

Urban Transport Infrastructure Development in African Cities: Challenges and Opportunities

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Abstract

Cities in developing countries are growing at an unprecedented rate. In a recent article by the World Economic Forum and United Nations, the Sub-Saharan Africa is emerging as the fastest urbanising region with a population expected to be around 1.5 to 2 billion by 2050. It is however unfortunate that these urbanisation trends have not been without their hurdles for Africa's developmental progress. The large scale infrastructure deficit in the continent is one of the widely recognised challenges inhibiting the realisation of sustainable and prosperous African cities. This paper examines the main issues and challenges specifically facing urban public transport infrastructure development in Africa. It also argues that the success of African cities in sustainable mobility is without doubt based on their ability to respond effectively to rapidly changing urban landscapes and migration trends. The paper also uses the City of Johannesburg in South Africa as a case study example to illustrate some of the innovative and progressive urban transport infrastructure development initiatives currently being implemented towards spatial transformation and sustainable mobility. The paper concludes by setting out, at a high level, a number of strategic pillars around which urban transport infrastructure development opportunities can be anchored to respond to both current and anticipated challenges thereof.

Keywords

African Cities, Infrastructure Development, Johannesburg, Urban Transport, Urbanisation Trends

1. Introduction

The importance of a vigorous infrastructure investment approach continues to be a recurrent theme in many debates tackling the issue of Africa's development. Some debates point out to the emergence of a large middle class which has driven the demand for socio-economic infrastructure including access to water and sanitation (United Nations, 2012), while others have pinned this down to the continent's status as the world's leading resource frontier (World Economic Forum, 2013), and many more others anchoring on regional migration trends which have necessitated the need for increased and sophisticated infrastructure provision. While a plethora of initiatives and policy strategies have been implemented over the past years in response thereof, the infrastructure deficit has persisted.

Popova (2017:580) posits that infrastructure broadly captures two connotations, namely, social infrastructure and economic/production infrastructure. Under social infrastructure, the common subsystems include healthcare, education, culture, tourism, etc., whereas the economic infrastructure consists of transport and transportation system, telecommunication, electrical grid, water supply system, bridges, roads etc. (ibid:380). Approximately 60% of Africa's population is considered to lack access to these basic modern infrastructure systems (United Nations, 2015), consequently undermining the continent's sustained efforts to achieve socio-economic and sustainable development.

This paper doesn't intend to narrow down to each and every one of these systems and examine the relevant issues thereof. Instead, we have dissected the transport system and concentrated specifically on urban public transport. African urban populations are growing at an average rate of between 4% and 5% per year and are undoubtedly boosting the demand for sophisticated urban transport services, facilities and space (Pirie, 2013). Moreover, the varied benefits associated with the availability of high quality and effective urban transport infrastructure are widely recognised throughout the world.

2. Research Methodology

The completion of this paper was achieved through a qualitative desktop study technique. Secondary data was gathered and reviewed to provide a high level and critical evaluation of the current dynamics in the urban transport space within Africa. In so doing, the paper pays particular attention to Africa's unique space economy while also addressing the specific issues that have exacerbated the current urban transport challenge in African cities. The paper also makes use of a Bus Rapid Transit (BRT) case study from South Africa, namely, Johannesburg's Corridors of Freedom project.

3. An overview of Urban Transport Infrastructure Development in Africa [Urban Public Transport – African Cities]

It is impossible to consider the social and economic development of a region or country without first considering the most influential factors of this development such as transport (Popova, 2017). Africa is fast transforming into a predominantly urban landscape and this reality is undoubtedly presenting fresh challenges to policy makers and has given effect to a number of initiatives aimed at facilitating inclusive urban development. In this regard, investment in various transport infrastructure has also taken centre stage and is now looked upon as one of the potential key drivers of economic growth in numerous cities within the continent. In the same vein, the Infrastructure Consortium for Africa (n.d) posits that improved urban mobility in African cities has long been recognised as a fundamental cornerstone for major economic, social and environmental benefits. This section provides a general overview of the current urban public transport scenario in African cities.

3.1 Urban Public Transport

Given the varying space economy of African cities, the key characteristics of the various urban transport systems are similarly different. Policy responses and initiatives aimed at tackling the numerous challenges of urban transport have equally been addressed differently across the respective countries of the continent. However, a number of studies (UN Habitat in Chakwizira, 2013; Pirie, 2013) equally provide strong empirical evidence of some of the key common features shared by African cities with respect to urban transport, which include, ageing and dilapidated transport infrastructure, traffic congestion, pollution and accidents, long commuting and journey times, and the inadequacy of policies that link transport with land use.

