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Managing African Urbanization in the Context of Environmental Change

Abstract | Africa's urbanization rate has increased steadily over the past three decades and is reported to be faster than in any other region in the world. It is estimated that by 2030, over half of the African population will be living in urban areas. But the nature of Africa's urbanization and subsequent form of cities is yet to be critically analyzed in the context of city authorities' readiness to address the challenges. Evidence is also suggesting that urbanization in African countries is increasingly associated with the high economic growth that has been observed in the last two decades. Both underlying and proximate drivers are responsible for the urbanization, and these include population dynamics, economic growth, legislative designation, increasing densities in rural centers, as well as the growth of mega cities such as Lagos, Cairo and Kinshasa, that are extending to form urban corridors. With the opportunities of urbanization in Sub-Saharan Africa, there are also challenges in the development and management of these cities. Those challenges include provision of social services, sustainable economic development, housing development, urban governance, spatial development guidance and environmental management, climate change adaptation, mitigation and disaster risk reduction. The challenge involves dealing with the development and infrastructure deficit, in addition to required adaption to and mitigation of climate change. This paper examines the current state of urban management in Africa.

Keywords | African urbanism – urban growth – urban corridors – sustainable cities

Introduction

AFRICA IS THE MOST urbanizing region in the world where ½ of the population lives in urban areas (UN-Habitat 2008). Africa's move into the urban 'age' is projected to be the world's shortest urbanizing period. African countries have chronically faced the challenge of managing urban development and still grapple with squeezed financial resources, urban governance transformation, investing in urban infrastructure, managing the urban environment, providing the social services and dealing with adaptation to and mitigation of climate change. Locked in mixture of development experiences, African cities are yet to

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develop sustainable pathways to tackle the conundrum of development deficit and climate change. Africa is reported the most vulnerable to climate change because of its limited capacity to recover from climate related disasters and impacts. Africa is already experiencing extreme events in terms of climate variability and climate change of droughts; flooding, storms surges, temperature rise and sea level rise that have put many cities at risk and millions of African vulnerable. There are two sides of the challenge with an urbanizing Africa, first is the speed of urbanization which is high compared to other regions. Second is the vulnerability of urban areas to climate change impacts. These two sides pose challenges for managing growth and development of cities. Although the African giant cities of Lagos, Cairo and Kinshasa continue to rise rapidly, the smaller medium sized cities are growing even much faster (Adelekan 2009; FOS 1996c; Wilbanks, et al. 2007). This paper examines the challenges of urbanization and management of this process in Africa focusing on sub-Saharan Africa. On the backdrop of the urbanization trends, the paper gives some pointers to potential improvement in management of cities in the context of environmental and climate change.

Analytical framework of urban management in context of environmental change

The *Science Plan* of the Urbanization and Global Environmental Change recognizes the bi-directional relationship between cities' built environment and the biophysical system. Behavioral and activities in cities have direct relationships with biophysical environment through extraction, transformation and release of residues into the biophysical system. This changes the urban environments and hinterlands from which they draw resources including long distance land areas whose transformation is determined by demand of consumables in other areas. The relationships between cities and resource producing regions have been analyzed using several approaches like the ecological footprint analysis, which tends to separate the cities from the regions where they draw materials and resources. The transformation of resource producing regions and cities within themselves changes the biophysical processes that eventually have direct relationship with cities. This feedback to cities indicates not only the bi-directional relationships but also the cascades of ecological interrelationships within cities and with the adjacent regions let alone distant regions. This framework provides a basis for conceptualizing risks to cities as both shaped by accumulated development in cities as well as areas from which they draw resources and materials. This framework of 'ecologies of cities' taking the built environment as part of the ecosystem within a city region is utilized to synthesize literature

regarding urban risks and management responses in Africa. The framework is utilized to articulate the society-environmental relations to point out the key urban management challenges and possible interventions for urban resilience in Africa. This paper utilizes the framework further to critically analyze the multidimensional nature of urban challenges and how the current urban management approaches can be enhanced for urban resilience in Africa. The paper synthesizes literature on African urbanization as well as papers that report and document building of urban resilience.

