

LAGOS MEGACITY OR MEGA-SLUM? TOWARDS A SUSTAINABLE LAGOS MEGACITY DEVELOPMENT: SOME BASIC PLANNING CONSIDERATIONS

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ABSTRACT

Lagos is projected to be the third largest city in the world by 2015, with a population of over 25 million. Prior to becoming a megacity, the provision of adequate waste management, sustainable transportation, housing, effective development control etc. had always been difficult. The recently acquired megacity status has come with its plethora of planning challenges and has exacerbated existing problems. The State Government has taken a number of steps to address these challenges but more fundamental issues need to be adequately addressed if the development of the city were to be sustainable. This paper highlights some planning considerations that should be integrated into any future actions in order to ensure that the city's growth is sustainable and its attractiveness and competitiveness enhanced. The policy recommendations are in line with best practice and contemporary approach being adopted in other regions and are considered to be applicable in Lagos.

Keywords: Development Control; Megacity; Lagos megacity; Sustainable development; Urbanisation.

INTRODUCTION

According to the U.S Census Bureau World Population Clock, the population of the world as of 13:16 GMT, 2nd of June 2011 was estimated at 6,922,296,397 (US Census Bureau, 2011). This represents an increase of almost 1 billion from the 2000 figure of just over 6 billion. Similarly, the Population Division of the United Nations' Department of Economic and Social Affairs provided that the population of the world is projected to be 8.9 billion by 2050 (United Nations Department of Economic and Social Affairs, 2004). Despite the fact that the rate of increase in world population is currently lower than that experienced between 1950 and 2000, there is no doubt that the increase in the world's population continues to remain high.

To illustrate how the world's population had grown over the years, Kinder (1998) stated in a lecture note that *'It took the entire history of humankind for the population to reach 1 billion around 1810. Just 120 years later, this doubled to 2 billion people (1930); then 4 billion in 1975 (45 years). The number of people in the world has risen from 4.4 billion people in 1980 to 5.8 billion today. And it is estimated that the population could double again to nearly 11 billion in less than 40 years. 2 This means that more people are now being added each day than at any other time in human history'*.

While the factors responsible for the explosion in population that is being experienced globally may appear not to be far-fetched, it is important to point out that these factors are fuelled by different circumstances in different parts of the world. An account provided by Kinder (1998) suggests that the Industrial Revolution in Europe and North America plays a significant role in the global increase in population. The Industrial Revolution was attributed to have led to a significant

reduction in mortality rate through increase in food production and improvements in its distribution system, improvement in public health (water and sanitation), medical break-throughs leading to the production of vaccines and antibiotics and improvement in education and overall standard of living. These factors gradually spread all over the world, bringing about a reduction in death rate and improvement in quality of life on a global scale. In addition to the lower mortality rate and improved quality of life brought about by the advancement in technology, cultural factors also contribute significantly to population increase in many parts of the developing world. In some parts of Africa and Asia, it is still commonly believed that a woman should continue to procreate until she no longer can. Similarly, some see the use of contraceptives as being contrary to religious doctrines.

A recent press release by the United Nations indicates that the population of the world is set to hit 10.1 billion by 2100 if fertility in all countries converges to Replacement Level (United Nations, 2011). The Replacement Level relates to the number of children a woman needs to have in order to ensure that the population replaces itself. The UN notes in the release that much of the projected increase up to 2100 will come from the high fertility countries, majority of which are in Africa. In this regard, the release states that *'Between 2011 and 2100, the medium variant projects that the population of the high-fertility countries would more than triple, passing from 1.2 billion to 4.2 billion. During the same period, the population of the intermediate-fertility countries would increase by just 26 per cent, from 2.8 billion to 3.5 billion, while that of the low-fertility countries would decline by about 20 per cent, from 2.9 billion to 2.4 billion'*.

Should the projection come to pass, there is no doubt that there will be additional pressure on natural resources. Planners therefore have a huge task ahead in order to ensure that the future growth in population is adequately catered for in a sustainable manner. In addition to meeting the basic needs of life (i.e. food, shelter and clothing), a range of other essential demands must also be met and these include but not limited to waste disposal, transportation and health.

One of the consequences of increasing population is a higher likelihood of an increase in the rate of urbanisation. The Organisation for Economic Co-operation and Development (OECD) described urbanisation as an increase in the proportion of a population living in urban areas; it could also be described as the process by which a large number of people become permanently concentrated in relatively small areas, forming cities (Organisation for Economic Co-operation and Development, 2003). The world's urban population rose steadily in both absolute and relative terms between 1800 and 1950 (Short, 1984). The United Nations Population Fund, formerly known as the United Nations Fund for Population Activities (UNFPA) observes that the world is currently experiencing the highest rate of urbanisation in history with more than half of the world's population living in towns and cities as of 2008. It projects that almost 5 billion people will be living in urban areas by 2030, with most of the future urban growth concentrated in Africa and Asia (United Nations Population Fund, 2007). In addition to increasing population, one other factor that contributes significantly to urbanisation is rural – urban migration.

