HEC Montréal

Is a Human-Centered Approach a Feasible Alternative to the Conventional Car-Centric Model?
The Case of Cape Town, Copenhagen and Tianjin Eco-City

par
Olivia Labonté

Sciences de la gestion
(Economie Appliquée)

Mémoire présenté en vue de l'obtention
du grade de maîtrise ès sciences
(M. Sc.)

Octobre 2016

Résumé

L'évolution rapide des données démographiques et l'augmentation des préoccupations environnementales ont mis en évidence l'importance de comprendre les mécanismes par lesquels une planification urbaine réussie est mise en place. Cette étude vise donc à déterminer si une planification urbaine possédant une approche centrée sur l'humain peut répondre adéquatement aux externalités sociales et environnementales négatives associées à l'approche conventionnelle centrée sur la voiture. Une approche centrée sur la voiture est définie comme une pratique de planification urbaine qui encourage les projets résidentiels de style subdivisionnels et zones commerciales de bande non résidentielle, qui sont largement accessibles uniquement par automobile. En réduisant l'infrastructure axée sur l'automobile et en encourageant plutôt le développement à haute densité et à usage mixte, l'approche centrée sur l'humain vise à concentrer la nouvelle croissance autour des centres urbains existants, et en limitant le développement dans les zones périphériques et qui sont sensibles à l'environnement.

Pour atteindre les objectifs de cette recherche, un cadre qualitatif a été développé et appliqué aux approches de planification urbaine de trois villes mondiales: Cape Town, Copenhague et Tianjin « Eco-city ». En établissant ce cadre conceptuel cohérent, un processus d'analyse comparative est développé qui reflète une approche multidisciplinaire du développement urbain, l'économie institutionnelle et de la planification urbaine. Cette approche permet de mettre en lumière les principaux piliers qui impactent les pratiques de planification urbaine et le bien-être général de ses habitants. Cette recherche examine ainsi les impacts générés par le développement urbain axée sur la voiture comparativement au développement centré sur l'humain afin de mieux comprendre les mécanismes par lesquels les pratiques durables peuvent être mises en œuvre, et dans quelles conditions ces pratiques seront les plus efficaces.

Les résultats de cette recherche suggèrent qu'une approche de la ville humaine centrée sur la planification urbaine est un moyen prometteur de répondre à certains défis majeurs auxquels les villes mondiales font face. En outre, cette étude comparative conclut que la réduction de la pauvreté est un précurseur important pour la planification de la ville centrée sur l'humain. De plus, les préoccupations environnementales ont ouvert la voie à la planification urbaine durable, tandis que le rôle de l'engagement civique dans la planification urbaine n'est pas clair. Il est

important de noter que cette recherche ne vise pas à résoudre tous les problèmes urbains, mais plutôt à fournir des conclusions qui contribueront à la littérature existante dans le secteur du développement urbain.

Mots clés: Approche centrée sur l'humain, villes, villes mondiales, urbanisation, préoccupations environnementales, engagement civique, réduction de la pauvreté, planification urbaine, économie institutionnelle, économie du développement, eco-city

Abstract

Rapidly evolving demographics and increasing environmental concerns have highlighted the importance of understanding the mechanisms through which successful urban planning occurs. As such, this study aims to determine whether a human-centered approach to urban planning can adequately address the negative social and environmental externalities associated with the conventional car-centered approach. The car-centric model is defined as a city planning practice that encourages subdivision-style residential projects and strip-nonresidential commercial areas, which are largely only accessible by automobile. By reducing automobile-focused infrastructure and encouraging higher-density, mixed-use development, the human-centered approach aims at containing new growth around existing urban centers, and limiting development in peripheral and environmentally-sensitive areas.

To achieve the objectives of this research, a qualitative framework has been developed and applied to the city planning approaches of three global cities: Cape Town, Copenhagen and Tianjin Eco-city. By establishing this cohesive conceptual framework, a benchmarking process is developed that reflects a multidisciplinary approach of urban development, institutional economics and urban planning, and which elucidates the major pillars impacting urban planning practices and the overall well-being of its residents. This research thus investigates the impacts generated by car-focused urban development, so as to better understand the mechanisms through which sustainable practices can be implemented, and in which conditions such practices will be most effective.

The findings of this research suggest that a human-centered city approach to urban planning is a promising means of addressing some of the major challenges facing global cities. In addition, this comparative study concludes that poverty reduction is an important precursor for human-centered city planning, that environmental concerns have paved the way for sustainable city planning, and that the role of civic engagement in city planning is unclear. It is important to note that this research does not aim to resolve all urban issues, but rather to provide conclusions that will contribute to the current literature in urban development.

Key words: Human-centered, cities, global cities, urbanisation, environmental concerns, civic engagement, poverty reduction, urban planning, institutional economics, development economics, eco-cities

Table of Contents

Résumé 1
Abstract 3
List of Figures 7
List of Tables 8
Acronyms 9
Foreword 10
Acknowledgements 11
Chapter 1. Introduction 12
Chapter 2. Literature Review 16
2.1 Origins and Definitions 16
2.2 Critical Challenges 20
2.3 New Perceptions of Economic Well-being 22
Chapter 3. Methodology 24
3.1 Methodological Approach 25
3.1.1 Research Strategy 25
3.1.2 Research Method 25
3.1.3 Choice of Case Studies 26
3.2 Conceptual Framework 27
3.2.1 Institutional Setting 29
3.2.2 Sustainability 29
3.2.3 Private Development 30
3.2.4 Time Frame and Implementation 30
3.2.5 Liveability 31
3.2.6 Potential drawbacks 33
3.3 Data and Indicators 34
Chapter 4. Case Study 1: Cape Town 36
4.1 Background 36
4.2 Current Status 37
4.3 Conceptual Framework Application 39
4.4 Summary and Analysis 49
4.5 Conclusion and Recommendations 51
Chapter 5. Case Study 2: Copenhagen 52
5.1 Background 52
5.2 Current Status 53
5.3 Conceptual Framework Application 55
5.4 Summary and Analysis 59
5.5 Recommendations 62
Chapter 6. Case Study 3: Tianjin Eco-city 63
6.1 Background 63
6.2 Current Status 64
6.3 Conceptual Framework Application 65
6.4 Summary and Analysis 71

6.5 Recommendations 73
Chapter 7. Conclusion 74
Sources 83

List of Figures

Figure 1 - Location of low-income housing and urban boundaries

Figure 2 - Map showing transport infrastructure upgrades in Cape Town and nodes of World Cup investment

List of Tables

Table 1 - Conceptual framework summary

Table 2 - Cape Town liveability ranking according to the EIU African Green Cities Index (benchmarked against 14 of the largest African Cities)

Table 3 - Cape Town Summary

Table 4 - Growth of cycling in various cities

Table 5 - Copenhagen liveability ranking according to the EIU (2015)

Table 6 - Copenhagen Summary

Table 7 - Tianjin liveability ranking according to EIU (2015)

Table 8 - Tianjin Eco-city Summary

Table 9 – Conceptual Framework Summary

Acronyms

CofCT	City of Cape Town
CPH	Copenhagen
CTSDF	Cape Town Spatial Development Framework
DK	Denmark
EIU	Economist Intelligence Unit
EU	European Union
GDP	Gross Domestic Product
GHG	Greenhouse Gas Emissions
NGO	Non-Governmental Organisation
OECD	Organisation for Economic Cooperation and Development
SA	South Africa
UN	United Nations
UNDP	United Nations Development Programme
UN Habitat	United Nations Human Settlements Programme

Foreword

Acknowledgements

First and foremost, I would like to express my very great appreciation to Cris Robertson, who shares my passion for sustainable urban development. I am extremely grateful for his continued support and provision of critical insights throughout this entire endeavor.

I would also like to express my deepest gratitude to my research director, Professor Bernard Gauthier, who gave me the opportunity to work on this new topic, which has allowed me to not only deepen my knowledge of urban planning but has also provided me with tangible opportunities for my career in international urban development. His guidance throughout the process of my research and writing is greatly appreciated. I would also like to thank Professor Gauthier for imparting his vast knowledge on the topics of international development and institutional economics with me, which ultimately helped shape and form this thesis.

None of this, of course, would have been possible without the continued support of my parents who encouraged me to pursue my master's degree. Thank you to my father for his continued input and fostering of my academic research throughout the years, and to my mother for her relentless encouragement from the start and continued guidance throughout my entire Master's degree. My gratitude to them both goes far beyond words.

Finally, I would also like to thank Future Cape Town (South Africa) and the Youth and Livelihoods Unit at United Nations Human Settlements Programme (Kenya) for providing meaningful platforms for this research to be shared and disseminated.

Chapter 1. Introduction

In the context of mass urbanization at the world level, as well as the prospect of severe environmental degradation, a critical challenge in the upcoming decades will be to effectively plan urban areas. In that regard, according to the United Nations Human Settlement Program (2014), it is the type of urban development employed that will be crucial in the sustainability thereof. An appropriate development of planning practices will also have to be supported by a richer set of indicators to measure economic well-being. As such, more research will have to be devoted to developing and implementing robust, reliable measures of sustainability indicators that can be shown to predict well-being, which itself is multidimensional and complex (Stiglitz, Sen and Fitoussi, 2008). Although there has been some work done in the realm of liveability and urban planning benchmarking processes, there is a need to shape these measurements at a micro-level for them to be applicable in the context of cities. Furthermore, it is important to ensure that negative externalities imposed by non-sustainable planning practices are taken into account when measuring the liveability of cities.

From the second half of the twentieth century, the population of the world's cities has increased immensely from 746 million in 1950 to 3.9 billion in 2014 (United Nations, 2014), and since 2007, half of the global population has been living in cities. The United Nations (2014) also projects that a further 2.5 billion people will be added to urban populations by 2050 - most of which will be added to developing cities in both Asia and Africa. This in itself makes for the planning of cities a difficult task, but given the increased environmental concerns that cities face, finding sustainable ways of planning cities is of the utmost importance (Korobar and Siljanoska, 2016).

Since the start of mass urbanization in the 18th century, there has been much debate over how a city should be planned and built (DuPlessi, 1997; Safdie and Kohn, 1997). As such, with the rise of the automobile in Western cities, the discussion in the urban economic literature has been characterized by significant social and environmental challenges, which has forced planners to rethink urban development as a means to achieve economic and socially equitable growth without further impeding our limited natural resources (Korobar et al, 2016). As a result, many

cities around the world are looking to deviate from their reliance on the automobile, and a shift in current urban planning practices is necessary for this to be successful.

In this context, the question to be examined is whether a human-centered approach to urban planning is a feasible alternative to the standard car-centric model. In this research, the human-centered approach will be synonymous with the Smart Growth theory. The Smart Growth theory, popularized by developers in the mid-1990s, is defined as an urban development practice aiming to contain most new growth around existing urban centers and to limit development in peripheral rural and sensitive environmental areas (Burchell and Mukherji, 2003; Resnik, 2010). This approach seeks to reduce automobile-focused infrastructure, such as roads and highways, through a higher-density development and mixed-use development. Conversely, the car-centric model could be defined as urban sprawl driven city planning. In other words, it refers to the conventional type of development involving subdivision-style residential projects and strip-nonresidential commercial areas that are, for the most part, accessible only by car (Burchell et al., 2003). Thus, the car-centric model is characterized by a stark segregation of residential and commercial development (Burchell et al., 2003; Resnik, 2010).

Focusing city planning on the human scale is potentially a promising way to address some of the significant challenges urban areas will face. However, there is a current gap regarding the consolidation of urban planning practices in emerging economies, where the majority of urbanization will occur. The objective of this research, therefore, is to determine whether there are economic benefits suggesting that investing in human-centered planning can better address the negative social and environmental externalities that have become associated with the conventional car-centered approach. It also seeks to determine whether the best practices of such an approach could be conceptualized in a cohesive framework, in order to plan and better benchmark sustainable urban planning strategies. Through a case study approach, this study aims to analyze the current planning environment of three cities and to determine the areas of potential improvement and stumbling blocks by applying a conceptual framework based on the two types of city planning approaches. The findings of the case studies will then be assimilated in a general format, so as to be applied in the context of high-growth emerging economies.

In order to investigate the feasibility of human-centered urban planning, this study will review and build on the current academic research available on Copenhagen, Cape Town and Sino-Singapore Tianjin Eco-City (hereafter referred to as Tianjin Eco-city). A qualitative framework will then be constructed to determine the feasibility of a human-centered approach. This interdisciplinary approach will allow a more cohesive perspective by combining notions of urban, development and institutional economics as well as urban planning. The study centers on a benchmarking process of the three case studies; two of which (Copenhagen and Tianjin Eco-city) have very different institutional settings, yet are both focused on fostering sustainable urban development practices, and one (Cape Town) which despite having achieved significant growth the past decade, still lags behind in term of sustainable development goals (OECD, 2016). This will provide insight into the factors underlying the inclusion of sustainability in city planning, as well as the dynamics that condition its impacts. The choice of case studies will be further motivated in the third chapter of this paper.

This study should contribute to the existing literature in urban economics by providing further insights on how innovative urban planning practices can potentially improve the current status of emerging developing cities. This is especially relevant since there is currently a lack of critical insight on the emergence of eco-cities, such as Tianjin Eco-city, in the academic literature (Caprotti, 2014). Most importantly, the framework developed in this study could serve as a starting point in a much-needed evaluation grid for the urban strategies of cities. Applying the standardized framework to various cities is a step towards establishing best practices in the realm of sustainable city planning. The framework will be flexible enough to be applied to different types of cities while taking into consideration that each city is endowed with its respective set of norms, cultures, challenges and institutional and political structures.

This study will also provide a reflection on how various planning approaches can affect the prospects for an emerging city dealing with mass urbanization. This will be conducted by investigating the impacts generated by car-focused urban development to better understand the mechanisms through which sustainable practices can be implemented, and in which conditions such practices will be most effective. Therefore, the aim of this study is not to solve urban planning issues in all types of economies, but rather to provide further insight on a human-

centered approach, as well as providing a better understanding of how this method affects the prospects for an emerging city in dealing with urbanization and environmental degradation. This study is structured as follows. Following the introduction, the second chapter reviews the existing literature in urban economics pertaining to human-centered and conventional planning practices. It also provides an overview of the critical challenges in the realm of mass urbanization. Chapter 3 presents the methodology and conceptual framework. Chapters 4, 5 and 6 develop the case studies on the three cities which are followed by the conclusion in chapter 7.

Chapter 2. Literature Review

This chapter presents a review of the literature on recent urban planning theories and challenges, with a particular focus given to the rise of a human-centered approach, in lieu of the conventional car-centric approach. The first section covers the context and main definitions used in this study. The second outlines the major challenges of contemporary urban planning. The third details the changing view of well-being, which will enable this research to better address the current shortcomings regarding urban planning practices. This review highlights the current state of research, the gaps in the literature concerning human-centered development in emerging economies, its relationship with economic well-being, and will help develop a conceptual framework for analyzing human-centered development.

2.1 Origins and Definitions

Mass urbanization is a complex phenomenon, with varying definitions in the literature (Safdie and Kohn, 1997; DuPlessis 1997). The process of large-scale urban development can be traced back to the 17th century (DuPlessis, 1997). However, the creation of cities has existed for much longer than that, with the very first city recorded, Uruk, having emerged in the 4th millennium BC (Harmansah, 2007). Uruk, in parallel with other cities existing still today such as Athens and Damascus, significantly influenced the urbanization during that time. Even though the origins of the city are widely debated, it can be loosely defined as a common place that facilitates trade for those living in proximity (Lampard, 1955). The various interactions among those living in these economic hubs can, therefore, generate both positive and negative externalities. However, at the start of the 18th century, urbanization was sporadic as well as both temporally and territorially selective (DuPlessis, 1997). The evolving commercial sector in Europe, notably in Western Europe, meant that the urbanization process was only advantageous for a privileged part of society. According to many authors (Antrop, 2004; Champion, 2001; DuPlessis, 1997), it was only following the industrial revolution that urbanization demonstrated exponential growth and became a widespread and continuous process.

