



INSTITUTE OF STRATEGIC &
INTERNATIONAL STUDIES
(ISIS) MALAYSIA

Actualising transit-oriented development in Malaysia

Why we must build our cities around public transit, not cars

Research note

By

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Foreword by

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ISIS Malaysia

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Foreword

Cities are living systems, shaped not only by roads and buildings but also by the people who inhabit them and the institutions that govern them. In Malaysia and elsewhere, cities reflect a complex tapestry of human activity. The rhythms of daily life are expressed through movement between places of residence, work and leisure, facilitated by transit corridors that serve as vital arteries, connecting people, empowering communities and unlocking opportunities.

Yet, as Malaysia's cities have grown and evolved, questions remain about how urban spaces can better facilitate the movement of people within them. Expansive road networks and high-density developments have supported economic growth, urban expansion and improved connectivity across much of the country. Yet, the challenge of ensuring accessible and inclusive mobility remains. For many Malaysians, mobility continues to present daily difficulties, with implications for quality of life, economic participation and social inclusion.

It is within this broader context that transit-oriented development has emerged as an increasingly important approach to urban planning. By concentrating residential, commercial and community development around public transport hubs, this model seeks to create more connected, accessible and vibrant urban environments. Beyond improving mobility, it offers opportunities to stimulate economic activity, strengthen social cohesion and enhance the overall liveability of cities.

Against this backdrop, this research note offers a timely examination of transit-oriented development in Malaysia. It explores how structural barriers and inherited approaches to urban planning have constrained efforts to create more connected and accessible cities, while drawing lessons from international experiences that may help inform more people-centred and sustainable models of urban development.

In William Shakespeare's *Coriolanus*, the question is posed: what is the city but the people? If cities ultimately derive their meaning from those who inhabit them, then the measure of a truly liveable city cannot be infrastructure alone. Rather, it lies in its ability to provide opportunity, accessibility and dignity to all who call it home.

Datuk Prof Dr Mohd Faiz Abdullah

Executive Chairman

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Executive summary

- **Historically and presently, Malaysia's land use and transportation policy have embedded a reliance on private vehicles.** This has resulted in extended travel times borne from urban sprawl, an increase in private vehicle loans as a component of debt composition and vulnerability to mobility shocks due to fuel price instability.
- **This paper explores transit-oriented development (TOD) as a solution to the problems above.** This approach to urban development encourages the concentration of mixed-use zoning and pedestrian connectivity along transit corridors, encouraging public transit uptake by reducing the travel distance to key amenities.
- **Key concerns are identified in the approaches by federal and state authorities.** Notably, a siloed approach to urban development among ministries, as well as across federal, state and local governments, poor pedestrian infrastructure, and prohibitive zoning and by-laws. These issues encourage private vehicle use and hinder mixed-use developments, and are major barriers limiting the efficacy of current approaches.
- **This paper explores policy proposals in the short, medium and long term aimed at addressing gaps in Malaysia's approach to TOD (Section 4).** Particularly, laws which encourage mixed-use zoning by default, "sprawl retrofitting" to reverse the effects of urban sprawl and innovative land value capture strategies are international lessons applicable in Malaysia.
- **Zoning and by-law reforms could enable mixed-use developments centred on transit hubs and to deprioritise cars.** To that end, city councils are the main executor of actualising TOD-related outcomes, particularly through regulatory reforms.
- **Funding is a major barrier faced by city councils in implementing TOD.** It impacts on their ability to execute coordinated built environment projects, namely pedestrian infrastructure, and to conduct comprehensive built environment audits.
- **At local and national levels, stakeholders are urged to coordinate their efforts.** We recommend city councils to formulate workflows, which prioritise inter-departmental involvement, rather than siloed approaches to urban development. For national level policy coordination, we recommend the formation of a mobility commission to consolidate land use and transport planning-related stakeholders across all levels of governance.

1 Background and literature review

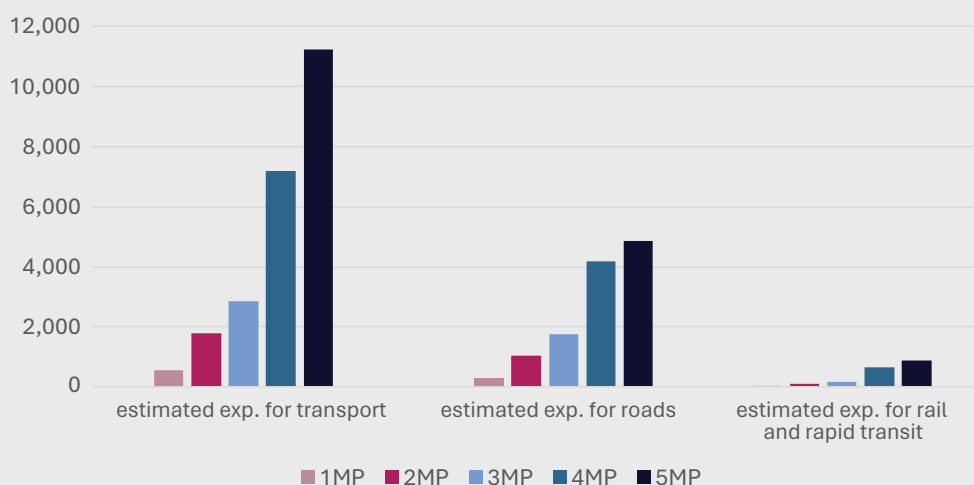
1.1 Historical precedence for car-centrism in Malaysia

Since the country's inception, urban development in Malaysia has largely been car-centric. From the First to Fifth Malaysia Plans, investments in infrastructure prioritised road development, aimed at bridging the urban-rural divide. Particularly, road development served as the backbone for economic growth by facilitating interstate connectivity, enabling the movement of people and goods.

In comparison, rail transit as a transport modality has historically been underfunded (Fig. 1). The lagging investment numbers can be attributed to the siloed nature of rail transit, with investments only ramping up with the formation of Prasarana in the 1990s as a body to consolidate the operation of bus and light metro services.

