

Routledge Studies in African Geography

TRANSPORT PLANNING AND MOBILITY IN URBAN EAST AFRICA

Edited by
Nadine Appelhans, Wolfgang Scholz
and Sabine Baumgart



Transport Planning and Mobility in Urban East Africa

This book critically explores the relationship between mobility patterns, transport provision and urban development in East African cities.

Bringing together contributions on the futures of mobility in urban East Africa, the chapters examine transport provision, mobility patterns, location-specific modes of transport and transformative factors for transport and mobility in the rapidly urbanising region. The book outlines different mobility needs to be addressed in transport planning to serve and shape the respective cities and examines the decision-making process in transport planning and the level of accountability to the public. The contributors show the dialectic between innovation in transport/mobility and urban development under rapid urbanisation and discuss how to practically integrate mobility and transport provision into urban development.

This book will be of interest to scholars in urban planning, transport planning, transport geography, social sciences and African studies.

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Introduction

This book is an edited volume on the pressing topic of transport and mobility in urban East Africa. In the course of rapid urban growth on the African continent, mobility patterns within the cities are changing thoroughly: the changes in urban structure and travel distances are leading to a change in transport needs and increased numbers of passengers. This poses a challenge to the various levels and stakeholders of transport provision in East African cities, where transport provision is currently dominated by road-based, individual and decentral transport modes. These still-prevailing transport systems are facing severe criticism for their quality of service and lack of capacity. Non-motorized transport (walking and bicycles) and so-called “paratransit” in the form of (informally) operating minibus services are often considered inefficient, unsafe and pollutant, as the contributions in this book critically discuss. Meanwhile, the overall numbers and proportion of private cars in the modal split are quickly rising, intensifying problems of congestion and inefficiency. While this volume shows that some cities have embarked on pilot projects to address their transport problems, managing the transport needs of the growing urban population will be a major task for the cities in the region for years to come. The book therefore contributes to the academic discussion on planning epistemologies and political economies of transport provision in the under-researched context of East Africa.

For the longest time, normative ethics of transport planning were derived from Europe, Northern America and lately Latin America. While there is a large demand for transport in the rapidly urbanizing African cities, they still lack sufficient transport provision. Recognizing this, recent contributions to the field of transport planning have, on the one hand, concentrated on pointing out the existing role of “paratransit” and developed mapping tools to increase their visibility, while on the other hand large-scale solutions funded by donor organizations in the form of bus rapid transit systems and light rail have been promoted by transport scholars to increase transport capacity. In contrast to this dialectic, this book reviews the policies from the local perspective, arriving at multi- and intermodal transport solutions suited to the contingent contexts. It sheds multi-disciplinary views on the issue of transport in urban development, outlines the need for intersectional cooperation and draws from a range of cases, pointing out the contextual challenges that this incorporates. Nairobi and Dar es Salaam, as large-scale cities,

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are presented alongside research from midsize towns and other African cities to illustrate the spatial and socioeconomic contexts that transport provision has to operate in. The book therefore presents a comprehensive overview on the subject of urban mobility and transport provision in East African cities, while opening new empirically based and locally rooted perspectives on the range of actions possible in the urban transport domain. Thereby, the link between urban development and mobility patterns is considered key to address the rising and changing transport demands. While the pace of urbanization in the East African region makes the book's topic an increasingly important subject for transport planning practice, this nexus has not received sufficient academic attention. Based on critical questioning of decision making in transport planning and accountability to the public, this edited volume gives a comprehensive and multi-perspective introduction to the challenges of transport provision and mobility in East African cities, which other regions can draw from. It therefore compiles contributions on changing traveling routines of urbanites, insights from critical analyses of current interventions and selected projects inspiring new approaches to transport provision for urban contexts in East Africa. It maps out the state of the art in transport planning and mobility knowledge in the region and gathers original contributions working on the dialectic between innovation in transport/mobility and urban development under rapid urbanization in the region of East Africa. Innovative and contextualized approaches are used to address these issues in cross-sectional integrated urban development and look beyond conventional technical solutions.

Even though we acknowledge the special importance of the transport of goods within the context of rapid urbanization and that there is a necessity for further research on this topic, the focus of this publication is on passenger transport. The transportation of cargo is only occasionally touched upon in connection with the transport of goods by individuals here. The volume further highlights the impetus for informed decision making on transport provision in East African cities and beyond. Hence, it includes discussions on how to practically integrate mobility and transport provision into urban development, thereby considering the impact of sectoral transport plans on communities and urban structures. It further draws out how the challenges of social cohesion, resource awareness and innovation can be considered within multi- and intermodal transport concepts.