There are various key factors underlying these trends particularly in view of the continent's unique developmental landscape. One prominent factor has been the emergence of a large middle class characterised by an increasing purchasing power, which has ultimately driven the demand for increased mobility and private automobile use. As Mbari (2002) also indicates, African cities are considered to have one of the highest rates of annual traffic increases, ranging from 15% to 20%. This forces one to wonder what policy strategies and interventions are being implemented to respond to these urban management issues in order to ensure a sustainable developmental path for African cities.

Sietchiping et al. (2012) state that urban planning efforts for diverse urban transport systems particularly in small or even medium sized cities are almost non-existent. He further goes on to assert that, instead, the focus has largely been on the construction of more roads and freeways that encourage automobile oriented cities which have no discernible integration with other forms of transport such as bus networks and trains. This practice has unfortunately led to the development of inefficient city spaces characterised by urban sprawl, chronic traffic congestion and various other urban transport ailments as alluded to earlier.

The informal transport industry is also one of the contentious issues that constantly emerge in various debates dealing with urban transport in Africa. Middleton (2016) states that in Johannesburg for instance, 72% of daily trips are through this industry (mostly taxis) whereas in Nairobi the usage is even higher at 90%. Indeed, the minibus taxi industry serves a very crucial public transport service in African cities, especially considering that many organised and state-backed transport systems have been unable to effectively satisfy the origin and destination (coverage) demands of most commuters. In spite of this, the industry is hardly ever regulated and is characterised by a multitude of appalling everyday realities for users. Some of these include, "unpredictable fares, schedules and routes; poor maintenance; lack of licensing (drivers and vehicles); recklessness; and safety concerns ranging from harassment to armed violence" (Middleton, 2016:7).

Recently, various African cities have seen the introduction of motorcycle taxis and attempts to formalise and regulate them, which has however not been entirely successful due to weak enforcement and safety concerns (Middleton, 2016). Kumar (2011:19) states that some of the contributing factors to the growth of commercial motorcycles have been attributed to cheap importation, low capital requirement, employment potential, and ability to navigate congested and poor quality roads with relative ease. On the other hand, Sietchiping et al. (2012) question the few policy interventions and planning efforts that have been undertaken despite so many citizens having to walk or at best use a bike to travel considerably long distances for their daily tasks such as work and various other domestic duties

3.2 What has caused the Persistence of these Issues?

With increasing populations and rising incomes, urban residents will expand outward, following the trajectory of automobile-dependent sprawl evident in developed countries (Suzuki et al., 2013). There are increasing pressures of congestion and poor air quality, and citizens who live in African cities confront worsening mobility (Wolf & Fenwick, 2003). Land-use and transportation policies have played a substantial part in helping these problems as current institutional segmentations in which land use and transportation issues are addressed do not permit extensive integration. Urban development that integrates transit and land use rarely takes place, both in developing countries or developed ones (Suzuki et al., 2013). There is a need for integrated strategies which must encompass land use measures that shape transit supportive urban structures, urban infrastructure development as well as measures that influence individual travel behaviours and lifestyles (Doi & Kii, 2012).

Declining public and private funds have also played a major role in the dire urban transport situation that many African cities find themselves in. For many African governments, as Collier (2014) highlights, the desire for private financing has been nothing more than a mere wish list of desired projects. He further argues that most governments in Africa lack the capacity to design and present projects in a manner that would be financially attractive to investors. For instance, the concept of Public Private Partnerships (PPPs) has become a very popular infrastructure financing model in many cities across the globe. In contrast, Africa seems to be relatively lagging behind in this area even though it has one of the highest infrastructure investment gap in the world.

On the other hand, Pirie (2013) attributes the current urban transport burdens to urban sprawl. Hayden (2004:8 in Banai and DePriest, 2010) states that urban sprawl is characterised by low-density, scattered, discontinuous car-dependent suburban development, usually on the periphery of declining older suburbs and shrinking city centres. In

the African context, the situation has traditionally been exacerbated by the onset of informal settlements, which happens haphazardly without due cognisance to planning processes. Given the geological constraints as well as internal access and circulation problems associated with informal settlements, the application of proper urban transport planning approaches and systems has always been a great challenge. As a result, the majority of city dwellers face worsening mobility and marginalisation has persisted.

