



MTR's Experiences in PPP for Railway Projects

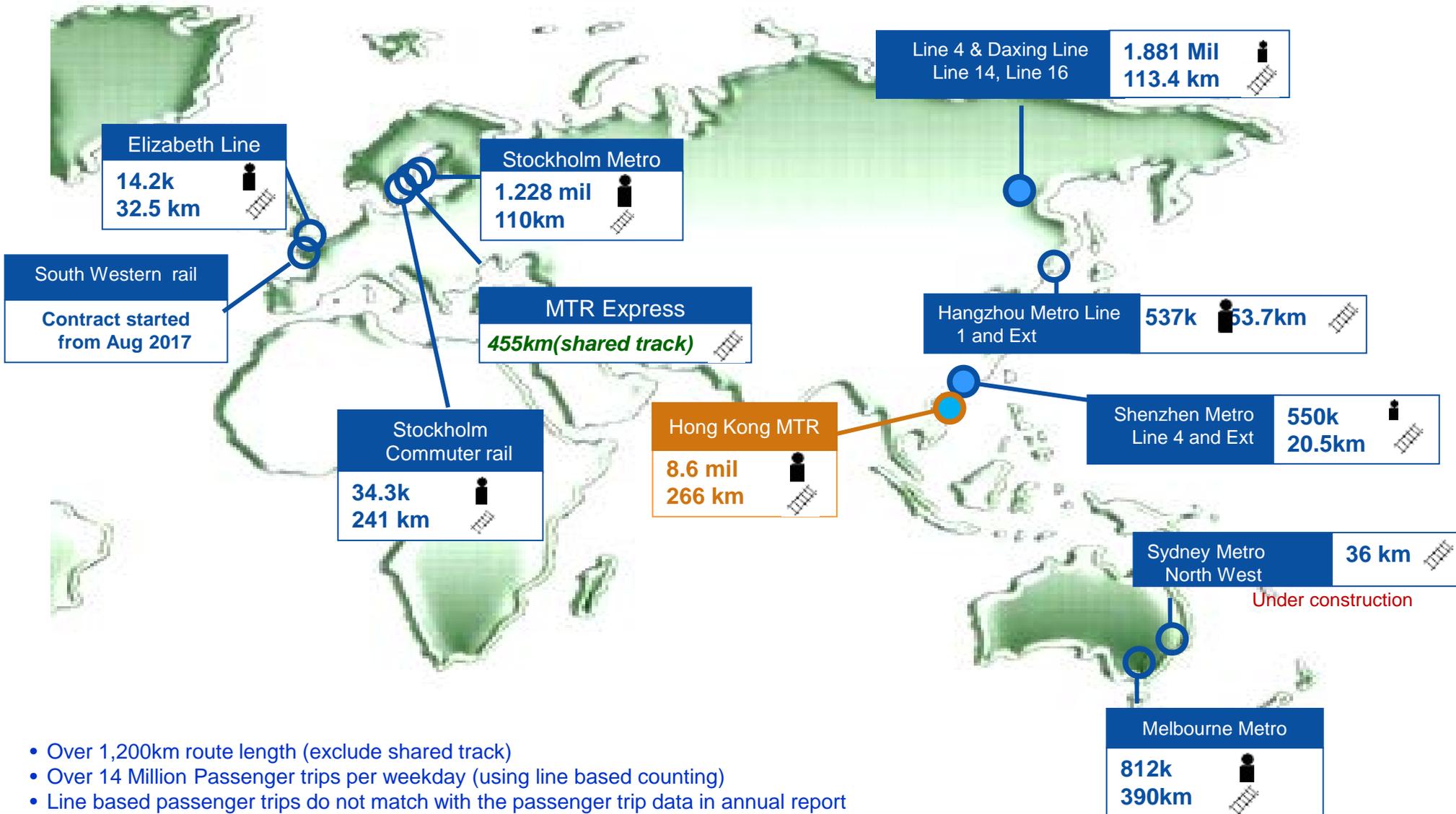
Dr Jacob Kam

Managing Director – Operations & Mainland Business

11 May 2017

MTR Businesses in China and Overseas

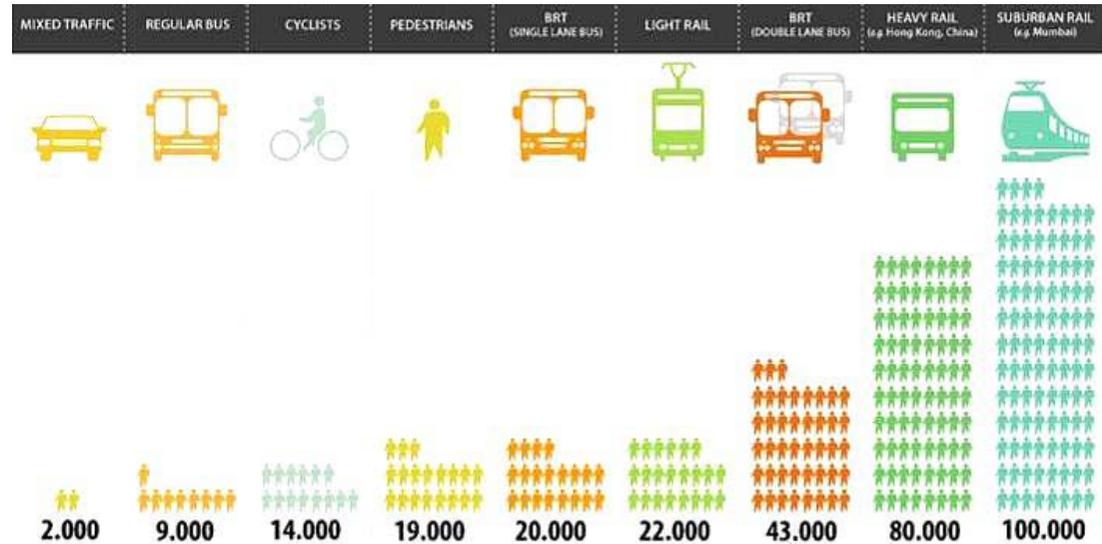
港铁公司在国内及海外的铁路业务



- Over 1,200km route length (exclude shared track)
- Over 14 Million Passenger trips per weekday (using line based counting)
- Line based passenger trips do not match with the passenger trip data in annual report

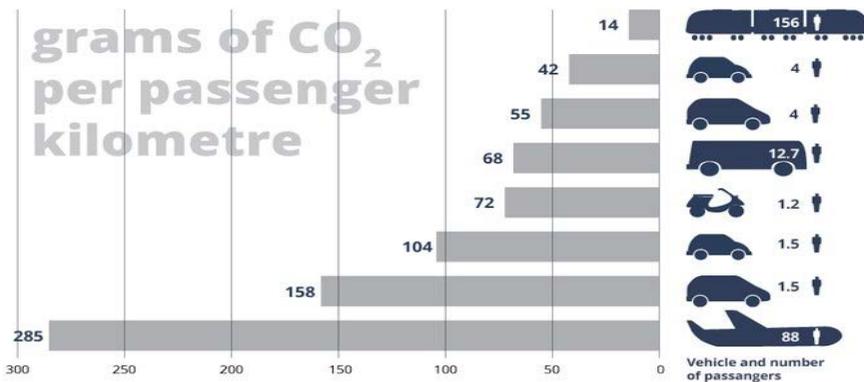
Why cities need railways?

- High capacity
- High energy efficiency, low carbon emission



CO₂ emissions from passenger transport

European Environment Agency



Note: The figures have been estimated with an average number of passengers per vehicle. The addition of more passengers results in fuel consumption - and hence also CO₂ emissions - penalty as the vehicle becomes heavier, but the final figure in grams of CO₂ per passenger is obviously lower. Inland ship emission factor is estimated to be 245 gCO₂/pkm but data availability is still not comparable to that of other modes. Estimations based on TRACC3 database, 2013 and TERM07 indicator.

Source: EEA report TERM 2014
eea.europa.eu/transport

In persons per hour in both direction

Source: UITP

Why cities need railways?

Effective land use

Modal Characteristics	Bus	Bus Rapid Transit	Tram	Light Rail	Metro
Max Flow (per hour per direction)	2,500	6,000	12,000	18,000	30,000 & above
Average speed (kph)	10-14	15-22	15-22	18-40	18-40
Reliability	Improving	Good	Medium to Good	Good	Very Good
Road-space Allocation	Mixed running with traffic	Totally segregated alignment	Mixed running and on-road tram lanes	Largely segregated alignments	Totally segregated
Land Consumed	15 – 25 times	10 – 15 times	5 – 10 times	3 – 6 times	All underground: 1 time Surface: 2-3 times

