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Addressing Strategic Challenges of Public Transport

National Summit on Urban Public Transport

Dr. Ulrich Koegler, Vice President, Dubai/Duesseldorf

Agenda

Current Situation

Strategic Challenges and Lessons Learnt

Strategic Questions for Public Transport Sector

Public Transport system in KL/KV suffers from overcrowding, poor service quality and lack of easy access and connectivity

ILLUSTRATIVE

Public Transport in Greater Kuala Lumpur / Klang Valley - Key Issues

High congestion during peak periods

- Main rail lines are overcrowded, e.g. with 140% capacity on KTM Komuter and 180% on the Kelana Jaya LRT services
- Similarly, bus services on popular routes are overcrowded during peak hours, e.g. 23 of RapidKLs 166 routes are over capacity

Unreliable service

- Systems suffers from frequent delays and ad-hoc service cancellations
- Trains frequently do not adhere to schedules
- Buses do not have schedules

Poor modal connectivity

- A frequently-quoted example is the lack of clear, standard connectivity between Monorail and LRT stations at KL Central, ...
- ... where ~ 3,000 daily commuters walk > 350 m around a construction site and through poorly maintained and partially sheltered walkways, in order to connect between the two stations

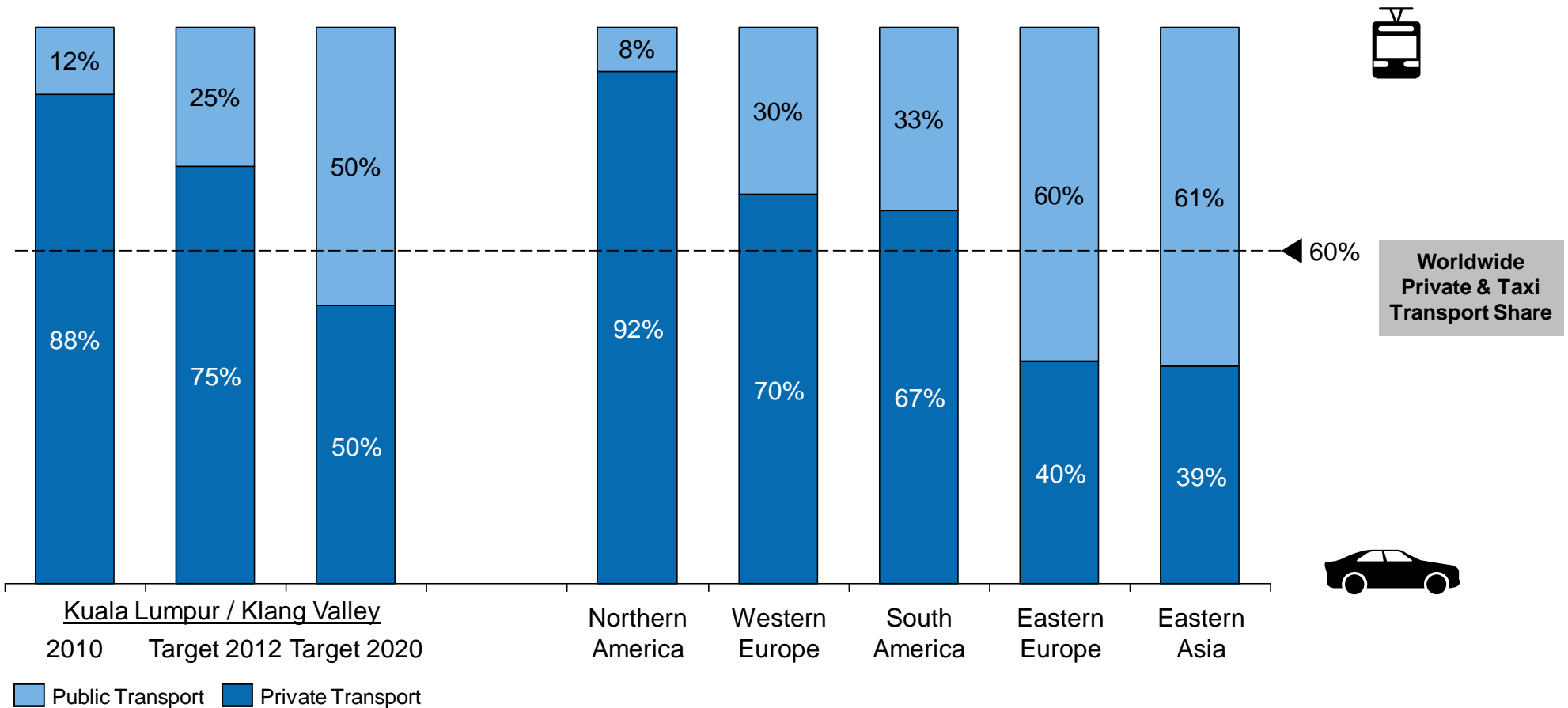
Poor access to PT services

- ~ 60% of Klang Valley's population live within 400 m of a bus route
- Out of ~ 4,000 bus stops in Klang Valley, ~ 40% have no shelter or signage

Source: GTP Roadmap: Improving Urban Public Transport

Today, public transport in Kuala Lumpur plays a marginal role, private cars cater for mobility needs

Split of Total Motorized Passenger Trips between Public and Private Transport



Source: UITP Cities Database (2001); Booz & Company Public Transport Database

As Greater KL/KV is growing rapidly, growth of mobility demand and public transport trips will become a major challenge

HIGH LEVEL ESTIMATES

Greater Kuala Lumpur / Klang Valley Metropolitan Area – Projected Demand Evolution
(2010-2020)

	GDP per Capita (\$ Nominal)	Daily Trips per Inhabitant ¹⁾	Urban Population (Mn)	Urban Daily Pax (Mn)	Share of Public Transport	PT Daily Pax (Mn)
2010	8,400	0.60	5.8	3.5	12%	0.4
2020	18,100	1.30	9.4	12.2	50%	6.1
CAGR	8%	8%	5%	13%		31%

$5.8 \times 1.6 \approx 9.4$ (+60%)
 $3.5 \times 3.5 \approx 12.2$ (3.5x)
 $0.4 \times 15.25 \approx 6.1$ (14.6x)

Comparison London (2006):
7.2 Mn. PT Daily Pax (30% Share)

1) Motorized Trips - Estimated based on correlation between the increase in GDP per capita and the number of daily trips per inhabitant observed through data comparison in multiple countries
Sources: Booz & Company Public Transport Database; UITP Mobility in Cities 2001; IMF World Economic Outlook Database; Economist Intelligence Unit; Global Insight, Economic Transformation Programme, Booz & Company analysis

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Globally, governments focus on three main pillars to improve Public Transport