The aim of the book is thus to critically explore the relations between mobility patterns, transport provision and urban development in East African cities. It outlines different mobility needs to be addressed in transport planning, thereby shaping and serving the respective cities. The target group of this publication is the scientific community in transport planning, urban planners and policymakers in the field of transport provision, as well as administration on local levels in East African cities and mobility professionals. The book further provides insights and lessons learnt that are of relevance beyond its geographical study context.

The volume is divided into two main sections. The first section focuses on the linkages and interdependencies between spatial development and shifting mobility patterns. This section includes the contributions that give overviews on the relation between urban development and transport practice, emphasizing the different

planning epistemologies structuring transport provision in relation to the transport needs in the different East African urban contexts. Wolfgang Scholz opens this part of the book with discussion of the interdependencies of urban development and transport services. He elaborates on the nexus between urban development and transport services, drawing on his long-standing expertise on Dar es Salaam. With regard to inclusive transport and distributive justice as prospects of non-motorized transport in the car-dominated city of Nairobi, Dorcas Nthoki writes on the challenges of creating inclusive transport systems in contexts with explicit socioeconomic segregation and discusses the idea of using non-motorized transport to empower citizens. Together with Alexander Jachnow, she presents empirical data from household surveys in various East African cities to elaborate on their findings on individual mobility patterns in the following chapter, “A long walk to socio-spatial inclusion: mobility and access in the context of urbanization and social exclusion in Kampala”. Grace Nyonyintono Lubaale and Romanus Opiyo contribute on trends and developments in transport planning in Nairobi, pointing out the implications for future developments. The first section is terminated with the contribution by Fredrick Bwire Magina and Nadine Appelhans focusing on the idea of integrated transport planning in Dar es Salaam.

The second part of the publication is dedicated to modes of public transport beyond the car. The section highlights typical transport modes in East African cities and discusses their potential for future transport planning in inter- and multimodal transport concepts. The aim of this section is to broaden the view on transport provision in policy formulation to include the modes used by the majority of the population in East African cities, which reach into the dense urban neighbourhoods but do not find sufficient consideration in transport policy formulation. Since it is understood that transport provision will have to be diverse to cater for a wide range of transport needs, the relation between the modes is considered in all four contributions to this section.

The first contribution by historian Robert Heinze takes a long-term perspective on the development of transport systems in Nairobi, since their colonial origins. He discusses the implications of this heritage for future developments. Astrid Wood lays out the geographies of Bus Rapid Transit (BRT) systems in a comparison between Dar es Salaam, Johannesburg and Lagos to explain the local properties these systems need to incorporate to operate according to the contingent needs in the respective contexts. Daniel Ehebrecht has conducted empirical work on motorcycle-taxis in Dar es Salaam and points out the potentials this mode of transport has for integrated transport planning, providing services in multi- and intermodal trip arrangements. John Mpemba Lukenangula and Sabine Baumgart present findings on non-motorized transport in Dar es Salaam and introduce the concept of “walkability” as an approach to designing pedestrian-friendly cities.

The conclusion gathers the key arguments of all contributions and discusses implications for future visions of transport provision jointly. It systemizes the material and draws out fields of action relevant to decision making in transport planning, based on the research findings presented in the individual chapters. Further, interplays with current mega-trends are highlighted. The publication hence

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concludes with final overarching findings on the link between mobility, transport and spatial planning.

The idea and the network of authors for this book originate from the editor's work on urban transport within the more widely themed research project "Translating the networked city: adaptation and creativity in urban infrastructures in Africa", in which the editors from TU Dortmund cooperated, alongside researchers from the TU Darmstadt (2013–2018). The project was funded by the German Research Foundation within the Special Priority Programme 1448 on "Adaptation and Creativity in Africa – Significations and Technologies in the Production of Order and Disorder" (2011–2019).

Part 1

Spatial development and shifting mobility patterns



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1 The nexus of urban development and infrastructure

Wolfgang Scholz

Introduction

Cities around the world are not just collections of different buildings, infrastructures and public spaces that developed randomly by chance but can be clearly distinguished by typologies. They are spatially organised, driven by economic forces in combination with land tenure arrangements and adjusted by formal planning legislation and urban planning interventions. Thus, an urban structure can be defined as the spatial arrangement and interrelation of different subcomponents which form a certain spatial structure on the basis of the impact of economic driving forces, access to infrastructure mains and natural conditions. One major factor that guides urban development is trunk infrastructure, especially transportation infrastructure, which is the focus here.

