Dense, diverse, and sustainable: exploring future pathways for the adoption of Transit-Oriented Development in Maputo.

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Abstract:

This dissertation explores the planning framework of Transit-Oriented Development (TOD) within the context of the African city of Maputo, the capital of Mozambique. It attempts to identify future pathways to achieving sustainable urban development through transport equity. The research looks at ethical theories of justice and introduces the notion of *just practices* to evaluate the outcomes of TOD. To identify the trends that define current land-use policy and urban planning practices, the research follows the urban trajectory of Maputo, from the colonial period up until today. The analysis suggests that transition to sustainable urban development and potential adoption of TOD policy could be hindered by the current lack of integration between urban and transport planning practices. In conclusion, this dissertation argues that even when there are presently several challenges preventing the possible adoption of TOD as a planning alternative for Greater Maputo, a context-specific version of TOD holds great potential as a strategy to promote sustainable urban development and stimulate transition to equitable transport systems.

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Abbreviations

CA – Capabilities Approach

CBA – Cost-Benefit Analysis

FRELIMO – Mozambique Liberation Front

ITDP – Institute for Transportation and Development Policy

JICA – Japan International Cooperation Agency

NMT – Non-Motorised Transport

PEUCM – Maputo Urban Structure Plan

PEUMM – Matola urban Structure Plan

PUP – Partial Urbanisation Plan

SDG – Sustainable Development Goals

TOD – Transit-Oriented Development

Introduction

In the last few decades, the concept of Transit-Oriented Development (TOD) has been widely adopted in urban planning as an alternative to address some of the issues affecting the urban world, such as housing and transport provision for a growing population. Fundamentally, TOD attempts to improve the level of urban mobility to increase accessibility to services and opportunities, sustainably and inclusively. It promotes the integration of transport and land-use policy within the wider framework of urban development planning. It aspires to produce a form of urban development that is compact in extension, dense in terms of population and diverse in economic activity with high levels of connectivity in and around the city, including multi-modal transport.

In the context of sustainable urban development, the principles of TOD implicitly align with the objectives of the New Urban Agenda 2017 and the Sustainable Development Goals (SDG's) for 2030. SDG 11 (Sustainable Cities and Communities), aims at providing access to more sustainable and improved transport facilities for all, specially attending to the mobility needs of the poor and vulnerable (United Nations, no date).

Generally, planning practices, especially in the Global North, have supported mobility policies that favour the use of private cars as the essential means to satisfy mobility needs. These policies have largely contributed to the physical expansion of the urban limits in favour of suburban lifestyles. This was particularly the case in Western countries after the end of the Second World War, when private car usage was further stimulated by the expansion of the road system. Car-oriented policies, however, have generated a series of cumulative impacts which have not been properly accounted for within established planning practices. These include spatial segregation, time poverty, pollution and limited access to services and opportunities. Neither the benefits nor the impacts of transport infrastructure are fairly distributed across cities. The poorer segments of society and those more vulnerable are more likely to bear the negative effects of these trends.

The urban trajectory of many cities in the Global South has followed a less linear path and has been delineated by other factors including, economic instability, weak political

apparatuses, poor institutional capacity, lack of robust regulatory frameworks, etc. In the case of Maputo this has also been affected by a fifteen-year civil war, which only ended in 1992. This resulted in a high influx of rural migration into the city and in the proliferation of informal settlements in the suburban areas.

It is estimated that in the next 30 years, Africa and Asia will experience 90% of all urbanisation in the world. During this period, the Maputo Metropolitan Area, which is the context of the present work, will add just over 1 million inhabitants to the nearly three million that currently live there. Currently, Maputo's Metropolitan Area (Greater Maputo), which includes the neighbouring cities of Matola, Boane, and the district of Marracuene, extends up to a radio of about 30km away from Maputo city centre.

According to the Comprehensive Urban Transport Master Plan for the Greater Maputo (JICA, 2014), in 2012 traffic in Greater Maputo was dominated by cars/taxis and paratransit services (*chapas*, as they are locally known) accounting for 86% of all vehicles, public buses and cycles/motorbikes accounted for a combined 4%. Yet, according to the same report, about 45% of travel journeys were done by non-motorised transport (NMT), nearly 10% by public buses and around 43% by car and *chapas* (*ibid*). These numbers outline the state of the transport system in Greater Maputo. Despite high levels of active travel (mostly walking), there is an overarching tendency to rely heavily on the use of paratransit services and private cars. State-run public buses neither have the capacity nor the flexibility to cover the travel demands of the growing population.

Maputo is currently adopting measures to realign its urban trajectory. The Urban Transport Master Plan is the foundation on which the vision for the future development of Maputo is based. Accordingly, the city aspires to become a *Socially and Environmentally Sustainable International Gateway Capital* (*ibid*).

In this context, this work will consider a customised version of TOD as a possible pathway for such realignment. With this in mind, this work will look at the objectives of TOD against the conceptual background of justice theories in an attempt to identify 'just practices' as the outcome of TOD policy.

Amongst other, this research will draw on Sheller's ideas about mobility justice and uneven patterns of mobility. As she explains, '*uneven mobility relates not only to how we move around cities, but also gendered and racialized colonial histories and neo-colonial presents*' (Sheller, 2018b). Her argument is particularly useful in the context of Maputo, since Portuguese colonial rule set in motion the hyperbolic urban trajectory that the city is currently trying to realign. Sen's Capabilities Approach will help ground the role of transport beyond the limitations of utilitarianism but within the context of distributive justice and accessibility, for which it is necessary to understand accessibility '*as an attribute of individuals in their interaction with their environment, taking into account how personal characteristics (such as gender, age social class, disabilities and time budget) shape interpersonal differences in accessibility levels*' (Pereira, Schwanen and Banister, 2017). In line with this, the literature on the social impacts and distributional effects of transport will offer an insight into the shortfalls of transport planning practices and show that by '*overlooking the social impacts and social equity implications, we fundamentally undermine the quality of life and social wellbeing of citizens in our towns, cities and rural settlements*' (Jones and Lucas, 2012). Finally, *the right to the city* will help in thinking more critically about the role of participatory processes within the context of urban development, including transport provision, to envisage positive urban transformation. In this sense, the right to the city is '*a right not only in a legal sense but also in a moral sense, a claim not only to a right as to justice within the existing legal system but a right on a higher moral plane that claims a better system in which the demands can be fully and entirely met*' (Marcuse, 2009).

From the point of view of sustainability and accessibility, this work argues that implementation of TOD policy could indeed be desirable as it could benefit society as a whole. However, TOD as a planning instrument does not provide a framework to engage with the social impacts or the distributional effects of transport investments. From a social and mobility justice perspective, this paper argues that better urban environments cannot materialise based on the principles of TOD policy alone. Therefore, the TOD framework needs to be further underpinned by ethical principles of justice, with a view to generate the conditions for better and more sustainable urban environments to be realised.

The research will attempt to answer the following questions:

1. *What are the conditions that need to exist in Maputo in order for the city to aspire to a possible implementation of TOD in the future?*
2. *What role can TOD play in achieving both a transition to sustainable urban mobility and a sense of mobility justice?*

To elaborate I will explore the transport and land-use integration framework currently operating in Maputo to identify what conditions are there which could favour or prevent the adoption of TOD policy in the future. The literature review will first revise the concept of TOD, its evolution, and current trends. It will then look at ethical theories of justice in the context of transport and urban development. Afterwards, the case study will be framed from the point of view of urban trajectories in order to identify the patterns and practices that have shaped the current institutional arrangements in Maputo. This will be followed by a discussion about how current frameworks and planning practices affect urban development and prevent policy integration. The final two sections are dedicated to outline the findings and the conclusions of this research.

