Visionary Transport Infrastructure Study 2030

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OVERVIEW

The major challenge for Hong Kong is to meet the increasing demands for transport and the demands for better environment and living quality at the same time. This report envisions the transport infrastructure in 2030 and beyond within Hong Kong, in the Pearl River Delta (PRD) region and internationally.

Hong Kong, a world city on the southern coast of China in the PRD, has a population of over seven million; a vehicle population of over six hundred thousand and a land area of about one thousand square kilometres. It is one of the most densely populated cities on earth. It is a leading financial centre in the world as well as being an international aviation hub and marine hub.

The increases of population and economic activities in the PRD region give rise to tremendous growth in demand for travel and cargo delivery both within and across the boundary of Hong Kong (Annex A). To sustain Hong Kong as a world city and transport hub in the Asian region, it is of vital importance that the international aviation and marine connections are strengthened. As the Mainland continues to thrive and the demands for importing products and services grow, Hong Kong's position as a transport hub for China becomes more significant under the "One country two systems" constitutional arrangement. The Hong Kong system which is in line with international practices, especially the World Trade Organisation, and operated independently provides all the flexibility, reliability and transparency required for international trade of product and services. The Beijing Central Government's policy support to Hong Kong as an international transport hub in the Twelfth Five-Year Plan gives Hong Kong a golden opportunity (Annex B).

Hong Kong road transport system requires a shift of emphasis from fossil-fuel driven motorized transport to electric and non-motorized transport (Annex C). The utilization of the Hong Kong Tramway should be maximized and electric trolley and battery buses and other electric transport modes should be trialled. New infrastructure for walking, cycling and electric transport should be built. Entire infrastructure networks in local areas, districts and across the territory have to be considered. The new road, pedestrian, and cycling infrastructures, together with the existing road infrastructure, will have to be well maintained and operated. Government's experience of MOM (management, operation, maintenance) contracts in its tunnels and bridges can be extended to cover other areas. The management of road use can be further improved through electronic payment at all road charging points as well as by adopting innovative technologies for road construction and utility maintenance (Annex D).

Marine transport facilities, in particular the public cargo working areas (PCWAs) and typhoon shelters in the Victoria Harbour should be relocated to more suitable locations to enable the community to have access to the harbour.

To sustain Hong Kong as an international marine hub, it is vital to facilitate freight transhipment so that cargos from the Mainland and overseas can pass through Hong Kong with maximum flexibility, minimum delay and minimal additional costs for consolidation and repackaging. The need for a Transhipment Ordinance should be urgently explored. To further strengthen the marine hub function, an international trade facilitation centre (ITFC) should be established at Tsing Yi South, next to the Hong Kong Container Terminals. The ITFC should provide multinational customs processing functions as well as tariff and duties financing functions (Annex E).

The Airport Authority recently announced the Hong Kong International Airport Master Plan 2030. The Plan predicts the existing passenger and freight handling capacity of the Hong Kong International Airport (HKIA) will not be able to meet demand by about 2020. As such, the Airport Authority has launched a public consultation exercise regarding options for increasing the capacity of HKIA. We support this consultation exercise. We opine that the public should be well informed and thorough debate on all possible options including those raised by the public should be encouraged. We believe that a well-planned future HKIA should still be a world leading aviation node to serve not only

Hong Kong but the PRD region; it however can only be realized through rational debate. In the meantime, the impact of High Speed Rail on air flights should be carefully observed and estimated when the national HSR network extends to Shenzhen next year. The Airport Authority should continue to strengthen the competitiveness of HKIA by all means including expediting the construction of the mid-field concourse to provide adequate gates for aircrafts and facilities to the passengers in the short term (Annex F).

We believe that the vision provided in this report has the capability to turn Hong Kong into a show-case for transportation in a sustainable urban environment to be used as a model for other world cities, to reduce our carbon footprint and to create a healthier environmental for our citizens, residents, visitors and to protect and allow other natural life to prosper in Hong Kong.

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A VISIONARY SCENARIO

1 INTRODUCTION

The ViTran 2030 Study is a high-level exercise to identify the direction of transport infrastructure development of Hong Kong. It examines the global, regional and local challenges especially meeting the increasing demands for mobility, connectivity, quality of living and sustainability. The study has provided an integrated framework of future transport infrastructure system covering air, water and land transportation. It is hoped that this framework for transport infrastructure for the next two decades will arouse active public debate and help Hong Kong decide the way ahead with broad understanding and support in the community. We look into this main challenge in three levels: i) within Hong Kong, ii) in the PRD and iii) international.

Hong Kong

Over the last 50 years of development, Hong Kong has built a world renowned efficient transport system. However, traffic congestion still remains a recurring issue. There are always two prongs of measures to tackle the congestion problem, one is to adopt restrictive policies including road charging to control traffic demand and another is to build more roads to release congestion. Both types of measures are necessary for easing congestion and the Government has been doing so for years. The current debate is an issue on the balance between restraint measures and the extent of road building.

Globally the transport infrastructure is a big contributor to greenhouse gases leading to climate change. China has committed to curb the carbon intensity per GDP growth by 40 to 45 percent compared to 2005 levels by 2020. The transport related pollution, most noticeable air and noise pollution, leads to health impacts and is of growing public concern in Hong Kong. The government has every obligation to re-think its own transport infrastructure development to achieve the low carbon objective, and to achieve sustainable and high quality of living in Hong Kong.

Pearl River Delta Region

There are concerns over Hong Kong's position as an international trading, financial and transport hub is being severely challenged by adjacent cities in the PRD. These cities are currently enjoying much stronger GDP growth than Hong Kong and thus high potential to challenge Hong Kong in the near future and there is a risk that Hong Kong will be marginalized in the big economic leap of the Mainland.

Nevertheless, the national Outline of the Twelfth Five-Year Plan explicitly states that the Mainland continues to support Hong Kong as an international finance, trade and shipping centre. This provides a strong policy backing for Hong Kong to lead these activities in the South China Region. The Central Government encourages regional co-operation in particular within the Pearl River Delta Region in order to develop a world-class metropolitan cluster linked with a comprehensive transportation system. To this end, it is necessary for the Hong Kong Government to further develop exchanges with the authorities in the Mainland on transport planning across the Pearl River Delta.

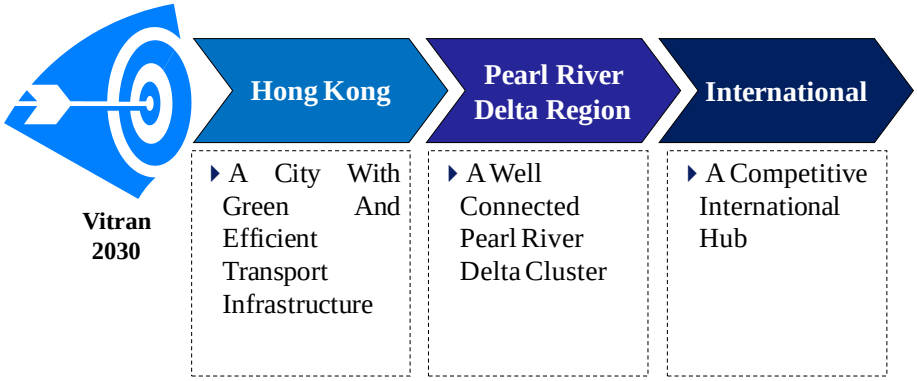
International

The sharp rise in passenger transfer / transit and freight transhipment poses a huge pressure on the transport infrastructure of Hong Kong in particular, its connectivity (air, land, and water) with other regional destinations, especially the Mainland China.

The HKIA is the most important transport infrastructure asset to sustain Hong Kong as a world city. The leading role of the HKIA not only contributes significantly to the economic and social development locally, it is equally important in the development of the PRD and Southern China.

The following figure shows the inter-relationship of the above three levels of transport infrastructure visions.

Figure 1 Three Levels of Vitran 2030 Proposals



The proposals in the ViTran 2030 Study were developed through a series of focus group meetings with strong engagement of transport experts and experienced people in the industry. The Study was conducted under the supervision of a Steering Committee comprising experienced leaders in the transport, logistics and construction fields. It was sponsored by the Hong Kong Construction Association – Civil Engineering Committee.

2 A CITY WITH GREEN AND EFFICIENT TRANSPORT INFRASTRUCTURE

We would like to see a green and efficient transport system in Hong Kong whereby there is zero vehicular emission and free of traffic congestion in the city centre. People enjoy instantaneous transport and traffic information to enable their choice of transport mode to access their destinations in the perceived shortest time. Majority of the people continue to enjoy the efficient, safe, convenient and affordable public transport.

(A) LOW CARBON TRANSPORT

(i) Electric Transport

Electric energy is clean at the roadside and the cost of such energy should remain quite stable in the years ahead, unlike fossil fuel which results in emissions at the roadside and the cost of which is likely to continue to be volatile and increasingly expensive. For these reasons **we wish to see** Government and the transport trades promote and trial various forms of electric transport. We wish to see the extension of charging infrastructure for private cars, and schemes to promote electric public transport (including taxis) and commercial vehicles. Where appropriate, we would like to see Government provide incentives to the public transport trades and others to promote the early introduction and adoption of electric vehicles.

The Hong Kong Tramway

The Hong Kong Tramway operates an electric service through the most congested and polluted parts of Hong Kong Island. **We would like to see** development of the Tramway through on-road measures to extend the tram-only lanes and to give priority to trams. **We would like to see** other upgrades to modernise the service and maximise its capacity and we are pleased to see the new operator of the Tramway have a robust transport focus.

Electric Buses

Trolley buses have long been in operation elsewhere. Although many systems have given way to diesel buses (during the era of cheap oil) and to unregulated competition, Athens, San Francisco, Seattle and Vancouver have all completely renewed their fleets recently, a new system has been introduced in Rome, and the fleet expanded in Salzburg. **We would like to see** the MTR, Tramway and/or bus companies trial a modern air-conditioned double-deck trolley bus service so that the public can judge whether this should be developed in Hong Kong. The initial cost of the wiring system may need to be borne by the Taxpayer. However, over time, the cost of the overhead wiring system will be more than offset against likely oil price rises.

In Hong Kong one bus company is trialling super-capacitor electric buses and plans to trial battery buses. **We would like to see** Government actively support the company with financial incentives and facilitate on street operational trials which will enable the public to judge the performance of such vehicles. **We would like to see** Electric Bus Rapid Transit as a form of electric mass transit system introduced, especially in busy corridors such as Nathan Road, in new developing areas and on the Hong Kong – Zhuhai – Macau Bridge.

Electric Taxis

We would like to see the Government subsidise and work with the taxi trade to trial electric taxis. Ideal vehicles for taxi services do not yet exist, but an early trial with acceptable vehicles will help identify pluses and minuses of electric operation and expedite the introduction of electric taxis once appropriate vehicles become available. We note that one manufacturer plans to work with New York on this basis and recommend that Government actively seek to develop such a scheme with one or more manufacturers/service providers for Hong Kong.

Electric Car Hire

We would like to see more done to promote the introduction of electric cars into Hong Kong, including through car hire schemes. We recommend Government should proactively support the trade, including providing incentives, to enlarge the scale of the current trial car hire schemes to include car share schemes.

(ii) Green Transport

Walking

Most of us walk every day either to get to our destinations or to shop or enjoy the street life of Hong Kong However, connections within and between districts are often inadequate or even non-existent for the volume of pedestrians. The local street environment is often poor and with conflicts between pedestrian and vehicular traffic. Walking should be promoted as a transport mode through the normal transport planning process; walking infrastructure should comprise a continuous, safe, comfortable and convenient network. (Annex G).

- ***Incorporation of Walking into Transport Planning***

  - To strengthen the role of walking in the transport system, it is important to treat walking as a proper commuting transport mode and go through the same comprehensive planning process as other regular transport modes from a higher level perspective. **We would like to see** the inclusion of pedestrian demand and needs into the traditional transport planning models so that the planning of pedestrian facilities can be systematic, integrated and coordinated with the planning of other closely related transport modes such as public transports.

  - **We would also like to see** a target modal split to be achieved in different future milestones. This approach is consistent with the successful experiences from overseas countries.

- ***Strategic Pedestrian Infrastructure***

  - **We would like to see** a pedestrian network with a hierarchy similar to the road network, resulting in a programme of convenient and, as far as possible, shaded

walkway projects to improve connections within districts, or to link districts (for example along the entire northern shore of Hong Kong Island, i.e., Shaukiwan - Victoria Park - Causeway Bay – Wanchai – Central – Sheung Wan).

- ***Strategic Walkways***

  - **We would like to see** a strategic network of walkways through buildings for implementation on redevelopment, such as has been achieved in Central.

- ***Pedestrian Priority Zones***

  - **We would like to see pedestrianised** areas throughout Central, Causeway Bay, Wanchai, Tsim Sha Tsui, Mong Kok etc to see how much more can be done to facilitate movement and to create vibrant world class pedestrian areas.
  - Features of these areas may include the progressive extension of pedestrianisation on a full or part time basis, imposition of 20 or 30 kph speed limits, the removal of all on-street parking, strict enforcement of traffic regulations, high quality street furniture, and both traditional and modern street activities.

- ***Tram/Pedestrian Areas***

  - **We would like to see** more tram/pedestrian areas after the completion of the Central Wanchai Bypass as more traffic will be diverted from the current network to the new road. An example of such scheme can be visualized along Des Voeux Road Central tramway between Pedder Street and Morrison Street as jointly proposed by the CILT-HK and HKIP.

Cycling

Cycling can provide healthy and cheap transport, especially for local trips within the New Towns. Cycling should be considered in the normal transport planning process; cycling infrastructures should comprise continuous, safe and convenient networks especially in the new towns and new developing areas (Annex G).

- ***Incorporation of Cycling into Transport Planning***

  - **We would like to see** the inclusion of cycling demand and needs into the traditional transport planning models so that the planning of cycling facilities can be systematic, integrated and coordinated with the planning of other closely related transport modes such as public transports.

  - **We would also like to see** a target modal split for cycling to be considered as a future objective, with reference to the successful experiences from overseas countries.

- ***Coherent Cycle Tracks in new Towns***

  - **We would like to see** cycling as a transport mode in the New Towns which already

incorporate cycle tracks. To do so effectively will require developing continuous cycle tracks, improving the planning, provision and management of parking, and enhancing education and awareness.

- ***Cycle Hire Schemes***

  - **We would like to see** cycle hire schemes similar to those in Hang Zhou, London, Paris and elsewhere. This will promote cycling and help to address many management problems including the control of long term parking/dumping of bicycles. Such schemes may best be introduced into the New Towns which have good cycle networks, including Shatin, Tai Po, Tuen Mun, Tin Shui Wai and Yuen Long and where there is a clear demand for accessing public transports such as the railway stations.

Franchised Buses

Franchised buses operate in the most crowded pedestrian areas. Pending the introduction of zero-emission vehicles, **we would like to see** Government develop a 5- year programme to upgrade the fleet to Euro V standards. To achieve this, Government should extend to the franchised buses the grant scheme currently available to all other commercial vehicles for this purpose, and meet additional costs of this accelerated replacement programme from public funds to neutralise any additional pressure on fares.

Telecommuting

The opportunities to allow telecommunication to reduce the demand for travel are not clear, but the potential exists for telecommunications to reduce the need for transport and thereby to reduce carbon emissions and Hong Kong's carbon footprint. Such idea however requires a seismic shift in the working style of these employers and employees who would be benefited from the change but is beyond the immediate scope of this study.

Low Emission Transport Zones

To aid the implementation of electric and green transport**, we would like to see** low emission transport areas in urban central business districts (CBDs) as well as landside service areas including the cargo/passenger loading/unloading areas in the airport. The implementation of low emission transport zones requires a more stringent set of air quality objectives and thus provides a bigger push to suppress emissions from vehicles and other stationary machines being used in these zones.

(B) DEVELOPMENT OF RAIL AND ROAD NETWORKS

Hong Kong's mobility depends on excellent transport infrastructure. Over the years strategic rail and road connections have been developed to meet the needs of the community. Looking ahead, we need in particular to develop our electric rail network further to meet demands for this efficient, low carbon and off-road form of transport.

(i) The Rail Network

We would like to see the implementation of the following planned and possible lines:

Planned

- South Island Line (West) (SIL(West))
- North HK Island Line (NIL)
- Northern Link (NOL)
- Hong Kong-Shenzhen Western Express Line (WEL)

Wish-list

- Extension of Island Line to Siu Sai Wan
- University via Ma On Shan to Sai Kung / Tseung Kwan O link
- Shatin to Tsuen Wan Link (in a longer term)

Details of the existing and possible rail lines are summarized also in Annex H.

(ii) The Road Network

The Strategic Highway Network in Hong Kong is relatively well developed. **We would like to see** that earlier plans for highways from Aberdeen to Sai Wan be abandoned in favour of rail as noted above. **We would like to see** a link between Chek Lap Kok to Castle Peak, thereby improving the links to the Mainland and providing an alternative route to the airport. (Annex I).

We would like to see the maximum use of intelligent transport systems on the strategic road network to facilitate the smooth flow of traffic and efficient handling of incidents.

(C) EFFECTIVE ROAD AND TRAFFIC MANAGEMENT

Hong Kong has an extensive road network but limited ability to add to it. We must therefore do all we can to ensure that the network is used to our best advantage.

Electronic Payment for Tunnel and Bridge Tolls

We would like to see more electronic payment channels for tunnel and bridge tolls. Initially these may be on a voluntary basis, by permitting electronic charge card payment of tolls at manually operated booths and by opening up the automatic toll payment lanes through an open platform system to all service providers who can meet the necessary conditions. The ultimate aim should be for compulsory payment by electronic charging tags at all Government and private sector toll roads.

The implementation of compulsory electronic payment using charging tags would free up significant areas of land at toll plazas.

Dedicated Public Transport Corridors

We would like to see a restructuring of the bus services on the main corridors on Hong Kong Island and Nathan Road, with core, rapid and prioritised services on these corridors replacing the multiple routes that currently serve them (Annex J). To be successful, incoming buses would need to converge in specially designed public transport interchanges where passengers could change buses quickly, conveniently, and in comfort – sheltered from the heat, cold and rain. The result should be fewer buses on the main corridors, but operating a highly efficient service on protected routes with good ancillary facilities. A model for this may be the Bus Rapid Transit systems developed elsewhere. We would be able to provide more space for pedestrians on these crowded corridors as a result.

Extensive Traffic Management Schemes

Traffic congestion is a particular problem in certain areas such as the Lockhart Road/ Hennessy Road/ Johnson Road area. **We would like** to see more radical and imaginative traffic management measures such as making Lockhart Road one-way. Such schemes were implemented successfully many years ago on Kings Road.

Park-and-Ride

We would like to see more drivers encouraged to leave their cars in the suburban areas, relieving pressure on congested urban roads. Such facilities may need to be subsidised, and should provide for convenient and comfortable movement between car and station, protected from the heat, cold and wet. The existing park-and-ride facilities provided at suburban MTR stations offer concessionary parking rates and have been proved to be very much welcomed by the drivers. More similar park-and-ride facilities should be built wherever possible.

