

**A Comprehensive Guide to
Transit-Oriented Development
for Developing Countries**

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**A Comprehensive Guide to
Transit-Oriented Development
for Developing Countries**

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Contents

<i>Preface</i>	<i>ix</i>
<i>About the book</i>	<i>xiii</i>
<i>About the author</i>	<i>xvii</i>
1. An Introduction to Transit-Oriented Development	1
1.1 Introduction	1
1.2 TOD and its objectives	6
1.3 Characteristics of Transit-Oriented Development	12
1.3.1 Density	13
1.3.2 Diversity	16
1.3.3 Design	19
1.4 Does transit type influence the success or efficacy of TOD plans?	30
1.5 At which scale is TOD planned?	34
1.6 Defining TOD area	37
1.7 TOD and car parking	41
1.8 Can TOD exist without transit?	44
1.9 Pricing the public transport	45
2. Learning from Examples	60
2.1 Introduction	60
2.2 Goals and objectives	61
2.3 Existing TOD case studies	65
2.3.1 Perth, Western Australia	65
2.3.2 Portland region, Oregon State, the USA	69
2.3.3 Subiaco, near Perth, Western Australia	74
2.3.4 Hong Kong Special Administrative Region, People's Republic of China	78
2.3.5 Singapore city, Republic of Singapore	84
2.3.6 Curitiba, Brazil	87

2.3.7	Guangzhou, China	93
2.3.8	Seoul, Republic of Korea	97
2.3.9	Tokyo, Japan	101
2.4	Conclusions	105
3.	Transit-Oriented Development in Developing Countries	110
3.1	Introduction	110
3.2	Need for TOD in developing countries	114
3.3	What does TOD mean for developing countries?	117
3.4	Gentrification of TOD areas and displacement of poor	124
3.4.1	Gentrification and its causes	124
3.4.2	Managing gentrification	129
3.5	Conclusions	136
4.	Planning for Transit-Oriented Development: The Methods	145
4.1	Introduction	145
4.2	Evaluation vs. Assessment	147
4.3	Evaluation of TOD plans	149
4.4	Assessment of TOD characteristics	155
4.5	Methods of assessment and planning for TOD	157
4.5.1	Node-Place Model	158
4.5.2	Enhanced node-place model	163
4.5.3	The Butterfly Model	165
4.5.4	Cluster analysis	168
4.5.5	TOD Standard (2013)	177
4.5.6	TOD Index – Local scale	182
4.5.7	TOD Index – Regional scale	189
4.6	Conclusions	196
5.	Transit-Oriented Development and Smart Mobility	202
5.1	Introduction	202
5.2	Smart cities	204

5.3	Smart mobility	207
5.3.1	Shared (smart) mobility	211
5.3.2	Electric vehicles (EVs)	215
5.3.3	Autonomous vehicles (AVs)	221
5.4	Smart and sustainable?	224
5.4.1	Environmental impacts of smart mobility	227
5.4.2	Social impacts of smart mobility	232
5.5	Smart mobility and TOD	242
	Appendix I: Equity vs. Equality	257
	Appendix II: The Multi-Criteria Assessment (MCA)	261
	Index	265



Preface

In recent times, there has been a growing popularity and emphasis on Transit-Oriented Development (TOD) in developing countries. This can be evidenced by the World-Bank-funded TOD projects in various developing countries, the National Smart City Program in India that emphasizes on transit-oriented development, the Global Environment Facility (GEF)'s multi-million grant to China's pilot project for TOD in seven of its major cities, and many more such projects. The global funding agencies are supporting TOD projects in light of the fact that more than 70 percent of urban population is expected to live in the cities by 2050 and most of this growth is going to happen in the developing world. There is a huge demand for urban services in developing countries, and migration of population from rural to urban areas in search of better livelihood is adding extreme pressure on the existing urban areas. The car-dependent lifestyle in most cities in developing countries has some unmatched benefits, but it also comes at a high cost of congestion, pollution, accidents, unequal society, and inefficient use of land for roads and parking. Going forward, it has been realised worldwide that it is essential to build liveable, sustainable and inclusive cities for the growing urban population. Transit-oriented development can be an extremely helpful planning strategy as it focuses on compact, mixed-use, pedestrian and bicycle-friendly development around transit stations that can help reduce car-dependence, urban sprawl, improve air quality, reduce road congestion, and make it easier for people to get to jobs and access other opportunities. Hence, there is a growing work on TOD in developing countries.