Fig. 1. Since Malaysia's inception, expenditure for rail and rapid transit has lagged that of road development

Estimated expenditure for transport across 1MP-5MP (millions, RM)



Source: First to Fifth Malaysia Plans, Ministry of Economy

Car-centrism was further enabled through the decoupling of peripheral townships from commercial centres, normalising suburban development as an urban development strategy. In many urban areas, the shift away from land development for residential purposes in favour of commercial purposes highlights this.¹ This development approach of planned townships has been at the forefront of Malaysian land use initiatives. Decoupling people from economic centres through purpose-built residential developments pushes them further into suburban corridors. Over decades, these initiatives have entrenched a car-dependent culture whereby public transport is deprioritised within the wider urban planning framework. Through this, the

urban development phenomenon known as “urban sprawl”, characterised by low-density housing, single-use zoning of land parcels and heavy automotive reliance, became the norm.²

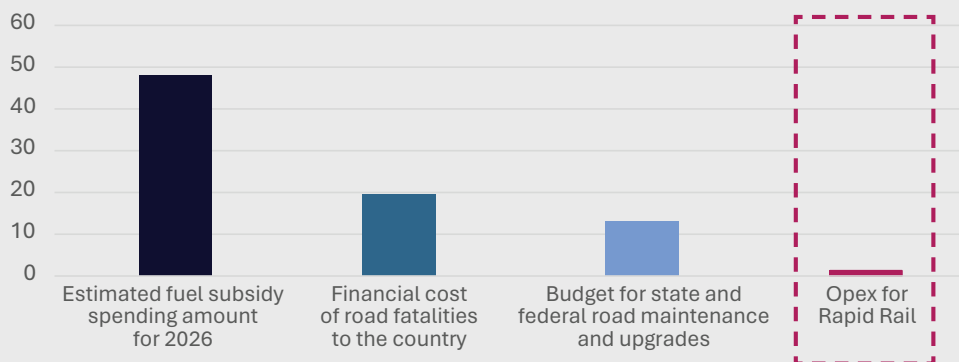
1.2 Cost of car-centric planning

Urban sprawl extends travel times and reduces the efficiency of ancillary public transit services. As housing is pushed further away from centres of economic activity into low-density areas, solutions to first-and-last-mile connectivity decrease in efficiency, reflecting the spatial dispersal of demand. Interventions aimed at increasing public transit uptake, such as feeder bus services, struggle to remain viable, as ridership levels are often incapable of justifying operational costs of about RM1,000 a day per bus. This is compounded by the irregular dispersal of residential neighbourhoods, which lengthens bus routes, resulting in scheduling inconsistencies – the single largest factor behind apprehension of public transit uptake.³ Ultimately, these inefficiencies are borne by people who rely on such services, who are burdened by time-related costs.

Private vehicle reliance makes Malaysians particularly vulnerable to fuel shocks. The state of fuel subsidies points to the fragility of car-centric mobility. Geopolitical tensions in West Asia have had a major impact on oil prices. The Malaysian government spent an estimated RM2.7 billion monthly on fuel subsidy in April, compared with RM800 million a month in late 2025. According to the Household Expenditure Survey Report 2024, fuels and lubricants for personal vehicles accounted for 53.6 % of mean household transport expenditure, underscoring the role of fuel subsidies in enabling mobility. Should tensions in West Asia drag on, Malaysians, the majority of whom rely on private vehicles to participate in economic activity, are increasingly at risk. Overall, the bill to maintain car-centric mobility is high, with only a fraction of costs being directed to funding for rapid rail transit (Fig. 2).

Fig. 2. Financial trade-off to maintain a car-centric ecosystem is high

Estimated spending to maintain private vehicle reliance versus operational expenditure for Rapid Rail (billions, RM)

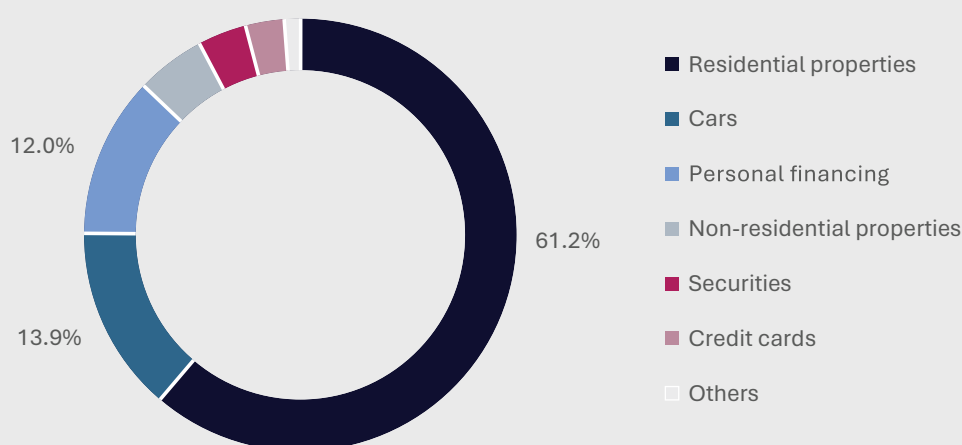


Source: data consolidated from Rachel Gong and Muhammad Najib Abu Hassan Alshari, *Budget 2026, Prasarana and Malaysia Road Safety Plan (2022-30)*^{4 5 6}

Private vehicle loans comprise a large portion of household debt, particularly for low-income groups. As a percentage of GDP, passenger vehicle financing is the second-largest component of national household debt behind only residential properties (Fig. 3). A World Bank study found that when analysing debt composition by purpose and income category, motor vehicles made up the second largest share of debt for Malaysians whose monthly incomes fell below RM3,000, at 28%.⁷ The same study when analysing the cost-of-living challenges of Malaysians found that between 45% and 65% of respondents aged 20-59 took out loans to sustain car ownership, spanning loan instalments, insurance, toll, fuel and maintenance.⁸ Across income quintiles, age groups and ethnicities, expenditure associated with motor vehicles was one the three largest components of household debt.⁹ This is especially prevalent for low-income households, whose motor vehicle loans could account for up to a third of monthly household income.¹⁰

Fig. 3. Passenger vehicle financing is a major component of household debt as a percentage of GDP

Composition of household debt by purpose, H2 2025



Source: reproduced from Financial Stability Review – Second Half of 2025

Note: terms 'passenger vehicles' and 'cars' are used interchangeably for the purpose of clarity

Poor public transport infrastructure may compel low-income earners to rely on private vehicle ownership as a necessity rather than preference. Research indicates that the reliability of public transport and first-mile-last-mile connectivity strongly shape the choice of modality for commuters.¹¹ This implies that the financial burden of private vehicle ownership may be less a product of consumer preference and more a systemic gap plaguing those who rely on transport for economic participation, thus forcing low-income Malaysians to take on debt out of necessity.