Source: Transport for London
CoMET & others

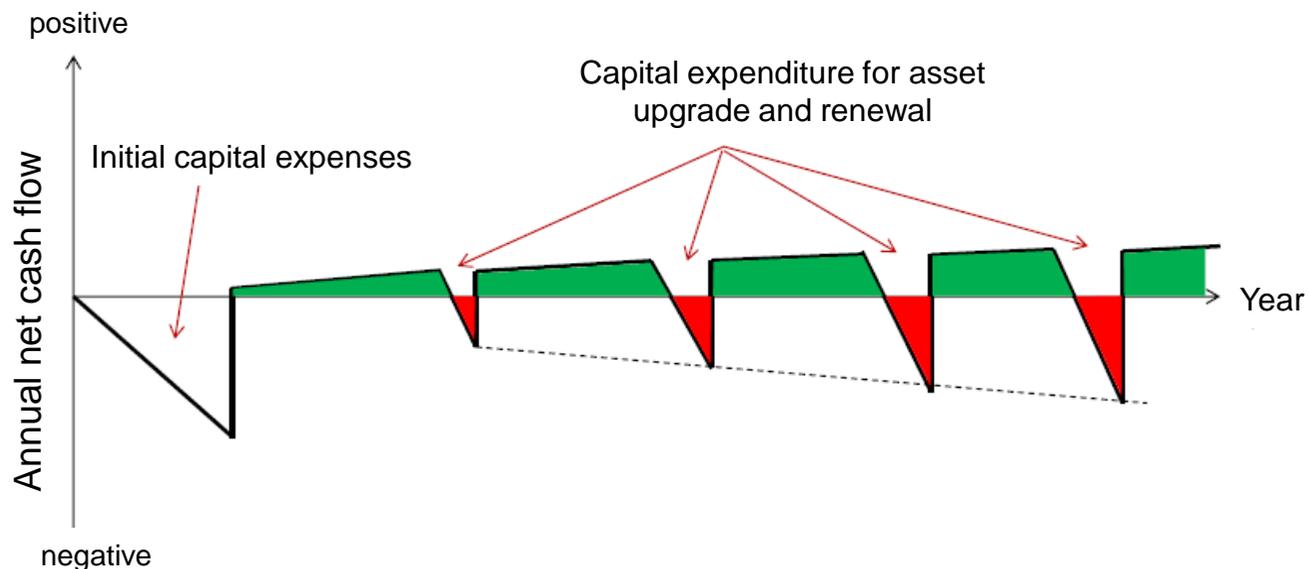
External benefits of Metro is Huge – Commercial & residential development opportunities - 2

- Analysis of external benefits from Island Line West Extension and South Island Line (East):
 - Economic and environmental benefits to Hon Kong, (NPV) > HK\$ 19 Billion
 - Land value and property tax (NPV) > HK\$ 21 Billion
 - Cumulative benefits for 30 years at HK\$ 300+ to 400+ Billion (Out-turn value)



Source: The Centre of Urban Planning and Environmental Management, The University of Hong Kong

Railways have low investment return



- Large initial capital investment
- Significant on-going capital investment
- Fare is kept low by politics and competition with buses (Buses use public infrastructure)
- MTR's railway's return on asset (ROA) is around 1.5% in recent years
- Railway investment is therefore not attractive.

To make Railway investment worthwhile,

- Either reduce the initial or on-going investment
 - PPP is an example
- Or divert some external economic benefits back into subsidising the railway
 - “Rail + Property”, “TOD” are typical examples
- Private participation can bring in commercial discipline and private sector efficiency

MTR Investment Models

- PPP
 - Beijing Lines 4, 14, 16, Hangzhou Line 1
 - Sydney North West Rail link
 - Shenzhen Line 4 (BOT)
- Initial Cash subsidy model
 - Hong Kong Disneyland Resort Line
 - Hong Kong West Island Line
- “Concession Model”
 - Hong Kong East Rail Line, West Rail Line, Ma On Shan Rail, Light Rail network
- Rail + Property model
 - Most of HK’s other railway lines

