

Urbanization Challenges in Poor Slum Areas of Nairobi and the Role of Sustainability Science in Seeking Practical Solutions

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Abstract

The chapter examines major sustainability challenges faced by people in the poor urban slums of Nairobi, Kenya. The objective of this study was to specifically examine challenges faced in the city's slum areas, and application of sustainability science in seeking solutions. The study relied largely on secondary information available in print material. Site visits, discussions and observation were also applied in seeking information. The slum areas in Nairobi can be said to be a consequence of a multiplicity of factors ranging from old colonial policies, to post independence factors of governance which over time have resulted in migrations from rural to urban areas. Further, natural population increase and rise in cost of living for wage earners in the central business areas of the city have equally pushed families to slum, peri-urban or near-slum areas. The existing concentration of people in slum areas is an adaptation to poverty conditions. Slums residents are exposed to many challenges some of which include inadequacies of shelter, food, water and sanitation, infrastructure and other aspects of economic or social deprivations. In order to approach sustainability of livelihoods in poor slum areas, existing challenges and their impacts on livelihood have to be identified and solutions sought. The paper notes that in addressing slum challenges, a critical aspect is to first and foremost lower the cost of living and in effect facilitate provision of food, better shelter, clean water and other essential social amenities. As a way of tackling poverty, there's need to reflect on governance and democracy, including women empowerment and to tap on the potentials

of the slum dwellers by encouraging participation and improving on their innovations. Sustainability science research can help analyse on-going slum dynamics, identification of key drivers or factors that lead to deprivation and seek solutions or adaptive measures that can improve the wellbeing of poor slum dwellers, improve livelihoods and make urban areas attractive and sustainable places to live.

Key words: Poverty, Innovations, adaptation, social amenities; infrastructure; governance

Introduction

Rural to urban migration in developing countries is increasing at an unprecedented pace. Approximately 34% of the population in Sub-Saharan Africa, currently live in urban areas, and predictions are that by 2020 nearly half (46.2%) of the population will be urban; while around 2030, Africa's collective population is expected to become 50% urban (UN-Habitat, 2010). While population growth in rural areas is an important contributor to urbanization, the key determinant for rural to urban movements has been better economic opportunities in urban areas. Currently, almost all rural areas of Kenya contribute disproportionately to the number of people moving to the city of Nairobi. In rural areas, a lot of people are literate but poor and those in close proximity to the city contribute the bulk of migrants. The arrival of new migrants from rural areas, sub-urbanization of the middle class out of the central areas of the city and the natural population increase through births, largely account for the current expansion in urban population most of who settle in slums. This paper focuses on an in-depth analysis of secondary data available in various print materials from Nairobi City Council and Kenya Bureau of Statistics. In addition, field visits, observations and discussions with slum residents and relevant stakeholders were held.

Rural-Urban Migration, Environmental Degradation and Poverty Nexus

Since independence in 1963, Kenya has experienced a rapid population growth, shooting from about 6 million to almost 38 million currently. This growth has out-paced the growth of resources available in most rural areas or undermined capacities for their effective utilization.

Resource resilience and replenishment capacities are equally low. Situations such as shortage of land for agriculture or livestock keeping, or low soil quality due to degradation characterise many rural areas. According to World Development Report (2003), most Sub-Saharan countries' agricultural productivity has been on the decline, and some 250 million people on the continent (30-70 percent of the inhabitants) live in "fragile" ecosystems with limited agricultural potential. The climate change phenomenon, characterised by prolonged droughts, together with decreased land fertility make it very difficult for rural populations to make a living out of land. Additionally, poor road networks have undermined many rural shopping centres, and enterprises which previously contained a reasonable proportion of the young workforce in rural set-ups.

These factors coupled with decay, neglect or total absence of important infrastructure and social amenities which include rural roads, schools, hospitals, clinics, water-supply systems, all ultimately undermine rural economies, and consequently the ability to support livelihoods. Poverty which results initiates a cyclic environmental degradation-poverty event the result of which is to finally drive large hordes of populations to cities. Many of those who move are the youths in need of work and/or the much needed social amenities. Slums then become the ideal receiving environment for poverty stricken migrants.