Transit-oriented development, however, is not a new concept or phenomenon and has been around for more than two decades. It was introduced in the United States in 1990s to counter the problems of urban sprawls, and growing automobile trend leading further

to road congestion, air pollution, noise pollution, road accidents, and general decrease in quality of life. Since then, various cities and regions around the world, predominantly in North America, Australia and Europe, have implemented TOD projects of different scales, to create sustainable urban development. Last decade has seen a rise in TOD projects being planned in developing countries in Asia, Africa and South America.

In the last few years, during my interactions with researchers, academicians, and practicing professionals from developing countries, I found some misconceptions about what TOD has to offer. While some call it a Western concept and hence an unfit model for developing countries, others claim that the real estate developers are milking the concept to develop even higher densities in already dense cities. The national governments are promoting TOD at national level, getting support from the international funding agencies; however, there is a little expertise within the in-house consulting sector, leading to dependence on international experts and examples. Given the TOD climate in developing countries, students, researchers and consultants who are working on TOD projects are looking for TOD literature that is relevant for them. They form the biggest group of users of TOD information and have two main sources to refer to – research articles, and reports on past projects, both of which should be read with caution. Both these sources of information have an inherent bias as most of the content has originated in the West. Additionally, the research articles have a defined scope, and project reports can be context-sensitive. Re-usability or transferability of TOD plans is also highly restricted. Further, global research community often uses a very theoretical narrative about scenarios, paradigms, long-term vision, and such, while the planning professionals in the developing countries have been found to be more project-oriented. They typically look for implementable, scalable, practical, financially feasible projects that are also measurable, i.e. verifiable using objective criteria. For them, the results should be seen as soon as possible and thus, their requirement is very different. Given this mismatch, there is little clarity about TOD and its use or relevance in developing countries, despite the plethora of TOD literature.

This is where this book comes in.

This book is meant to bridge that gap between knowledge and knowledge-seekers. This book has been written to review, concise, explain and present the available knowledge in the manner that is most useful to the planning professionals, students and researchers in the developing countries. It helps that I have developed a keen understanding of consulting, research and government sectors during my 18 years of experience in India and the Netherlands. I understand the motivations, requirements, objectives of different users and have used that understanding to write this book.

We all agree that urban problems in developing countries are different from those of developed nations. However, that is not to say that TOD is unsuitable for developing countries. Rather, it means that the meaning of TOD should differ for both developing and developed countries. The application of TOD concept to developing countries needs a complete understanding of what the concept is, how it has been implemented in other countries, and what technical methods can be used to actually plan for a transit-oriented development. Essentially, the book discusses *what* is TOD, *why* is it important or useful, *when* and *where* has it been implemented before, *which* lessons can be drawn from those cases, and *how* can one plan for TOD. This book breaks down the entire concept of TOD into manageable and understandable smaller portions. Every chapter also carries a reflection of how different pieces of knowledge are applicable or useful in the context of developing countries.

In current times, while we are busy planning our cities around transit, our cities are also going through the IT (information technology) and AI (artificial intelligence) revolution that is leading the smart cities movement across the globe. From small interventions like LED lights replacing old-fashioned, high electricity consuming bulbs from street lights, to larger innovations like the autonomous vehicles, the technology is affecting everything. So much so that it is affecting the shape of our cities and their growth patterns. The smart mobility options on offer, ranging from bike-sharing to ride-sourcing, are affecting our decisions related to housing, work place locations and even our decisions to own a personal vehicle.

While these are impacting our travel behaviour and choices, their impact on environment, social inclusion and economic growth are also under scrutiny. The question that arises is – Is TOD too old-fashioned in these times of smart cities? Going by the growth of smart city projects as well as simultaneous growth in TOD projects in developing countries, it seems that they both have something to offer each other, while co-existing in their respective spheres. However, it remains to be seen if these provide more grounds for collaboration or competition. This book also deals with these questions and tries to break it down for the readers to understand for themselves if TOD still remains relevant and useful.

The target audience of this book is any reader who wants to understand TOD comprehensively. This will be a perfect book to pick up for students of planning profession, practicing urban and transport planners working on TOD projects in developing countries, urban and transport specialists at the international funding organisations that fund TOD projects in developing countries and wish to model the project's terms of references or guidelines, and for the researchers working on TOD.

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About the book

This book is intended to be a one-stop guide or a manual on Transit-Oriented Development (TOD) for readers, especially from developing countries. Since TOD started in the developed countries, it should be understood from the perspective of the developing countries that are culturally, economically and demographically different than the developed countries. The book works on that principle and explains the characteristics of TOD, discusses selected case studies to learn from, clears out various misconceptions related to TOD, brings together various technical methods to plan for TOD and explains their advantages and disadvantages. In the end, it throws light on validity of TOD in the fast-changing urban scape of smart cities and smart mobility.