Car-centric infrastructure heightens the risk of road fatalities, particularly for vulnerable road users. Car-centric infrastructure delegitimises alternative mobility options, such as pedestrian and cycling infrastructure, exposing pedestrians and cyclists to car-dominated environments. This approach undermines the benefits of pedestrian-focused urban development while increasing the risk of fatalities for motorcyclists, their passengers and pedestrians, who collectively account for the largest share of road fatalities.¹² Notably, the Malaysian Burden of Disease and Injury Study 2019 found that road injuries were the fifth leading cause of death for Malaysians, underscoring the need to expedite safety-focused road infrastructure design, inclusive of all mobility types.

1.3 TOD as an approach to remedy car-centric development

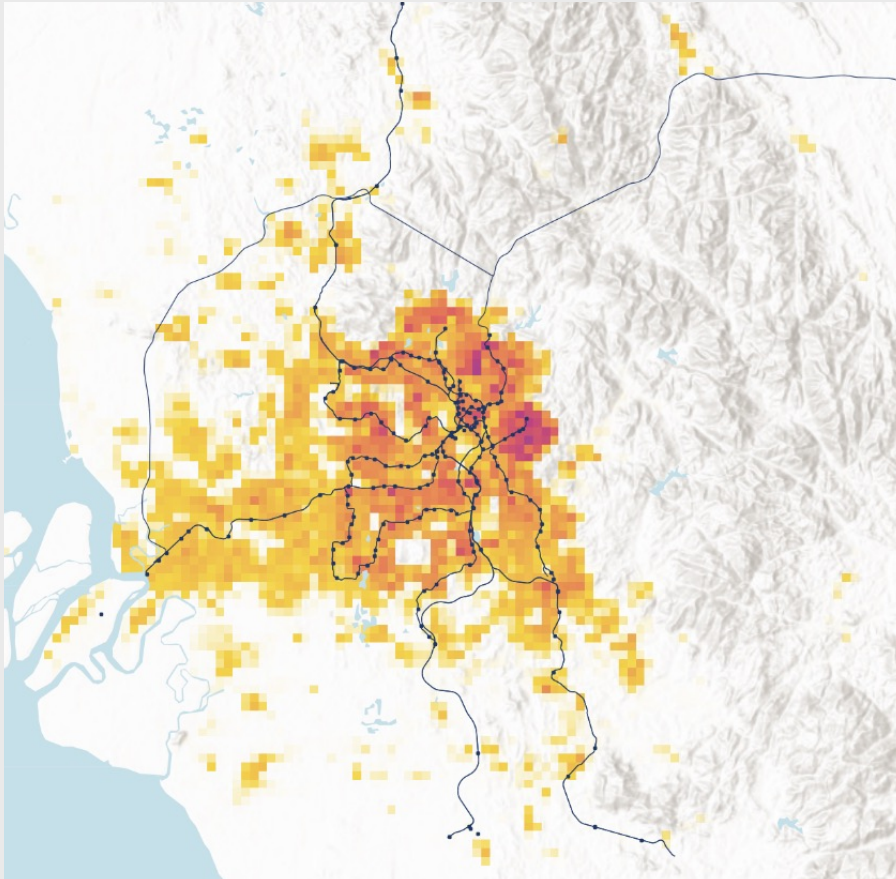
TOD enables increased public transit uptake through efficient land-use practices. According to the World Bank, TOD is defined as a “planning strategy that aims to concentrate jobs, housing, and services around public transport stations.”¹³ TOD is characterised by integrated land use planning that centres on a transit stop as a key node. Beyond development density centred on transit hubs, TOD’s success is also contingent upon the seamlessness of transport infrastructure to enable movement between zones within and along a transit corridor. Through its planning philosophy of promoting mixed-used development and compact neighbourhoods, TOD is capable of not only boosting public transport use, but also traffic flows consisting of alternative modalities, such as walking, cycling and other micromobility options. The success of TOD, therefore, hinges on the proximity between transit hubs and mixed-use developments, enabled by population density to promote residential and retail vitality.

TOD also brings spillover effects in the form of economic benefits through the centring of public transportation. Globally, the impacts of TOD on a city’s economic vitality are well-known. Associated land use changes and increased transit access boost a city’s economic dynamism, primarily through increased job density and employment access along transit corridors. Businesses and housing located within a TOD enjoy higher foot traffic, as the concentration of economic corridors are developed and sustained through TOD-oriented planning. Foot traffic provides a multiplier effect to retail and services clusters, which thrive in areas with mixed-use developments. This is particularly beneficial for low-income groups as it advances equitable access to opportunities for economic participation and social inclusion. Likewise, residents are also afforded a better quality of life, as TOD has been linked to lower travel expenses. Likewise, residents are also afforded a better quality of life, as TOD has been linked to lower travel expenses.¹⁴

As Malaysia’s economic centre continues to urbanise, development surrounding transit hubs has flourished. Fig. 4 illustrates this development trend through macro-level analysis measuring population density to key rail transit stations in the Klang Valley. Despite appearing promising, this analysis does not account for on-the-ground realities. High-density areas near transit hubs may still experience poor pedestrian connectivity, fragmented land-use coordination and weak first-and-last-mile access. This is largely due to car-centric planning, which limits pedestrian accessibility through major roads. Car-centric planning also extends to single-use zoning, isolating residential enclaves from centres of economic activity. These concerns suggest wider issues tied to limitations in how our cities are designed.

Fig. 4. Proximity and population density to transit hubs do not reflect on-the-ground realities

Population density (people/km²) to key rail transit stations in the Klang Valley



Source: reproduced using methodology provided by Toronto School of Cities; OpenStreetMap for rail transit data; GlobPOP for gridded population data

2 Discussion and gaps

This section aims to highlight weaknesses in Malaysia's delivery of TOD. Namely, policy misalignments across various government agencies and councils, a lack of enforcement capacity of TOD-related policy levers and restrictive zoning and by-laws which limit mixed-use development.

2.1 TOD adoption

The government has signalled its intention to adopt TOD design principles as an institutionalised urban development approach. The National Transport Policy 2019-30 alongside the 13th Malaysia Plan (13MP) and Kuala Lumpur Local Plan 2040 (KLLP2040) aspire towards more sustainable urban planning frameworks, which include TOD.^{15,16} These frameworks pledge large-scale infrastructure development, improvement towards service frequency of public transportation, as well as a generally holistic approach to urban development. Specifically, 13MP recognises the role of TOD in bolstering public transport infrastructure by implementing them across commercial, residential and recreational corridors.¹⁷ Similarly, KLLP2040 highlights the role of TOD to enable high-density integrated urban development through the bolstering of public transit networks.¹⁸ Meanwhile, the National Physical Plan also spotlights the role of TOD in enhancing Malaysia's cities. Thrust 1 of the plan highlights the government's focus on strengthening public transit services to achieve modal share targets, defined as the percentage of travellers using a particular transportation type, while Thrust 2 emphasises the need to create transit corridors that better connect where people live and work.