Literature Review

Transit-oriented development

Historically, the relationship between transport, land-use and urban planning has been crucial for driving urban economic growth as well as for defining the urban form of cities. The ascendance of public transport, from early horse drawn coaches to the more technologically advanced systems of today, has largely contributed to the expansion of the urban realm, as economic activity slowly moved away from the traditional urban core and closer to major outer roads. This pattern of urbanisation was particularly more visible in places such as Europe and North America, where more robust institutional frameworks supplied the planning instruments to support urban expansion. In the context of the Global North, urban sprawl was supported by the adoption of planning policies and practices that promoted decentralisation of economic activity towards the outer fringes of cities. An expanding road network facilitated transportation of higher volumes of freight and promoted the use of

privately-owned cars (Knowles, Ferbrache and Nikitas, 2020). In places where urban growth has occurred outside the formality of planning institutions, it has resulted in unorganised sprawl around the urban core. In many cases, the geographical location of such settlements makes it difficult to provide them with basic services and public transport networks, adding an extra layer to the level of disaggregation they experience in relation to other areas within the city (Corona, 2020). As it will be better explained later, the urban trajectory of Maputo has been outlined by similar processes.

As an urban development practice, TOD proposes a planning alternative to mitigate the effects of car-centred planning policies. Such effects include city sprawl, unequal and fragmented patterns of urban mobility, traffic congestion, pollution and housing shortage, the sum of which are reflected in differential access to the benefits of urban life. Although no concerted definition exists for the concept of TOD, it generally refers to an alternative form of urban development planning that promotes denser, more compact, diverse and easily accessible cities for urban dwellers (Calthorpe and Poticha,1993; Cervero, Ferrell and Murphy, 2002).

According to Knowles et al. (Knowles, Ferbrache and Nikitas, 2020), some of the conditions that Calthorpe (Calthorpe and Poticha, 1993) identified as central for the success of TOD, such as the concentration of economic activity, housing and services along and around transit stations have all been there from as early as the 19th century. However, the concept of TOD as such only gained more relevance within urban planning practice after Calthorpe advanced the concept in 1993 (Dittmar, 1995; Knowles, Ferbrache and Nikitas, 2020).

Calthorpe (1993), Cervero and Kockleman (Cervero and Kockelman, 1997), and Knowles et al. (2020), have identified *density*, *diversity*, *design*, *distance*, *destination* and *demand* (the 6D's) as the defining characteristics of TOD. According to Knowles et al. (*2020*), these can be described as follows:

1. Density: high density of dwelling units, population, jobs, and activity sites.
2. Diversity: high density of dwelling units, population, jobs, and activity sites.
3. Design: dense urban grids and pedestrian friendly.
4. Distance to transit stations and stops: thresholds for walking.

5. Destination accessibility: thresholds for walking.
6. Demand management of road transport .

Supporters of TOD argue that implementation of these principles would result in dense urban settings featuring different housing options to accommodate a wide range of household incomes. These would sit within a highly permeable commercial area which is easily accessible by either walking or cycling. Access to further destinations within the city should be streamlined by a diverse choice of public transport modes (multi-modality).

TOD advocates for the development of integrated localities that are well served by public transport networks, which economies are rich in social life (dense), diverse in terms of opportunities and economic activity (mixed land use) as well as manageable and accessible in connection with urban mobility (environmentally sustainable). In this sense, it promotes an urban form which is compact by design, usually extending to a radius no larger than 800m away from a main transport station. It is expected that the sum total of shorter distances, provision of supporting infrastructure for walking and cycling, as well as good urban design, should be conducive to a reduction in car usage, quicker access to the wider city via public transport (usually mass transit) and, more importantly, better quality of life for urban dwellers (Calthorpe and Poticha, 1993; Cervero, Ferrell and Murphy, 2002; ITDP, 2014; ITDP, 2017). Furthermore, as suggested by Suzuki *et al*., '*Denser cities are also more socially just. By providing high levels of access to everyone, regardless of income, they enable the less-privileged segments of society to achieve upward mobility*' (Suzuki, Cervero and Kanako, 2013).

The Institute for Transportation and Development Policy (ITDP) has recently *standardised* and made clearer the principles of TOD. At large, the *TOD Standard* (ITDP, 2017) continues to emphasise the need to address current patterns of urban growth with a view to reduce the negative impact this has, not only on the economy and the environment, but also on social life. Fundamentally, the *TOD Standard* refines the tenets previously advanced by the 6D's and condenses them into a comprehensive set of principles and detailed guidelines to support successful implementation of transit-oriented development policy. Non-motorised modes of transport, essentially walking and cycling, are prioritised over the use of private cars, as is neighbourhood

connectivity and interactive, mixed land-use near a transit station. The *TOD Standard* provides an award system that serves to evaluate the level of good practice achieved by each project. Implicitly, the conceptual line of TOD calls for a more holistic approach, with an aim to integrate land-use and transport planning as the backbone for sustainable urban development. Interestingly, however, the idea that 'inclusive TOD is a necessary foundation for long-term sustainability, equity, shared prosperity, and civil peace in cities' is emphasized more openly (ITDP, 2017).

Implicitly, the latter seems to reflect a growing concern with the social consequences of public transport provision, which by extension grapples with issues of accessibility, understood here in a broader sense (beyond physical mobility) and 'mobility justice' (Sheller, 2018a). From this perspective, the methodological framework so far provided for the implementation of TOD is not sufficient to fully address such issues.

Whilst inclusive or equitable TOD might provide solid ground on which to build the foundations for more equally accessible cities to emerge, the fact that denser cities in themselves are more socially just, as suggested by Suzuki *et al*. (2013) should be open for discussion considering that, within the context of the Global South, the equation between density and socio-spatial stratification is mostly unbalanced. Thus, the extent to which TOD can manage to set in motion redistributive processes, and bring about a sense of mobility justice, is contingent to social differences, planning practices, institutional frameworks, and socio-economic conditions specific to each context, therefore, results might be difficult to quantify from a standard base. Whilst the core objective and underpinning principles of TOD are in themselves commendable, and even desirable from the point of view of sustainable mobility, it is necessary to make TOD operational as an instrument through which more equal environments could be envisaged. From this perspective, a more explicit ethical approach is needed in order to synchronise the principles and objectives of TOD with the conceptual framework of social justice theories.

From this stand, it could be argued that if TOD policies were further complemented and informed by social justice theories, the impact of TOD could be broadened. Consequently, this could enable a fairer (re)distribution of the benefits of transport provision and allow people to have improved access to the benefits of urban life.

There is a growing body of literature concerned with the social implications of transport provision. At large, this literature focuses on addressing aspects related to 'the right to the city' (Lefebvre, 1996), 'the social and distributional impacts of transport' (Markovich and Lucas, 2011), the social implications of 'transport decision making' (Jones and Lucas, 2012), 'distributive justice and equity' in transport (Pereira, Schwanen and Banister, 2017) as well as with 'mobility justice' (Sheller, 2018a).

Mobility justice

The notion of *mobility justice* is a departure from the more widely accepted theorisations about transport and spatial justice. Whilst acknowledging their theoretical contribution to debates about just urban environments, *mobility justice* also acknowledges the necessity to move beyond their limitations. Sheller (2018) argues that ideas about transport and spatial justice have mainly focused on the city and been concerned with issues of infrastructure provision and accessibility. Instead, she calls for a broader understanding of the interrelating processes that lead to mobility injustice. In her view,

> 'Mobility justice is an overarching concept for thinking about how power and inequality inform the governance and control of movement, shaping the patterns of unequal mobility and immobility in the circulation of people, resources, and information. We can think about mobility justice occurring at different scales, from micro-level embodied interpersonal relations, to meso-level issues of urban transportation justice and the "right to the city", to macro-level transnational relations of travel and borders, and ultimately global resources flows and energy circulation' (Sheller, 2018b).

Sheller's approach is wider in scope as she connects the flow of people and goods, with the built environment, politics, power, and the different histories and legacies which have contributed to unjust patterns of development, particularly more so in the Global South. In the context of TOD, ideas of mobility justice could assist in thinking more holistically about urban development planning and to re-evaluate the way in which public transport policies are shaped.