Since the 19th century, the way cities are designed has both evolved and been widely debated. However, the rise of most North American cities coincided with the increasing reliance on the automobile, like in the United States, where the most intensive growth occurred after the Second World War and was enhanced by the construction of the interstate highway system, funded by federal legislation in 1956 (Safdie et al., 1997). At the time, a mere 20% population owned cars, but we are now fast approaching a one to one ratio of cars and persons in the developed world (Safdie et al., 1997). The adoption of the automobile as a primary source of transportation in much of the Western world has profoundly influenced the planning of cities. According to the urban economist Jane Jacobs (1961), many planners naively focused their efforts on solving the problem of congestion as opposed to more complex and intricate social and economic concerns of urban development. Understanding the evolution of major urban planning trends is critical in order to better predict future changes in the realm of city planning. The patterns leading to our current firm reliance on automobiles will allow for a deeper understanding of the underlying factors that need to change to incorporate human-centered urban planning in cities.

The first major wave of contemporary urban planning practices was notably the ‘Garden City’ coined by Ebenezer Howard in the late 19th century (Jacobs, 1961). Howard opposed the basic fundamental concept of a ‘city’ and did not believe individuals should live in such close quarters together. His theory stipulates that the only way to remedy the ‘city,' was to create a new kind of town, namely the Garden City, in the hopes of repopulating the countryside and reducing the density of cities. His aim was to create self-sufficient towns. Howard achieved this by ensuring that industries were built in these towns. He believed that towns needed to be entirely controlled by the central government to prevent populations rising above a 30 000 threshold. Although Howard managed to build only two official Garden Cities, its principles continued to influence the creation of many North American suburbs, and according to Jacobs, even city planners with no formal interest in the Garden City, were still thoroughly influenced by its underlying principles (Jacobs, 1961).

Following this movement was the ‘Radiant City’ coined by Charles-Édouard Jeanneret-Gris, more commonly referred to as Le Corbusier. He opposed much of the Garden City principles and was an active advocate for skyscrapers and dense downtown cores, which is much more in line

with a human-centered approach should these downtown cores employ mixed-use development. Mixed- use development entails that different sectors and types of residents are found within the same building complex; a mix of institutions, residential and commercial aspects of one same building for example. However, even though he focused on the vertical aspect of city planning and believed building upwards was the key to creating a more vibrant and liveable city, contrary to his emphasis on mixed use, he did put a lot of emphasis on the vehicle as being the primary mode of transportation with grand highways being the key to successful planning, according to Le Corbusier (Fishman, 1977). Evidently, recent history is a testament to how much of an impact Le Corbusier has had on modern architecture and city planning. Central to his theory of the "cité idéale" was the focus on high-rises, technology, and the automobile. He also diverted his attention from segregating the rich and the poor to focusing on housing developments based on needs, rather than luxury (Fainstein and DeFilippis, 2016). Le Corbusier is a prime example of how the automobile greatly influenced the types of infrastructures that came to be in growing urban areas. Prosperity and growth were associated with the car and as such, the focus on city planning was increasing the ease with which one could travel by car. Le Corbusier emphasized the need of great arterial roads for express one-way traffic and denounced pedestrian ways since he believed crossroads to be the enemy of traffic (Jacobs, 1961).

Heavily inspired by the convenience of the automobile and Le Corbusier's vision of a thriving metropolis, city planning since the 1950s has focused on roads and expressways. Robert Moses, New York City's Master Builder during the second half of the 20th century, embodied the changing perception of city planning post-Second World War. Foreseeing the automobile as the principal mode of transportation, the planners during this time envisioned numerous highways and preferred to tear down old residential complexes in favor of newer more modern buildings. This has, in fact, established the current status quo in the realm of city planning and has facilitated urban sprawl, not only in the developed world but has also influenced many metropolises in emerging economies (UN Habitat, 2013). According to Brueckner (2000), urban sprawl can be defined as the excessive spatial growth of cities. In other words, it is the discrepancy between the growth of the built city and the rate at which its population grows. Urban sprawl consequently encourages the growth of suburbs and the reliance on the automobile. Furthermore, there have been growing concerns about the increased energy consumption

potentially caused by urban sprawl and resulting pollution (Kim, 2012). Although those living in affluent suburbs might yield private benefits, these may be at the cost of society due to the negative social externalities, such as increased greenhouse gas emissions caused by car-centered development, which can, in turn, lower of the overall quality of life (Kahn, 2000).

To summarize the various urban economics and planning theories, we define two alternate urban planning strategies for cities. The first, inspired by the status quo, will be referred to as the "car-centric" method and is synonymous to city planning fostering urban sprawl. Burchell et al. (2003) defines this conventional type of development as involving subdivision-style residential project and strip nonresidential commercial areas. The resulting urban sprawl has characterized much of the developed world's cities and its suburbs since the second half of the 20th century (Kahn, 2000). The car-centric method's land development patterns will most likely continue prior trends of utilizing sensitive environmental and agricultural land and invest heavily in road construction (Burchell et al., 2003). This conventional method is loosely based on the monocentric city, which is a general equilibrium model in urban economics that describes a city as a central business district, in which population densities and building heights decline as one moves further from the city center (Arnott and McMillen, 2006). This theory explains the lower housing costs in the suburban areas, which has encouraged urban sprawl and the commuter lifestyle.

Conversely, the alternate urban planning strategy is defined as a "human-centered" approach in this study and is synonymous with the "smart growth" theory. According to Resnik (2010), "smart growth" can be defined as a policy framework that encourages urban development centered on high population density, walkable and bikeable neighborhoods, preserved green spaces, mixed-use development projects, accessible public transit, and limited road construction. Although a human-centered approach to urban planning has multiple definitions, this study will define it in the same manner as Burchell et al. (2003) in that it aims to contain the majority of new development around existing urban centers and to limit growth in peripheral rural and sensitive environmental areas. Human-centered urban planning also seeks to reduce automobile focused infrastructure such as roads and highways through a higher-density development and mixed-use development (Burchell et al, 2003). This approach can be linked to what urban

economists consider the polycentric city model. In urban economic theory, this model consists of some concentrated sub-centres with high population and employment density, which is often achieved through development that encompasses a combination of residential, cultural and commercial, among other uses (Ahlfeldt and Wendland, 2013).

In establishing definitions for this study, it is also important to note the lack of a global standard for the classification of urban environments. Most countries distinguish between urban and rural populations in a similar fashion. However, the precise definition of what constitutes an urban area varies between countries and is dynamic (Cohen, 2006). This study, however, will use the built-environment definition of a city as defined by Parr (2007), who states that a city or urban environment is a "continuous or near-continuous tract of territory devoted predominantly to such uses as housing, manufacturing and commercial activity, transport and public spaces" (Parr, 2007: 3)[1].

2.2 Critical Challenges

Central to the debate on how we should plan our cities are the critical challenges metropolitan areas around the world currently face. According to United Nations Human Settlement Program (2014), these major problems can be summarized as follows: increasing poverty in several developing cities, rising consequences of climate change and global economic turmoil. Cities in the poorest countries of the world are the ones being most impeded by the aforementioned challenges. This trend will be exacerbated by the fact that 90% of urban growth is occurring in developing countries (UN Habitat, 2014), so there is a need to further study these obstacles to sustainable growth and how they can be remedied.

Urbanization and city growth are caused by a number of different factors, including rural-urban migration, natural population increase and annexation. A 1995 study on Copenhagen highlights that it was faced with similar problems to those currently facing developing cities (Andersen and

[1] we impose a minimum size threshold; we take the arbitrary, though common, level of 50 000 population as the lower limit of what we qualify as an urban area. Below this limit, we will qualify as a rural area.

Jorgensen, 1995; Larsen and Hansen, 2008). For example, increased rural-urban migration during this time caused severe unemployment, especially in the suburbs surrounding the downtown core, and forced planners to rethink the urban planning strategy of the city (Andersen and Jorgensen, 1995). By adapting city planning to foster sustainability, Copenhagen is now one of the most liveable cities globally, and was voted by the European Commission as the greenest capital of Europe (EU Commission, 2014). Heavy urban-rural migration is currently a major challenge across most urban centers in China. This combined with alarmingly high levels of pollution, has also forced planners in China to rethink urban planning strategies, much like Denmark did in the 1990s. To reduce the amount of urban migrants and to reduce the high public health costs induced by pollution, the Chinese government has decided to start designing and creating low-emission suburbs, or 'eco-cities' (Caprotti, 2014). By removing the reliance on vehicles and focusing on public transportation and mixed-use development, their aim is to create residential areas that will be less of a burden to the environment. However, there are relatively few studies available concerning the impacts of China's innovative 'eco-cities'. If city planning continues to rely on the automobile, there will be several risks to the environment, to natural resources, to health conditions, to social cohesion, and to individual rights and freedoms (Cohen, 2006).

In terms of demographic-related challenges, the greatest concern is often the massive increase in the numbers of the urban poor. In fact, in much of the developing world, the proportion of urban poor is increasing faster than the overall rate of urban population growth, and this growth has prevented many cities from providing basic services for its inhabitants (Cohen, 2006). For example, there is approximately three-quarters of the urban population in Africa currently living in slums (Cohen, 2006; World Bank, 2015). In the case of Cape Town, South Africa, a combination of the long-term effects of apartheid, combined with poor spatial planning have created urban sprawl and the result is the expansion of racial specific suburbs (De Swardt and Puoane, 2005). This increased inequality continues to negatively impact economic well-being in Cape Town. In particular, the car-centered urban planning of Cape Town creates a vicious cycle of inequality where the rich have access to business areas, and the poor cannot access them since they are unable to access automobiles. As such, there is also a need to further investigate the impacts of rising inequality and the negative effects caused by dividing strictly affluent

neighborhoods from poor areas. By example, a significant amount of the world's urban areas are not equipped with proper water sanitation facilities and in fact, most developing cities typically serve the middle and upper-classes while neglecting the poorer communities (United Nations, 2014; Cohen, 2006). Therefore, finding adequate ways of increasing sustainability while fostering inclusive growth within quickly growing populations in the developing world is urgent.

Another major challenge is the lack of adequate institutional structure in many developing countries. Indeed, many cities lack the necessary capacity to manage their exponentially growing populations (Cohen, 2006). According to several institutional economists, institutions are the root cause of the diverging performance of economies globally (North, 1990; Acemoglu and Robinson, 2012). With a city often being regarded as a spatial area where exchanges amongst agents are facilitated, it is evident that institutions, which are defined as any constraint humans devise to shape their interactions, will influence the urban planning practices of that region (North, 1990). Although some research has been conducted to determine the link between governance and municipal policy decisions, there is more research to be done in determining the institutional structure required to better shape the strategic planning of cities. Urban planning practices, which often arise from the political and governance landscape of a region can analyze globalization forces. These forces are increasingly influenced not only by economic competitiveness but also the two essential pillars of sustainable development; social cohesion and environmental sustainability (Thornley and Newman, 1996).

2.3 New Perceptions of Economic Well-being

The 2008 Report by the Commission on the Measurement of Economic Performance and Social Progress, headed by Stiglitz, Sen and Fitoussi, states that: "the time is ripe for our measurement system to shift emphasis from measuring economic production to measuring people's well-being and that these measures of well-being should be put in a context of sustainability".

The change in perception of what constitutes 'growth' is an important foundation of a human-centered approach in the realm of urban development. Growth should not be solely focused on the production and income of an urban area, but rather a more all-encompassing measurement of

the various indicators that can take into account important intangibles, such as impacts of climate change and rising inequality. Only since the start of the 21st century in 'mainstream' economics, has there been an interest in studying the magnitude of economic spillover effects in a spatial sense (Anselin, 2003). This can be attributed to many factors, but according to Anselin (2003), it followed from a shift in economic theory from studying agents in isolation to studying the complex dynamics of their interactions. Understanding the city from an urban economic perspective can, therefore, yield interesting results to determine their impacts in the context they operate and better manage the current challenges many emerging cities are currently faced with.

There have been various empirical analyses to determine the impact of planning strategies in the realm of urban economics. However, most studies conducted have taken a micro approach by either observing a particular city or one country at most. For example, Burchell et al.'s (2003) empirical study compared the effects of the conventional suburban sprawl compared to smart growth (or a human-centered approach) on land and infrastructure consumption, real estate development and public service costs in the United States. However, in the context of city planning, it will be critical to adapt these relevant indicators, so as to better assess the quality of life within urban areas.

Adapting measures to cities is increasingly important since rising inequality is a phenomenon occurring within nations as opposed to among them (OECD, 2011). A better conceptual framework of urban planning practices in cities combined with a better measurement process of such practices is a necessary step in the current shift of economics research seeking to analyse economic well-being and societal progress (OECD, 2011). Although the framework will be applied to three specific cities only, the framework will be general enough in its scope to apply to various other cities. This framework should contribute to a better benchmarking process of sustainable urban planning practices. Evidently, more research will need to be done in terms of assessing the impacts of sustainable urban planning practices in the long run since there exist very few cities that have been deemed low-emission over an extended period of time. However, it is anticipated that this framework will be a first step for city planners and various stakeholders to efficiently allocate resources to urban planning practices that will yield the highest economic well-being returns and foster sustainability in the long-term.

Chapter 3. Methodology

Most aspects of society are complex and are connected to various theories that belong to different disciplines. For example, well-being can be approached from both a qualitative and quantitative perspective. For this reason, a better understanding of the well-being resulting from specific urban planning strategies requires an interdisciplinary approach (Jabareen, 2009). Therefore, in analyzing the shortcomings and benefits of the two alternative urban planning methods, namely the human-centered and car-centric approach, this study will adopt a multidisciplinary perspective to determine if the former is a feasible alternative. A conceptual framework will be developed to benchmark appropriate urban planning practices. The purpose of our framework will be to create standardized criteria to evaluate the current urban strategy within the three aforementioned cities. This grid will be divided into sections, which will allow the results to be compared as well as determine which city-specific underlying factors need to change in order to achieve the desired outcomes.

In this chapter, the operationalization of this study's framework is outlined. First, the methodological approach will be presented by defining the research strategy and the type of research to be undertaken. The unit of analysis will also be delimited, and the choice of case studies explained in greater detail. Second, the conceptual framework will be presented which will guide the analysis of both urban planning methods. In addition, the assessment criteria will be described, as well as the different indicators and measures that will be used to assess the expected impacts of the human-centered and car-centric methods. Finally, the data utilized in this study will be presented.

3.1 Methodological Approach

3.1.1 Research Strategy

This study will provide a framework that will be applied to descriptive case studies with an explanatory purpose. As such, the case studies will provide an in-depth analysis within the context established by the framework. A case-study approach primarily describes what is happening in a similar context and why, in order to compare the relational similarities as well as elucidate certain trends (Wholey, Hatry, and Newcomer, 2010). Furthermore, a conceptual framework can be defined as a network of connected concepts that provide a comprehensive understanding of a phenomenon (Jabareen, 2009:51). The various elements that form the conceptual framework seek to enable a better understanding of social reality. The process of a conceptual framework is iterative, necessitating a strong interlink between concept and evidence, in addition to utilizing a comparative approach that requires "a constant comparison across types of evidence to control the conceptual level and scope of the emerging theory" (Jabareen, 2009:53).

The selected case studies will also have an explanatory focus. This can be demonstrated through the efforts to establish cause-and-effect relationships that explain which causes produced which results, and from which the benefits and shortcomings of the two urban planning methods studied can be understood. Thus, by conducting the study through both a descriptive and an explanatory lens, within the context of our established framework, we will ensure that this approach remains consistent with the primary research objective of this paper, which is to determine if a human-centered approach is a feasible alternative to the car-centric model in the way we plan our cities.

3.1.2 Research Method

A case study approach is appropriate when the research topic is relatively new, which is the case for a multidisciplinary approach to planning cities (Eisenhardt, 1989). This method can be defined as an empirical inquiry "that investigates a contemporary phenomenon in-depth and within its real-life context, especially when the boundaries between phenomenon and context are

not clearly evident" (Yin, 2009:18). A case study approach is, therefore, employed when an understanding of the real-life phenomenon is only possible through an analysis of relevant contextual conditions.

This analysis will be achieved through a comparative case study approach; more precisely by comparing three different cities; Copenhagen, Cape Town, and Tianjin Eco-city. In this context, instead of seeking to collect empirical data to improve a pre-existing theory, our research objective is to provide a better understanding of the observed event. Furthermore, through the use of the framework in each of the respective case studies, this study should allow the development of a broad benchmarking process that can be applied to other cities.