Rapid Mushrooming of Slums in Nairobi

In Nairobi, urban sprawl is associated with a rapidly deteriorating quality of life and which is reflected in poor people's inability to meet their basic needs such as of food, housing, water supply, sanitation and transport. Access to social services and infrastructures is dependent on income rather than population density (although there is a clear correlation between income and residential densities), with poorer services being found in high density and low-income areas. Ethnic spatial segregation in colonial times resulted in a tri-partition of Nairobi, with most white settlers residing in the North-Western and Western high-value areas; Asians in North-Eastern areas, while Africans were concentrated in densely populated areas to the east and south (UN-habitat, 2010).

The distribution of the population in Nairobi today has a bearing on these colonial period settlement patterns. The eastern areas turned out to be settlements for the lower and middle class workers and the unemployed.

These “eastern parts”, commonly known as “East lands” have slum areas of Mathare, Korogocho, Mukuru (KwaNjenga, Reuben, Kaiyaba) and Kiangombe. Kibera slum, one the largest in Nairobi is in the South eastern part of the city. Many other smaller pockets of slum settlement, and which are often insignificant in recognition are found sandwiched in the intervening spaces between industries and sprawling housing estates. Presently, these slum areas represent settlements where majority of the urban poor in Nairobi are found. Characteristic features include dense population settlements and shanty towns or sub-standard shelters for human occupation. Despite the environmental, social and economic challenges in the slum areas of Nairobi, they are also centres of informal activities and innovations.

Major Urbanization Challenges and Implications for Sustainable Development of Nairobi

Sudden and unexpected concentration of people in urban areas places a strain on the environment far greater than absolute numbers of people. High density population in very small urban areas means that wastes and all other aspects of pollution are also concentrated, often to such a degree that natural processes are unable to cleanse the environment of contaminants. The rapid expansion of population in Nairobi has brought with it severe sustainability challenges such as those pertaining to assurances on household food security and access to basic services which include adequate housing, adequate and clean water, sanitation, and education and health care facilities. Urbanization is a challenge in other urban areas where more and more people continue to congregate due to collapse or stagnation of rural economies, or rising insecurity in rural settings. Unlike rural counterparts who are involved in food production, urban dwellers in Kenya are basically consumers. Kessides (2005, pp 3) writing on urban transition in Sub-Saharan Africa notes that “serious shortcomings in basic urban services, land, housing, urban transport, and the severe shortage of fiscal resources for local governments mean that urban firms and workers experience prematurely the downside of urban concentration—diseconomies such as high land costs, degraded public areas, threats to public health and emerging crime”. According to the World Bank (2008), if local and national policies and priorities do not change, much of the imminent urbanization will be characterized by more slums. Hundreds of millions of new slum dwellers too, will suffer from the

relentlessly inhuman conditions that affect the large population already living in slums.

The Urbanization Impacts

Impacts on Urban Land, Housing Problems and Slums

The evolution of cities in many developing countries is often shaped by the unplanned nature of squatter settlements. Letting squatters settle wherever they can—on steep slopes, on river floodplains, or in other high-risk areas—makes it difficult to provide basic services such as transport, water, and sewerage (Warah, 2003). Despite the change in locality by people who move from rural to urban areas, and regardless of the place people settle, basic human needs such as food, clothing and shelter have to be met. Shelter and food pose the greatest challenges both to new comers in the city and equally to established urban dwellers whose household sizes have expanded. Generally, with regard to people movements to urban areas, migrants start out less well-off than the established residents but manage to improve their situation over time (CASSAD, 2002). Slums themselves are the physical manifestation of several overlapping forces. They are also an expression of deep poverty, unrealistic regulatory frameworks, ill-conceived policies, inadequate urban planning, weak institutional capacity, and larger macroeconomic factors. But on the other hand, slums are a manifestation of the ingenuity and resilience with which extremely disadvantaged populations have organized themselves in the face of these very challenges (World Bank, 2008). The inability of the governments to provide affordable land to low-income city dwellers is the result of resource allocation inefficiencies and inappropriate governance. The inadequacies and outright failures which plague formal land and housing markets impose significant costs on society at large, and make the majority of city residents vulnerable and landless.