When discussing issues of justice and equity in transport, there is an overarching tendency in the literature to focus on the idea of accessibility, Pereira *et al*. (2017) argue, even though accessibility is the main concern of public transport provision. According to Lucas et al. (Lucas, van Wee and Maat, 2016) accessibility refers '*not*

only to physical access to goods and services, but also the transport system itself in terms of its availability (including routing and scheduling), affordability, reliability and safety, as well as access to timetable information, etc.' In the context of transport justice, accessibility could be broadly understood as the combined outcome between transport systems (including affordability, destination, frequency and ease of access), land-use integration (spatial distribution of social infrastructure, goods, services and employment), the urban form (whether it is fragmented or unified, compact or dispersed with multi-modal infrastructure) and the physical, social, cultural and economic constrains and capabilities of transport users (Geurs, Boon and Van Wee, 2009; Markovich and Lucas, 2011; Lucas, van Wee and Maat, 2016; Pereira, Schwanen and Banister, 2017). Focusing on accessibility issues alone, they suggest, is not sufficient to address the diverse needs some members or groups of the population might have. Lack of engagement within the literature with philosophical theories of justice leads to misunderstand what the idea of justice means in relation to transport.

Capabilities approach

Rather than focusing on accessibility as the one and only *end* of mobility justice, the Capabilities Approach (CA) proposes that accessibility should instead be seen as a *means* to enable people to (first and foremost) survive, pursue their own interests, and develop their own abilities, should they choose to do so. Generating the conditions for a fairer distribution of opportunities for anybody to exercise their right to develop their own capabilities, is at the centre of the CA. Freedom of movement, in this sense, should be considered as one of such human capabilities (Pereira *et al*., 2017). According to Amartya Sen,

> 'the focus on the distribution of resources or primary goods is incapable of recognising the diversity of human needs and preferences. This is because goods, services, or income are not ends in themselves, but merely means to valued ends' . . . 'Hence, what matters from the moral point of view is not so much the distribution of resources, but people's capacities to convert such resources into a good life' . . . 'according to their own preferences' (Pereira *et al*., 2017).

In tune with Sheller, the CA recognises that there are numerous factors involved that affect people's ability to adequately develop their capacities. Some of these factors have to do with the individual's own (*dis*)abilities, other are the product of cultural

practices such as gender, age, income, or background, and some other such as decision-making processes, are contingent to institutional structures and power. In order to achieve a sense of mobility justice, the Capabilities Approach calls for a more heuristic view over transport provision and its interaction with the wider field of urban development planning. In other words, the CA '*emphasizes not only the need for fairness in the distribution of transport and accessibility, but also calls for greater attention to justice in transportation decision-making and participatory processes*' (Sheller, 2018a). At a conceptual level, evaluation of equity in transport investments would involve adopting new methodological frameworks underpinned by ethical principles of justice, such as the Capabilities Approach. At institutional level, it would be necessary to synchronise transport systems and land-use policy into agendas of sustainable urban development.

Considering this, it could be argued that, at least in principle, an ethically informed and context-specific version of TOD could help generate the conditions where a basic minimum level of accessibility is guaranteed for people to pursue and develop their own interests, wherever these might be. This assumption is based on the fact that *equitable* TOD aspires to create inclusive urban settings that provide people with local amenities, services, and employment, as well as with multi-modal transport choice to accommodate the travel needs of the many and enable access to other spatially distributed destinations.

Social impacts and distributional effects of transport

The social impacts and the distributional effects of transport are wide-ranging and are fundamentally associated with questions of social and mobility justice. So are the distributional effects of transport decision-making which, in fact, can potentiate or hinder the capacity of people to access services and opportunities by determining where transport investments are made.

Geurs et al. (2009), have defined the social impacts of transport as: '*changes in transport sources that (might) positively or negatively influence the preferences, well-being, behaviour or perception of individuals, groups, social categories and society in general (in the future)*'. Transport-related social impacts take many forms and can have

a longitudinal effect on both active transport users and city dwellers in general. The social impacts of transport are multi-scalar and are unevenly distributed at global, national, regional, and local levels. This can be observed, for instance, by looking at the number of traffic related deaths around the world. According to data from the World Health Organisation, in 2018 around 1.35 million people died as a result of traffic related accidents (this number is inclusive of all types of road users). 93% of these accidents occurred in developing countries even so only 60% of the world's vehicles are found there. Worldwide, Africa accounted for the highest total number of traffic related deaths (World Health Organization, 2020).

The methodological frameworks employed to evaluate transport projects largely determine how social impacts are *distributed* across the city. One of the methods more widely employed in the context of transport investments is the Cost-Benefit Analysis (CBA). In short, the CBA is a method to quantify the balance between the cost of an investment and the return it generates according to the willingness to pay of transport users. At its core, the CBA is mostly concerned with maximising the number of transport users and secure the viability of the return, both of which have an inherently monetised component attached to them (Van Wee and Roeser, 2013). However, within the CBA the social impacts and the distributional effects of transport projects tend to be undermined by the economic and environmental dimensions. Numerous authors (see Geurs et al., Jones and Lucas, Markovich and Lucas, Van Wee and Roeser) have suggested that lack of adequate instruments to measure how transport projects impact different segments of the population, largely contribute to an unfair distribution of the benefits and social impacts of transport investments. In view of Markovich and Lucas (2011), this outcome represents a paradox where the more vulnerable:

> 'experience disadvantage as a result of lack of access to transport (both public and private); yet when access increases at an individual level (such as in the case of car ownership), or at an aggregate level (such as when low-income communities are in close proximity to transport facilities), they are also disproportionately more likely to experience disadvantage'.

From this perspective, it could be argued that not only the poor but also the more vulnerable segments of the population, including women, children, the elder, people with disabilities, non-motorised transport users, etc., are more likely to experience the

negative impacts of inadequate transport-decision making processes, which ultimately hinders their capacity to exercise their right to the city.

The right to the city

Many cities in the Global South have failed to deliver equitable conditions for urban dwellers to access the benefits of urban life. Absence of appropriate urban planning frameworks, weak institutional capacity together with political instability and the ever pervading effect of capitalist relations, have contributed to the propagation of fragmented urban environments that constantly undermine the entitlement of many dwellers to enjoy full citizenship. These conditions negatively affect the prospect of participating in the decision-making process and hamper their ability to make the most of urban life.

The right to the city, in Lefebvre's view, is not only about the right to access the benefits of urban life, whether it is affordable housing, food, employment, health, education, entertainment and places of encounter but, more importantly, about the right to express our ideas and participate actively in decision making processes (Lefebvre, 1996). Similarly, Harvey writes that:

> 'The right to the city is far more than the individual liberty to access urban resources: it is a right to change ourselves by changing the city. It is, moreover, a common rather than an individual right since this transformation inevitably depends upon the exercise of a collective power to reshape the processes of urbanization' (Harvey, 2008).

From this point of view, as Marcuse (2009) argues, the right to the city necessarily raises questions in regard to whose right, what right, and to what city? These questions touch upon the social, political, and economic organisation of the city. In the Global South, these questions are ever more problematic because the urban trajectories of many cities reveal highly uneven patterns of urban development and distribution, which are reflected in dismal socio-spatial stratification and unequal levels of accessibility. The latter adds another constrain for the more disadvantaged segments of the population, whose legitimate right to the city is further hindered by issues of gender, age, income, status, etc.

In the wider framework of urban development planning, it could be argued that the right to the city is about changing the way in which institutional practices operate and draw more attention to the social impacts of urban interventions to achieve a fairer distribution. In terms of transport, it is about delivering a range of mobility options that are context-driven and that truly reflect the needs of the people inhabiting the more disadvantaged areas.

As with the other theories and approaches that this work has described, the right to the city does not hold the key to resolve the complexity of the urban problematic. They do, however, shed light on some of the deficiencies and problems pertaining urban systems, including current planning practices. As a whole, they offer alternative views which could inform possible paths for the realignment of urban trajectories. These critical views are particularly useful in the context of the Global South.

