputation as a great example of successful urban planning (Karis B. et al., 2006).

A master plan grounded on the articulation of land use, hierarchical street systems, and public transportation based on buses, transformed the city (Duarte et al., 2011), which made Curitiba an international reference in urban planning (Rogers, 1998); and its public transportation system has confounded roots with what is now known as the Bus Rapid Transit (BRT). Some important BRT guides name Curitiba’s system as a “full BRT,” comprising of a high-capacity buses, special boarding platforms on the same level of the bus floor, fare collection before boarding; and a segregated bus lanes (ITDP, 2007; EMBARQ, 2010). The input of built environment professionals are well felt not only in Curitiba but the world over for the singular recognition of leading city with sustainable transport planning and infrastructures. Curitiba as a success city model is driven and revolves round through the government, the built environment professionals, and the investors/financier’s.

Fig. 3.02: Curitiba Bi-articulated bus in operation

Source: URBS, 2003; (Duarte, 2011)
Planners, Architects and Civil Engineers with the active support of the government master minded the conceptualization and implementation of what in 1996 was declared as the most innovative city in the world (UN Habitat II). Jaime Lerner, an Architect and Urban Designer, the promoter of urban Acupuncture successfully design the Curitiba’s transportation system. This is as a follow up to an earlier concept develop by a French urban planner and architect (Alfred Agache) in his attempt to direct the urban growth in the city of Curitiba in 1947. One of the focuses of the plan is to create new sanitation measures, additional housing and industrial zoning. The goal of the plan was to strengthen the city core by providing increased vehicular movement in and out of the city. This was not however successful for financial and political situations. These lead Mayor Ivo Arzula to call for new proposals for a new urban design for the city in 1964, resulted in the creation and implementation of the Master plan. A consortium formed by the Serete Limited (Society for Studies and Projects) and the urban planner Jorge Wilhelm, both based in Sao Paulo, won a competition for developing the new Master Plan for Curitiba, called Plano Preliminary de Urbanismo. A local team was designated to detail the preliminary plan (Duarte et al., 2011). The architect Jaime Lerner was part of this team, which was seminal for the creation of the Institute of Planning and Urban Research of Curitiba (IPPUC) in 1965.

The making of a livable urban community is a complex endeavor. For much of the 20th Century planners and engineers believed that modern and rational decision-making would create successful cities. Since 1974 Curitiba has implemented an integrated land use and transport program with its world leading bus rapid transit system. The highest levels of residential and commercial development are concentrated in the two blocks either side of the trunk route, with diminishing densities in the blocks to either side, thus preserving large areas for low-rise residential development in the sectors between routes. The road network is centered on the trunk routes of the BRT scheme flanked by low speed local routes. Poverty and Urban Environment report (2006) indicates that Curitiba was able to reduce the usage of private cars through effective transportation planning by about 30% and more 2 million people uses the rapid and non expensive transportation daily.

Curitiba as a model for successful cities particular on urban transport infrastructures is a resultant product of built environment professionals. The initial design by the French urban and regional planner and the subsequent redesign by Architect and planner as well as the establishment of urban planning institute provide the initial lead. The need to have a sound
park, garden and sustainable waste management strategy was directed by Civil Engineer Nicolau Kluppel. Curitiba’s’ where made to be productive in view of its economic predicament through collection of waste for recycling. Park was further designed to control flood, a plan that transform problematic area into a valuable and self sufficient environment. The almost traffic free experience in Curitiba today provide much challenging solution, the BRT system is another built environment professional input by an Architecture which provides land use directives, land use transportation and road way system. Governments on its part were instrumental to the enabling environment and aggressive mobilization of resources by attracting investors to participate in the urban acupuncture program of Curitiba. The public are equally made to participate through promoting sustainable development programme and equally serves as employment opportunity by collecting trash for recycling for a fee. The continuous administrative control, implementation and evaluation to accommodate the increasing challenge falls within the purview of the government and the professionals in the built environment through the research institution set by the government.

3.6 The New Cities Initiatives

Konza Techno City, a new city initiative conceived by the combine effort of the built environment professionals, the government and the private investors, a proposed smart city derives its name from a small settlement named Konza, which is 4km to the south. This settlement has a railway station on the main Nairobi-Mombasa rail route. Konza Techno City at the former Malili Ranch – in Machakos and Makueni Districts – is located in the eastern part of Kenya. It is 60km from Nairobi, on the Nairobi-Mombasa road A109. It is 50km from Jomo Kenyatta International airport; and 500Km from Mombasa and its ports.

The Master plan is based on successful ‘new town projects’ around the world – put together by an international team of experts. It is modeled in line with best practice from countries all over the world to ensure global competiveness. The vision for the city includes a strong emphasis on Information Technology and Information Technology Enabled Services (ITES); and a wide range of commercial and support activities. In addition, the government of Kenya has taken advantage of its geographical position, its status as the 3 trade hub of the region and its competitive production costs to develop the Business Process Outsourcing (BPO)
industry; and by extension Konza Techno City which will house major BPO companies. The city provides a great opportunity to leverage Kenya into the Knowledge Economy. It is design to be environmentally friendly and providing state of the art technology as promoted by the World Bank. It is to serve as host for many conglomerate including international schools, shopping centres among others.