Public Transport Improvement Pillars

A

Sector Governance Model

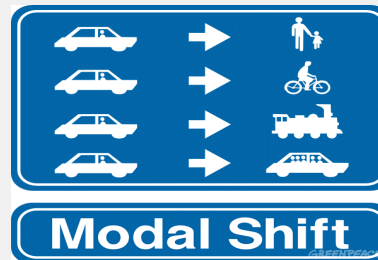
- Overview of Public Transport Decisions
- Governance Structures in Public Transport as part of public transport
- Public Transport Regulator Key Roles and Responsibilities



B

Effective Mobility and Modal Shift

- Incentives / Disincentives to Increase Public Transport Usage including
 - Service levels
 - Fares structure & ticketing
 - Integration with other modes
 - Technological solutions
- Improving mobility, e.g. through walkability and pedestrian policies



C

Funding Strategies

- Government Investment /Subsidies
- Private Sector Participation (PSP) in Public Transport



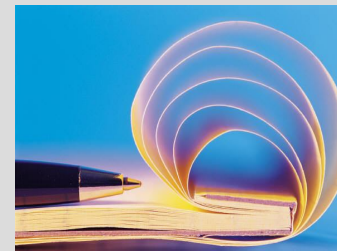
Source: Booz & Company analysis

The government role appears in policy setting and planning, regulation, operations, and enforcement

Government Contribution Roles

Policy Setting & Planning

- Budgeting and Funding
- Integrated Transport Planning
- Standards Development



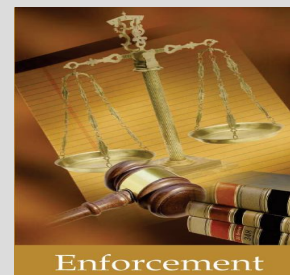
Regulation

- Fares Definition and Economic Regulation
- Demand Management
- Performance Monitoring

Government Roles

Operations

- Tendering and Licensing
- Ticketing and Fares Collection
- Infrastructure Ownership and Management



Enforcement

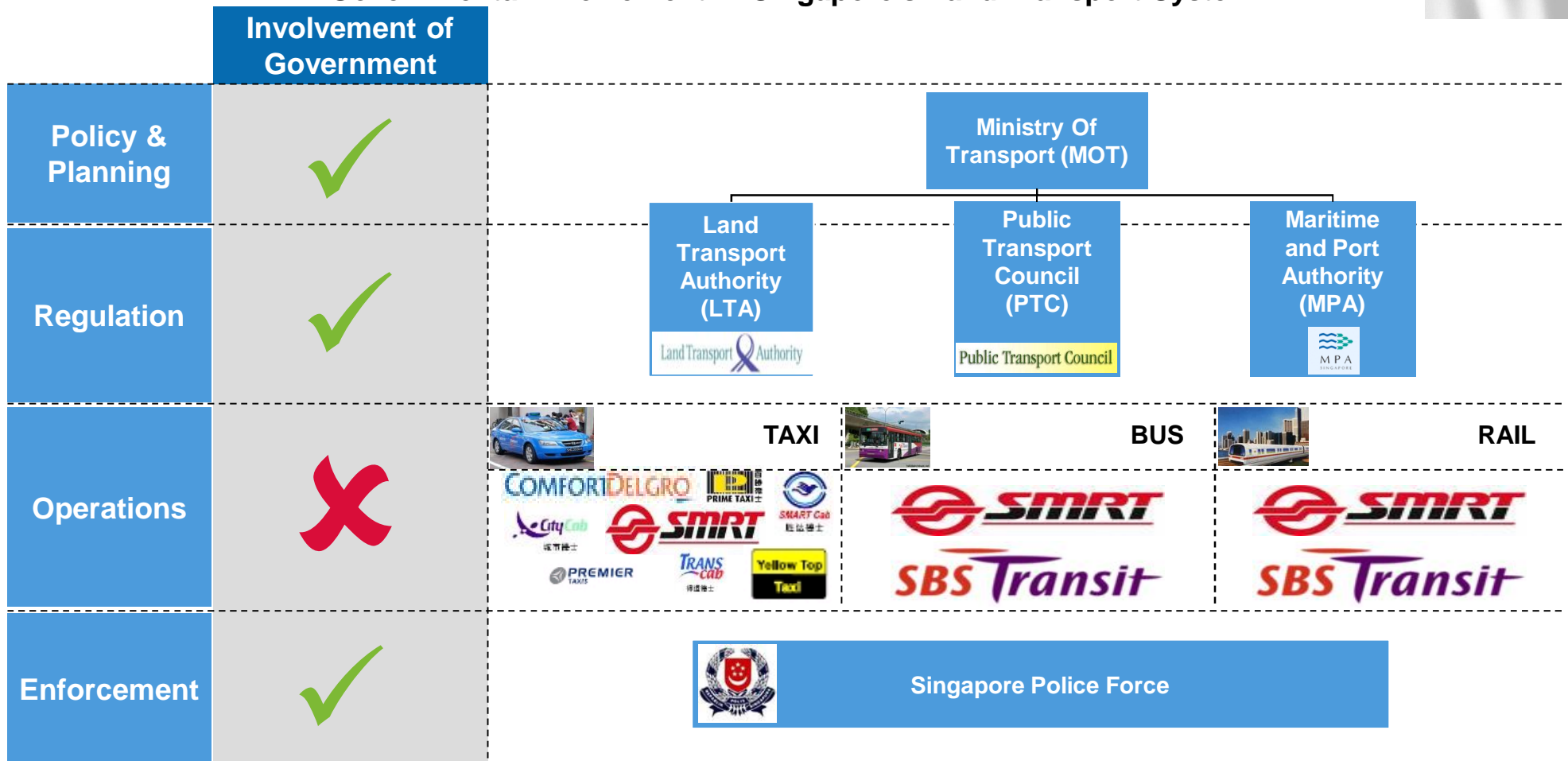
- Standards Enforcement
- Regulations Enforcement

Source: Booz & Company analysis

Singapore Land Transport Authority (LTA) is involved in policy, regulation & enforcement with no operational involvement

