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Article

# The progression of transport infrastructures and Transit Oriented Development (TOD) areas in Jakarta and Kuala Lumpur suburban: Lessons from policy approach

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**Abstract:** In developing metropolitan cities, the expansion of urban areas due to the urbanization phenomenon has resulted in massive transport infrastructure development in suburban areas. This development has prompted many governments to begin introducing Transit-Oriented Development (TOD) to organize emerging transit hubs in suburban areas into their city plans. The approach adopted to introduce TOD may differ, depending on the existing context. Countries with similar socio-cultural background typically adopt a uniform approach, but not Jakarta and Kuala Lumpur as the most developing metropolitan cities in Southeast Asia with similar urbanization and socio-cultural Based on the situation, through the examining documents and spatial analysis, this study seeks to examine the impact of different policy approach between Jakarta and Kuala Lumpur on the progressions of transport infrastructure and TOD areas in suburban. The results showed that Kuala Lumpur had a more rapid progression in transport infrastructures development, accompanied by the establishment of several transit zones in urban and suburban areas. Meanwhile, Jakarta's approach comprised the gradual development of infrastructures, initially focusing on TOD in central urban areas and only a limited number of suburban areas with significant commuter traffic. These results indicate that differences in policy approaches in the two regions with similar urbanization and socio-cultural contexts influence the evolution of transport infrastructure and TOD areas development. Several factors contribute to these discrepancies, including efficiency, synchrony, bias, clarity of organizational structure, and conceptual comprehension. At macro basis, policy makers must underline that the characteristics suitability between the approach and region critically determines the success of urban development.

**Keywords:** Transit-Oriented Development (TOD); metropolitan; suburban; infrastructure; policy approach

## 1. Introduction

The rapid urbanization in developing metropolitan cities is known to pose significant challenges to urban planning practices. These challenges include the trend of individuals seeking employment in major cities but deciding to live in suburban areas as commuters to cope with affordability. Consequently, formerly centralized small urban settlements begin to expand their physical boundaries outward to rural areas to create new regions. This phenomenon has significantly affected public infrastructures and service delivery in the newly developed regions (Pan et al., 2011). Particularly in the transportation sector, the increasing demand for housing in suburban areas among the middle and working classes has attracted more investments

in the transport infrastructure, especially road and public transport networks (Mansury et al., 2012). Hasibuan et al. (2014) stated that transport infrastructure investment in suburban areas is experiencing rapid development to meet the high demand for commuter movement. The ensuing expansion of new infrastructure in the suburbs has given rise to the emergence of transit areas (Dittmar and Ohland, 2018; Mansury et al., 2012; Padeiro et al., 2019). This shows a clear interconnection between the emergence of "infrastructure-driven transit areas" (Baker and Lee, 2019; Pan et al., 2011).

Transit areas typically arise due to the movement of commuters using newly established transport networks that connect suburban settlements with the major cities. A review of numerous literatures illustrates in greater detail how transit zones typically evolve through three phases. Initially, suburban areas experience a housing boom due to changing demographics and economic dynamics driven by gentrification and increased investment (Padeiro et al., 2019). This increase in investment leads to the establishment of various new land uses with economic value, such as commercial spaces (Mansury et al., 2012), offices, and recreational areas (Dittmar and Ohland, 2018) which promote city development, including the development of tourism site facilities and services, as seen in Jogjakarta (Utami and Ratriningsih, 2019).

These zones are strategically located where various transportation networks and public transit services intersect, whether by design or chance. The intersection enables residents to engage in more flexible commuting activities, facilitating travel from home to work and other destinations (Baker and Lee, 2019; Cidell and Prytherch, 2015; Garcia-López, 2012). This underlies the significance of transit nodes as essential center and pivotal point for the confluence of multiple urban activities that need transportation services and interchanges (Lyu et al., 2016; Teklemariam and Shen, 2020). Furthermore, these nodes, where fairly often spontaneously emerged, have become focal points for the transformation of ordinary settlements into Transit-oriented Development (TOD) areas. This is in line with the statement by Cidell and Prytherch (2015) and Curtis et al. (2019) that such transit nodes will evolve into new planned area known as TOD areas over periods. In essence, the urban periphery is evolving into dynamic zones where transportation and urban development intersect smoothly, shaping the trajectory of these burgeoning suburban spaces into high-density, compact, and attractive areas to live, controlled by a set of planning standards and building regulations under transit-themes (Hasibuan and Permana, 2022). In line with previous studies, various approaches have been proposed for the implementation of TOD policies in suburban areas that typically contain descriptions of concepts, land use and zoning strategies, service standards, and transit-designated areas plans, followed by incentive and disincentive policies to encourage more or control investments (Darchen and Huston, 2012). In this regard, existing literature focusing on two, including (1) local government initiation, often supported by the central government (bottom-up), and (2) strategic policy adoption by the central government, prompting local government to implement supportive policies (top-down) (Jamme et al., 2019; Pan et al., 2011). Some literatures show that the top-down approach is generally used in developed countries, such as United Stated (Renaissance Planning Group, 2014), Netherland, Denmark, German, Sweden (Staricco and Brovarone, 2018), and Tokyo (Kidokoro, 2019), while developing countries generally adopt a bottom-up approach (Nair, 2019; Ibrahim et al., 2022; Hermansyah et al., 2024). In

various American metropolitan cities, the state government has the authority to develop land use policies and provide financial support for key infrastructure projects related to TOD (Renaissance Planning Group, 2014). These policies are lowered to the regional level to be formulated into TOD-specific plans, policies, and programs, then actually implemented at the local authority level through technical and financial assistance provisions (Renaissance Planning Group, 2014). In advance context, several European countries use a top-down method that includes vertical and horizontal coordination to establish a planned transition from the central to the local level (Staricco and Brovarone, 2018). In contrast, employing a top-down approach in Indian metropolises has not produced benefits. The bottom-up approach is considered more suitable because it can capture all the diversity of socio-cultural norms in each region, compared to the to the top-down application which provides a normative masterplan (Nair, 2019).