Rural – urban migration relates to the process whereby a significant proportion of the rural population emigrates to the urban centres on a relatively permanent basis. In the absence of a commensurate migration in the opposite direction, this leads to a net decrease in the population of rural areas and a net increase in the population of the urban centres. According to the United Nations Population Fund (1999), some of the causes of rural – urban migration include search for urban employment, more educational opportunities in urban centres, generally higher standard of living in urban areas

and inability of rural land to continue to support rural dwellers. Whatever the causes, one implication of this phenomenon is that it also leads to a structural transformation within the society. Such transformation is seen in the shift from agrarian to tertiary system of production and lifestyle. A society experiencing significant urbanisation is thus structurally transformed from agrarian to tertiary/industrialised society and consequently, there are modifications in lifestyle and consumption patterns. In this regard, Madlener and Sunak (2011) pointed out that a structural shift from low energy intensity agrarian to a more energy intensive industrial system of production leads to a higher demand for energy in the urban areas. In addition to this, they observed that materials needed in the urban areas are mostly sourced from regions located far away from the urban centre thus increasing the demand for transport in urban centres. In the rural, agrarian societies however, the demand for transport is less as lifestyle is predominantly subsistent and basic needs can be met without necessarily having to travel too far from the vicinity.

SPATIAL DISTRIBUTION AND SIZES OF URBAN AREAS

According to the United Nations Population Division (2008a), the distribution of human beings across the surface of the earth is a function of the perceived opportunities that each territory has to offer. Accordingly, territories with more opportunities are likely to be more populated than those with fewer opportunities. The United Nations Environment Programme (UNEP) states that *'By 2007, one-half of the world's population will live in urban areas compared to little more than one-third in 1972, and the period 1950 to 2050 will see a shift from a 65 per cent rural population to 65 per cent urban (United Nations Population Division 2001a). By 2002, some 70 per cent of the world's urban population will be living in Africa, Asia or Latin America (UNCHS 2001a). The most striking current changes are the levels of urbanization in less developed nations: rising from about 27 per cent in 1975 to 40 per cent in 2000 — an increase of more than 1 200 million people (United Nations Population Division 2001b). Furthermore, there is every indication that the trend will continue for the next 30 years, adding 2 000 million people to the urban population of the presently less-developed nations'* (United Nations Environment Programme, 2002).

It is considered important at this stage to differentiate between 'urban' and 'rural' areas. Urban areas are defined on the basis of a number of criteria. In general, there appears to be three main criteria for determining the status of a settlement and these are (a) the land use approach; (b) the functional area approach; and (c) the density approach. The first relates to the extent to which the settlement is closely built up and the uses to which the built up area are put to. The second approach identifies the hinterland over which a settlement is considered important particularly in the provision of jobs, services and facilities while the third approach is based on the scale of some phenomena such as population, buildings etc (The UK Department for Communities and Local Government, 2002). Similarly, the United Nations Statistics Division (2007) states that *'the definition of urban/rural areas is based on both qualitative and quantitative criteria that may include any combination of the following: size of population, population density, distance between built-up areas, predominant type of economic activity, conformity to legal or administrative status and urban characteristics such as specific services and facilities'*.

Due to differences in context, as well as differences in the interpretation of the criteria mentioned above, the size of an urban area in one country may be significantly less or bigger than what is considered urban in another. In Argentina for instance, a settlement with a population of 2,000 or more is considered an urban centre while in Senegal, a settlement is considered an urban centre if the population is 10,000 or more. In Norway, a locality with a population of 200 is an urban

centre (United Nations Statistics Division, 2007). The above classification/definition is based on population size only. In general however, urban areas are usually characterised by substantial tertiary land uses as against agrarian or primary land uses as it is the case with rural areas. They are also considered to serve regions that spread well beyond the boundaries of the urban settlements and have populations running into thousands living within a defined area. The number of persons living per unit area is relatively higher in urban areas than rural areas. The number of buildings per area is also higher in urban than in rural areas.

On the basis of the variation in their sizes and functions, urban areas have been categorised into towns, cities and megacities. Just as what constitutes an urban area differs from place to place, the classification of urban centres into towns and cities is also expected to differ. For instance, there are many cities in Western Europe with populations of under 70,000. Urban centres with that population size are categorised as towns in some African countries. Geographical areas also do not provide a uniform classification of urban centres as some centres that cover relatively smaller geographical areas have higher populations than some geographically bigger areas because of the former's high population densities.