In this chapter, two East African cities (Dar es Salaam and Nairobi) will be analysed based on the ideas of the typology of urban structure models. Special attention is paid to the impact of trunk transportation infrastructure in order to gain a deeper understanding of the interrelationship of urban development and trunk mobility infrastructure. The chapter is structured into an introduction considering urbanisation trends in East Africa, the challenges and underlying driving forces, and the role of infrastructure for urban development. The two case study cities of Nairobi and Dar es Salaam are then analysed based on their historical development, planning documents and discussion of the past and present role played by infrastructure in their urban development.

Urban development, urban models and mobility infrastructure

Various theoretical descriptive models have been developed in order to simplify the structure of the different urban spatial settings that organise the various urban functions in space. Models of urban structure were developed to better understand the underlying forces and rules. They were first developed by US-American researchers with reference to North American cities before other researchers picked up the idea and applied it to other cities, including African cities (Figure 1.1). An early descriptive model for contemporary African cities, which

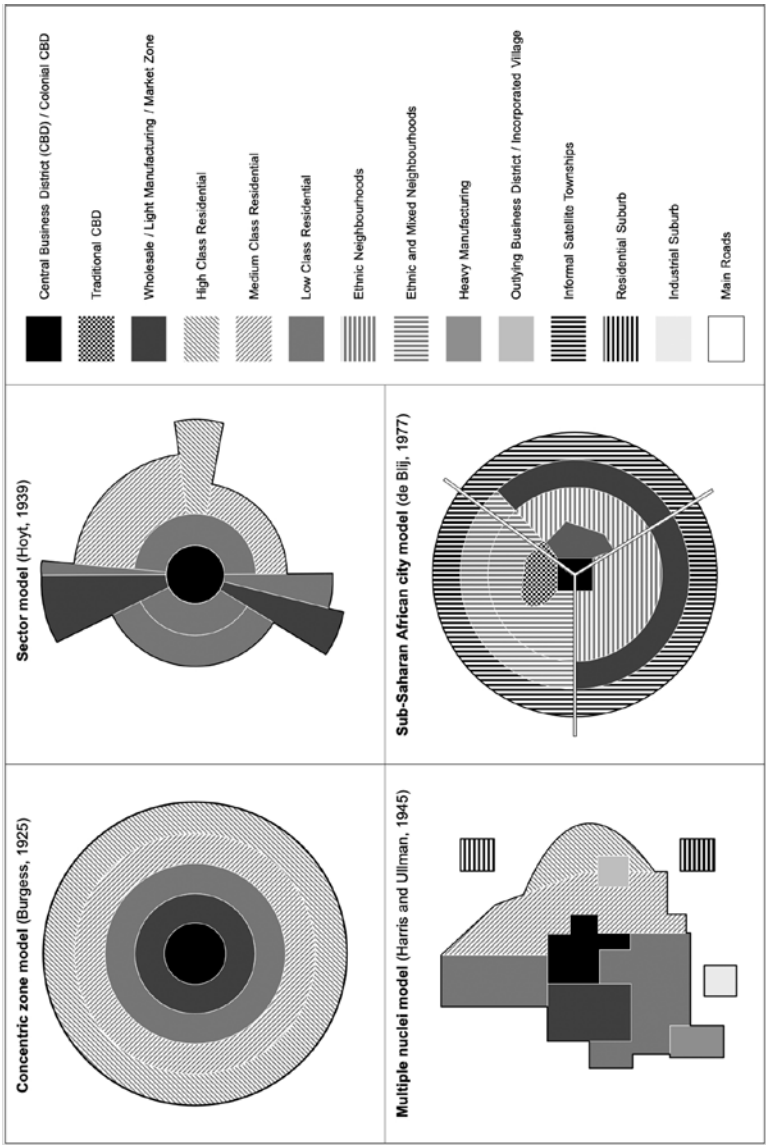


Figure 1.1 Comparison of the four models of urban structure: Burgess, Hoyt, Harris and Ullmann, and de Blij. Author's figure.
Graphic: Tim Stober

followed the ideas of these other models, was created by Harm de Blij during colonial times in 1962 (see Fouberg et al. 1977). South Africa's urban apartheid model (e.g. Davies 1981) will not be discussed here since it is a unique model and not transferable to other (East) African cities. The same applies to the ancient pre-colonial African cities (see Anderson & Rathborne) which have not had a significant impact on the contemporary cities.