Urbanization in Africa

According to UN-Habitat, urbanization in Africa is estimated to range from 3.4% – 8% (UN Habitat 2011). The mega-cities of Africa are growing at a lower rate but the medium size and secondary cities are growing faster (Potts 2012; 2012b). This two-way urbanization is pushing the extents of mega cities into rural hinterlands and corridors along established transportation routes in Africa. These urban corridors are forming around established urban areas along and connected to the economic agglomeration zones. At the same time, large cities are continuing to fast featuring a peculiar characterization of the urban spatial phenomena in Africa. Of importance is the Low Elevation Coastal Zones (LECZ) with over 3000 cities in this zone on the African continent (Bunce, Brown and Rosendo 2010). This trend of urbanization is serving as a major logistic and economic integration driver in the region. Urban corridors are also now playing a significant role in unlocking the rural lands and guiding population away from the primate cities in addition to opening international boundaries that have remained hard in some regions hampering integration and flows. There are some examples of the urban corridors most of which are sub-national including; the Cairo-Alexandria, Port Said, Ismailia and Suez; the Lagos-Ibadan in Nigeria (Frihy, et al. 2010; UN Habitat 2008; 2011). But some are also showing extension across national boundaries. For example; the Lagos-Ibadan, Cotonou-Lome-Accra while some are moving in that direction as the case for the Nairobi, Nakuru, Kisumu, Jinja Kampala corridor in East Africa (UN-Habitat 2008). In terms of population size, there are about 112 cities with $\frac{1}{2}$ a million inhabitants or more including 2 cities with over 10 million inhabitants. What is striking is that the proportion of the slum population in these cities is increasing exponentially. The largest proportions of slum population occur in sub-Saharan Africa with countries such as Sudan, Central African Republic, Chad, Angola and Guinea-Bissau having between 80–90% of their urban population in slums (UN-Habitat 2011). The other trends in Africa's urbanization are the growing number of urban population without basic services such as water, sanitation and housing but

also vulnerable to climate change impacts. The slum population lives in hazard prone areas including LECZ's flood prone areas, landslide areas, seismic hazards and with high crime rates. These challenges are the focus of the next section in this paper.

A brief history and drivers of urbanization in Africa

Most cities in the North and West Africa have a long history connected to the colonialism characterized by different regimes of urban administration (UN-Habitat 2008). These regimes range from the Roman colonialism to Arabic domination of the west and north to European colonization of the 17th Century. Whereas the sub-Saharan cities had contacts with the Arabic trade missions, colonization only became so during the 18th Century and by European countries. It is this history, which gives a perspective from which heterogeneity in African cities exists but also explains the many similarities of African urbanization including the management challenges (Carlton 2009). In North Africa, most cities developed around water resource reservoirs an important factor due to the arid conditions in the region. Thus many cities are located along river systems and or coastal zones. Trade, commerce and linkages with other continents were the major factors in connecting the population to other areas. In West Africa, cities have also grown from coastal zones linked to the early trade in slaves but also around education institutions as knowledge from Europe penetrated the region. While in East and Southern Africa colonialism played a major role through establishment of centers for collecting and marketing produce from the region. And as such, cities in Africa have grown as *Laissez-Faire* in which as observed by UN-Habitat, systemic policy failure has provided ground for the proliferation of informal cities. Other cities have been favored to grow and expand as primate cities while many show a blend of tradition and modernity as the case in North Africa (UN Habitat 2011). These scenarios have shaped the challenges of urban management in Africa.