Case study

Tracing the urban trajectory of Maputo

The limited scope of the present work, which primarily focuses on more recent urban developments, does not allow for an in-depth exploration of Maputo's urbanisation process under colonial rule. There are, however, some relevant events that deserve attention because they have largely contributed to set Maputo on an urban trajectory which the city is presently struggling to realign. Some of these events are described in the following paragraphs.

The city of Lourenco Marques, as Maputo was known during colonial times, was first founded by the Portuguese in the late 1700's. Initially established as a military garrison and trading post, the settlement then evolved to the category of *cidade* (city) in 1887 and later, in 1898, became the official capital of the former *Província Ultramarina de Moçambique* (Melo, 2013).

Today, Maputo is the capital and the biggest city of the African country of Mozambique. It is located in the south of the country, near the border with South Africa and

Swaziland. At present, the city of Maputo together with the cities of Matola, Boane, and the district of Marracuene make up the Greater Maputo Metropolitan Area, which is the biggest urban agglomeration in the country. Its geographical location offers the city privileged access to the sea. This feature allows this major conurbation to function as one of the main economic hubs within the region. As well as being one of the most important ports in East Africa today, Maputo also provides access to landlocked neighbouring countries such as Zimbabwe and Swaziland.

The colonial era

At large, the urban trajectory of Maputo has been outlined by two distinct historical periods, namely: the colonial era and the post-independence period. The colonial era lasted up until 1975, when Mozambique became independent. This period was characterised by fluctuating but generally slow levels of urbanisation. This trend started to accelerate during the 1950's and continues today. In part, this escalation was due to structural changes in the political apparatus of Portugal at the time, which allowed foreign investment to be channelled into the overseas territories in order to stimulate the economy through industrial and large scale agricultural projects. During this period, port and rail activity in Maputo also increased due to an intensification of commercial exchange with neighbouring South Africa. In the meantime, the colonial administration incentivised internal migration of Portuguese settlers to stimulate economic activity in the overseas provinces and gain more control over the land. Despite the apparent economic momentum, living conditions for the rural population were largely deteriorating, particularly for indigenous Mozambicans. These disadvantaged conditions forced many to look for better opportunities in the city. Other factors, such as the emergence of industrial activity in neighbouring Matola, also contributed to the increase in the number of urban dwellers in the region at the time. Consequently, Maputo experienced a period of rapid urban population growth, doubling its size between 1960 and 1970. Interestingly, as it will be explained below, most urban growth happened in the suburban areas around Maputo and in the emerging city of Matola (Mendes de Araujo and Raimundo, 2003; Melo, 2013; Mendonça, 2014; Andersen, Jenkins and Nielsen, 2015a).

In terms of urban planning, this urban growth took place against a background of acute institutional deficiencies. According to Jenkins (Bryceson, D.F. and Potts, D., 2006),

> 'Attitudes to urbanism were transferred from Portugal where the process of urbanization was relatively slow, and physical control of urban land was limited. As a consequence, . . . Mozambique was unprepared for the rapid urban growth it started experiencing from the 1950's onwards in terms of its institutional capacity to regulate the city's physical expansion'.

It is in this context of deficient planning practices and limited institutional capacity that a double process of urbanisation started to outline the urban form of Maputo. On the one hand, some major constructions began to appear in the higher, more consolidated area of the city (known locally as *cidade de cimento*), which included social infrastructure, administrative offices, and residential areas for the wealthier sectors of the population (mostly European settlers). On the other hand, the *cidade de caniço* (city made of reeds), was also starting to consolidate. These suburbs were generally self-built by migrants from the surrounding rural areas and largely developed without any planning regulations. As such, the city's spatial development was being outlined by two very distinct processes operating at once: formality and informality.

Even so there were attempts at organising the development of Maputo during this period, such as the 1952 General Urbanisation Plan (Plano Geral de Urbanização de Lourenço Marques) and the 1969 Urbanisation Master Plan (Plano Diretor de Urbanização de Lourenço Marques de 1969) the socio-spatial fragmentation of the city continued and, in fact, worsened in the years following independence. According to Melo (2013), the 1952 plan did not succeed because it was out of touch with the evolving socio-spatial realities of the time. In this respect, the plan mainly focused on the form and functions of the consolidated city and the needs of the city's elite. The plan failed to account for the conditions of the growing number of urban dwellers in the emerging suburbs, which were rapidly consolidating. The plan ignored the fact that the city limits were expanding away from the urban core and that the needs of the suburban population were different.

The failure to understand the changing urban context evidenced the limited institutional capacity that existed at the time. The 1969 Urbanisation Master Plan

adopted a more rational approach to urban development and appeared to address more directly the problems of the evolving city. Accordingly, there were some advancements in the provision of basic services in the suburban areas, which included road improvements and social infrastructure (Melo and Jenkins, 2019). Nevertheless, as Jenkins (Bryceson, D.F. & Potts, D., 2006) noted, the plan failed to provide a comprehensive approach to land-use planning and continued to foster the development of the urban core at the expense of uncontrolled sprawl elsewhere. Political unrest and economic downturn in the years leading up to independence would prevent the 1969 plan to ever be fully realised.

The post-independence period

The years following independence witnessed a sharp acceleration in the urban trajectory of Maputo. Immediately after independence, about ninety percent of colonial settlers migrated, including key professional and administrative staff. This lack of vital human resources would weaken even more the institutional apparatus of the country. Yet, considering these limitations, the new FRELIMO (Mozambique Liberation Front) government managed to achieve some changes to urban development planning and land-use policy by a process of expropriation and nationalisation. It is in this context that the cities of Maputo and Matola merged to form a major conurbation and extended their jurisdictions to absorb the surrounding suburbs (Melo and Jenkins, 2019). The new government, however, showed an ambiguous interest in urban development planning. Consequently, many initiatives were negatively affected by the lack of political will, economic instability, and a lasting void in regulatory planning structures (Andersen, Jenkins and Nielsen, 2015a).

In effect, these unfavourable conditions worsened with the advent of the civil war in 1977, which forced thousands of people from the rural areas to fled to the city. By the end of the conflict in 1992, the population of Maputo and Matola together had increased to well over one million people (see figure 1), far exceeding the city's capacity to provide access to basic services.

What emerges from this historical context, is the skewed urban trajectory of a city that has continually suffered from (a.) acute institutional deficiencies regarding urban planning (influenced by its colonial past), (b.) lack of political interest in developing a long-term vision for urban settings and, more importantly, (c.) economic instability. These structural conditions have prevented the formation of robust planning frameworks to structure urban growth. The differential patterns of socio-spatial development the city has experienced during the last 70 years, clearly reflect the hyperbolic urban trajectory of Maputo.

Figure 1 Illustrates the relationship between population growth and urban sprawl in the context of Greater Maputo from 1970 to 2017.

1970	1980	1997	2007	2017
465,327	739.077	1,391,499	1,807,510	2,541,629

Source: Prepared by the author with data from INE and Andersen et al.

Conceptual Framework

In the last few decades, the concept of transit-oriented development has been widely adopted in many countries (mostly in the Global North) as a planning alternative to address key questions related to unsustainable urban growth such as sprawl, traffic congestion, exhaust emissions and access to more and better opportunities. There is a substantial amount of literature providing guidelines and recommendations to successfully implement TOD policy. There is a general tendency in the literature to

focus on the environmental and economic dimensions of transport, but less attention is paid to its social impacts and its distributional effects. In this sense, this paper argues that, more than the *end,* accessibility should be understood as the *means* to equally enable people to participate in and take advantage of the benefits and opportunities that urban life has to offer, whether in terms of employment, education, health or leisure, and live more fulfilling lives.

