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Karani George Washington is a professional Interior Designer with 16 Years' Experience. He has been instrumental in championing the design industry and profession regulation and codes of conduct. Karani is the Founding President and Chairman of the Interior Designers Association of Kenya (IDAK), an organization that has brought together interior designers in Kenya and related professions. He is also a member of the steering committee that is working on the Built Environment PractitionersBill 2020. With his skills, he has a great passion to maximize student learning opportunities by integrating multidisciplinary teamwork as a learning tool in Kenya and Africa at large. He is currently an Assistant Lecturer at The Technical University of Kenya having taught in other design institutions in Kenya. Karani is a champion for innovation and research in the design industry in Kenya amongst other activities geared towards advancing the Universal Design agenda as a major economy booster in Kenya.He advocates for an all-inclusive environment with a special interest on Persons with Disabilities(PWDs). Karani has played a fundamental role in advancing the interior design role in the new economy having

served as the Chief Judge during the Ideal Interiors Expo and was instrumental on giving expertise knowledge on Ideal Interiors TV Show. He has featured on a number of local and international TV stations including Design TV, KTN, NTV, CNBCetc. He is currently the CEO, Design Television Ltd, a 24 hour free to air channel focusing on design. Karani is a workplace design strategist and expert bringing in new trends in the workplace.He believes today's workplace is more than a workspace. That's where we spend our lives and get our livelihood. Utmost care and concentration needs to be taken in the design of these spaces

JP Odoch Pido

Odoch Pido is a design educator and professional designer. He is an Associate Professor of Design at the Department of Design and Creative Media, the Technical University of Kenya. He has served on numerous administrative positions, boards and committees, setting curricula and judging Kenyan art and design projects and competitions. He has been a strong force in the preparation and development of more than five generations of Kenyan designers as they make their first halting steps and then flourish as professionals. His many professional credits include exhibition designs, graphic design and product development.

Odoch's many publications include papers and chapters in books, conference presentations and journal articles focusing on the deep analysis of culture in relation to design, emerging trends in cultural expression, health and development. He has concentrated on issues in design education but the closest to his heart has been alternative communication techniques for controlling HIV-AIDS, especially for orphans and vulnerable children in rural Kenya. Together with other scholars he is examining groundswell as a cultural revolution in weddings and connecting African thought system with mainstream philosophy, design and related disciplines.

Odoch's photography of abstract forms in nature is his way of expressing his sensitive vision by focusing on small scale natural beauty that might otherwise go unnoticed.

Prof Dr. Donna Pido is an American Anthropologist with several decades of experience in product and graphic design as well as formative research for health education campaigns. She has designed collections for various art galleries in the US and for African Heritage in Kenya. Among Donna's credits are the period beaded ornaments worn in the Hollywood film, Out of Africa. She has mentored several successful art jewelers and has worked closely with Maasai women's groups in developing their designs. Her publications, dealing mostly with analysis of East African material culture, can be found on Academia.edu. Her experimental jewelry was featured in the Kenya Arts Diary of 2012. At present she divides her time between teaching in the Department of Design and Creative Media of the Technical University of Kenya and research on archaeological materials in the National Museum of Kenya, both in Nairobi. She is an active member of the Arts Council of the African Studies Association (US), the Kenya Quilt Guild and the Kenya Embroiderers Guild.

An Analysis of Legal and Institutional Design for Sustainable Urban Public Transport Systems and Accessibility Standards in Kenya: A Case of Nairobi City

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Abstract

In recent years, there have been efforts at enhancing the legal and institutional framework to redesign transport and settlement form for the provision of access to people, goods, services, and information in cities. The more efficient this access, the greater the economic benefits through economies of scale, agglomeration effects and networking advantages. This paper discusses the concept of sustainable urban planning and the extent to which institutional framework/designs guide urban public transport and accessibility. Along with the effectiveness of existing legal and institutional design, this paper examines challenges and prospects of integrating universal design into urban planning and development for accessibility for Persons with Disabilities in Nairobi. This article provides guidance for applying various types of accessibility analysis in transport planning. The study is an effort to help policy makers understand the recommendation and the importance of strong legal and institutional frameworks that guide urban planning policies.

Keywords-Legal framework, Institutional Framework, capacity building, Universal Design; Disability; Accessibility; Social inclusion; Barriers; Awareness; Public transportation; Urban planning.