One of the most striking feature of colonial urban development in Africa were the stringent laws that controlled urban development which also segregated social groups (Byerley 2011; Owens 2010). For a long time, urbanization was a measure of industrialization level, modernization and socio-economic development determined greatly how urban development investments were spread in different countries. However urbanization in Africa has occurred with no concurrent proportional changes in social transformation though there is limited research that correlates urbanization with modernization, industrialization and socio-economic development (Satterthwaite 2003). Although most literature on African urbanism is dominated by attribution of urbanization to rural-urban mi-

gration and that it has often averaged urban growth rates, recent literature points greatly to urban growth in different countries especially with small and medium sized cities. Of late the increasing balkanization in many African countries is also contributing to urbanization and this has happened in the last quarter of the 20th Century as policies such as Structural Adjustment Programs (SAPs), Liberalization and Decentralization were implemented across the continent. In addition is the trend of urban development that is characterized by private sector led development and or public policy as the case in North Africa by establishing ultra-modern neighborhoods and suburban town in places hitherto thought of as inhabitable. It is this nature of urbanization coupled with the climate change challenge that this paper attempts to analyze in context of urban management.

The African urbanization trajectory

Picking up from the brief history, sub-Saharan Africa has experiencing urbanization characterized by exploding urban centers with steadily growing economies. Being centers of production, employment and innovation, cities and urban centers in sub-Saharan Africa display this economic reality but with duality. Whereas industrialization, service sector, infrastructure, communication and trade has grown, rapid but disproportionate urbanization between population growth and economic transformation has had negative consequences including increasing incidence of poverty, urban sprawl, social services, environmental degradation, vulnerability to risks and infrastructure deficiencies. The negative consequences have subsequently led to deterioration of human settlements' conditions, depletion of natural resources and pollution. The assumption that urban centers would open new opportunities for the sub-Saharan population in terms of new markets for the rural areas, industries for employment as a vehicle for diffusion of ideas and techniques to the rural areas (Obudho and Peter 2002), has remained elusive in many of the cities. What has happened is the growth of an 'emerging' economic sector that not only contributes to the national economy but also provides employment and livelihood for many urban dwellers but often negated as 'informal' and thus received less pragmatic policy attention. The nature of urbanization in Africa has two dimensions; an increasing growth path that continuously presents urban management problems and sustainability challenges; second increasing vulnerability to environmental change especially climate change impacts. Sustainable urban development and management should therefore be of high priority in Africa. Since urban development is crucial to social transformation as engines of growth, urban centers need to be managed properly in order to enhance and promote regional development.

Drivers of urbanization in Sub-Saharan Africa

Some of the urbanization drivers lie in the history of the urbanization process on the continent and these are inherently both underlying and proximate drivers. The underlying drivers of urbanization are mainly the demographic shifts of urban population growth and rural to urban migration. These factors are lead to urbanization through natural increase coupled with internal and international migration (Nyakaana, J. B., H. Sengendo, et al. 2004). Associated with the demographic shift and related to proximate factors is the growth of slums, which has been exponential in the last three decades. The other proximate factor for urbanization relates with policies for the economic transformation such as industrialization, which have been pursued for the last five decades. African cities continue predominantly play a major role as industrial and commercial hubs there by attracting higher population. As part of the market forces industrialization influenced by globalization has led to increase in consumption levels leading to establishment of numerous industries and commercial centers along the urban corridors. There has been proliferation of the 'emerging' economic sector, which absorbs most of the economically active population. It is important to note that the growth of the emerging sector is not necessarily a problem due to its role in providing employment to many in urban areas and contribution to the national economies but the challenges of integrating such in spatial planning and development is more evident (Blanco, et al. 2009; Nkurunziza 2007; Rogerson 1996). Due to these factors, the expansion of urban areas is steadily advancing leading to engulfing of adjacent rural areas and other urban centers to form urban-corridors. These changes have far reaching implications to environment and social well-being of the population and pose a challenge to sustainable urban development (Simon 2010).

