



ADB Working Paper Series

**TRANSIT-ORIENTED DEVELOPMENT
POLICIES AND STATION AREA
DEVELOPMENT IN ASIAN CITIES**

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No. 947
May 2019

Asian Development Bank Institute

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Suggested citation:

Kidokoro, T. 2019. Transit-Oriented Development Policies and Station Area Development in Asian Cities. ADBI Working Paper 947. Tokyo: Asian Development Bank Institute. Available: <https://www.adb.org/publications/transit-oriented-development-policies-asian-cities>

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Abstract

Many metropolitan cities in Asia are planning and implementing extensive investment in mass transit networks and thus are now on the threshold of becoming transit cities or car traffic saturation cities. The promotion of transit-oriented development (TOD) policies will be a key to the progression to transit cities. TOD should consider a transit-oriented regional growth management plan, station area zoning regulations (mixed-use, minimum density, maximum parking, etc.), joint development among local governments, transit agencies, and private developers, and an institutional mechanism for public and private cooperation in station area development. This paper examines cases from cities in Japan, the United States, and Southeast Asia, including Tokyo and Toyama in Japan, Denver in the US, and Kuala Lumpur in Malaysia. It concludes that the following are factors for the successful implementation of TOD in Asian cities: a shift from highway-based zoning to transit-oriented zoning; the creation of an institutional mechanism for public and private cooperation in station area development; a balance between public benefit and private benefit; the connection of transit services and affordable housing; and multi-modal connection planning, including walking.

Keywords: Asia, mass transit network, metropolitan cities, transit cities, transit-oriented development, urbanization

JEL Classification: R42, R51, R58, O18

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1. INTRODUCTION

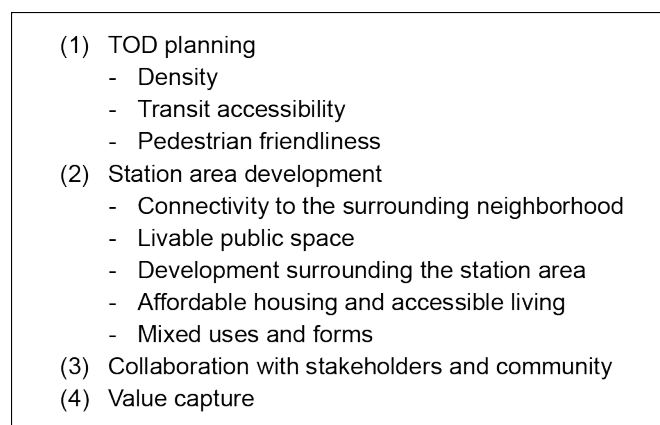
Many metropolitan cities in Asia are planning and implementing extensive investment in mass transit networks and thus are now on the threshold of becoming transit cities or car traffic saturation cities. The promotion of transit-oriented development (TOD) policies will be a key to the progression toward transit cities. Some of the key characteristics of the new directions for sustainable development in cities are now widely observable (OECD 2012): dense and proximate development patterns; urban areas linked by public transport systems; and accessibility to local services and jobs. It is apparent that these characteristics of sustainable urban development are quite compatible with TOD policies. However, automobile-oriented urban patterns have formed extensively in the meantime, as governments have vacillated due to the huge investment costs necessary for the construction of urban railways. Once an automobile-oriented city form has arisen, it has a lock-in effect; thus, it becomes very hard to transform a city with mass-transit-oriented patterns. As a result, though many cities are gradually introducing mass transit modes, the reality is that it is not easy to change the urban patterns and realize the synergy potential in the transport sector. In particular, many mega cities in Asia are now on the threshold of transforming into transit-oriented cities or becoming entrenched as automobile-oriented traffic saturation cities.

To examine the possible paths to transform the pattern of urban development from automobile oriented to transit oriented, this paper firstly overviews the characteristics of urbanization in Asian cities in conjunction with TOD policies. Secondly, it examines cases from cities in Japan, the United States, and Southeast Asia, including Kanazawa Toyama and Tokyo in Japan, Denver and Portland in the US, and Kuala Lumpur in Malaysia. Finally, it discusses the lessons regarding the application of TOD policies.