Additionally, more focused policy frameworks reflect the need for housing to be placed closer to key transit nodes, in line with TOD-related tenets. This commitment is displayed within national policies, such as the National Housing Policy (2018-25) and National Affordable Housing Policy (2019) that push for increased affordable housing access aligned with transportation hub development. In 2025, Prime Minister Anwar Ibrahim stated that the government was exploring opportunities to build housing above train stations.

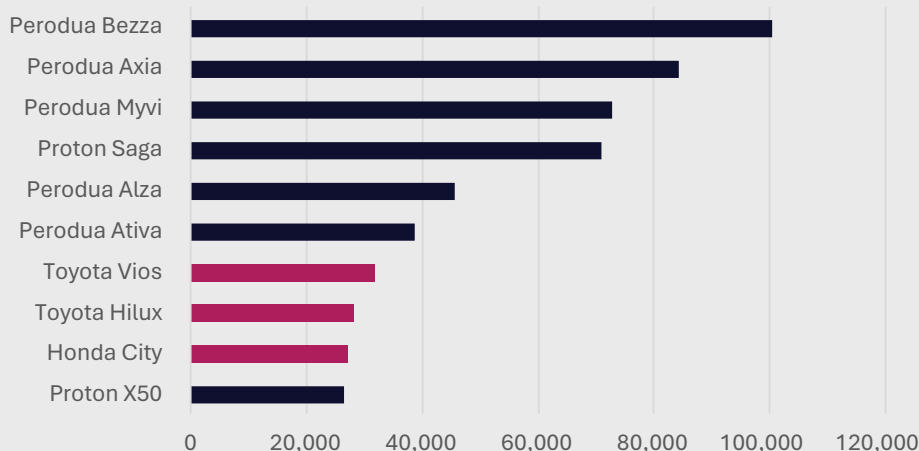
Local plans also embed TOD-focused concepts, which are reflected in the prioritisation of mixed-use zoning and pedestrian-friendly built environment recommendations. Additionally, local plans allow for revisions to plot-ratio allocations, which increase development density via higher floor space relative to land area. The TOD planning guidelines, formulated by PLANMalaysia (the Department of Town and Country Planning, under the Ministry of Housing and Local Government), provide a reference point for city councils to operationalise TOD-related tenets, subject to alignment with legislation, such as the Town and Country Planning Act 1976 (Act 172), Street Drainage and Building Act, 1974 (Act 133), and Uniform Building By-laws of each state.

2.2 Incoherence between TOD adoption and car-centrism

Malaysia's automotive policy is a major contributor to private vehicle inundation, despite being at odds with the goal of TOD adoption. Several key mechanisms, which reinforce the presence of local automotive players, have had adversely impacted on mobility outcomes. Chief among these approaches is the artificial suppression of vehicle prices produced by national car brands Perodua and Proton. Complementing this is the approved permit system – whereby import quotas for foreign car makes are allocated to dealerships – functioning as a safeguard to suppress external pressure from international manufacturers. Through this approach, niches are carved out to consolidate control by local players in a heavily sheltered market (Fig. 5).

Fig. 5. Protectionism forces overwhelming reliance on local brands to enable mobility

Perodua and Proton dominate the list of top 10 cars sold in Malaysia as of 2025



Source: Department of Statistics Malaysia¹⁹

Revenue derived from private vehicle ownership has reinforced Malaysia's approach to the automotive sector. Profitability complicates efforts to decouple from car-dependent planning. Malaysia's policy direction pertaining to the automotive sector reflects this commitment to maintaining the status quo. The government stands to reap about RM5 billion from excise and import duties, sales and road taxes, driver's licence and renewal fees, among others. Strong pressure exists to maintain this system of motor vehicle reliance, as reflected through fuel subsidies despite geopolitical pressures.

Malaysia's automotive industry contributes an estimated 5% of annual GDP or RM82 billion, and employs about 700,000 people.²⁰ As of 2025, national car brands held 63% of the domestic market, while sales of non-national makes fell by 7.9% from 2024 to 2025.²¹ Sustaining this policy direction, therefore, provides the government with a steady revenue stream. However, it complicates efforts to move away from an entrenched system in which private vehicles command the largest share of mobility-related investment in Malaysia.

2.3 Misalignment across different agencies

The government has repeatedly affirmed its commitment towards realising TOD as the cornerstone for urban development. However, this policy aspiration is largely undermined by several federal and state level policy contradictions and limitations. On the federal level, the National Transport Policy's championing of public transportation is undermined by Malaysia's approach to bolster the automotive sector through artificial price suppression of local car brands.

Horizontal misalignment exists between government agencies working to independently fulfil overarching federal policy objectives. Currently, the Public Works Department (JKR) oversees the development and maintenance of all major roads at the federal and state levels, and acts independently without consulting the Ministry of Transport on road placement. The Ministry of Transport, meanwhile, is responsible for developing a wider public transit framework, even though this function is closely intertwined with JKR's responsibilities.

Vertical misalignment is also present between federal, state and local authorities. The Ministry of Transport leads on transportation-related matters, encompassing the development and alignment of rail network corridors. In contrast, state governments retain authority over land matters through state structure plans. Local authorities – comprising city and municipal councils – oversee operationalising state-level priorities through local plans and special area plans. As land matters fall under state jurisdiction, national priorities might clash with state-level land-use decisions. This fragmentation is compounded by situations where federal-led transit investments are planned without aligning with state governments on local land use. These misalignments reinforce a car-centric baseline and relegates approvals for developments that support public transport and pedestrian infrastructure to case-by-case discretion.

City councils face internal and external constraints, preventing holistic changes to mobility expansion efforts. Departments in city councils, spanning development controls, planning, engineering, sewage and landscaping, work in siloes and do not always communicate when implementing city-wide project deliverables. Department-led decisions happen in isolation despite built environment components like pedestrian infrastructure being multi-dimensional. Councils also face challenges in ensuring private developer adherence to universal design standards, owing to short turnaround times for project approvals and blueprint misalignments.

Constraints also extend to limitations in technical expertise and manpower. Other challenges include pedestrianisation and micromobility (small lightweight vehicles designed for short-distance travel, such as bicycles, e-bikes and scooters) infrastructure approvals. Due to JKR's role in executing road-related matters, building mobility-related infrastructure spanning sidewalks, bus lanes and roads become fragmented. This challenge becomes more prominent as councils are also required to fund and maintain traffic calming and dispersal measures like bus lanes and pedestrian pathways.