The other proximate driver for urbanization in some of the countries is the balkanization of administrative regions in which smaller districts or administrative jurisdictions have been curved out of larger administrative units. When balkanization occurs, towns are created or organically grow and several of these towns rapidly expand outside their gazetted boundaries and with no control in such adjacent areas, social, environmental and economic problems set in more instantly. In countries that have experienced protracted civil wars, the displacement of large populations has contributed to explosion of numerous cities. For example countries like Rwanda, Democratic republic of Congo, Sudan, Ethiopia, Sierra Leone, Angola and Kenya have experienced civil strife that contributed to urbanization. The role of the Private sector can also not be underestimated in influencing urbanization. Associated with performance of national economies rehabilitation and development strategies, the private sector through establishment of industries, housing estates, higher education institutions and commercial

Table 1. Comparative statistics of access to urban services in selected SSA countries.

	Year	Total Population (millions)	Urban Population (millions)	Slum Population (millions)	Urban population growth rate (%)	Slum Population Growth rate (%)	Access to safe water (%)	Access to Improved Sanitation (%)
Country								
Uganda	1990	17	2	2	5	5		
	2001	24	2.8	2	5	5	72	16
Rwanda	1990	7	—	—	3	4		
	2001	8	—	—	3	4	60	37
Tanzania	1990	26	6	6	7	6		
	2001	36	12	11	7	6	80	18
Kenya	1990	24	6	4	6	6		
	2001	31	11	8	6	6	87	53
Zimbabwe	1990	10	3	—	4	3		
	2001	13	5	—	4	3	100	96
Democratic Republic of Congo	1990	37	10	5	4	4		
	2001	53	16	8	4	4	89	56

Source: UN-Habitat 2001. <http://hq.unhabitat.org/list.asp?typeid=44&catid=240>

agricultural entities is greatly contributing to the expansion of urban areas. There is increasing establishment of multi-national companies that operate beyond the national boundaries. The real estate sector is steadily growing and driving the urban sprawl on the continent that contributes to the urban corridors. While real estate business is establishing ultramodern residential neighborhoods, it develops amidst impoverished peri-urban and rural settings. The growth of the private sector has influenced labor migrations into urban areas as rural populations search for employment accelerating the housing sector development and proliferation of the urban 'emerging' sector but with limited access to social services. The economic performance contributes to direct and indirect employment that attracts big populations in the cities. On the other hand, the planned employment opportunities are too few to absorb the labor and coupled with increasing population, this creates an influx of excessive laborers. This influences migrations directly or indirectly, direct in the context of opportunities to work in the industry and indirect in terms of opportunities in

trading in products and linkages with other economic activities. This poses sustainability questions in the context of employment creation. Africa in general appears not well prepared to deal with higher rates of urbanization but this differs from region to the other and among countries.

The urban management challenge

Urban management has been a focus of various international funding agencies and inter-governmental initiatives. The World Bank, African Development Bank and European Union all have dedicated Urban Management sections or units that have for long time attempted to address the infrastructure needs, urban finance enhancement and transformation of urban governance in Africa (The International Bank for Reconstruction and Development/The World Bank 2010). Experiences and literature contends that these initiatives and funding streams have largely been characterized by implementing projects in what are considered to be key urban sectors. The sectors include water supply, sewerage utilities, road infrastructure, waste management facilities, financial enhancement and transportation systems. Despite the longstanding effort coupled with country urban programs, there is still an infrastructure deficit in many African cities. In addition the existing infrastructure, which is ailing, has proved to be difficult to manage and maintain. Bilateral support and programs by government such as Japan, China are now committing resources to construct new infrastructure in many African cities particularly in sub-Saharan Africa. Despite all these efforts, managing by closing the deficit, sustaining the existing infrastructure and services as well as managing rapidly growing demand for infrastructure services is a big challenge for many African governments and municipalities. In this vein, sustainable urban development remains elusive to Africa in general and recognizing that sustainable development is multi-dimensional in nature urban sustainability remains a challenge due to spontaneous developments, peri-urban developments, urban environmental change, land-use change and industrialization. This is because environmental burdens intertwine with poverty in a concomitant and reinforcing manner (IDRC 2006). Due to the increasing complexity and interactions at all scales of urban development the key challenges around which urban sustainability pathways can be built are discussed in the following sections of the paper.