Introduction

Public transportation is key to socio-economic development of any nation. It facilitates accessibility and enhances people's livelihoods (Mupfumira & Wirjodirdjo, 2015). Moreover, it is now clear that a well-performing public transportation sustains economic prosperity. In other words, a poorly performing transportation undermines economic prosperity, which seems to be the case in Kenya and other developing countries. Rapid and poorly planned urbanization in developing countries reduces the efficacy of public transportation contributing to congestion, movement delays, high travel costs, and construction of holding bays. Governments have attempted to wrestle with poor public transportation. Such attempts include deregulation, liberalization and focus on sustainability (Dirgahavi and Nakumura 2102). Other efforts are introduction of commuter omnibuses in Harare (Maunder & Mbara 1995), interrogation of policies (Kodero 2005) and investment (Musakwa and Gumbo 2017). The discourse is towards transport infrastructure investments that facilitate the attainment of the so-called 'smart city' and 'smart mobility' status. 'Smart' is nowadays the panacea for all public transport problems that, among others, include traffic congestion and unreliability.

Universal design is the focus of this article and is the main problem in Nairobi City where we conducted the study. In Nairobi, people use buses and trains to get to work or to access facilities and

services; only a few people go to work or their businesses in private instead of public transport vehicles. The busses and trains do not seamlessly connect with each other and passengers walk long distances to and from public transport termini. Commuters often come face to face with and persevere pickpockets, muggers, rain, darkness, rough roads or no sidewalks. Most important, public transport is not inclusive; the system of transport does not take people with disabilities into account. The lack of universal design in public transport creates inconvenience and great difficulties for the elderly, impaired and disabled, especially those in wheelchairs. The elderly or persons with disability who dare to access Nairobi Central Business District (CBD) pay a big price. Achieving more convenience and easier public movement transfers at connection points is needed to achieve overall public transportation that everyone can use smoothly.

One of the World Bank (2013) reports indicates that most cities have difficulties in planning and managing the development of their urban transport systems. Overlooking inclusivity is a reason for such difficulties. In addition to overlooking critical considerations, planners hardly put in place sound legal and regulatory frameworks, planning is provincial or local instead national. Yet establishing favourable conditions for addressing existing transport problems requires a national framework that would create pre-requisites for sustainable development of urban transport systems. Preceding submission explain why Nairobi urban public transport does not meet the growing demands for mobility. It can be argued that the Nairobi urban transport system actually impedes the growth of the urban economy.

Discussion of field and archival findings

Whereas gaining access is the ultimate goal in designing public transport, Nairobi houses many examples of ‘access-denied’. No matter differences in our views of access, mobility, quality,

affordability of options, connectivity, mobility substitutes, and land use patterns can and often frustrate such a goal. Poor planning denies us access when cannot comfortably move from one place to another, afford transport, connect with other forms of transport and operate in a poorly planned land use pattern. At times planning overlooks and undervalues some of these factors and perspectives.

Good land use planning can expand the scope of potential solutions to transport problems (Litman, 2017). This happens when it involves trade-offs between different forms of accessibility. For example, road design features that maximize motor vehicle traffic speeds may reduce active transport (walking and cycling) accessibility, and transit accessibility since most transit trips include walking and cycling links. Locations convenient for automobile access, such as along urban fringes where parking is abundant and inexpensive, tend to be difficult to access by other modes of transport. Central locations that are easier to access by walking, cycling and public transit tend to have lower traffic speeds, more congestion and parking that is more expensive.

More often than not, experts who evaluate the performance of public transportation ignore accessibility. Instead, they tend to evaluate transport system performance based on motor vehicle travel conditions, especially roadway level-of-service, traffic speeds and vehicle operating costs to the neglect of other accessibility factors. The style of evaluation favours mobility over accessibility and automobile transport over walking, cycling and other modes of transportation. The socioeconomic class of the urban experts who make decisions on but do not use public transportation tend to make

them inexperienced and biased against public transport. Many of these planning biases are subtle and technical, resulting from the statistical parameters used to measure travel demands, the selection of performance indicators, and the formulas used to allocate resources.