Funding pressures force state governments to prioritise commercial development. State governments in peninsular Malaysia have limited fiscal autonomy and derive revenue primarily from land-based taxes. As state authorities administer land-related matters, revenue retention becomes a major area of contention. States are incentivised to prioritise land conversion for the purpose of commercial development as they command higher premiums and generate larger revenue as opposed to land designated for residential use. The existing fiscal structure encourages state authorities to prioritise this strategy for the purpose of revenue generation, despite it conflicting with mixed-use developments, a core tenet of TOD. Restricted funding also hampers councils' operational capacity.

2.4 Weak enforcement and incentives

National frameworks and planning guidelines identify TOD as a priority, evident through the promotion of higher-density, mixed-use development around transit hubs. Despite a clear

policy focus on paper, implementation remains vague. Key elements, such as pedestrian connectivity, land value capture and enforcement, remain underdeveloped with regard to enforcement. Policies like the National Physical Plan and National Transport Policy only outline TOD in principle, with no mention of implementation mechanisms beyond the delegation of responsibilities to local authorities.

As a result, accountability for TOD implementation is weak. Baseline planning standards remain car-centric, while responsibilities across council departments are fragmented. With no single body responsible for coordination and enforcements of developments, which align with TOD, implementation becomes inconsistent.

This governance gap is most evident when viewing the statutory enforcement of TOD-centric policy instruments. For example, compliance with the transit-planning zones outlined in PLANMalaysia's TOD planning guidelines is advisory rather than mandatory. The transit-planning zones are defined as a designated catchment area surrounding rail transit hubs, acting as a basic tool to identify and label areas conducive for high density mixed-use development. Malaysia's TOD planning guidelines list three different transit-planning zone types, which cover different distance ranges based on assumptions of how far people are able to walk, referencing international standards of walkability. Transit-planning zones advocate for varying levels of development density based on proximity thresholds (Table 1). However, the discretionary nature of local plans means that local authorities do not share a common planning standard, resulting in differing qualities of TOD implementation outcomes.

Table 1. Catchment areas for transit-planning zones are built on assumptions of walkability

Transit Planning Zone type and corresponding distance according to TOD Planning Guidelines

Transit-planning zone type	Distance from station (metres)	Details
Core	0-400m	- Core zones are defined by potential for high-level development intensity 400m threshold corresponds to a 5-minute walk
Primary	400-800m	- Primary zones are defined by potential for medium- to high-level development intensity 800m threshold corresponds to 10-minute walk
Secondary	800m-1.5km	- Secondary zones are defined by potential for medium level development intensity 1.5km distance threshold corresponds to 15-minute walk

Source: transit-oriented development planning guidelines, PLANMalaysia²²

Note: due to the advisory nature of the guidelines, the catchment standards of the transit-planning zones differ based on locality

Currently, an incentive structure exists to promote high-density development within transit-planning zones within Kuala Lumpur, the hub of Malaysia's rail network. However, this scheme may potentially be exploited by developers who meet bare minimum requirements. In Kuala Lumpur, plot-ratio allocation increases are awarded to developers who comply with TOD-related requirements. But the requirements to obtain this perk are loosely outlined and fail to ensure that connectivity between developments to public transit infrastructure is comprehensive.

KLLP2040 categorises all connectivity infrastructure under the same criteria to obtain a higher plot-ratio allocation, despite different infrastructure types having different capacities to enable pedestrian mobility. Notably, pedestrian bridges, underground passages and ground-level pedestrian infrastructure are lumped together. The broad grouping overlooks the roles of infrastructure types and effectiveness of specific infrastructure in activating mixed-use pedestrian mobility. Ground-level pedestrian pathways are more likely to spur continuous movement, not only between developments and transit hubs, but also adjacent land plots within a transit-planning zone.

Allowing any form of pedestrian infrastructure to be built without considering the strengths of different infrastructure types risks diluting the benefits of high-density development close to transit hubs. Additionally, KLLP2040 fails to outline clear standards to assess whether infrastructure types can satisfy connectivity requirements. Collectively, these loopholes allow developers to build with little regulatory oversight while maximising the benefits of plot-ratio increases, resulting in the prioritisation of commercial considerations while sidelining liveability standards.

Another “incentive”, which penalises pedestrian mobility, is Kuala Lumpur's approach to parking provisions. Current regulations mandate the provision of parking bays for all developments, which takes up several floors. In a bid to reduce parking bays, Kuala Lumpur City Hall (DBKL) offers “incentives”, whereby developers could fork out RM60,000 for every single parking bay they choose *not* to build for developments within transit-planning zones.²³

This incentive may curtail developer buy-in. Developers may be discouraged to reduce parking bays, as RM60,000 is still a requirement regardless of parking bays being built. Rather than absorb the losses resulting from parking bay reductions, developers may find it more financially viable to constructing parking infrastructure and pass the cost on to the tenants. In effect, the surroundings of a development may also be impacted by this decision. Street frontage, necessary for pedestrian footfall to sustain retail viability, is instead dedicated to vehicular circulation.

This approach, when combined with “park & ride” facilities (land set aside next to transit hubs to address first-and-last-mile access for private vehicle users) signals a continued preference for private vehicle use over pedestrian and public transit mobility. In doing so, it weakens the impact of TOD by decoupling pedestrian-oriented, mixed-use activity from public transit use.

2.5 Rigid zoning laws and by-laws discourage mixed-use zoning

Rigid zoning laws and by-laws enforce a car-centric baseline, which restricts a city's capacity to holistically adopt TOD. For example, the Universal Building By-Laws mandate the provision of one to two parking bays per unit. This increases the development cost of residential units,

as parking bays are priced at RM60,000 per unit, while siphoning off space from housing development.

Moreover, zoning laws are heavily skewed towards single-use zoning. This strategy dictates that each parcel of land is dedicated to a single purpose or use, which typically covers either residential, commercial or industrial development. Changing the zoning purpose of a plot of land is a lengthy discretionary process requiring planning permission from the local authorities.

Single-use zoning discourages mobility between land parcels, requiring people to use private vehicles as the only convenient option to reach key amenities and services. As councils and JKR prioritise road investment and maintenance, alternative mobility mediums, such as pedestrian pathways and micromobility infrastructure, are neglected.