Cities and climate change

Cities have a bi-directional relationship with earth climate system (Dhakal 2010; FAO 2012). This is described as cities being responsible for a proportion of

Greenhouse Gasses into the climate system and on the other hand a feedback system as impacts of climate variability and change on cities. Cities have been reported as largely responsible for greenhouse gas emissions but a recent literature indicates that cities may not be to blame largely (Dodman 2009). The discourse and contradictions notwithstanding, a key issue raised by cities and GHG emission is the hegemony around transportation, industrial activity and building sectors all of which are big emitters of GHG's. Although limited data of city-specific GHG emissions in Africa exist, by nature of the activity and reliance of fossil fuels in the key sectors, cities in Africa potentially emit high GHG's. Africa in general is reported to be highly vulnerable to climate change and this is largely due to capacity limitations to respond to the impacts. Urban vulnerabilities to climate variability and change in Africa are now getting documented and different scenarios for different cities can be discerned. Cities in Africa are facing climate change impacts of flooding, temperature rise, droughts, storm surges, sea level rise for coastal cities and saline water intrusion for coastal and delta cities (Adelekan 2009; Adeniji 2009; Douglas, et al. 2008; I. O. Adelekan 2010). Numerous city-specific climate change plans are now underway but these are based on coarse data on climate change models which is not very reliable in predicting the impacts. Similarly, adaptation plans have also been drawn and the Durban Mayor's Charter of 2012, expounds the role of city mayors and governments in addressing climate change impacts. Some cities have also benefited and or planning to design Nationally Appropriate Mitigation Actions to tap into the financial resource flows from climate mitigation fund. This therefore presents a mix of impacts, vulnerabilities and responses to climate change in Africa. For example the cities of Alexandria in Egypt and Cape Town in South Africa are both predicted to be submerged by up to 2 meter sea level rise in the next 30 years; Pierre and Gina 2009). The key issue of this challenge is whether cities in Africa are prepared to address the impacts. Climate change impacts on cities are now reported as adding anew layer of challenges to African cities and governments. Coupled with development and infrastructure deficit, it is increasingly difficult for African governments and city authorities to prioritize resources between the deficit and addressing long-term impacts. Yet in long term, the challenges around climate change impacts may be an opportunity to develop the infrastructure with low carbon emissions strategies. An important feature of climate change challenges is also related to social vulnerabilities. The differential vulnerabilities among different social groups of Africa is widely reported in literature with the urban poor being the most vulnerable to low adaptive capacities. A key urban management aspect of adaptation to climate change relates to how adaptation measures can be coupled with poverty and placed in the wider development context. Adaptation in African cities just like developing countries

has been critiqued due to almost non-existent infrastructure or systems to adapt (Adger, et al. 2009; Christoplos, et al. 2009). Thus adaptation, which includes co-benefits for development, is a key challenge for municipal authorities and governments. Adaptation pathways will be required to take into consideration adaptation because climate change will increase social polarization of urban communities, urban poverty, environmental degradation and increasing burdens. This is a key urban management challenge in current and future terms.

