Land Public Transport Transformation in Malaysia – History, Aspirations and Challenges

Good morning, Ladies and Gentlemen

**Introduction and Context**

I am glad to see so many people here today for SPAD's Inaugural Public Lecture series on Land Public Transport Transformation in Malaysia – History, Aspirations and Challenges. I believe that this shows the level of interest in public transport among not just public transport professionals but also the general public and especially the younger generation. Public transport professionals always like to talk of modal share as their preferred measure of performance. I am sure that many of you especially the transport professionals and students have heard that the modal share of public transport is about 20% in Kuala Lumpur, 15% in Johor Bharu, 11% in Penang and so on. However we must not lose sight of the fact that these bland percentages actually represent real-life people. It means that everyday in Malaysia, a total of 1.3 million passengers make a journey using the bus, the LRT, the KTM or the monorail.

So when we talk of transforming public transport, we are actually talking about how we can improve the lives of these 1.3 million of our fellow citizens. When we talk of increasing modal share, we are talking of improving the lives of more of our fellow citizens, for make no mistake – all things being equal public transport is the best and cheapest form of transport for each and everyone of us. But here is the root of the problem – all things are NOT equal. Too often, we have unreliable services, we have first-mile last-mile connectivity issues, and we have issues regarding integration between different modes and services. In fact, we have a whole lot of issues that make public transport not the first choice but the second choice and sometimes even the last resort of the people. This is something that the public is very aware of as they experience it first-hand. In fact I would say that public transport is one area where the public is as knowledgeable as the professionals when it comes to how the system is performing on the ground. Professionals may say that the capacity on average is sufficient but try telling that to someone who cannot get up a bus or a train because it is too crowded. Who do you believe? I know who I will believe.

We also have to keep in mind that in transforming public transport, we are not starting from a blank slate. There is in fact an existing well-entrenched system that both operators and people are familiar with. Any attempt to change will necessarily have to take into account the existing system to minimize if not avoid totally any disruption as we attempt to make the journey from where we are to where we want to go. So it is useful for us to reflect on this reality, to understand how we came to this state of affairs before we can talk of our aspirations and challenges.

## Evolution of the Public Transport Operating System and Regulatory Framework

Historically, the public transport system started as a private sector initiative using buses. The passenger bus industry relied on the farebox revenue model whereby operating costs and investment returns are meant to be covered from passenger fares. There was cross-subsidization within the company level. Lucrative routes cross-subsidized loss-making routes. This model worked fine as long as the number of lucrative routes exceeded the number of loss-making routes. However as the city expanded, route expansion did not keep pace with the increase in urbanization because by definition the new areas were less populated and thus loss-making.

The result was that the PT network served an increasingly smaller proportion of the urban area. Increasing affluence resulted in high rates of private vehicle ownership and taking into account the relatively less dense coverage by public transport, resulted in greater use of private vehicles and less usage of public transport. Bus operators reacted by cutting unprofitable routes, or reducing frequencies along routes, the net effect being further reduction in service followed by further reduction in patronage, putting the industry in a classic case of a vicious downward spiral. Thus rational decisions taken by individual actors led to an overall irrational suboptimal outcome.

The increasing marginalization of public transport means that local authorities became extremely reluctant to take measures that can assist public transport , such as parking restrictions or bus priority in traffic, which further reduces the attractiveness of PT. Local authorities frequently stated that they cannot take traffic management measures until public transport becomes a viable alternative creating a chicken-and-egg situation. With public transport commuters mostly coming from the economically disadvantaged groups, the Government has also found it difficult to increase bus fares further adding to the problems of the industry.

With the failure of the farebox model, it became obvious that the laissez-faire model of regulation practised in the early days of the industry was not tenable. The Government reacted by creating new regulatory structures i.e. the Commercial Vehicles Licencing Board (CVLB) to take over the licensing functions previously handled by the Road Transport Department for road-based public transport and the Department of Railways for rail-based public transport. However these new organizations were on top of the existing organizations. Hence at one time there were 13 government agencies who had some form on role in the public transport arena. You can imagine the problems of ensuring coordination and coherence of policy and implementation.