Control Waiting of Private Cars in Central Business Areas

Private cars waiting to pick up passengers contribute significantly to congestion in and around Central and other congested areas. **We would like to see** convenient alternatives be put in place, including proper short term and free or concessionary (as offered at airport carparks) parking space in existing carparks, before strong enforcement action is taken to address the problem. **We would like to see** an end to on-street waiting/parking in the Central, Wanchai, Causeway Bay, Tsim Sha Tsui, Mongkok districts.

Minimise Road Opening Works

A constant irritant in Hong Kong is the apparently never-ending digging up of roads for utility services. We would like to see utility tunnels under selected roads, which would provide conduits for the utilities' services and minimize the need for intrusive disruptive road openings. (Annex K).

Maintenance/Operation/Management of the Strategic Highway Network

The current MOM contracts (e.g. Tsing Ma Control Area) for Government tunnels and bridges and strategic roads nearby have worked well to ensure the infrastructure is well maintained and traffic incidents are promptly and efficiently attended (Annex L). **We would like to see** this system extended to cover the entire territory network of strategic highways.

Congestion Charging

Having explored various ideas listed above, we foresee a need to explore congestion charging. Government and the community have debated the pros and cons of road pricing since the early 1980's. While views remain divided, the issue remains very much alive. The Government's review of tolls for the three harbour crossings explicitly relates the level of charges to the level of congestion – acknowledging the congestion charging system that has been in place for many years.

With the development of technology and the likely continuing increase of traffic, an increasing awareness of the environmental and other quality costs of congestion, and the lack of new road space on Hong Kong Island after the completion of the Central and Wanchai Bypass, **we would like to see** the start of public engagement and consultation into this controversial measure as suggested in the Expert Report on Central and Wanchai Bypass.

Information Systems

We would like to see continuous development and promulgation of real time passenger information systems from the on-road public transport companies, such as on-board announcements and information on departures and arrivals at bus and/or tram stops and termini.

We would also like to see implementation of parking guidance system such as wayfinding system which has the potential to significantly improve drivers' experience by minimizing the needs of circulating their cars to find a car park on the road. The directional signs can be also designed to include real-time information of the number of available car park spaces at different carparks within the urban area so as to provide instant information to the car park users to allow them to find the nearest available car park space.

(D) IMPROVING LOCAL FERRY SERVICES

Ferry Services to Outlying Islands

We would like to see a radical overhaul of the outlying island ferry services, and the way in which these services are licensed and how the services are paid for. The Government has recently reviewed the viability of the ferry services to the outlying islands and introduced a subsidy scheme. **We would like to see** the review of the ferry services to determine the type and standard of services that should be provided and how such services may be provided in a sustainable manner. The review should consider alternative ways to purchase services, e.g. indirectly through Government or directly by passengers, and whether any necessary subsidies necessary should be paid to the service providers or to passengers on a need basis.

Cleaner Ferry Services in the Harbour

The Government has been working hard with the ferry operators to find ways to reduce emissions in particular within the harbour through low sulphur fuel and after-treatment devices such as the scrubber systems. In order to make progress, **we would like to see** a preferred infrastructural solution identified quickly, with capital costs and, if necessary in the short term, recurrent costs to be met by the Taxpayer.

(E) RATIONALIZING MARINE FACILITIES

Break-bulk Cargo Processing Centre

To avoid environmental problems and free up scarce harbour front land for community use, **we would like to see** the relocation of the urban area PCWAs to a consolidated site with improved facilities. Our suggested site is at the location adjacent to the proposed Phase 2 International Trade Facilitation Centre(ITFC) (Annex E) (next to Kwai Chung Terminal 9 on Tsing Yi Island) which is also closer to the PRD. This area can be improved and developed into an important "Break-bulk Cargo Processing Centre" for mid-stream operations and a "Container Freight Station".

A World-class Typhoon and Marine Resort Centre (TSMRC)

We would like to see the urban area typhoon shelters of Hong Kong gradually phased out and replaced by TSMRC's which should function as typhoon shelters, yachting and water recreation centres. Such facilities could be located at the eastern and the western sides of the harbour, where they would have convenient access to leisure waters.

3 A WELL CONNECTED PEARL RIVER DELTA CLUSTER

Hong Kong is located at the heart of the Pearl River Delta (PRD), one of the most economically dynamic areas in China and close ties with Shenzhen, Guangdong and the Pan-PRD. According to the Twelfth Five-Year Plan, the PRD region is envisioned to develop a world-class metropolitan cluster which will be international centers for shipping, logistics, trade, conferences and exhibition, tourism, and innovation.

In realize this vision, the PRD region has to be linked with a comprehensive and efficient transportation system. **We would like to see** the Hong Kong Government to take the lead to further develop exchanges with the authorities in the Mainland on transport planning across the Pearl River Delta, covering both freight and passenger transport, with the aim to construct a sustainable and efficient transport system which is affordable by the general public and produces minimal emissions. **We would like to see** concerted drive towards electric and green land transport, in particular for public and freight transport. On the marine side, the use of shoreside power facilities to minimise the use of on-board fuel and the adoption of cleaner, higher quality fuel by vessels in the Pearl River Delta and Hong Kong waters should be considered. We envisage many such areas for productive collaboration and inter-governmental cooperation

(A) THE MARINE LINKS

There has been a continuous decline in passenger numbers using inland water transport services. The loading/unloading operations in Hong Kong (i.e. River Trade Terminals, Kwai Chung Terminal, and Public Cargo Working Area) nevertheless suffer from high operating costs and long waiting times. To improve the situation, **we would like to see** roll on and roll off (Ro-Ro) vessels as an alternative mode of transport to offer a more efficient and secure service.

The Ro-Ro vessels can sail along the major rivers, e.g. the Xijiang River Network (西江水系), in the western PRD area. Apart from carrying passengers and light duty vehicles, overnight Ro-Ro services can be a secure option for road transport and attract shippers of high value products. One possible location for the Ro-Ro terminal in Hong Kong is at the current area of the New Yau Ma Tei Typhoon Shelter.

(B) THE RAIL LINKS

Hong Kong, as the financial centre in this region, is a popular venue for setting up regional headquarters or representative offices of multinational companies to manage their businesses in the Asia Pacific, particularly the Mainland China. Hong Kong has inseparable social and economic connections in PRD. As a result, the process of the integration and development of Shenzhen and Hong Kong has been further accelerated, and the movement of cross-boundary vehicles and personnel has grown substantially (Annex M). Therefore, the intercity rail transit network in the region should be constructed as quickly as possible, the railway, expressway, and intra-region express trunk line networks have to be improved, and the transport connection between the two sides of the Pearl River estuary should be strengthened.

(C) THE ROAD LINKS

Attention has been paid to the HZMB which is currently under construction connecting Hong Kong with Macao and Zhuhai. The Guangdong Government has thrown its weight behind a plan to link Shenzhen with Zhongshan via a bridge across the estuary. In order to maintain and enhance Hong Kong's position in the region, **we would like to see** better use of the total capacity of the bridge by linking HKIA with Macau airport, and encourage the use of low-cost carriers to use Macau to serve budget-travellers destined for Hong Kong. In particular, without alternation to the HZMB structure, a high capacity and speed public transport system such as an electric rubber- wheeled train or trolley bus with minimum infrastructure investment can be provided. (Annex N)

4 A COMPETITIVE INTERNATIONAL HUB

Over the last three decades, Hong Kong has developed itself to be a successful international aviation destination and marine hub. According to Hong Kong Tourism Board, Hong Kong may draw a record 39.6 million visitors in 2011, after setting a new mark of 36 million visitor arrivals in 2010, which was driven by a surge in tourists from mainland China. HKIA also handled more than four million tonnes of cargo in 2010 as economic growth in China helped boost travel. While most passengers and cargoes choose Hong Kong as their destination, significant proportions of both passengers and cargoes are transferred at the HKIA to over 100 international destinations. On the marine side, Hong Kong Container Port handled over 7 million TEU for both inward and outward laden throughput in 2010, of which around 30% are transhipment cargoes. **We would like to see** strengthening of the competitiveness of both our aviation destination and marine hub (Annex F). Measures include both infrastructural improvements and policy changes.

(A) STRENGTHEN COMPETITIVENESS OF HONG KONG INTERNATIONAL AIRPORT

To explore the way forward for air transport development in Hong Kong, HKIA must strengthen its strategic role in the PRD region. Statistical numbers in February 2011 has revealed that HKIA holds a dominant market position in the PRD region and is expected to maintain the position as an international aviation hub, especially for international passengers/ cargoes to catch transfer flights to/from Chinese cities, in medium to long term. The convenience and efficiency of HKIA are crucial ingredients to maintain Hong Kong as a world leading financial centre. HKIA also contributes significantly to support many industries, most noticeably, the logistics and tourist industries. For HKIA continues to lead especially in the PRD region, it is necessary to improve the connectivity with the PRD cities and their airports so as to broaden the catchment area of HKIA and provide choices in using airports to people in the PRD regions.

The Third Runway Debate

The Airport Authority of Hong Kong (AAHK) has recently (June 2011) formulated the Hong Kong International Airport Master Plan 2030 and launched a three-month public consultation exercise. The Master Plan proposes further expansion of the HKIA capacity, in particular, either through further developing the existing two runway system or through the construction of a third runway. We welcome this early consultation exercise as it allows a thorough and informed debate on the future of HKIA in the community; and provides a possibility for a well-planned future HKIA with community consensus. The focus of the debate centers round whether the third runway should be built.

HKIA is one of the five airports in the PRD region. While these airports are competing against one and another in certain business segments, they also supplement one another in other segments. The role of each airport can be briefly described below:

- Hong Kong International Airport (HKIA) is a leading international aviation hub especially in freight transport for Chinese cities. It has the biggest interconnecting network to other countries
- Guangzhou Baiyun International Airport (GZIA) has been positioned as the national multi-function gateway1. It is to be the largest aviation hub bringing in business and vacation passengers in PRD.
- Shenzhen Baoan International Airport (SZIA) is to be built into large scale core airport mainly serving domestic demand.
- Zhuhai Sanzou Airport (ZHA) plans to develop a short-haul helicopter transport network for PRD and is committed to the development of various types of civil construction and airport services such as an aviation industrial park and regional air cargo logistics centre.
- Macau International Airport (MIA) has established itself as the most attractive Low Cost Carriers (LCC) airport in the region.

The proposed third runway will no doubt strengthen HKIA's competitive edge against the other airports in the PRD region as it provides ample rooms for taking additional flights. However the Master Plan 2030 covers very little regarding ways to strengthen the supplementary aviation services among airports in the PRD region. The PRD collaboration issue may be outside the jurisdiction of AAHK. Government has to address the call for "developing a world-class metropolitan cluster with enhanced competitiveness. In particular, strengthening the planning and co-ordination of a comprehensive transportation system among Pearl River Delta Region, Hong Kong and Macao" stated in the national Twelfth Five-Year Plan.

The HKIA Master Plan 2030 reckons that the existing runway capacity shall be exhausted in around 2020. This constitutes to the need of the third runway. This premise of exhausting runway capacity has to be further explained and all practical measures to efficiently fully utilize the runways have to be undertaken while the consultation exercise carries on.

We would like to see a) extensive efforts with destination countries and airline companies to optimise the slot allocation; b) work with the Chinese government on the airspace limitation issue to reduce flying distance as well as fuel use, and to enhance air traffic management to maximize the number of landings and take-offs at the existing two runways; c) the implementation of marginal landing charges to alleviate the congestion problems in peak periods and d) full consideration of the diversion and/ or induced impact of the GZ-SZ-HK High Speed Rail Line to the demand for aircraft movements, especially on short haul flights to Chinese cities) and e) consideration of the impact on capacity of the increasing use of large wide-bodied aircraft such as the A380 and new generation B747.

The third runway will inevitably give rise to grave environmental concerns, mainly the aggravation of air pollution and further threatening of the survival of the Chinese white dolphin. **We would like to see** a) the formulation and implementation of conservation plans for the Chinese white dolphin well in advance of any construction works in the sensitive ecological areas and b) formulating plans to achieve the low carbon and low emission objectives set by EPD and International Civil Aviation Organization.

Linking Adjacent Airports

It is self-evident that one of the aims of the "Reform of the Pearl River Delta Development Plan" was to enhance the communication and coordination between airports in PRD. To promote collaborative development among Hong Kong and the PRD cities to form a

world-class metropolitan cluster, we believe that an express rail link connecting all nearby cities and their airports in the PRD is essential. **We would like to see** further study be conducted to look at the feasibility of strengthening a rail network among the cities and the airports in PRD. This rail network will enable the integration among Hong Kong, Guangzhou, Shenzhen and Macau and thus the extension of catchment area for Hong Kong; as such, Hong Kong's role as a multi-modal transportation hub with wide-spectral selection of destinations can further be strengthened.

Mid-field Concourse

A new mid-field concourse will take 4-5 years to construct. It is expected to serve 10 million passengers per year and will increase HKIA's capacity to 70 million passengers and 6 million tonnes of cargo per year. If AAHK's predictions are correct, it will only be able to cope with the air traffic demand up to 2020. **We would like to see** the construction of the mid-field concourse.

(B) CO-CIQ (CHINA ENTRY-EXIT INSPECTION AND QUARANTINE) FOR AIR, LAND AND MARINE ENTRY/EXIT POINTS

Passenger and cargo processing can be more conveniently processed at cross-boundary facilities if co-location of the Hong Kong and Chinese customs can be established in Hong Kong. The Co-CIQ facility provides an opportunity to simplify the custom procedure, thereby reducing time for travelers and goods going through customs and saving manpower resources at the check points.

We would like to see a solution to the issue of co-location of Hong Kong and Mainland China customs. The principal merits are:

- the processing time (and thus costs) for customs checking can be reduced for passengers and cargoes in and out of Mainland China and
- the extremely complex and lengthy custom procedures in the Mainland can be avoided.

Also, **we would like to see** Co- CIQ (China Entry-Exit Inspection and Quarantine) facilities to be provided at the cross-boundary railway terminals in Hong Kong, including the committed high-speed rail Terminal at West Kowloon Cultural District and the existing cross-boundary railway terminal at Hunghom.

(C) FREIGHT TRANSHIPMENT ORDINANCE FOR AIR AND MARINE CARGOS

While Hong Kong develops into an international transport and logistics hub, with transhipment and re-export business playing an increasing role, the trade related regulations fail to support the industry in several aspects. We understand that the current requirement for master bill of lading or airway bill as proof of transhipment goods is impractical. Also, import and export declarations must be completed for such re-export goods.

We would like to see trade facilitation measures to minimize any unnecessary barriers for transhipment activities and special arrangements in customs declaration for certain well defined re-export activities, in order to facilitate value-add-services to be performed in Hong Kong. **We would like to see** a new ordinance governing the transhipment of air and marine cargo to simplify and speed up the transhipment process.

(D) INTERNATIONAL TRADE FACILITATION CENTRE (ITFC) FOR MARINE TRANSPORT

Over the years, the Hong Kong Container Port (HKCP) has been a major hub for transshipment in South China. The HKCP can build on two distinctive competitive strengths of Hong Kong, i.e., a) a clean and efficient administration and b) an advanced and free financial system. We can make full use of these strengths to upgrade the role of HKCP as one of the important gateway ports in Pearl River Delta region and Asia Pacific area. **We would like to see** an International Trade Facilitation Centre (ITFC) established in Hong Kong, which can serve the following key functions (Annex E):

- Multinational customs processing function, similar to the Co-CIQ arrangement between Hong Kong and Mainland China, to include custom advisors of other jurisdictions outside China to be located in ITFC
- Tariff & duties financing function.

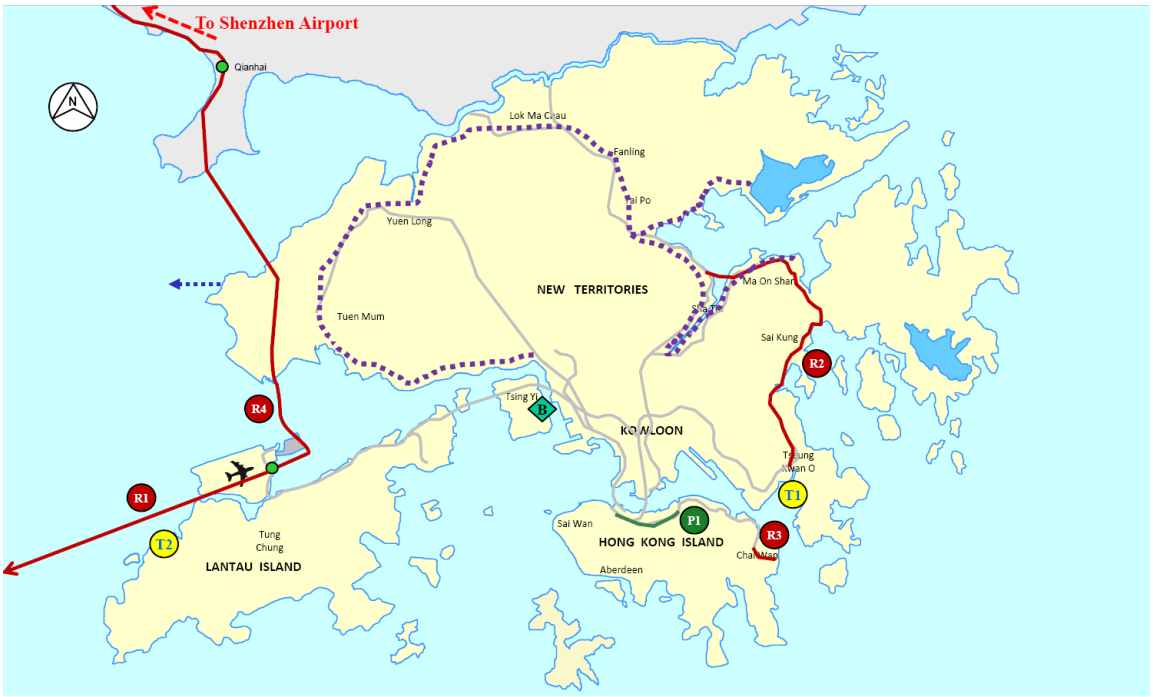
With these key functions, the ITFC can perform as a regional distribution centre for manufacturers with production facilities in different locations of Asia, e.g. Southeast Asia. The location of the proposed ITFC can be considered in two phases:

- Phase 1 (3-4 years) at River Trade Terminal
- Phase 2 (5-7 years) at Kwai Tsing Container Terminal, next to Terminal no. 9

5 SUMMARY OF SUGGESTED INFRASTRCTURE DEVELOPMENT

A summary of the suggested infrastructure developments is shown in the following figure.