One way of classifying urban centres into towns and cities that appears to be widely accepted is by considering the nature and scale of goods and services that are available in the centre. This method was developed by Walter Christaller in his Central Place Theory. The theory explains that the higher order goods and services (which are goods and services with higher range and threshold) are found in the relatively larger urban centres and the larger the centre, the higher the order of goods and services that are likely to be available in such centres. The range refers to the distance people are willing to travel to avail of the particular good or service while the threshold refers to the optimum population level that is required to sustain the production of that good or service. While lower order goods and services (those with lower range and threshold) are found in the smaller centres, the bigger ones provide lower order as well as higher order goods and services. The higher order places thus offer more opportunities than the lower order places and are thus likely to be more populated. Cities are those urban settlements that offer the most opportunities and relatively higher order goods and services than towns.

MEGACITIES

'The definition of what is a megacity is clearly arbitrary, as the population concentration that differentiates megacities from other urban areas changes with time and context. In the ancient world, Rome, with its over 1 million inhabitants, was a megacity, and today, London or Chicago could be considered megacities, even if they fall below the 10 million UN threshold' (Bugliarello, 1999). In as much as this author agrees that what constitutes a megacity changes with time and context, it is considered that the criterion employed in the definition of a megacity is not as arbitrary as submitted by Bugliarello above. The dynamics of world population and rate of urbanisation make it imperative that what constitutes a megacity during a particular demographic era may be significantly different from that of another era. While there seems to be no universal agreement on what distinguishes a town from a city even during a given demographic era, it appears that there is a relatively higher level of uniformity in universal opinion on what a megacity is, at any particular point in time.

Megacities are borne largely out of the conurbation or an agglomeration of a number of settlement points, such as Tokyo. It is also possible for a megacity to develop out of a single, rapidly expanding urban centre. This is usually the case

where certain types of developments which have the tendency to attract others are located at the periphery of the urban centre. As other developments are continually attracted to the periphery, the particular urban centre grows in size, a process that may eventually result in a megacity. The very complex organism termed megacity is also sometimes referred to as a megalopolis.

The principal index used in defining megacities is their population. However, the minimum population required to attain such status varies with time. This explains why ancient cities such as Ancient Rome with a population of 1 million were considered megacities in those days but nowadays, a settlement of such size will be a mere city or even a large town in the highly populous countries. The United Nations has set a standard of 10 million inhabitants for a settlement to be categorised as a megacity (United Nations Population Division, 2008a). The UN Population Division notes further that megacities are continuous urban agglomerations with at least 10 million inhabitants and their number is expected to increase to 27 in 2025. The proportion of people living in megacities is small. In 2007, 9 per cent of the world urban population resided in megacities and by 2025 their share is expected to rise to almost 10 per cent. In relation to the whole world population, megacities account today for 4 per cent of the population, meaning that just one in twenty-five people on Earth live in megacities (United Nations Population Division, 2008b). The UN Population Division provided that there were 2 megacities in the world in 1950. These were New York – Newark, USA with a population of 12.3 million and Tokyo, Japan with a population of 11.3. By 1975, the number had increased to three with Ciudad de México (Mexico City), Mexico with a population of 10.7 joining the category. The number of megacities in 2007 had risen significantly from 3 in 1975 to 19 and it is projected that there will be 27 megacities come 2025.

Currently, this standard appears to enjoy universal acceptance and this is why it is considered that the definition of a megacity is not arbitrary as submitted by Bugliarello. The United Nations' definition of megacities is based purely on numbers and not socio-economic context. Accordingly, while one megacity may be well advanced, especially those in the advanced western countries, another may be little less than a giant slum. There also appears to be some consensus that modern day megacities have a density of at least 2,000 persons per square kilometer (Views of the world, 2011). This does not however mean that all cities with a population density of 2,000 persons per square kilometer are megacities. To qualify, the 10 million population size requirement has to be fulfilled.

LAGOS – HISTORY AND GEOGRAPHY

An account of the history of Lagos State as provided by the State Government indicates that the name 'Lagos', by which the State is now widely known, has a Portuguese origin. Traditionally, Lagos was known and still widely referred to by the indigenes as 'Eko' which was derived from either 'Oko', the Yoruba word for farm or 'Eko', a Benin word for 'war camp'. This indicates that the urban entity known as Lagos might have developed from a farm or a camp used by warriors.