In 2010 the planning and regulatory structure for public transport was streamlined with the formation of the *Suruhanjaya Pengangkutan Awam Darat* (SPAD) to replace the Commercial Vehicles Licensing Board and the Department of Railways in Peninsular Malaysia. This, for the first time, brought under one organization both the planning of public transport networks and operations with the licensing functions of public transport operators and vehicles. It also integrated the planning of road-based public transport modes with rail-based public transport systems. There was a reason why a Commission structure was adopted instead of a standard government Department of Public Transport. One was to inculcate greater professionalism and continuity in the staff as previously staff at LPKP and DOR were transferred every few years. Another was to allow a greater measure of professional independence. However I must point out that this is not absolute independence as we are still a Government agency and we are still bound by Cabinet decisions and directives. In fact our Act expressly allows the Minister to give directions to the Commission.

The formation of SPAD does not mean that integration in public transport has been fully achieved. For example while planning and licencing of bus routes is the responsibility of SPAD, the approval of drivers' public service vehicle licences and indeed of the buses themselves are under the purview of the Road Transport Department.

While not as well known, similar situation of fragmented responsibility exists in the rail sector as well. We have three bodies The existing governance structure dates back to 1992 with the implementation of the Railways Act 1991. In accordance with this Act, Keretapi Tanah Melayu (KTM) was corporatized as Keretapi Tanah Melayu Bhd. (KTMB), fully owned by the Minister of Finance, Inc., the Department of Railways (DOR) was established to ensure and promote safe, efficient and affordable railway transport system in Malaysia i.e. the planning and regulatory role, while the Railway Assets Corporation (RAC) was established to carry out the management of all assets and liabilities which is owned and liable by KTM including railway lands. Both the DOR and RAC were placed under the Ministry of Transport and thus a single agency was ultimately responsible for both infrastructure development and service planning.

However, in 2010, with the coming into force of the Land Public Transport Act 2010, and the repeal of the Railways Act insofar as Peninsular Malaysia is concerned, DOR's role and staff for Peninsular Malaysia was subsumed into SPAD and with it the planning and regulatory role was also transferred to SPAD which is under the Prime Minister's Department. So now there is a situation where the operator of commuter and inter-city services (KTMB) reports to the Ministry of Finance, the planning and regulatory role is under the Prime Minister's Department through SPAD while the infrastructure development role remained with the Ministry of

Transport through RAC. This is just one of the legacy issues that I mentioned earlier

## Issues and Challenges

### (i) Increasing Vehicle Ownership

One of the main reasons is of course the high rate of private vehicle ownership. According to a World Bank study published in June 2015, Malaysia today is among the countries in the world with the highest incidence of car ownership. This study used 2011 data and it showed that outside of Eastern Europe, among all the middle-income countries in the world, Malaysia had the highest rate of car ownership. This is just car ownership. It does not include motorcycle ownership. I am sure that if the World Bank included motorcycle ownership, Malaysia would have highest rate of private vehicle ownership among all the middle-income countries in the world, bar none.

Road Transport Department statistics show that between 1997 and 2012, the number of private vehicles registered increased from 8.5 million to 22.7 million. This average annual growth rate of 6.7% is three times the population growth rate of 2% and 1.6 times the growth rate of the economy as a whole which was 4.2%. While in many countries increased car ownership does not automatically translate into increased car usage, in Malaysia it does. Based on surveys conducted by MIROS, the vehicle-km driven in Malaysia during the period 1997 – 2012 increased at an average annual rate of 7.0%, higher even than the 6.7% increase in vehicle ownership. So in Malaysia once a person has a car or a motorcycle, he or she stops using the bus.

### (ii) Integration of Land Use Planning and Public Transport Planning

An analysis of the land use pattern of Malaysian cities shows that Malaysian cities are sprawling cities and as they increase in population, the urban sprawl seems to increase. Take Greater KL for example. In Dec 1990, the population of Greater KL was 3.08 million and the urban land area was 621 sq. km. In Dec 1999, population increased to 5.97 million and the built up area increased to 1,555 sq. km. In other words a population increase of 3.55% led to a built-up area increase of 7.92% or more than double the population increase. Hence the urban density is actually decreasing as the population is increasing. The same pattern is being repeated in other cities such as Penang and Johor Bahru. In fact a 2011 World Bank report stated that of the 15 developing countries in their East Asian and Pacific region, Malaysia had the 4$^{th}$ largest built-up land mass. Please keep in mind that this region covers China, South Korea, Vietnam, Indonesia and many other countries with much higher population than Malaysia.