Urban income inequality is characterised by a continuously increasing gap between the rich and poor. The many informal urban land markets that sprout as a response to land shortage and associated high demand are often considered as inappropriate, illegal, illegitimate or undesirable and negates the realities on ground. The present day expansion settlements within the peri-urban areas of Nairobi including within the metropolitan zone itself can be largely attributed to the informal land buying and selling companies, as they are on the fore-front of buying large

parcels of land, sub-dividing and re-distributing it to the many people seeking land to put up shelters. The main disadvantage is that plots of land so distributed, including their development usually contradicts the city's overall planning and environmental considerations. Securing and safeguarding formal tenure for informal settlers remains the greatest challenge as housing development projects fail to reach out to the urban poor due to land tenure conflicts (UN-Habitat, 2010). In Nairobi, land markets and prices are the main drivers of urban spatial expansion and geographic social patterns. Urban land prices have been increasing steadily while incomes of most city-dwellers have been stagnant or decreasing, and as a result economically challenged communities living close to urban centres where land and house rental prices have been rising are increasingly faced with eviction (UN-Habitat, 2010), a factor that forces them to re-locate to even poorer areas away from the city centre. Urban land acquisition is usually very cumbersome and time-consuming while tenure regularisation procedures are linked with corruption and vested interests, turning land management and administration into a challenge (UN-Habitat, 2010).

The consequences of land scarcity, high costs of house tenancy and presence of populations who exceed available house space lead to development of slums as individuals seek shelter for themselves and their families. The resultant urban slums represent major threats to national and urban stability and, by extension, to overall political stability. An example is the 2008 post-election violence in Kenya, where slum areas became hotspots or focal points of violence. Each year, cities attract new migrants who, together with the increasing native populations, expand the number of squatter settlements and shanty towns, exacerbating the problems of urban congestion and sprawl and hampering local authorities' efforts to improve basic infrastructure and deliver essential services.

Food Security Issues

Rapid increase in urbanisation has resulted in food security related problems among the urban poor. Cities are known to offer access to a wide variety of food prepared outside the home; including street food and food served in restaurants, hotels and kiosks, but reliance on purchased food is a leading factor in household food insecurity of poor urban populations, who lack fixed incomes (Mutisya and Yarime, 2011). The urban poor in Nairobi live in slum areas that are highly congested, inaccessible and with poor

sanitation and this greatly affect food distribution and safety. Poverty and lack of nutritional awareness among many of the urban poor is associated with consumption of foods that are of low nutritional quality, and quantity. Food scarcity among the urban poor often manifests itself mainly in form of under-nutrition, malnutrition, nutritional diseases and seasonal hunger. Malnutrition and under-nutrition are due to inadequacies in quantity and quality of food taken or consumed. Affected individuals are weak or appear under-nourished and in extreme cases suffer from nutritional diseases, a situation most common in children living in poor slum areas. This undermines productivity in adults and schooling in children. However, for most urban people, seasonal hunger is the most common expression of food scarcity. Seasonal hunger is a way of life for most urban poor and occurs when there is unexpected lack of food or people going without food for some unspecified period. Seasonal hunger is short-lived, lasting for a few days, weeks or months or intermittent between time but its frequency of occurrence is often very high among poor families, unemployed or poorly paid workers.