Lagos State is situated within the south western part of Nigeria. It is bounded to the north and east by Ogun State and the Republic of Benin to the west. The entire southern boundary of Lagos is defined by the Atlantic Ocean (Figure 1 below). This coastal location, coupled with the presence of the Apapa Port and the Tin Can Island Port makes Lagos the principal commercial gateway to Nigeria. Lagos was, until December 1992, the capital city of Nigeria. Despite the relocation of

the capital to Abuja, Lagos remains the economic nerve centre of the country with the largest concentration of industries, financial institutions and major seaports.

Geographically, Lagos State covers an area of approximately 358,862 hectares or 3,577 sq. km, about 75,755 hectares of which are wetlands (Lagos State Government, 2011). It lies on the coastal flood plain of the Bight of Benin, approximately between Latitudes 6° 23' N – 6° 41'N and Longitudes 2° 42'E – 3° 41'E. The 2006 National Census results indicate that the population of the State was 9,113,605 (National Population Commission, 2006). However, the Lagos State Government estimates the current population of the State to be 17.5 million and Ilesanmi (2010) observes that the city of Lagos is currently the fifth largest in the world. The United Nations Department of Economic and Social Affairs, Population Division (2006) estimated the population of Lagos to be 10.9 million in 2005 and projected that this will rise to 16.1 million by 2015. Taking into consideration the State Government's estimate of the population of the city and the United Nations' estimates of the city's population, Lagos falls within the category of megacities.

Figure 1: Map of Nigeria showing the location of Lagos.



Source: <http://www.ngex.com/nigeria/places/images/nigeriamap.gif> (Accessed July, 2011).

LAGOS MEGACITY PROJECT

Abosede (2006) provides that the Lagos Mega City Region is defined as the continuous built-up area of Lagos, starting from the Atlantic Ocean in the south and spreading eastwards, westwards, and northwards. It includes eighteen of the twenty Local Government Areas of Lagos State and, four other Local Government Areas of Ogun State. The vast territory of the Mega City is identified as covering 10 kilometres beyond the Lagos-Ogun State boundaries into Ogun State and covers an area of approximately 3,000 sq. kilometres. The Lagos megacity project may have started as far back as 2003 when the United Nations selected Lagos as one of the cities to launch the organisation's New Partnership for Africa's Development (NEPAD) Sustainable Cities Programme. Under the programme, the United Nations is expected to assist Lagos in managing the challenges resulting from its megacity status (E – The Environmental Magazine, 2005).

The United Nations Population Division (2008a) states that, in Africa, the largest rural populations are located in Nigeria (78 million), Ethiopia (69 million), Egypt (43 million), the Democratic Republic of Congo (42 million), the United Republic of Tanzania (30 million) and Kenya (30 million). In the absence of an effective policy to discourage rural-urban migration, and should the current pattern of rural-urban migration in Nigeria continue, the fact that there are 78 million rural dwellers in the country is an indication that Lagos (one of the most preferred destinations of rural-urban migrants) is likely to continue to experience a significantly high influx of people from the country's rural hinterland well into the foreseeable future. This view is supported by Abosede (2006) who submitted that the World Bank has projected that by 2007, 50% of Nigeria's total population will be city dwellers and that Lagos will accommodate a significant portion of the country's urban population.

The rapid transformation of Lagos to a megacity can be very overwhelming and the city will therefore be likely to continue to face significant social, environmental and economic challenges that are typical of large, ever-expanding urban centres of similar context as Lagos. The current State Government has embarked on the provision of infrastructural facilities in order to cope with the numerous challenges facing the city. The magnitude of problems and issues associated with rapid urbanisation, especially in the developing countries however make it imperative that a lot more needs to be done to achieve a sustainable Lagos megacity.

PROBLEMS OF RAPID URBANIZATION

According to the United Nations Population Division (2008a), urbanization, especially rapid and unplanned urbanization comes with a plethora of ills. In this regard, the Division notes that *'despite its many positive facets, urbanization is not without its ills. Large cities, in particular, are prone to suffer from environmental contamination stemming from traffic congestion, the concentration of industry, and inadequate waste disposal systems. Cities also tend to make demands on land, water and natural resources that are disproportionately high in relation to their land area or their population, whose high average income results in high consumption'*. The United Nations Population Division noted further that though high concentration of population and economic activities in the urban centres is the fundamental cause of these problems, the sharp and persistent disparities among city dwellers means that the poor feel the negative impact of rapid urbanisation the most. This wide gulf in income between the rich and the poor, as well as the fact that the poor constitute a significant proportion of city dwellers in the developing countries may not be unconnected with the presence of so many slums and informal settlement quarters in the large cities of the global south.