Figure 2 Summary of Suggested Infrastructure Development



A summary of the suggested actions is shown in the table below:

Table 1 A Summary of Suggested Visionary Transport Infrastructure for Hong Kong in 2030

We wish to see	Descriptions
(I) Electric and Green Transport	
A roadmap for electrification of roads	➔Develop electric vehicle re-charge infrastructure ➔Facilitate and financial support on-road trial schemes of electric buses (supercapacitor and battery buses), trolley buses, minibus, taxi and electric car hiring ➔Provide more exclusive road corridors for trams and extend trams/trolleys to new development areas ➔Trial of Bus Rapid Transit (BRT) system in major corridor such as Nathan Road with electric buses
A policy framework for pedestrian planning	➔Incorporate walking demand and needs into the traditional transport planning models ➔Develop a target modal split for walking ➔Develop a continuous walking network ➔Develop strategic walkways ➔ pedestrian priority zones ➔tram/pedestrian areas
A policy framework for cycling planning	➔Incorporate cycling into the traditional transport planning models ➔Develop a target modal split for cycling in particular to new towns and new development areas ➔Develop a continuous cycling network and parking facilities in housing estates, shopping malls and MTR stations in new towns and new development areas ➔Promote cycle hire schemes
Feasibility studies for planned and wish-list rail lines	➔Study the feasibility of the following railway links: ● South Island Line (West) ● North HK Island Line ● Northern Link ● Hong Kong Shenzhen Western Express Line ● Extension of Island Line to Siu Sai Wan ● University via Ma On Shan to Sai Kung / Tseung Kwan O link ● Shatin / Tai Wai to West Kowloon / Tsuen Wan (in a longer term)
Implementation of strategic road	➔ Construct a Chek Lap Kok to Tuen Mun and West Shenzhen link, thereby improving the links to the Mainland and providing an alternative route to the airport
Effective traffic management	➔Implement more electronic payment systems in all road toll charging points (tunnels and bridges) for voluntary and then compulsory auto payment of tolls ➔Develop dedicated public transport corridors on HK Island and Nathan Road aided with bus-bus interchanges ➔Implement traffic management schemes in congested corridors such as Lockhart Road/Hennessy Road/ Johnston

We wish to see	Descriptions
	Road areas ➔Provide more convenient and comfortable park-and-ride facilities ➔Control waiting of private cars in Central ➔Minimize road opening works by using common utility tunnels ➔ Implement district-wise Maintenance/ Operation/ Management (MOM) mode for more effective road management ➔Carry out public consultation on congestion charge
Green bus fleets	➔Develop a 5- year programme to upgrade the bus fleets to Euro V standards
Better transport information system	➔Implement the real time passenger information system for bus and tram services ➔Implement the parking guidance system
The role of telecommunication in traffic management	➔Explore active use of telecommunication in traffic management ➔Incorporate telecommunication effects in transport modelling ➔Study the possible impact of telecommuting on transport demand
A sustainable local ferry services	➔Review the type and standard of ferry services that should be provided and how such services may be provided in a sustainable manner ➔Review alternative ways to purchase services, e.g. indirectly through Government or directly by passengers, and whether any necessary subsidies should be paid to the service providers or to passengers on a need basis. ➔Identify and implement preferred ways to reduce ferry air pollutant emissions
Vibrant and rationalized Victoria Harbour	➔Relocate all PCWAs and typhoon shelters in the Victoria Harbour to form Break Bulk Cargo Processing Centre and a world class typhoon and marine resort centre
(II) A well-connected Pearl River Delta Cluster	
Efficient marine links	➔Provide roll on and roll off (Ro-Ro) services for vehicles up the rivers in particular Xijiang River Networks
Efficient rail links	➔Develop intercity rail transit network in the region ➔Improve railway, expressway, and intra-region express trunk line networks to be improved ➔Strengthen transport connection between the two sides of the Pearl River estuary
Efficient road links	➔Improve utilisation of the total capacity of the Hong Kong Zhuhai Macao Bridge by linking HKIA with Macau airport, and encourage the use of low-cost carriers to use Macau to serve budget-travellers destined for Hong Kong ➔In particular, without alteration to the HZMB structure, an electric rubber- wheeled mass transit system such as trolley

We wish to see	Descriptions
	bus should be operated
(III) A competitive International Hub	
HKIA as a competitive international passenger and freight aviation destination and transhipment hub	➔Work with Mainland authorities on means of better utilization of air spaces ➔Expedite construction of mid field concourse ➔Upgrade the ATC system ➔Expedite the electrification of ground transport ➔Provide Co-CIQ services ➔formulate Transhipment Ordinance ➔Explore the number of runway required to meet with future demands
HKCT as a competitive international maritime centre	➔Explore establish an International Trade Facilitation Centre (ITFC) for Marine Transport ➔Provide Co-CIQ services ➔Enact a Transhipment Ordinance
A multi-modal transportation hub	➔Explore feasibility of strengthening a rail network among the cities and the airports in PRD. This rail network will enable the integration among Hong Kong, Guangzhou, Shenzhen and Macau and thus the extension of catchment area for Hong Kong; as such, Hong Kong's role as a multi-modal transportation hub can further be strengthened

6 ENVIRONMENTAL IMPLICATIONS

It is envisioned that the conversion of the fossil fuel based road infrastructure system to electric and non-motorized transport system will have significant benefits to the urban air quality. As the road transport exhaust emissions will be reduced to minimal, it is expected that the roadside air quality will fall below the limits set in the Air Quality Objectives. Even these AQOs are revised to meet the World Health Organization standards, it is likely that the roadside air quality will meet with the most stringent standard. Human health will be saved to the maximum extent.

As for green house gas emissions, the transport sector is contributing to some 18 percent of the total 42 million tones in 2008. Turning to green land transport, I.e., electric and non-motorized, it is likely that there will be a emission reduction in land transport as the many short trips will be replaced by walking and cycling and electric vehicles can be more efficient than fossil vehicles in energy terms. There will be more trips in both marine and air transport as we propose strengthening the aviation and marine transport hub of Hong Kong. Both marine and aviation sectors have to find ways to reduce GHG emissions. Bio-fuels and electric vessels are now available in the market, it is worthwhile to explore the possibility to introduce them to Hong Kong, at least in the harbor of Hong Kong and rivers of Greater PRD region. Design of the "Break-bulk Cargo Processing Centre" suggested for Kwai Tsing Container Terminal should also consider adopting shore-side electric power system for inland water vessels to perform cargo lifting if quay-side crane cannot be provided. Some aircraft manufacturers have been trying bio-fuel, Hong Kong based Airlines should be more proactive in collaborating with these aircraft manufacturers. Effective air space management can also reduce aircraft emissions. The "invisible wall" of 5000 m over the Mainland air space at the approach of the Hong Kong air space increased the fuel consumption of 270,000 tonnes in 2009. If these flying restrictions can be lifted, we can save the wasted fuel and the additional GHG emissions.

Construction of transport infrastructure is inevitably destructive to the land and sea together with the ecology on them. It will require careful planning and programming to avoid and minimize these damages. All proposals of individual infrastructure projects must be accompanied with an effective environmental and ecological conservation plan.

All in all, with the transport infrastructure envisioned under ViTran 2030 Study, it is more likely for Hong Kong to meet with the obligations to improve the air quality and climate change situations. A detailed strategic environmental impact assessment is required to provide quantitative estimates.

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

Title

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Annex A

Projection of Growths in Population, Economy and Traffic

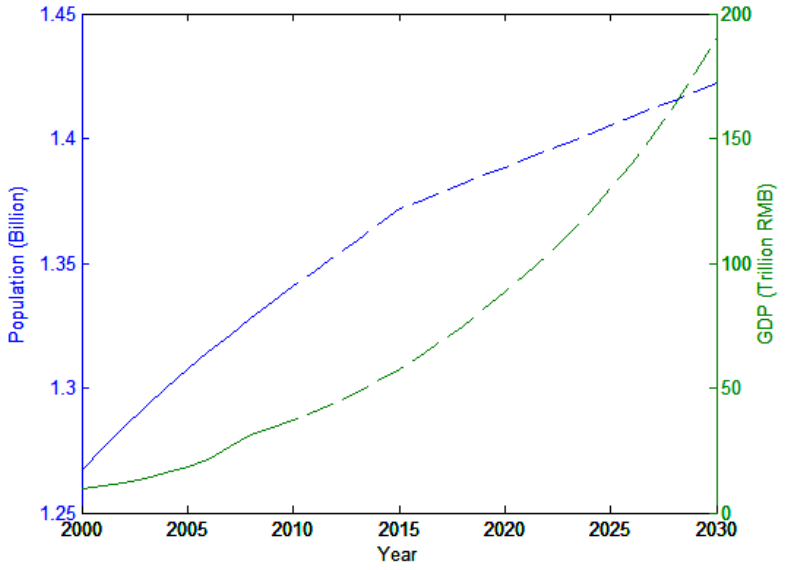
Annex A

Projection of Growths in Population, Economy and Traffic

The projections for future years are either obtained from official estimations or estimated from recent trends in growth rates.

Population and Economic Growth

Figure 3 Changes in population and GDP in China

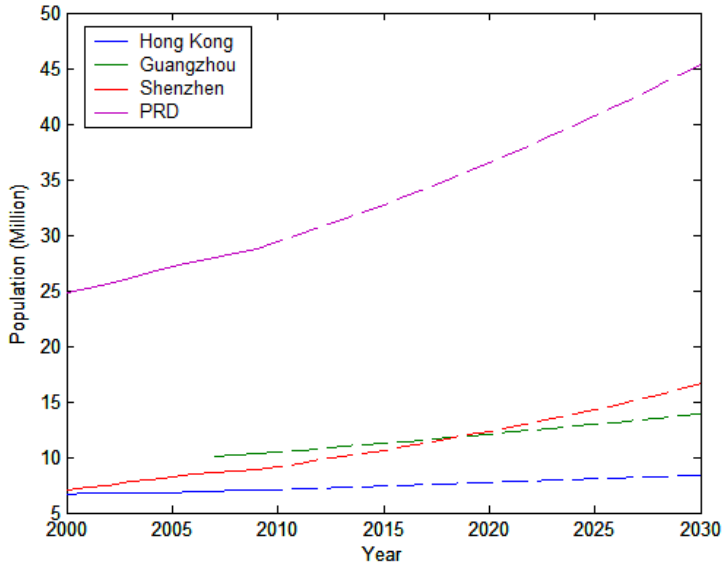


The population of China has grown from 1.22 billion in 2000 to 1.33 billion in 2009. The US Census Bureau estimates that, by the end of 2030, Chinese population will reach 1.42 billion.

Meanwhile, GDP in China climbed from 9.9 trillion RMB in 2000 to 34.1 trillion RMB in 2009. It is expected that GDP in China will reach 190 trillion RMB in 2030.

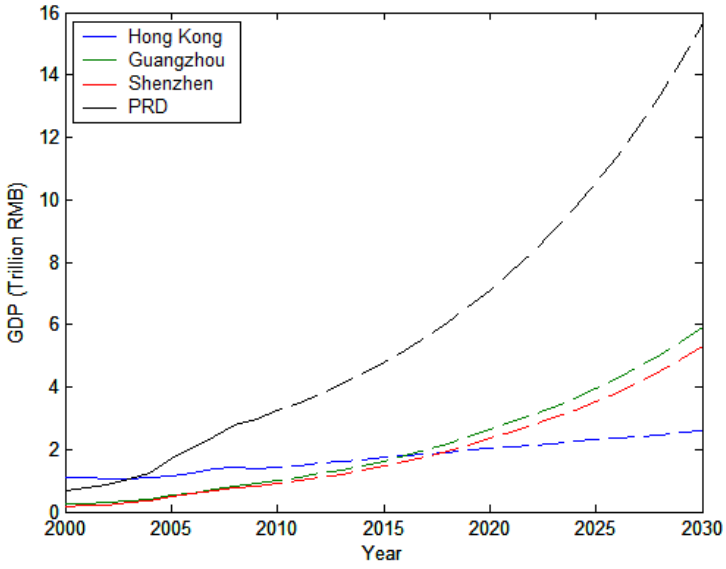
In 2000, population in Hong Kong, Shenzhen, and the PRD (excluding Hong Kong and Macau) were 6.71 million, 7.01 million, and 24.8 million respectively. Total population in Hong Kong, Guangzhou, Shenzhen, and the PRD in 2009 grew to 7 million, 10.3 million, 8.91 million, and 28.7 million respectively. It is expected that, by 2030, population of Hong Kong, Guangzhou, Shenzhen, and the PRD will reach 8.4 million, 13.9 million, 16.6 million, and 45.4 million respectively. Population projections for Hong Kong are obtained from the document "Hong Kong Population Projections 2010-2039", published by the Hong Kong Census and Statistics Department.

Figure 4 Population growth in Guangzhou, Shenzhen, and the PRD, 2000-2030



In 2000, GDP in Hong Kong, Guangzhou, Shenzhen, and the PRD were 1.11 trillion, 238 billion RMB, 166 million, and 670 billion respectively By 2009 the respective GDP reached 1.37, 0.91, 0.82, and 2.99 trillion RMB. It is expected that GDP of Hong Kong, Guangzhou, Shenzhen, and the PRD will reach 3.1 trillion, 6 trillion, 5.3 trillion, and 15.6 trillion RMB in 2030 respectively.

Figure 5 Changes in GDP in Hong Kong, Guangzhou, Shenzhen, and the PRD, 2000-2030(1 RMB=1.19 HKD)

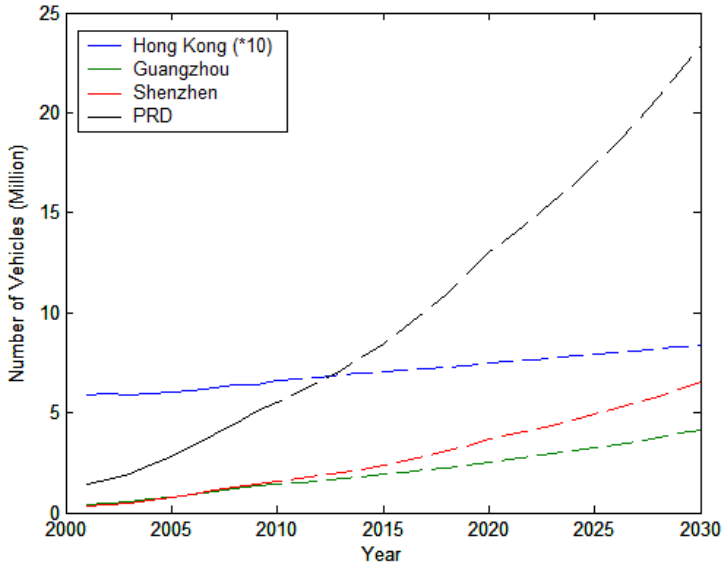


Growth in Number of Vehicles

While growth in vehicles has been slow in Hong Kong, there are large increases in the PRD between 2001 and 2009, the number of vehicles in Guangzhou, Shenzhen, and the PRD grew by 211%, 332%, and 263% respectively.

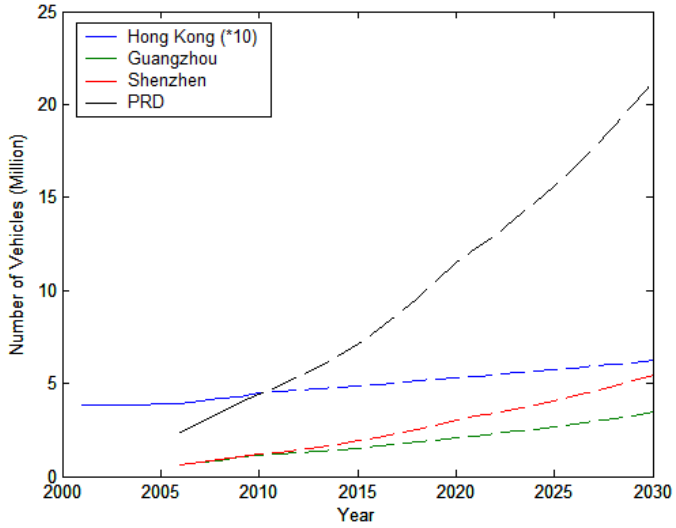
The number of vehicles in Hong Kong, Guangzhou, Shenzhen, and the PRD are expected to reach 0.84 million, 4.15 million, 6.56 million, and 23.3 million by 2030 respectively.

Figure 6 Number of vehicles in Hong Kong, Guangzhou, Shenzhen, and the PRD, 2000-2030



The growth in number of vehicles in the PRD can be attributed to the growth in the number of passenger cars. By 2030, it is expected that the number of passenger cars in Guangzhou, Shenzhen, and the PRD will reach 3.46 million, 5.47 million, and 21.2 million respectively.

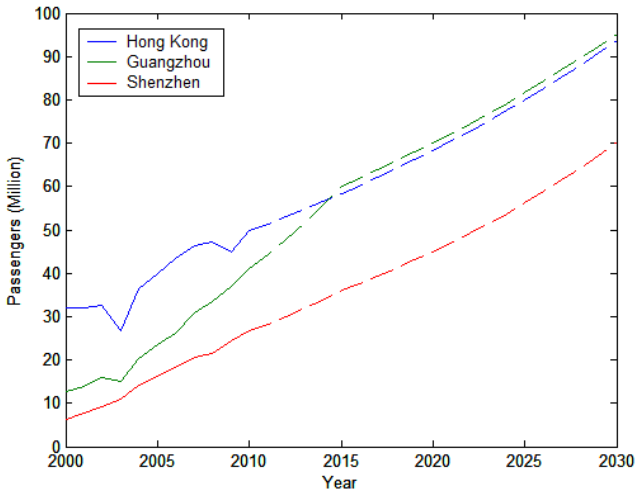
Figure 7 Growth in number of passenger cars in Hong Kong, Guangzhou, Shenzhen, and the PRD, 2000-2030



Changes in Air Traffic

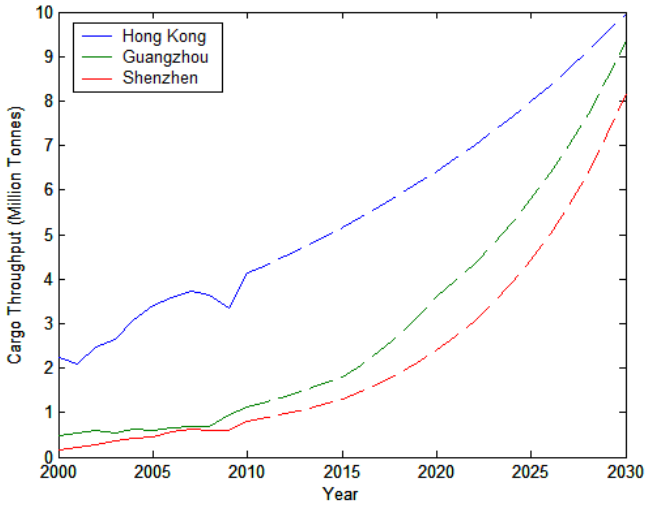
Passenger traffic at Hong Kong International Airport increased from 32.1 million in 2000 to 49.8 million 2010. Between 2000 and 2010, passenger traffic at Guangzhou International Airport increased from 12.8 million to 41 million. Meanwhile, the number of passengers arriving and departing Shenzhen airport grew from 6.4 million in 2000 to 26.7 million in 2010. It is expected that passenger traffic at Hong Kong, Guangzhou, and Shenzhen airports will reach 93.7 million, 95.3 million, and 70.3 million by 2030 respectively.