The need to integrate land use planning and public transport planning is the holy grail of urban transport professionals everywhere. Yet, in the Malaysian context this has proved extraordinarily difficult to implement in practice. Again there are two main factors which hinder such integration, namely institutional and methodological.

The institutional responsibility for land use planning rests with local authorities in the respective states. As the key officials in local authorities are appointed by the respective state governments, it can be seen that land use planning is within the purview and jurisdiction of the state and local governments. Public transport planning on the other hand is the responsibility of SPAD. Hence there is a need to institutionalize cooperation between SPAD and the state/local governments to ensure that better coordination can be achieved in practice.

A start in this institutionalization process was the decision of the National Physical Planning Council in July 2012 to form **State-level Public Transport Technical Coordinating Committees** in each state in Peninsular Malaysia. Pursuant to this decision, such committees have been formed in all 11 states in Peninsular Malaysia. The Director, State Economic Planning Unit chairs the committee while SPAD acts as the secretariat. While these Committees do not have executive power. They nevertheless help to sensitize state and local government officials on the need to consider public transport issues in their normal work. An encouraging case in point is the decision of the Johor State Government to have public transport plans prepared for each local authority.

A starting point for the development of common methodologies for coordinating land use planning with public transport planning is transit-oriented development (TOD). TOD in Malaysia is in its infancy but its importance in both land use planning and public transport planning has been recognized. The 2$^{nd}$ National Physical Plan (NPP2) stated that TOD concept will be promoted as the basis of urban planning to ensure viability of public transportation. TOD has also been identified as one key action plan in the NLPTMP in supporting the achievement of 40% modal share by 2030. SPAD has developed planning guidelines aspects of TOD. These guidelines also consider the implications for public transport planning and service provision. The methodologies proposed in the guidelines can also be adapted to plan for better coordination between land use development and public transport service provision on a corridor basis.

### (iii) Better Coordination between Public Transport Planning and Highway/Road Construction Planning

Road and highway construction have an obvious impact on public transport usage. Sometimes the impact is positive for public transport since buses need the road network to serve origins and destinations effectively. New road/highway construction can also help facilitate the introduction of new public transport services such the bus rapid transit (BRT) services. At other times, the impact is negative since by providing better travelling conditions for private vehicles, they act as a further barrier to greater usage on public transport. Hence there needs to be better coordination between public transport planning and highway/road construction planning. The current level of coordination between these two key aspects of overall transport planning is lacking and needs to be improved. There are two main factors hindering such coordinated planning. The first is institutional in nature while the second is methodological in nature.

On the institutional side, highway/road construction planning is the responsibility of the Ministry of Works and its agencies such as the Public Works Department and the Malaysia Highway Authority. On the public transport side, SPAD is the lead agency for public transport planning. Each of these agencies has its institutional focus/bias and thus cannot act as the lead agency for coordinated transport planning. Furthermore more, in the case of SPAD, its legal remit is clear in restricting it to public transport only.

The methodological barrier to better coordination arises from the fact that the two transport modes use different planning methodologies. In simplifying matters, highway planning focuses on the level of service for vehicles on a particular road with the passenger car unit as the unit of analysis. Public transport planning on the other hand focuses on ridership with cost-effectiveness per passenger as the unit of analysis. Because of the differing methodologies it is difficult to develop a common appraisal methodology to assess alternatives between road and public transport proposals. It is therefore necessary to develop a common appraisal method which can be translated into comparable methodologies for both road and public transport planning and appraisal. Considering that the purpose of transport networks whether highway/road or public transport is to provide mobility for people, the unit of analysis for the common appraisal methodology should be the efficiency of the proposed solution to move people taking into account cost, fuel usage and emissions.