In the same vein, Deutsche Bank Research (2008) observed that *'megacities face mega-problems ---- cities are areas of population agglomeration, and agglomeration means that resources will become scarce'*. Due to the high concentration of people and activities, the pressure on resources and infrastructure in cities, if not properly managed, will gradually lead to the depletion and deterioration of such resources and infrastructure, ultimately resulting in the degeneration of such settlements.

Furthermore, the concept of urban metabolism views large cities as living entities that consume energy, food, water, and other raw materials, and release wastes in the process. These releases include carbon dioxide, the main greenhouse gas; air pollutants, sewage and other water pollutants; and even excess heat that collects in vast expanses of concrete pavement and stone buildings and are produced mainly from the human, industrial, commercial, power generation and

transportation activities taking place in the cities (Kolb, 2009, cited in Science Daily, 2009). Importantly, Kolb observes further that sewage systems, landfills, domestic pets and pests like rats, which in some cities outnumber people are other urban metabolizers that contribute to releases. With regard to megacities, Kolb pointed out that these cities release large quantities of carbon dioxide and adversely impact the climate on regional and global levels because the greenhouse gases they generate are long-lived and are dispersed around the world.

In view of the magnitude of the rapid urbanisation issues facing cities and megacities as highlighted in this section, it is considered that, for Lagos to be sustainable as a megacity, a number of planning issues have to be addressed. These are discussed below. The suggestions are applicable to other third world cities that are similar in context to Lagos.

SUSTAINABLE LAGOS MEGACITY - RELEVANT PLANNING ISSUES TO ADDRESS

Provision of an integrated public transport

It is unlikely that many will contest the statement that a city with a population of 10 million or more cannot function effectively without an integrated and efficient public transport system. The current Lagos State Government has realised this and has taken a number of steps in that direction. However, a lot more has to be done to make the transport system in Lagos more sustainable. Mabogunje (2008) pointed out that the decision by the Lagos State Government to establish the Lagos Metropolitan Transportation Authority (LAMATA) is perhaps the first step in initiating the process of integration. He pointed out however, that there is a jurisdictional weakness since the span of LAMATA does not cover the whole of the megacity, a significant part of which is in Ogun State and, as already indicated, consumers of transportation services do not recognize such artificial boundaries to mobility within the megacity. The efforts of LAMATA therefore need to be complemented by similar actions from an equivalent body in Ogun State in order to ensure that the entire megacity is adequately covered. Further on the provision of integrated transportation system, Mabogunje observed that the initiation of the process of organizing existing private-sector vendors of mass transit such as the National Union of Road Transport Workers (NURTW) as well as private sector operators to participate as franchisees on some of the emerging bus routes within the megacity would enhance the development of an integrated system of transportation within the city. These steps by the government are commendable but considering the magnitude of the issue, more innovative actions are required.

The big employers of labour should be encouraged to either provide staff buses and encourage their staff to patronise same or collaborate with public transport agencies within the State to offer staff tickets at reduced rates in order to encourage members of staff to use public modes of transport. The State Government can blaze the trail in this regard by offering staff tickets to employees of the State to use the Bus Rapid Transit (BRT) service. As it is being done in the case of passenger railway transport, the ferry services should also be revived as this also has the potential to provide a relatively less hitch free commuter service. The relevant government agencies should also engage in the promotion of car pooling in the State. Car pooling relates to the use of a car by more than one occupant thus increasing the occupancy ratio. The idea is that, where feasible, two or more people can travel in one car instead of each travelling in his/her own car. This will complement public transport services and help in reducing the number of single-occupant cars (which appears to constitute the majority currently) on Lagos roads. The planning gain from this is that, as more people travel in a single car, less fuel will be consumed per person kilometre. This will translate into less carbon dioxide emissions thus reducing the accumulation of greenhouse gases in the atmosphere. Furthermore, congestion will be reduced and mobility enhanced.

This is particularly crucial in Lagos where traffic congestion has become a perennial problem. Even with the introduction of the 'BRT' public bus service and bus lanes, very significant traffic congestions and delays are still experienced in the city. A trip from Ikeja (the capital of the State and seat of government) to Lagos Island (the main business district), covering a distance of approximately 40 kilometers could take up to two and a half hours during peak periods. This unnecessarily long commuting time is caused partly by the high number of single occupant cars on the roads and is counter productive from business and environment point of view. A comparison of vehicle registration in Lagos State compared with other States of the Federation indicates that while Lagos State is one of the smallest in terms of physical size, the number of vehicles registered in the State annually is significantly higher than that of any other State, including Kano which has a higher population than Lagos. Significantly, recent data on vehicle registration shows that Lagos had more cars registered in 2007 than all other States in the country put together (National Bureau of Statistics, 2009a). The trend is unlikely to have changed significantly in recent times. Indeed, given the commercial and economic role of Lagos both nationally and internationally, it is considered that the trend will continue well into the future. Heavy dependence of the private car as the principal mode of transport in Lagos will significantly detract from the city's sustainability. The Government has taken a number of steps towards regulating the 'okada' business (the use of motorbikes as a commercial mode of public transport in Lagos). This is long overdue considering the hindrances to traffic movement caused by the okadas. It is considered that with a more efficient public transport system in place, the okada business will be reduced gradually to a more manageable size.