The preceding descriptions demonstrate that background differences in each country trigger differences in TOD policy approaches implemented. These descriptions further demonstrate that the similar socio-cultural context in each country results in a common approach. However, this concept does not apply to Jakarta and Kuala Lumpur as the most metropolitan cities in Southeast Asia with commonality in urbanization and socio-cultural context. The two metropolitan areas have significantly different approach, with Kuala Lumpur adopting a top-down approach and Jakarta adopting bottom-up approach. This is an interesting issue for further study, focusing on a analyzing the impact of different policy approaches on the progression of the transportation infrastructure and TOD areas development in suburban. This study is crucial in determining whether differences in policy approaches in the nations with similar urban socio-cultural have a substantial impact on suburban area growth from the transportation standpoint. This research is also something novel, considering that numerous earlier studies about TOD policies in Jakarta and Kuala Lumpur tend to focus on the technical design guidelines (Dirgahani and Chaerunnisa, 2019), land use (Azmi et al., 2021; Hasibuan and Mulyani, 2022; Hasibuan et al., 2024), mobility change (Hendratno, 2018; Hasibuan and Mulyani, 2022), residential optimization (Irsal et al., 2022), citizen preferences (Suryawan et al., 2024), regional model development (Rahmat et al., 2016), rail-based transit system (Yussof et al., 2021), and principle implementation (Azmi et al., 2021).

## 2. Materials and methods

This study used a comprehensive mixed-method approach to analyze the case studies, combining literature and documentary reviews, and spatial overlays. The utilization of multiple study methods offered the intention to provide a deeper investigation of the chronological development process. The literature and documentary reviewed component of the report which served as a foundational pillar for analyzing the case study based on an analytical framework. By systematically examining a diverse array of sources, including report publications, policy papers including preliminary studies for public transport integration provided by Japan International Cooperation Agency and Asian Development Bank (2010–2013), and planning documents including Kuala Lumpur and Jakarta's spatial plans, as well as

zoning regulations in both cities, the study gained insights into the historical trajectory of public transport network expansions and TOD policies. This meticulous review established a chronological framework, enabling the study to trace the policy evolution, identify key milestones, and assess the overall impact on urban development. The synthesis of information from various documents provided a robust foundation for this paper's argumentation regarding the phenomenon of "infrastructure-driven TOD" in the 2 case studies for further scrutiny.

Complementing the documentary reviews, the spatial overlays and visualization employed Geographic Information System (GIS) software, ArcGIS, to elucidate the shape and concentration of transport infrastructure and TOD policies identified by formally designated TOD areas. This visualization offering insights into how these policies manifested based on the argumentation of the "infrastructure-driven TOD".

## 3. Results and discussion

This chapter examines the development of transportation infrastructure, particularly the public transportation network and road, and the TOD areas within each case study based on different policy approaches. Subsequently, the analysis of the two cities was conducted, examining both the similarities and differences in their developmental patterns and investigating the underlying rationales behind these divergences.

The concept of TOD in Malaysia emerged earlier, around 2010, coinciding with the extensive construction of various transit terminals on the outskirts of Kuala Lumpur. However, the concept was introduced in 2010, and the Malaysian government had already implemented the first TOD project in 2001, known as Kuala Lumpur Sentral. TOD in Indonesia began to gain traction as a prominent idea considered by major cities after 2012 with the first TOD project applied a few later, and it was important to note that both metropolitan areas exhibited distinct characteristics. Kuala Lumpur Metropolitan encompassed 4615 square km of land, including Kuala Lumpur, Petaling, Klang, Gombak, Putrajaya, Sepang, Hulu Langat, and Kuala Selangor. Jakarta, on the other hand, covered 6802.10 square km of land, including Jakarta, Bogor, Depok, Tangerang, Bekasi, and its respective districts.

### 3.1. The case of Kuala Lumpur Metropolitan Area

The flow of TOD policy, which stipulated more than 50 TOD areas, was top-down from the federal government to the state government and finally executed by the local authorities. Firstly, the federal government sets TOD goal in the Tenth Malaysia Plan, and in this document, TOD concept was introduced and encouraged. The state government, along with the local authorities, executed the plan by forming a detailed TOD framework, selecting the location of TOD areas, and implementing supporting programs. Numerous incentives were promoted to encourage more investment and projects in TOD areas. These included zoning changes, higher plot ratios, increased density, and mixed-use zoning. Gradually, the introduction of the incentives led to the development of high-density and mixed-use buildings in TOD areas, increasing ridership. According to the Ministry of Transport Malaysia (2019), the total number of passengers for ERL, monorail, commuter, LRT, and MRT (since 2017) significantly

increased from 170.8 million (in 2010) to 211.7 million (in 2019). The total number of passengers once declined to 128.3 million in 2022 as the country was still recovering from the COVID-19 pandemic.