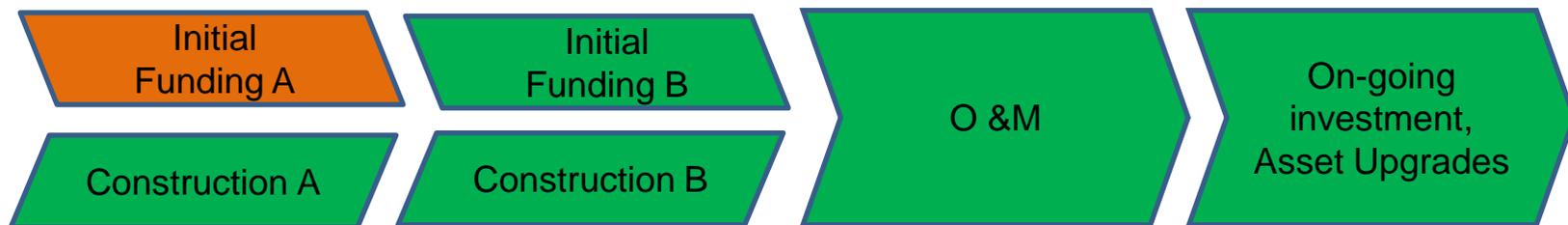
PPP

- Government (Public) builds part of the project (usually civil works) to reduce initial capital requirements, thus increasing Private investment return.
- The basis of public participation is because of the public service nature of the project
- Private sector efficiency, commercial discipline and customer-oriented approach will then provide an overall value-for-money service



Initial Cash Subsidy

- This can be considered to be a form of PPP.
- Government (Public) pays for part of the investment (but not build it). So the Private investor invests less but has to bear additional construction risks.



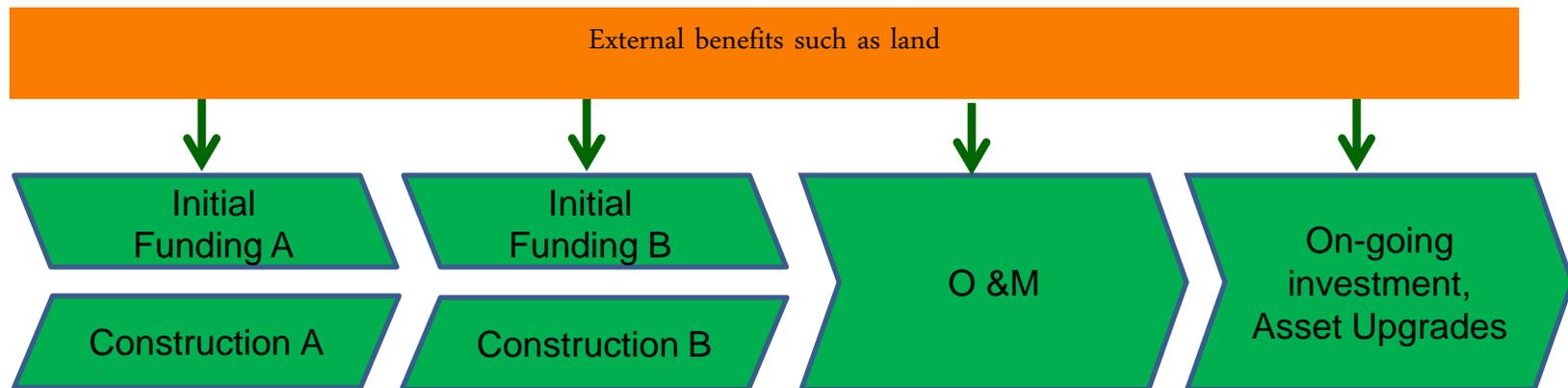
“Concession Model”

- Government leased existing railway lines to the investor.
- The investor has to pay rent and be responsible for the asset on-going investment.
- This reduces the total Private investment and improves investment return.
- This can also be considered to be a form of PPP.



Rail + Property

- This can also be considered a form of PPP.
- Government (Public) provides land development rights. This increases total revenue and improves investment return.



- This also encourages railway to carefully protect the surrounding land and environment, and to increase land value (through better land-use integration and noise / vibration mitigation), thus maximising the external economic benefits of railways.

PPP and Related Models

		Public Participation	Private Participation
PPP		Build Part A, Supervise performance	Build Part B, O&M, On-going investment
Initial Cash Subsidy		Give Cash, Supervise performance	Build the line, O&M, On-going investment
Concession		Build whole line, Supervise performance	Rent the line, O&M, On-going investment
R+P		Give land rights, Supervise performance	Build the line, O&M, On-going investment

Note: O&M = Operations and Maintenance

More Commonly Found PPP and Related Models

Outsourced Models

- Service Contract; Management Contract;
- Design, Build with / without Maintenance;
- Operations & Maintenance;
- Design, Build and Operate

Concession Models

- Lease, Upgrade, Operations and Transfer*;
- Purchase, Upgrade, Operations and Transfer;
- Build, Operate and Transfer*;
- Design, Build and Transfer;
- Private Funding Initiative*

Private Ownership Models

Concluding Remarks

- Railway can create significant economic benefits external to itself.
- PPP reduces investment intensity to enable Private investment to take part, so that private sector management can create better value-for-money service.

Thank You