2. CHARACTERISTICS OF ASIAN URBANIZATION AND ITS IMPLICATIONS FOR TOD

Many studies and policy documents discuss the guidelines for TOD policies. Based on a careful examination of the existing documents, Figure 1 summarizes the key issues concerning TOD policies (Ditmar and Ohland 2003; Curtis, Renne, and Bertlini 2009; Salat and Ollivier 2017; Thomas et al. 2018).

Figure 1: Key Issues Regarding the Application of TOD Policies

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- (1) TOD planning
 - Density
 - Transit accessibility
 - Pedestrian friendliness
 - (2) Station area development
 - Connectivity to the surrounding neighborhood
 - Livable public space
 - Development surrounding the station area
 - Affordable housing and accessible living
 - Mixed uses and forms
 - (3) Collaboration with stakeholders and community
 - (4) Value capture

In conjunction with the application of the above key points of TOD policies, several points require careful consideration in fast-growing Asian cities. First, many developing Asian cities are facing serious urban environmental problems, such as traffic congestion and air pollution. It is therefore important to determine the synergies between the solution of urban environmental problems and the enhancement of mobility through the application of TOD policies. Second, it is important to seek synergies in the adaptation to and mitigation of climate change. It is obvious that disaster risks are higher in Asian countries than in the rest of the world. One of the characteristics of urbanization in Asia is that urban agglomerations have developed on the low-lying land of delta regions, and Asian cities are thus vulnerable to the impacts of climate change, including cities located in arid regions in inland areas. It is necessary to consider synergies between mitigation and adaptation when applying compact city policies to fast-growing Asian cities. It is a considerable opportunity for cities to apply TOD policies to realize compact city forms that can contribute to both the mitigation of and the adaptation to climate change. It is therefore important to consider these aspects when formulating TOD plans.

Third, sprawl and motorization are increasingly becoming a tendency of urbanization in Asian countries (Jenks et al. 2008). Due to rapid motorization, sprawl-type developments prevail, particularly in fast-growing Asian cities. Though the conventional image of Asian cities as high-density and mixed-use cities still applies in the central built-up areas, urbanization patterns in the fringe areas of fast-growing Asian cities are more and more becoming low density and automobile oriented with segregated land use. The formation of ongoing sprawl-type development could be detrimental to value capture due to the difficulty of development along transit routes; thus, the attractive station area development will be one of the keys to the successful implementation of TOD policies.

Fourth, the existence of informal settlements is an important feature of many Asian cities. These informal settlements provide affordable housing for the urban poor. About 30% of Asia's population still lived in slums in 2010, and the total number of slum dwellers is continuing to rise (UN-HABITAT 2012). The Asian region remains host to 505.5 million slum dwellers—over half of the world's slum population (Dahiya 2012). Careful consideration of the existence of those informal settlements is necessary, particularly regarding the development of station areas.

3. CASE STUDIES

This section reports case studies of cities with different maturities of TOD policy application in Japan, the United States, and Malaysia to distill the key factors for their successful implementation.

3.1 Tokyo, Japan

Tokyo is one of the most transit-oriented mega cities in the world, and large-scale urban development projects are ongoing in the station areas of the city center. The redevelopment project in the Tokyo Station area is among the largest projects in the city center of Tokyo (Figure 2). Tokyo Station is the central station, where four *Shinkansen* high-speed rail lines and many commuter and subway lines connect. The Tokyo Station Area Redevelopment Project covers the city center neighboring Tokyo Station, Japan's central business center, where major financial institutions, insurance companies, ICT companies, mass media, and trading companies are located. In terms of value capture, various redevelopment schemes are underway to provide the necessary public infrastructure at and around the station, including the Land Readjustment Project, the Transfer of Development Right (TDR), and the Urban Renaissance Special District

(URSD). Once an area has received URSD designation, the local government cancels and decides anew the existing land use controls, floor area ratio (FAR), building coverage ratio (BCR), height limitation controls, and building line limitations. It has applied URSD to the redevelopment area and deregulated the FAR from 1200% to 1590% max. by taking into consideration this project's contributions to urban regeneration for the whole area.