Over almost 2 decades, the rapid expansion of public transport networks in the Kuala Lumpur region, including the ongoing construction of the East Coast Rail Link (ECRL), had been well responded to by the implementation of TOD policies as the following action. In addition to promoting more investments in such transit zones, TOD was expected to drive population deconcentration away from the Kuala Lumpur city center towards the surrounding districts.

Provision of transit infrastructure since 1995 and the introduction of TOD concept in 2010 by the Malaysian government in the Tenth Malaysia Plan (2011–2015) had played significant roles in the population distribution in the Kuala Lumpur Metropolitan Area (The Economic Planning Unit, 2010a). **Figure 1** showed the current integrated transit system in the Kuala Lumpur Metropolitan area, which consisted of light rail transit (LRT), mass rapid transit (MRT), monorail, express rail link (ERL), and commuter train.

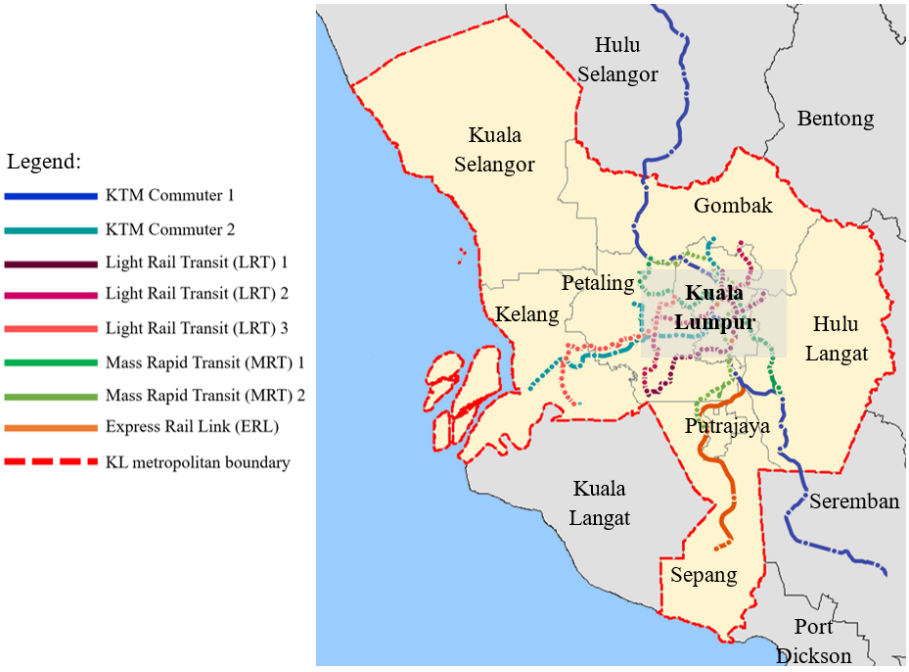


**Figure 1.** Integrated transit system in Kuala Lumpur Metropolitan Area.

Firstly, as the largest transit hub in Malaysia, Kuala Lumpur Sentral was connected to a comprehensive railway network and routes, enabling greater accessibility for residents and commuters. There were 102 designated TOD zones (known as Transit Planning Zones) in Kuala Lumpur (Kuala Lumpur Government, 2020). Secondly, the population de-concentration from Kuala Lumpur to the Petaling District since 2010 (Hasibuan et al., 2024) was influenced by urban sprawl caused by the establishment of massive transport projects on the outer boundaries of Kuala Lumpur. The projects included the existing commuter train line (since 1995), LRT1 (since 1998), LRT 2 in 2016, MRT in 2017, and LRT 3 (estimated completion in 2025). In response to this network extension, 47 stations were designated as TOD areas in the

Petaling District by the local authorities—Petaling Jaya City Council (15 TOD areas), Subang Jaya City Council (15 areas), and Shah Alam City Council (17 areas). Additionally, there were also more designated TOD areas in other districts of the Kuala Lumpur Metropolitan area (Gombak, Hulu Langat, Kelang, and Sepang). Due to the high number of designated TOD areas, it was impossible to map out these areas individually. The conditions of urban development in these TOD areas varied significantly, and some had evolved into compact areas with dense buildings, while others remained with existing low-density residential. The government utilized TOD designation as an effort to accelerate investment and redevelopment and achieved efficient spatial utilization to support widespread urban development both in the central and peripheral areas of the city.

### 3.2. The case of Jakarta Metropolitan Area

In contrast to the Kuala Lumpur Metropolitan Area, the Jakarta Metropolitan Area adopted a bottom-up approach in implementing TOD policy, which began in 2012 with the publication of DKI Jakarta Provincial Regulation No. 1/2012 concerning the Jakarta Spatial Plan. This regulation states that one of the goals of Jakarta spatial planning is to create regional space that provides a productive and innovative quality of city life through the TOD Concept implementation. The inclusion of TOD idea in spatial planning was a response to law No. 23/2007 concerning the National Railway and Law No. 22/2009 concerning Road Transportation. Specifically, Law No. 23/2007 focuses on the direction of reforming the railway service system, including local railways, to promote economic growth regional development, and regional integration. Similar to the previous regulation, Law No. 22/2009 specifically directs the development of a traffic transportation service system that is capable of supporting economic growth, regional development, regional integration, and reducing environmental impacts through efficient mobility and energy use, as well as minimizing emissions and pollution.