3.3 An Overview of BRT initiatives in Africa [BRT Initiatives]

Drawing on the successes of some of the world renowned BRT systems such as Brazil and Bogota, African cities are equally reimagining their spaces and embarking on BRT projects as part of their sustained efforts towards spatial transformation and sustainable mobility. The following is a list of some of the notable BRT systems in Africa:

- Johannesburg (South Africa), Rea Vaya – opened in August 2009
- Cape Town (South Africa), MyCiTi – opened in May 2011
- Pretoria (South Africa), A Re Yeng – opened in December 2014
- Ekurhuleni (South Africa), Harambee – July 2017
- Marrakech (Morocco) – opened in November 2016
- Lagos (Nigeria), Lagos BRT – opened in March 2008
- Accra (Ghana) – opened in November 2016
- Dar es Salaam (Tanzania), UDART – opened in May 2016
- George (South Africa), Go George BRT system – opened in August 2015

Huge amounts of money have been spent in the development of these systems and undoubtedly there have been varying results across them in terms of return on investment and various other dimensions. In an article by Eric Goldwyn (2013), he indicates that African BRT initiatives have traditionally faced strong resistance from drivers and private transit operators, lower than projected ridership, as well as ballooning costs that threaten their long-term viability. The following section considers a BRT case study example from South Africa.

4. The South African Context

4.1 Background

South Africa comes from a past that did not embrace uniformity as a way of administering planning. Different group areas would have different sets of guidelines on how planning would be done. These inconsistencies in spatial planning policy ultimately had a great impact in shaping the country's urban public transport. The Group Areas Act of 1950 advocated for the division of urban areas based on racial lines, leading to the forced removal of nonwhites from their homes to the outskirts of cities and far away from places of economic opportunity. With little commitment to invest in these marginalised areas, challenges relating specifically to decent transport services and infrastructure were a common phenomenon.

The dawn of a new democratic order in 1994 marked a fundamental shift not only in the governance structure of the country but also in its planning system. In line with the developmental agenda of the new government, there was great emphasis on a shift towards a more democratic, sustainable and integrated planning system. However, a little over two decades later, the planning system is still not effectively addressing the socioeconomic and spatial disparities inherited from the apartheid planning system. The situation continues to be socially, economically and ecologically unsustainable (Sitas, 2014).

Policy and decision makers have consistently endeavoured to devise strategies aimed at stimulating and facilitating change that provides an “answer to societal spatial issues and ambitions that lend an insight into possible futures.” (Van den Broeck, 2013). Under the apartheid regime, spatial planning in South African cities manifested particularly through master planning approaches and was fragmented and differentiated along racial lines. In the post-apartheid

era, planning in South Africa has “tended to emphasise spatial planning focused on macro-level urban restructuring” (Todes et al., 2010).

Although the new approaches offer ways of responding to poverty, they are not effectively challenging inequality. It is thus critical to think creatively and imaginatively about city futures, and “to do so on the basis of a strong understanding of urban social, economic and spatial dynamics, and a sense of what is strategically possible” (ibid). This section provides a review of one of the practical example that is fast becoming a policy mantra in the metropolitan planning space in South Africa, namely, corridor development. There is a general consensus among policy makers that corridor development is one of the strategic spatial planning mechanisms that can potentially be leveraged for spatial interconnectedness that will facilitate appropriate sustainable development and facilitate increased mobility and access to economic opportunities particularly for the country’s poor and marginalised communities.

4.2 A Brief Overview of Development Corridors and Nodes

Development corridors are a common feature in spatial development planning policy in South Africa. They are considered the main structures that hold the spatial framework in place. Their elaboration has manifested most prominently through Spatial Development Frameworks (SDFs). These SDFs are a critical lever of coordinated urban development and identify development corridors as broad strategic interventions for spatial transformation and linkage systems between various development nodes. A schematic diagram of the interaction between development corridors and nodes is provided below.