### (iv) First-Mile and Last-Mile Connectivity

Feeder transport is a key component of any public transport system. This is because it serves local areas and brings passengers to nearby transfer/interchange points where passengers can board trunk services. This is especially critical for urban rail services which are the backbone of the public transport system in the Greater KL/Klang Valley region. Spot checks conducted by SPAD reveal that feeder services suffer from several deficiencies. Some feeder buses took a very long time to reach their destination. For example the feeder bus from Sri Rampai LRT station to Lebuh Ampang took 45 mins in one direction and 60 mins in the reverse direction to cover a distance of only 12.5 km.

A second problem was the waiting time for feeder buses at LRT stations varied from 20 mins to 30 mins. The long waiting times are due to the low number of buses operating on feeder routes. In many cases the waiting times for feeder bus services was longer than the journey time. For example for the feeder bus T416 for the Serdang KTM Kommuter station, the waiting time was 40 mins for a journey time of 26 mins in one direction and waiting time of 60 mins for a journey time of 40 mins in the reverse direction. The end result of such excessive waiting and travelling times adds to the overall door-to-door travel times. All this travelling and waiting times do not include the last-mile journey from the feeder bus stops which would normally be done walking.

The 2013 GKL Travel Study carried out some comparative analysis of door-to-door travelling times during the morning peak by urban rail and by private cars. It showed that on average the total time for a rail journey was 1.76 times longer than the same journey by private car. The main factor contributing to the long journey times is the time taken to travel from home to the rail station. Generally, morning peak users walk from the rail station to their destination. So the main problem is actually the first-mile connectivity i.e. from the home to the railway station.

This problem arises from the housing land use pattern in Malaysia where the norm for housing estates is link or terrace houses spread out for a relatively large area rather than high-density condominium or dense housing as is the case in Singapore or Hong Kong. For high density housing, feeder buses perform relatively well because the feeder routes can be relatively short and direct and the feeder bus stations can be placed close to the housing estates. When houses are spread out, these operational advantages of feeder buses are lost. To provide access to as many houses as possible, feeder routes are to be relatively long and meandering. This results in relatively long feeder bus journey times. The alternatively of having multiple feeder routes is not practiced because buses, having relatively high capital costs need to be utilized for about 250 km per day to be efficient. Hence the number of buses that are deployed on feeder services is not sufficient to keep headways reasonable.

The solution for feeder services in the Malaysian context thus cannot be the conventional bus. We need to use vehicles that have lower capital and operational costs so that a larger number of feeder services could be provided within a particular housing area. This would enable shorter journey times, shorter waiting times and reduced walking distance to feeder service stands.

**Consequence of Low Public Transport Modal Share**

This low modal share of public transport has its consequences on the social and economic life of the country. The most obvious is traffic congestion. The Ministry of Works stated that 38% of all Federal roads in the country many of which provide access to urban centres are either severely congested or extremely congested. The situation is especially bad in the Greater Kuala Lumpur region, but it is getting bad even in other cities. No one, I know, not even the most committed car aficionado, likes sitting in the traffic jam. And yet this is what the reality is for many people. Surveys show that in GKL, on average residents commute 29km/hr slower in the morning peak than in the off-peak. In the evening peak, it is 20 km/hr slower. It is therefore no surprise that in a survey of global mobility carried out by a consultant firm, 41% of Malaysians stated that road congestion as their highest source of frustration, higher than the Asia-Pacific average of 35% and the global average of 29%. Thus congestion, due to the high use of private vehicles, has a major adverse impact of the social well-being of Malaysians.

Equally important is the economic cost to the country resulting from this high reliance on private cars. This cost arises from various factors, the time cost of delays in journey times, the cost of additional fuel burnt because of the stop-go nature of travelling in traffic jams, and the cost of additional carbon and other emissions. The World Bank did a first-line estimate of the costs of congestion for the economy. It found that time delays cost the Malaysian economy anywhere between RM10 – 19 billion a year, fuel costs about RM0.9 – 2.4 billion, and pollution costs when monetized cost RM0.9 – 2.7 billion annually. The total costs of congestion therefore were between RM12.7 – 24.7 billion a year. This means that the predominant reliance on private vehicles was costing the Malaysian economy anywhere from 1.1% - 2.2% of our Gross Domestic Product.