This explains the initiation of the application of the TOD concept in regulations which started at the local level, specifically the City of Jakarta, which was then followed up at the central level through the presence of the Ministry of Land and Spatial Planning Regulation No. 16/2017 and Presidential Decree No. 55/2018 concerning the Jabodetabek Transportation Master Plan 2018-2029. This initiative began to resonate significantly after the implementation of JUTPI and JAPTraPIS activities in 2010–2012, which included a collaborative-research on plans to implement the TOD idea in Jakarta. These studies emphasize developing TOD areas through the construction of mass-transit corridors in inner city Jakarta (MRT) and corridors connecting Jakarta with adjacent suburban district, consisting of Bekasi, Bogor, Depok, Tangerang, and South Tangerang. Furthermore, these JICA studies were highly influential, with many local governments referring to the recommendations in subsequent years. The phase of development is seen as a turning point in the serious pursuit of TOD strategy in the Jakarta metropolitan region.

Jakarta was the first pioneering city to produce significant action towards TOD implementation through its transport strategic actions in 2012, and most of the instruments were building and land use guidelines. This is underlined by the fact that

Jakarta has more TOD areas than the surrounding suburbs. In this case, Jakarta has 10 TOD zones, while the suburbs have 6 TOD zones. Bekasi (1 zone), Depok (2 zones), Bogor (1 zone), Tangerang (1 zone), and South Tangerang (1 zone). Transit zones were designed to promote and facilitate more integrated planning between spatial and transportation aspects, both planned and existing, environmental balance, and the enhancement of the character and identity of urban areas (Taki et al., 2018). The integration was realized through development of a public transportation-oriented spatial concept and a self-contained integrated city (compact city) (Hasibuan and Permana, 2022). Meanwhile, the enhancement of urban characteristics and identity was achieved through the arrangement of area designs that aligned with local heritage and culture. The promotion of environmental balance was achieved by increasing the extent of green open spaces.

After 2019, development of TOD policy and area stipulation began to be showed by the Jakarta government (**Table 1**), which was followed by a few other municipal governments surrounding the capital. TOD policy was directed to achieve the increase of mass public transportation which used up to 60%, especially for daily commuter movements. According to DKI Jakarta Provincial Regulation No. 1/2018 concerning RPJMD DKI Jakarta Province, the integration has been carried out in Jakarta since 2017–2022, with the development of the MRT phase 1 corridor (since 2013), MRT phase 2 (since 2023), LRT phase 1 (since 2023). Previously, in 2004, the BRT network was established in Jakarta, as the city center, before being expanded to suburban areas in 2015. Aside from BRT, the mass public transportation network that has reached suburbs is LRT. In Jakarta, the MRT corridor served as the backbone of the internal transport system, while in surrounding cities, the commuter line corridors acted as the magnet points, drawing people to settle along transit zones and organizing the existing random and spontaneous growth.

These strategies were aimed at assisting Jakarta in managing its overpopulation and controlling its unplanned sprawling, and the improved connectivity offered by the railway and BRT systems encouraged people to move to the suburban areas. These transportation networks made it easier for individuals to commute from the outskirts of Jakarta to the city center. As a result, residential areas in places like Bekasi, Depok, Tangerang, Bogor, and Tangerang Selatan became attractive options for those seeking affordable housing while still accessing job opportunities in Jakarta.

This strategy was predicted to helped the Jakarta metropolitan in 2 ways, which included the following, firstly, as urban land prices in Jakarta continued to rise extraordinarily, people seeking more affordable housing options found these neighboring areas to be financially attractive. The lower cost of living, including housing and basic amenities, made urban sprawling an appealing choice. This reduced slums and ineffective landed houses in Jakarta against the vision of a compact city. Secondly, the government's push for regional development and improved connectivity through railway and BRT projects actively encouraged the growth of these suburban areas. Policies and investments in infrastructure development were aimed at distributing economic activities and reducing the concentration of development in city center which in turn fostered the growth of surrounding cities, one of which through the redevelopment of the shopping center, multinational office parks, and industries in peri-urban areas served by TOD connections.