Figure 2: Tokyo Station Redevelopment Project Area



Regarding the stakeholder collaboration, the public–private partnership (PPP)-based collaboration in the city center (120 ha) around Tokyo Station (the Otemachi–Marunouchi–Yurakucho “OMY” area) began with the establishment of the OMY Redevelopment Project Council, which brought together property owners to think about the direction of urban generation for the area. The formation of the Council was based on Chiyoda Ward’s approach, which positioned PPP as a key urban development policy in the urban master plan. The Council continued discussing the direction of urban regeneration, and in 1994 the property owners reached a basic agreement on the principles of redevelopment to follow when reconstructing their office buildings. Furthermore, with the Council as the foundation, the Tokyo Metropolitan Government (TMG), the Chiyoda Ward, and the JR East Railway Company joined and formed the Advisory Committee on OMY Area Development to cover the arena of PPP. In 2000, the Advisory Committee created the City-Planning Guidelines, which state the vision for the area and the building rules that property owners should follow when reconstructing their office buildings. It positioned the guidelines as evolutionary in the sense that they maintain principles but avoid rigid, long-term planning and aim to achieve the overall vision incrementally through individual projects. The details of the guidelines are also flexibly adjustable in accordance with the changing economic and social conditions. In fact, to date, the committee has revised the guidelines in 2005, 2008, and 2012. It follows that typical project-based urban development through PPP is occurring in the OMY area.

Consensus making for the project has taken place within the OMY area. As discussed above, the property owner association known as the OMY Redevelopment Project Council has been the main platform for consensus making, and the Advisory Committee on OMY Area Development covers the PPP arena. Chiyoda Ward acted as a catalyst by

approaching property owners to create a platform for consensus making and to foster relational development rights. At the same time, TMG acted as an enabler by making a major shift from plan-led to project-led urban development policies in response to movements in the OMY area. The central government also supported these movements by making the necessary institutional arrangements.

3.2 Toyama, Japan

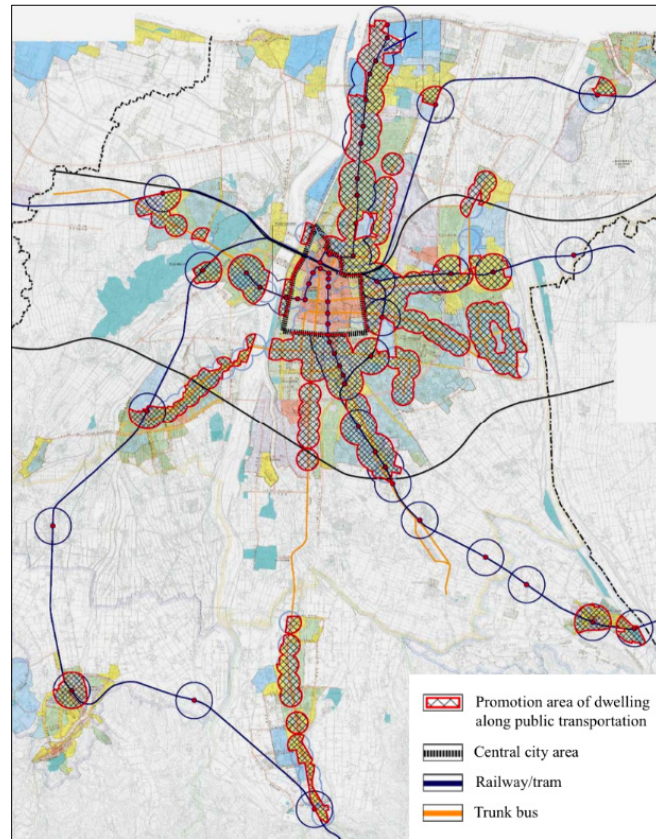
Toyama city is a regional core-level city and the capital city of Toyama Prefecture. Through the annexation of neighboring towns and villages in 2005, Toyama city became the eleventh-largest city in Japan in terms of area coverage. Though the administrative area is wide, the ratio of habitable land is 38.2%, and almost 70% of the city area is covered by forest. People regard Toyama city as a champion of compact city policies, and the UN Climate Summit named it as one of the model cities for the District Energy Cities Initiative.

Toyama city has recently changed its urban development policies from expansive urban development to compact city policies under the strong leadership of Mayor Masashi Mori. There are several issues behind this recent policy change—the decline of the city center, low-density urban development, high dependency on automobiles, an increase in administrative costs, ageing, an increase in the emission of CO₂, and so on—that are common in small and medium-sized cities in Japan.