Some of you might think that this loss to the economy is just a notional cost, just a theoretical cost. So let me use another measure, this time a financial measure, to show the costs of our individual modal choice of relying on private vehicles. A 2012 survey showed that transport costs accounted for slightly over 8% of household expenditure in Seoul, slightly less than 8% for a household in Shanghai, and only 4% of household expenditure for a household in Tokyo and Hong Kong. The corresponding figure for a household in Kuala Lumpur was 10%, and this was the same for households in other cities like Georgetown, Kuching, Kota Kinabalu, Kuantan and Johor Bahru. So Malaysian households are proportionately spending a much higher percentage of their monthly income on transport than cities where the modal share of public transport is high. This, ladies and gentlemen is the cost of our love affair with our cars.

## THE WAY FORWARD

Clearly the way forward is self-evident. If we are serious about people-centric mobility for social and economic development, we need to find a way to fulfil human needs in a sustainable manner enabling those needs to be met indefinitely. Conceptually it has three main dimensions – social, economic and environmental. In social terms, mobility is a basic necessity of contemporary life and we cannot hope to restrict mobility without having adverse impacts for individuals access to important services. In economic terms, we simply cannot afford to go on building more roads to try to satisfy mobility demands through private vehicles, since the more the demand the higher the costs of trying to do so. This is the key difference between the two options to satisfy increasing demands. If we choose the private vehicle option, we have to keep on building more highways, more roads and more interchanges. Even if it were possible to do so, the unit costs would only keep rising. However, since transit is a shared service, it benefits from the economics of agglomeration resulting from high densities and from economies of scale arising from high demand. So the higher the demand for public transport, the lower the unit costs to provide them. In environmental terms, again the advantages of public transport in terms of lower emissions per user is compelling.

Hence people-centric mobility means that we have to achieve a new balance between the personal and the collective, between private vehicles and public transport. We cannot continue to be in a situation where the share of public transport remains in single digits for the vast majorities of our cities. That is why the National Land Public Transport Master Plan has as its target a 40% modal share for public transport in all urban areas. Achieving this target will require tremendous efforts at a policy level, at a governmental level. This is because the root cause of the problem, is urban sprawl which is a classic case of market failure, although not often documented as such.

Policy makers in Malaysia currently have two major policy tools to guide the pattern of urban development. The first is transport infrastructure and service provision investment policy. If we want to foster a compact urban form, then our transport investment has to necessarily give priority to public transport investment. If we instead give priority to building roads in the name of connectivity and relieving congestion and leave public transport until later, then we can be sure that the city urban form will be shaped by private vehicle use and the task of installing public transport and changing travel behaviour will be more difficult.

In many respects, decision-makers accept the case for rail-based public transport. Hence the tremendous investment in urban rail systems in the Greater Kuala Lumpur region over RM70 billion in committed expenditure. Even for service provision, the Government either directly or indirectly, is subsidizing all rail-based public transport, at an average of 34% of the fares. Even with the recent fare increases, the operators will not get enough fare revenue to cover their operating costs and thus have to rely on Government subsidies.

But what about other cities, especially cities that have not yet reached the threshold populations that make urban rail systems a viable alternative? Unfortunately here the picture is less encouraging. The case for investment in bus services is accepted at an intellectual level but not at the visceral level by many key decision-makers. Even though the Government has accepted the Stage Bus Services Transformation based on the gross-cost model as the permanent solution for bus services in second- and third-tier cities in Malaysia, the amount of financing allocated is not yet enough to implement this in all state capitals let along all second- and third-tier urban areas. We Malaysians always like to compare our bus system to those of other countries. Yet we conveniently forget how much it costs to provide such good service. London and now  Singapore are both funding 35% of the cost of their bus services. Smaller cities like Perth in Australia and Waikato in New Zealand require even higher funding at close to 70%.