One sees a need for new planning paradigms, to be used in Kenya and other developing countries. The designs of the new planning paradigms require more comprehensive accessibility analysis. Our ability to evaluate accessibility is improving as transportation and land use planners develop better tools for quantifying accessibility impacts, including multi-modal level-of-service indicators, and models which measure the travel distances, time and costs required by various types of transport system users to access various types of places, services and activities. However, accessibility-based planning techniques are still new and practitioners are still learning how to apply them to specific decisions. There is a need for designers to work alongside the engineers, architects and planners in developing use friendly systems. Comprehensive accessibility analysis therefore requires creativity and judgment to incorporate new accessibility factors. It also cries out for qualitative tools of data gathering, analysis and evaluation. Numbers yield false clarity. We are burdened with strictly quantitative analyses that cannot tell planners the full story.

The UN ‘Declaration of the Rights of Disabled Persons’ states that disabled persons and their families, irrespective of their race, colour, sex, language, religion, political opinion, national or social origin, and state of wealth, should be respected in their human dignity.

They should share the same fundamental rights as their fellow and able-bodied citizens. This means that persons having any sort of impairment have the right to a normal life and are entitled to the necessary support in order to enable them to be as self-reliant as possible. They have the right to special education, medical assistance and rehabilitation in order to develop their abilities and to promote their social integration. They also have the right to have their special needs taken into consideration at all stages of the design process (Agarwal, 2009). There is a great disparity of knowledge, resources, and practical assistance between developed countries, Kenya and fellow countries in development (Jacobs, 2003).

City planning standards need to reflect extensive research on and clear understanding of accessible, barrier-free environments and should include stakeholders as designers, architects, doctors, sociologists and historians. According to Kadir and Jamaludin (2013), designers should go beyond existing accessibility regulations, standards and guidelines, and incorporate the principles of ‘universal design’ that benefit people of all ages and abilities. Bade (2011) emphasizes that designs are now expected to reflect equity and context and to balance pedestrian and vehicular use. Indeed, design and layout of buildings as well as roads have dictated accessibility and mobility within the Nairobi urban environment. Yet both design and layout, in their separate ways, have created unsafety, undermined pedestrian confidence and curtailed movement and travel choices amongst disadvantaged groups. In Nairobi, benchmarking of accessibility does not reflect everyday

journeys and trips taken or desired, and the perceptual barriers felt by many people. We need to change.

In practice, standards in accessible design tend to isolate particular elements such as the design of building features and their approaches (Disability Discrimination Act – DDA, 1995) not if and how the user actually reached the destination itself, or whether transport is integrated with service delivery, e.g. opening times. Official benchmarks classify a service or activity as 'accessible' if we can reach it at reasonable costs, in reasonable time, and with reasonable ease. We do not, however, define and use 'reasonable' in DDA terms and context; we prefer to define and use it in the context of active users, especially those who, with this value judgment, decided by the provider (e.g. facility or transport operator) not the user, let alone those most excluded from travel and transport. Access guidance arising from the DDA legislation takes up less than one and a half pages out of over 100 (Ratcliff, 2007), with a focus on building, workplace and vehicular access.

According to Abiero-Gariy (2006), public transport plays a major role in facilitating office-type of work because a majority of the office based population do not own private automobiles. However, its role in facilitating work and the overall pattern of development is greatly reduced because the following reasons. One, roads are not designed to slow down traffic flow. Traffic often come to a standstill when it rains. Two, there is little courtesy on the road; drivers do not respect pedestrian and other drivers' rights of way. The problem is built into the way drivers are trained in Kenya. Three, owners and managers do not maintain their vehicles in good working conditions.

Thus poor maintenance goes to make roads unsafe. Overall, the buses do not and cannot run according to schedule. Numerous potholes on highways and feeder roads indicate poor maintenance by government leading to inefficient service (Abiero-Gariy, 2006).

For the developing countries, emerging institutional structures do vary considerably across nations, even in those with similar levels of economic development. However, establishing effective legal and institutional frameworks is crucial to management in order to enable the effective implementation of sustainable urban planning for public transport. Africa's rapid urbanization challenges have many aspects that highlight urban sustainability. The concept of urban sustainability calls for African municipalities, companies and citizens to achieve a better urban planning (Dietz, 2017). Consequently, Africa's cities cope with huge demands and challenges, with many unplanned residential areas, and many working and living conditions that are inherently hazardous. Nairobi is experiencing rapid growth facing and emerging challenges in mainstreaming universal design principles into the public transport system. The provision of local development needs, especially regarding the provision of adequate infrastructures and access to basic services are enshrined in Kenya's "Vision 2030" and in key targets of designated Sustainable Development Goals.