For persons living in urban areas, food access hinges primarily on the household's ability to purchase food. Most urban poor have neither large food stores, nor do they have access to space for growing their own food. The urban poor, often pay more for food purchases than their wealthier urban counterparts, as they are obliged to buy small quantities of food daily because they do not have the resources or living conditions which permit them to purchase and store large quantities of food at home (Maxwell et al., 2000). In the slums of Nairobi city, purchase of food is re-packaged into very small quantities commonly known as the "Kadogo" or "Small Economy".

Poverty and Environment in Slum Areas

One of the real threats to sustainable urbanization is urban poverty. It establishes a vicious cycle of poverty where conventional market economies condemn millions to poverty, while awarding a few with prosperity (UN-Habitat, 2010). While high population density may impoverish certain groups of people, it may be good for minimizing the effect of man on local ecosystems especially when it translates into lower per capita cost of providing infrastructure and basic services (Cohen, 2006).

However, rapid urban growth throughout the developing world has seriously outstripped the capacity of most cities to provide adequate basic services for their citizens.

Although poverty is prevalent among most slum dwellers in Nairobi, much remains to be done with regard to urban poverty alleviation and slum expansion incidences. The speed and sheer scale of the urban transformation in Kenya just like in many developing countries presents formidable challenges, and especially due to the proliferation of slums (UN-Habitat, 2010), and especially the risks to the immediate and surrounding environment, to natural resources, and to health conditions (Cohen, 2006). In an attempt to meet basic human needs, the poor are forced by circumstances to eke a living or survival needs from the immediate and fragile urban environments leading to further degradation. In turn, the degraded environment deteriorates further, reducing its capacity to support people, resulting in more poverty. Such poverty is a trigger for many social-ills, including crime and moral decadence.

Pollution in Urban Settlement Areas

Congestion in urban settings brings about accumulation of organic and inorganic wastes. On the lead are domestic wastes, polythene materials, plastics, bottles and metal based wastes, all which are collectively referred to as garbage. Sorting of wastes in Nairobi at present has not fully developed, partly due to the absence of effective garbage management systems and enterprises. Wastes have an overall effect of enhancing environmental degradation. Local authorities in their clean-up-efforts have tended to overlook the poor urban settlement areas, as they concentrate their efforts to the central business district and residential areas of the affluent and the upper middle class. This situation is evident in Nairobi, where clean-up efforts in slum areas are not only ignored, but slum areas also have to bear the burden of absorbing solid wastes generated elsewhere. As an example, at Dandora dump-site in Nairobi, over 95% of solid wastes dumped on a daily basis next to nearby squatter settlements is external to the slums in origin. Waste disposal policy, technologies infrastructure and capacity are a challenge for Nairobi city (Mutisya and Yarime, 2011).

Water and Sanitation Issues in Slum Areas

The slums of Nairobi have grown with no prior planning and their spatial extents are restricted despite the fact that human populations within them have continued to expand. In urban areas, the poor and under privileged populations pay exorbitant amounts of money for water, which is often not even suitable for consumption, on the other hand resources allocated to those living in the wealthy urban areas are heavily subsidized as reflected in higher levels of efficiency in services provision meaning the wealthy pay less for cleaner water and better sanitation systems (Fotso et al., 2007). In slums, water and sanitation and infrastructure is usually dismally poor, characterised by many illegal water and sewer line connections with an overall negative effect on environmental hygiene.

To access clean water without spending, some water vendors occasionally resort to damaging water supply pipes as they illegally try to acquire the scarce water resource, leading to pools of stagnant water spreading in the slums and which become breeding grounds for mosquitoes. Lack of adequate sewer delivery systems, occasional breakdowns, clogging, shallow toilets or none at all contribute to compromising the environmental status in slums. The existing water and sanitation situation in the slums of Nairobi, coupled with food handling under poor sanitary conditions all contribute to high incidences of environmental diseases such as diarrhoea, typhoid, malaria, amoebic dysentery and intestinal diseases. In urban areas with poor sanitation, safety of food is of great concern as street foods which are popular and prevalent in slums are often prepared under unhygienic conditions, and often contribute to outbreaks of food-borne illness, with children being much more susceptible to the disease burden and mortality risks. Overcrowding in urban slums makes it even more difficult to control sanitation issues and disease outbreaks associated with exposure to raw sewage.