Malaysia allows for the development of different classes of use within single-use zoning parcels, but red tape is a major hurdle. Planning permissions are required for non-residential classes of use within low-density residential land-use zones, meaning that many single-use zoning parcels are effectively limited to residential development (Table 2). Key classes of use, such as transportation facilities, religious and educational facilities, and retail centres, are only permitted subject to certain conditions. As these conditions require the discretion of relevant authorities rather than being permitted outright, single-use zoning often becomes the default for many residential-only land parcels.

Table 2. Low and medium-rise residential zones present a major hindrance to mixed-use developments

Permitted classes of use within Kuala Lumpur’s residential zones for landed housing (detached, semi-detached and terraced houses)

Permissible with conditions
General retail
Office
Food and drink
Health services
Club house
Religious facility
Educational facility
Civic and cultural facility

Emergency and security
Sports and recreational facility
Urban farming
Forest reserve
Utilities
Drainage
Transportation facility
Parking

Source: KL Local Plan 2040

Mixed-use developments could address Malaysia's land-use concerns. Mixed-use zoning enables the effective adoption of TOD through the development of high-density activity-rich localities centred on transit nodes. Mixed-use zoning allows for the concentration of commercial and residential functions to co-exist in a compact space, reducing the need for private vehicles as the sole travel option. Despite this, zones designated as appropriate for mixed-use development are limited, even in major cities in the Klang Valley.

3 Global case studies of successful TOD implementation

This subsection provides an overview of international case studies from which Malaysia can glean lessons. Specifically, the lessons are: utilising public-private partnerships to actualise and financially sustain TOD, reforming land-use policies to encourage mixed-use zoning as the baseline in line with TOD tenets and sprawl retrofitting to reverse the impacts of urban sprawl.

3.1 Hong Kong's rail plus property model

TOD hinges on the financial and operational sustainability of rail transit systems. The maintenance of rail networks enables the movement of people within and beyond TOD catchment areas. Tangentially, its expansion also enables the development of more TOD along rail lines, reinforcing ridership while supporting sustainable urban growth. The ability for rail transit agencies to generate stable non-fare revenue without reliance on federal funding is key to ensuring that transit hubs, and by extension TOD, are scalable.

Malaysia's transit system chalked up losses amounting to RM603 million in 2025.²⁴ Prasarana relies on annual budget allocations to sustain its operations. This limits Prasarana's capacity

to invest in station-adjacent improvements and last-mile connectivity. This limitation also constrains the ability of transit agencies to partake in TOD implementation alongside local authorities.

Hong Kong employs the rail plus property (R+P) model, defined by integrated land use with transit planning. The Hong Kong government grants rail authority MTR development rights to greenfield sites (land that has not been developed). MTR pays the government a land premium (the cost to acquire the land lease) at a “before-rail” market value. MTR then collaborates with private developers on projects on the land at “after-rail” market value, with revenue generated coming from profits derived from properties built. The profits may either be a fixed lump sum, a percentage of development profits, or a portion of the properties built on the land.²⁵ Through “land value capture”, MTR is able to be self-sustaining, while allowing it to expand rapidly and independently without being fully reliant on government subsidies, loans or budgetary allocations.

3.2 Japan’s progressive zoning policy

Zoning laws are a major chokepoint hindering sustainable urban development globally. Zoning determines how land parcels are utilised and by extension, how transit corridors are developed. Restrictive zoning measures encourage the development of “islands” whereby each plot of land serves a single use. As a result, urban sprawl is perpetuated as activities become spatially segregated, increasing travel distance and enforcing private vehicle dependency to access public services and employment opportunities.

Japan provides an example of how compact cities can be built through efficient zoning strategies. Like Malaysia, Japan follows a cascade system, whereby lower density categories allow for the development of specific classes of use, with more classes being permitted for larger or denser categories. However, unlike Malaysia, Japan’s progressive zoning laws do not limit the development of housing types, meaning that low-density residential zones allow for a variety of building types, ensuring that land parcels do not exclusively become “single use”. Correspondingly, housing can be found almost everywhere, except for exclusively industrial zones (Table 3).

In Japan, small-scale commercial activity is permitted within residential areas. This contrasts with Malaysia, where commercial developments on residential land parcels generally require planning permission. Japan’s restrictions focus mainly on the total floor space occupied by commercial uses, allowing smaller businesses, such as offices, restaurants and shops, to be integrated into residential neighbourhoods rather than confined to separate plots away from housing. This approach helps address the challenges of low-density urban development, a key driver of urban sprawl.

Table 3. Low and medium-rise residential zones present a major hindrance to mixed-use developments

Permitted classes of use within Kuala Lumpur's residential zones for landed housing (detached, semi-detached and terraced houses)

Zone type	Residential		Mixed-use	Commercial	Industrial	
Building type	Low-rise	Mid/high-rise			Industrial/quasi-industrial	Exclusively industrial
Housing						
Schools and clinics						
Places of worship						
Hospitals, universities						
Retail, food and beverage, offices						
Hotels, entertainment venues						
Factories						

Light blue: permitted

Light pink: permitted with conditions to plot ratio

Dark pink: not permitted

Source: City Planning Division, City and Regional Development Bureau, Ministry of Land, Infrastructure and Transport of Japan²⁶

This approach to land use is in tandem with limitations to development areas. Japan's approach to controlling urban expansion within large cities is to designate land into urbanisation promotion areas (where land development projects are permitted) and urbanisation control areas (where land development projects are prohibited). When combined with the land-use zones, which encourage homes to be built across most land parcels, densification of urban areas happens regularly. This ensures that the baseline of mixed-use development is not a case-by-case approach, as is the case in Malaysia.

3.3 American cities employ 'sprawl retrofitting'

Sprawl retrofitting is an urban development strategy focused on addressing the impacts of urban sprawl. This strategy is centred on transforming low-density, car-centric urban areas into compact, sustainable transit-focused environments. This approach aims to reconfigure urban spaces, such as abandoned commercial sites, single-use land parcel and infill (open space land) like parking lots, to improve mobility and sustainability. Sprawl retrofitting is based on three key principles: reinhabitation, redevelopment and greening. These principles emphasise the repurposing of existing structures, the renewal of built environments and enhancing the provision of green spaces to counter the negative impacts of urban sprawl.²⁷

Like Malaysia, many cities in the United States struggle with urban sprawl. In response to this issue, cities like Meriden Green in Connecticut and Potomac Yard in Virginia employ sprawl retrofitting strategies to address spatial limitations. These include the repurposing of buildings to become mixed-use, greening to increase vegetation and green spaces, and the introduction of pedestrian access to connect buildings to each other.