Models of urban structure can generally be divided into concentric, sectoral and polycentric models. The concentric city model displays a dominating city centre with radial development and was developed by Burgess in 1925. It is characterised by a core city with political and economic dominance surrounded by a ring of manufacturing and residential areas for different income groups with decreasing densities towards the periphery. Typically, there is a concentration of all traffic systems towards this centre and lower density in the periphery that inhibits the development of subcentres in peri-urban zones (Jessen 2004).

This simple model seemed not to satisfactorily cover all aspects and features of existing cities, leading to the development of a more advanced successor, the sector model proposed by Hoyt in 1939. It includes the same land-use categories and shows areas of specific land uses along infrastructure axes or following natural features. In the sectoral model, the city centre also serves as the core of the city, but the different spatial sectors with specific land uses develop in a pie-shaped structure following trunk infrastructure lines.

A third model, the polycentric model, however, characterises a city as a space with multiple centres; here the city centre loses its dominant position and competes with other (sub)centres in the urban area. In the polycentric model or multiple nuclei model by Harris and Ullmann from 1945, the core city still exists as a multifunctional centre, but it is supplemented by cooperating and competing smaller centres at the periphery. The existence of subcentres at the periphery leads to a reduction of traffic to the core city with simultaneous development of tangential transport connections (Jessen 2004).

In his model for the African city, de Blij also emphasises a sectoral model following infrastructure lines, but adds aspects of ethnically segregated neighbourhoods (European, Asian and Africans but also separate African ethnic groups) and includes informal settlements which, in the 1960s when the model was created, were not yet the largest component of African cities, in contrast to the current situation in many African cities. In this model, the cities include three CBDs: a remnant of the colonial CBD (with the most vertical development), a transitional business centre where commerce is located at the curbside or storefronts (mostly single-story buildings), and an informal and periodic market zone (usually open-air). The quality of residences tends to deteriorate towards the periphery. At the time of its creation in the 1960s, the model lacked areas of elite, middle class or gentrified residential zones as well as new clusters at junctions such as now exist. Today, global investment in new urban developments, both residential and commercial, are also having an increasing impact in African cities (Splinter & Van Leynseele 2019). Nevertheless, the idea of multiple CBDs and a segregated city continues to be valid.

Cities do not necessarily strictly follow only one model but can include aspects of different models. However, for all models, the role of trunk infrastructure is important since it defines the core at the junction of main roads, connects the different parts of the urban area with transportation and provides preferred areas for industry or other commercial land uses depending on access to infrastructure and customer flow.

Usually, trunk infrastructure follows the urban structure, and, at the same time, large-scale infrastructure guides urban development in certain geographical directions. This applies to most formally planned cities since urban planners and infrastructure development departments depend on each other to develop areas at reasonable costs.

Thus, all models display a strong interdependency between urban development, land-use changes and infrastructure, mainly roads. In Sub-Saharan cities, in an environment of highly constrained public sector resources with low investment levels and large growth control deficits, the provision of trunk infrastructure (foremost water mains and roads) constitutes one of the few remaining instruments to guide urban development:

Urban planners can influence city shapes only indirectly. Market forces in the long run are building cities. . . . But market forces respond to constraints constituted by regulations and taxations and to opportunities provided by the network of primary infrastructure built by the state.

(Bertaud 2002: 24)

Planners thus have, according to Bertaud, only three tools at their disposal to influence urban spatial structures: land-use regulations, infrastructure investments and taxation (Bertaud 2002: 24). Hence, the potential role of trunk transport infrastructure on urban development in Sub-Saharan cities will be considered in this chapter.

Urban development and infrastructure in (East) Africa

In the following, with reference to the urban models introduced previously, the structural, spatial and infrastructural development in urban areas with a special focus on East Africa will be discussed.

Urban development in (East) Africa, trends and challenges, driving forces

With more than half the world's population living in cities, urbanisation has become a prime feature of global human habitation. Although still far behind the urbanisation levels of other regions, cities in Africa have taken the lead in urban growth rates during the last decades, with forecasts estimating there will be 760 million urbanites representing 50% of the continent's population by 2030