3.1.3 Choice of Case Studies

According to Hamel (1997), a case study takes into account an event within its particular context and attempts to relate the two, in order to examine how the event in question will develop itself in the future. Thus, the purpose of a case study is to present a deeper understanding of the different impacts of urban planning practices given a particular context. According to Yin (2009), the unit of analysis must be closely related to the initial research question. Evidently, since this paper is investigating the way cities are planned and built, our unit of analysis for this study will be cities.

The choice of cities used in this study is motivated by numerous reasons. Copenhagen used to be a car-centric city prior to the 1990s and has now become one of the world's most liveable cities by investing in human-centered infrastructure and removing its dependence on the automobile. The shift to a human-centered approach in planning the city has made Copenhagen a leader in the realm of eco-friendly capitals of the World (EU Commision, 2014).

Cape Town has been chosen as the second case study because of its strong European origins, which will render the comparison interesting since it can better highlight the diverging factors that led to sustainable urban development or lack thereof. Furthermore, South Africa scores low on development and well-being indicators when compared to Denmark (OECD, 2011; World

Bank, 2015). Therefore, comparing two major urban areas of those countries will signal patterns and outcomes that can possibly be applied to other cities in emerging economies, since the former shares many fundamental challenges with other developing cities. An example of these urban development challenges includes urban sprawl that is characterized by private sector investment and job growth occurring mainly in prosperous suburbs resulting in low-density, car-oriented development in and around the affluent areas (Turok and Watson, 2001). Meanwhile, low-income housing projects and public investment in basic services tend to be focused on where the price of land is the cheapest (Turok et al., 2001). Consequently, urban development in Cape Town is characterized by rising inequality, with a stark divide between affluent and poor communities.

As for the third case study, we will investigate the potential benefits of an eco-city, namely Tianjin Eco-city, a joint investment of the Government of Singapore and China, which will be completed in 2020. The aim of the city is to create a low-carbon environment that is inspired greatly by human-centered urban planning. It will be quite interesting to apply the framework to this Chinese eco-city and to further investigate the policy mechanisms through which it was facilitated since there is a current need to establish appropriate monitoring and auditing standards to ensure eco-cities are in fact 'holding up' to internationally-recognized standards of sustainability (Caprotti, 2014).

3.2 Conceptual Framework

In this section, we present a conceptual framework that will be used to analyze the three case studies of this paper. The framework outlines the major pillars that will be used to investigate the impact chain of urban planning practices. Based on our literature review and existing indexes, we created an assessment criteria that will enable a thorough benchmarking process of sustainable urban policies. The criteria will enable us to also evaluate the potential impacts and thus the feasibility of the human-centered approach to planning cities. For each pillar, we establish a set of factors that will be assessed by the use of various indicators. The indicators will then portray a thorough representation of potential and current impacts, to allow for proper resource allocation in city planning and further establish best practices in the realm of sustainable urban planning

policies. Each pillar will then receive a score between 1 to 5 that is based on the findings, which will help rank the cities' planning practices against each other and establish patterns. Each pillar will carry equal weight, and an average score will be presented at the end of each case study – the higher the score, the greater the likelihood of success of a shift towards human-centered urban planning, or in the case of a city with an already established human-centered approach, the higher the score, the higher the likelihood of its ongoing success. Similarly, the lower the score, the lower the likelihood of a successful shift towards human-centered city planning, due to significant underlying foundations missing.

See below for a breakdown of each of the scores:

- Excellent (5): *The city in question performs outstandingly*;
- Good (4): *The city in question performs above average;*
- Fair (3): *The city in question has both satisfactory and less than satisfactory indicators;*
- Poor (2): *The city in question mostly performs below average*;
- Very Poor (1): *The city in question has only negative attributes*.

The first pillar of this framework is the institutional setting of a city. This will influence the urban policies that arise from that particular municipality (Cohen, 2006). The implementation of any urban project within a city requires multi-level approval and the respect of regulations put in place both nationally and locally. This regulatory context necessarily sets the tone of the type of projects that will follow. As such, the institutional setting can either foster sustainable planning practices or prevent them. The second pillar is the perceived attitude towards sustainability. The national commitment, or lack thereof, towards green policies and GHG emissions reduction, will most likely trickle down to the municipal political strategy. This combined with a thorough understanding of the institutional context will help gauge the feasibility and thus the impacts of a human-centered approach to city planning. The third pillar is private development. This is an important determinant regarding the understanding of the incentive structures in place vis a vis urban projects. Private development plays a crucial role in the types of projects that will emerge in cities (Burchell et al., 2003). The fourth pillar is time frame and implementation.

Understanding the planning process and regulation for urban projects can either encourage or slow down the desired outcomes of particular urban planning initiatives. The fifth pillar is liveability. In other words, this is the population's perception of the city in question combined with the realities of living there. This pillar will be measured in a using the EIU's liveability (2015) and African Green Cities Index (2011). We will now discuss the pillars one by one.

3.2.1 Institutional Setting

A number of different institutional related factors can be used to evaluate urban planning policies. Since most city-planning decisions are made at the municipal/local government level, it is important to understand the inner workings of this level of government and its relation to other levels of government. A sustainable urban planning endeavor will most likely achieve its desired outcome should there be a strong link between governance and municipal policy. Furthermore, some municipalities are better equipped to shape the strategic planning of cities than others (Thornley and Newman, 1996). The regulatory framework put in place by the local government is also central to the proper evaluation of the effectiveness of urban planning strategies.

Civic engagement can also be an influential factor in the realm of urban planning. According to Sharp (2012), these various civic associations are important players in the urban political system. Therefore, understanding citizen involvement can enable a deeper understanding of the impacts of local governments' policies and programs. By observing whether think tanks and non-governmental organisations related to sustainable urbanization in a particular city are actively participating in urban development, one can better determine the feasibility of a shift towards a human-centered approach to city planning, or should that change have already occurred, can help maximize the desired outcomes.

3.2.2 Sustainability

The national attitude regarding sustainability can have impacts on policies at the regional and local level. For example, the emergence of green city planning initiatives in China might have resulted from the National Government's commitment to reduce pollution (Caprotti, 2014).

Studying the national government in question's commitment to green and sustainable policies will enable a better understanding of the current city planning strategy in place. Furthermore, observing key factors such as emission target setting and which types of energy investments are made at the national level will help determine the feasibility of a human-centered approach and its impacts.

3.2.3 Private Development

Although not frequently studied in the context of sustainability, this pillar is an important element in assessing the current urban strategy in place of a city. Investigating the process through which bids and tenders are developed will be essential in understanding the current urban planning strategies in place and which types of development will be favoured. Studying the trends and incentives of private development will gauge the feasibility of a human-centered approach to urban planning. For example, if private development in a city is plagued by nepotism and therefore lacks fair competition, bids will not be attributed to those that have the most efficient or innovative urban projects (Sharp, 2012).

3.2.4 Time Frame and Implementation

The mechanisms through which projects are planned and built in a city is a key factor in understanding the types of project that will prevail. This includes following the chain of approval for urban projects as well as the allocation of funds. This is critical since urban planning is an endeavor that needs cooperation amongst the public and the private sector (Thornley et al., 1996).

3.2.5 Liveability

Finally, the feasibility of a human-centered approach will be significantly influenced by the current liveability status of a city. By building on the Economist Intelligence Unit (EIU) (2015) Liveability Index, this pillar will take into account relevant factors such as stability, health, culture, environment, education, and infrastructure. To evaluate these factors, an analysis of public amenities such as public transportation, access to healthcare, crime and corruption level will be studied.

Table 1- Conceptual framework summary

Pillars	Factors	Indicators/measures
Institutional Setting	- Municipality - Regulatory framework - Civic engagement	- Municipality level of autonomy - Urban-related NGO and Think tank influence - Neighborhood groups - Municipal operating budget % of GDP
Sustainability	- National Government commitment - Target setting - Types of energy used	- International treaty participation - Green policies - GHG reduction targets - Public investments in renewable energy
Private Development	- Incentive structure - Local trends - Current public amenities	- Types of companies engaged in urban projects - level of competition for tendering process - zoning regulation - protection of heritage/green space - Public-private partnerships frequency
Time Frame and Implementation	- Planning process - Chain of approval - allocation of funds	- efficiency & feasibility studies - time delays from start to end of projects - transparency in the realm of urban projects - type of building projects implemented
Liveability	- stability - health - culture - environment - education - infrastructure	- EIU Liveability Index - EIU African Cities Index - World Bank/OECD poverty indicators such as income inequality

3.2.6 Potential drawbacks

As indicated previously, we expect a human-centered approach to urban planning to improve the economic well-being of the citizens of the city in question. However, it is important to note the potential drawbacks of a human-centered approach in addition to the possible benefits attributable to the conventional car-centric model.

According to Burchell et al. (2003:1534), there are three significant potential drawbacks to a human-centered approach:

- increased housing costs owing to the land development limitations posed by managed growth;
- extra-governmental costs stemming from the administrative requirements of imposing a growth management regime; and
- the thwarting or driving away of development potential because of an overcontrolled real estate market.

These potential shortcomings need to be taken into account of our analysis in order to have an accurate portrayal of the impacts of a human-centered approach.

Conversely, even though the conventional car-centric model is increasingly criticized, namely due to adverse impacts of urban sprawl, there are some possible lost benefits that need to be taken into account when analyzing the feasibility of implemented a human-centered approach in lieu of the car-centric model.

Burchell et al. (2003:1534) highlight three possible benefits to standardized urban sprawl, and thus car-focused city design:

- people have access to less expensive, single-family homes on large lots situated away from urban centers;
- greater opportunity for participation in governance owing to the high number of small jurisdictions found in these peripheral areas; and

- public service costs are lower in such areas as a result of the reduced need for a profound public service base.

Even though there are some expected benefits to the car-centric model and shortcomings to the human-centered approach, we expect that a human-centered approach will yield much more benefits in comparison. This is cohesive with the comparative analysis of Burchell et al. (2003) where his research concluded that even with the inclusion of the adverse effects of a human-centered approach and the positive impacts of a car-centric model, the former remains more advantageous.

For the purpose of this study, our focus of this analysis will be on the feasibility of the human-centered approach, in comparison to the standard car-centric model. To assess the impacts of the different types of urban planning practices, three case studies will be looked at, by analysing both the present and predicted future scenarios, based on the framework. The conceptual framework will be based on a number of different indicators and anecdotal evidence.

3.3 Data and Indicators

In this section, we describe the data used in our study. First, we present the various data sources. Second, we define the indicators that will be used to explain the motivation of their inclusion in our analysis.

In term of liveability indicators, the Economist Intelligence Unit (2015), has recently created the 'Liveable City Index', which measures a city's liveability beyond observing its financial prosperity. The way it measures a city's score is by observing five categories.

1. Stability (Weight of 25%): takes into account indicators such as crime prevalence and civil unrest
2. Healthcare (Weight of 20%): this includes the quality and availability of healthcare within the city itself
3. Culture and Environment (Weight of 25%): indicators include discomfort caused by climate and corruption

4. Education (Weight of 10%): measures the quality and availability of education
5. Infrastructure (Weight of 20%): indicators include the quality of road network and the quality of public transportation

Since Cape Town was not included in the EIU study, we will use the EIU's African Green Cities Index to observe its liveability. This index looks at liveability elements more relevant to African urban centres, including land waste management and water resource availability.

Although the EIU indexes are a step in the right direction in terms of increasing the indicators observed to determine the liveability of an urban area, there is still much work to be done to study the relationship between urban development and economic well-being. For example, increased car dependence results in traffic congestion, which has some very real costs (Prud'homme, Koning and Kopp, 2011; Popovic, 2012). As emphasized by Stiglitz, Sen and Fitoussi (2008), measures in the realm of economic well-being need also to be framed in the context sustainability. Therefore, we will use information provided by the EIU indexes and add other measures we deem appropriate in the context of the framework outlined in this paper.

Information available through municipal and national government websites will also be used when applying the framework to the three case studies. Local governments provide information on current urban projects and as well as information on bidding processes for urban projects. National governments also often provide thorough information on housing policies and environmental policies currently in place related to the realm of urban development. This information will be highly relevant when measuring the level of competition within private development companies as well as the building and urban development incentive structures.

Chapter 4. Case Study 1: Cape Town

The following chapter will apply the conceptual framework to the first case study. This standard approach will also follow in the two latter case studies. First, some initial background information on the city will be provided. Second, a summary of the city's current urban development context is presented. Third, the conceptual framework application will be discussed. Fourth, a summary and analysis of the findings will be highlighted. Finally, concluding remarks and possible recommendations will be presented.

4.1 Background

Although being one of the most beautiful places in the world and a tourist capital, Cape Town in the Western Cape, province of South Africa, has fostered urban sprawl and, therefore, a car-centric planning approach as we will argue this case. This is potentially due to the legacy of Apartheid-era government policies of racially-based residential segregation.

Apartheid policies were created, in part, to restrict and manage the movement, as well as the settlements, of non-white peoples in urban areas. Pervasive policies, such as the Natives Act of 1923 and the Group Areas Act of 1950, prevented non-whites from owning land or congregating in areas deemed to be for Caucasians only by the government (De Swardt et al., 2005). These policies cemented an unequal and unsustainable way to develop a city, resulting in people being pushed to the outskirts of urban areas. This can be considered a form of not only planned, but also accelerated urban sprawl (Robinson, 1998; De Swardt et al, 2005; Sinclair-Smith, 2013).

Urban sprawl in the context of emerging economies, such as in South Africa, is very problematic because it is primarily in the form of unplanned and unregulated settlements (African Green City Index, 2011). In Apartheid-era Cape Town, high population growth combined with racially-based residential segregation imposed by the National Party-led Apartheid system led to separate informal settlements being designated in the southeast periphery of Cape Town, such as Khayelitsha. These informal settlements, also known as slums, suffered from minimal access to

basic services and had little-to-no reliable access to the central economic hub (Turok et al., 2001). The income inequality based on racial lines, which was perpetuated during Apartheid, led to a segregated urban sprawl on the outskirts of the city. Although there are slum redevelopment policies in South Africa, a third of the urban population still live in informal settlements (World Bank, 2015). These can be defined as a group of housing that is not permanent and is not on a formally registered residential property (Turok et al., 2001).

As such, at the cost of the marginalised residents, Cape Town, and its surrounding area have since developed into a more centralised physical form than other cities in South Africa with both officially regulated and planned development focusing on car-centered infrastructure. The aforementioned planning practices have been reinforced due to affluent members of society influencing city-planning (Turok et al., 2011). As a result, radial car transport routes have fed high volumes of people and goods into the dominant Central Business District and adjacent areas, which still accommodate the largest concentration of economic activity and employment (Turok et al., 2011).

4.2 Current Status

Cape Town currently has a population of approximately 3 749 026 inhabitants (World Bank, 2015) with a density of 1530 persons per square kilometer (Statistics South Africa, 2016). Cape Town's low density qualifies it as the second-least dense city of Africa's fifteen major cities--the average being 4,600 persons per square km (African Green City Index, 2011). The low density is likely due in part to the city's ongoing urban sprawl and resulting lack of mixed-use development. Even though low-density development was considered an effective way to protect fragile resources, such as Cape Town's limited water supply, many urban planners now state that low-density may have the opposite effect (Farr, 2008). Furthermore, with the population growing rapidly by nearly a million people in the past decade, the developed area of Cape Town has subsequently increased by 40 % between 1985 and 2005 (Statistics South Africa, 2015).