Malaysia is well positioned to duplicate these efforts. Urban renewal could address longstanding issues with dilapidated buildings. In practice, urban renewal initiatives must extend beyond building quality and should look to prioritise the integration of earmarked developments into the wider urban and transit networks. It is crucial to ensure that these redeveloped areas have comprehensive pedestrian connectivity, access to transit hubs and coherent land-use planning integration to ensure these redeveloped areas become functional parts of an inclusive, people-oriented city.

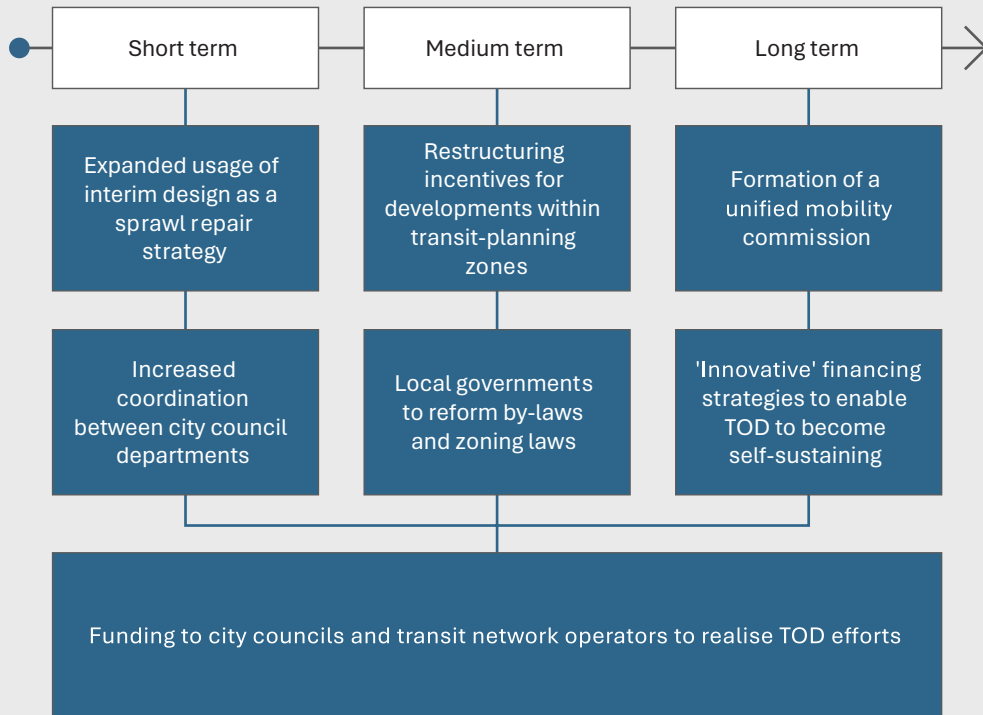
4 Policy recommendations

The success of TOD in Malaysia is predicated upon three factors. First, the proximity of different classes of land use to each other, enabled through extensive pedestrian infrastructure and proliferation of mixed-use developments along transit corridors. Second, regulatory changes to encourage mixed-use developments, which adhere to urban design standards. Third, sustainable and equitable funding mechanisms to ensure current and upcoming TOD can generate enough revenue to become self-sustaining.

This section offers six main policy thrusts to be implemented in the short, medium and long term, encompassing all levels of government and the private sector (Fig. 6.). First, redirect national-level policies towards an outlook centring on TOD. Second, strengthen coordination between local authorities and the federal government on planning matters to achieve alignment which have historically obstructed sustainable urban development.

Finally, we propose a set of innovative financing strategies to facilitate capacity-building and TOD adoption.

Fig. 6. Timeline of proposed TOD implementation strategies



4.1. Short-term policy approaches

4.1.1. Expand usage of 'interim design' as a sprawl repair strategy

Sprawl repair could start as an interim design to improve pedestrian infrastructure and walkability. City and municipal councils can deploy low-cost materials, such as modular curbs, paint and bollards. Interim design allows for quick operationalisation without overstressing council budgets while allowing for a more iterative approach to street design (Fig. 7). Changes to sidewalk geometry can be done quickly based on shifting vehicular and pedestrian traffic demands. This low-stakes approach enables city planners to trial-and-error solutions to pedestrian infrastructure before committing to capital construction.

Fig. 7. Interim design along Jalan Tun Mohd Fuad, Taman Tun Dr Ismail, Kuala Lumpur

The pedestrian pathway redesign exemplifies iterative pedestrian access while operating within budgetary constraints



Source: Global Designing Cities Initiative

4.1.2. Increase coordination between council departments

At present, council departments often operate in siloes, leading to uneven and fragmented built environment outcomes. These outcomes take shape in the form of poor pedestrian infrastructure, characterised by narrow and discontinuous walkways; obstructive utility poles; exposed or poorly maintained manhole covers; inadequate shading, all of which undermine the viability of walkability. To address this problem, council departments should strive for greater interdepartmental collaboration through cross-team projects to ensure more coherent

and aligned project implementation. This will allow for the planning department to work more closely with implementing bodies, namely the engineering department, to translate project outcomes, which prioritise universal design principles which activate TOD.

4.2. Medium-term policy approaches

4.2.1. Reform local council by-laws, zoning laws and restructure incentive mechanisms

Local governments should update their Universal Building By-Laws to include TOD-specific components – specifically, removing the minimum parking bay requirement for developments within transit-planning zones and mandating mixed-use developments. We also propose a scoring system to assess pedestrian accessibility as a criterion for developers to obtain approval for a higher plot ratio allocation.

Many local authorities struggle to execute TOD-related initiatives due to wider regulatory hurdles, such as mandatory minimum parking requirements and strict plot-ratio allocations. Therefore, local by-laws which promote these inflexible standards should be revamped to reflect the current need for TOD. As it stands, projects identified within Kuala Lumpur are allowed to apply for relaxation in parking requirements if the new developments are near urban rail networks.²⁸ A more radical approach is to remove parking bay minimums entirely for developments within transit-planning zones to encourage public transit use, while approval could be granted on a discretionary basis.

This can be facilitated through the unbundling of sales of strata titles from parking bays for residential developments within transit-planning zones. Typically, stratified developments like apartments and condominiums come bundled with parking bays. Unbundling parking bays from property sales reduces costs for both developers and proprietors. To further enable by-law reforms, we propose employing coordinated sprawl retrofitting with the by-law amendment to reduce with traffic congestion (Section 4.1). For this recommendation to be effective in Kuala Lumpur, by-law amendments must also come with the removal of the parking requirement “incentive” (Section 2.4).