From ecology in cities to ecology of cities

Cities in Africa occur in different ecological zones and thus can be categorized in this paper as; inland cities, low elevation coastal cities, mountainous cities and inland desert cities. In each of this category is a set of ecological systems that systemically part of the urban ecosystem. Traditionally urban ecologies have been studied as if the natural ecological processes can be detached from the urban function in space (Ewing 2008; Enyedi 2003; Haughton and McGranahan 2006). Recent literature points to ecologies of cities that also include the built-environment as part of the ecology. Thus understanding how the built environment components interact is key in addressing the challenges of urban environmental management. For example traditional sewer systems have often transported sewerage long distances to central treatment plants. Recent innovation and development is promoting decentralized sewer systems that can take advantage of the local resources and purification systems using the natural environment. Coastal cities have many challenges but the risk associated with sewerage systems in coastal cities is reported widely (Adelekan 2009; Cynthia, Orindi and Ochieng Adwera 2008; Frihy, et al. 2010; Pierre and Gina 2009). With the economic potential from sea ports and other maritime related infrastructure, the competition between ecosystem services like treating waste and economic activities is stiff. Like wise inland cities in climatically variable zones with a potential for excessive precipitation have a challenge of maintaining the ecosystem service of flood attenuation with the high competition from built up developments. This dilemma is felt in most of the African cities where ecosystem services are dwindling due to land competitions or developments that reduce ecosystem services from within the cities. The challenge is extended further into the rural hinterland when the urban-rural gradient is analyzed. The reduction of ecosystem services along the urban-rural gradient is evident as cities grow into city-regions. Exportation of pollution and contaminants into the rural hinterland has been reported in literature in Africa while the importation of nutrients from rural Africa and stocking the organic nutrients in the cities is

of concern (Bah, et al. 2003; Browder 2002; Cofie, et al. 2001; McDonnell, et al. 1997). Thus moving from ecology in cities to ecology of cities does not only provide an opportunity for sustainable city-regional development but poses a challenge of jurisdictional and territoriality issues between administrative units. In order to optimize the ecosystem services within the city-region, planning for enhancement of the services is required at strategic level for entire city-regions rather than the current practice of piecemeal planning at neighborhood scale that does not hang on to a strategic framework. Thus the pathway to urban resilience, which in itself is a challenge, needs to consider the interrelationships between built environmental components with biophysical systems within city-regions as well as distant relations that cities have with other regions.

Urban green economies and green growth

Cities in Africa are still and will continuously play a role of engines of growth and economic transformation on the continent. This is either through the traditional role of processing of raw materials or conduits for distribution of products to destinations and being service centers. Whichever role, cities will have to grapple with the consequences of the global 'oil peak' and innovate around systems that are less carbon intensive (Grobelaar and United Nations Human Settlements Programme 2012; UN-HABITAT n.d.) This calls for green urban growth and green economies. Innovation in this area will require to shift in technological orientation of cities in sectors of transportation, infrastructure and ecosystem-based development that spurs products and services that are less carbon intensive as well as ecosystem products from local resources. The areas in which municipal and national government need to innovate include, recovery of nutrients and reuse or recycling of such, extending the life cycle of metals and other key minerals that cities consume, low carbon transportation systems, low carbon energy sources and industrial as well as business systems that are low carbon intensive. Green urban economies will rely on a vibrant leadership that promote and encourage innovation with financial and infrastructure support. For example low carbon transportation systems for bulging cities will be key in future of African cities as growth of these cities continues (Carter and Fowler 2008; Gill, et al. 2007). Such transportation systems can be hybrid systems or a complete shift to alternative energy sources such as biofuels and hydro-electricity. In a situation of deficit in development and biting urban poverty, this challenge is yet to be encountered as it seems farfetched and distant let alone close to the higher end of the priority lists of cities in Africa. Green urban economies will require technological innovation, which is based on research. A key associated challenge is the resource investment into research and or partnering

with research institutions to develop systems, which are low carbon intensive. In the context of urban management in Africa, there is an opportunity associated with transfer of the resource stockpiles of aging cities from the Global North to reduce global carbon footprint of cities but also challenges of technological capacity to manage the resources with less emissions. An entry point for green economies relates with management of natural resources within and around cities or within city-regions. For example off grid sewer systems that recover energy from wastes and at same time treat the wastes are being promote in African cities as the problem of water resource shortages and fluctuations increase. One co-benefit of the off grid systems is promotion of green technologies that can contribute to green urban economies.