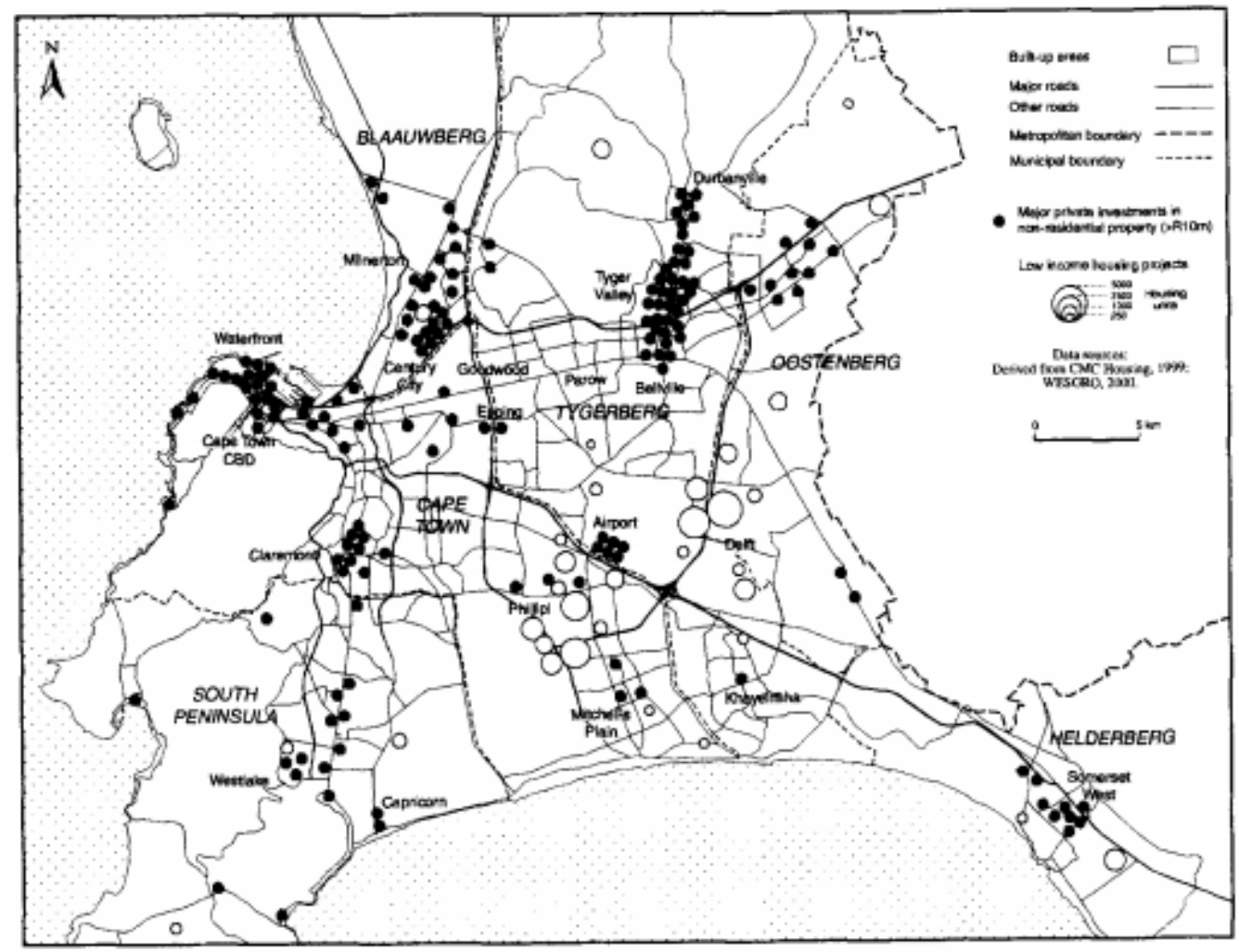
As the urban sprawl continues to expand in Cape Town, for both marginalised and affluent populations, this has meant that an increasing amount of residents have had to rely on

commuting further and further to work. In many developing countries, including South Africa, the choice of transportation is typically dictated by income (UN Habitat, 2013). Specifically, low-income segments of the population will utilize public transport and non-motorised modes, while high-income members of society will most likely use private motorised transport. Nevertheless, as a whole, the result has been severely congested traffic in Cape Town (De Swardt et al., 2005). It is unsurprising that Cape Town's transportation investments are highly unequal, since South Africa is a highly unequal country; having the highest Gini coefficient – a measure calculating income inequality between 0 and 1, with the higher the number the greater the income inequality (see Annex 1) – in the world in 2009 (UNDP, 2012).

Urban growth boundaries, or "urban edges" as they are known in South Africa, are planning mechanisms currently used in many countries to curb urban sprawl (Sinclair-Smith, 2013). It was at the turn of the twenty-first century that Cape Town began demarcating these urban edges around the periphery of the city in an attempt to combat its unchecked urban sprawl. However, even though Cape Town has officially identified these urban edges in order to regulate development and mitigate continued sprawl, an often-overlooked consideration is that their administration presents many challenges for the local government (Sinclair-Smith, 2013).

The urban edge was introduced through the *Cape Town Metropolitan Spatial Development Framework* where it featured prominently as a key element of its spatial vision (Sinclair-Smith, 2013). This policy, used to counter poor spatial planning from apartheid, has had mixed results. For example, according to Sinclair-Smith (2013), it has driven long-term infrastructural planning, and has thus been influential in keeping urban development from sprawling further beyond the "edge". However, its success has admittedly been limited by not having a statutory status, according to the City of Cape Town (2016), since the city only recently managed to accurately demarcate the urban edges to reach the city's coastal interface. The following figure (1) shows the demarcations of the urban boundaries (dotted lines) and the white circles show the major low-income housing areas within the greater Cape Town area.

Figure 1 - Location of low-income housing and urban boundaries



Source: (Turok et al., 2001:121)

4.3 Conceptual Framework Application

The City of Cape Town has greatly improved in urban practices since the end of Apartheid. Although still characterized by urban sprawl and resulting car reliance, Cape Town has improved considerably over the years with the African Green Cities Index (2011) scoring it quite high in liveability when compared to other African urban centres. However, it is important to note that Cape Town lags behind when compared to other metropolises around the world, in areas such as environment and energy management (World Bank, 2015). In this section, we apply the

conceptual framework to determine whether a human-centered approach to city planning would be feasible in Cape Town and what the major areas of improvement could be.

Institutional Setting

As discussed, our first pillar of the framework is the institutional setting of a city. Decentralizing urban governance and adopting more sustainable and resilient city planning approaches are critical first-step adjustments that dramatically improve how regulatory forces influence future urban development. Unfortunately, in many urban centres in Africa, the reverse is happening (African Green Cities Index, 2011). The decentralisation of power from the national to the local level is crucial for effective planning; this is one of many reasons that chartered cities have become popular in development practices in the Global South. There is a trend towards national governments exerting more authority over municipal matters, but according to research from the African Centre for Cities (2011), the re-centralisation movement has occurred in most regions with the exception of South Africa, where South African cities currently manage many important levers of positive urban development change. The City of Cape Town has a high level of fiscal independence from the national government. This is partly due its quasi-federal system, which has decentralization laws enshrined in its constitution (Resnick, 2012). South African cities also rely more on their own tax revenues than national government transfers (Resnick, 2012).

Another important element forming the institutional setting is civil society. The City of Cape Town engages with the public through various non-governmental actors in order to promote inclusiveness vis-a-vis their projects. However, the city still engages in public consultation processes that are considered far from inclusive. For example, one of the reasons Cape Town's decentralization and good fiscal governance has not translated into a permanent shift from car-centered planning to human-centered urban development can be attributed to the lack of inclusivism regarding the City's budgeting process. According to the opinion piece published by the South African non-profit Ground Up (2016), Cape Town's local government's pre-budgeting process is considered unfair and not transparent.

It is important to highlight that even though the budget data is open and available to all, it can be difficult or near impossible for the most marginalized members of the greater Cape Town area to

participate and provide input prior to the City allocating its resources for the upcoming budget. Also, with decentralization comes greater responsibility for local government, since managing relatively larger local budgets has a much more immediate and targeted impact on its constituents when compared to the centralized form of government. An inclusive budget resulting in sustainable practices is one that is accessible, transparent and enables all members of the public to participate. In Cape Town, the budget process has been described as more of an inspection and comment than a forum for public deliberation (International Budget Partnership, 2016).

A member of the non-profit *Ground Up SA* outlines the following challenges with the City's budget consultations:

"*The City places the budget on its website on the night of the draft budget speech with just 21 days to make submissions. The budget, when printed, is a stack of paper 20cm high full of figures, tables, annexures and lists, which is very difficult to understand and engage with. Access for those without computers or internet is also not taken into account.*
There is currently no organised forum in place to actively encourage and support real participation. The job is effectively given to a unit within the City known as the Participation Unit. When we engaged with this unit, it was severely understaffed and had almost no seniority or capacity within the City." (Axolile Notywala, April 2016)

In the past decade, there have been less than 60 budget submissions to the City of Cape Town (International Budget Partnership, 2016). The gap with respect to public consultations regarding budgeting allocations has started to be filled by the active civil society organisations operating within the city. Several non-profit organisations are running workshops in informal settlements to assist these more marginalized communities to better understand the city's budget documents and prepare relevant comments (International Budget Partnership, 2016). These various workshops, including one supported by Ndifuna Ukwazi (NU) and the International Budget Partnership in one of the most impoverished areas of the greater Cape Town area, Khayelitsha, could influence city planning towards a more inclusive and human-centered approach. These less affluent segments of society are those that have a greater need for investment in modes of public

transportation. Impacts of car-reliance will not likely be mitigated against until those with a greater need for sustainable public transit have a fair say in how the local government allocates funds and resources.

Sustainability

The second pillar of the framework is the approach towards integrating sustainability into city planning. Increasingly, the discourse regarding the environment has evolved to include other critical issues surrounding adaptation to future climate impacts (UN Habitat, 2014). South Africa, has agreed to adopt programs for mitigation and adaptation to climate change, with Cape Town implementing its Energy and Climate Change Action Plan as a result (CofCT, 2011). These policies are not always easily translated to the local level. According to Mukheibir and Ziervogel (2007), the resources and capacity at local level to deal with the implementation and operational issues regarding climate change are not optimal - and for the City of Cape Town, there have been very limited examples over the past decade of substantial work done in this arena.

According to the African Green Cities Index (2011), Cape Town scores below average for energy consumption and Co2 emissions when compared to 14 other African metropoles. In addition, quantifiable metrics outlined by the EIU index suggest that Cape Town is lagging in the realm of the environment, including waste and greenhouse emissions (African Green Cities Index, 2011). Nevertheless, the African Green Cities Index (2011) does rate Cape Town high in sustainable policies because of its comprehensive Energy and Climate Change Action Plan targeted at improving its performance by improving its energy supply by increasing total renewable energy by 2020. This objective is strongly in line with the human-centered approach to city planning since the city has stated within the action plan that they are aiming to build a more compact, resource-efficient city and will develop a more sustainable transport system (CofCT, 2011).

The city has also significantly improved the management of overlapping and competing land demands, much of which are environmentally sensitive (African Green City Index, 2011). This has been done by mapping sensitive biodiverse areas and preventing them from being over-

developed. Not only does protecting sensitive green spaces surrounding Cape Town prevent environmental degradation, but it also favours higher density development and human-centered infrastructure investment. Sustainability is central to the human-centered approach to city planning (Resnik, 2010).

Private Development

The third pillar of the framework is private development. The aforementioned is considered to be highly regulated in the City of Cape Town (African Cities Index, 2011; Mukheibir et al., 2007). This is a direct outcome of its municipal legislation regarding urban edges. Since these edges mostly delineate the areas that the city will stop providing the services and infrastructure necessary for continued outward urban growth, it has provided additional incentives for private developers to focus on mixed-use development and to encourage development closer to the urban centres (Sinclair-Smith, 2013). This has been a useful backstop to some degree, but according to Next City (2016), the urban edge has been made porous by politicians catering to the short-term interests of voters and developers. In other words, the urban edge has not been entirely successful in preventing the continued urban sprawl.

An area that the City of Cape Town has been successful in is their planning processes. The city has recently streamlined their planning methods through providing additional resources to ensure different channels and departments are able to assess the impacts of various development proposals. This allows for an informed and thorough mechanism, which encourages a more comprehensive review and discussion of information between staff from different CofCT Departments, with respect to issues related to competing land demands. This led to the creation of the aforementioned *Cape Town Spatial Development Framework* (CTSDF), which has an important element conducive to inclusive city planning: the focus on gaining public input regarding development proposals (CofCT, 2016). Building on what was highlighted previously, although the city chooses to include public input, they have not yet found an inclusive and accessible method of doing so.

Time Frame and Implementation

Our fourth conceptual framework pillar is time frame and implementation. The application of urban projects has been a challenge for the City due to competing urban, agricultural and environmental interests. As mentioned previously, the approval of the CTSDF (CofCT, 2016) proved to be particularly useful and pivotal to the city's land assessment process. The framework helped identify and prioritize land-use areas that would be safe and most beneficial to civilians in the long-term for development. In addition, the CTSDF provided the impetus to build upon the current geographic information systems. Furthermore, the land assessment process improved due to the many studies that were conducted simultaneously, one of which being a study of agricultural land as well as another study which was an extensive survey of environmentally-sensitive land in Cape Town (African Cities Index, 2011).

Furthermore, another important element of this area of the conceptual framework is the tendering or contract selection process. According to data from the City of Cape Town, large infrastructure projects have on average four or more competitors and the projects go to different private developers (CofCT, 2016). The contract review-and-award process is more extensive, which is beneficial to a shift towards sustainable urban planning, as it is more likely to have proper needs assessments and recommendations put in place before the shovels hit the ground. The bids that are successful vary depending on the project, as such, competition is high, and the process is transparent by providing citizens with information on each bid put forward for City contracts. This, in turn, has led to researchers awarding Cape Town with a high score in land management, compared to other African cities overall (African Green Cities Index, 2011).

Liveability

Finally, the fifth pillar of our conceptual framework is the city's liveability rankings. The African Green Cities Index employs a similar methodology to the Economist Intelligence Unit's Liveability Index (African Green Cities Index, 2011). According to the African Green Cities Index and observing data from the City of Cape Town, Cape Town ranks as being above average when compared to the other major African urban centres, but below average when compared to leaders in sustainable cities, such as Copenhagen, (discussed in the following chapter) (see Table 2).

Table 2 - Cape Town liveability ranking according to the EIU African Green Cities Index (benchmarked against 14 of the largest African Cities)

Category	Indicator	Average	Cape Town	Year*	Source
ENERGY and CO_2	Proportion of households with access to electricity (%)	84.2	**89.7** [e]	2009	General Household Survey 2009
	Electricity consumption per capita (GJ/inhabitant)	6.4	**13.9** [e]	2009	City of Cape Town, Electricity Department
	CO_2 emissions from electricity consumption per person (kg/person)	983.9	**4,098.6** [e]	2006	State of Environment Report 2008
LAND USE	Population density (persons/km^2)	4,578.1	**1,509.5**	2009	EIU calculation
	Population living in informal settlements (%)	38.0	**17.0** [e]	2009	City of Cape Town, Environmental Resource Management Department
	Green spaces per person (m^2/person)	73.6	**289.5** [e]	2010	City of Cape Town GIS data
TRANSPORT	Length of mass transport network (km/km^2)	2.7	**1.9** [1e]	2010	Golden Arrow Bus Company
	Superior public transport network (km/km^2)	0.07	**0.11** [2]	2010	Cape MetroRail & MyCiti BRT
WASTE	Waste generated per person (kg/person/year)	407.8	**572.9**	2010	City of Cape Town Solid Waste Minimisation and Disposal Statistics Database
WATER	Population with access to potable water (%)	91.2	**91.4** [e]	2009	General Household Survey 2009
	Water consumption per person (litres per person per day)	187.2	**225.2**	2009	City of Cape Town, Environmental Resource Management Department
	Water system leakages (%)	30.5	**10.0** [3]	2009	City of Cape Town, Environmental Resource Management Department
SANITATION	Population with access to sanitation (%)	84.1	**94.1** [e]	2009	General Household Survey 2009

All data applies to Cape Town unless stated otherwise below. * Where data from different years were used only the year of the main indicator is listed. e = EIU Estimate. 1) Number of bus routes (182) multiplied by average length of route (26.1 km). 2) There are no subway or tram lines. 3) Unaccounted for water = 24.5%