While land-use and transport planning integration, increased ridership, higher accessibility, and good design tend to be the benchmarks of *good practice* within TOD, this paper proposes the notion of 'just practices' to evaluate the outcomes of TOD policies in terms of equitability of access according to the needs and capabilities of urban dwellers. From the perspective of this paper, *just practices* refer to the level at which implementation of a context-specific version of TOD could succeed in addressing the social impacts and the distributional effects of transport and generate improved conditions for urban dwellers to access better opportunities according to their capabilities.
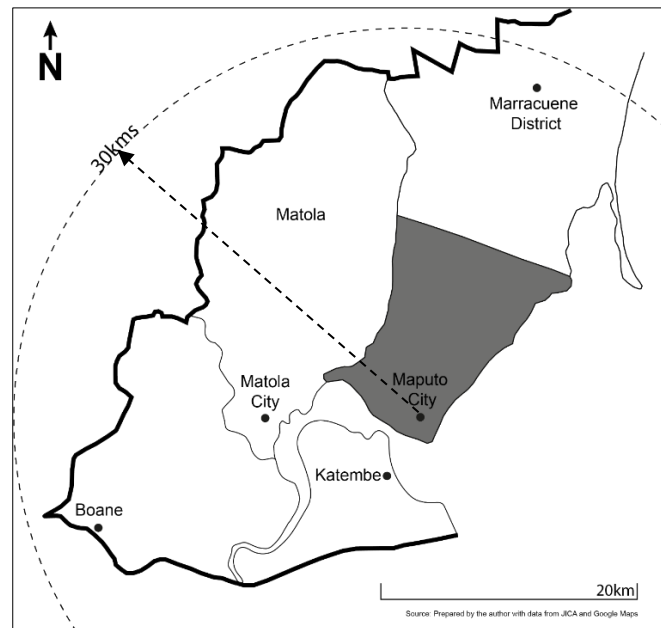
Considering Maputo's efforts to curb sprawl and offer a more equitable transport system, this paper will set out to look at current practices regarding land-use and transport planning integration in Maputo to evaluate whether these are: (i)supportive of a possible adoption of a context-specific version of TOD in the future and (ii)conducive to achieve sustainable urban development. This paper suggests that even when there are several challenges preventing the possible adoption of TOD policy in Greater Maputo, a context-specific version of TOD holds great potential as a strategy to promote sustainable urban development and stimulate the emergence of equitable transport systems. Therefore, is worth exploring what the challenges might be in terms of planning frameworks and institutional capacity in Maputo, should TOD policy be adopted in the future.

Discussion

Nowadays the spatial expanse of the Greater Maputo Metropolitan Area extends to a radius of about 30 km away from the city centre of Maputo (see figure 2). According to estimates from the 2017 census, the current population of Greater Maputo stands at 2,216,460, and is projected to increase by nearly 50% in 2030 and more than

double by 2050 (Intituto Nacional de Estatistica de Mozambique, 2020). It is imperative for the city's authorities, therefore, to plan strategically for future growth and be able to realign the urban trajectory of the city.

Figure 2 illustrates the Maputo Metropolitan Area, which includes Maputo City, Katembe, Matola, Boane and the District of Marracuene.

In the last two decades, authorities in Maputo have been trying to adopt measures to improve the social, economic, and environmental prospects of the city. Currently, the *Comprehensive Urban Transport Master Plan for the Greater Maputo*, produced by the Japan International Cooperation Agency (JICA) in 2014, outlines a long-term strategic vision for future development up until 2035. During this period Maputo aspires to become a *Socially and Environmentally Sustainable International Gateway Capital* (JICA, 2014).

To achieve this vision, a couple of future city prototypes have been proposed based around a poly-centric urban structure with decentralised economic activity. Further, the plan emphasizes the central role of transport systems in realising this vision and suggests the adoption of a mass transport system, such as BRT, to help transition into

socially and environmentally sustainable transport systems, and to facilitate the international gateway (*ibid*). The proposed public transport options and urban development scenarios harmonise with the principles of TOD and, in fact, the JICA plan illustrates the benefits of this based on the Japanese experience.

Assuming this is the vision guiding the future development in Greater Maputo and considering the urban trajectory the city has followed, some questions emerge in relation to whether TOD could be adopted as an instrument through which this vision could be realised. Considering that integration of land-use policy and transport planning are at the centre of TOD, what kind of planning practices currently operate in Maputo? Could transition to sustainable urban development generate the conditions for people to access better opportunities according to their capabilities? To what extent can the framework of TOD be adapted to the context of Maputo?

Land-use policy and planning

Understanding land-use and planning practices in Mozambique demands a more in-depth investigation than what is currently possible within the scope of this paper (for a more detailed analysis see: Melo, 2013; Jorge and Melo, 2014; Andersen, Jenkins and Nielsen, 2015a, 2015b; Melo and Jenkins, 2019). However, an attempt will be made to sketch out the functioning of this process, how it affects spatial patterns, and what the implications might be for the future adoption of TOD in Maputo.

One of the core tenets for successful implementation of TOD is the integration of land-use policy and transport planning. In the context of developing countries this marriage could prove to be more challenging than not due to several factors such as poor regulatory frameworks, limited institutional capacity, distinct planning practices, adverse political environment, economic instability, reluctance of stakeholders, etc. According to Suzuki et al. (Suzuki, Cervero and Kanako, 2013), transport provision in developing countries is almost always driven by short-term mobility improvements, which often results in the '*absence of strategies and regulations to create higher densities along transit corridors and high-quality urban spaces*', undermining the prospect

of sustainable urban development and preventing the implementation of an efficient transport system to drive it.

Existing land-use policy and planning practices in Mozambique are a complex and blurry area. This lack of clarity is spatially reflected in current urban growth trends. According to a 2017 report from the World Bank, Maputo has one of the most inefficient land-use patterns in the whole of Africa. It is estimated that around 50% of urban growth in Greater Maputo happens in low density areas that lack both adequate planning regulations and access to any basic facilities (World Bank, 2017b). These distinct forms of spatial distribution continue to produce disaggregated patterns of densification which inevitably yield uneven levels of accessibility.

After independence in 1975, land in Mozambique became nationalised and fell under the control of the central government. Structural reforms during the 1990's led to the formation of municipal governments in 1998. This process resulted in the devolution of administrative powers to the new municipalities, which included control over land-use policy and planning. Allocation of land in Mozambique is based on usufruct titles and is administered by provincial governments. Municipalities such as Maputo and Matola, are allowed to generate revenue from land taxation based on land registry entries (Andersen et al., 2015). However, it is calculated that from the nearly 200,000 estimated properties in Maputo city, only 38% appear in the records and as little as 20% pay their contribution. Numbers for Matola are even lower than that despite the fact that it is growing four times faster than Maputo (World Bank, 2017a).

Andersen et al. (2015) noted that the land registry in Mozambique has not been systematically updated since the colonial period. The long-term effect of these structural deficiencies continues to be felt today. As they explain, the 1992 housing law allowed a certain amount of housing stock to be privatised, however, control over and ownership of the land stayed within the state. Lack of institutional capacity to keep updated records of transactions, together with a certain level of laissez-faire on the part of the authorities, have generated the conditions for the creation of a real estate black market and allowed the operation of customary practices in relation to land allocation. As Andersen et al. (*ibid*), explain, there are two simultaneous processes effectively managing the land in Mozambique. On the on hand, there are the

institutions, operating with limited capacity to administer and plan the use of land and, on the other, there are customary practices which effectively '*orientate and guide land-use practices in many 'unplanned' areas*', often speculating and illegally trading housing and land titles and creating *ad hoc* spatial plans. These processes have resulted in the proliferation of unplanned and segregated settlements away from the main infrastructure network.

In this context, an outdated cadastre has not only undermined the capacity of municipalities to spatialise and quantify land assets but has also constrained their ability to take full advantage of these resources and generate revenue through land-value capture instruments. Also, since land is national property, it cannot be officially sold or privatised, so the market-value of land is never fully appreciated. As a report from the World Bank suggests,

> 'Without a recognition that land has a market value, municipalities cannot capture the real market value of urban land in their land-based tax instruments . . . This in turn reduces their capacity to raise own-source revenues, and thus, to finance the urban infrastructure to expand service coverage to most urban dwellers, or to finance modern infrastructure to attract private investment into the local economy' (World Bank, 2017b).