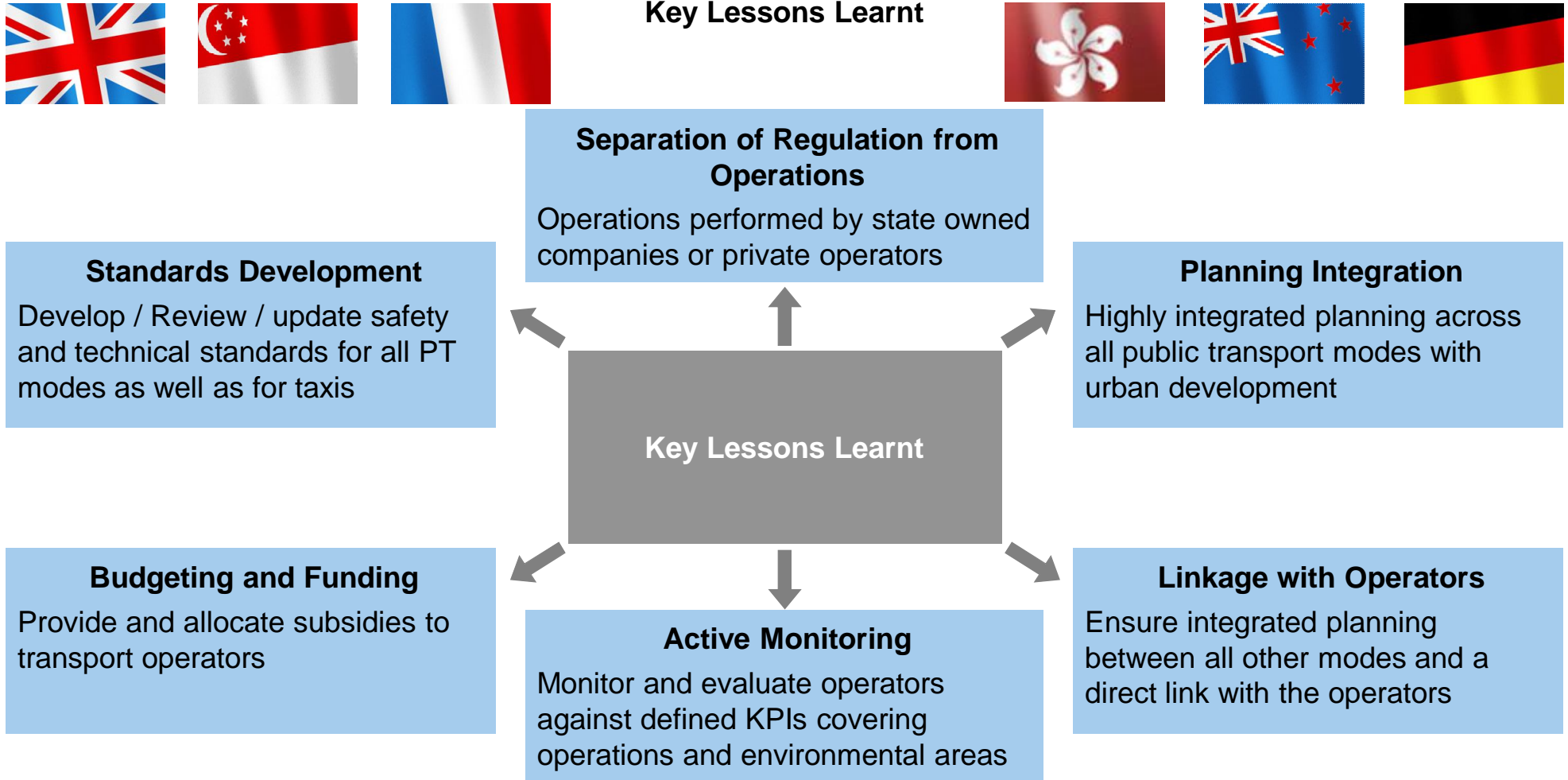


Governmental Involvement in Singapore's Land Transport System



Source: Booz & Company analysis

Benchmarking of relevant areas revealed takeaways to be considered for governments' contribution role in PT sector



Source: Booz & Company analysis

To achieve higher public transport usage, cities use a comprehensive approach of incentives and disincentives

Incentives / Disincentives to Increase Public Transport Usage

Increase Usage of Public Transport

1
Incentives to use public transport

Disincentives to use personal cars¹⁾
2

Supply Levers

- Ensure public transport network **coverage** and **capacity**
- Ensure public transport service **quality**
- **Integrate** public transport modes

- **Limit road** and **parking** space for private transport
- Provide / improve **pedestrian** facilities

Demand Levers

- Set affordable **fares** for public transport





- Increase the cost of car **ownership**
- Increase the cost of car **usage**
- Encourage **walking** and **cycling**

Note: 1) Measures covered in the Congestion section

Source: Booz & Company analysis

Several supply and demand levers are typically adopted to incentivize the use of public transport

1 Incentives to Use Public Transport Usage – Benchmarks

			Singapore 	Hong Kong 	London 	Berlin 
Supply Levers	Ensure public transport network coverage and capacity	▪ Constantly expand network to reach newly developed areas and increase connectivity of suburbs	✓	✓	✓	✓
		▪ Optimize network layout and density according to demand	✓	✓		✓
	Ensure service quality (for 3rd party operators)	▪ Set and enforce quality standards	✓	✓	✓	✓
		▪ Encourage competition between service providers (e.g. competitive bidding, license duration)	✓	✓	✓	
Integrate public transport modes	▪ Fare integration: integrated tickets and multi-mode smartcards ▪ Network: feeder bus services to main corridors/metro ▪ Physical: interchanges / park and ride facilities ▪ Institutional: same entity responsible for all modes	✓	✓	✓	✓	
Demand Levers	Set affordable fares	▪ Public transport fares are set at affordable rates ▪ Same entity sets fare policies (public transport fares vs. car usage fees and toll fees) to manage usage	✓	✓	✓	
	Ensure access to public transport	▪ Develop pedestrian and cycling access to public transport ▪ Provide adequate waiting areas (e.g. shelters)	✓	✓	✓	✓

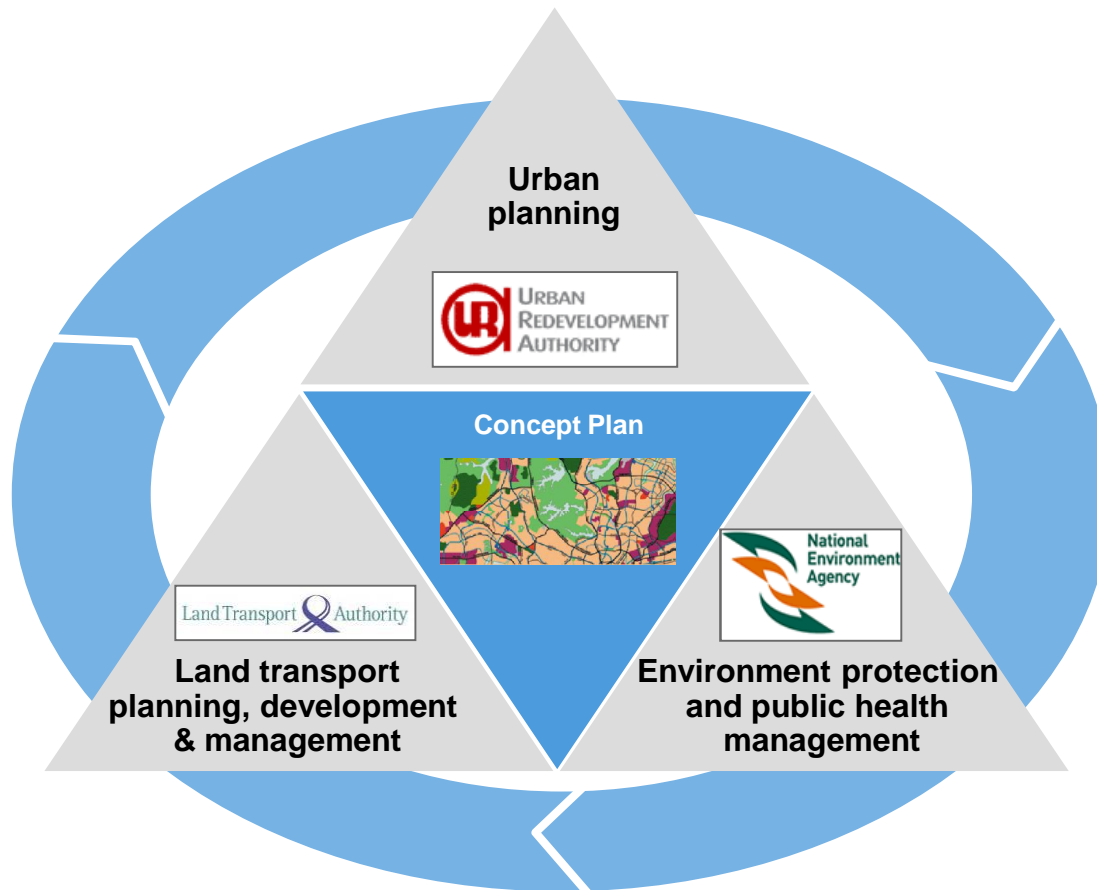
Note: London has a some integration, e.g. ticketing and fare collection, but is less developed on the other integration dimensions