Cities require high levels of infrastructure to deliver essential services that are intend to link cities to one another to other systems (Chachavalpongpun, 2011); the services account for urban resilience. They include physical infrastructure, which includes the public transport system. Agents, or actors in urban systems,

comprise the second key element in the framework. They include individuals and private and public sector organizations (government departments, private firms, civil society organizations). They have identifiable but differentiated interests and are able to change behaviour based on strategy, experience and learning. In order to work effectively with agents, it is important to recognize the opportunities and constraints they face and the incentives to which they respond (Hodgson, 2006). On the other hand, institutions may be formal or informal, overt or implicit. Whatever the type of institution may be, we create it to reduce uncertainty, to maintain continuity of social patterns and social order, and to stabilize forms of human interaction (Campbell, 2008). Institutions condition the way that agents and systems interact to benefit all users. Institutions of property and tenure, of social inclusion or marginalization and of collective action influence the vulnerability of particular social groups (Adger et al 2005).

Universal Design is about accessibility for all; it means ease to approach, enter, use something and leave with a good user experience. It should be the embodiment of user friendliness. As a design concept, it entails placing diverse users at every stage of the design process and ensuring the practical suitability of the designed space or system. Universal Design has its origin in studies of spatial accessibility and their origins in the field of geography. A geographical definition of the concept state that, ‘accessibility is determined by the spatial distribution of potential destinations, the ease of reaching each destination (Handy & Niemeier, 1997).

Going on foot is at the foundation of public transportation in Kenya. Before the onset of motor vehicles, most of us walked to and from where we wanted to go; very few people journeyed on camels, donkeys or bulls. Horses have never been a mode of transport in Kenya. Obviously, walking was hardly inclusive since those with physical disabilities got around only with the help of relatives or kind-hearted friends. Individuals found it easier to go about on back of camels, donkeys or oxen. Pedal bicycles and motorbikes added to walking and riding animals; they too were hardly public transportation in the way we defined in our studies. Lorries came on the scene and they were the precursor to buses and trains. Among these transport options, our study centred on buses. Essentially, the history of public road transport in Kenya dates back to 1934 when London based Overseas Trading Company (OTC) introduced the first fleet of buses. The fleet comprised of 13 buses covering on 12 routes in urban Nairobi. For not-yet-known reasons, OTC initiated Kenya Bus Service (KBS) and assigned it to serve urban Nairobi on the style of London. KBS did very well until Nairobi's population explosion and bad politics killed it towards the end of the 20th Century. In the spirit of liberalization, there are now many public transport players that are operating in Nairobi, and these include intermediate modes of public transportation that we call bodaboda. small to medium sized motorcycles.

Kenya has been experiencing challenges that impact negatively on road safety. Some of the challenges are disjointed institutional framework, disjointed legal framework, poor infrastructure and general disregard of existing laws. Because of car crashes and loss of life, the police paid greater attention to road

safety omitting universal design from consideration. Between 1979 and 1988, the Government of Finland helped initiate and supported the National Road Safety Council under the Kenyan Ministry of Transport and Communication. Due to factors, the Council ceased to exist in 1988. Again, the focus was on road safety rather than inclusivity in public transportation. Between 1988 and 2012, various Government ministries and departments engaged in road safety; design for all in public transportation was not a serious concern.

Though parliament and other bodies adopted several subsequent policy papers, none gave much attention to universal design for public transportation as a way of entrenching inclusivity. Adoption by the 10th Parliament of the Integrated National Transport Policy (Sessional Paper No. 2 of 2012) was a big stride. In order to address road safety challenges and harmonize management of Kenya's road transport, the Government formed the National Transport and Safety Authority (NTSA) through the National Transport and Safety Act Number 33 of 2012. Despite this progress, the public transport sector in Nairobi City continues to work with out-of-date regulations. The current 1954 Traffic (Amendment)Act Cap 403 that is full of contradictions and perhaps has unconstitutional sections due to so many amendments, is not skewed to manage modern transport trends. A critical analysis of the new Transport and Safety Authority Act 2012 that repealed the Transport Licensing Act Cap 404 does not fully address issues of an integrated modern transport system. Maybe that is why huge traffic jams continue to disorganize all Nairobi residents.