To date the Government allocated RM470 million for the Interim Stage Bus Support Fund and only RM100 million for its permanent replacement – the Stage Bus Services Transformation. We in SPAD estimate that full implementation will require about RM972 million and then reduce to about RM300 million per year. In the larger scheme of things, this does not seem too high but yet we have not yet been able to get the budget allocation for it. The reasons are many, buses are seen as a declining mode, that it is not patronized by many Malaysians, that it is almost a lost cause. This is a defeatist attitude. Yes, the ridership is not high at the moment. It has been declining for over 30 years. They cannot be reversed immediately. The SBST must be given time and allocation to show that bus services are a viable public transport solution for our second- and third-tier cities. As I mentioned earlier, the pilot implementation in Kangar and Seremban showed that ridership increased by an average of 30%. SPAD is also doing its part to reduce government reliance, encourage sustainability, and boost ridership. Our future innovations include sophisticated network planning in state capital cities across the Peninsular to cover high-value intercity routes, the introduction of a smartphone app called Journey Planner to help commuters plan their travel, and vigilantly monitoring bus operator performance through introducing quality incentives and penalties on non-performance.

The second policy tool that the Government has is policy on land use. We, and here I mean State Governments and Local Authorities must use all powers at their disposal to increase the density of urban areas. Urban sprawl must be checked and where possible reversed. State and local governments must adopt as a matter of policy what I like to call the 4C approach – to foster compact, connected and coordinated cities.

Different cities can apply the 4C approach in different ways. Small and medium-sized cities in Malaysia growing at 6% or more per year could design-in compact urban growth features from the start. These include integrating residential, commercial and industrial areas and designing efficient public transport routes. They could provide connected infrastructure by introducing road-based public transit system such as the conventional bus and Bus Rapid Transit systems. Where appropriate urban rail systems including trams could also be provided. They can introduce coordinated governance by building up capacity, systems and procedures to carry out integrated land use – transport planning in a pro-active manner.

One such practical way to do this is to encourage transit-oriented development (TOD). Currently in Malaysia, we only have one true TOD i.e. the KL Sentral area. Why aren't we having more such developments? The upcoming MRT projects have such potential for TOD. Indeed I would like us to go beyond the TOD around stations and instead expand it to TOD corridors along rail and BRT corridors. Certainly more clarity is needed regarding the legal processes and the implementation processes, we have start to do this now. Retrofitting is not just more difficult but also more costly. This is the irony of development. The price of land along transit corridors goes up not because of anything the land owners did but because the Government spent money to do this. Then afterwards if we try to acquire more land for TOD, the Government has to pay the new higher costs of the land. So the Government pays twice.

Medium and large Malaysia cities expecting growth rates of 5-6% per annum could introduce several compact urban growth strategies. These include re-densification through regeneration of existing city cores and supporting hubs, developing multiple hubs, encouraging brownfield re-development, encouraging transit-oriented developments and urban retrofitting as well as managed growth of the urban periphery.

Planning and implementation of all these initiatives requires skilled human resources. We need well-qualified engineers, economists and planners for this purpose. This is where universities have a role to play. You are the ones who ae going to train our future generation of public transport professionals and so it is my hope that you will later your courses to meet the demands of the sector. We in SPAD have set up an SPAD Academy and it is my hope that all universities will collaborate with the Academy to increase the number of industry-ready professionals. At the same time, we also hope that academics in our universities will extend the frontiers of knowledge in fields elvant to public transport especially in the areas of methodological advancements that I identified earlier.

## Conclusion

All this may sound academic and theoretical for some of you. Let me assure you that it is not. It will affect how our cities and thus how we live our lives in the future. Do we want urban sprawl or a compact city? Do we want a car-oriented city or a public transport-oriented city? In case you are not sure let me refer you to an objective guide. Every year the Mercer consulting firm publishes the city quality of life index. For the 2014 edition, the top five cities are in order of their ranking Vienna, Zurich, Auckland, Munich and Vancouver. All except Vancouver are very compact cities with good public transport. Even Vancouver is relatively compact by North American standards and is noted for its good public transport system. Thus the choices that we make today will influence our quality of life tomorrow. This is why I mentioned that in the end the most important thing about public transport is the public. We must transform pubic transport to ensure that it becomes the first choice of the rakyat and not the last resort. This is what we in the present generation owe our children and our grandchildren to ensure that they have a better quality of life.

Thank you.