Figure 8 Actual and projected growth in passenger traffic at Hong Kong, Guangzhou, and Shenzhen airports, 2000-2030



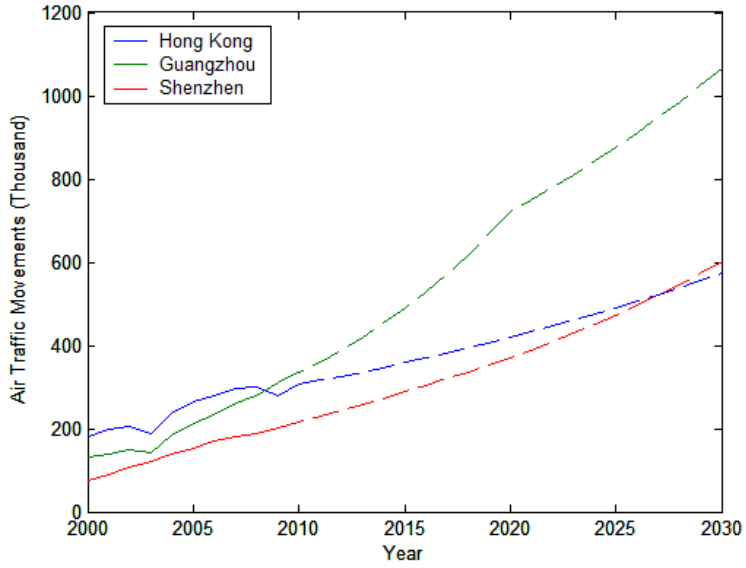
Cargo throughput at Hong Kong International Airport grew from 2.24 million tonnes in 2000 to 4.14 million in 2010. The amount of cargo being handled at Guangzhou International Airport increased from 492000 tonnes in 2000 to 1.14 million in 2010. Cargo throughput at Shenzhen airport grew from 170000 tonnes in 2000 to 809000 tonnes in 2010. It is expected that cargo throughput at Hong Kong, Guangzhou, and Shenzhen airports will reach 10 million, 9.3 million, and 8.2 million tonnes by 2030 respectively.

Figure 9 Actual and projected growth in cargo throughput at Hong Kong, Guangzhou, and Shenzhen airports, 2000-2030



Aircraft movement at Hong Kong Airport grew from 182000 in 2000 to 279000 in 2009. Between 2000 and 2009, aircraft traffic at Guangzhou Airport increased from 133000 to 309000 while aircraft traffic at Shenzhen Airport rose from 74000 to 203000 during the same period. It is estimated that, by 2030, aircraft movement at Hong Kong, Guangzhou, and Shenzhen airports will reach 573000, 1.07 million, and 602000 respectively.

Figure 10 Changes in air traffic movement at Hong Kong, Guangzhou, and Shenzhen airports, 2000-2030



Data sources: Projections for the year 2030 are estimated from intermediate projections made in "HKIA 2025", "Guangzhou Airport Economy Development Plan (2010-2020)", and by the Shenzhen Development and Reform Commission.

Changes in Marine Cargo Traffic

In terms of TEUs, cargo throughput at the port of Guangzhou increased eight-fold between 2000 and 2008, reaching 11.7 million TEUs in 2008. Meanwhile, 24.5 million and 21.4 million TEUs of cargo passed through the ports of Hong Kong and Shenzhen in 2008 respectively.

It is expected that, by 2030, cargo throughput at Hong Kong, Guangzhou, and Shenzhen ports will reach 40.8 million, 62.9 million, and 45 million TEUs respectively.

In 2009, 243 million, 364 million, and 194 million tonnes of cargo passed through the ports of Hong Kong, Guangzhou and Shenzhen respectively. It is expected that, by 2030, cargo throughput at Hong Kong, Guangzhou, and Shenzhen ports will reach 426 million, 823 million, and 450 million tonnes respectively.

Figure 11 Cargo Throughput in TEUs at the ports of Hong Kong, Guangzhou, and Shenzhen

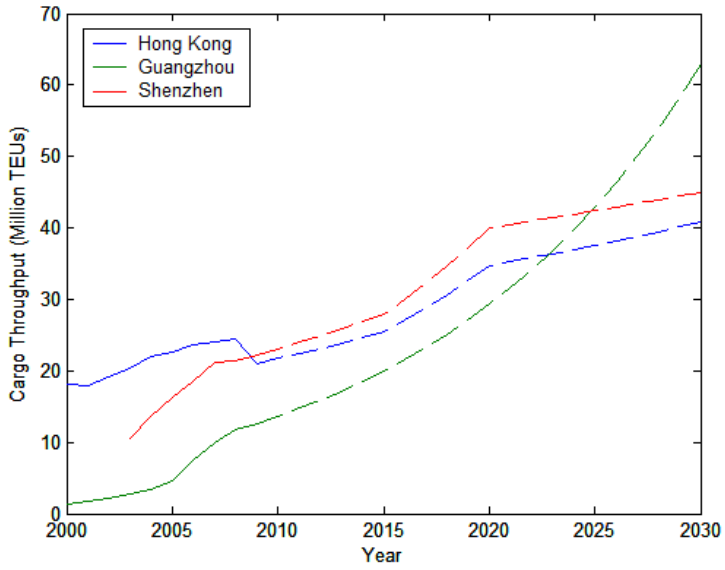
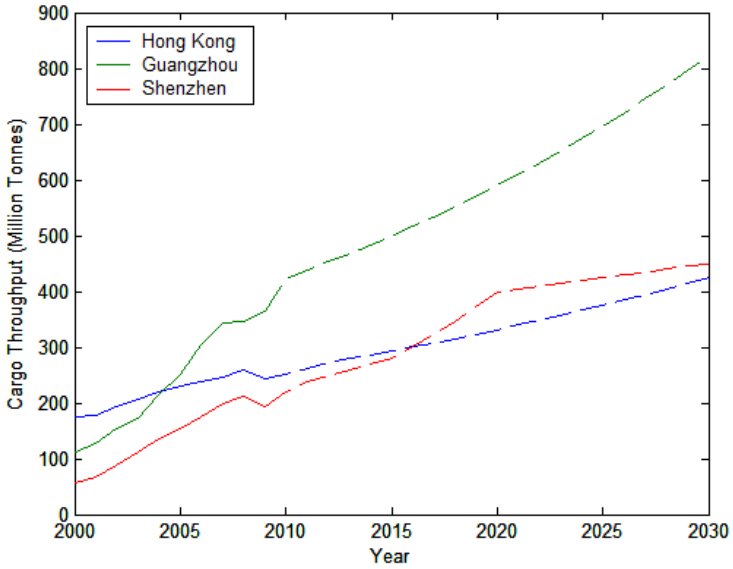


Figure 12 Cargo Throughput in Tonnes at the ports of Hong Kong, Guangzhou, and Shenzhen

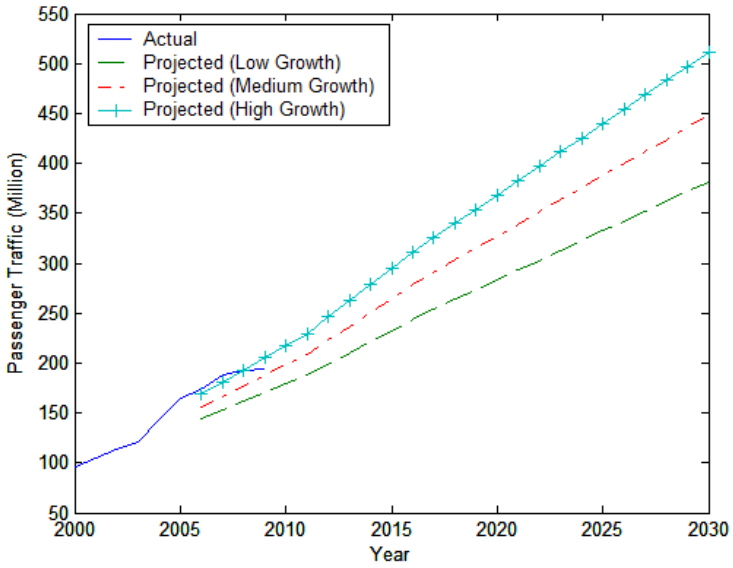


Data Sources: Projections for the year 2030 are estimated from intermediate projections made within "Study on Hong Kong Port Cargo Forecasts 2005/2006", "Guangzhou-Foshan Amalgamation Development Plan", and "Shenzhen Port General Plan"

Land boundary crossing trips

The number of passengers crossing the boundary at various land boundary crossing has increased from 97 million in 2000 to 194 million in 2009.

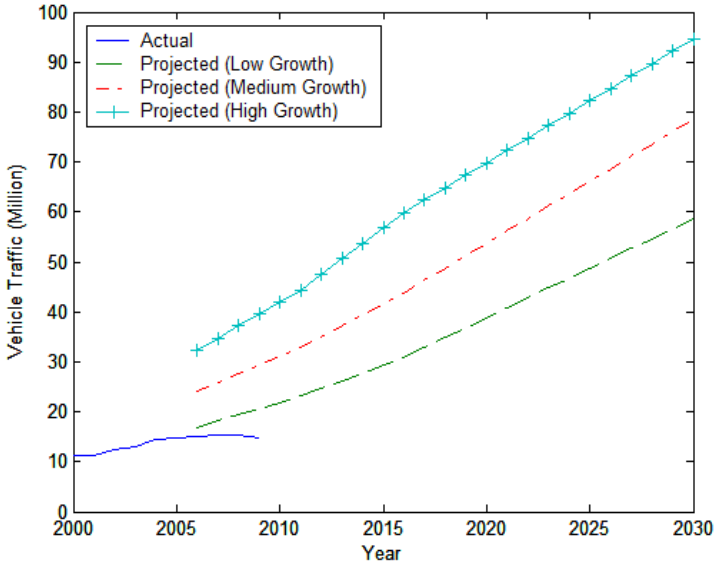
Figure 13 Annual cross-boundary passenger traffic, 2000-2020



The growth in passenger traffic between 2000 and 2009 was more rapid than the low and medium growth projections made in 2000. This rise in cross-boundary traffic is largely due to the increase in Hong Kong citizens travelling to the mainland and the influx of tourists from the mainland. Estimations in 2000 predicted that, by 2030, cross-boundary passenger traffic will range from 382 million to 512 million.

Between 2000 and 2009, annual cross-boundary vehicular traffic increased from 11.2 million to 14.7 million. The growth in cross-boundary vehicle traffic has been smaller than expected—it was predicted that, in 2009, between 21 million and 40 million vehicles would cross the boundary. In 2000, it was estimated that annual cross-boundary vehicle traffic will be between 58 and 105 million by 2030.

Figure 14 Actual and projected cross-boundary vehicle traffic, 2000-2030



Data Sources: Projections based on estimations made in the report "Feasibility Study for Additional Cross-border Links Stage 1: Investigations on Traffic Demand" by the Hong Kong Planning Department.

Annex B

Hong Kong as an International Transport Hub and the Twelfth Five-Year Plan

Twelfth Five-Year Plan

The national Outline of the twelfth Five-Year Plan explicitly states that the Mainland continues to support Hong Kong as an international finance, trade and shipping centre. This provides a strong policy backing for Hong Kong to lead these activities in the South China Region; and it also states that the Mainland encourages regional co-operation in particular within the Pearl River Delta Region. The Study on the Action Plan for the Bay Area of the PRD Estuary further elaborates the actions to be taken to build the region becoming a vibrant Bay with high-quality livability.

For the first time, the Outline of *the Five-Year Plan for the National Economic and Social Development of the People's Republic of China* includes a dedicated chapter on Hong Kong and Macao. In the fundamental interests of the nation, taking forward the implementation of "One Country, Two Systems", the Chinese Central Government pledged to continue support:

a) Hong Kong in developing its financial services, shipping, logistics, tourism, professional services, information and other high-value-added services (Chapter57, Section 1);
b) Deepening cooperation among Guangdong, Hong Kong and Macao; implementing the Framework Agreements on Hong Kong/Guangdong Co-operation and Macao/ Guangdong Co-operation; promoting co-ordinated regional economic development and developing a world-class metropolitan cluster with enhanced competitiveness. In particular, strengthening the planning and co-ordination of a comprehensive transportation system among Pearl River Delta Region, Hong Kong and Macao (Chapter 57, Section 3)

It is clear that the Central Government urges the governments of Guangdong, Hong Kong and Macao to work together and develop a world-class metropolitan cluster linked with a comprehensive transportation system. It is now up to the three governments to come up with a plan for the metropolitan cluster and associated transportation system.

Hong Kong's Role as an International Transport Hub

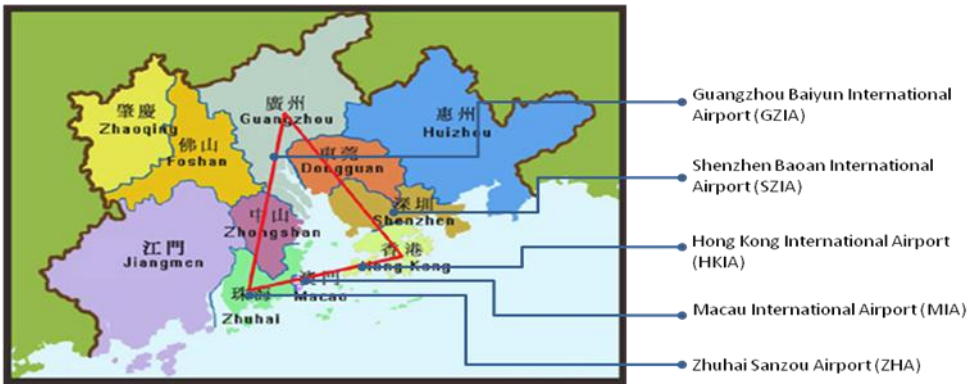
The well-established Hong Kong system includes legal, institutional, organizational and management arrangements in line with best international practices. This provides a strong foundation and a level playing field necessary for the competitive world market. This is perhaps the most crucial asset and a sharp edge of the Hong Kong to continue its ability to lead among Mainland cities.

Hong Kong as a Special Administrative Region of China enjoys its autonomy in all matters except defence and foreign policy. Hong Kong keeps its own tradition and practices moulded by the British; that is, a culture in line with the international norm. This crucial ingredient of Hong Kong attracts many international enterprises and organizations to establish headquarters here. There are around 1300 such international corporation headquarters in Hong Kong.

The HKIA is the most important transport infrastructure asset to sustain Hong Kong as a world city. The leading role of the HKIA not only contributes significantly to the economic and social development locally, it is equally important in the development of the PRD and Southern China. To a very large extent, the five airports in this region are supplementary more than competitive as the overall air traffic demands grow bigger and bigger. Each airport can have an edge in certain market segments.

For example, Shenzhen airport flies to over 100 Mainland cities, most of which have no Immigration and Custom services. For this reason, Hong Kong cannot have direct flights to these cities. On the other hand, Hong Kong has a lot more and frequent international flights as it is an independent international air flight jurisdiction.

PRD has a strategy for the positioning of all five International airports, i.e. Hong Kong International Airport (HKIA), Guangzhou Baiyun International Airport (GZIA), Shenzhen Baoan International Airport (SZIA), Zhuhai Sanzou International Airport (ZHA) and Macau International Airport (MIA). This responds to the development of joint objectives and will be in line with the overall direction in which the region is moving.



The following table compares the infrastructure for the five airports in PRD. It shows that only HKIA has two terminal buildings at present, and it serves the highest number of airlines, including passenger and cargo airlines. It is the home base for a total of 8 airlines. Only HKIA and GZIA have two runways at the moment, although SZIA is now constructing its second runway which will be in operation in 2011. GZIA has the highest number of parking stands, followed by SZIA and HKIA.

Table 2 Comparison of the Five Airports in PRD [1]

AIRPORT(1)	TERMINAL BUILDINGS No.		PARKING STANDS No.			RUN WAY		Airlines Operators		HUB FOR AIRLINES AND CARGO		General Aviation Traffic (Y/N)
	PAX	CARGO	PAX		CARGO	No.	Length	PAX	CARGO	PAX	CARGO	
			Frontal Stand	Remote Stand								
HKG	2(2)	2(3)	59(4)	27	34	2	3800 m	74	63	4	4	Y
MFM	1	1	24(5)			1	3420 m	17	4	1	0	Y
CAN	1	1	68	143	30	2	3800 m/ 3600 m	47	14	2	1	Y
SZX	1	1	26	94		1	3400 m	23	7	1	2	Y
ZUH	1	1	17(6)	17	6	1	4120 m	11	1	0	0	Y

Note:

(1) www.wikipedia.org, HKG= Hong Kong International Airport; MFM=Macau International Airport, CAN= Guangzhou International Airport, SZX= Shenzhen International Airport and ZUH= Zhuhai International Airport

(2) Terminal 1 is equipped with stands and access to the runways, yet Terminal 2 is not.

(3) Asia Airfreight Terminal & DHL Central Asia Hub

(4) 10 frontal stands(aerobridges) of North Satellite Concourse were open for use since Dec 2009

(5) Total of 24 parking space at the apron, including front and remote stands

(6) 9 out of 17 front stands (aerobridges) are now in use

most of them have leased offices in terminal buildings of HKIA.

Annex C

Electric and Non-Motorized Transport

Annex C

Electric and Non-Motorized Transport

(1) LOW CARBON TRANSPORT

(A) Electric Transport

By increasing the proportion of electric vehicles in the vehicle fleet, dependence on fossil fuels can be reduced. Since electricity can be produced with a variety of fuels, fuel source is more secure and fuel price volatility is reduced.

Emissions of greenhouse gases and other gaseous pollutants from electric vehicles are lower than conventional vehicle fuels. As a result, negative health effects can be minimized.

By using lower-emitting fuel sources in generating the power for electric vehicles, further environmental benefits can be realized.

Table 3 CO2 Emissions (in g/km) of Different Mixes of Electricity Generation

	Well to Tank / Batteries	Tank / Batteries to Wheel	Total CO2 Emissions
Conventional Fuel	25-35	120-180	145-215
27% Nuclear, 20% Renewable, 53% Fossils	85-105	0	85-105
11% Nuclear, 20% Renewable, 69% Fossils	120-140	0	120-140
75% Nuclear, 20% Renewable, 5% Fossils	20-25	0	20-25
30% Photo Volatic, 60% other Renewables, 10% Fossils	18-22	0	18-22
50% Photo Volatic, 50% Wind	8	0	8

Source: European Roadmap—Electrification of Road Transport

Worldwide Initiatives

Currently, both hybrid electric vehicles (HEV) and plug-in electric vehicles (PHEV), whose batteries are rechargeable by external power sources such as the power grid, are available commercially within the European Union. To make HEVs and PHEVs commercially competitive, tax exemptions/credits are offered to HEVs and PHEVs.