New legislation came into force in 2008 with the aim to improve land-use and planning practices in Mozambique. As a condition to issue any land titles, the new law requires municipalities to produce formal urbanisation plans at all administrative levels. To date, municipalities have legal powers to distribute investments and coordinate planning strategies across their jurisdiction. The information available suggests that the aim of this strategy is to (a.) formalise the planning process, (b.) regularise existing settlements, (c.) identify areas for future development (residential and otherwise), and ultimately (d.) capitalise on land-value capture (Andersen, Jenkins and Nielsen, 2015a). In the context of TOD, as Cervero et al. (Cervero, Murphy and Ferrell, 2004) suggest, land-use designation is particularly important for a developer's decision to engage or not in a project.

At present, current land-use patterns in Maputo do not provide the conditions for the adoption of transport-oriented development in the short term, or at least not in the form in which it has been implemented in other developing countries. Nonetheless,

Mozambique has been making considerable progress considering the short institutional life of municipalities and the limitations they continue to face. In this sense, all efforts made so far to realign the urban trajectory of the country, and specifically of Maputo, are highly commendable. Yet, the challenge remains to build the institutional capacity required to regulate land-use planning (including an up-to-date cadastre) and activate the necessary instruments to capitalise on land-value capture which would generate the incentives to attract investment to further support the city's ambitions.

Policy integration

As the previous section has shown, institutional deficiencies and lack of appropriate land-use policy and planning frameworks have constrained the ability of municipalities to capitalise on the value of land assets and, therefore, make further investments in services and infrastructure. In addition, this has also limited the options in which land-use patterns could be diversified and use more efficiently. In Maputo these trends have set forth a cycle of unsustainable urban development, which exacerbate the socio-spatial disaggregation of the city, as it is reflected by current patterns of uneven mobility and differential accessibility.

The New Urban Agenda and the Sustainable Development Goals have set targets to reduce the effects of unsustainable urban development by 2030. SDG 11 particularly aims at providing: *'safe, affordable, accessible and sustainable transport systems for all''*, as well as *'inclusive and sustainable urbanisation'* (United Nations, no date)**.**

Maputo is currently investing in making structural changes in an effort to adopt a more sustainable model of urban development, for which the creation of an integrated public transport system is meant to be one of the driving engines. Unlike previous urban plans such as PEUMM (for Maputo) and PEUCM (for Matola), the JICA 2014 Urban Transport Master Plan for Greater Maputo has adopted a metropolitan level vision regarding future urban development and transport provision. The creation of the Metropolitan Transport Agency (AMT) in 2017 has been the first step forward in an attempt to drive this vision.

Currently, AMT is actively exploring and implementing initiatives to make the metropolitan transport system a realistic choice for urban dwellers. For example, night bus services covering the length of the metropolitan area were introduced in 2019. The coverage of the bus network has increased from 20 to 73 routes, including non-radial journeys. Also, the number of buses in operation has grown from 215 to 339. AMT has even introduced modified buses to serve the less accessible areas and provide a level of service that only the more flexible *chapas* could previously offer. Yet, considering the modal splits as suggested in the JICA plan, 'formal' transport only accounts for less than 10% of travel journeys, so the overall impact of AMT is small considering that most travel is made either walking (45%) or by 'informal' *chapas* (32.9%).

As well as being responsible for planning, coordinating, and funding transport investments, the objective of the AMT is to follow up on the implementation of the transport master plan, which provides urban development scenarios based around a multi-core urban form. This aims at decentralising economic activity and diversify land-use policy. The prioritised transport projects include the establishment of a passenger rail line connecting west Matola and Maputo central, also the implementation of two BRT corridors connecting north and central Maputo as well as road improvements across the area (see figure 3). This implies that, to fulfil its mandate, AMT would necessarily have to engage with spatial and development planning departments to coordinate consented actions towards future development.

However, urban planning practices appear to be evolving on a separate stream. In recent years (in line with current legislation which requires the production of development plans as a condition to release urban land titles) Maputo Municipality has identified several locations as areas of opportunity for future development. Partial Urbanisation Plans (PUP) have been produced for at least four neighbourhoods located within a 10km radius from the city centre: Baixa, Chamanculo C, Malhazine and Polana Caniço (see Figure 4).

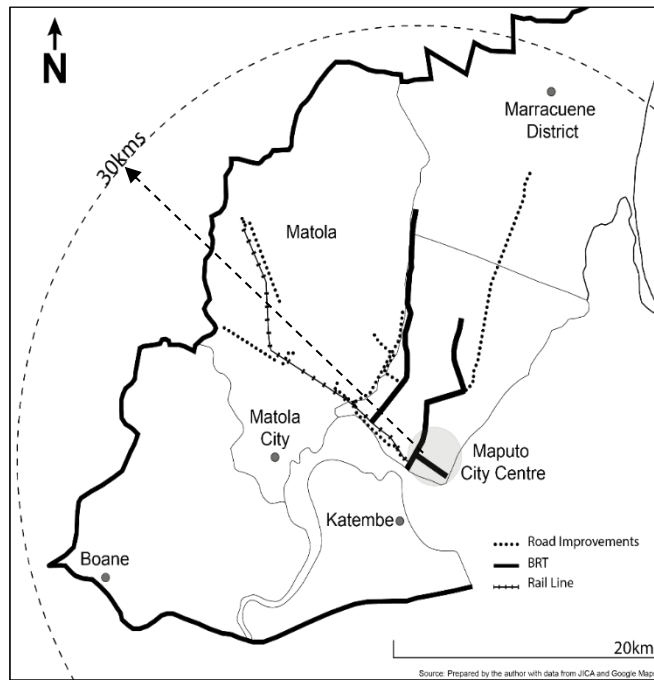*Figure 3 illustrates current priority projects for the Metropolitan Transport Agency (AMT)*
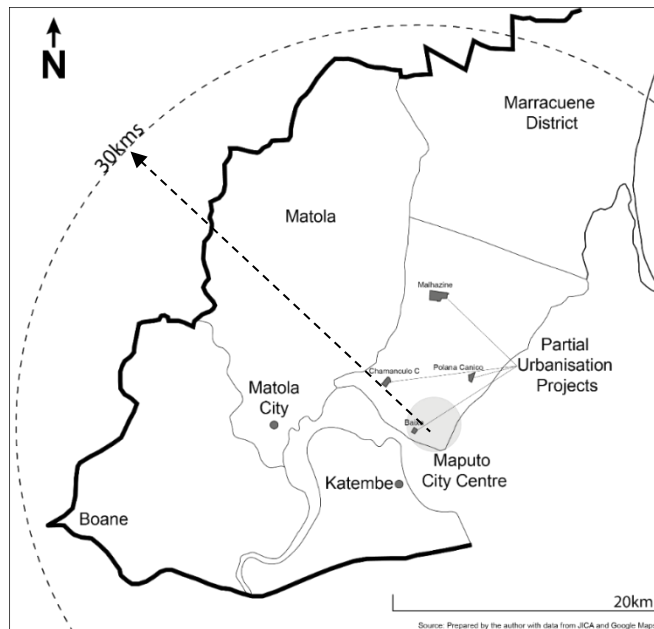
Source: Prepared by the author with data from JICA and Google Maps

Figure 4 illustrates the location of Partial Urbanisation Plans as proposed by Maputo Municipality.

Source: Prepared by the author with data from JICA and Google Maps

As Andersen et al. (2015) have argued, '*the intention of the current 'formal' planning process is thus to subsequently develop new land-use plans 'regularising' existing 'unofficially' planned areas . . . and planning the unplanned areas . . .*'. The current plans indicate a tendency to densify these locations which, in the context of sustainable development, could be seen as desirable due to their proximity to infrastructure and economic activity.