Source: Booz & Company analysis

For example, on the supply side, Singapore successfully integrate PT planning and land use, thus facilitating intermodal integration

1

Integrated Planning – Singapore Example



Integrated Planning Process

- Integrated planning is conducted in close **cooperation** between relevant ministries and agencies - urban planning, housing, environment & transport
- **Long term** planning process that integrates land use and main transport corridors:
 - **Concept plan** (every 10 year): strategic long-term plan for next 40-50 years that guides city growth
 - **Master plan** (every 5 years): mid-term plan for next 10-15 years
 - Urban **design** and conservation plans
- Transport corridors are defined long before individual residential developments are planned

Source: Booz & Company analysis

Also, integration is facilitated through integrated demand management and strategic transport planning of all modes

1 Overview Hierarchy and Interdependency of Transport Strategies and Plans

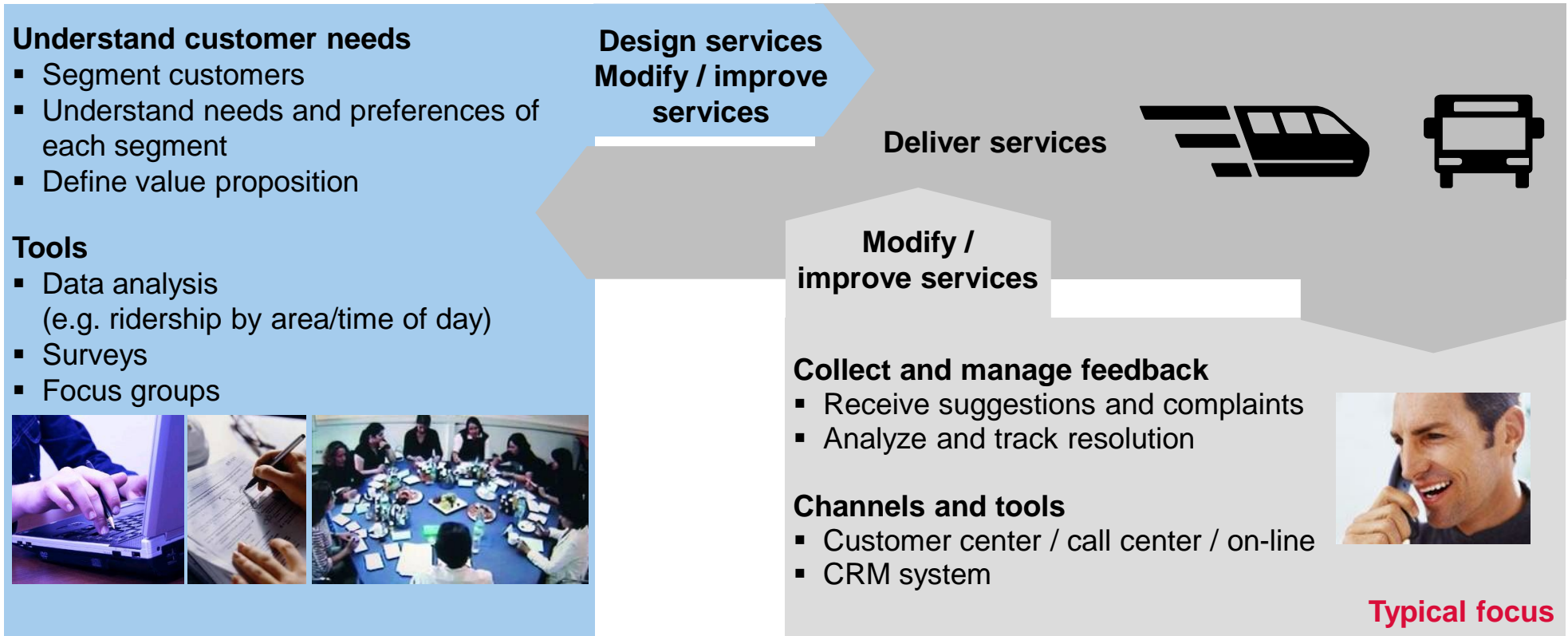
BEST PRACTICE



Source: Best Practice, Booz & Company analysis

Customer needs should be studied and incorporated into service planning and design, feedback is used to improve services