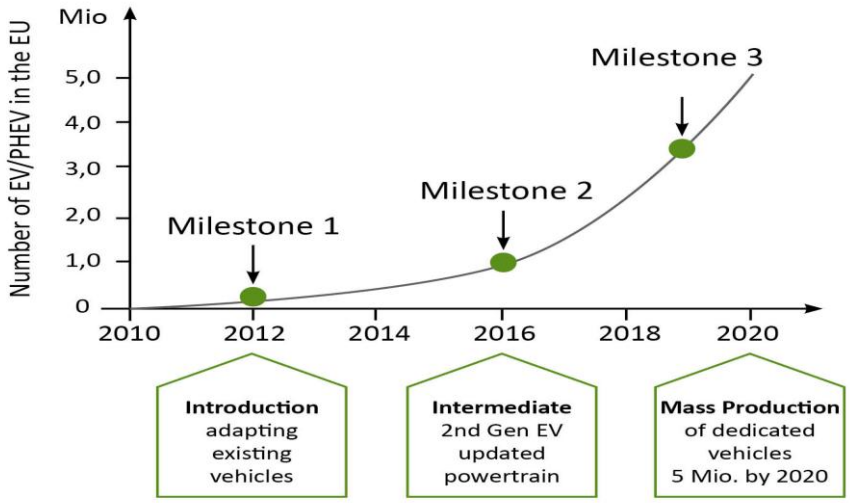
There are also efforts to increase the share of electric vehicles among public transport vehicles. The goal is to eventually convert all on-road vehicles to electric vehicles, either through vehicle replacement or

retrofitting. However, conversion of heavy-duty vehicles (e.g. trucks) to electric powered ones is more difficult due to that such conversion requires further advances in fuel cell technology.

In many cities, electric buses are currently in service. Electric power for such vehicles can be delivered from overhead wires, charging stations at bus stops, or underground electric facilities.

Electric taxis have also been introduced to the streets of Shenzhen. Trials are currently taking place in a number of cities (Tokyo, Beijing, and London). Electric taxis are recharged at specific charging stations.

Figure 15 Projected growth in electric vehicles in European Union



Source: European Roadmap—Electrification of Road Transport

Figure 16 Electrically-Powered Taxi

Electric Taxi taken by the research team at Shenzhen

Table 4 Description of milestones of the European Industry Roadmap for Electrification of Road Transport

	Milestone 1	Milestone 2	Milestone 3
Energy Storage Systems	Full understanding and proper management of all relevant parameters for safety, performance, lifetime.	Manufacturing of long life, safe and cheap energy storage systems with advanced energy and power density.	Availability of batteries providing tripled energy density, tripled lifetime at 20-30% of 2009 cost and matching V2G.
Drive Train Technologies	Availability of drive train components optimized for efficient use and recovery of energy.	Manufacturing of range extenders & update of electric motors for optimized use of materials and functionality.	Implementation of power train systems providing unlimited range at sharply reduced emissions.
System Integration	Solutions for safe, robust and energy efficient interplay of power train and energy storage systems.	Optimized control of energy flows based on hard- and soft-ware for the electrical architecture.	Novel platform based in overall improved system integration.
Grid Integration	Charging adaptive to both user and grid needs.	Charging at enhanced speed.	Quick, convenient and smart charging with bi-directional capabilities.
Transport System	Road Infrastructures and communication tools encouraging the use of electric vehicles.	Full integration of electric vehicles with other modes of transport.	Automated driving based on active safety systems and car-to-x communication.
Safety	Electric vehicles (tested and inspected for) meeting (new) safety standards at same levels as conventional cars.	Implementation of solutions for all safety issues specific to mass use of the electric vehicle and road transport based on it.	Maximum exploitation of active safety measures for electric vehicles.

Source: European Roadmap—Electrification of Road Transport

Making Electric Transport Competitive

To increase market share of electric vehicles, incentives are provided to make electric vehicles more attractive compared to conventional vehicles. Such incentives include subsidies to electric vehicles and higher gas tax. Introduction of carbon charge and implementation of strict emission and fuel economy standards can also increase the competitiveness of conventional vehicles. The development of low-cost motors and electric engines can also increase the competitiveness of electric vehicles by reducing the cost of such vehicles.

Electric vehicles would become more competitive when recharging becomes more convenient. Quick charge (bi-directional) technology is now available while contact-less (wireless) charging is under development. A wider network of recharging facilities, such as a network of charging stations similar to petrol stations, can also make charging more convenient to motorists and thus increase the competitiveness of electric vehicles. Vehicle manufacturers should implement uniform recharge standards so that it is possible to recharge any vehicle at any recharge station.

In addition, new methods in recharging vehicles are being developed. Electric vehicles can be designed so that empty batteries can be replaced with full-charged ones at recharge stations. The replaced batteries would then be recharged for later use.

Since the introduction of electric vehicles would likely increase electricity usage, electricity use has to be monitored to prevent overloading. To optimize electricity use, smart-meter technology should be integrated. In the future, development of intelligent grid enables vehicle to recharge automatically at off-peak periods, when recharging costs are lower.

By improving the range of electric vehicles, they would become more competitive in the market. Range of electric vehicles can be improved through development of batteries with higher energy storage capacity, mechanisms that enable more efficient power delivery to batteries, and more advanced battery technology such as fuel cells. By improving the durability and lifetime of battery system of an electric vehicle, the life span of such a vehicle can be extended.

To improve safety of electric vehicles, crash standards similar to those of other vehicles should be adopted. Eventually safety solutions specific to electric vehicles should be developed.

Current and Possible Electrification of Transport in Hong Kong

(i) Trial Electric Transport Schemes

An electric car leasing program is currently underway. Under the program, 1-year leases are offered by electric companies. The vehicle users has right to purchase vehicle after the lease expires. Electric light buses are currently in use within the restricted areas of Hong Kong Airport.

There are more than 100 recharge stations in Hong Kong at present, some of which are quick charge stations, where a vehicle can be recharged in 15 minutes. Recharging is free recharge until the end of 2011. Until 2014, first registration tax of electric vehicles is waived.

According to the Transport Department, there are totally 173 registered electric vehicles, mainly private car and a few light goods vehicles, as at 31 March 2011. Manufacturers include Mitshbishi, Leaf Nissan, Tesla Roadster, Daewoo, Citraoen.

Apart from light duty vehicles, strong support to the electrification of the public transport system can move the programme a big step forward.

(ii) The Hong Kong Tramway

The existing tram service system in Hong Kong is the world's largest double-deck tram fleet and unique double-deck metric system. There are altogether six routes with 118 stops in Hong Kong Island and the total line-length is about 29.5km. The total operating kilometrage is over 6 million km per annum.

It is regarded a mass transit system with 230,000 trips per day (84,000,000 per year) representing an important public transport mode on HK island. It is an essential service complementary to other transport means. It is also regarded as the greenest and cheapest transport mode in Hong Kong (*lowest carbon footprint to reduce emission of CO2 and help alleviate the global warming").

There are improvement plans of Hong Kong Tramway to improve the tram service in Hong Kong and raising its competitiveness. A series of service improvement plans had been devised after over one year's examination and planning; and the plans had been submitted to the government for its approval.

The improvement projects, with the objectives of improving safety, reliability and operational efficiency of the tram services, include:

- Revamping of track repair and maintenance methods;
- Upgrading of emergency braking system;
- Enhancement of passenger information system;
- Improvement of tram body and interior design;
- Provision of additional turnaround loops;
- Use of new tools for traffic and staff scheduling;
- Replacement of overhead span wire
- Synchronization with public traffic lights at selected road junctions; and
- Adoption of AC traction system.

(iii) Trolley Buses

A trolleybus (also known as trolley bus, trolley coach, trackless trolley, trackless tram or trolley) is an electric bus that draws its electricity from overhead wires (generally suspended from roadside posts) using spring-loaded trolley poles. Two wires and poles are required to complete the electrical circuit. This differs from a tram or streetcar, which normally uses the track as the return part of the electrical path and therefore needs only one wire and one pole (or pantograph). They also are distinct from other kinds of electric buses, which usually rely on batteries.

(iv) Supercapacitor and Battery Buses

A franchised bus company has introduced Hong Kong's first supercapacitor bus. The challenge for the zero-emission, energy-efficient bus is to be able to adapt to the city's steep, winding, and at times, congested roadways. The 12-meter 70-person supercapacitor "gBus" can run continuously for five kilometers, roughly the distance between Tsim Sha Tsui and Sham Shui Po.

The supercapacitor bus does not require overhead cables to operate. It is an electric bus powered by supercapacitor technology. When fully charged, a fully air-conditioned supercapacitor bus can run continuously for 5 km. Unlike trolley buses, the supercapacitor bus does not require an extensive network of continuous overhead cables to operate. Because of its rapid charging speed, the supercapacitor technology is well suited for bus operations, which typically require frequent stops within relatively short distances. Rapid charging can be conducted at bus stops while passengers board and alight, taking approximately 30 seconds for 1 km of power.

The supercapacitor bus is a truly green bus because it produces zero roadside emissions. As the supercapacitor does not rely on chemical reactions to store electrical energy, it is more environmentally friendly than battery-based electric engines. Furthermore, the supercapacitor can most effectively capture energy from regenerative braking, making it more efficient in electricity consumption than trolley buses. In terms of both economics and environmental performance, the supercapacitor bus is a more attractive technology than other low-emission or zero-emission green bus technologies currently available.

Advantages of supercapacitor buses include:

- Rapid Charging of Power
  - Super-fast charging (30 seconds for 1km)
  - Unfit for passenger cars, but great for buses (many stops)

- Greener than diesel and battery-based technologies
  - Zero roadside emissions
  - Long life-cycle of supercapacitors, no toxic materials

- Higher energy efficiency vs. other electric technologies
  - Consumes 40% less electricity vs. trolley buses
  - Can fully capture power from regenerative braking

- Charging is done at bus stops while passengers are boarding / alighting
  - A charging station system imparts the charge (600V)
  - Underground cables feed power to the catenary

Source: KMB, 2011

(v) Bus Rapid Transit (using electric bus)

Bus rapid transit (BRT) is a combination of technologies, design features, operating practices, and marketing approaches that allow buses to approach the speed and service quality of light rail transit service. BRT systems are designed to reduce travel time, increase schedule reliability, and improve

passenger comfort over traditional bus services on heavily traveled routes. In most cases, BRT allows high quality rapid transit service to be achieved at a fraction of the cost of constructing and operating Metro and light rail transit lines.

The primary emphasis of service designed for a BRT system must be geared toward providing a bus service that can compete favorably with the private automobile for many trip purposes. This means that the service design must consider rapid transit style features that emphasize safety, security, speed, reliability, convenience, and comfort. The most common attributes that define BRT include:

- Separation from other traffic
- Transit signal priority on arterial streets,
- Unique vehicle designs
- Distinctive Passenger stations,
- Off-vehicle fare payment,
- Communication and passenger information systems, and
- Transport System and Land Use Integration

Discussion of "Bus Rapid Transit" started in the United States with several cities examining plans for express bus services in separated medians of urban expressways. The seminal research study exploring BRT options was completed in 1970.[2] The emergence of BRT as a viable public transport option really began in Curitiba, Brazil in 1974. Original planning for public transport service improvements in Curitiba considered Metro or light rail transit. These options were considered too expensive by local leaders. A review of available literature suggested that BRT was a cost effective alternative to the costly construction of a rail system.

Sao Paulo quickly copied the Curitiba model and its BRT system was placed into service in 1975. In 1977, Porto Alegre, Brazil and Pittsburgh, Pennsylvania (USA) also constructed bus only roadways. Ottawa, Canada opened its first busway in 1983. Since then, all these systems have been expanded. Sao Paulo today operates the largest network in the world consisting of 250 kilometers of exclusive busways carrying over 3.2 million passengers per day. In 1996, Quito, Ecuador commenced operations on an electric trolleybus line modeled after Curitiba, complete with exclusive median busway, high platform level boarding stations and off-bus fare collection.

These busways received little notice until the late-1990's when the cost of constructing light rail systems were growing at an alarming rate in the United States and Western Europe. Study trips to Curitiba were organized by technical teams from Bogotá and the United States. Since then new BRT systems have been constructed or are under final design in several cities throughout the world, including Shanghai, Beijing, Guangzhou and Hangzhou in China.

(vi) Trial Electric Taxis

Producing no carbon, particulates or other pollutant emissions, the government should work with the taxi trade to trial electric taxis. Ideal vehicles for taxi services do not yet exist, but an early trial with acceptable vehicles will help identify pluses and minuses of electric operation and expedite the introduction of electric taxis once appropriate vehicles become available. We note that one manufacturer plans to work with New York on this basis and recommend that Government actively seek to develop such a scheme for Hong Kong.

; American Automobile Manufacturers Association, 1970.

The 300 million Pilot Transport Green Fund launched in May 2011 does attract some transport operators to trial electric taxis. The Fund is administered by the Environmental Protection Department. The Transport Department is expected to play a supporting role. Government anticipates that the Fund can provide adequate incentive to the private sector to take lead in the electrification of public transport systems. As the Fund has commenced only a few months, it is yet to see the results.

Overseas Successful Experiences

Many European, American and Asia Cities have demonstrated the success of implementing tram, supercapacitor buses and BRT. Those international experiences can be summarized as:

- In terms of overall boardings, trams are the second most used form of public transport in Melbourne after the commuter railway network with a total of 178 million passenger trips a year. The network carries 83% as many passengers as metropolitan rail despite having less than half the range. As of 2009, trams had the fastest growing patronage of any mode of transport in Melbourne, despite having less overall spent on extension than the rail or freeway network in the last decade.
- New tram system in Rouen, France has been replaced the old system with the intention to increase capacity by up to 60% and consume 10% less energy than the previous vehicles.
- Supercap buses have been in commercial operation on Route 11 in Shanghai, China has demonstrated a smooth service with positive feedback. Totally 17 supercap buses with air-con have been deployed and the total operating mileage has already over 2.2 million km with over 8 million passenger trips;
- BRT in Bogotá, Columbia carries over 372,000 riders per day with a capacity of 36,500 passengers per hour per direction (pphpd). Bogotá utilizes bi-articulated, high platform loading buses similar to Curitiba. France and the United States have embarked on a campaign to build BRT systems as a means of providing mass transit capacity at a fraction of the cost of LRT or Metro.

The review of experiences in implementing electric and green transport in the above mentioned countries reveals the following findings:

- Support and determination of the government are essential.
- Increasing Modal Share for mass and green transport has been a common practice.
- Rationalization of supply in terms of trunk and feeder routes and choice of new travel options with a separate fare with some “Integration” / interchange points to avoid waste competition on the same corridors.
- Exclusive right-of-way has to be allocated for such kind of systems. Considering the busy traffic in urban area, it is proposed to implement such systems in new developed area.

Figure 17 Possible Trial Run of Electric Transport System

Source: KMB, 2011

Annex D

Effective Road and Traffic Management

Effective Road and Traffic Management

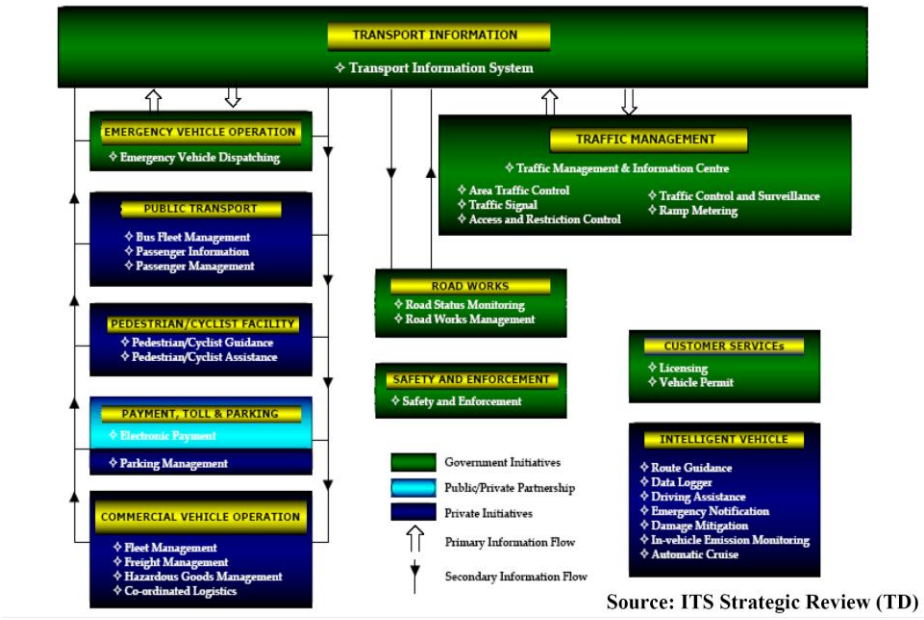
Traffic congestion problems cannot be resolved by merely building of roads. They can give temporary resolve, but attract more vehicles to use them and traffic congestion will pick up again. Road congestion persistently remains the recurring issue. This is the time to change the mindset to travel demand management and think about how to effectively manage the road use. The following are the more practicable measures that can be implemented to ease congestion:

- Further enhance Integrated Transport System (ITS) technologies to manage the road use more efficiently;
- Minimize the needs for road opening works to further improve the road use efficiency;
- Apply district-wise Maintenance/Operation/Management (MOM) mode for more effective asset management;
- Further investigate the feasibility of Congestion Charge on demand management;

(A) Further Enhance Integrated Transport System (ITS) Technologies to Manage the Road Use More Efficiently

In recent years, the Transport Department (TD) has been promoting the development of Intelligent Transport Systems (ITS). Research and development of Transport Information System in Hong Kong has been carried out. The figure below shows the ITS framework of Hong Kong.

Figure 18 Intelligent Transport Systems (ITS) of Hong Kong



Source: Transport Department, ITS Strategic Review

The main components of the ITS system in HK include:

- Area Traffic Control (ATC) – The ATC System is a computerised system that integrates the control and operation of traffic signals within a district.
- Traveler Information System – Pre-trip and En-route Traveler Information Systems to provide information to the travelers.
- Traffic Control & Surveillance – The comprehensive TCSS facilities include CCTV cameras, automatic vehicle detection, lane control signals, variable message signs, etc. for efficient and effective traffic and incident management.
- Autotoll – Its ETC system provides maximum convenience to motorists by allowing toll collection process to be automated in such a way that motorists do not have to stop and pay cash at a tollbooth.
- Octopus – It has become very popular and can be used on most of the transport services in Hong Kong including railways, buses, minibuses, coaches, ferries, car parks and parking meters.
- Traffic Enforcement – Red light cameras and speed enforcement cameras were introduced
- Control Centre – The Traffic Control Centre (TCC) will closely monitor the traffic and public transport situation.
- Incident Management – the Emergency Transport Coordination Centre (ETCC) is to coordinate emergency traffic and transport incidents and minimise the impact, delay and inconvenience caused by incidents to the public on a 24-hour basis throughout the year.