Data from the World Bank (World Bank, 2017a) suggests that the relation between density and access to services in Maputo is less proportional than the relation between services and distance from the urban centres. The average household density within a 4km radius from the city centre in Maputo is 4,000 per square kilometre but beyond a 10km radius it drops to less than 1000 households per square kilometre. Accordingly, neighbourhoods within a 3km radius from the city centre have better access to services regardless of density**.** Yet, according to the same document, it is becoming increasingly difficult for poor and middleclass residents to afford housing within this radius, forcing more people to move further away from employment sources and service networks. Consistent with these trends, the poverty headcount ratio tends to increase in the locations that are further away from the city centre.

Current initiatives regarding transport planning and urban development seem to be diverging in separate ways. While the Metropolitan Transport Agency is attempting to consolidate an integrated urban transport system for the metropolitan area at large, urban development initiatives are mostly taking place in different locations within the jurisdiction of Maputo City.

Findings

To a large extent, current land-use policy and planning frameworks in Mozambique are the result of two distinct but interrelated historical periods: the colonial era which lasted up until 1975 and the post-independence years, which continue up to the present day. In the context of land use policy and urban development planning, both these periods have been characterised by lack of robust regulatory frameworks, poor institutional capacity, ambiguous attitudes regarding urban development, and an
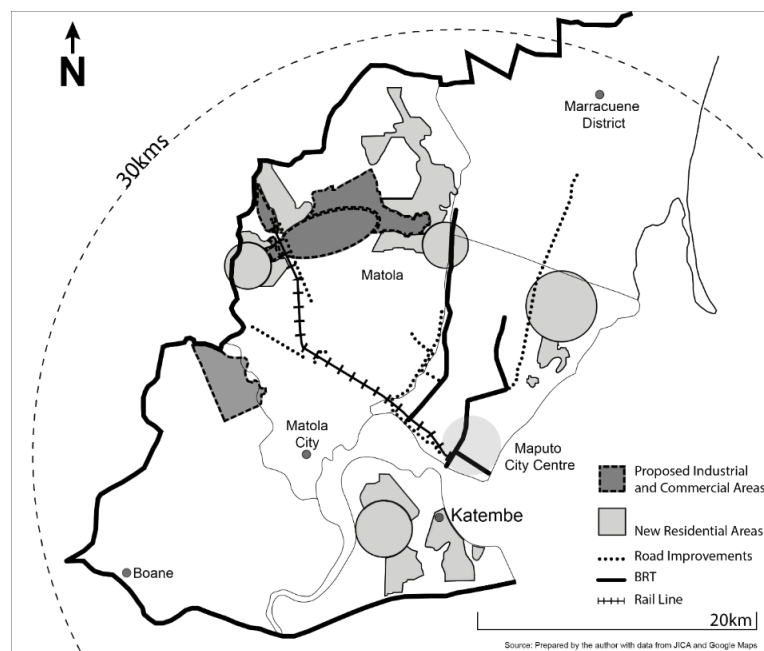
unclear long-term vision for the role of cities in the national life. These factors have set Maputo on a hyperbolic urban trajectory. This is reflected in current patterns of unplanned expansion across the Metropolitan area. In turn, this has led to differential forms of socio-spatial development, which is represented by unequal levels of accessibility to services and uneven patterns of urban mobility.

At present, institutional restructuring is taking place in Mozambique in an attempt to set forth a new path for its urbanisation process. Yet, municipalities continue to suffer from acute deficiencies today and continue to operate with limited resources. Outdated land registry systems, for instance, are preventing them from managing the land more efficiently and, therefore, constrain their ability to use land-value capture instruments more effectively. This would, otherwise, allow them to generate revenue for infrastructure upgrades or to produce incentives to attract future investment. In the context of TOD, as Cervero et al. (2004) have pointed out, clear and 'supportive land-designations' are key to stimulate positive decisions about potential investments. At the moment, neither land-use planning practices nor institutional capacity in Maputo are conducive to the adoption of TOD policy in the short-term. However, the ongoing institutional reorganisation could prove to be the first step towards more integrated planning and institutional frameworks.

While TOD has not been explicitly adopted as the *de facto* strategy to realise the vison that the city aspires to, the proposed urban development scenarios (as outlined by JICA) harmonise with the principles of TOD at various levels, such as the aim to achieve public transport integration, the creation of multiple development corridors, clear vision for the future role of the city, and diversified land-use policies. Interestingly, the concept of transport-oriented development has only been explored from a rather schematic and normative point of view. For instance, it has not been considered that '*what matters most for transit and land-use integration is not average population densities but "articulated densities"— densities that are strategically distributed across parts of a metropolitan area*' (Suzuki et al., 2013). According to the proposed future scenarios, it could be argued that this is precisely what the future urban form of Maputo could look like (see figure 5).

Transport initiatives appear to be gaining a certain level of momentum in the metropolitan area, but urban planning practices seem to be operating at different scales and without a unified goal. This is exemplified by the Partial Urbanisation Plans, which aim to reconstitute the urban form of at least four neighbourhoods in the city, all of which are conveniently located within 10km radius from the centre. As explained before, distance to the city centre in Maputo is directly proportional to the level of access to services, employment, and infrastructure. The World Bank (World Bank, 2017a) estimates that people from poor households in the metropolitan area typically commute 2 or 3 hours to the city centre, take on average ten more minutes to access health services, and eight more minutes to reach the nearest bus stop. An inefficient public transport system further contributes to exacerbate these conditions. As Mendonça (2014) has suggested, in Mozambican cities the less wealthy dwellers spend about 30% of their wages in transport expenses.

Figure 5 illustrates proposed urban development scenario and priority projects
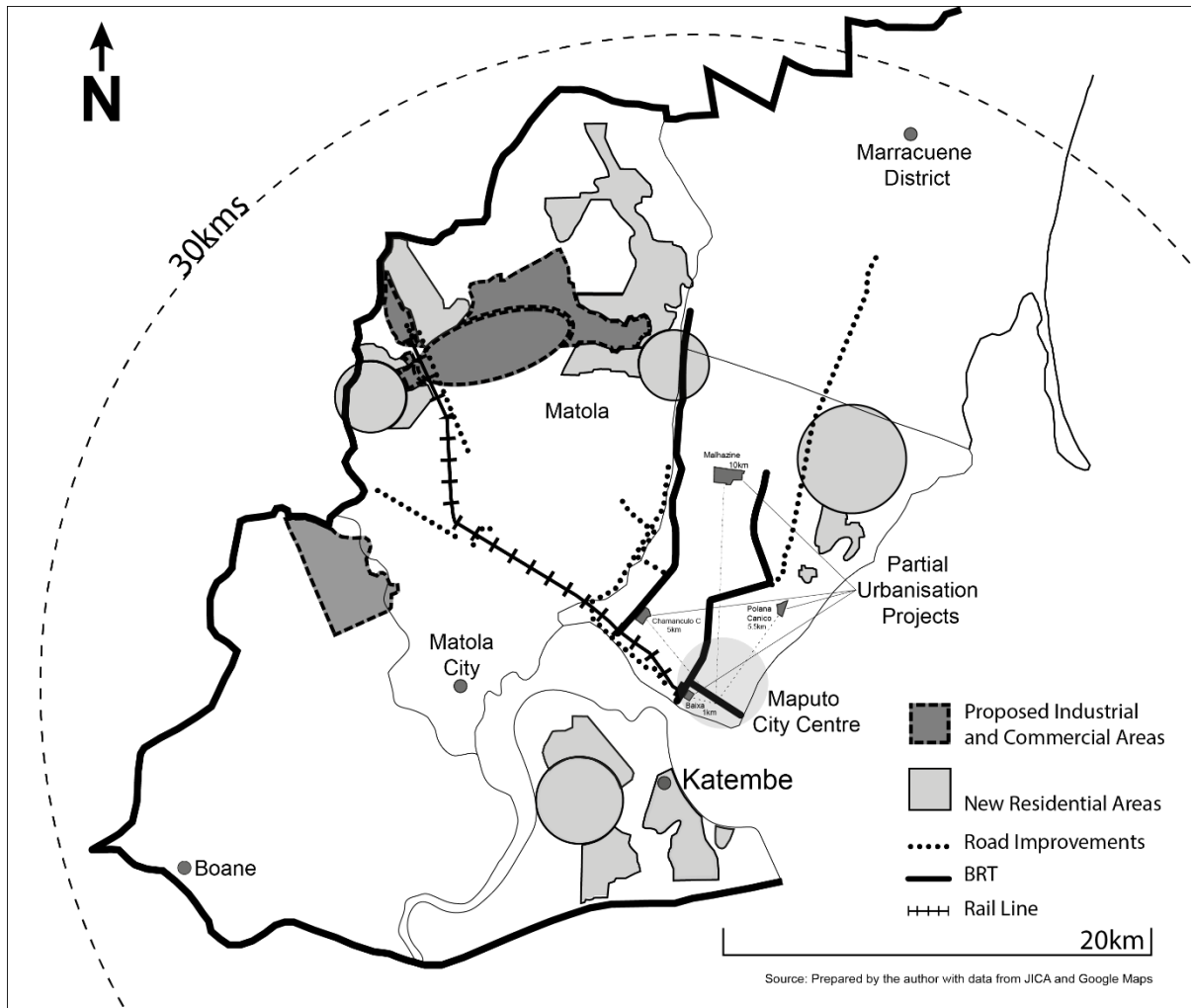
It is not clear now the extent to which Partial Urbanisation Plans (PUP's) are part of the larger scenario proposed by the Urban Transport Master Plan. However, one of the objectives of the PUP's is to achieve medium level densities in those locations and to make land-use more diverse. Nevertheless, if current practices regarding land-use planning continue, and if the PUP's do indeed go ahead, it could be assumed that a cycle of housing speculation will start. Much to the detriment of the poorer segments of the population, these practices will contribute to perpetuate historical trends of differential socio-spatial development.