Slums as Focal Points of Disease and Disasters

The relatively poor health conditions that slum residents face at all stages of the life course are rooted in three key characteristics of slum settlements: poor environmental conditions and infrastructure, limited access to services due to lack of income to pay for treatment and preventive services, and reliance on poor quality and mostly informal and unregulated

health services that are not well suited to meeting the unique realities and health needs of slum dwellers. Due to a combination of these factors, slum residents experience relatively high levels of morbidity, low levels of access to reliable and affordable health care, and high levels of mortality (Zulu et al., 2011).

The high HIV/AIDS prevalence and vulnerability occurring in poor slum areas is mainly due to poverty, illiteracy, and social neglect all contributing to high infection rates and low adaptive capacities. Occasional epidemics of cholera, typhoid and fire disaster outbreaks are reported every other year. Poor accessibility in sections of the slums, contribute to life and property losses whenever such disasters strike. The urban poor, being squatters on land they do not own, have from time to time been victims of violent conflicts, especially when spatial extent of squatters settlements grow large and then developers or land owners decide to evict them and they react by resisting. Such incidences not only create internally displaced persons but have also become a recipe for increase in levels of crime and insecurity.

Sustainability Challenges and the Way Forward

According to Cohen (2006), cities have always been focal points for, innovation, and employment, and other aspects of economic growth and social development. Therefore, ensuring that cities and urban areas are harmonious and sustainable starts by dealing with the slums and finding affordable solutions for those deprived of decent housing, food, water and sanitation or other essential services and who find themselves systematically marginalized by mainstream urban market economics (UN-Habitat, 2008). A major challenge is to address the shelter and basic services needs of low-income segments in urban areas and then scaling up the interventions, including their own innovations. An important starting point is to appreciate that the root causes of most problems experienced in slum areas have their origin in poor governance and illiteracy which exist within their social, economic and political institutions.

Despite these challenges, there is need to employ sustainable development approaches that will largely seek solutions to urban poverty and environmental problems. Accountability, good governance and democracy are all important tenets of sustainability and have great applicability in urban problems solving. Greater attention needs to be given

to identifying particular deprivations facing the urban poor and tackling these directly, by removing causes of economic and social exclusion such as insecure tenure and providing effective access to affordable basic services. Sustainable development approaches can connect the need to protect and conserve the natural environment with concern for the social and economic development needs of the community (Ramona and Liviu, 2007).

In addressing sustainability issues within poor urban areas, harnessing rather than alienating human energies of the poor is essential for maintaining urban dynamism, which cannot be fostered or maintained with rising urban inequality. The urban poor should not be punished for their poverty but instead should be supported and encouraged to participate in urban planning and development endeavours. According to UN-Habitat (2010), cities are the future habitat for the majority in Africa, and “now” is the time for spending on basic infrastructure, such as social services (health, water, education), affordable housing and other appropriate interventions including land tenure security.

The Place for Sustainability Science in addressing Kenya’s Urban Challenges

According to the World Bank (2008, pp 13), “affordable and successful adaptive measures for existing slums have, and can increase the well-being of millions of slum dwellers. Effective adaptation may need to continuously build capacity and to carry research aimed at problem identification and solving. Sustainability science can improve the adaptability of slum dwellers livelihoods through innovations and other scientific and socio-economic interventions. These interventions should also aim at encouraging community participation at all levels in order to stimulate urban economies and generate the much needed growth and jobs. These measures act to unlock the productivity of the urban poor, creating a powerful upward spiral that strengthens both urban and national economies”. The challenge is to integrate sustainability actions into urban life in a humane way that provides hope through the potential for improvement of life standards (Warah, 2003).

Sustainability science can play a key role in addressing urban challenges especially through analysis of on-going slum-dynamics to help identify key drivers or factors that lead to deprivations/poverty, and explore practical solutions that may raise urban productivity and efficiency.