1 Framework – Understanding the Needs of Commuters



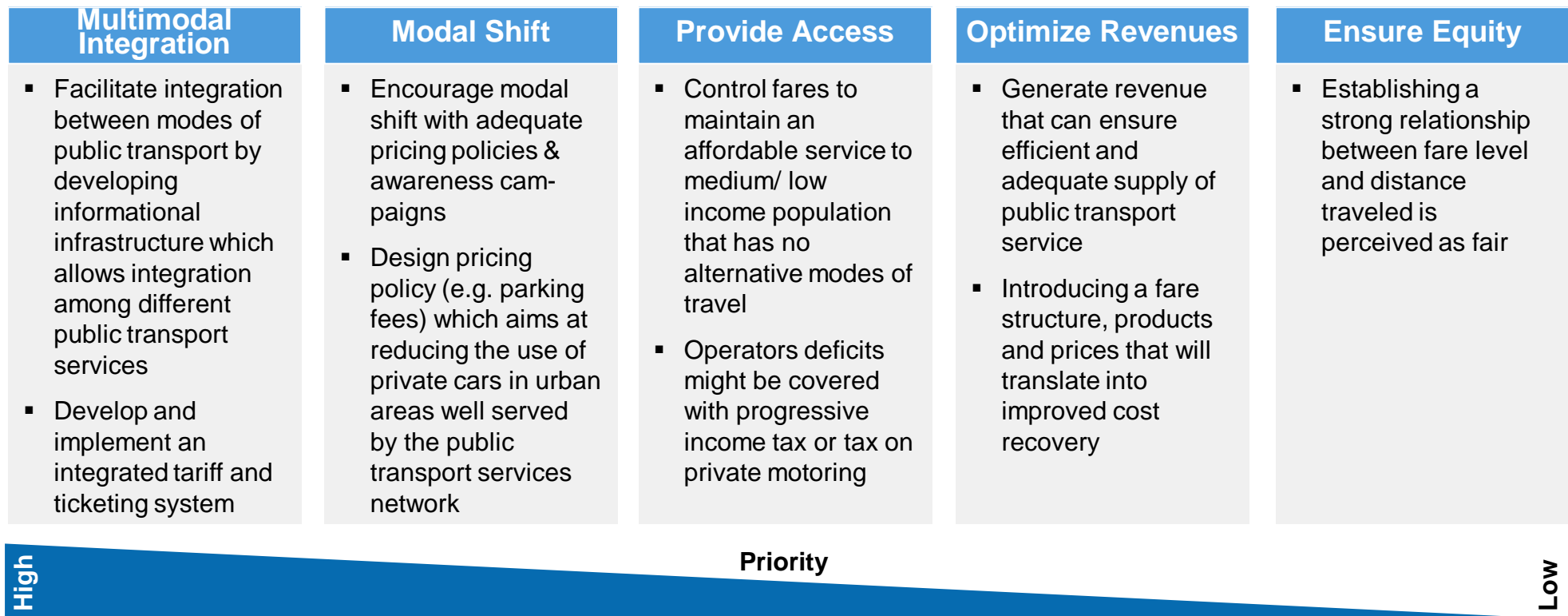
Source: Booz & Company analysis

To enhance demand, a comprehensive fare strategy should be based on five fare policy objectives

1

Fare Policy Objectives for Public Transport

New Fare Structure



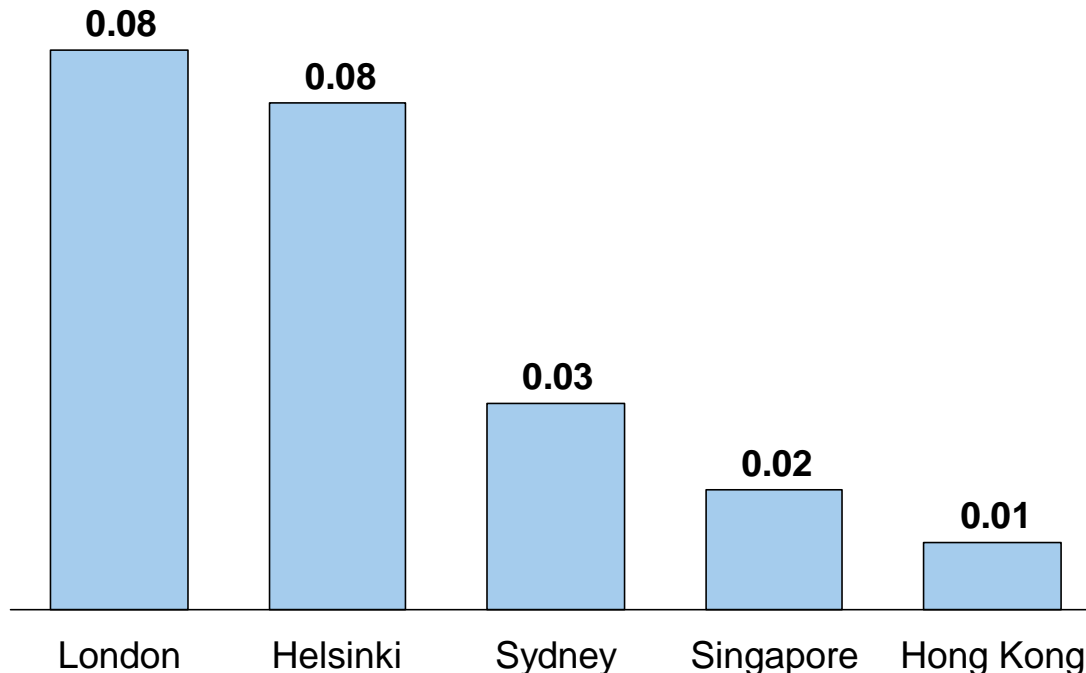
Source: Booz & Company analysis

Public transport fare levels need to strike a delicate balance between affordability and sustainability

1

Fare Levels - Benchmarking

Single Ride Bus Cash Fare as a % of GDP per Capita
(2008, % per Thousands of GDP per Capita in US\$ PPP)



Fare Level - Considerations
<ul style="list-style-type: none"> ▪ Affordability of fares, especially compared to alternative modes, is an important determinant of ridership ▪ However, too low fare levels have negative impacts: <ul style="list-style-type: none"> – Encourage excess use and abuse – Higher subsidies needed, which, if not met, lead to deterioration in coverage and service quality ▪ Controlling fare levels to maintain them low requires a transparent direct subsidy mechanism

Notes: GDP/Capita was calculated based on total country income and population
Source: C.I.A World Factbook, Operators Data

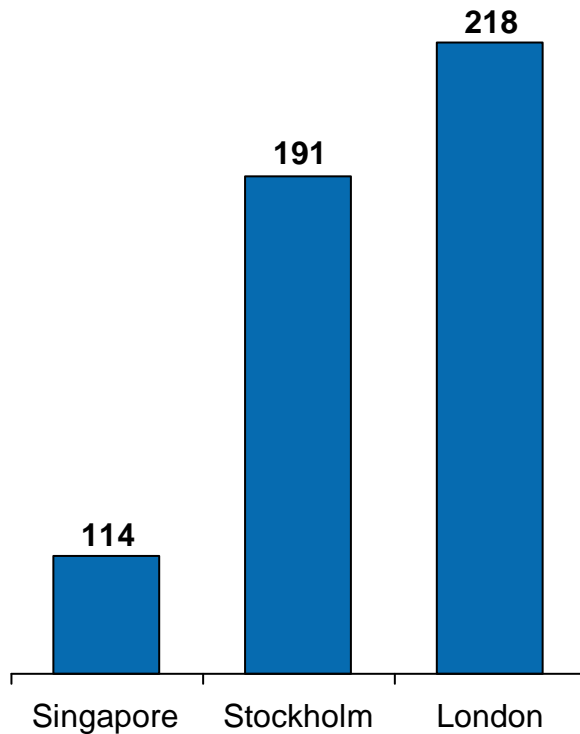
A broad range of charges and duties is applied to discourage car ownership and usage and hence promote usage of public transport