In the first chapter, TOD has been comprehensively defined, discussed, analysed and elaborated for proper understanding of the concept. This chapter discusses the typical, atypical, important and crucial components of TOD, such as transit systems that are important for implementing TOD; scales at which, TOD is implemented (for example, local scale, network scale, or regional scale); potential benefits of TOD; importance of parking management in TOD; pricing the public transport; priority to the pedestrian; and many more. Currently, available literature has a wide array of reading material with a variety of views. This chapter puts these views together, discusses them, and provides a guide on each important aspect of TOD, helping readers to make an informed choice.

There are numerous case studies on TOD from various parts of the world, and these are at different scales, are planned with different aims and have led to different benefits. Chapter 2 discusses few selected TOD case studies from both developed and developing countries. Selected cases were planned at different scales, have different transit systems (rail and BRT), achieved varying degrees

of success and all offer lessons for learning. The chapter provides a discussion on how different factors can be responsible for successful or failed TOD projects and how those lessons are relevant or useful for cities in developing countries. The idea is to build on global practices but align them with the local context.

Chapter 3 deals with a critical issue – importance of TOD in developing countries. Since TOD has mostly been practiced in the developed world and almost all of the existing literature on it comes from developed world, there is little understanding of the concept in the context of developing countries. At the same time, more and more TOD projects, funded by the Asian Development Bank and the World Bank are being started in various countries. Thus, this chapter describes how developed and developing countries should approach TOD differently and have different reasons for implementing TOD projects. Mainly, the biggest difference is that under TOD, the developed countries built higher densities to improve transit ridership, while the developing countries need to make their transit systems more efficient, frequent, user-friendly, having higher capacities, and make the areas around transit nodes more walkable. In the end, both developed and developing countries stand to benefit from higher transit use, more walkable communities and less car-dependent societies. This is the core aim of TOD. Thus, TOD is not entirely a Western concept and is equally relevant for developing countries. We only need to understand it in different contexts.

Having made the case for need and applicability of TOD to developing countries, Chapter 4 will guide the reader on how to actually plan for TOD. It will detail out different, but unique, quantitative and qualitative methods that have been used to assess, measure and evaluate TOD at different scales and in various parts of the world. This is different from the past section on case studies, as it does not focus on *what* was planned as TOD, but *how* it was planned. Different methods of measuring TOD, creating typology of transit nodes for TOD assessment purposes, creation of a TOD standard, developing a TOD Index and other such methods are discussed here in detail with comments on their advantages, disadvantages

and recommendations for use. This chapter is especially useful for people who are planning and implementing TOD plans. The purpose of this chapter is to help the planners or practitioners pick a suitable methodology for their project so that TOD can be scientifically planned rather than put together in an ad-hoc manner.

Any discussion on urban mobility in current times is incomplete without the discussion on smart cities and smart mobility. The concept of smart cities has been growing very fast all over the world and a very strong focus is laid on the use of technology in all urban activities and planning approaches. Looking further, one may wonder – Is TOD becoming old-fashioned and is losing its validity in smart cities? Is TOD becoming irrelevant or does it stand to benefit from smart mobility solutions and services? These questions, and more, have been discussed in Chapter 5 in the light of smart mobility options such as the electric vehicles (EVs), ride-sharing, car-sharing or bike-sharing services, smartphone apps, smarter connected multi-modal transit services and others.



About the author

Dr. Yamini J. Singh is an urban and transport planner holding a PhD on Transit-Oriented Development, from University of Twente, the Netherlands. She completed her Bachelors in Physical Planning and Masters in Transport Planning (Gold Medalist) from School of Planning and Architecture, New Delhi. After working in India's government and private consulting sector for almost 7 years, she moved to the Netherlands for her PhD. In her 18 years of consulting and research experience in India and the Netherlands, she has worked on international urban projects, has published a number of international journal and conference papers, book chapters; she reviews scientific articles for many highly acclaimed international journals; has been invited by premier universities/institutes in India, Norway, the Netherlands and Finland to give lectures; has advised many PhD and Masters students globally; and has even given two TEDx talks in the Netherlands. She has also been featured on radio, podcast and in magazines. She continues to work on sustainable urban development, smart cities, smart mobility and closing gender gap in the design of our cities. In the year 2019, she was also nominated for the VIVA400 award of the 'most inspiring woman' in the Netherlands under category of 'world improvers'. More details about her work can be found at her website: www.yaminijsingh.com.