Waste management

As a result of the population of Lagos and the high concentration of industrial and commercial activities, the level of wastes generated is expected to be very high. Due to poor coordination of waste management, Lagos in the past was known to have many unattended open refuse dumps dotting its entire landscape. Some of those dumps were as high as 12 metres and each covering an area of up to 1,000 sq. metres. These not only constituted eye sores but posed threats to underground water and air quality. Lagos in many fora has been described as one of the dirtiest cities in the world. A recent documentary aired by BBC, titled 'Welcome to Lagos' in 2010 is one of such. According to the Nigeria Investment Promotion Commission (2011), approximately 9,000 tonnes of wastes are generated in Lagos daily. As population and commercial activities increase, this figure is also likely to increase. Without adequate management, this is likely to expose the residents to some health hazards and damage the environment, a situation that is contrary to the principles of sustainable development. A sophisticated waste management system has to be in place to deal with the volume of wastes that is generated in Lagos. The current government has embarked on a number of initiatives to address waste management in Lagos and has invited the private sector to actively participate in the process. Modern waste handling facilities are also being provided while energy from wastes is being considered. The streets are gradually becoming cleaner. However, most of the efforts appear to be targeted more at waste disposal and less in the direction of waste reduction, reuse and recycling. Adopting these three 'Rs' (reduce, reuse, recycle) will significantly reduce the burden on the waste management authority and contribute towards a more efficient waste management system. The possibility of producing fertilisers and animal feed from municipal wastes to support the agricultural sector should be exploited. The Local Governments should be more actively involved in municipal waste management as they are closer to the generators of such wastes. The Lagos State Waste management Authority (LAWMA) could be a supervisory body in this regard. Waste sorting at the point of generation should also be encouraged in order to facilitate recycling. The volume of litter on Lagos streets is an indication that the existing laws relating to littering are either ineffective or not

being enforced properly. Therefore, more effective laws banning indiscriminate dumping of refuse and litter have to be promulgated and vigorously enforced. Necessary facilities to discourage littering, such as the provision of bins at strategic locations, have to be provided. Enlightenment campaign to educate the masses on the economic, environmental and health problems associated with inappropriate waste disposal also has to be considered. Such campaign should be taken to the grassroots by including relevant modules in primary school curriculum. Market places and shopping centres should have designated and properly managed waste disposal areas. Commercial and other types of developments that have the potential to generate significant amount of wastes (such as restaurants, which are now found virtually everywhere in Lagos) should be mandated to submit acceptable waste management plans as part of the conditions for obtaining planning permit.

Employing effective Development Control system to curb unplanned urban sprawl and slum development

One of the physical outcomes of an uncoordinated urban growth and expansion is the emergence of sprawls and slums. This is not sustainable and represents an inefficient and inappropriate use of urban land resources. In addition, the presence of slums results in some planning and environmental implications on adjoining land uses. A significant number of such informal, squalid settlements exist in Lagos and the current population trend could exacerbate the situation unless a coherent and effective planning system is put in place. Olokesusi (2011) reported that Nigerian cities are now dominated by slums and informal settlements to the extent that about 30-70 per cent of the urban population in Nigerian cities live in unplanned or informal settlements. Some reasons for this include inability of the urban poor households to gain access to the formal housing market and are therefore compelled to access shelter through the informal housing supply system. An effective development control system can be used to ensure that structures that do not have necessary planning permissions are discouraged and demolished where necessary. The Physical Planning Ministry of the State has a significant role to play in this regard. It is acknowledged that the task is quite challenging given the population of Lagos and resources at the disposal of the Ministry. The planning system has to be adequately equipped in terms of human and material resources to cope with these challenges otherwise the State will have to deal with the counter productive consequences of slum development. The use of Geographical Information Systems (GIS) will aid the Planners in the discharge of their development monitoring and control duties. The Government should also embark on an affordable housing scheme which will enable those on low incomes to access decent accommodation that meets international standards. Adequate housing is a basic need and should therefore be a priority of the government as much as possible. The Lagos Home Ownership Scheme is a commendable effort on the part of the government. However, there is still a huge difference between demand and supply. The shortfall in the supply of adequate housing and the inadequate supervision and monitoring of the private sector's role in this area of social infrastructural provision have both contributed significantly to the development of slums in Lagos. While it is acknowledged that the State Government cannot solely meet the city's housing needs, the State however has a significant role to play in ensuring that the private sector stock meets minimum standards. This is a responsibility for the development control and enforcement arm of the Physical Planning Ministry.