INDICATIVE

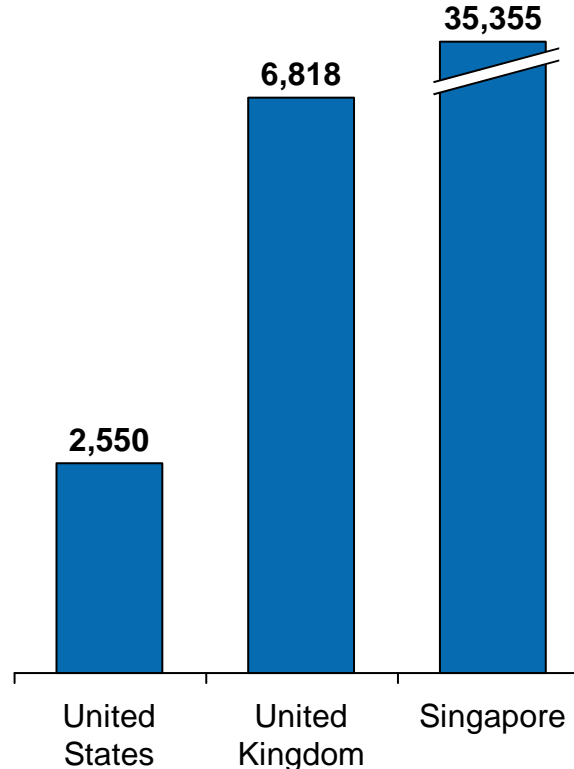
2

Levers to Limit Car Ownership and Usage

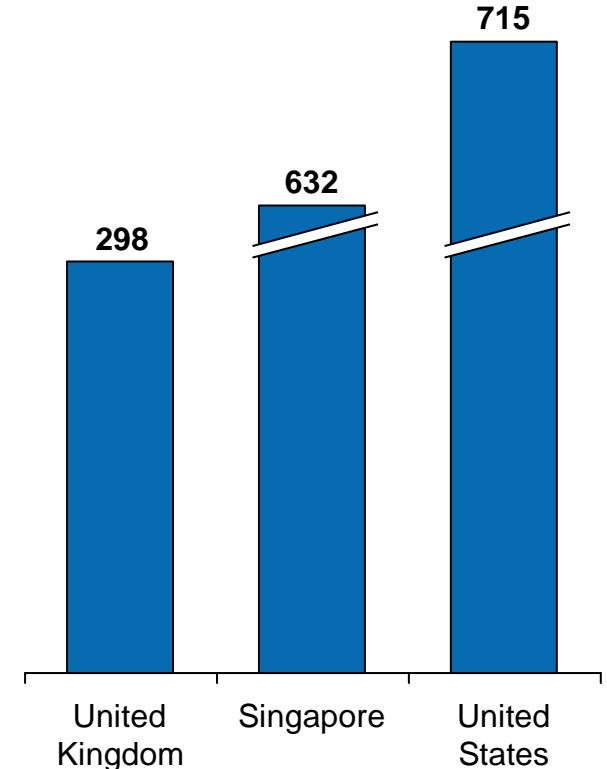
Congestion Charging or Toll Revenue per Year, per Registered Vehicle
in PPP\$



Taxes and Importation Duties on New Vehicles
Per Vehicle, in PPP\$



Annual Charges on Registered Vehicles
Per Vehicle, in PPP\$



Note: Purchasing Power Parity exchange rates were used to normalize charges and fees in different countries

Source: Booz & Company analysis

Intelligent Transport System applications are critical enablers to limit road and parking space and promote public transport usage

NON EXHAUSTIVE

2 Example - Bus Transit ITS Applications

Transit Traveler Information

- Provides transit users at transit stops and on-board transit vehicles with ready access to transit information
- Information services include
 - Transit stop annunciation
 - Imminent arrival signs and
 - Real-time transit schedule displays that are of general interest to transit users



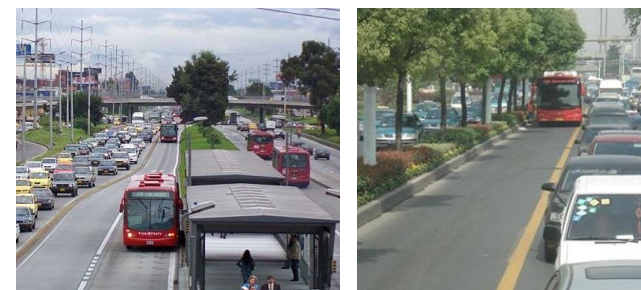
Transit Signal Priority

- Determines need for transit priority on routes and at certain intersections and requests transit vehicle priority at these locations
- Coordinate between transit management and traffic management centres, to improve on-time performance of the transit system without degrading overall performance of traffic network



HOV Lane Management

- Preferential treatment given to HOV lanes using
 - Special bypasses
 - Reserved lanes and
 - Exclusive rights-of-way that may vary by time of day



Source: Booz & Company analysis

Improvement of city walkability provides a number of mobility, social, safety and environmental benefits

2

Benefits of a Pedestrian Policy and Standards

Removes Barriers to Mobility

- Greater pedestrian accessibility and right of way
- Increased connectivity for non-motorized travelers
- Minimal steps, inclines and surface irregularities
- Accommodates all needs: wheelchairs, walkers, strollers



Provides Social Benefits

- Greater community cohesion, vitality and network
- Promotes personal health and well being
- Increased recreation options
- Advocates equity
- More options for non drivers



Benefits of a Pedestrian Friendly City

- Designated crossings reduce the need for jaywalking
- Non roadway paths and traffic calming reduces the risk of injury, death and conflict with motorists
- Tactile pavement, dropped curbs and barriers reduce accidents
- Improved lighting, and open areas can deter crime



- Positive impact on congestion
- No associated pollution
- Removes noise and air pollution associated with vehicular travel
- Requires less land space than roads
- Walking is sustainable



Improves Safety


Aids Environmental Sustainability

For example, Transport for London developed a comprehensive plan for its pedestrian friendly city program

NON EXHAUSTIVE

2

Overview of London's Pedestrian Plan – Key Components –

Plan Background	Key Components
<ul style="list-style-type: none"> The plan outlines how Transport for London hopes to realize the Mayor's Vision of making London one of the world's most walking friendly cities by 2015  <p>Making London a walkable city The Walking Plan for London February 2004</p>	<ol style="list-style-type: none"> 1. Vision <ul style="list-style-type: none"> Sets the 2015 vision for London and how it relates to other policies 2. Baseline and Gap Analysis <ul style="list-style-type: none"> Summarizes current functional walking categories, facts, statistics, forecasts, barriers etc Provides case studies and benchmark comparisons 3. Goals <ul style="list-style-type: none"> Outlines SMART strategic objectives and targets and how they were derived 4. Key Actions Required <ul style="list-style-type: none"> Holistic approach: Stakeholder coordination and integration of plans Awareness campaigns: Educate about the benefits of walking and available routes Improved service: Connected network that integrates focal points, greater aesthetics and amenities, increased accessibility etc Greater safety and security: Pedestrian rights of way, increased designated crossings, traffic calming, reduced proximity to main roads, greater lighting, visibility, surveillance and signage 5. Implementation Plan, Responsibilities and Funding <ul style="list-style-type: none"> Identifies all stakeholders to coordinate with, list of projects per initiative stating owner and key deliverables, overview of funding requirements and sources 6. Monitoring <ul style="list-style-type: none"> Principal tools and mechanisms: Surveys, index, flow monitoring