Further Enhancements

(i) Real Time Passenger Information System for Road Public Transport (Bus and Tram) Services

Passenger expectations have risen greatly over the past five years., bus passengers rightly demand the highest in quality services to enhance their journey experience by providing accurate departure and arrival times, enabling travellers to plan there journeys and thus make better use of their time. The advanced Dedicated Short Range Communication (DSRC) and Vehicle Positioning System (VPS) systems in use in many cities can provide a wide range of **real-time passenger information (RTPI)** services for passengers. A public transport real time passenger information system was launched in Helsinki, Finland in 1999. The system provides several public transport telematics functions such as real-time passenger information, bus and tram priorities at traffic signals and schedule monitoring. The aim of the system was to reduce the delays in public transport service, to improve the regularity and punctuality of the public transport service, and to improve passenger information.

Such kind of system has proved to reduce the delays at traffic signals, decreased the travel times and improved the regularity and punctuality of the public transport service. The results indicated that delays at signals were reduced by more than 40 per cent. The signal priorities seemed to reduce the fuel consumption about 4 per cent and the exhaust emissions 1–5 per cent depending on the type of emissions. The regularity and punctuality of the service were considerably improved and passenger boardings increased as a result. The passengers regarded the bus stop displays especially useful. These systems are now in common use in Los Angeles and in Las Vegas.

In 2006, a supplier of vehicle monitoring system carried out a trial on 31 local green minibuses (GMBs) serving 11 routes by installing on them an information record device operated with GPS to test whether

the system could help GMB operators manage their minibuses for enhancing road safety. Since the results of the trial showed that the system failed to record and transmit information on operational data of a GMB (such as its location, speed and journey time) accurately, the trial was terminated in late 2008. In addition, the City University of Hong Kong (City U) is developing an advanced safety system for public transport. By tracking the movement of a public transport vehicle, the system can provide real-time traffic information such as the location of the vehicle and its distance to the next stop, for the convenience of passengers of public transport service. City U gave a briefing on the system to TD last year and received feedbacks on its functions and design. TD also helped City U liaise with GMB operators for voluntary participation in City U's trial scheme.

Apart from providing general bus route information (such as fares, routes, maps and schedules); a bus operator has enabled mobile phone technology to detect bus-stops within a radius of about 200 metres through the Global Positioning System (GPS), for passengers' convenience. The bus operator is now studying the feasibility of extending the service to other types of mobile phones. However, the bus operator indicated that it has no plan at present to provide other information such as passenger waiting time or estimated duration of traffic congestion. It is proposed TD should continue to coordinate and encourage the public transport organisations to participate actively in the testing and use of information technology systems which can enhance their services.

(ii) Electronic Payment of Tunnel and Bridge Tolls

Currently, Autotoll is the main Electronic Toll Collection (ETC) available in all of the 10 toll roads/ tunnels. As mentioned, there are currently about 240 000 Autotoll subscribers. 50% of the vehicles passing through the tunnels and Tsing Ma Control Area are the system's users. Given that there have been comments that as motorists may make toll payments for tunnels and roads only by Autotoll or in cash at present, it is inconvenient to them and results in longer time for cars to pass through the toll booths.

The Government has been discussing with the Octopus Cards Limited (OCL) on the introduction of a Octopus toll collection system for tunnels and roads, and studying the technical feasibility of its proposed toll collection system. In considering the introduction of a new automatic toll collection systems for tunnels and roads, apart from providing another alternative for motorists to pay tolls, we need to explore the technical feasibility of such a system (such as the interfacing of the proposed system with the existing toll collection system of the tolled tunnels and roads) and other relevant factors, including whether adoption of a Octopus toll collection system can enhance toll collection efficiency, achieve a smoother traffic flow at the tunnel portals as well as its cost effectiveness.

There were discussions between the Government and OCL in recent years, the preliminary proposal made by OCL is that its toll collection system would adopt a "stop-and-pay" mode, that is, motorists would need to stop the vehicle at a toll booth and place the Octopus card at the card reader to effect payment. This is similar to a "semi-automatic toll collection system". OCL considered that Octopus card readers and associated software need to be installed at the existing toll collection system and interfacing problems between the Octopus system and the existing toll collection system would need to be resolved to ensure that the new toll collection system will not affect the operation and reliability of the existing one. OCL's preliminary conclusion is that the proposed system should be technically feasible.

However, apart from technical feasibility, it needs to consider the cost-effectiveness of the relevant proposal. Under the payment mode proposed by OCL, toll collectors still need to manually select the appropriate toll for each vehicle according to its vehicle category. Therefore, there might not be much manpower savings. Besides, as a motorist still needs to stop the vehicle and present the Octopus card for

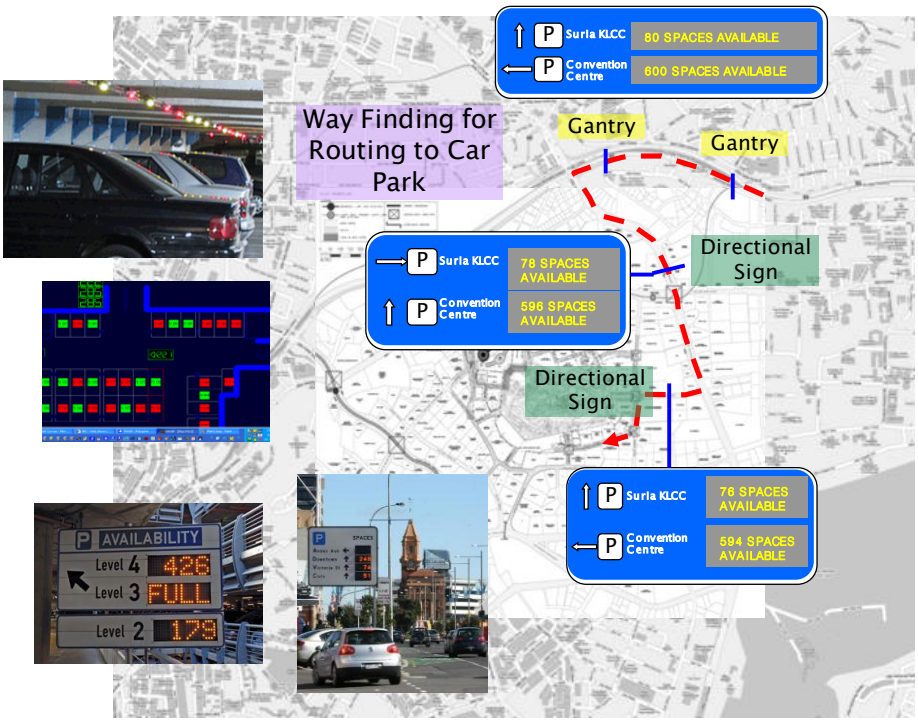
payment, there may only be slight, if any, improvement to the vehicular flow at the tunnels. Furthermore, there might be unnecessary delays when a motorist's Octopus card does not have sufficient balance. If the toll collection system proposed by OCL were to be adopted, OCL will charge the costs of purchasing and installing the relevant Octopus facilities, as well as the administration and maintenance fees for operating the system. Whether the relevant expenditure is cost-effective requires further study. The Government should continue to explore the above issues with OCL in order to make it feasible.

On the other hand, the Government should also explore other ETC systems with the ultimate objective that vehicles should all be charged electronically without stopping at the toll plazas. As such, we can save a lot of space at the toll plazas. It is also believed that electronic payment to cover all vehicles can be a progressive step for implementation of Electronic Road Pricing.

(iii) Parking Guidance System

A wayfinding system has the potential for significant improvement to the drivers' experience on one end, and on the other end, minimizing the needs of the drivers circulating their cars to find a car park on the road. As shown in the following figure, the directional signs can be designed to include real-time information of the number of available car park spaces at different carparks within the urban area so as to provide instant information to the car park users to allow them to find the nearest available car park space.

Figure 19 Wayfinding for Routing to the Nearest Car Park



Parking Guidance Systems (PGS) could be provided through private sector participation to supply relevant parking information via media and communication systems or roadside electronic information signs, to enable motorists to avoid areas where parking facilities are already full. A well-interconnected and occupancy-controlled PGS can direct drivers to the next available car park or parking space. PGS can reduce the amount of traffic on the road network and help mitigate environmental impact.

Strategically, the system can be used to spread demand or adjust the demand on existing parking facilities. In emergency situations, a PGS can be operated as part of a contingency plan for traffic diversion and control of emergency service vehicles.

As a long term initiative, real-time or near real time parking information can be disseminated to the public through mass media or through the 3rd Generation Mobile Phone service as a private sector initiative. It is anticipated that the system will develop and become mature with increasing popularity. It will enable road users to make more informed choices such as changing travel mode or trip destinations to avoid areas where parking facilities are already full.

Parking technology such as sensor for parking bay monitoring could be adopted to give real time information on bay occupancy and help guiding vehicles inside the car park to the nearest available bay. A new concept of ITS - parking reservation system - can aid travellers in securing a parking space either prior to or during their trip. It could provide real time monitoring of parking availability and estimate of anticipated demand.

Annex E

International Trade Facilitation Centre (ITFC)

Hong Kong Container Port (HKCP) has been a major hub in South China. There are some observations:

- Low growth rate of container throughput 2001-2010 (Figure below) in facing the competition of adjacent Pearl River Delta (PRD) gateway ports,
- HKCP has transformed into an ocean-to-ocean transhipment hub (Tables below), due to:
  - Strong international shipping network,
  - The simple customs control of HK allows ad hoc or last-minute changes in containers off-load and connecting vessels' arrangement due to overbooking,
  - Restrictive control by Chinese Government on foreign vessels' transhipment operations between ports of China,
  - Transhipment containers enjoy concessional THC (Total Handling Cost) offered by HKCP operators.

Figure 20 Hong Kong Port Ocean Cargo Forecast 2010-30

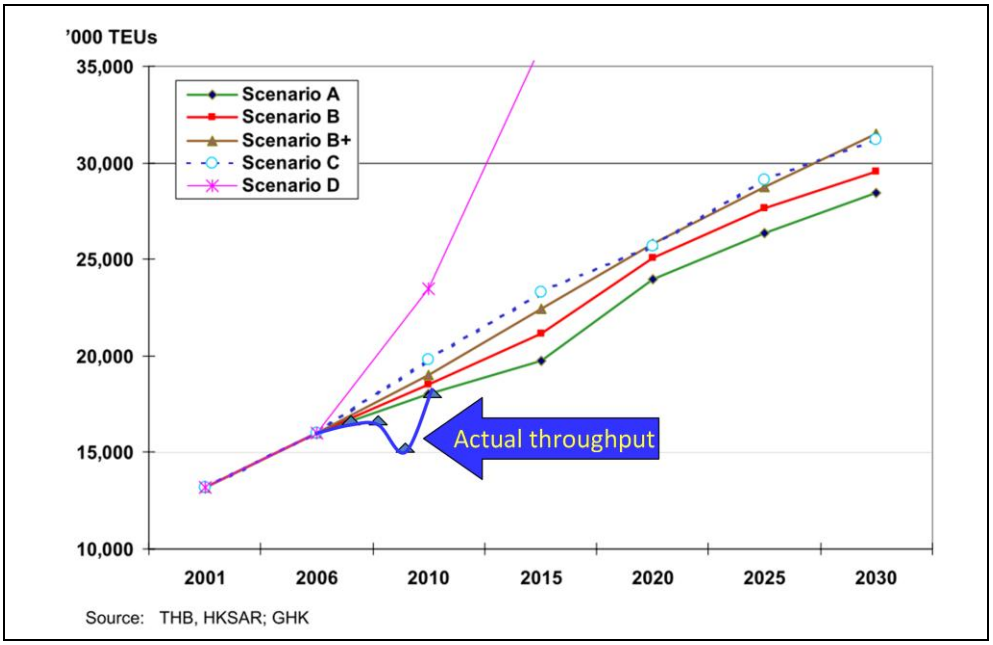


Figure 21 Hong Kong's Laden Container Throughput for Ocean-to-Ocean Inward Transhipment 2001-2010

Hong Kong's Laden Container Throughput for Ocean-to-Ocean Transhipment

Inward Transhipment

	2001	2002	2003	2004	2005
Discharged seaborne laden containers' total throughput(000TEU)	4820	5128	5421	5987	6309
Overall inward transhipment(000TEU)	1290	1334	1504	1841	2230
Inward transhipment as % of total discharged containers	26.8%	26.0%	27.7%	30.7%	35.3%
Year on year discharged seaborne laden containers' growth rate	N.A.	6.4%	5.7%	10.4%	5.4%
Year on year inward transhipment growth rate	N.A.	3.4%	12.7%	22.4%	21.1%

	2006	2007	2008	2009	2010
Discharged seaborne laden containers' total throughput(000TEU)	6604	6833	7000	6223	7059
Overall inward transhipment(000TEU)	2603	2771	3048	2468	3039
Inward transhipment as % of total discharged containers	39.4%	40.6%	43.5%	39.7%	43.1%
Year on year discharged seaborne laden containers' growth rate	4.7%	3.5%	2.4%	-11.1%	13.4%
Year on year inward transhipment growth rate	16.7%	6.5%	10.0%	-19.0%	23.1%

4

Note: Adapted from Census & Statistics Department of Hong Kong

Figure 22 Hong Kong's Laden Container Throughput for Ocean-to-Ocean Outward Transhipment 2001-2010

Hong Kong's Laden Container Throughput for Ocean-to-Ocean Transhipment

Outward Transhipment

	2001	2002	2003	2004	2005
Loaded seaborne laden containers' total throughput(000TEU)	6360	6785	7118	7533	7267
Overall outward transhipment(000TEU)	1281	1393	1563	1710	1911
Outward transhipment as % of total loaded containers	20.1%	20.5%	22.0%	22.7%	26.3%
Year on year loaded seaborne laden containers' growth rate	N.A.	6.7%	4.9%	5.8%	-3.5%
Year on year outward transhipment growth rate	N.A.	8.7%	12.2%	9.4%	11.8%

	2006	2007	2008	2009	2010
Loaded seaborne laden containers' total throughput(000TEU)	7503	8025	8051	6448	7527
Overall outward transhipment(000TEU)	2355	2843	3065	2640	3156
Outward transhipment as % of total loaded containers	31.4%	35.4%	38.1%	40.9%	41.9%
Year on year loaded seaborne laden containers' growth rate	3.2%	7.0%	0.3%	-19.9%	16.7%
Year on year outward transhipment growth rate	23.2%	20.7%	7.8%	-13.9%	19.5%

5

Note: Adapted from Census & Statistics Department of Hong Kong

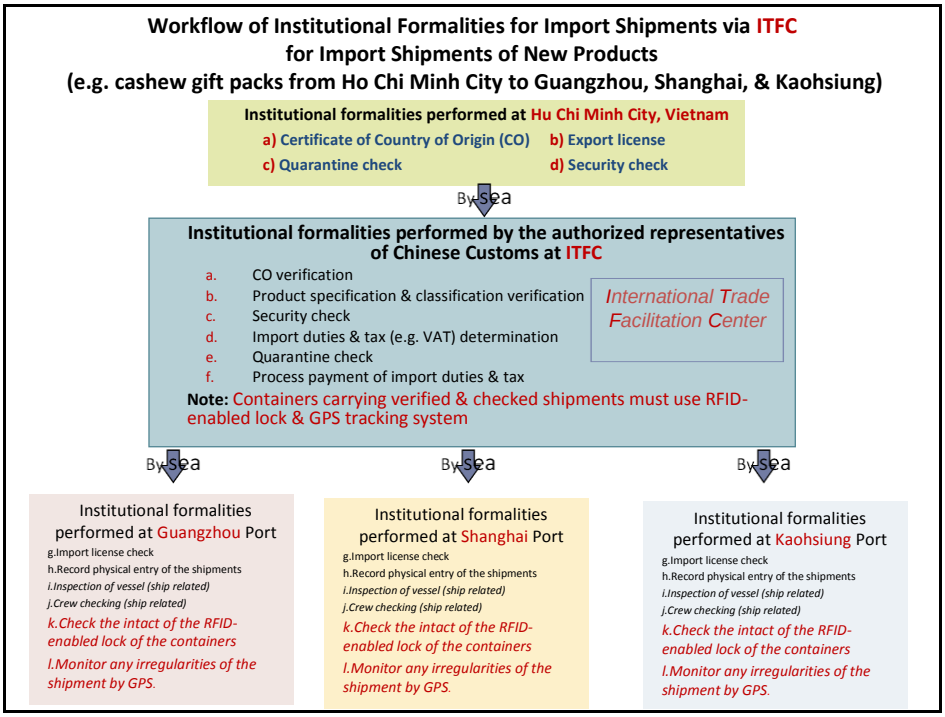
The HKCP possesses two distinctive competitive strengths, i.e., a) a clean and efficient administration and b) an advanced and free financial system. We can make full use of these strengths to upgrade the role of HKCP as one of the important gateway ports in Pearl River Delta region and Asia Pacific area.

It is recommended that an International Trade Facilitation Centre (ITFC) should be established in Hong Kong, which can serve the following key functions:

- Multinational customs processing function
- Tariff & duties financing function.

With these key functions, the ITFC can perform as a regional distribution centre for manufacturers with production facilities in different locations of Asia, e.g. Southeast Asia.

Figure 23 Workflow of International Trade Facilitation Centre.



The location of the proposed ITFC can be considered in two phases:

- Phase 1 (3-4 years) at River Trade Terminal
- Phase 2 (5-7 years) at Kwai Tsing Container Terminal, next to Terminal no. 9

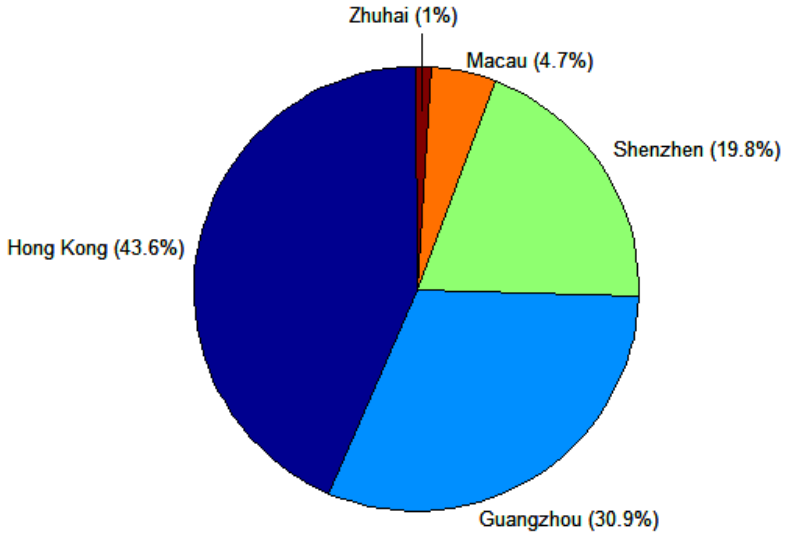
Annex F

Strengthen Competitiveness of Hong Kong International Airport

To explore the way forward for air transport development in Hong Kong, it is essential to examine first of all the current positioning of HKIA in the PRD region.