To cope with the problems mentioned above, Toyama city has implemented compact city policies since Mayor Masashi Mori took office in 2002. In particular, TOD is a key policy of compact city policies in Toyama city. Toyama city's basic policy is to strengthen public transportation, including rail, the light rail transit (LRT), and buses, and to concentrate urban facilities along public transport corridors (Figure 3). There are three main measures with regard to TOD in Toyama city: strengthening public transportation, regulating and guiding development, and revitalizing the city center (Table 1).

The city's master plan designates railway and tram lines in the city and selected bus lines, which run frequently (more than about 60 services/day) between the city center and suburban centers or between the city center and important facilities (including the university, hospitals, and the airport), as public transportation corridors. The city government opened a 7.6 km LRT (Toyama LRT: TLR), which converted the conventional suburban rail into a modern LRT system, and started the loop-line service in the city center, which connects the city tram and TLR and run-through services between the TLR, the city tram, and a suburban rail line. It constructed and operates the TLR under the principle of public and private partnership (PPP); it implemented the construction of the TLR with a national subsidy, and a "third-sector company," Toyama Light Rail, operates it. Toyama city (33.1%), the prefecture government (16%), and various local companies (50.8%) share the equity of Toyama Light Rail. A Land Adjustment Project constructed the public facilities at and around Toyama Station, including a station plaza and the north–south connection through the station.

Figure 3: Transit-Oriented Development (TOD) Policy in Toyama City



Source: Toyama City.

Figure 4: Land Readjustment Project at Toyama Station, Toyama City



Source: Toyama City.

Table 1: Main Measures for Realizing TOD in Toyama City

Strengthening of public transportation	Networking LRT and tram	Toyama Light Rail (TLR): the first LRT line in Japan Experimental increase of frequency for the JR Takayama Line Loop-line service for the city tram* Run-through service on TLR, city tram and a suburban rail line
	Improving bus	Improvement of trunk bus vehicles and bus stops Community bus service to assure mobility
	Support for the elderly	Fare discount for intra-city trips to/from city center* Support for surrender of driving licenses
Regulating and guiding developments	Regulating developments	Regulation on trip-attracting developments in light-industrial zones and loose regulation areas Regulation on sporadic residential developments in suburban areas
	Guiding population distribution	Financial support for constructing, acquiring and renting houses in the city center and 'dumplings' along public transportation corridors** Support for elderly households to move into the city center**
Revitalization of city center	Making public transportation more convenient	Target: Increase ridership of city tram by 30% in five years Elevation of railway lines around Toyama Station Land readjustment in the area around Toyama Station Community bus service to support intra-central area trips (See also single-asterisked measures above)
	Creating lively city core	Target: Increase pedestrian flow in the city center by 30% in five years Renovation of Toyama Castle Park Development and operation of several key facilities Mixed-use redevelopment projects including retail and residential Refurbishment of exteriors under a unified concept Special deregulation zones for attracting major retail developments City Center Thanksgiving Day: free parking and celebratory events
	Promoting residence in the central area	Target: Increase population of the central area by 10% in five years Several redevelopment/development projects including residence (See also double-asterisked measures above)

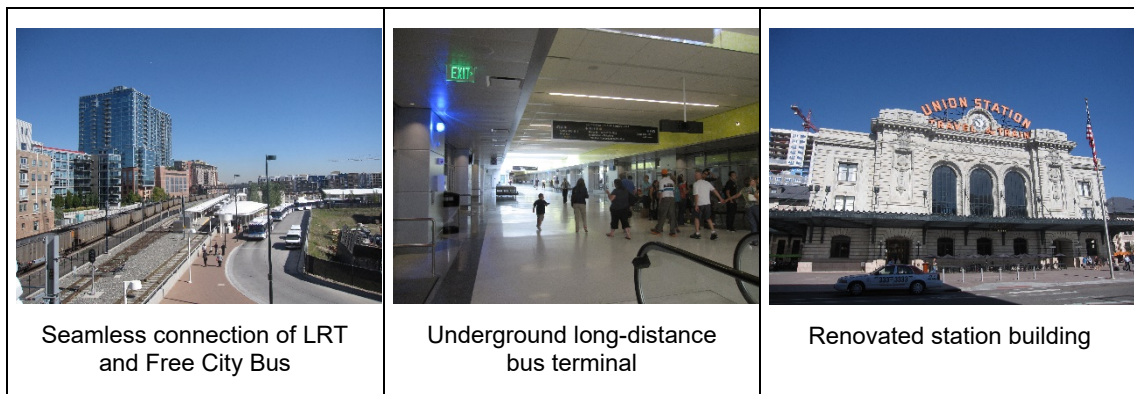
Source: Takami and Hatoyama (2008).