4. Urban Center Management

“The future of the world does not lie in villages. Cities- they are the single most brilliant invention of our species” (Major Boris Johnson, London United Kingdom). Urban management has to do with coordination and integration of public and private actions to tackles the major problems that inhabitant of the cities are facing and to make a more competitive, equitable and sustainable city (Van Dijk, 2000). It is a multi sector and multi actor (Cheema, 1993) and should be concern about the economic basis of the city, about the environment, participation of and equality among its citizens (Devas and Radkodi, 1993). Management of cities requires the enabling environment including adequate legislative framework for the skilled personnel to synergize with the government and prove direction for urban centers in the 21st century.

Built environment is synonymous with cities, and the professionals have their activities more centered on urban areas for the continuous maintenance of infrastructures, upgrade and adjustment, monitoring land use development pattern and providing overall direction to city growth. Urban center management is a whole complex of interventions of government and private entities by employing appropriate resources to change the urban environmental requirements (van Naerssen T. et al., 1996). It includes aspect of organizational management, structure and relationships for well coordinated urban programmes (Mohammad and Shahbuddin, 2003).

Cities are faced with the problem of urban infrastructures project, especially when is necessary to find a solution which can meet requirements of al stake holders and the concept of sustainable development (Jajac et al., 2009). Urban center management involves coordinated planning and control of infrastructures, and services such as waste, sewerages, water supply, parks and gardens, roads, electricity supply, walk ways, development control among others. The input of built environment professional is instrumental to provision and
management of urban infrastructure for sustainability. Urban designers, Surveyors, Architects, Facilities managers, Engineers in public and private establishment continuously engaged in the provision of urban infrastructure and monitoring through maintenance management.

5.0 Model Framework

In view of the observed significant input, role and professional direction offered by the built environment professionals in planning, organizing, directing urban pattern for attainment of sound and efficient human habitation and the promotion of global sustainability agenda in general. It is reasonably well to provide a concept frame work model based on the integrated synergy of various stake holders for best practice urban center management.

**Fig: 5.1:** The five (5) key stake holder’s model

![Diagram showing the five key stakeholders model](image)

**Source:** (The Author)

The model provided in figure 5.1 describes the inter-relationship between the various stake holders required for a well planned and sustainable cities. Is a broad based concept which includes designing and planning of urban infrastructure and services by the built environment professionals; provision of enabling environment including policy and institutional settings by the government at all levels; mobilizing finances by the investors; providing support services and programmes including enlightenment by the Non governmental organizations (NGO’s) and foreign Aide’s; involving local stake holders in form of public participation.
The whole idea centered on the best practice approach to the millennium challenge facing our cities. However, this is case specific, as each urban center has its unique challenge; the bottom line is that built environment professionals are indispensable to the sustainability of the ever increasing world population and cities.

The synergy between government and professionals in the built environment in Curitiba has resulted into the realization of sound city, with one of the best transport infrastructures including excellent road network, organize waste disposal system among others. The organize and integrated activities of key five (as referred here) stake holders in any urban setting is identified as the best practice approach for city management. The Bam city reconstruction and recovery programme is a testimony of the proposed model, as professionals of the built environment, the government, The NGO’s and the public where all involve with continuous professional guide on the resilient design and materials to suit the specific purpose.

The five key stake holders had conceptualize through the built environment professional the need for new urban center with specialize services to meet up with the global advancement in technology had set up a new city, Konza-Kenya, to provide first class technological requirement. The integration has resulted in the realization of the need for new city driven by the technological advancement of the world. The five key stake holder’s concept argues that the built environment professional plays a unique role in conceptualizing stage, policy frame work, coordination, implementation, monitoring and evaluation.

5. Conclusion and Recommendation

In view of the above discussion on the challenging role of built environment professionals’ vis-à-vis increase population explosion and the finite nature of the resources, global advocacy for sustainable development. The cities/urban centers are the engine room of innovation, growth and export in the global economy inspite of several issues identified, they play increasingly important role in their local resources to the global net works. In order for the urban centers to achieve sustained economic growth, restore social equilibrium, ensure the efficient functioning of public facilities and services performance, revitalize neighbourhoods, transform derelict sites and neglected buildings, uplift and bring hope to neglected communities, reduce crime, truancy and illness, create flexible, durable, sustainable and ecologically sound development, enhance respect for the environment, reduces waste and
enhance productivity, professionals of the built environment should be integrated in the management of our urban centers for the global as well as local Agenda on environment to be successful.

Their unique expertise in the area of Urban Designs, Landscape Architects, and Land use planning, Environmental management, Development Appraisals, Engineering, Urban policy strategy and implementation among others, as evidenced in the various roles played in successful cities such as Curitiba, in Bam disaster reconstruction as well as new city development of Konza. Relevant authorities and entities must avail themselves of their services for the realization of the comprehensive goals, objectives and purposes of our urban centers. Urban centers will remain a mirage without the integration of all the professionals in the built environment. Public participation will ensure credible and sustainable urban centers. There is the need for a deliberate policy strategy to enhance the knowledge scope of the built environment professionals for meeting the emerging challenges of environment such as disasters, innovational strategy for urban center management, and the global sustainability requirement. The five key stakeholders model should serve as a guide to policy makers and a further research might be required to broaden the significant role of achieving sustainable cities in the 21 century.
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