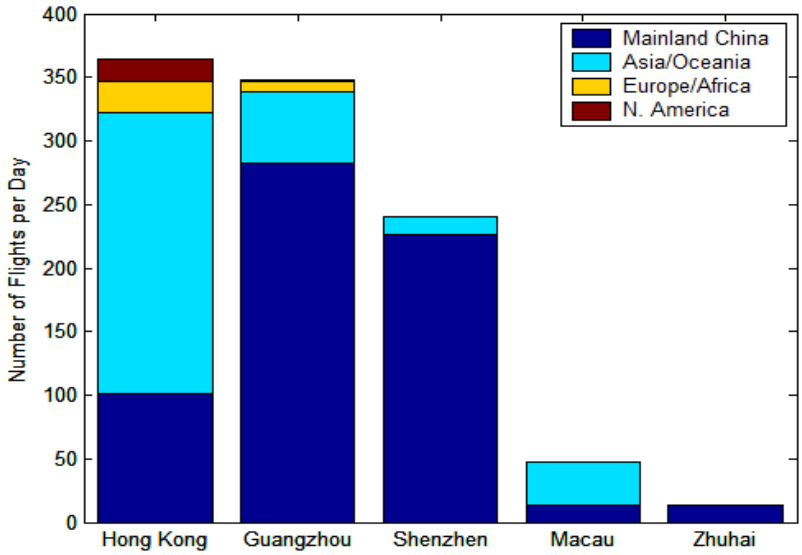
The following figure shows the share of passenger traffic at the five airports within the PRD in 2008. HKIA served 44% of passengers among all. GZIA and SZIA have contributed to slightly over half of the total passengers among five, and the passengers throughput in MIA and ZHA were insignificant comparing to the other three.

Figure 24 Share of passenger traffic at major airports within the PRD, 2008



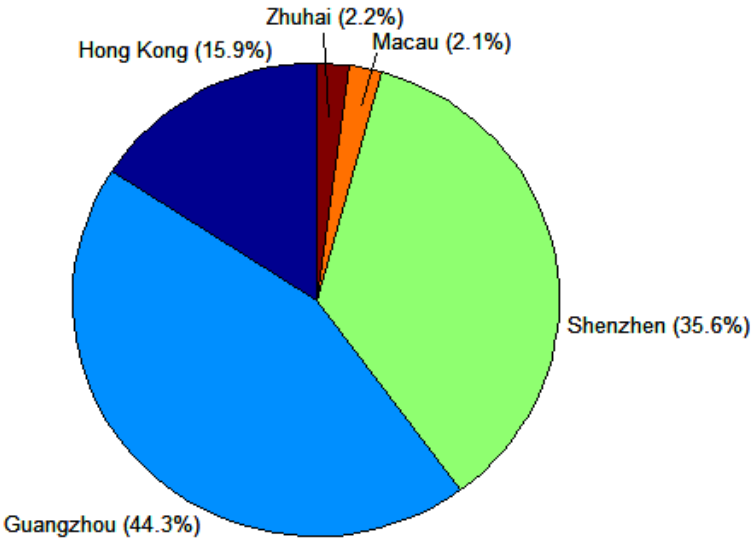
As shown in the figure below, all passenger flights departing ZHIA only fly to destinations in Mainland China in 2011. A vast majority (over 80%) of passenger flights departing Guangzhou and Shenzhen airports were destined for airports in Mainland China. Most aircraft movements from Hong Kong and Macau airports were to destinations in Asia. Flights between the PRD and the rest of Mainland China originate mainly from Guangzhou Airport. Within the PRD, a vast majority of international flights originate from HKIA.

Figure 25 Share of flights from major airports within the PRD to destinations in different continents (Feb 2011)



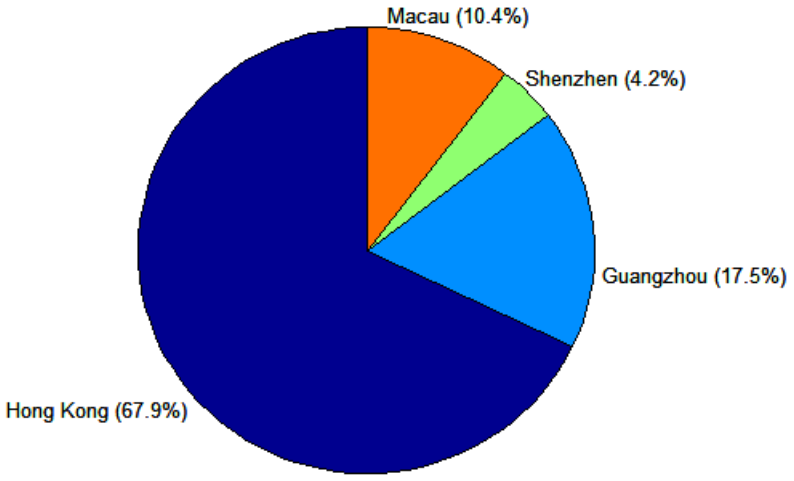
The pie chart below shows that 80% of the flights departing from PRD to other destinations in Mainland China were originated from GZIA and SZIA.

Figure 26 Share of flights from major airports within the PRD to destinations in Mainland China



On the other hand, 80% flights from the five airports in the PRD to Asia and Oceania were originated from HKIA.

Figure 27 Share of flights from major airports within the PRD to Asia and Oceania



It is observed that very small number of passengers chooses to use international services at Shenzhen and Zhuhai airports because of the high international airfares, even though some of the passengers actually stay in these two cities. The total amount of international airfares in Hong Kong plus the sum of land transport costs and additional transport costs for border crossing to Hong Kong is still lower than international airfares in Shenzhen and Zhuhai. Therefore the generalized cost of using these two airports is higher. Most international passengers would choose Hong Kong Airport and Guangzhou Airport. Even though the catchment of Guangzhou Airport is bigger than HK, its market share is less than one third of HKIA as the existing demand for international passenger demand is still concentrated in south PRD, especial Hong Kong, Shenzhen and Zhuhai. Following the growth in international passenger demand, Guangzhou will have the comparative advantage because of its geographical location to attract international passengers. On the other hand, passengers prefer to use Mainland airports in PRD for domestic flights, especially Hong Kong residents who live in North New Territories.

From Hong Kong's perspective, enhancing its aviation position has always been a major area of focus for the government, the industry and the Airport Authority Hong Kong. The above mentioned statistics numbers has exhibited that HKIA has a strong position to continue to hold a dominant market position in the region through its availability of service and facilities, competitive pricing structure, and its expected continued position as an international aviation hub.

(A) The Third Runway Debate

AAHK's aim is to maintain its role as an international aviation hub for both passengers and freight transport. It has to provide sufficient capacity to accommodate the continuous strong growth in both passenger and freight demands at HKIA.

IATA predicts that the international passenger traffic may grow at a 6.7% annual to reach 62.2 million in 2014. According to Hong Kong Tourism Board, Hong Kong may draw a record 39.6 million visitors in 2011, after setting a new mark of 36 million visitor arrivals in 2010, which was driven by a surge in tourists from mainland China. Total arrivals to Hong Kong were three times higher than the 11.6 million tourists to Singapore in 2010 and compared with the 5.9 million to Australia, according to the countries' tourism boards. HKIA also handled more than four million tonnes of cargo in 2010 as economic growth in China helped boost travel.

The amount of passenger and cargo that can be handled at the HKIA is determined by the number of aircraft movements, landing and taking-off on the two runways. AAHK has recently announced that the current handling capacity of the two runways is 60 aircraft movements per hour (ATM/hour) which is at 93% of capacity. It is to reach 100% by 2017[3] or even earlier.

There are concerns over AAHK's effort to strengthen its aviation hub position. Airports in the PRD have been generating significant competition for HKIA in recent years due to the rapid aviation growth. Some believe that GZIA or even SZIA will surpass Hong Kong in the near future. These airports are planning to expand their facilities to cope with the rising demand, including the construction of additional runways and/or terminals. The trade worries that Hong Kong's position as an aviation hub is very vulnerable and can be easily taken over.

To strengthen HKIA as an international aviation hub, AAHK is expected to secure more and frequent flights to major world airports and airports in the Mainland. International travelers can conveniently make connecting flights to places in the Asian region and various major cities in the Mainland. On the other hand, travelers from Mainland can also fly to overseas cities at HKIA easily. This strategy can apply to freight transport as well. The additional capacity offered by the third runway can provide the opportunity for AAHK to secure these additional flights. These additional flights can bring more passengers and cargo and in turn means more business for many trades, including logistics service providers, tourism industry, retailer as well as financing and insurance institutes. More than 180,000 people are directly and indirectly involved in the above mentioned sectors.

Arguments for Urgent Decision

There is obvious a strong demand from the trade to have a third runway at the HKIA as soon as possible. The reasons are that:

- The existing handling capacity of the two runways which is 60 aircraft movement/hour will be exceeded by around 2017. In order to push the current 60 movement/hour to 68 movement/hour, the Civil Aviation Department (CAD) has pledged to upgrade its Air Traffic Control (ATC) system by 2015. It is known from previous studies[4] that the capacity of the two runways is restrained by two other factors, i.e. the Tai Mo Shan in the northern approach of the airport and the air space constraint in the region
- Even with the upgrading of the Air Traffic Control (ATC) system to enable a more efficient handling of the aircraft movements, the capacity of the two runways can only be optimised to 68 aircraft movement/hour. This handling capacity can only cope with the increasing demand up to 2019.
- There may be some further increase in the handling capacity if the air space can be better managed by enhanced coordination among the three jurisdictions, i.e., Hong Kong, Macau and Zhuhai (Mainland).
- As it takes years to plan and construct an additional runway, there is an urgent need to make a decision ahead of time.

According to the recent announcement from AAHK, with an additional runway, the airport would be able to accommodate up to 620,000 aircraft movement/year[5], it will be able to handle the increasing

[3] International Air Transport Association, IATA

[4] The Runway for China Study by Strategy Access (commissioned by Cathay Pacific) in 2009

[5] Announcement of Hong Kong International Airport Master Plan 2030 on 01 June 2011

demand probably up to 2030. Whether a third runway should be built is a highly controversial subject. On one hand, the third runway can further increase the capacity of HKIA to bring in more passenger and freight, which will be important for the long-term sustainability of Hong Kong's economy. On the other hand, more aircraft movements will bring about negative environmental implications to the society.

Environmental implications

Hong Kong has the obligation to take into consideration its transport infrastructure development to achieve the low carbon objective. Therefore it is also important to address the question of how to prioritise or make better use of the remaining capacity where demand is going to exceed supply soon.

The third runway will no doubt be built through land formation by reclaiming the sea adjacent to the airport island. The consequences are obvious; there will be disturbances to the Chinese white dolphins active in that part of the sea. Many environmentalists have concerns over possible further loss of these living species due to the land reclamation. Department of Agriculture and Fishery may be able help to provide ecological figures before and after the third runway will be in operation to verify/ ease this concern.

It is expected that additional aircraft movements generated from an additional runway may also contribute to more carbon and other air pollutants emissions, leading to further deterioration of the air quality and more challenges in achieving the carbon reduction target. Moreover, it is believed that noise may be further aggravated by more aircraft movements. These environmental issues will have to be addressed by AAHK.

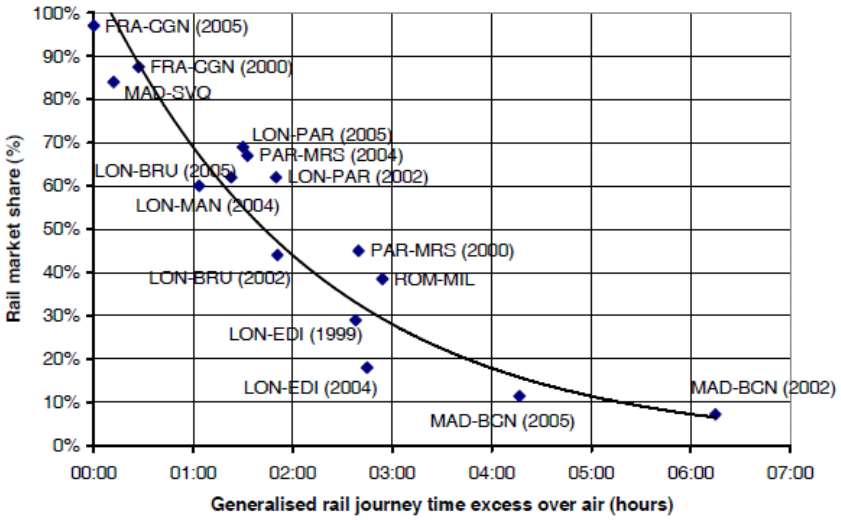
Possible impacts of the High Speed Rail

The massive national high speed railway network (4 north south lines and 4 east west lines) will largely be completed by 2017. The high speed rail will undoubtedly compete with air transport.

Air transport and high speed rail (HSR) are seen as competitors in short to medium range markets. It is clear that market share of air and rail depends on the fare level, the distance of airport and railway station from city centre and the service frequencies of the flights and trains. The shorter the travel distance, the more severe is the air-rail competition. It is expected that the short haul flights (less than 2 hours) within the areas covered by the HSR services will be largely losing out.

The following figure illustrates the relationship between the generalized rail journey time excess over air and rail market share for a number of European city-pair markets where HSR had been introduced. It shows that the shorter the generalized rail journey time excess over air, the higher the rail market share would be. Some travellers are willing to try new rail services if they are provided advantages over driving or flying.

Figure 28 Generalised Rail Journey Time Excess over Time (hours)



Source: Air and Rail Competition & Complementarity, August 2006

A majority of the flights from HKIA to the Mainland are long haul flights (longer than 2 hours), therefore the impacts of high speed rail (HSR) on air transports are expected to be insignificant. On the other hand, the HSR may bring additional passengers to HKIA as travellers can come to Hong Kong more conveniently and rapidly by HSR to benefit from the more frequent and larger network coverage of flights at HKIA.

It therefore requires a more accurate assessment to appreciate the residue effects (difference between the positive and negative effects) of the HSR on HKIA.

Possible impacts of linking the adjacent airports

Currently, there are two runways at HKIA; one at SZIA (two by mid of 2011), MIA and ZHA. Although there may be some excess capacities in SZIA, MIA and ZHA, it is highly unlikely that HKIA can divert flights to these airports because this might not be the air passengers' preference and each flight pair arrangement is reciprocal under the current freedom rights between Hong Kong and other countries.

The Way Forward

As the economies of Mainland, Russia, India, Brazil and Africa pick up in the coming decades, the demand for air transport is very likely to escalate more rapidly than in the last few decades. Therefore there is an urgent need to solidify the role of the HKIA as an aviation hub in the coming surge of demand.

AAHK has started a three months public consultation on the third runway on 01 June 2011. We strongly support this initiative. AAHK however should present to the public a full view of the picture to enable an informed decision on whether it is worth spending about HK$86 billion to build an additional runway.

Hong Kong as a major world city relies heavily on the development of HKIA (with or without the third runway). Hong Kong has outperformed other Chinese cities in the PRD to become the leading hub, and the extensive connectivity, flexibility and convenience of HKIA has a major contribution to this success.

The ecology, carbon emissions and public health are the three major challenges. Hong Kong as a responsible member of the international community must have the obligation to fulfil the international commitments to protect the ecology and reduce carbon emissions. Public health, of course, is the primary concern at the local level.

There are two mechanisms to control the need of major projects in Hong Kong against social and environmental impacts: a) the Cost Benefit Analysis and the Economic Internal Rate of Return and b) the Environmental Impact Assessment. No doubt the third runway project has to go through these processes.

These two processes will eventually boil down to two fundamental issues: a) who will be benefitted from the third runway and b) what will be the costs generated from capacity expansion including financial, ecological and environmental costs. To facilitate a wise decision from all sectors of the community, AAHK is suggested to prepare three sets of plans: a) a plan for the utilization of the third runway to maximize the benefit of the community; b) a strategic plan to preserve the ecology in Hong Kong; and c) a plan to minimize the carbon emissions by aircraft to fulfil our commitment to the environment.

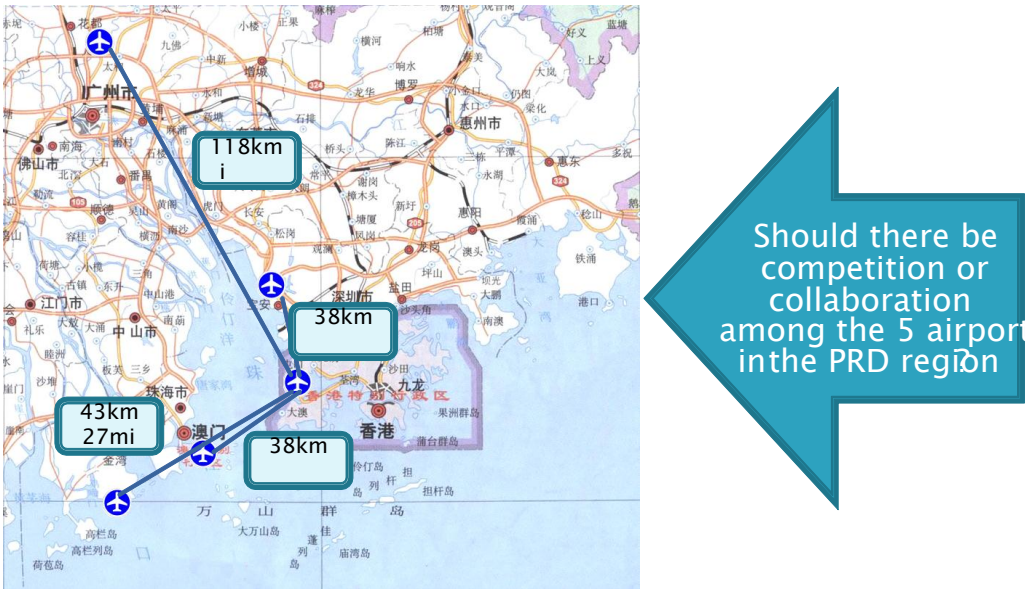
The government or AAHK should also investigate further including but not limited to the following on capacity building:

- Work with destination countries and airline companies to optimise the slot allocation
- Work with the Chinese government on the airspace limitation issue, such as the "Invisible Wall" to reduce flying distance as well as fuel use
- Enhance air traffic management to maximize the number of landings and take offs at the existing two runways, if possible.

(B) Linking Adjacent Airports

Whether it should be competition or collaboration among the five airports in the PRD region has always been a hot topic.