Urban planning and management challenge

To respond to the urban challenge Africa, there is need to re-think several things including technology, embracing green technologies, rethinking ecologies of cities and long term strategic planning and response to climate change impacts. But the vehicle for ensuring the realization of the transformation lies in innovative urban planning and management approaches (Carmin, Anguelovski and Roberts 2012; Jenkins 2000; Shuaib and Kinuthia-Njenga 2012; UN-Habitat 2009). There is considerable literature on ways of improving urban management but the gaps between these approaches and the experiences are getting big. Urban planning and management innovation can offer opportunities for galvanizing urban economies, respond to climate change adaptation and mitigation needs, improve social and physical infrastructure but also reform the current urban governance system in Africa. Urban planning innovation can be understood as “the development of systems that are new in the context of planning, utilizing creativity that can be based on adapted local conditions”. This planning innovation would require debunking various aspects among which the planning colloquium. Urban planning innovation that responds to the challenges and promotes better urban communities will have to emerge and provide a platform for exchange of ideas, knowledge and skills for developing strategizing on how to ignite the much needed transformation for sustainable and inclusive urban development (Sanusi 2011). The areas of innovation include; planning education, innovative planning research, moving from projects to programs and policy, considering the societal costs of unsustainable urban development, redefining community roles and institutional reforms.

The policy challenge

Sustainable urban development in Africa is facing a pivotal challenge of policy failures and the need for policy transformation (Bulekeley, Harriet, et al. 2012; Bulkeley and Betsill 2005; Jenkins 2000). Currently urban development is guided by colonial laws with some revised. Whereas legislations exists focused on spatial development, recent laws in several countries focus on the urban-wide scale provision of services. These laws are also complimented by other laws for environmental management, water resources management and natural resource management. Municipal authorities inherently have the liberty to make ordinances which translate the rules and regulation concerning specific urban management issues. These are developed to implement the laws and or address the challenging issues which have emerged. But the time lag of developing these ordinances makes several attempts futile (Bulkeley and Betsill 2003; Goodfellow 2010; 2012). Implementing the laws and regulations in urban management has largely been pursued through two approaches; the project-based approach and the sector-wide approach. The project-based approach is the most common in Africa while the sector-wide approach has only recently been introduced at National Levels. One of the disadvantage of the project-based approach is breaking down challenges into projectization with no follow up to complete the cycle that doesn't hang on a framework. The Sector-wide approach is pursued at national level in several of the countries realizing the need for guidance of urban development and ensuring sustainable national development. There is now recognition of the need for coordinated land use planning at national level and especially managing urbanization. Associated with sector-wide programs is the adoption of the principles of sustainability to ensure a participatory identification of solutions to the social and environmental conflicts. The policy challenge however lingers on as institutions that are custodians of legal and policy frameworks seem to change at a slow pace compared to the pace at which cities are transforming. Institutions are not responding the current needs and it is not clear whether this lag is adequate in preparing cities for the future challenges such as climate change impacts. This is a serious challenge that affects all the afore-discussed challenges.

Conclusion

In conclusion, despite potentials for realizing sustainable urban development, it remains eluding Africa in general. Social and environmental sustainability of cities seems a farfetched reality in Africa as the issues of development deficit, climate change, green economies and policy transformation remain a stumbling block to sustainability. Africa is projected to reach an urbanization level of 50%

in the next 30 years but seems unprepared to manage the huge challenges associated with closing the infrastructure gap while ensuring economic opportunities and response to climate change impacts. The challenges posed by the urban growth and expansion to sustainability is by far daunting given the current demographic dynamics and the pace of the dynamics. The consequence of the conditions is increasing urban poverty, urbanization of poverty, social vulnerabilities, climate change impact and possibly slowing economic growth of cities and nations. The intertwining of urban poverty and environmental challenges call for innovation into alternative urban development approaches and policy transformation. Urban resilience in Africa will most likely be achieved with the support of the reconceptualization of the functioning of cities in the environmental context and how the built environment interacts with the biophysical system in Africa. Thus from coastal cities to mountainous cities, sustaining their ecologies is a key management challenge and transcends the traditional view of urban management informed by the socio-economic and political perspective. This will require a concerted effort that should bring together researchers, policy actors, communities and governments to address the challenges.

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