**Table 1.** Literature and document references of the study.

| Reference Source | Jakarta | Kuala Lumpur |
|---|---|---|
| National Policy | • National Law No. 23/2007 concerning the National Railway<br>• National Law No. 26/2007 concerning Spatial Planning<br>• National Law No. 22/2009 concerning Road Transportation<br>• Ministry Regulation of ATR/BPN Agency No. 16/2017<br>• Presidential Decree No. 55/2018 concerning the Jabodetabek Transportation Master Plan 2018–2029 | • Tenth Malaysia Plan<br>• Eleventh Malaysia Plan 2016–2020<br>• The Fourth National Physical Plan 1981–1985<br>• Twelfth Malaysia Plan 2021–2025<br>• National Transport Policy 2019-2030 |
| Regional Policy | | • Rancangan Struktur Negeri Selangor 2035<br>• Kuala Lumpur Structure Plan 2040 |
| Local Policy | • DKI Jakarta Provincial Regulation No. 1/2012 concerning The Jakarta Spatial Plan<br>• DKI Jakarta Provincial Regulation No. 1/2014 concerning the Spatial Planning Details and Zoning Regulations<br>• DKI Jakarta Governor Regulation No. 44/2017 concerning Development of TOD Areas<br>• DKI Jakarta Governor Regulation No. 140/2017 concerning the Assignment of MRT Jakarta Company as the Main Operator for Managing Transit Areas<br>• DKI Jakarta Provincial Regulation No. 1/2018 concerning RPJMD DKI Jakarta Province 2017–2022<br>• DKI Jakarta Governor Regulation No. 67/2019 concerning Implementation of Transit Oriented Areas<br>• DKI Jakarta Governor Regulation No. 107/2020 concerning Dukuh Atas TOD Guideline<br>• DKI Jakarta Governor Regulation No. 55/2020 concerning Blok-M Sisingamaraja TOD Guideline<br>• DKI Jakarta Governor Regulation No. 56/2020 concerning Fatmawati TOD Guideline<br>• DKI Jakarta Governor Regulation No. 57/2020 concerning Lebak Bulus TOD Guideline | • Rancangan Tempatan Daerah Majelis Kuala Selangor 2025<br>• Rancangan Tempatan Majelis Daerah Sabak Bernam 2025<br>• Rancangan Temapatan Majelis Perbandaran Sepang 2025<br>• Rancangan Tempatan Petaling Jaya 1 & Petaling Jaya 2<br>• Rancangan Tempatan Majelis Bandaraya Shah Alam 2035<br>• Rancangan Tempatan Subang Jaya 2035<br>• Rancangan Tempatan Majelis Perbandaran Klang 2035<br>• Rancangan Tempatan Kuala Langat 2030<br>• Rancangan Tempatan Daerah Hulu Selangor 2035 |
| Cooperation Report | • Final Report of Jakarta Public Transport Policy Implementation Strategy (JAPTraPis) in The Republic of Indonesia<br>• The Final Report of Jabodetabek Urban Transportation Policy Integration (JUTPI) Project Phase 2 | |

Source: Bendaraya Kuala Lumpur Government (2023); Majelis Bandaraya Petaling Jaya (2023a, 2023b); Majelis Bandaraya Shah Alam (2020); Majelis Bandaraya Subang Jaya (2022); Majelis Daerah Sabak Bernam (2015); Majelis Perbandaran Hulu Selangor (2021); Majelis Perbandaran Klang (2021); Majelis Perbandaran Kuala Langat (2022); Majelis Perbandaran Kuala Selangor (2015); Majelis Perbandaran Sepang (2017); Selangor State Government (2017); The Economic Planning Unit (1980, 2010a, 2010b, 2015); The Economic Planning Unit (2021); Ministry of Transport Malaysia (2019); Central Government of Republic Indonesia (2007a, 2007b, 2009, 2018); DKI Jakarta Provincial Government (2012, 2014, 2017a, 2017b, 2018, 2019, 2020a, 2020b, 2020c, 2020d); Japan International Cooperation Agency (JICA) (2012, 2019); Spatial Planning Ministry of Republic Indonesia (2017).

However, in practice, this strategy had no affect on the growth of suburban districts, including the development of TOD areas. There were significant constructions of transport infrastructure in the core city area, Jakarta, consisting of the MRT, Bus Rapid Transit (BRT), and LRT, and their networks, stations, and parking spaces. Such constructions were implemented nearly 3 (three) years before the formal inclusion of TOD concept into spatial planning documents. Furthermore, in other cities directly adjacent to Jakarta, such as Bekasi, Tangerang, Depok, and Bogor, the adoption of TOD concept into a formal municipal plan worked a few years later from the core city, but still, with less significant improvement of stations and service networks (**Figure 2**).