Through intensification in the application of science, technology and, opportunities that exist in the innovations of slums occupants and their micro-enterprise systems and survival strategies can equally be improved upon. Further, sustainability science applications can provide a variety of solutions in the urban context, ranging from high technology-based solutions to retrofitting and other innovative approaches to urban planning and governance that employ more basic technologies. The outcomes of such applications however, must not be to the detriment of the environment or livelihoods.

The on-going slum upgrading projects in Kibera and Math are slums of Nairobi, improvement of the city's infrastructure and developing land and environmental policies (with a major urban component/chapter) in Kenya are not only strategies for achieving vision 2030, but are also a projected outcome of sustainability development. This is about bringing outcomes of research and values into practical action (UN-Habitat, 2010).

Conclusion

Environmental degradation and poverty are critical drivers of rural to urban movement in Kenya, contributing to a sizeable proportion of who occupy Nairobi's informal settlements or slums. Additional people are those already living in cities but are low wage earners, unemployed and lower middle class who move to slum areas due to high cost of living or economic inadequacies. Further expansion of slum populations is due to the natural population increase. The slum areas are poorly adapted to handle an ever increasing population and issues of shelter, food, water and sanitation, and more poverty dominates the resultant challenges. To ensure sustainability in such urban environments, measures that address the root causes of the "slums situation", and practical solutions are needed. This is an important entry point of sustainability science as it involves research, technology, innovations and many other environment-livelihood domains, including governance.

References

- Cohen, B. (2006). Urbanization in developing countries: Current trends, future projections, and key challenges for sustainability, *Technology in Society* 28, 63-80.

- Centre for African Settlement Studies and Development (CASSAD) (2002). *Economic and Employment Trends in Karu*, Ibadan, Nigeria.
- Fotso, J., A.C. Ezech, N.J. Madise and J. Ciera (2007). Progress towards the child mortality millennium development goal in urban sub-Saharan Africa: the dynamics of population growth, immunization, and access to clean water, *BMC Public Health*, 7, 218.
- Kessides, C. (2005) The Urban transition in sub-saharan Africa: Implications of economic growth and poverty reduction. Africa Region Working Paper Series No 97, World Bank, Washington D.C., United States of America.
- Maxwell, D., C. Levin, M. Amer-Klemesu, M. Ruel, S. Morris and C. Ahiadeke (2000). Urban livelihoods and food and nutrition security in greater Accra, *Ghana Research Report 112*, International Food Policy Research Institute, Washington D.C., United States of America.
- Mutisya E. and M. Yarime (2011). Understanding the grassroots dynamics of slums in Nairobi: The dilemma of Kibera informal settlements. *International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies* 2 (2), 197-213.
- Ramona, M. E. and M. Liviu (2007) *Education for Sustainable Development and Society: The future requirements*, Lucian Blaga University of Sibiu, Sibiu, Romania.
- UN-Habitat (2010). *The State of African Cities 2010: Governance, Inequality and Urban Land Markets*, UN-Habitat, Nairobi, Kenya.
- UN-Habitat (2008). *Bottom of the Pyramid Approaches for Urban Sustainability paper*, UN-Habitat, Nairobi, Kenya.
- Warah R. (2003). *The Challenge of Slums: Global Report on Human Settlements*. UN-Habitat, New York, United States of America.
- World Bank (2008). *Approaches to Urban Slums: A Multimedia Sourcebook on Adaptive and Proactive Strategies*. Washington D.C., United States of America.
- World Development Report (2003). *Sustainable Development in a Dynamic World*. World Bank, Washington D.C., United States of America.
- Zulu, E.M., D. Beguy, A.C. Ezech, P. Bocquier, N.J. Madise, J. Cleland, and J.Falkingham (2011). Overview of migration, poverty and health dynamics in Nairobi City's slum settlements, *Journal of Urban Health*, 88 (Suppl 2), 185–199.