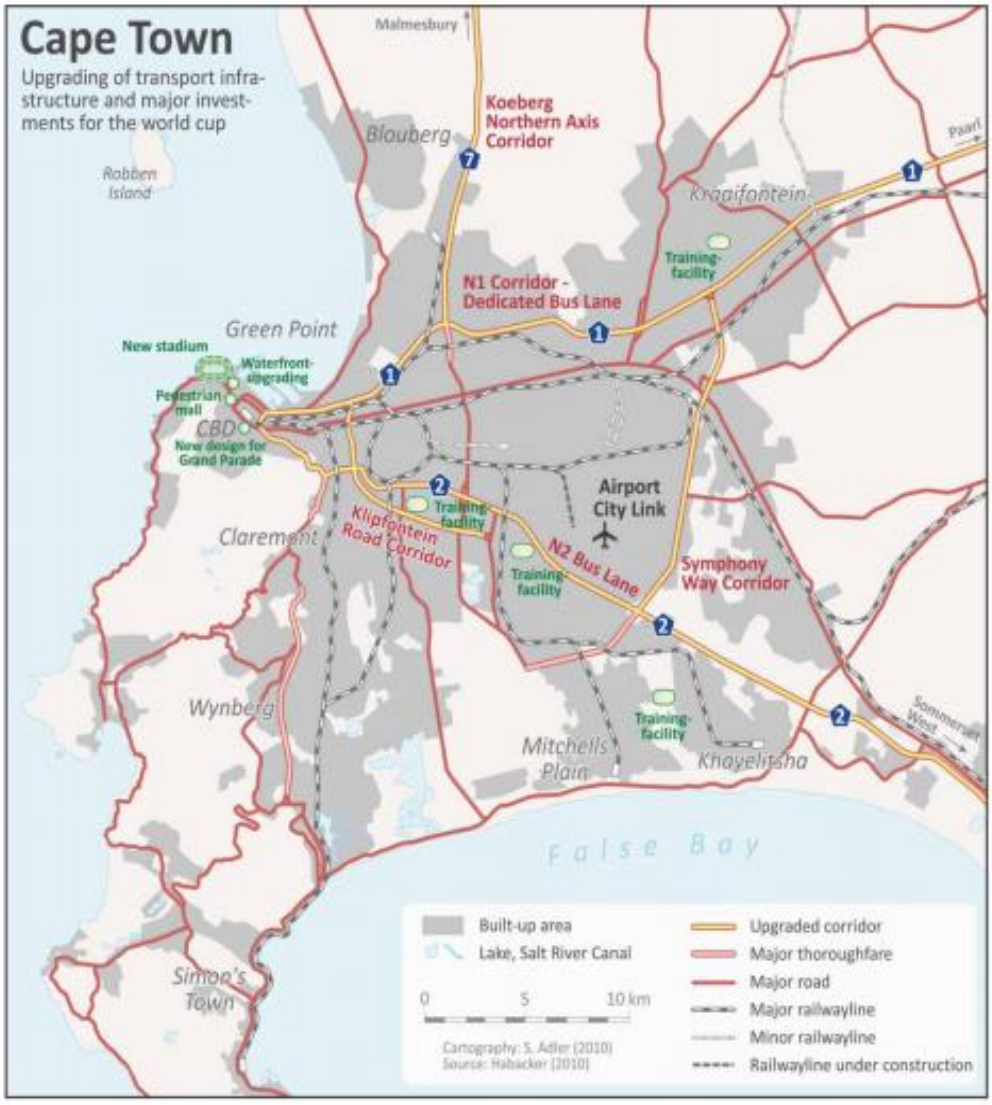
Source: EIU African Green Cities Index (2011:51)

Cape Town is certainly a leader when it comes to waste and land management. However, the City still lags in the area of reliable transportation. Admittedly, the City's downtown public transportation system is widely used – much of which was developed in anticipation of the FIFA World Cup in 2010. This development for the mega event can be shown in figure 2 below. Yet, despite accelerated development, there is still relatively little to no available option, other than privatised motor transportation for suburbanites of both high and low-income areas to gain reliable access to the downtown core. This dilemma can be attributed in part to the Apartheid legacy of forced and accelerated urban sprawl (Haferberg, 2011).

Furthermore, the most recent City of Cape Town budget saw a reduction in funding of approximately R30.1 million in recent years on various projects within the Human Settlement Directorate (CofCT, 2016). This is problematic, considering that sanitation, albeit good overall, is unsettlingly inferior in many of Cape Town's informal settlements and townships. Capital investment allocations for sanitation in informal settlements – used for long-term infrastructure, such as flush toilet systems – are extremely low and disproportionately small (African Green City Index, 2011).

There are many other changes in the upcoming budget. Additional capital allocations will be used to reduce crime, which is highlighted as one of the major deterrents to sustainable urban development (Economist Intelligence Unit, 2015). There will be an additional allocation of 3 million South African Rand over the next fiscal year for training of law enforcement officers within Safety and Security Directorate funded Provincial Government (CofCT, 2016). The budget also shows minimal funding to combat high levels of traffic congestion to get into the city or expansion beyond the downtown core (CofCT, 2016). This is another consequence of Cape Town's heavy reliance on private motorised means of transportation. Although current data is not available, Cape Town and South Africa as a whole have been plagued by high-income inequality, with the highest income inequality globally in 2009 (World Bank, 2015). This creates a problematic foundation for ensuring an inclusive and liveable city.

Figure 2 - Map showing transport infrastructure upgrades in Cape Town and nodes of World Cup investment



Source: Haferburg (2011:339)

4.4 Summary and Analysis

According to our five pillar framework, Cape Town falls into the car-centric category of city planning, which is characterized by its continued urban sprawl over the past few decades - perpetuated during the Apartheid era. This has led to many challenges for the city including slum upgrading, protection of environmentally-sensitive lands and mitigating the effects of CO2 emissions and energy consumption.

However, research and our findings show that Cape Town is improving its urban development practices. Over time, Cape Town might be strongly inclined to reduce its reliance on the automobile while enhancing a human-centered approach to city planning, because it currently employs many of the smart growth theorem's pillars necessary to instilling positive urban development including an engaged civil society and strong municipal level governance. The decentralisation of governance allows the City to adopt autonomous legislation without being too restricted by national policies; in other words, ensuring the local level has the freedom and authority to contextually enact national policies

According to the African Green Cities Index (2011), Cape Town scores above average in land management due mostly to its Energy and Action Climate Plan. Even though Cape Town currently has a significant portion of its population still living below the poverty line (World Bank, 2015), the policies that stemmed from the Plan will most likely have tangible results on quantifiable metrics in the upcoming years. The recently implemented Cape Town Spatial Development Framework and the open, competitive process for tendering large scale projects in the City is conducive to improved development in the future. However, public consultation is still a challenge for the City, as it is currently only being used by affluent constituents that can easily understand the jargon and have access to a computer. To improve the living conditions of those living in informal settlements, more outreach needs to be done on the City's part to include them. Research, policy and practice examples show that incremental settlement upgrading and consultations with marginalized communities are by far the most viable and effective practice (Robinson, 1998).

Table 3 - Cape Town Summary

Pillars	Factors	Takeaways	Score/Valuation
Institutional Setting	● Municipality ● Regulatory framework ● Civic engagement	There is a strong decentralisation of power to local authorities in South Africa. However, the impact of civic engagement is unknown due to lack of accessibility of pre-budget input for marginalized communities.	Fair
Sustainability	● National Government commitment ● Target setting ● Types of energy used	Many of the progressive policies have only recently been implemented in Cape Town -impacts of which have yet to be determined. However, the African Cities Index commends Cape Town for their work in this area due to its aggressive 2020 environmental targets	Good
Private Development	● Incentive structure ● Local trends ● Current public amenities	Competitive and transparent, lack of inclusive public input	Poor
Time Frame and Implementation	● Planning process ● Chain of approval ● Allocation of funds	Although the planning processes are becoming more conducive to inclusive city planning with the introduction of the CTSDF, ensuring projects adhere to the new environmental policies is left to be determined. The local environmental and energy policies should be integrated in the CTSDF.	Fair
Liveability	● Stability ● Health ● Culture ● Environment ● Education ● Infrastructure	Liveability is high compared to other African Cities, but lags when compared internationally due to lack of reliable public transportation, low density and high income inequality	Poor

4.5 Conclusion and Recommendations

As we observed within our conceptual framework, Cape Town performs well in sustainability, although much of the results of its recently implemented green agenda have yet to materialize, yet performs poorly in liveability and private development. Even though Cape Town is leading in liveability within the African continent, more focus on higher density mixed-use development should be a priority, as well as extending the public transportation infrastructure to the excluded informal settlements and suburbs. Transparency and more inclusiveness regarding local government spending are recommended for improved urban development. Furthermore, the Impacts of Cape Town's *Energy and Climate Action Plan* will be interesting to follow since they have targets regarding their energy sector and sustainable transportation that they are looking to reach by the year 2020. Continuing to expand on current transit routes to reach most marginalized communities will be an important step towards improving the city's inclusiveness.

Another important recommendation is for the City to improve its grassroots consultations. There is currently no organized forum in place to continuously encourage and support meaningful participation. The task of public consultation is given to a unit within the City known as the Participation Unit. Unfortunately, current capital allocations demonstrate that this unit is severely under-funded relative to other departments and is currently understaffed (GroundUp SA, 2016; CofCT, 2016). For a feasible shift towards human-centered city planning, public consultations regarding future development should be accessible to those living in informal settlements and marginalized communities who have been both been historically excluded because of Apartheid and are presently excluded because of its segregating legacy. To achieve this, allocating more resources to training and increased public participation will most likely benefit urban development in Cape Town.

Chapter 5. Case Study 2: Copenhagen

5.1 Background

Copenhagen is the largest city and Capital of Denmark and is located on the far east side of the island of Sjaelland. With approximately a half a million residents, the city of Copenhagen is relatively small (World Bank, 2015). Garnering a density of about 2,052.4 persons per square kilometer-- the density is not that high for a major city (Fertner, 2013). However, the low density is not a testament to low mixed-use development but is more likely due to the low-rise nature of the city (Larsen and Hansen, 2008).

The past 20 years of changes in Denmark's urban development strategies have included many trends, including the curb of urban sprawl through development endeavors focused on people rather than cars (Larsen et al., 2008; Katz and Noring, 2016). Back in the early 1990s, like most cities globally, Copenhagen was plagued by urban sprawl, which caused problems of traffic congestion and air pollution as a result of high or increasing levels of motorised transport, such as individual car use (Gössling, 2013).

Much like many other cities around the world dealing with rapid urbanization, Copenhagen also dealt with a spike in rural-urban migration during the early 1990s which caused severe unemployment, especially in the suburbs surrounding the downtown core, and forced planners to rethink the urban planning strategy of the city (Andersen et al., 1995). Planners opted for radical changes, not unlike the planners in China spearheading the eco-city revolution, from a previous tradition to restricting investment and growth in Copenhagen to adopting a sustainable, forward-looking urban renewal strategy. This shift in planning policy is one of the main reasons Copenhagen entered in the running of a lead sustainable global city (Larsen et al., 2008).

The precise pivotal moment for urban planning in Copenhagen, which many attribute to being the reason for its current liveable and human-centered character, was the implementation of the City's "Close to Station" planning, introduced in 1989, which is synonymous with the principles of city planning dedicated to people rather than vehicles (Norden, 2016). The planners of Copenhagen ensured that areas for additional building developments were limited to within one

kilometre from any railway station. As such, buildings would be agglomerated around the major railway stations in Greater Copenhagen (Norden, 2016). This focus on mixed-used development created an incentive structure that favored public transport over private car use since the investments made by the city were targeted at the liveability of the city and not car-related infrastructure (Katz et al., 2016).

5.2 Current Status

Copenhagen's investments in the creation of a city that is human-centered, and consequently shifting away from car-reliance, has made it known as one of the world's most sustainable and liveable urban centres. As an innovator in clean, renewable energy at all levels, Copenhagen is now not only known for its city planning catered to people, but also to the environment. The City's focus on mixed-use, mixed-income neighborhoods, has led to a unique urban environment that is innovative, inclusive and forward-looking (Katz et al., 2016). A testament to this was its selection by the European Union as the Green Capital for 2014, with the jury concluding that "Copenhagen is a highly successful role model for the green economy, with an efficient communication strategy and the commitment required to develop its role as a model for Europe and beyond" (European Commission, 2014).

Part of what makes Copenhagen's planning evolution unique was its increased bike use. Where cycling as a primary source of transportation has declined in most industrialized economies since 1950, it has continually increased in Copenhagen (Gössling, 2013). More precisely, according to Gilbert and Perl (2008), on a global annual average, cycling has fallen from more than 1400 km cycled per person, to less than 1000 km. Not surprisingly, the use of private cars has increased from a global annual average of 2000 km per person at the start of the 20th century, to 9490 km by the 1990s (Gilbert et al., 2008). Therefore, one of the major outcomes of Copenhagen's innovative urban planning processes is the rise of cycling usage in the City, despite the lagging growth of such a mode of transportation in other countries. The proximity of development through the close to station approved combined with continued investment in cycling-related infrastructure has led to a steady increase of cycling within the City. Research shows that considerable growth in the adoption of bicycling in Copenhagen can continue to be expected in the future (Gössling, 2013).

With Copenhagen's international recognition as the way forward in city planning, its focus on cycling as a reliable and safe mode of transportation has contributed to the cycling revolution occurring globally. Many cities are slowly trying to mitigate the impacts of car-use and experts agree that a cycling renaissance has been resultantly on the rise in different areas of the world since the turn of the 21st century (see Table 4).

Table 4 - Growth of cycling in various cities

Share of trips made by bicycle and growth rates, various cities.

City	Trips made by bike (%)	Growth by period
London, UK	1.2% (2006)	2000–2008: +99%
Bogota, Columbia	3.2% (2003)	1995–2003: +300%
Berlin, Germany	10.0% (2007)	1975–2011: +275%
Paris, France	2.5% (2007)	2001–2007: +150%
Barcelona, Spain	1.8% (2007)	2005–2007: +100%
Amsterdam, Netherlands	37.0% (2005)	1970–2005: +48%
Portland, OR	6.0% (2008)	1990–2008: +445%
Copenhagen, Denmark	38.0% (2005)	1998–2005: +52%
Münster, Germany	35.0% (2001)	1982–2001: +21%
Freiburg, Germany	27.0% (2007)	1982–2007: +80%
Odense, Denmark	25.0% (2002)	1994–2002: +9%
Groningen, Netherlands	40.0% (since 1990s)	1990–2005: +0%

Source: Gössling (2013)

5.3 Conceptual Framework Application

Copenhagen has been a leader in the realm of sustainability for years now. In this section, we will apply the conceptual framework in order to further evaluate the feasibility of the human-centered approach to city planning and determine what some of the underlying factors of the implementation of this strategy were.

Institutional Setting

Copenhagen's local government holds a lot of power and fiscal independence. The Danish political system is described as decentralized (Katz et al., 2016) with the Copenhagen municipality budget accounting for nearly half of Denmark's national output and, therefore, has much authority over its local policies (OECD, 2011; World Bank, 2015). Furthermore, municipalities in Denmark are tasked with the agenda for regional development and growth, which in many other jurisdictions would be the responsibility of higher levels of government (Katz et al., 2016). As a result, Copenhagen is the leading actor for local businesses and confers upon municipalities the major responsibility for advancing national policies, such as environmental sustainability.

The decentralized nature of the Copenhagen political system also applies to the local government, where the City's civic capacity in Copenhagen is reinforced by its *mellemformstyre* system; resembling a ministerial cabinet, as opposed to a traditional mayoral system - with many 'mayors' being responsible for distinct portfolios. For example, Copenhagen has a mayor of the environment, a mayor of economic growth, and so on (Katz et al., 2016). The concentration of power at the municipal level, which makes the city arguably more powerful than national government regarding its own interests and agenda, has undoubtedly played an instrumental role in the sustainable and human-centered city-planning practices (Gössling, 2013; Katz et al., 2016).

Civil society has much space in the institutional setting of Danish politics (Anderson, 2014). Governance in Denmark is considered by OECD standards to be inclusive with a particularly active civic engagement (OECD, 2011). A characterizing factor of this is the youth and diversity-focused pre-budget consultations. The Danish education system also plays a significant role in its

civic engagement, with the Economist Intelligence Unit (2015) rating its educational sector a perfect score. The high-level quality and availability of education have put results and research at the forefront of development in Denmark. This, in turn, translates into cutting-edge collaboration across political parties, levels of government and other sectors of society in the realm of urban development (Katz et al., 2016).