At the current population estimate of 17.5 million and based on an assumed occupancy ratio of 5 per dwelling unit, the city requires at least 3.5 million decent housing units. This figure will increase with population. To ensure that this large number of dwelling units meet minimum international standards thus reducing the likelihood of slum development, the development control system has to be effective. Tangential to having an effective development control system in place is

the need for a reasonable ratio of qualified Town Planners to population. As the population of the State increases, efforts should be made to ensure that more Town Planners are trained and employed to provide this service which is crucial to sustainable development.

Furthermore, a higher degree of collaboration between Lagos planning authorities and adjoining planning authorities in Ogun State should be fostered. This will prevent a situation where conflicting and incompatible uses exist side by side. Developments within the periphery of the megacity are likely to influence and be influenced by land uses in the adjoining/neighbouring Ogun State. The fact that the Lagos megacity by definition includes areas that are within the administrative boundaries of Ogun State also makes it important that a higher level of cooperation, particularly in land use planning should take place between Lagos and Ogun States.

Development and adoption of more sustainable and environmentally friendly construction design system.

The Physical Planning Ministry of the State Government or a special unit should coordinate the development a 'Sustainable and Passive Design Code' for new buildings. The sustainable and passive design code shall set out standards relating to energy and water consumption that new buildings should meet. With the codes, new buildings will be rated on the basis of energy efficiency. The higher the energy efficiency, the more passive the building is. Passive buildings are low energy buildings wherein energy efficiency is enhanced. Where building energy consumption is low, there will be less demand for energy and the rate of emissions associated with energy consumption will also be low. This is one of the principles being promoted under sustainable development and similar codes or practices now exist in many parts of the world. In essence, it is submitted that more passive buildings should be encouraged. Such buildings require less energy to operate. The rating procedure shall have regard to such issues as the internal layout of the building, materials used in the construction, the fenestration system (i.e. size, shape and location of windows as well as the system of window operation, should the window be manually operated or mechanically operated?), building orientation and consideration for issues such as natural lighting and ventilation, the lighting system, water demand etc. This is becoming more and more essential in a city like Lagos where there is incessant power outages due to very high demand for power, the supply of which is very low. Professionals in Town Planning, Architecture, Building Services Engineering and Sustainable Energy Engineering should be brought together to work on the development of these codes and Town Planners should put the energy efficiency rating of a building into consideration when assessing such proposal for the purpose of granting planning permission. The fact that the city will continue to grow in population well into the future indicates that more buildings, both commercial and residential, are likely to spring up. The high number of new buildings likely to spring up in the city and the fact that the temperature is high all year round means that there will be a significant increase in demand for energy for cooling purposes in the future. This will add to the existing pressure on the energy supply system but the introduction of the passive building will help to reduce such pressure and also help in reducing energy related emissions thus enhancing the city's livability and sustainability.

In addition to building design, community design should also integrate elements of active modes of transport. The level of use of active modes of transport (walking and cycling) is an indication of a settlement's sustainability. In order to cater for the increasing population of the city, the State Government has been involved in the construction of new housing estates in recent times and so is the private sector. It is considered that the inclusion of walking and cycling facilities at the design and construction stage of these estates will encourage more people to use such active modes of travel where

feasible. The lack of footpaths and cycle lanes along most streets and roads in Lagos exposes pedestrians and cyclists to a higher degree of risks and is one of the reasons why people use the private car even for trips that could be conveniently undertaken by foot or by cycling.