Figure 1: Corridor Development Concept

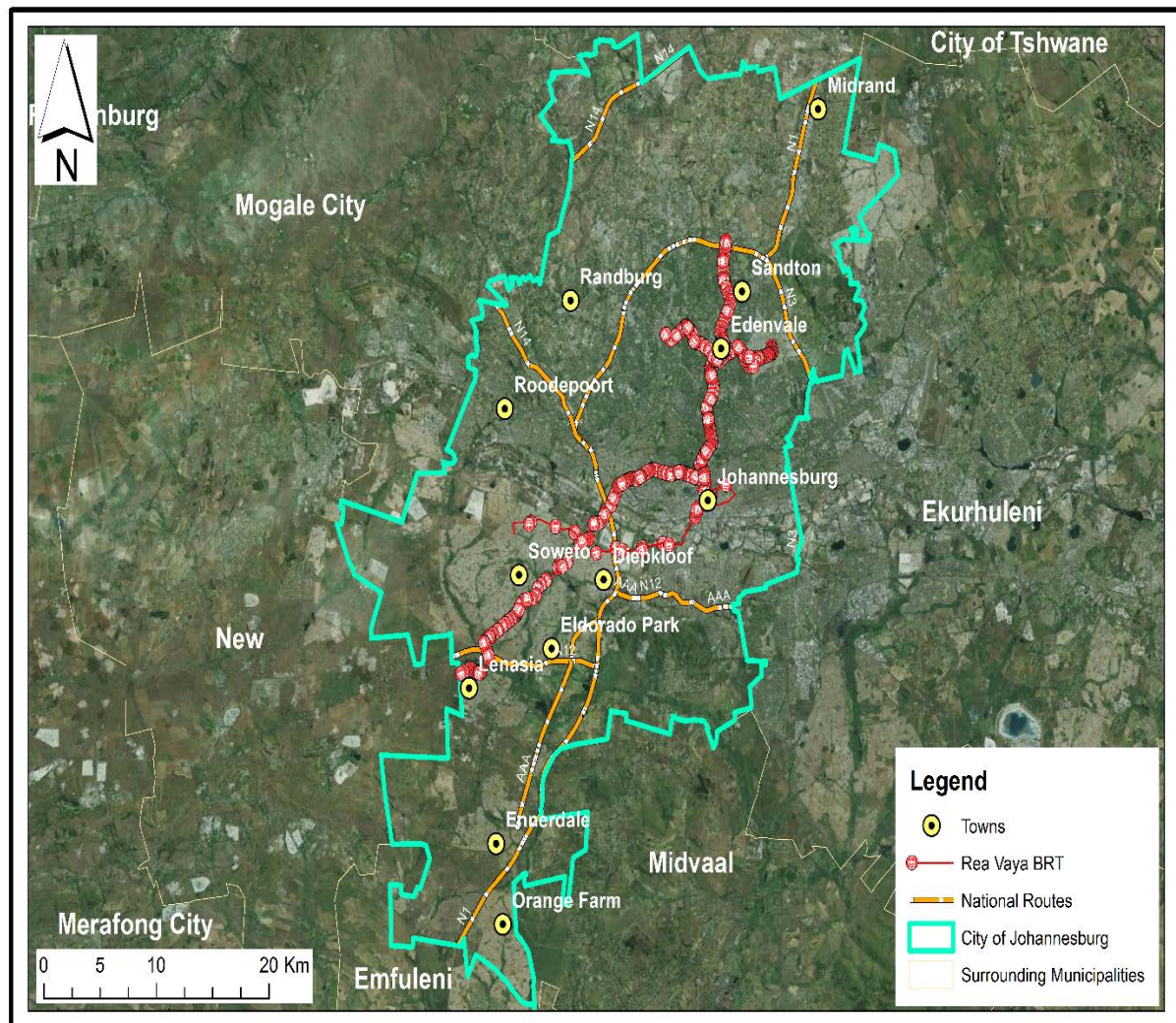
4.3 The “Corridors of Freedom” – City of Johannesburg

In his State of the City Address in May 2013, former Executive Mayor Mpho Parks Tau introduced what has become one of City of Johannesburg’s crucial spatial targeting strategies. Known as the ‘Corridors of Freedom’, Tau described them as “the launch of one of the largest public transportation development programmes in the history of South Africa”. These particular corridors are envisaged to be “...well-planned transport arteries linked to interchanges where the focus will be on mixed-use development – high-density accommodation, supported by office buildings, retail development and opportunities for leisure and recreation” (COJ, 2013).