Future development scenarios proposed by the JICA master plan, implementation of the priority projects, as well as the interventions outlined within the PUP's demand a high level of integration between transport and urban planning practices, not least because the ambitions to reconstitute the metropolitan area are multi-scalar, multi-sectoral, and long-term (see figure 6).

For urban systems to operate efficiently, a high level of inter-sectoral integration is required at all administrative levels. This is particularly the case with such important drivers such as land-use, transport, and urban planning. Unfortunately, the legacy of the colonial past in Mozambique is still reflected in current land-use and planning practices, which continue to operate with a level of laissez-faire in terms of land allocation and on an ad hoc basis regarding spatial planning. These practices effectively contribute to perpetuate existing patterns of uneven development and hinder the prospect of residents to live more fulfilling lives.

Figure 6 illustrates proposed urban development scenario, priority projects and Partial Urbanisation Plans

Conclusions

This dissertation set out to answer the following questions:

1. *What are the conditions that need to exist in Maputo in order for the city to aspire to a possible implementation of TOD in the future?*
2. *What role can TOD play in achieving both a transition to sustainable urban mobility and a sense of mobility justice?*

The questions centred around the concept of Transport-Oriented Development in the context of an African city. The aim of this work was to explore whether the institutional capacity and regulatory frameworks currently operating in Maputo were supportive of TOD policy, and whether TOD could play a role in realising more equitable and sustainable urban environments.

In order to conduct the research, this paper made use of publicly available secondary data sources, as well as specialised academic literature and data bases. Quantitative data was only used as a base to support the theoretical underpinning of this research and to illuminate the context.

Considering the concerns about the negative outcomes of unsustainable urban development patterns, TOD has been widely adopted as an alternative form of city planning which is meant to be conducive to the emergence of more sustainable urban environments. TOD promotes the development of localities that are compact by design, dense and rich in social life with diverse economic activity (mixed land-use), and well connected to the public transport network (environmentally sustainable).

The benefits of transport-oriented development have been widely acknowledged and advocacy for its adoption remains high. This is particularly the case in developed countries, where longer-term goals are supported by strong institutional capacity and robust regulatory frameworks. Apart from the recent case of South Africa, literature about implementation of TOD in African cities is scarce. In view of this, this paper has attempted to contribute to the discussion about whether TOD has any relevance in the context of African cities.

The theoretical underpinning of this paper has argued that, from the point of view of sustainability, implementation of TOD policy could be indeed desirable as it could benefit society as a whole. However, as a planning instrument, TOD does not provide a framework to engage with the social impacts or distributional effects of transport investments. From a social and mobility justice perspective, this paper has argued that better urban environments cannot materialise based on the principles of TOD policy alone. Therefore, the TOD framework needs to be further underpinned by ethical principles of justice, with a view to generate the conditions for better and more sustainable urban environments to be realised.

In answer to the first question,

> *What are the conditions that need to exist in Maputo in order for the city to aspire to a possible implementation of TOD in the future?*

This paper argues that current institutional arrangements in Mozambique are preventing Maputo from delivering better living conditions for its residents. Regarding land-use policy and urban development planning, lack of institutional capacity and robust regulatory frameworks continue to undermine Mozambique's ability to capitalise on key assets, such as urban land. For Maputo to aspire to a possible adoption of TOD policy in the future, it is crucial for the municipalities to be able activate land-value capture instruments in order to generate incentives to attract investment. A first step in this direction would be to generate more institutional capacity to be able to implement regulatory frameworks. This could be followed by updating the land registry system, which at the moment is not fit for purpose and therefore unable to provide accurate information about all existing land assets. At the moment, there does not appear to exist much policy integration between transport and land-use planning.

Regarding the second question,

> *What role can TOD play in achieving both a transition to sustainable urban mobility and a sense of mobility justice?*

Institutional life in the country has been short but some progress has been made. The establishment of the Metropolitan Transport Agency in 2017 has been the first step

forward in an attempt to set the urban trajectory of Maputo on course to transition to sustainable urban mobility. However, lack of policy integration between transport and urban development planning could potentially hinder this transition. As an independent body, AMT was explicitly created to implement the proposals of the master plan at metropolitan level. At the moment, AMT's initiatives seem to be only directed at restructuring the transport system of Greater Maputo, for which implementation of BRT's are one of the priorities for 2020 (AMT, 2019). However, as figure 6 illustrates, the transport master plan contemplates a wider restructuring in the metropolitan area which reaches far beyond the integration of a metropolitan transport system. Without the necessary synergies channelled towards a unified goal, it appears that potential adoption of TOD policy in Maputo remains a remote prospect. Nevertheless, an integrated transport system for the whole of the metropolitan area could be the one of the keys for transition to sustainable urban development.

This research attempted to explore, from a policy level perspective, what it might imply for institutions to adopt a TOD planning model in the context of an African city. The findings suggest that, at least in the context of Mozambique, institutional deficiencies have a direct relation to its colonial past. They also outlined the parallel but interrelated processes actively shaping the urban form of the city, namely the *formal* and the *informal*, which contribute to differential patterns of socio-spatial development. The research shed light on the extent to which an inefficient and out-of-date land registry can affect land-use and urban development planning.

Institutional capacity is still lacking in Mozambique, but positive changes are slowly happening, especially in terms of transport initiatives. Still, questions remain as to how implementation of the master plan scenarios will take place with the current level of planning integration. Or, how the Partial Urbanisation Plans will integrate with the transport system and who are they going to benefit, considering that prices in central locations are increasing

This research proposed the notion of just practices to evaluate the possible outcomes of TOD policy in terms of generating just and equitable urban environments, where people can travel freely and efficiently according to their needs and capabilities. This still remains the case, and it is believed that these should be the explicit objective of

transit-oriented development policy. However, more work needs to be done in order to further expand the notion of 'just practices' and to create a refined framework for analysis and evaluation.

It is hoped that the current impetus in transport planning initiatives will eventually gain momentum and produce the required synergies between urban development and transport planning. Similarly, it is expected that the existing vision for the future of the city will alight the path to follow for its realisation. In effect, this would mean that more opportunities would be more easily accessible for more people in more places, further contributing to achieve a sense of equity and justice within the city.

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