Enhancing food security

Currently, most of the food consumed in Lagos comes from outside the administrative area of the State. The few rural local government areas, Badagry, Ibeju-Lekki and Epe are now experiencing significant urbanisation and rapid transformation from predominantly agrarian societies to urbanised ones. Importation of food not only brings about food insecurity but also has huge energy consumption and emissions implications. A significant quantity of agricultural produce consumed in Lagos comes from the country's hinterland and some of these locations are thousands of kilometres away from Lagos. As plenty of these crops come from locations that are hundreds and thousands of kilometres away, significant consumption of fuel is involved in transporting these agricultural produce (mainly via the use of trucks) to Lagos. The fact that these trucks run on petrol and diesel also means that emission level will be on the high. These no doubt detract from the sustainability of the city. The presence of hundreds of trucks on Lagos roads ties into the issue of traffic congestion mentioned earlier. The State should integrate an urban agriculture scheme into the physical planning process. The scheme will provide for subsistence level of farming in urban areas. In the 1980s and early 1990s there were cases of urban farming within Lagos metropolis but these farms have disappeared and the land built up. This has increased the dependence on food from outside the State. There were farms along the Lagos – Badagry Expressway, stretching from Abule-Osun to Iyana-Iba (a distance of approximately 12 kilometres). There were some along the Iba – Isheri Road as well. Vegetables such as lettuce, cabbage, carrots, onions, maize etc were cultivated on these farms and they served as a ready source of fresh vegetables for the urban dwellers. The land use planning process should be used to ensure that lands in appropriate locations within the metropolis are zoned for this type of agriculture. Many developed countries are now going down this route through the provision of allotments to urban dwellers for small scale farming in towns and cities. Also, many schools in the State that provided on-campus accommodation for students had school farms where a lot of crops consumed by the students were cultivated. These school farms, like the urban market gardening, have also disappeared. Public and private schools in the State that have suitable land for cultivating vegetables should be encouraged to put the land to such use, whether such schools provide on-campus accommodation or not. Where the crops are not consumed directly by the school community, they could serve as an additional source of income.

Human and material safety and security

One advantage that cities have over smaller settlements is that they have the capacity to generate more employment opportunities due to the volume of activities taking place in such settlements. This is one of the major factors responsible for the migration of people into cities. For the city to continue to exist, it is essential that these employment generating activities continue. The environment within which such activities take place plays a role in the sustainability of the city. One of the attributes of a sustainable city therefore is that the city should be able to ensure the safety of residents and businesses to such a degree that there is little fear or skepticism in wanting to live or do business in such city. In this regard, the United Nations noted that '*Crime prevention and criminal justice are an integral part of the development process. Civil society, good governance, and democracy rest on the promotion of justice as an essential condition for social stability, security, peace, human rights, and long-term sustainable development. Such a stable and secure climate*

is necessary to support the goals of poverty eradication, economic investment, environmental stewardship, gender equality, participation, and sustainable livelihoods’.

The report of a survey on crime and corruption carried out in 2007 by the National Bureau of Statistics (NBS) with the support of the European Union and the United Nations Office on Drugs and Crime, involving more than 2,200 businesses across all Nigerian States and sectors of the economy indicated that 75% of all the businesses interviewed stated that crime and insecurity constituted ‘very strong obstacles’ to doing business in Nigeria (National Bureau of Statistics, 2009b). These obstacles are likely to influence the level of investment of such businesses in the Nigerian economy and are also likely to discourage others from coming onto the scene.

The need for security increases with the size of a city. All necessary facilities have to be in place to ensure the safety of individuals and corporate bodies. A city notorious for crimes is not sustainable as this detracts from its attractiveness and livability. This essential aspect of sustainable development does not appear to receive the deserved attention in many parts of the developing world and this may be one of the reasons why cities in the global north seem to flourish while those in the south only continue to grow in physical size without a commensurate growth in economic and social development. Many authors in the developing world writing on planning for sustainable development also do not place sufficient emphasis on this issue. It is considered essential that relevant authorities in the southern cities make the issue of security a priority if growth is to be sustainable.

The government of Lagos should engage more with the security arms of government to ensure that a higher level of security is provided in the State. This will not only encourage indigenous entrepreneurs to invest more in the State but will also attract more foreign investment. There are plenty of business opportunities in the State as a result of the population size. These business opportunities, if properly exploited, will generate more revenue for the State and enhance its sustainability. A safe business environment will facilitate the maximisation of the commercial potentials of Lagos. To start with, the State Government can work on the expansion of the closed circuit televisions (CCTVs) monitoring system at strategic locations within the city and encourage businesses to do same within their premises. This is likely to reduce the instances of burglaries, an issue which was cited in the National Bureau of Statistics’ report on crime and corruption as one of the major crimes that businesses experience in Nigeria. The State Government should also facilitate the establishment of more police posts at locations where there are substantial residential and or commercial developments. These are the areas that are more prone to risks and their fortification should be prioritised. Local Area Plans for new communities in Lagos, as well as regeneration projects should include provisions for adequate security facilities.

Significantly, it should be realised that the issue of adequate security does not affect the business sector alone but the entire sectors of the city and should therefore be accorded as much priority as any other issue. This is because, even where the other suggestions mentioned earlier are implemented and the issue of security left unattended, it is likely that all the other measures put in place will be abused physically or in any other way and thus jeopardising the sustainability of the city.

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