These corridors would be the focus points for transit-orientated developments, which will also include the City’s Bus Rapid Transit (BRT) system known as the Rea Vaya. Upon completion, the following key features are envisaged within these TOD nodes:

- A variety of land uses where people have the opportunity to work, live, and play within their immediate environments
- Socioeconomic integration through the provision of a number of housing options
- Safe neighbourhoods characterized by complete streets scaled to user needs
- Convenient public transport stops and stations

The map below provides an indication of the current coverage of the Rea Vaya BRT system within the City of Johannesburg:



Source: Authors

The system is the backbone of the city's 'Corridors of freedom'. The first phase of the project (trunk route service between Soweto's Thokoza Park and Ellis Park Stadium) was implemented in 2009 just prior to the hosting of the Confederation Cup. Phase 1b was partially completed just in time for the 2010 Soccer World Cup Tournament. Construction works are continuing and the system is envisaged to provide a city wide network consisting of trunk and feeder routes. The critical success factor of the Corridors of Freedom vision will undoubtedly be largely influenced by partnerships and the willingness of property developers to densify land adjacent to these BRT routes. This will go a long way in achieving the ultimate goals of these corridors as previously alluded.

5. Lessons Learned

There has been a new focus on approaches to managing the growth and physical development of cities and towns. The acceptance and use of a number of planning concepts has received widespread support. Many of these concepts and practices are not necessarily new, but have become part of an integrated toolbox of concepts addressing common

approaches. These approaches are responses to a number of concerns and the need to address a growing awareness of the interrelatedness of issues in our continued efforts towards sustainable development.

This paper has established that there have been little progress made in improving the overall mobility level for many urban dwellers despite various documented cases of urban public transport initiatives across African cities. With increasing levels of car ownership, strategies aimed at addressing chronic traffic congestion and facilitating transport modal shifts have fallen well below expectations. In many cities, policy responses to congestion have been through the construction of more freeways and the widening of existing roads, which has hardly offered any relief from these challenges. Instead, it has only exacerbated the existing unsustainable land use patterns of spread out development, leading to greater travelling distances and worsening mobility.

Recently, there has been a shift in policy paradigm and decision makers are beginning to advocate for BRT systems as a solution to current urban transport challenges. The introduction of these systems has however been met with mixed reactions particularly from the intended users and existing operators. For instance, the informal transport sector is the most dominant form of transportation in most African cities. How then does the introduction of state backed transport systems settle with informal transport owners and the unions representing them? As an example, when the City of Johannesburg's BRT system was first launched in 2009 there were reports of violent incidents caused by some taxi associations, which posed a great security risk to bus drivers and commuters.

The above poses some very critical questions relating to stakeholder dynamics in the undertaking of big public infrastructure initiatives such BRT. With BRTs potentially seen as increasing competition for private operators, it is worth examining what sort of strategies and incentives have been implemented by transport planning authorities to address these issues. Drawing upon world renowned BRT systems, the use of concession agreements has been looked upon as a practical and viable strategy in the operation of most BRT systems. Concessions are basically an undertone of public private partnerships and refer to contractual agreements which permit private operators to run services that are under the prerogative of government. Typically, private operators would be entrusted with the provision of bus services along these BRT corridors. In other cases, monetary compensation is considered whereby private operators are paid a lump sum which consequently requires them to stop their services and make way for BRT.

The paper has also alluded to the concept of corridor development as a cornerstone of successful BRT systems. The concept is not a new one and has been in use for several years within the planning domain. They have become a crucial aspect of spatial planning policy and there is general consensus that effectively implementing them can put cities and towns on a sustainable development path. The following are some of the key elements relating to development corridors:

- Development corridors provide the main platform for various catalytic spatial interventions and initiatives towards sustainable urban development.
- Public transport and densification along these transport routes are the main cornerstones of successful corridor developments.
- The development of nodes along corridors provides the much needed synergies between various economic sectors and can go a long way in meeting the overall mobility needs of people.
- The integration of transport and land use activities is a fundamental strategy in achieving the objectives of mixed land use typologies along development corridors as well as facilitating the 'play, live, work' (in one's immediate neighbourhood) principle.

6. Concluding Remarks

The urgency to transform our cities and towns anchors on the great desire to address the current spatial inequalities brought forth by the unjust policies of colonial planning. While there have been major attempts to address these spatial development challenges through various policy frameworks, most of them have fallen well below expectations and the spatial pattern of our settlements still remains a far cry from our ideals. This presents both a challenge and opportunity to policy makers in terms of devising innovative and practical solutions towards making spatial transformation a reality rather than the rhetoric that it currently is. This paper has illustrated that urban public transport through corridor development is one such solution available. Corridor development is not a recent phenomenon. The introduction of various corridor based BRT systems across various African cities is a fundamental shift in spatial

transformation policy and indicates the bold steps being taken by planning authorities to challenge the status-quo and chart a sustainable development trajectory going forward.

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Biographies

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