Source: Making London a Walkable City: The Walking Plan for London February 2004

Fundamentally, Governments have three levers to subsidize public transport

ILLUSTRATIVE

Government Invest/Subsidies

Subsidy Type	Subsidy Model	Description	Assessment
Capex Subsidies	Monetary	<ul style="list-style-type: none"> Monetary subsidies for investing in Capex 	<p>Pros:</p> <ul style="list-style-type: none"> Easy, one-off monitoring <p>Cons:</p> <ul style="list-style-type: none"> Require large one-off investment
	In-Kind	<ul style="list-style-type: none"> Government contributes certain assets 	
Opex Subsidies	Fixed Simple	<ul style="list-style-type: none"> Fixed subsidy independent of performance or ridership 	<p>Pros:</p> <ul style="list-style-type: none"> Performance dependent Subsidies provided in smaller regular installments <p>Cons:</p> <ul style="list-style-type: none"> Require constant monitoring
	Fixed Performance Based	<ul style="list-style-type: none"> Performance based subsidy independent of ridership 	
	Variable Simple	<ul style="list-style-type: none"> Variable subsidy independent of performance but dependent on ridership 	
	Variable Performance Based	<ul style="list-style-type: none"> Variable subsidy dependent on both the performance as well as ridership 	
Special Subsidies	Indirect - Investor	<ul style="list-style-type: none"> Indirect subsidies consisting of tax relief, right of way, land development, etc. 	<p>Pros:</p> <ul style="list-style-type: none"> Target only the most needy <p>Cons:</p> <ul style="list-style-type: none"> Difficult to implement
	Indirect - Customers	<ul style="list-style-type: none"> Targeted directly at passengers based on need and social status 	

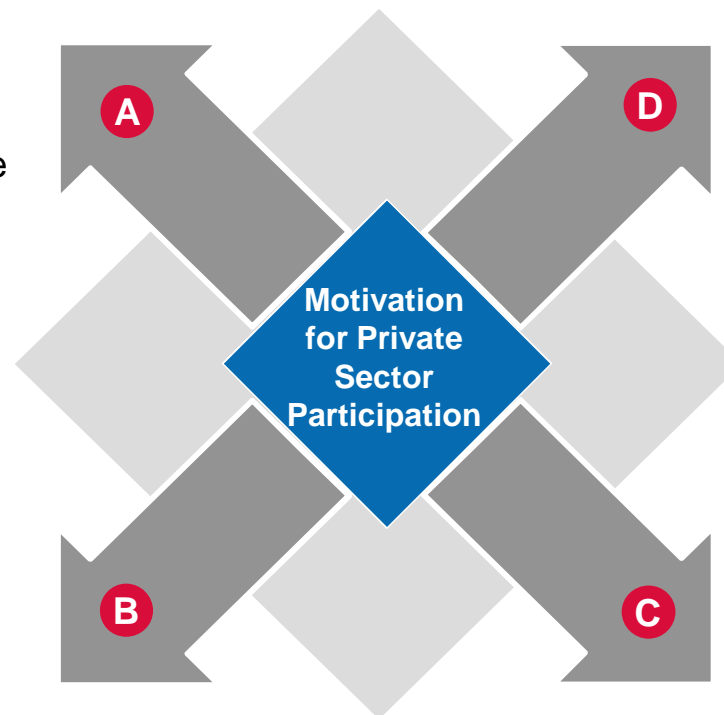
Source: Booz & Company analysis

To ensure sustainable funding schemes, Governments tend to involve private sector in public transport for four major reasons

Reasons for Private Sector Participation (PSP) in Public Transport

Reduce Public Subsidies
Reduction in subsidies required to support public transport services by involving the private sector which has higher operating efficiencies

Improve Operational Efficiencies
Improve operational performance of operations by outsourcing elements of the value chain to the private sector



Access Private Capital
Access private capital for large scale infrastructure development projects






Improve Service Quality
Improve overall quality of service - frequency, maintenance, image, etc - by involving the private sector

Source: Literature Review, World Bank Website, Booz & Company analysis

There are five different engagement models prevalent for private sector participation in public transportation

NON-EXHAUSTIVE

Overview of Private Sector Participation in Public Transport

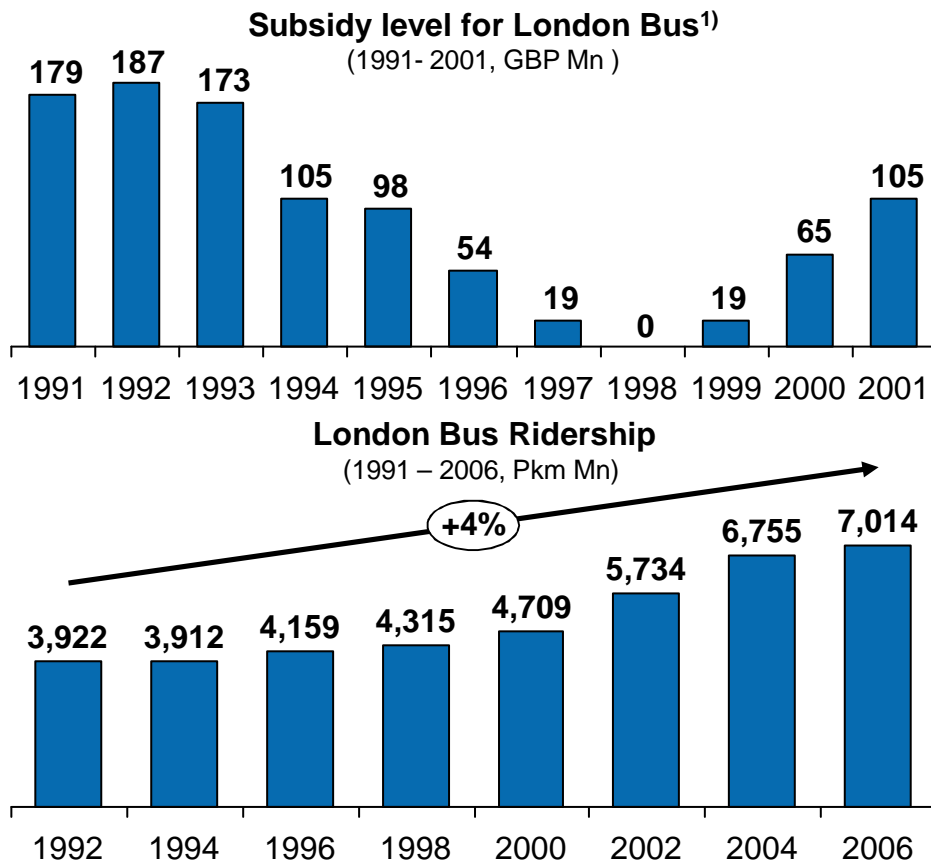
Engagement Model ⁽¹⁾	Description	Rationale	Country Examples
1 Management Contract	<ul style="list-style-type: none"> Public transport operations (or some elements of it) are outsourced to private parties e.g. maintenance, fare collection, IT, etc... 	<ul style="list-style-type: none"> Increased accountability and responsibility for operations due to the presence of a single managing entity Reduced contractual, operational and logistical complexity, since the authority will not have to dedicate resources to the management 	
2 Service Availability (Gross Cost)	<ul style="list-style-type: none"> Private sector companies are guaranteed a payment based on operating costs (and service quality) The public sector entity is responsible for collecting the revenue 	<ul style="list-style-type: none"> The authority has a control over fares collecting Reduced operational complexity, since the authority will not have to dedicate resources to operations 	
3 Net Cost Service Contract	<ul style="list-style-type: none"> Private sector companies are responsible for the operating costs as well as revenue collections The public sector may/may not provide any subsidies 	<ul style="list-style-type: none"> Reduced operational and logistical complexity, since the authority will neither have to dedicate resources to operations nor fare collection 	
4 Franchise	<ul style="list-style-type: none"> Several operators are franchised to provide competition World bank best practice for emerging markets 	<ul style="list-style-type: none"> Unsubsidized commercial model typically works where public transport services are close to 100% cost recovery Appropriate to provide replaceability and competition 	
5 Partnership	<ul style="list-style-type: none"> Both public sector and private operator setup and operate public transport services The arrangement may be a BOO (Build Own Operate) This is typically accomplished through joint ventures 	<ul style="list-style-type: none"> The involvement of the authority in the day-to-day of operations through the assignment of authority's representatives within the management team Partner contribution to the financing Reduced financial risk to the authority since a partner shares in bearing the financial losses, if any 	