Summary of discussions and recommendations

From the study, we are clear that inclusivity is not yet an important criterion in planning Nairobi public transportation. Yet Nairobi city policy directs investment towards public transport and other infrastructure. Currently, the discourse is moving towards transport infrastructure investments that facilitate the attainment of the so-called smart city, and smart mobility status is disjointed. A smart city is not necessarily an inclusive city.

A fragmented institutional framework for the management of public transport accounts for the lack of inter-modal integration. Institutional inadequacies undermine the development of a comprehensive urban transport policy. History shows that Government has failed to develop efficient transport facilities under public ownership and that management generally has weak and ineffective structures. Moreover, lack of capacity and shortage of resources seriously further negates Government's already not-so-good corporate governance, sound decision making and efficient management. In any case, the Nairobi County Government lacks the technical know-how to integrate universal design in planning public transport that enhances accessibility for all. Allowing the private sector to participate fully in public transportation can only be politically correct; in practice, the private sector is only doing the dance instead of treating public transport with a sense of commitment and finesse. The non-functional legal framework confounds private sector participation. Provisions in the Kenya Roads Act, 2007 and the Public-Private Partnerships Regulations, 2009 are inadequate in dealing with the private sector.

Planners and the public have yet to appreciate Universal Design while architects, engineers and geographers appear completely ignorant of it. Meanwhile business goes on as usual and does so at the expense of design for all. A large percentage of participants in our study were unable to distinguish Universal Design from superficial treatment. From observation, it was clear that the design of transport network systems does not consider the needs of people with disability; in many instances, current planning immobilized people with partial mobility. Lack of Universal Design-awareness is one reason why physical and psychological abuse of persons with disability continues in silence. There has been a slow but noticeable improvement in public perception towards and treatment of persons with disabilities even in employment, but the design of bus stations and buses is a major obstacle.

Increase in demand for urban transport is directly linked to the growth in population and the economic activity and services offered in a particular urban area. Urban transport plays a vital role in the economy of Kenya, particularly in Nairobi, which generates a major share of gross domestic product (GDP). Providing an efficient urban transport system should therefore be a high priority. Such efficiency and supply levels are lacking in Kenya's urban areas, not just in Nairobi.

Low maintenance and lack of investment in network capacity have caused urban road networks to decay. Severe competition for road space at peak hours results in traffic congestion, high transport costs and reduced productivity of public transport vehicles. More meaningful urban transport improvements should be based on the

development of an urban transport policy; institutional strengthening and management; improving road safety. In addition, the Government needs to actively consider developing a metropolitan growth strategy that relieves development pressures in the center of Nairobi

Incorporating urban transportation as an important parameter at the urban planning stage is essential rather than being a consequential requirement. Encouraging integrated land use and transport planning is needed in all cities so that travel distances are minimized and access to livelihoods, education, and other social needs, especially for the marginal segments of the urban population are improved

The government together with respective agencies in the transport sector should adopt universal design as the conceptual approach for the design of buildings and roads that serve the public. More important, full compliance should be required for new construction of buildings and roads that serve the public. This comprises features such as ramps and kerb cuts and accessible entries, safe street crossings, an accessible path of travel to all spaces and access to public amenities such as toilets. In the public and private sector, there is need to adopt policies on procurement which take into consideration UD criteria.

There is need for the County Governments to develop a comprehensive source of accessible information about universal design and standards. Moving forward, a change in culture to improve attitudes and behaviours is a priority for all stakeholders. Ensuring

PWDs' transport needs should be included at the start and not as an afterthought. High-level actions in the plan on accessibility and universal design standards need to be prioritized, broken down, assigned for completion, monitored and reviewed. In addition, continuous engagement and participation of PWDs is key throughout the lifetime of the Framework and beyond. With all due respect to the other professions mentioned above, governments should be including Designers and Anthropologists in the planning and implementing of universal access in Public transport systems. Those two disciplines can support the other in data gathering, analysis and the development of innovative and functional plans. It will also be up to government to enhance qualitative monitoring and evaluation in the implementation of universal design and accessibility laws and standards. Specifically, an impartial monitoring body, preferably outside government, and with a significant membership of persons with disabilities, could be designated and funded to track progress on universal design and recommend improvements.

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