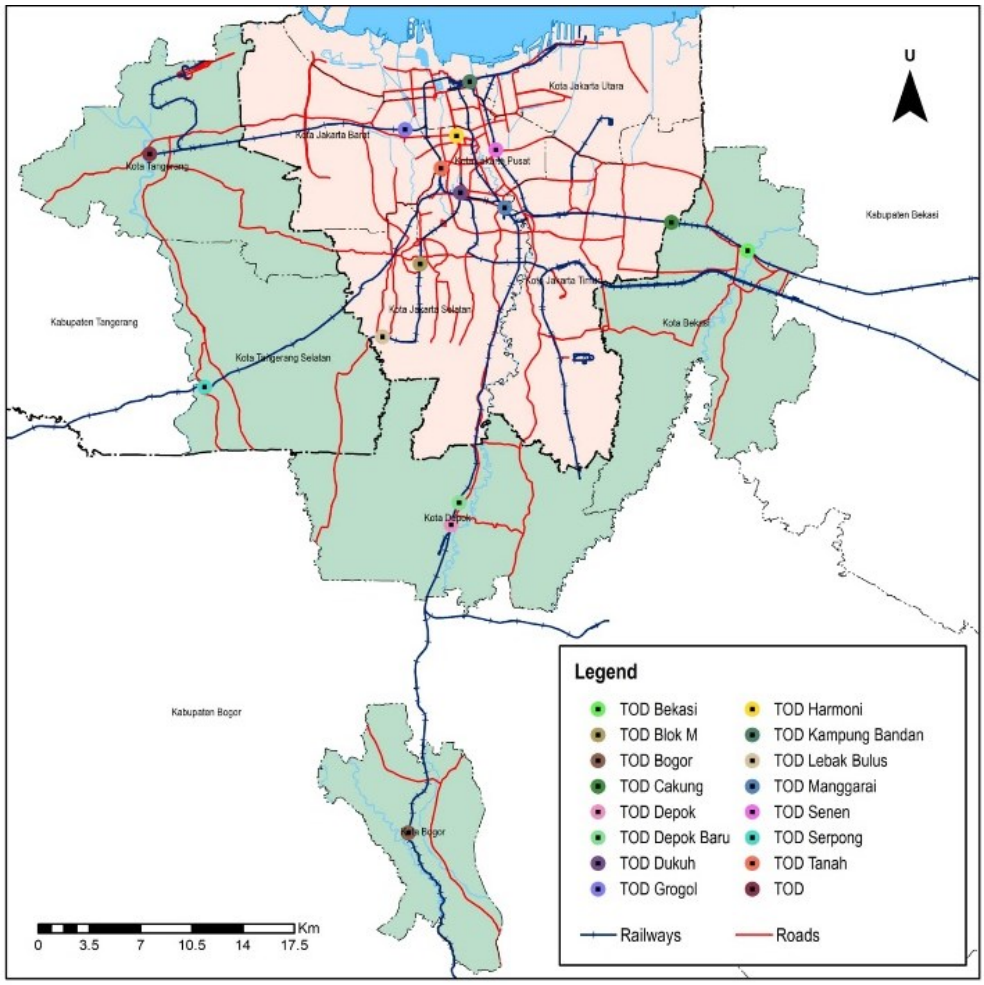


**Figure 2.** Transit development plan in Jabodetabek metropolitan area.

The overall trend of development in the Jakarta Metropolitan Area employed a tendency for urban sprawling which occurred to be more significant than infrastructure development. Furthermore, infrastructure development was also lightly affecting the promotion of TOD, and rather than deconcentration as in the case of Kuala Lumpur, Jakarta as the main city remained the most attractive destination of investment and the core of public infrastructure and service development. This condition left its suburban settlements in slow development progress. Transport infrastructure and service were not improved for a decade, and this created major traffic congestion in the region before 2010. Development of railway and bus rapid transit (BRT) systems connecting

Jakarta with its surrounding cities, which included Bekasi, Depok, Tangerang, Bogor, and Tangerang Selatan, began in 2007 and was extended after 2019, but the government in both national and municipal did not provide a quick response policy to stimulate development of emerging transit zones, resulting more commuter flows without any significant support to cope with traffic congestion problems on the roads.

In Jakarta metropolitan city, TOD policy was operationalized only after the operation of MRT (inner city) in 2019 and the reintroduction of regional BRT in 2020. However, in practice, public government offices, major companies, and shopping centers remained concentrated in Jakarta's TOD plan. Many other transit stations in the peripheries impacted by the construction of new public transport projects were still unmanaged by formal plans. In some cases, supporting stations in suburban areas such as Poris Plawad (Tangerang), Bojong (Bogor), and Cisauk as well as Rawa Buntu (South Tangerang) remained quiet and lacked policy intervention.

In one of the busiest satellite areas of Bumi Serpong Damai (BSD) in South Tangerang, for instance, TOD was introduced alongside a few policies to relocate new major private offices and government offices from the core city to this district. However, this situation only created another traffic issue rather than the emergence of new TOD strategies in the affected transit nodes. All development progressed in a slightly organic manner and was not guided by a strong intention to continuously promote TOD.

## 4. Discussion

A comparative analysis of these 2 contrasting models showed crucial insights into the challenges and benefits associated with bottom-up and top-down approaches to TOD development. In this case, discrepancies in the intention underlying the use of the term TOD in Kuala Lumpur and Jakarta (**Figure 3**) result in differences in the approaches adopted. In the Kuala Lumpur, the term TOD was used as a "flagship" to promote development at almost every station point, to accelerate and evenly distribute development in line with a specific theme. Meanwhile, in Jakarta, this term was used cautiously because it was seen as correlating with investment plans and changes in building height coefficients in area. The points designated as TOD underwent spatial and design transformations, allowing it to undergo various large-scale physical development. Therefore, the use of the term tended to be more cautious and directed only at points that were considered most ready and strategic by the determining entities, in this case, the Jakarta Provincial Government for TOD in Jakarta, and other city governments for suburban TOD outside Jakarta.

The variances in approach are also influenced by the goals to be reached. The Jakarta Greater Area used a bottom-up model to empower local communities and stimulate different development initiatives, whereas the Kuala Lumpur Greater Area used a top-down approach to ensure strong network integration and quick plan realization. However, the approaches used by both regions also pose challenges. The implementation of Jakarta's bottom-up approach resulted in network disconnection and a slowed implementation of TOD plans. On the other hand, Greater Kuala Lumpur's top-down approach could face challenges in adequately addressing local nuances and community-specific needs. Differences in approaches triggered by

variances in objectives and conceptual meanings of the term TOD have resulted in variations in the progression of transport infrastructure and TOD areas development, as described in **Table 2**.