3.3 Denver, United States

Denver, United States, has implemented extensive TOD policies, including a mass transit development plan (US\$4.7 billion FasTracks Plan) as well as station area developments based on the TOD strategic plan. Under the FasTracks Plan, it has developed an extensive mass transit network and undertaken station area development at and around the central station (Denver Union Station). In terms of the value capture, it is notable that the surcharge of the sales tax covers a large part of the implementation costs of the FasTracks Plan: 71% from the 0.4% surcharge to the sales tax of Denver City and County, 19% from the Federal subsidy, 2% from the city, and 8% from others.

The flagship project is the 50-acre Denver Union Station Project at and around Denver Union Station (Figure 5). To coordinate the planning and implementation of the multi-stakeholder project, the city established the Denver Union Station Project Authority (DUSPA) in 2008. The project comprises the redevelopment of the project site as an intermodal transit (Amtrak, Commuter Rail, LRT, Inter-city Bus, and City Bus) district surrounded by transit-oriented development, including a mix of residential, retail, and office space. It is notable that various schemes are funding the \$487.7 million cost, including Tax Increment Financing (TIF), Special Improvement Districts (SIDs), Land Sales by RTD, Joint Development, Federal Subsidy, and so on. To use the TIF mechanism in Denver, a project site must meet the definition of blight as defined in statutes and reported by the Denver Urban Renewal Authority (DURA). Joint development is taking place between RTD and private developers for the joint use of transit facilities or property with an incidental (non-transit) use, including the use of air rights. The joint development may involve private developers’ air rights development, ground lease to private developers, or the outright sale of land.