Notes: 1) Monopoly and unregulated models are not considered as not being applicable to privatization

Source: Literature Review, World Bank Website, Booz & Company analysis

London was able to capitalize on private sector involvement as it directly contributed to lowering subsidy and increasing PT usage

Impact of Privatization on London Bus Sector



- In 1998 operations in London broke even
- Increase in subsidy starting 1999 was caused by expansion of bus network
- At the beginning of the tendering process (1990-1996) operators were bidding with low prices to achieve high market share in London
- Starting 1997 tendering prices starting to increase but with higher QOS standards applied
- The daily average bus trips per passenger increased from 2.1 daily trips in 1994 to 3.2 in 2006
- The number of car trips stayed fairly constant at 10.2 daily trips per passenger throughout the past 12 years

Notes: 1) Private sector participation started in 1986 through a competitive tendering process
Source: Transport for London, World Bank case study, Booz & Company analysis

Agenda

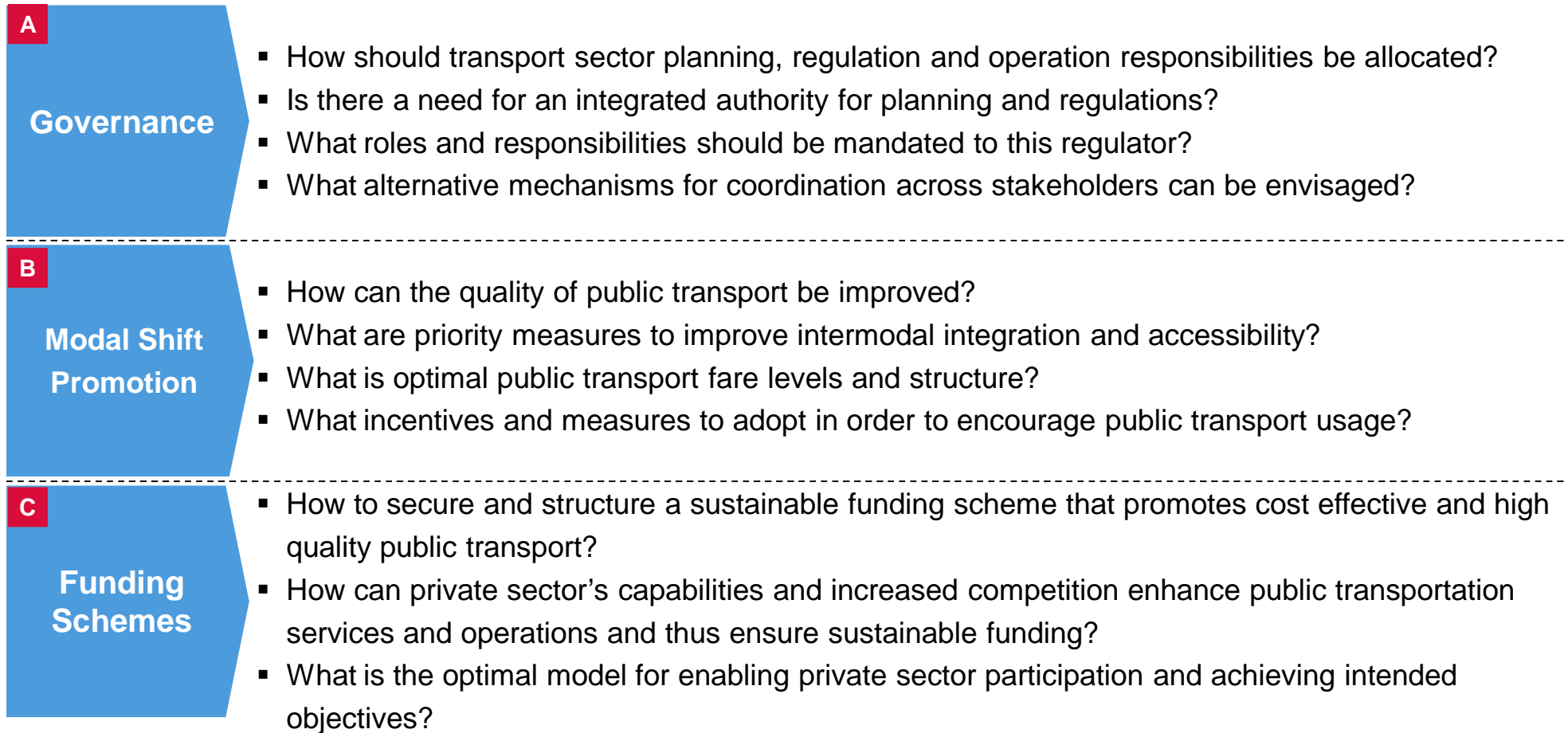
Current Situation

Strategic Challenges and Lessons Learnt

Strategic Questions for Public Transport Sector

Key questions are to be considered as a step to promoting public transport

Strategic Questions for Public Transport Sector in KL/KV



Source: Booz & Company analysis