Sustainability

Copenhagen's status as a leading sustainable city is due in great part to its leadership in the realm of green transit. The City has aimed to become the world's most practicable city for cyclists with close to 50% of people currently cycling to their place of work or education, they have managed to greatly reduce pollution and greenhouse gas emissions (European Commission, 2014). Copenhagen also scored 87% of the maximum number of points, in a recent survey (State of Green, 2015) ranking Copenhagen the 2nd city in Europe with the cleanest air. Air quality is high because of the strong cycling culture and the high costs imposed by the City to polluting car owners. Cycling culture does not only apply to the working population, according to statistics from Denmark's Cycling Embassy (2015), 44 % of all children in Denmark aged 10-16 cycle to their schools. Children are learning how to bike with many never seeing the need to purchase a vehicle.

Copenhagen's status as a green innovator is not only attributed to its shift away from non-car reliance; it also has very progressive environmental policies, focusing on renewable energies and making sure the built environment reflects its green urban planning agenda (C40 Cities, 2013). Currently, over 20 % of Denmark's overall energy comes from renewable energy, with much of the renewable energy coming from wind turbines. (Denmark Stats, 2016). Denmark, and more specifically Copenhagen, is considered a world leader when it comes to developing new technology in this area (Denmark Stats, 2016). In this same vein, Copenhagen has pledged to be the first carbon-neutral capital in the world by 2025 (Katz et al., 2016). Specifically, Copenhagen's Climate Plan 2025 is looking to reduce CO2 emissions from its buildings, which accounts for 75% of its emissions since many of the City's buildings were built many decades ago and did not meet current energy efficiency standards (C40 Cities, 2013).

Private Development

Over the past two decades, private enterprise in Copenhagen has increasingly been included in the local authority's decision-making and policy implementation processes. This is attributed to the public sector's encouragement and embracing of "entrepreneurial forms of organisation and behaviour" (Larsen et al., 2008:2432). Copenhagen has also created much of its innovative and eco-friendly development over the past decades through public-private partnerships. At the core of its eco-innovation is the inclusion of multi-level partnerships, with the City working closely with companies, universities and organisations in "dedicated forums to develop and implement green growth" (European Commission, 2014).

With strong governing capacities at the local level, Danish municipalities interestingly have the ability to create publicly-owned corporations, which act similar to traditional private developers, and are usually established for specialized areas in urban development (Katz et al., 2016). These publicly-owned corporations create opportunities for dedicated public and private partnerships. A positive example of such a partnership is the CPH City and Port Development, which is a multi-level of government endeavor that is focused on the development of areas along the waterfront and overseeing operations and logistics of Copenhagen's port (Katz et al., 2016. The publicly-owned corporation was also able to raise capital to improve the metro system. According to Katz et al. (2016), the benefits of these types of corporations "lie in their ability to bring scale and to harness market forces while working toward the public good".

Time Frame and Implementation

One of the unique outcomes of Copenhagen's multi-mayoral system is the focus it brings to long-term interest as opposed to short-term concerns. In other words, urban development endeavors are built and created for long-term impact as opposed to being made for immediate results (Gössling, 2013). This principle of urban development explains why Copenhagen is currently leading in the realm of sustainability today - it started creating policies over 20 years ago with sustainability in mind (Norden, 2016).

Furthermore, another important element of this area of the conceptual framework is the tendering or contract selection process. Currently, the chain of approvals for the built environment in

Copenhagen has a dedicated space for its public and private partnerships. Although the City does not have much competition for government contracts, with often less than 4 companies bidding (Denmark Statistics, 2016), the dedicated space within the regulatory and political framework of the city has ensured that development processes, by default, are complemented with a wide array of stakeholder engagement - from civil society to academia, the public, and the private sector - thus ensuring transparency in this area. The eco-innovation within the city, including its bike lanes and renewable energy industry, is a direct result of this.

Liveability

Copenhagen is ranked as one of the most sustainable cities globally (European Commission, 2014). By utilizing the data from the Economist Intelligence Unit's (2015) Liveability Index, it is possible to rank Copenhagen against both other urban centres within the EU and across the world; ranking as the 20th most liveable city, globally (EIU, 2015). As outlined in the methodology section of this paper, the Index looked at five categories; Stability, Healthcare, Culture and Environment, Education, Infrastructure - each category carrying an equal weight and the overall score being an average of the five sub-category rankings. Each score is out of 100 points.

Table 5 - Copenhagen liveability ranking according to the EIU (2015)

	Average score (out of 100 %)	Stability 25%	Healthcare 20%	Culture and Environment 25%	Education 10%	Infrastructure 20%
Copenhagen, Denmark	93.5	85.0	95.8	95.4	100.0	96.4

Source: Economist Intelligence Unit (2015)

According to the EIU data (2015), Copenhagen is ranked the 7th most liveable city in Europe, with Helsinki being the most liveable. As mentioned previously, Copenhagen had a perfect score in education due to its highly-skilled workforce and civically-minded population - a natural result of having highly regarded educational institutions. Infrastructure and the environment also scored high, as a result of Copenhagen's impressive green economy and its commitment to becoming carbon neutral by 2025. However, stagnating economic growth and the rising cost of living has meant that the City scored poorly with regard to stability, which knocked down Copenhagen's overall score as a consequence (EIU, 2015). Furthermore, it is important to note that Denmark has a last recorded Gini coefficient of 0.25 which is the lowest among all OECD countries (UNDP, 2012). Denmark's low-income inequality is an important element of its liveability since it provides a stable foundation from which to ensure an inclusive society.

As such, it will be interesting to see whether Copenhagen continues to lead in the area of sustainability, specifically urban sustainability, or whether its leadership in this regard will be challenged. The question remains whether, with its human-centered city planning and non-car centric planning policies, Copenhagen will be able to transform its green innovations into tangible and positive impacts on the economy since growth has been stagnant over the past couple of years with Denmark experiencing negative GDP growth in 2013 (World Bank, 2015).

5.4 Summary and Analysis

Copenhagen falls within the human-centered approach to city planning, as outlined and reinforced by the application of the conceptual framework. The institutional context in which its urban projects emerge is considered to be highly inclusive, with much power and authority left to the municipalities to allocate and plan their regions as the local authorities deem fit. The removal of high-level governance has allowed Copenhagen to dramatically revitalize its planning strategies, which has led to it being a leader for city-planning on an international scale (European Commission, 2014; Katz et al., 2016). Importantly, the civically-engaged population also allows for a democratization of city-planning, which is a pivotal element of human-centered city planning, as outlined at the start of this paper.

Copenhagen also has encouraging city-level policies in the realm of the environment. With little car-usage by Copenhagen residents, most of the emissions come from inefficient energy usage. Their next hurdle, therefore, will be to update the old infrastructure and the outdated built environment. How they will achieve this challenge will certainly pave the way for other cities as most urban centres are currently focused on reducing car emissions (Kahn, 2000).

Copenhagen's current status as a city designed for people has remained consistent throughout the past decade because of its quality civil society and academic sector that is at the cutting edge of eco-innovation. The overlap of academia and the public and private sectors has led city planning to be focused on long-term results and research based. Whether or not the city's focus on eco-innovation specifically in the energy sector will translate into tangible impacts on Denmark's economy is left to be determined. It will be interesting to revisit Copenhagen's liveability once 2025 targets are met, so as to see if it improves the stability ranking or not.

Table 6 - Copenhagen Summary

Pillars	Factors	Key Findings	Score/Valuation
Institutional Setting	● Municipality ● Regulatory framework ● Civic engagement	Strong local government with fiscal independence is present: decentralized municipal government with a plurality of mayors exists in Copenhagen.	Excellent
Sustainability	● National Government commitment ● Target setting ● Types of energy used	Continued efforts to reduce emissions. Aiming to be carbon neutral for 2025	Excellent
Private Development	● Incentive structure ● Local trends ● Current public amenities	Private developers have to act closely with the public sector. Urban development occurs with multi-level cooperation across all sectors.	Excellent
Time Frame and Implementation	● Planning process ● Chain of approval ● Allocation of funds	Projects implemented with long time horizons - political interests are motivated by long term results not short term outcomes	Good
Liveability	● Stability ● Health ● Culture ● Environment ● Education ● Infrastructure	Liveability of Copenhagen is considered high internationally, with very few European cities ahead overall. Future economic prospects are uncertain.	Good

5.5 Recommendations

As we observed in the application of our conceptual framework, Copenhagen scores well within each of the pillars due to its close to three decades of emphasis on sustainable urban development practices. Since Copenhagen is certainly at the forefront of sustainable urban planning practices and so, encouragingly, very few recommendations can be put forward. There are many elements that support its eco-friendly city-planning, including its skilled labour force and high investments in non-car centric infrastructure, among other factors. However, although a leader in this field, there are slight areas of concern that should be monitored.

Copenhagen's economic growth prospects are unsure, as shown in the Economist Intelligence Unit's (2015) Liveability Index, and with emerging economies such as China coming strongly onto the sustainable urbanization scene with their aggressive eco-city agenda, it will be necessary for Copenhagen to continuously improve its human-centered city planning. For example, although impressive in comparison to other global cities, there is still much room for growth in cycling, since only 50% of Copenhagen's population currently uses bicycles as a primary source of transportation.

To encourage the non-cyclists to benefit from the significant amount of city investment in cycling, more incentives should be created to get them on the road (Gössling, 2013). The improvement of cycling safety is also important, as they are often the most vulnerable on the road. All infrastructure developments for cyclists, as well as urban designs and layouts, should seek to make cycling more attractive (Gössling, 2013). Furthermore, ensuring that the renewable energy industry receives adequate attention and investment will be of the utmost importance in the coming years to ensure the Danish economy grows and does not suffer from negative growth.

Chapter 6. Case Study 3: Tianjin Eco-city

6.1 Background

Over the past decades, the People's Republic of China has had a highly centralized planning system. However, China's post-reform governance has since been characterized by economic decentralization and the rise of the entrepreneurial city. While some claim China's planners have been successful in the elimination of slums and the urban problems associated with fast urban growth, many of China's major cities still experienced problematic urban sprawl the last 20 years (Fang and Pal, 2016).

In a historically planned economy such as China's, urban development is used as a means to ensure that the socialist ideology of planned development leads to the ultimate goal of economic planning in the urban space (Yeh and Jia, 2003; Wu, 2012). In an economy characterized by both a heavily centralized government and rapidly changing demographics, such as high-growth rates, the national level policies were not able to curb rapid urban sprawl and, to that end, car-reliant city-planning. For example, although the national level urbanization policy has the goal of shifting more than 200 million rural residents to cities by 2025, it was only able to partially justify the need for land conversion (Fang et al., 2016). More specifically, much of the land development that has occurred was not inherently justified with much of China's sprawl expanding inefficiently.

This type of urban development leads to inefficiencies in transportation, since car-centered development and rapidly increasing populations hinders access to main economic hubs, which in turn leads to inefficient infrastructure development and detrimental impacts to the natural environment (Fang et al., 2016). As car reliance increased, the use of alternative modes of transportation decreased. For example, according to Gössling (2013) and Wang (2012) when referring to the Beijing Transportation Research Centre, bicycle use in the Chinese capital has continuously declined since the mid-1980s. According to Fang and Pal (2016:2), these patterns of inefficiency are evident in China's version of urban sprawl caused by decades of irrational development. Although most urban agendas have come as a result of post-industrial economies,

"where industrial production still dominates the economy" - as it does in China (Chang, 2013)- challenges still exist in engaging and fostering sustainability.

The development of China's eco-cities, defined here as low-emission suburbs that are managed by the government, should be understood within the setting of the complex interactions between central and local states, and the challenges of rapid growth and industrial production still dominating the economy (Wu, 2012; Caprotti, 2014). Currently, more than 100 Chinese municipal governments have put forth proposals to the national government for eco-cities, which would be cities developed with a human-centered approach to city planning (Caprotti, 2014). These cities would focus on creating low-carbon communities that would employ mixed-use development, and would ensure safe and eco-friendly transportation means to major economic hubs (Wu, 2012).

6.2 Current Status

According to experts, China's shift towards sustainability-orientated urban planning can be attributed to the pressures of increasing urban migrants and the need to reduce pollution-induced public health costs (Wu, 2012; Caprotti, 2014). Additional factors including rising real incomes, increased levels of domestic consumption and the aggressive GHG reduction targets have made it possible for China to go beyond export-oriented development and achieve a high-quality and sustainable living environment (Wu, 2012). The Government has recently released its latest Five Year Plan on environmental sustainability focused on reducing environmental degradation within the Chinese economy. Not surprisingly, reducing car-reliance and, instead, aiming to emphasize public transportation and mixed-use development, China's goal is to develop residential areas that will carry less of a burden on its environment. However, there are very few studies that look at the impacts of these eco-cities (Caprotti, 2014). This study will, therefore, apply the conceptual framework to the Sino-Singapore Tianjin Eco-city, referred to hereafter as the Tianjin Eco-city.

Tianjin Eco-city is a flagship urban mega-project currently under construction. This project is located 45 km from Tianjin, China's fourth largest city, on the coast of northern China. The

location of the project is in the Binhai district, which is considered by many to be a new national strategic location (Wu, 2012). The planned area of this project is 30 square km and is currently being developed by the governments of Singapore and China, with the involvement of international real-estate development corporations (Caprotti, 2014). The expected population will be of approximately 350 000 residents. According to Caprotti (2014), Tianjin Eco-city is "marketed by both government and corporate actors as a forward-looking, technological and market-based attempt to tackle problems of environmental degradation and deterioration in and around China's fast-growing cities". The total investment is expected to reach 30 billion Yuan (Wu, 2012). This eco-city is a concerted effort to tackle problems of environmental degradation and deterioration caused by urban sprawl. The city aims to be a place that is sustainable and that advocates for human-centered city planning through the promotion of clean and healthy living (Caprotti, 2014).

The criteria for the location of this particular eco-city was established by the Chinese leaders who strongly encourage eco-cities to be built on non-arable land and in an area facing water shortage (Ghiglione and Larbi, 2015). The Master Plan of the city, according to Ghiglione et al. (2015), adopts an essential eco-structure fostering a human-centered city planning approach, including "live-work-play" spaces, eco-cells, walkable districts, high-density mixed-use housing and embedded transportation networks. Clean energy will be the guiding principle for the city's development (Ghiglione et al., 2015).

6.3 Conceptual Framework Application

Tianjin Eco-city is an important case study since it's a direct result of the pressures from environmental degradation and mass urbanization. In this section, we will apply the conceptual framework to further evaluate the feasibility human-centered approach and determine what some of the underlying factors of this current shift in city planning strategy were.

Institutional Setting

China is characterised by a highly centralized political process. However, eco-cities provide an opportunity for local governments to participate in national development plans, which can lead to political support from the central state (Wu, 2012). Since the eco-cities need central government approval, these cities are created within national government top-down approach which is considered a unique city planning strategy in the context of sustainable development. Even though local authorities haven't had much power historically, the fact that they are the ones conceptualizing the Master Plans for eco-cities has enabled many to acquire some independence and increased power by contextualizing applications of national policies to their regions.

However, in the case of Tianjin Eco-city, the Chinese government is partnering with Singapore's government and international lending agencies, such as the World Bank, which by default creates a need for more transparency (Ghiglione et al., 2015; Wu, 2012). Nevertheless, the institutional context in which this eco-city is being developed still has its challenges due to the top-down approach. The potential failure experts anticipate from the eco-city project is to be blamed on either the local officials who push for elements of the project that cannot actually be implemented in a particular district because of economic or social conditions, or on the local leader who cannot see the project to completion because he is removed from office or switched locations due to a political or corruption scandal (Ghiglione et al., 2015).

The top-down approach to urban development has had significant impacts including putting immense pressure on its civil society sector (Samson, 2015). Unfortunately, cracking down on many civil society actors, mainly in the realm of civil justice and the green economy, has increased since the last presidential election in 2012. This has hindered areas in sustainable urban development since hundreds of activists and dissidents have been detained and arrested. Restrictions of the internet have also occurred, too, which is evident in the new commissions that have been put in place by the government to oversee national security across a wide spectrum of issues. According to Samson (2015), the repression against NGOs is "further entrenched by how local bureaucratic apparatuses implement the task of stability maintenance". Even though the desired outcome is an inclusive human-centered city, eco-cities lack a robust public consultation process, and citizens are not given the space to contribute and participate in this process.