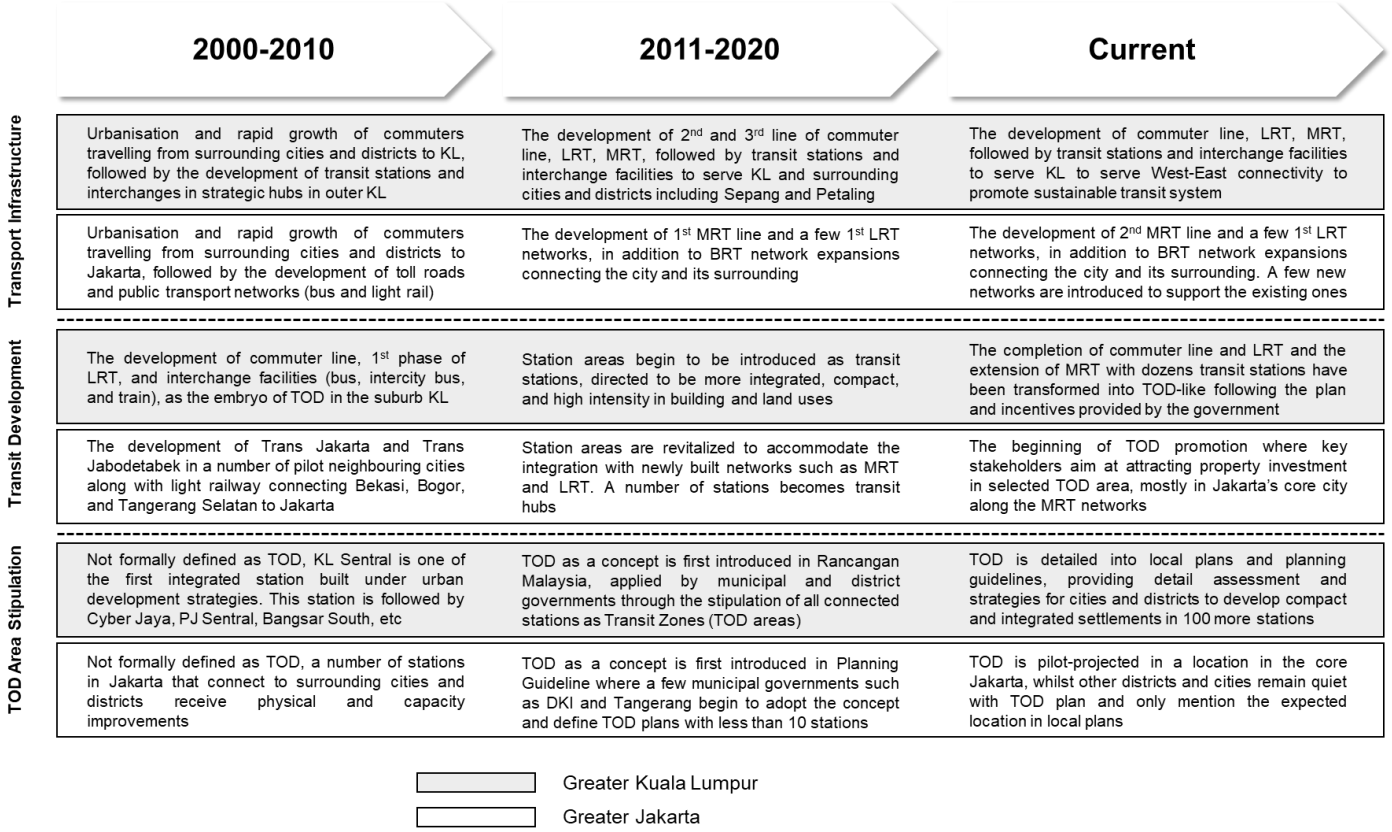


**Figure 3.** The impact of conceptual meaning on the history of TOD policy and infrastructure provision in Jakarta in greater Jakarta and Kuala Lumpur.

**Table 2.** Comparison of transport infrastructure and TOD areas development between Jakarta and Kuala Lumpur.

| **Development** | | **Jakarta** | **Kuala Lumpur** |
|---|---|---|---|
| **Variables** | **Subvariables** | | |
| Transport Infrastructure | MRT Corridors | • Phase 1 (since 2013)<br>• Phase 2 (since 2023) | Since 2017 |
| | LRT Corridors | • Phase 1 (since 2023) | • Phase 1 (since 1998)<br>• Phase 2 (since 2016)<br>• Phase 3 (since 2025) |
| | BRT Corridors | • Transjakarta (since 2004)<br>• Transjabodetabek (since 2015) | |
| TOD Areas | City Center | 10 zones | 102 zones |
| | Suburbs | 6 zones | 47 zones |

**Table 2** illustrates that the Kuala Lumpur Greater Area has undergone more significant development than the Jakarta Greater Area. In this case, Kuala Lumpur Metropolitan Area adopted a clear top-down approach to TOD development, with a robust influence from the national government. The centralized governance structure ensured a coordinated planning process at the regional level, enabling a more

streamlined and integrated approach to TOD. This top-down model expedited decision-making and plan realization, resulting in a more cohesive urban landscape that seamlessly combined transportation infrastructure and land use policies.

The strong network integration observed in Greater Kuala Lumpur was a direct outcome of the centralized planning paradigm. The national government played a proactive role in steering development, and aligning policies with infrastructure initiatives. This alignment ensured that the transportation network was strategically designed and implemented to cater to the needs of the entire region. As a result, Greater Kuala Lumpur experienced a rapid realization of TOD plans, fostering a well-connected urban environment that efficiently accommodated the demands of a growing population. The top-down approach minimized the disconnection that was often witnessed in bottom-up models, allowing for a more comprehensive and synchronized development strategy.

On the contrary, TOD development in Greater Jakarta Area through distinctive bottom-up model introduced challenges that impacted the coherence of TOD Plan. In this approach, local governments structures and community participation played a pivotal role in shaping urban landscapes. Local governance structures in Jakarta delegated significant decision-making authority to individual entities to work alongside the government, resulting in a plethora of decentralized development initiatives. In this case, the emphasis on grassroots involvement had been a hallmark of Jakarta's urban planning strategy, with decision-making distributed across various local authorities. Furthermore, this bottom-up approach is also aims to foster community involvement and local empowerment.