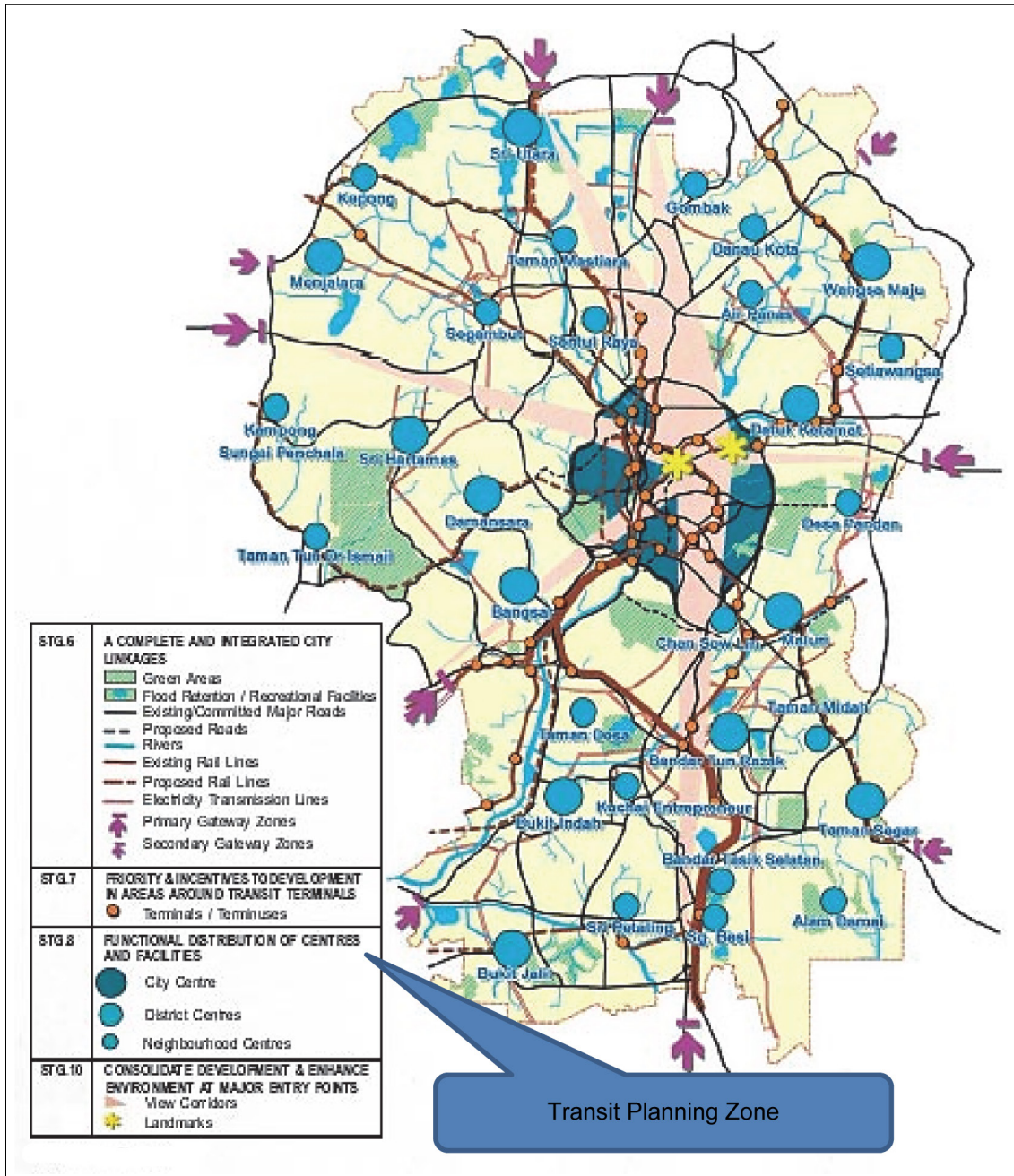
Figure 5: Denver Union Station Project



3.4 Kuala Lumpur, Malaysia

Among the Southeast Asian cities, Kuala Lumpur is extensively promoting TOD policies, in particular transit-oriented zoning. It has designated the areas surrounding mass transit stations as transit planning zones with additional FAR and stipulated (a) that land use activities should be transit supportive; (b) that mixed-use activities are encouraged within the transit planning zone (TPZ) with street-level activities to promote vibrancy and safety; (c) higher-intensity development to support the transit system; and (d) good urban design that prioritizes pedestrians (Figure 6). As regards the station area development, Kuala Lumpur utilizes the public–private partnership (PPP) scheme extensively. The largest station area development project in Kuala Lumpur is the Central Station Development Project, which is a 72-acre development project for commercial and residential properties and the transit hub of 6 rail networks (the KLIA Express Rail Link, KLIA Transit, RAPID KL (Putra), KTM Komuter, KTM Intercity, and KL Monorail Services). The site was formerly a marshalling yard for Malaysia’s national rail operator (KTMB), and the Government awarded the privatization of Stesen Sentral to Kuala Lumpur Sentral Sdn Bhd, a consortium under the leadership of a private developer (Malaysian Resources Corporation Berhad: MRCB), in 1994. It tasked Kuala Lumpur Sentral Sdn Bhd with building and surrendering the central station (*Stesen Sentral*) to the Government in exchange for development rights over the surrounding 72-acre freehold commercial land.

Figure 6: Transit Planning Zone in Kuala Lumpur



Note: STG = Strategy.

Source: DBKL (Kuala Lumpur City Hall). *Kuala Lumpur Structure Plan 2020*. <http://www.dbkl.gov.my/pskl2020/english/transportation/index.htm>.

4. CONCLUSION

This paper examined some best practices for the application of TOD policies in different countries. Some of the lessons for the successful application of TOD policies that the case studies offered are:

1. The need for a transit-oriented regional growth management plan
2. The need for station area zoning regulations (mixed-use, minimum density, maximum parking, etc.)
3. The need for joint development among local governments, transit agencies, and private developers
4. The need for an institutional mechanism for public and private cooperation in station area development

Many Asian cities are currently trying to apply TOD policies as an important component of sustainable urban development, yet there are obstacles given their current situation in light of the above lessons. In conclusion, the paper recommends the following points to consider toward the successful application of TOD policies:

1. A shift from highway-based zoning to transit-oriented zoning
2. The creation of an institutional mechanism for public and private cooperation in station area development: a balance between public benefit and private benefit
3. The connection of transit services and affordable housing
4. Multi-modal connection planning, including walking

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