It is important to note that although there is a certain level of scrutiny and results-based approach to the eco-city, there is still very little room for environmental activists to contribute in China. According to Samson (2015), recent environmentalists had a documentary banned on smog and pollution that used cutting edge video footage, scientific data and interviews with researchers and government officials. Even though the research did not attack the Chinese political system as a whole, it was still banned (Samson, 2015). The resistance towards incorporating grassroots level movement in projects such as Tianjin Eco-city might be problematic in the long-term.

Sustainability

In recent years, China has faced a wide array of international pressure to reduce their greenhouse gas emissions. Pollution is an immense problem for the Chinese economy, as outlined previously, which is one of many reasons that city planning within the country has shifted from car-reliant sprawl to human-centered. According to the World Bank (2015), pollution is costing the Chinese economy the equivalent of approximately 3% of GDP. Tianjin Eco-city's plan to have a strong public transportation network is a direct outcome of aggressive pollution reduction strategies (Caprotti, 2014). The shift to a low-carbon economy is becoming a major government task and is the underlying factor for the dramatic change in urban development that can be found in the planning of Tianjin Eco-city, and is described by Wu (2012) as an 'eco-revolution' rather than 'eco-evolution', since these eco-cities are brand new and built from the ground-up and on a large scale.

However, as outlined in the previous section, the element of sustainability has to be understood within the context of China's governing system, which profoundly affects environmental policy implementation, because approvals are required for every action taken by any player of the government on sustainability issues (Wu, 2012; Ghiglione et al., 2015). According to Ghiglione et al. (2015), sustainability and environmental policy implementation must be understood through an elaborate pyramidal prism. With so many layers of governance, ensuring environmental sustainability is an ongoing challenge. There is a serious risk that appearances of

sustainable results are being met at the outset, while in reality, further environmental degradation occurs.

Yet, Tianjin Eco-city has allowed the government to demonstrate, on an international scale, its commitment to its latest Five Year Plan - their environmental sustainability plan - which has enabled a certain level of transparency among all levels (Wu, 2012; Ghiglione et al., 2015). The recent Five-Year Plan announced by China indicates a carbon intensity reduction target of 40–45% by 2020 (Wu, 2012). For this ambitious objective to be met, the central state has established rigorous indicators and benchmarks to uphold local governments in their task of energy-saving and emissions reductions. This shift towards a rigorous and indicator-based approach to the green economy will arguably contribute to the success of Tianjin Eco-city because tangible results are expected above the expectation to perform with its proposal (Wu, 2012).

Private Development

As mentioned earlier, Tianjin Eco-city is a joint venture among Chinese land and investment corporations, international institutions, as well as various foreign developers. An investment platform, such as a city investment firm, was used to raise loans from the bank (Wu, 2012). However, to raise loans from the bank, the corporation needed to present a feasibility study to show the potential of future land development. This is a new occurrence, a positive one, in the realm of urban development in China, which prior to the government's aggressive green agenda, was erratic and not thoroughly thought through (Fang et al., 2016; Wu, 2012).

As is the case with Tianjin, the increased demand for local authorities to implement eco-cities has led to fierce competition among the different states. To ensure maximized resource allocations, the local authorities must work in close collaboration with private developers in order to prepare a master plan. These plans serve as a feasibility study of sorts, typically conducted through foreign consultancies, which has been a positive change to the way city planning has otherwise occurred over the past decades. Experts agree that even though the required feasibility evaluation for further urban development is a step in the right direction toward sustainable city planning, because of the quick turnaround, these master plans are often

flawed in that they are imported from another urban context and do not include a full feasibility study (Fang et al., 2016; Wu, 2012). For example, while there exists great freedom for the proposal of an eco-city, the location is, unfortunately, incidental because land that is available for the local authorities to develop is very limited which makes it challenging to do a feasibility study without the particular geographical location (Wu, 2012).

Time Frame and Implementation

The Master Plan for Tianjin was developed rapidly, as are most of the eco-city proposals in China, due to limited resources and high demand from local authorities (Caprotti, 2013). As mentioned in the previous section, the rapid turnaround for proposals has had negative impacts in the realm of feasibility. Conversely, the high demand and promptness with which these proposals are approved through the many levels of government is a testament to the commitment with which the Chinese government wants to put forth the green agenda. As mentioned previously, the speed at which development has occurred for Tianjin Eco-city and other similar projects has led to what many call a 'green revolution' in China (Wu, 2012; Ghiglione et al., 2015).

The urban development implementation process is also accelerated due to the time constraints imposed by the Government's Five Year Plan to reduce greenhouse gas emissions. An outcome of this phenomenon has been a knowledge exchange and network development that fosters eco-innovation within the local and foreign community (Wu, 2012; Caprotti, 2014). Planners are in contact through networks between professionals both outside and inside China, which is a remarkable phenomenon considering how confined urban planning was a decade ago.

According to Wu (2012), an example of this collaborative exchange is the recent funding from UK Engineering and Physical Sciences Research Council towards several eco-city networks, so as to facilitate cross-border learning through workshops and visits. This has led to a high degree of knowledge-flow across borders and among many different actors (Wu, 2012). Even though there is not much room for local public consultation, there is an added element of cross-border consultations due to the international partnerships that were created to build Tianjin Eco-city. Since the project will only be completed in 2020, the exact results of the knowledge-flow and the possible consequences of hasty feasibility studies ex-ante are still to be determined.

Liveability

As Tianjin Eco-city is still in the process of being built, this section will analyze the liveability score of the neighboring city of Tianjin. By utilizing the data from the Economist Intelligence Unit's (2015) Liveability Index, it is possible to rank Tianjin against both other urban centres within China and across the world.

Tianjin ranks as the 70th most liveable city, which places the city right in the middle of the list, with Damascus being ranked 140th (last) on the list, and Melbourne being ranked 1st overall (EIU, 2015). As outlined in the methodology section of this paper, the Index looked at five categories; Stability, Healthcare, Culture and Environment, Education, Infrastructure.

Table 7 - Tianjin liveability ranking according to EIU (2015)

	Average score (out of 100)	Stability	Healthcare	Culture and Environment	Education	Infrastructure
Tianjin, China	76.0	90.0	66.7	65.3	66.7	85.7

Source: Economist Intelligence Unit (2015)

Tianjin is ranked the 2nd most liveable city in China according to the EIU data (2015), with Beijing being the most liveable. Centralized governance in China is what most likely led to an almost perfect score in stability, which helped raise the average by many points. Tianjin and other Chinese urban centres scored poorly in both health and the environment due to the real and adverse consequences of high emissions and levels of pollution (Chang, 2013). Infrastructure scores highly for Tianjin, in part due to the rapid eco-development happening in and around the city including Tianjin's very own eco-city: Tianjin Eco-city.

As the shift continues towards urban development that is human-centered, it will be interesting to see the changes in Tianjin's rankings once the Eco-city on its outskirts is complete in 2020. Its

completion will have positive impacts on health, well-being, and the natural environment and many citizens will likely be opting out of using motorised and other polluting means of transportation.

6.4 Summary and Analysis

The shift towards the green economy is legitimate in that China had to radically change its development approach to human-focused cities (Wu, 2012). Environmental damage incurs severe economic costs- the equivalent of 3% of GDP annually (World Bank, 2015). There will be pressure on the local state to adopt a more cost-effective way to achieve its eco-targets including the spread of human-centered city planning practices beyond Tianjin Eco-city.

Table 8 - Tianjin Summary

Pillars	Factors	Key Findings	Score/Valuation
Institutional Setting	● Municipality ● Regulatory framework ● Civic engagement	Limited space of civil society. Centralized government.	Poor
Sustainability	● National Government commitment ● Target setting ● Types of energy used	Strong stance to undertake the green agenda due to real economic costs to decades of environmental degradation	Good
Private Development	● Incentive structure ● Local trends ● Current public amenities	More open and transparent since the wave of eco-cities which has required local and international developers to jointly work on the creation of Tianjin	Good
Time Frame and Implementation	● Planning process ● Chain of approval ● Allocation of funds	With the quick time frames imposed by government to create these cities, the chain of approval is rapid which leaves doubts on the accuracy and quality of feasibility reports prior to Tianjin Eco-city being approved	Poor
Liveability	● Stability ● Health ● Culture ● Environment ● Education ● Infrastructure	Liveability of Tianjin is relatively high in China but is considered average international. Tianjin scores low in health, environment and education.	Fair

6.5 Recommendations

As observed in our conceptual framework, Tianjin Eco-city scores well in sustainability due to its inception resting upon an aggressive pollution reduction and other green policies but score poorly in its institutional setting and time frame and implementation pillars. Therefore, the findings of this case study suggest that Tianjin Eco-city is, at its core, a good initiative, because it constitutes a technically efficient alternative to current urbanizing patterns. The move away from the adverse effects of urban sprawl patterns and car-reliance is a necessary development in the context of challenging levels of pollution. However, even though many predict the outcomes to be positive, which suggests human-centered city planning is feasible for this economy, its success in the long-term is unknown. Success will depend on the compliance of lower levels of the government to formulate and operationalize well-considered projects that focus on achieving sustainability targets in the long-term (Ghiglione et al., 2015).

The lack of space for public consultation and civil society, however, could prove to be problematic in the long run, since an important pillar of human-centered city planning is inclusiveness. Even though China has risen to the challenge of introducing green cities, the results of Tianjin Eco-city once it is completed in 2020 might be negatively impacted by the lack or urban democratization.

Chapter 7. Conclusion

The increased reliance on the car as a main mode of transportation has led to significant social and environmental challenges. This has forced planners to rethink urban development as a means of achieving economic and socially equitable growth without further impeding our limited natural resources (Korobar et al., 2012; UN Habitat, 2014). The question examined by this study is whether a human-centered approach to urban planning is a feasible alternative to the standard car-centric model. The objective of this study was to determine whether there are benefits suggesting that investing in human-centered planning can better address the negative social and environmental externalities that have become associated with the conventional car-centered approach. This study also aimed to provide a reflection on how various planning strategies can affect the prospects for an emerging city dealing with mass urbanization. It is important to note that the aim of this study was not to solve urban planning issues in all types of economies, but rather to provide further insight on a human-centered approach, as well as providing a better understanding of how this approach affects the prospects for an emerging city in dealing with urbanization and environmental degradation.

In order to achieve the aforementioned objectives, a qualitative framework was constructed and applied to three different case studies to determine the feasibility of a human-centered approach. This interdisciplinary approach combined notions of urban, development and institutional economics as well as urban planning. As a result, this research investigated the impacts generated by car-focused urban development to better understand the mechanisms through which sustainable practices can be implemented, and in which conditions such practices will be most effective.

Therefore, this study centered on a benchmarking process of the three case studies; Cape Town, Copenhagen and Tianjin Eco-city – two of which having very different institutional settings, yet are both focused on fostering sustainable urban development practices (Copenhagen and Tianjin), and one of which, despite having achieved significant growth the past decade, still lags behind in term of sustainable development goals (Cape Town) (OECD, 2015). As observed in the three case studies, focusing city planning on the human scale has proven to be a promising

way to address some of the significant challenges urban areas will face. The establishment of a cohesive conceptual framework, which outlines the major pillars impacting urban planning practices and consequently the overall well-being of its residents, has allowed this research to observe patterns and provide conclusions that will contribute to the current literature on urban development. Through the use of a case study approach, this study analyzed the current planning environment of three cities and then determined the areas of potential improvement and stumbling blocks by applying a conceptual framework based on the two types of city planning approaches.

The five pillars established within the conceptual framework were: Institutional Setting, Sustainability, Private Development, Time Frame/Implementation and Liveability. Each of the pillars was then assigned a score between one to five – corresponding to very poor, poor, fair, good and excellent, respectively – to better gauge the weaknesses and strengths of a city's urban development strategy.

However, first and foremost, this study suggests that not only is the human-centered approach to urban planning a feasible alternative to the conventional car-centric model, but also that it is a necessary change. When comparing the results of all three case studies, another important finding comes to light: shifting towards more people-focused urban development strategies is inherently dependent on the contextual reality of the respective cities.

While acknowledging the importance of searching for the discrete, replicable solution in the area of urban planning, it is, however, challenging to do so. This is because of the interconnectedness of cities, which are at the intersection of all the factors that impact a person's life. Yet, although there is no single route to inclusive and sustainable cities, there are many patterns that have emerged from the application of the conceptual framework. By comparing the results and indicators of each of the 5 (established) pillars of the conceptual framework (see Table 9), there are valuable insights to be acknowledged. Copenhagen unsurprisingly ranked the highest (4.6/5) regarding its pillars of urban development, but what is more interesting is that Tianjin Eco-city scored only slighty better than Cape Town (3.0/5 and 2.8/5, respectively). Therefore, upon

comparing the findings of each case study, there are three important observations to be made regarding poverty, civic engagement, and environmental concerns.

Table 9 - Conceptual Framework Summary

	Current status and Score (equal weighted average of each respective pillar)	**Institutional Setting** *Source: Municipal Budgets (2016); World Bank (2015)*	**Sustainability**	**Private Development**	**Time Frame and Implementation**	**Liveability** *Source: EIU (2015); World Bank (2015)*
Cape Town, South Africa	Car-centric 2.8/5	-Local authorities have a fair amount of independence -Fiscally independent from National Government -Municipal budget < 1% of GDP -Strong Civil Society	-Poor record in this area -Current research forecasts that Cape Town's newly developed Energy and Climate Change Action Plan will improve the city's green agenda	- Healthy competition among private developers -No significant partnerships across all levels of governance	-Development feasibility studies are strong due to regulated spatial frameworks	-High within African context -Low globally -35.7% population living below the poverty line -High income inequality (Gini coefficient 0.63)
Copenhagen, Denmark	Human-centered 4.6/5	-Local authorities have significant amount of independence -Fiscally independent from National Government -Municipal budget > 45% GDP -Strong Civil Society	- Successful in this area - CPH 2025 plan aims to make Copenhagen one of the first emission free cities by 2025	-Poor competition among private developers -Significant partnerships across all levels of governance	-Development feasibility studies are strong due to overlap and collaboration of all sectors including public, private and academia	-High within european context -High globally - >1% of the population lives below the poverty line -Low income inequality (Gini coefficient 0.25)
Tianjin Eco-city, China	At crossroads between human-centered and car-centric 3.0/5	-Local authorities have independence specifically in the context of the eco-city through their authority over the Master Plan -Not Fiscally independent from National Government -Municipal Budget TBD -Weak Civil Society	- Poor record in this area for surrounding cities -China's aggressive environmental action plan was the precursor to the eco-city movement	-Healthy competition among private developers that transcends borders -Significant partnerships across all levels of governance with the exception of the grassroots level	-Development feasibility studies are not robust due to the expedited time-frame of eco-city inception and development	-High within Asian context -Average globally -6.5% of the population lives below the poverty line -Slightly above average income inequality (Gini coefficient 0.47)

Reducing Poverty is Critical

When comparing the urban planning practices of both Tianjin Eco-city and Cape Town, Tianjin comes out way ahead, with regard to achieving poverty reduction. Although the exact outcomes of Tianjin Eco-city are still left to be determined, since the city is not yet built, it is worth noting that neighboring Tianjin has recently significantly reduced its poverty level to less than 10% of the population; whereas Cape Town still has more of a third of its population living well below the poverty line - with many having little-to-no access to on-site sanitation. As Tianjin expands through human-centered city planning by developing surrounding eco-cities (such as Tianjin Eco-city) rather than conventional suburbs, it is interesting to note that the essential services and needs of most of it citizens are for the most part covered. Copenhagen also has less than 1 % of its population living below the poverty line. The comparison of the three cities demonstrates that ensuring the majority of the population is living comfortably is a precursor to the feasibility of shifting towards human-centered city-planning.

The Role of Civic Engagement is Unclear

This study strongly suggests that human-centered urbanization is linked to the fundamentals of sound governance. However, the role of civil society and how it should be incorporated in urban development is unclear. A municipality that can operate at arm's length from the national government arguably allows for cities to manage its affairs contextually, and to have the authority to make meaningful changes. However, with that considered, an interesting finding of the case studies is that similar urban planning strategies found within China and Denmark have different civil societal landscapes.