On the other hand, implementing a bottom-up approach actually creates fragmentation of development and management caused by a lack of a centralized planning framework, which results in hampered integration of transport infrastructure and land use development. The stipulation of TOD hubs, for instance, was sometimes facing dualism because 2 entities could decide on different hubs. This indicates that Jakarta's decentralized approach could lead to varied development outcomes and social disparities, reflecting the diverse interests of different communities. According to the results study of Rosalin et al. (2019), diversity of interest is also triggered by heterogeneous communities so that gathering synchronization of decisions is considered more difficult. Decisions originating from dialogue at the ground level in heterogeneous community risk bias due to the desire of each party to maintain their norms, values, and culture believed (Bhakti et al., 2023).

The disconnect between different parts of the city became palpable, manifesting in disjointed transit systems and an inefficient network that struggled to meet the demands of a growing population. As a consequence, the pace of TOD plan implementation slowed down, as each local authority pursued its agenda, contributing to a lack of synchronization in overall urban development. In the institutional context, this situation is also exacerbated by a lack of clarity in the organizational structure, which leads to interactions between stakeholders on unregulated issues, resulting in deceptive outcomes. This lack of synchronization prevents the fundamental purpose of building TOD areas in suburban regions from being met. The primary goal of developing TOD areas in Suburban regions are create well-developed settlements by managing high standards of living quality at the boundaries (Darchen and Huston,

2012), as well as overcoming inadequate infrastructure, disorganized land utilization, and settlement neglect (Cidell and Prytherch, 2015, Hudalah et al., 2016). In mobility context, the implementation of TOD in suburban areas could disperse urban development and thereby decrease commute activities (Hasibuan et al., 2014). This is consistent with the TOD area's role as a catalyst for the implementing transportation integration for commuters, which promotes the use of public transportation and minimize reliance on automobiles (Lyu et al., 2016).

The case study from the Jakarta Metropolitan Area provides a more extensive description of the prerequisites for implementing a bottom-up approach. the bottom-up approach has the advantage of capturing the entire socio-cultural background (Nair, 2019). On the other hand, this strategy risks causing bias that impedes the advancement of urban development, which in this case are transport infrastructure and TOD areas in suburban regions. As a result, Levine (2021) and Streicher et al. (2023) underline that the adoption of bottom-up strategies, particularly in locations with varied groups, requires fair education which not only focuses on the maturation of knowledge and information but also on the generalization of perspectives, but this process takes a long time (Streicher et al., 2023). This provides the foundation for the effective implementation of a top-down approach in the Kuala Lumpur Greater Area. Hermansyah et al. (2024) discovered that the growth of the TOD area and its transportation infrastructure network, which demand rapid response, is extremely similar to the features of an efficient top-down approach. More specifically, the findings of a study conducted by Hermansyah et al. (2024) demonstrated that this approach may be utilized in regions with a wide range of socio-cultural background. In this instance, central policies will shape the harmony of development perceptions that filter down to the local level. Furthermore, entities at the local level shape the sense of growth depending on the evolving socio-cultural context before directing it back to the central level. The success of the Kuala Lumpur Greater Area in implementing a top-down approach in the suburbs is further helped by the region's characteristics. Several related studies state that the top-down approach is appropriate for areas with low density, high-level sof car use, unequal distribution of land availability, as well as resistance of residents and local authorities to higher authorities (Bres, 2014; Desjardins et al., 2014; Hickman and Hall, 2008).

## 5. Conclusion

In conclusion, this article underscored a critical discovery, shedding light on a crucial factor that influenced the divergent approaches observed in 2 case studies—the stark disparity in the interaction and outcomes between national and local governments in implementing TOD. In the analysis of these 2 metropolitan areas, results concluded that Kuala Lumpur's approach, which showed a slight inclination towards a top-down model, facilitated swift and cohesive coordination between infrastructure provision and TOD area development. In contrast, Jakarta's case, characterized by a bottom-up approach experienced a rapid dynamic action at the municipal level. This led to infrastructure provision primarily focused on addressing local demands, thereby not encouraging the realization of TOD area development at the regional level. The nature of this intergovernmental relationship not only

determined the speed of development but also impacted the coordination between infrastructure development and policy creation within the framework of TOD. In Kuala Lumpur, the approach went in a top-down and integrative direction, while in Jakarta, a mixed bottom-up approach was observed, with both national and local governments determining their strategies, resulting in overlapping plans that were difficult to follow by relevant stakeholders.

This study also ultimately showed conceptual understanding differences. In Kuala Lumpur, stakeholders' understanding of TOD was an approach to encourage regional growth and spatial development through comprehensive investment direction in areas around stations, both centralized and peripheral, with the hope that area could develop massively and compactly. However, in Jakarta, stakeholders' understanding of TOD leaned more towards an approach to integrate transportation networks and housing, providing a healthy, compact, and sustainable environment. These differences led to different orientations in determining transit zones, with one tending to promote comprehensive investment at many points as in Kuala Lumpur, and the other tending to control and organize sustainable spaces through strategic priority nodes as in Jakarta. All preceding descriptions suggest that differences in policy strategy in the two regions with similar urbanization and socio-cultural contexts influence the evolution of transport infrastructure and TOD areas development. Several variables contribute to these disparities, including efficiency, synchronization, bias, clarity of organizational structure, and conceptual comprehension. At macro level, policymakers must sensitive that the fit strategy and region critically determines the success of urban development.

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