To enable this transition, local governments should mandate mixed-use development flexibility along transit corridors to encourage the development of affordable homes and commercial lots near transit hubs. Land parcels are to be mandated strictly for this purpose, specifically within identified transit-planning zones. This will encourage sustainable urban growth along transit corridors, increasing public transit network utilisation. We also propose zoning reclassification to allow for more classes of use within a zoning parcel, similar to Japan.

We also propose a pedestrian accessibility scoring approach, known as a weighted matrix, as part of the criteria for granting developers higher plot densities within transit-planning zones. The scoring system would allow for a graduated increase in plot-ratio allocation based on aggregated score, thus preventing pedestrian access from becoming a box-ticking exercise. Moreover, this would incentivise on-ground pedestrian infrastructure. Currently, Prasarana, in collaboration with PLANMalaysia, plans to introduce a national TOD rating framework, which aims to evaluate dimensions of TOD, including proximity to transit, affordability, density, mixed-

use diversity, design quality, sustainability, public realm and safety, and mobility integration. To that end, we propose for the weighted matrix recommendation to be embedded within this rating framework. The framework should also be made mandatory for all city councils to ensure accountability.

4.3. Long-term policy approaches

4.3.1. Formation of a unified mobility commission

Misalignment also exists between federal and state authorities, particularly in terms of land-use policy. A strict delineation between land and transportation matters, with the former falling under state powers, complicates the federal government's efforts to align development of transit hubs due to limited land parcel availability from state governments. Therefore, coordination between federal and state authorities must happen to facilitate the incorporation of overarching national transportation goals into structure plans.

This can be facilitated through the introduction of a unified mobility commission, whose core responsibilities are the planning, regulating and enforcing of standards aligned with TOD tenets. This body will not only ensure alignment between state governments to actualise national sustainable transportation priorities but will reorient the priorities of federal agencies with conflicting policy objectives. Namely, the Ministry of Transport, responsible for implementing multi-modal transportation encompassing road and rail, and JKR, responsible for the construction of roads.

A mobility commission will help with institutional alignment of agencies responsible for the construction of urban developments. The development of pedestrian infrastructure, location selection and operationalisation of bus routes, selection of land parcels for high-density housing and Universal Building By-Law-centred building requirement minimums will all adhere to a unified standard, enforced throughout all regulatory bodies.

4.3.2. Adopt 'innovative' financing to facilitate capacity building and TOD adoption

Leveraging on private sector participation to sustain TOD is crucial, as complete reliance on the state may not be feasible. The Ministry of Transport and local authorities should deepen collaboration with the private sector to strengthen the financial sustainability of TOD initiatives. Specifically, we propose the enhancement of land value capture strategies for land parcels within transit corridors, particularly within identified transit-planning zones. Like Hong Kong's R+P approach, this model can defray TOD implementation costs, as well as generate profit to be funnelled back into investments for rail infrastructure and adjacent TOD. Innovative land value generation strategies may help to self-finance operational costs of Malaysia's transit network, which has struggled due to its inability to meet ridership targets.²⁹ This could reduce long-term fiscal dependence on public funding across rail and housing aims, while generating profit.

To further replicate Hong Kong's success, Prasarana would need to coordinate with state governments to integrate land-use and transit planning strategies. Updating Malaysia's

approach to land value capture and providing transit agencies more autonomy to participate in the development of transit corridors is critical in this regard.

4.4. Multi-horizon policy approaches

4.4.1. Higher funding for transit network operators

Strengthening public transportation in the Klang Valley and beyond will fortify the government's case to move on from fuel subsidy rationalisations. Enabling successful TOD outcomes means that transport nodes along rail lines and train units require sustained support, achievable via a boost in budgetary allocation. This is due to the role of TOD as “enablers” of retail vitality and residential occupancy along transit corridors. Irregular movement patterns borne from unreliable service risk reducing economic activity in mixed-use developments, undermining their viability and attractiveness of transit-oriented communities.

The allocation of RM1 billion to replace 26 LRT train sets for the LRT Kelana Jaya line under Budget 2026 and another RM1 billion for bus fleet expansion under 13MP indicate the government's commitment to address rising concerns of public transit failures.³⁰

4.4.2. Increase funding for city councils to scale up operational capacity

Local governments rely heavily on assessment taxes for revenue. Therefore, providing equitable funding, particularly for underfunded localities, is crucial to encourage TOD-centric infrastructure development, spanning pedestrian infrastructure, housing and designating land parcels for mixed-use zoning purposes.

Many councils also lack technical capacity and manpower, owing to budgetary constraints. This impacts on their ability to carry out comprehensive enforcement, pedestrianisation efforts, built environment audits and coordinate inter-departmental implementation of projects. We recommend funding councils to scale up their efforts through hiring for departmental expansion, upskilling to enhance the technical capacity of staff members and a larger funding pool to realise built environment projects, without relying on contractors who may not adhere to universal design standards.

Appendix

Comparative spending analysis for First to Fifth Malaysia Plans (Fig. 1)

“Transport” in this analysis covers land, aviation and maritime line items.

“Roads” covers expressways, and roads under JKR. The line item “rural and security roads” is not included.

Cost of maintaining private vehicle reliance v operational expenditure for Rapid Rail (Fig. 2)

Assumptions:

- Projected annual fuel subsidy cost, according to KRI publication ‘Beyond the Pump: How Malaysia Can Weather Oil Price Spikes’:
RM48 billion
- Financial implications of road fatalities, according to Malaysia Road Safety Plan 2022-30):
RM3.12 million per death, based on value of statistical life estimate, equivalent to RM19.7 billion in losses
- Budget for federal and state road maintenance and upgrading:
RM13 billion allocation in Budget 2026, of which:
 - RM2.5 billion for federal roads, including the resurfacing of potholes, streetlight installation in high-risk areas and replacing damaged street furniture
 - RM5.6 billion to state governments for nationwide repairs, channelled through the Malaysian Road Records Information System
 - RM2.4 billion to support Bumiputera contractor ecosystem
 - RM30 million to assist district engineers in small-scale repair efforts
 - RM2.5 billion for building and repairing rural roads
- Operational expenditure for Rapid Rail, of which Prasarana is the holding company:
RM1.324 billion

Methodology for population density analysis (Fig. 4)

For standardisation, the urban region of each city is defined via a 50km radius from the centre point identified within the Natural Earth dataset.

Population density data were sourced from GlobPOP. This data source provides density and population count data at 1km from the Equator.

Rail and rail transit station data sourced from OpenStreetMap (OSM) with 1km buffers applied to each station. Aerial interpolation is employed to estimate population density around rail transit station.

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