The case study on Copenhagen highlighted the strong civic engagement of the population and resulting democratization of city-planning, whereas the Tianjin Eco-city case study highlighted the lack thereof. Cape Town falls somewhere in-between, with a vocal civil society that the city has yet to embrace fully. It is also important to note that even though, Tianjin Eco-city had little input from the grassroots level, there was unprecedented collaboration across borders in the planning and construction of the city. Perhaps this element alleviated some of that gap, though whether this will replace civil society's role cannot yet be confirmed. More research needs to be done to observe the impacts of Tianjin Eco-city post-construction, as well as finding whether

Cape Town creates a dedicated space for civil society and how this would affect the liveability of the City and its planning practices.

Environmental Concerns are Changing the Way Cities are Planned

Upon reflection from all three case studies, it is argued that considerations about the environment have become much more of a focus on urban planning. Climate change, mass urbanization, income inequality and the many international accords that address these issues all necessitate the important role of the city. If states are going to contribute to realizing the targets of the recent Paris climate agreement, for example, changes at the city-planning level are imperative. Consequently, if city planning continues to rely on the automobile, there will be several risks to the immediate and surrounding environment, to natural resources and to health conditions, which will significantly impact individual rights and freedoms (Cohen, 2006).

As pollution and environmental degradation continue to have real costs to cities globally, human-centered city planning will be a critical alternative going forward. The findings on Tianjin Eco-city highlighted that environmental degradation was at the forefront of the eco-city revolution. China's air pollution is of the worst in the world, and so the seriousness of the issue cannot be neglected; its impact will be both national and international. In South Africa, Cape Town's liveability is expected to improve due to its notable plans on climate change action. Whether or not this spurs change towards human-centered city planning is yet to be determined, but nevertheless, it will impact how the city will develop in the upcoming years. Copenhagen's human-centered city planning has resulted in it being one of the most sustainable cities globally, and one with the cleanest air.

Concluding Thoughts and Avenue for Further Research

Outlining this research's limitations is important. Since this study was conducted on three cities that are endowed with their own set of norms and values, the comparison is far from perfect. Even though certain conclusions can be drawn, urban planning finds itself at the intersection of many different factors and disciplines, which can make it challenging to have a complete evaluation of a city's urban development approach. Furthermore, the lack of available city specific data has prevented this conceptual framework from having a robust quantitative ranking.

Many important economic indicators are available only at the aggregate national level and in the instance that city-specific data is available, it does not go very far back in time.

Understanding the underlying contextual structure of cities is critical to their advancement, since each is associated with different spatialities that facilitate both contestation and representation, and thus each need their own dedicated analysis (Robinson, 1998). However, although cities are complex and unique, there is room for the establishment of best practices, and this study argues for a framework that highlights the best practices for human-centered planning. How urban planning evolves, as a whole, will have profound impacts on the global economy and well-being (UN Habitat, 2014), and it is hoped that this framework will help in steering this development in a sustainable direction.

The key takeaways from this study include the following: reducing poverty can help further improve a city; although the importance of local governance cannot be underestimated, the role of civic engagement is still unclear; and lastly, environmental concerns are taking centre stage with regard to how cities are planned. It is argued that shifting city-planning to foster urban development centered on high population density, walkable and bikeable neighborhoods, green spaces, mixed use development projects and accessible public transit is imperative, as this research has demonstrated, but the path ahead is still left to be determined. Urban planning cannot operate in isolation; cities are at the intersection of the economy, politics, business and most importantly people, and understanding the complexity of each city's context is important in being able to analyse these intersections. As such, with the framework as a guide, a continued commitment to researching the development of human-centered urban planning is suggested.

As well as supporting the argument for human-centered planning, this study also argues that there is an encouraging link between sustainable urban planning and liveability, which includes economic well-being. Nonetheless, there is a need for more micro-data to be made available, in order to comprehensively demonstrate this link between cities. The conceptual framework introduced in this study is a step in the direction of more rigorous and comprehensive research in cities, but there is arguably still much room for further interdisciplinary research in this area. Furthermore, there are many more interesting case studies to observe, investigate and draw upon.

It is hoped that this study will provide the foundation from which this continued research will be built.

Sources

Acemoglu, Darron and Robinson, James A. (2012). Why Nations Fail. Profile Books Ltd

Ahlfeldt, Gabriel M and Wendland, Nicolai (2013). How polycentric is a monocentric city? Centers, spillovers and hysteresis (pp.53-83) Journal of economic geography, 13 (1)

Andersen, Hans Thor and Jørgensen, John (1995). City profile Copenhagen (pp.13-22). Cities 12 (1)

Andersen, Hans Thor (2013). Urban Policies on Diversity in Copenhagen, Denmark. *Divercities*

Antrop, Marc (2004). Landscape change and the urbanization process in Europe (pp. 9-26). Landscape and Urban Planning, 67 (1).

Anselin, Luc (2003) Spatial Externalities (pp. 147 - 152). International Regional Science Review, 26 (2)

Arnott, Richard, and. McMillen, Daniel (2006). A Companion to Urban Economics. Malden, MA: Blackwell Pub.

Byun, Pillsung and Esparza, Adrian (2005). A Revisionist Model of Suburbanization and Sprawl: The Role of Political Fragmentation, Growth Control, and Spillovers (pp. 252-264). Journal of Planning Education and Research, 24(3).

Brueckner, Jan K (2000). Urban sprawl: diagnosis and remedies (pp. 160-171). International regional science review, 23(2)

Burchell, Robert W & Mukherji, Sahan (2003). Conventional Development Versus Managed Growth: The Costs of Sprawl, (pp.1534-1540). American Journal of Public Health, 93(9).

C40 Cities (2013). CPH Climate Plan 2025. C40 Networks.

Caprotti, Federico (2014). Critical research on eco-cities? A walk through the Sino-Singapore Tianjin Eco-City, China (pp. 10-17). Cities, 36 (1).

Champion, J (2001). Urbanization, suburbanisation, counterurbanisation and reurbanisation. In: Paddison, R. (Ed.), Handbook of Urban Studies. Sage, London, pp. 143–161.

Chang, I-Chun (2013) China's Eco-Cities as Variegated Urban Sustainability: Dongtan Eco-City and Chongming Eco-Island. Journal of Urban technology, 20 (1)

City of Cape Town (2011) Moving Mountains: Cape Town's Action Plan on Energy and Climate Change.

City of Cape Town (2016). Budget. Open Data Portal.

Cohen, Barney (2006). Urbanization in developing countries: Current trends, future projections, and key challenges for sustainability (pp. 63-80). Technology in Society, 28 (1).

Cycling Embassy of Denmark (2015). Cycling Statistics. Secretariat for The Cycling Embassy of Denmark.

Denmark Statistics (2016). Green living and population. Ministry of Foreign Affairs of Denmark

De Swardt, C.and Puoane, T.(2005). Urban poverty in Cape Town (pp 101-111) Environment and Urbanization, 17(2)

Duplessis, Robert (1997). Transitions to Capitalism in Early Modern Europe., Cambridge University Press

Economist Intelligence Unit (2011). African Green Cities Index. *Siemens*.

Economist Intelligence Unit (2016). Liveability Index. The Economist

Eisenhardt, Kathleen M. (1989). Building Theories from Cass Study Research (pp.532-550). Academy of Management Review, 14(4),

European Commission (2014). Environment: European Green Capital. Green Cities for life. "Copenhagen"

Fainstein, Susan and DeFilippis, James (2016). Readings in Planning Theory. Wiley Blackwell

Farr, Douglas (2008). Sustainable urbanism. Landscape and Urban Planning, 96(4)

Fang, Yping; Pal, Anirban (2016). Drivers of urban sprawl in urbanizing China – a political ecology analysis. Environment and Urbanization

Fertner, Christian (2013). The Emergence and Consolidation of the Urban- RuralRegion: Migration Patterns around Copenhagen 1986–2011. Tijdschrift voor economische en sociale geografie, 104 (3)

Fitting, Peter (2002). Urban Planning/Utopian Dreaming: Le Corbusier's Chandigarh Today (pp. 69 - 93). Utopian Studies 13(1).

Fishman, Robert (1977). Urban Utopias in the Twentieth Century: Ebenezer Howard, Frank Lloyd Wright, and Le Corbusier. New York: Basic, Print.

Fuller, Brandon; Romer, Paul (2012). Success and the City; How charter cities could transform the developing world. Mcdonald-Laurier Institute.

Gilbert, R. and Perl, A. (2008). Transport Revolutions: Moving People and Freight without Oil. Earthscan, London

Gössling, Stefan (2013). Urban transport transitions: Copenhagen, City of Cyclists (pp.196-206). Journal of Transport Geography, Volume 33

Ghiglione, Silvio; Larbi, Martin (2015) Eco-Cities in China: Ecological Urban Reality or Political Nightmare? Journal of Management and Sustainability, Volume 5(1)

Ground Up SA (2015). Voices in the Budgeting process. *Opinions*

Haferburg, Christoph (2011) South Africa under FIFA's reign: The World Cup's contribution to urban development. Development Southern Africa.Volume 28 (3)

Hamel, Jacques (1997). Étude de cas et sciences sociales. Montréal: Harmattan.

Harmansah, Ömür (2007). The Archaeology of Mesopotamia: Ceremonial centers, urbanization and state formation in Southern Mesopotamia. The Joukowsky Institute of Archaeology

International Budget Partnership (2016). South Africa: Cape Town. *Web*

Jabareen, Yosef (2009). Building a Conceptual Framework: Philosophy, Definitions, and Procedure. International journal of qualitative methods.

Jacobs, Jane (1961). The Death and Life of Great American Cities. New York: Print.

Kahn, Matthew E (2000). The environmental impact of suburbanization (pp. 569-586). Journal of Policy Analysis and Management, 19(4).

Katz, Bruce; Noring, Luise (2016) Why Copenhagen works. Brookings Edu Report. *Web*

Kim, Jinwon (2012). Endogenous vehicle-type choices in a monocentric city (pp. 749-760) Regional science & urban economics, 42(4).

Korobar, Vlatko P and Siljanoska, Jasmina (2016). Challenges of teaching sustainable urbanism (pp. 121–130) Energy and Buildings, Volume 115.

Lampard, Eric (1955). The History of Cities in the Economically Advanced Areas (pp. 81–136). Economic Development and Cultural Change

Larsen, Henrik Gutzon and Hansen, Anders (2008) Gentrification—Gentle or Traumatic? Urban Renewal Policies and Socioeconomic Transformations in Copenhagen. Urban Studies.

Law, Violet (2012). Jan Gehl (pp.36). The Progressive, 76(12)

Mukheibir, P. and Ziervogel, G. (2007) Developing a Municipal Adaptation Plan (MAP) for climate change: The City of Cape Town (pp 143-158). Environment & urbanization, 19(1)

Mumtaz, Kamil Khan (2011). Development, Urbanization and Sustainability. (pp. 330-335) Development, suppl. Sustainable Cities.

Next City Org (2013).How Urban Sprawl Is Creating Echoes of Apartheid in Cape Town. Rockefeller Foundation Dialogue on Informal Settlements.

Norden Org (2012) City planning in Copenhagen.

North, Douglass C (1990). Institutions, Institutional Change, and Economic Performance. Cambridge: Cambridge UP, 1990. Print.

OECD (2011). Better Life Initiative. Paris, France: Organisation for Economic Co-Operation and Development.

OECD (2016). Territorial Review. Paris, France: Organisation for Economic Co-Operation and Development.

Parr, John B. (2007). Spatial Definitions of the City: Four Perspectives (pp. 381-392). Urban Studies, 44(2).

Pipes, R. (1999). The Institution of Property (pp.97-120). Property and Freedom.

Polidoro, Maurício; de Lollo, José Augusto; Barros, Mirian Vizintim Fernandes (2012). Urban Sprawl and the Challenges for Urban Planning (pp. 1010-1019). Journal of Environmental Protection.

Popovic, Vladimir M. (2012). Application of new decision making model based on modififed cost benefit analysis: a case study, Belgrade tramway transit (pp.B1). Asia Pacific Journal of Operational Research, 29(6).

Prud'homme, Rémy; Koning, Martin; Kopp, Pierre (2011). Substituting a tramway to a bus line in Paris: Costs and benefits (pp. 563-572). Transport Policy, 18(4)

Resnik. David B. (2010). Urban Sprawl, Smart Growth, and Deliberative Democracy (pp. 1852-1856). American journal of public health, 100(10).

Resnick, Danielle (2012). Decentralization and service delivery in African cities. United Nations University.

Robinson, Jenny (1998). Spaces of democracy: remapping the apartheid city (pp.533-548). Environment and planning. Society & space. Volume 16 (5)

Safdie, Moshe, and Wendy Kohn (1997). The City after the Automobile: An Architect's Vision. New York: Basic, Print

Samson, Yuen (2015). Friend or Foe?: The Diminishing Space of China's Civil Society. China Perspectives pp 51-56.

Sharp, Andrea (2012). Does Local Government Matter?: How Urban Policies Shape Civic Engagement (Globalization and Community).

Sinclair-Smith, Ken (2013). Methods and Considerations for Determining Urban Growth Boundaries—an Evaluation of the Cape Town Experience. Urban Forum, 25 (3)

Soderstrom, Mary (2008). The Walkable City: From Haussmann's Boulevards to Jane Jacobs' Streets and beyond. Montreal: Véhicule.

State of Green Org (2015) Copenhagen no 2 in Europe for Air Quality.

Statistics South Africa (2015). Data on the City of Cape Town Municipality. STATSSA

Statsdirect (2016). Income Inequality: Gini Coefficient Calculation.

Stiglitz, Joseph; Sen, Amertya; Fitoussi, Jean-Paul (2008). Report of the Commission on the Measurement of Economic Performance and Social Progress.

Thornley, Andy; Newman, Peter (1996). Urban Planning in Europe: international competition, national systems, and planning projects. Psychology Press. Print

Turok, Ivan et Watson, Vanessa (2001). Divergent development in South African cities: Strategic challenges facing Cape Town (pp.119-138). Urban Forum, 12 (2).

United Nations Development Programme (2012). « Gini Coefficient ». New York, USA

UN Habitat (2014). Goals & strategies of UN-Habitat. Nairobi, Kenya. United Nations Human Settlement Program.

United Nations (2014). Report: World Population 2300. Economic and Social Affairs. New York: The United Nations.

UN Habitat (2013). Chapter 5: Mobility and Urban Form. Nairobi, Kenya. United Nations Human Settlement Program.

Wei, Yehua Dennis et Jia, Yanjie (2003). The geographical foundations of local state initiatives: globalizing Tianjin, China (pp.101-114) Cities, 20(2).

Wholey, Joseph S., Hatry, Harry P. & Newcomer, Kathryn E. (2010). Handbook of practical program evaluation: 3rd ed: San Francisco. Jossey-Bass

Wang, Q., (2012). A Shrinking Path for Bicycles: A Historical Review of Bicycle Use in Beijing. MA Thesis. The University of British Columbia

World Bank (2015). Country Profiles: Data.

Wu, Fulong (2012). China's eco-cities (pp.169-171). Geoforum, 43 (2).

Yin, Robert K. (2009) Case Study Research: Design and methods 14th ed. LosAngeles, California: Sage Publications.

Annex 1: Gini Coefficient Calculation

(Source: Statsdirect 2016)

The Gini coefficient (G) is a measure of inequality of a distribution. It is defined as a ratio with values between 0 and 1: the numerator is the area between the Lorenz curve of the distribution and the uniform distribution line; the denominator is the area under the uniform distribution line. G is a measure of inequality, defined as the mean of absolute differences between all pairs of individuals for some measure.

When G is based on the Lorenz curve of income distribution, it can be interpreted as the expected income gap between two individuals randomly selected from the population.

The classical definition of G appears in the notation of the theory of relative mean difference:

$$G = \frac{\sum_{i=1}^{n}\sum_{j=1}^{n}\left|x_i - x_j\right|}{2n^2\bar{x}}$$

where x is an observed value, n is the number of values observed and x bar is the mean value.

If the x values are first placed in ascending order, such that each x has rank i, the some of the comparisons above can be avoided and computation is quicker:

$$G = \frac{2}{n^2\bar{x}}\sum_{i=1}^{n} i(x_i - \bar{x})$$

$$G = \frac{\sum_{i=1}^{n}(2i - n - 1)x_i}{n\sum_{i=1}^{n} x_i}$$

- where x is an observed value, n is the number of values observed and i is the rank of values in ascending order.
- Note that only positive non-zero values are used.
- http://www.statsdirect.com/help/default.htm#nonparametric_methods/gini.htm