Figure 29 Five Airports in PRD



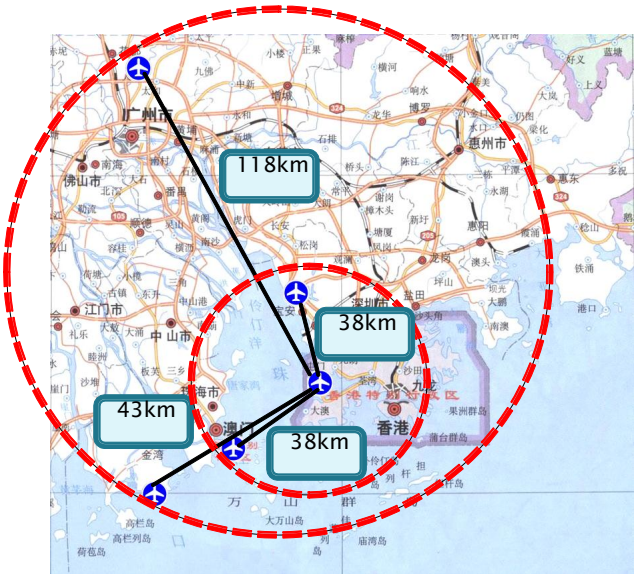
AAHK needs to conduct a benchmarking exercise against comparable airports to help determine its performance and competitiveness, and to determine whether competition or collaboration among the five airports in the PRD region is appropriate to support HKIA's air transport development. The benchmark exercise could include:

- To understand the competitive situation between HKIA and surrounding airports
- To discover the key competitive advantages of the surrounding airports in the PRD region
- To analyze HKIA's core competitive (advantages and weaknesses)
- To study HKIA's market coverage
- To research the development the airports in the PRD region when developing their hubbing capabilities

One of the aims of the "Reform of the Pearl River Delta Development Plan" was to enhance the communication and coordination between airports in PRD. Linking HKIA and Guangzhou, Shenzhen and Macau can bring tourists from more diverse regions, and also offer a better route choice to residents in Guangzhou, Shenzhen and Macau who want to travel abroad via HKIA. If HKIA aims to maintain its position as a regional aviation gateway and to strengthen its role as an international hub and if the above three cities aim to resolve the problem of scarce long haul international routes, the cooperation may be able to draw transit passengers for their outbound flights. Conversely, HKIA can also attract passengers who travel to these cities with Hong Kong as their final destination.

To promote collaborative development among Hong Kong and the PRD cities to form a world-class metropolitan cluster, an express rail link among all or a few selected airports in the PRD might be one of the opportunities to pursue.

Figure 30 Distances between the Five Airports in PRD



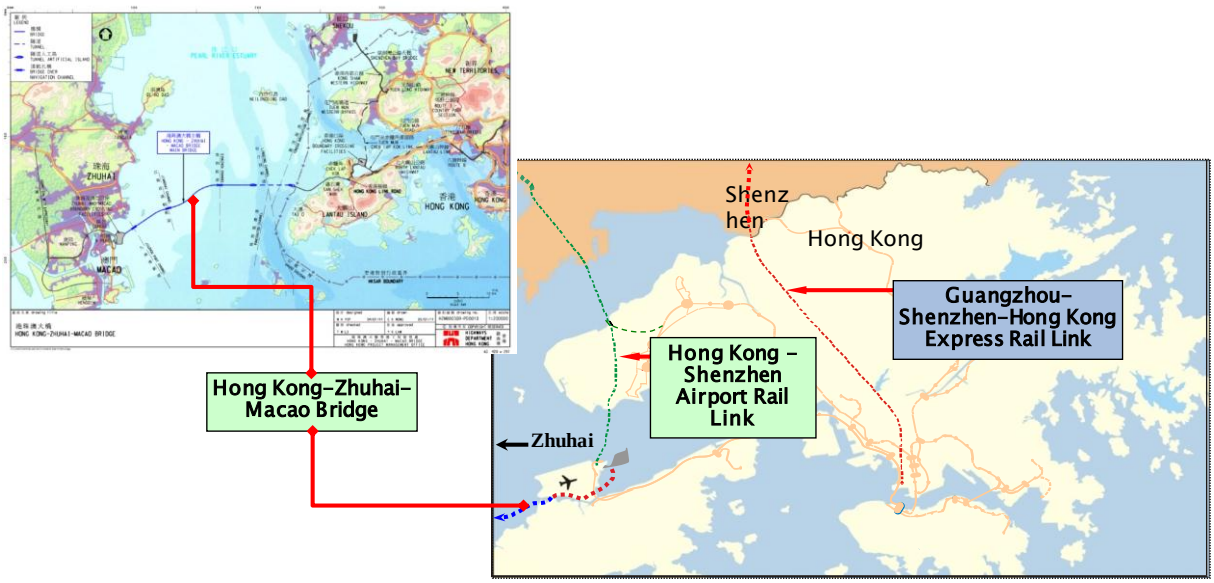
The figure above shows that GZIA is more than 100km away from HKIA. From the Chinese government policy perspective, it is competing with HKIA on international market. Therefore it might be lack of incentive to expand complementary development and mutual co-operation between HKIA and GZIA.

At present, cross boundary services at HKIA includes:

- Direct ferry services to Guangzhou, Shenzhen and Macau from HKIA are provided in the Sky pier II for the arrival passengers
- Shuttle buses from HKIA to Guangzhou, Shenzhen and Macau
- Taxi Service endorsed by the Airport
- Private agents in HKIA to provide Helicopter and jet services to Macau.

Further study is required to look at the feasibility of constructing a rail connection between the airports in PRD, whether it would be an open or closed system. The open system allow anyone to ride on the trains while the closed system (maybe special train car) to carry passenger from one airport to another airport custom areas. It is important to examine whether the rail connection would be able to extend the catchment area for Hong Kong and/or to strengthen Hong Kong's role as a multi-modal transportation hub. When the three or four airports work in cluster, air passengers will be able to enjoy better and cheaper services.

Figure 31 Rail Link between Hong Kong, Guangzhou, Shenzhen and Macau



(C) Mid-field Concourse

To maintain HKIA's role as an international and regional hub for both passengers and freight transport, HKIA needs to provide sufficient capacity to accommodate the continuous strong demand growth.

Considering that only terminal 1 is equipped with stands (aerobridge) and access to the aprons and runways, the airport's designed capacity is mainly referred to Terminal 1's designed capacity which is 45 million passengers per year.

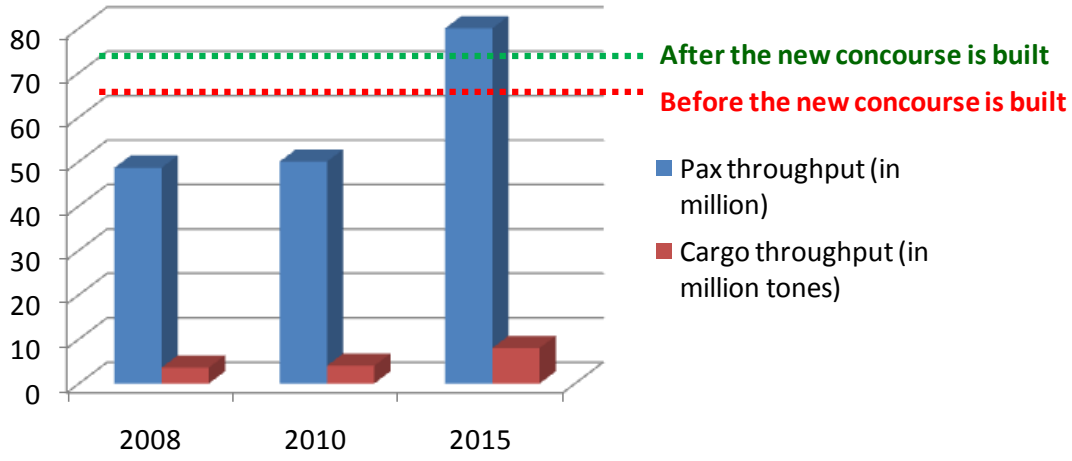
However, since 2008, the passenger throughout of HKIA was over 46 million and up to 2011 the passenger traffic has risen to 50 million passengers per year. To facilitate the increasing number of

passengers, at the end of 2009, North Satellite Concourse (NSC) was open. With the floor area of 200,000 sqm and 10 front bridges, NSC can serve more than 5 million passengers per year.

In the coming 4-5 years, another concourse will be completed. This concourse will be linked with Terminal 1 by an extension of the underground "automated people mover" and the concourse is expected to serve 10 million passengers per year. The new concourse with a total floor area of 73,000 sqm will be built with 20 aircraft parking stands, a new cross-field taxiway and the extension of the existing automated people mover (APM) to the midfield concourse.

However, the new concourse will only increase HKIA's capacity to 70 million passengers and 6 million tonnes of cargo per year, which will only be able to cope with the air traffic demand up to 2020. Therefore, a review of the design plan of the mid-field concourse under the Master Plan 2030 as well as accelerating the construction of the concourse is necessary

Figure 32 Capacity Constraint at HKIA after then new Concourse is Built



Annex G

Policy for Walking and Cycling in Hong Kong

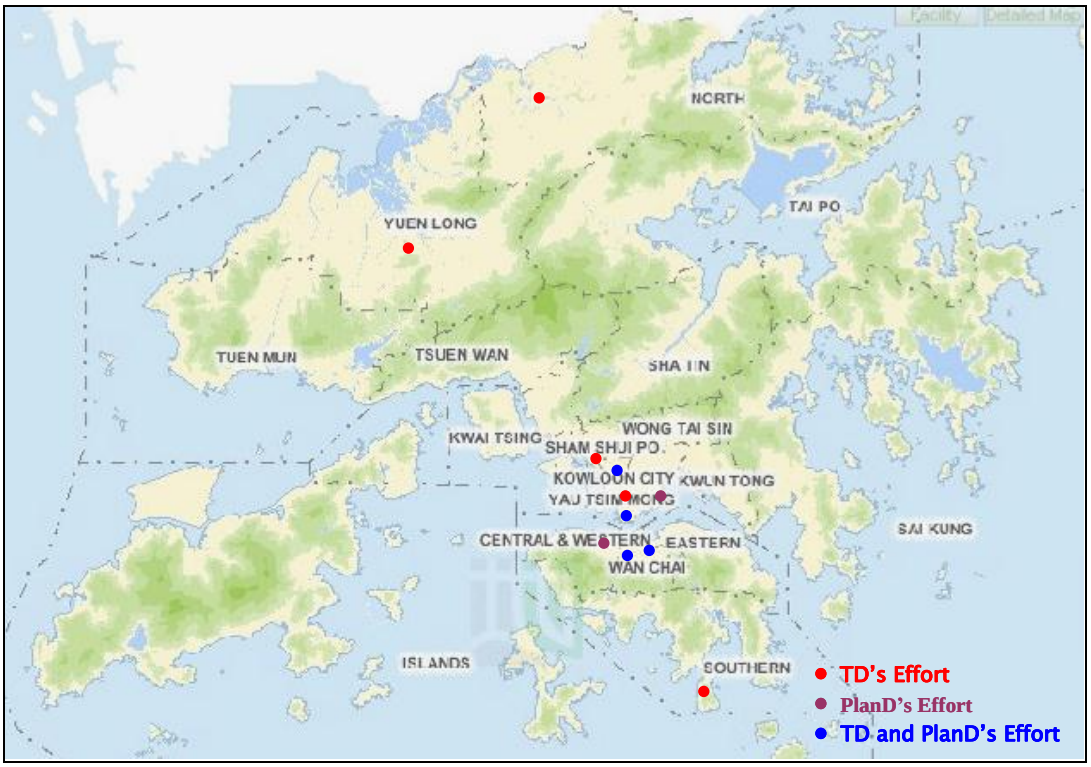
Policy for Walking in Hong Kong

Apart from the pedestrian connections to/from railway stations, Transport Department (TD) has been implementing different pedestrian schemes, including full-time pedestrian streets, part-time pedestrian streets and traffic calming streets in 10 different districts in Hong Kong. These schemes proposed by TD aim at:

- Improving pedestrian safety and mobility
- Promoting walking as a transport mode
- Discouraging access for non-essential vehicles
- Reducing air pollution
- Improving overall pedestrian environment

In addition to the pedestrian facilities provided by TD, Planning Department (PlanD) also have proposed considerable amount of pedestrian schemes through their Area Improvement Plans. Locations of these pedestrian schemes are shown in the following figure. These pedestrian facilities are installed and implemented separated mainly for pedestrian circulation purpose in the local district, especially in the urban areas.

Figure 33 Locations of Pedestrian Schemes Proposed by TD and PlanD



Source: Legco Paper (2006), PlanD (2001, 2007, 2008, 2009), TD (2010a, 2010b)

Policy for Cycling in Hong Kong

According to the Cycling Study Final Report (TD, 2004), relatively higher cycling modal shares are observed in the New Territories and outlying island (about 2%). The major factor discouraging cycling is the cycling environment.

- The expansion of the role of cycling is not advisable at this point in time due to poor underlying safety conditions
- The initial focus should be (TD, 2004)
  - to assist cyclists by enhancement of the New Territories cycle track network
  - to improve safety by better education, training and enforcement.

As shown in Figure 34, the existing cycling facilities are provided mainly for recreational purpose and mainly located at (1) new towns, (2) rural areas; and (3) countryside. These cycle tracks are all disconnected locally and regionally. In particular, a study reviewed some deficiencies of the existing cycling facilities (Gallagher et al., 2009) including poor cycle track connectivity, shortage or mis-provision of parking spaces, poor management and maintenance of parking spaces, poorly designed or maintained cycling facilities, lack of education and training, and insufficient enforcement efforts.

In view of these deficiencies, TD proposed a NT Cycle Track Network (Figure 35) to connect the existing local cycle track networks in various districts and passing through attractive points as far as possible. Thus, it is also mainly for recreational purposes.

Figure 34 Existing Cycling Facilities in Hong Kong

Figure 35 NT Cycle Track Network Proposed by Transport Department

Overseas Successful Experiences

This Study reviewed and analyzed different efforts in promoting walking and cycling from a number of European countries including:

- The Walk21 Initiative – An international charter promoting cycling (Walk21, 2011)
- Copenhagen's largest urban pedestrian network (Tan, 2006)
- London's Pedestrian Braid (Alexander et al, 2005)
- France's Velib' Bike Sharing Scheme (Certu, 2010)
- London's package of cycling measures (Cycling Superhighways and Cycle Hire) (Tfl, 2011)
- Seville's Public Bike Network Oficina de la Bicicleta (2010)

The review of experiences in implementing low carbon transport modes – walking and cycling – in the above mentioned countries reveals the following findings:

- Support and determination of the government is essential.
- Increasing Modal Share for bicycle and walking has been a common practice.
- Develop a continuous network of cycle tracks with special arrangement at junction is necessary to promote cycling.
- Develop a continuous network of pedestrian walkway, which is separated from the cycle tracks, is necessary to encourage walking for longer trips.
- Cycle sharing (can be in different form) are feasible, affordable and effective.

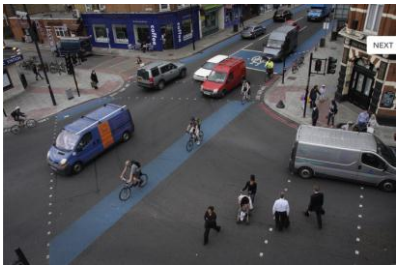
The review of international successful experiences indicate that one of the important components for the success of promoting cycling is to derive a target modal split specifically for walking mode. Some reference modal shares from European countries are listed below.

Table 5 Modal Shares of Walking and Cycling in some European Countries

City	Size	Density	Modal Share of Non-Motorised Mode (%)			
			Cycling	Year of investment	Walking	Year of investment
Basel	167,763	70.3	21%	22	28%	5
Bremen	546,038	16.78	25%	8	20%	7
Brighton & Hove	256,600	29.98	3%	5	N/A	5
Copenhagen	528,208	59.0	38%	25*	23%	40
Freiburg	239,665	14.35	27%	30	22%	2
Ghent	237,250	15.19	17%	20	18%	12
Graz	235,477	20.21	16%	21	22%	None
Groningen	184,227	22.01	55%	30	N/A	None
Hannover	519,212	25.43	15%	20	28%	None
Lund	109,147	2.54	42%	40	24%	5
Stockholm	829,417	44.1	6%	11	N/A	None
Utrecht	299,891	29.7	33%	always	N/A	None
Zurich	380,499	41.4	8%	30	46%	25

*Note: though some level of investment for 100 years
Source: Summarised from Warren (2010)

While it is not suitable to provide cycling facilities in some areas in Hong Kong (e.g. the urban areas) due to safety concerns, the focus of the target modal share for cycling may emphasize on new towns or newly developed areas. Some reference modal shares of cycling in European countries are provided in the table above.



London's Superhighways with special treatment at junction (Transport for London, 2011)

Develop a continuous network connecting the existing local district cycling tracks – As mentioned, the existing cycling facilities are largely disconnected locally and regionally, especially at junctions. Therefore, it is recommended that these disconnected cycling facilities should be connected to form a continuous cycling network with a reasonable hierarchy. The proposed NT Cycle Track Network being constructed is a good basis for the future development of a continuous network. With reference to overseas experiences, priority should be given to cycling tracks at junction areas to ensure a safe and prioritized cycling environment. Grade separated treatment may also be used as it does currently in some new towns such as Shatin, Taipo and Tsueng Kwan O.

London's Superhighways with special treatment at junction (Transport for London, 2011)

Other cycling initiatives include:

Cycle Sharing System – shared uses of bicycles have been a common measure to encourage the use of cycling as a commuting mode (such as the France Velib' Bike Sharing Scheme, London's Cycle Hire Programme and the associated Cycle Superhighways, as well as the Seville's Public Bike Network). The success of these cycle sharing services usually include (1) a good network of bicycle stations available for the easy access of users; (2) a significant amount of bicycles available; and (3) the facilities would be always available 24 hours a day and 7 days a week. Experiences from those programme indicated that it could provide an affordable alternative mode of transport and thus significantly increased the modal share of cycling. It is recommended that this new idea can be introduced and tested in some newly developed areas such as Kai Tak.

Velib' Bike Sharing Scheme in Paris (Certu, 2010)

VeloMobile (or Bicycle Car) – it is a human–powered vehicle which is enclosed for aerodynamic advantage and provides protection from weather and collision. Experiences from overseas countries indicated that it is very practical for daily use in all weather. As indicated in Table 6 below, the performance of VeloMobile can double that of a regular bicycle in terms of speed under different conditions (Van De Walle, 2007).

Table 6 Comparison of Performance between Bicycles and VeloMobile

	Regular Bicycle	Standard Velomobile	Racing Bicycle	Best Practice VeloMobile
Flat Road	20.5 - 29.9	28 - 41	27 - 37.5	34 – 50
5% Uphill	9.7	8.6	11.6	9
2% Downhill	29.5	50	38.5	63.8
Strong ahead Wind	5.5	12.1	9.3	17.4

Source: Van De Walle (2007)

VeloTaxi or CityCruiser – it is a concept originated from Berlin in 1997 (VeloTaxi WM 2010). It is a brand of the Veloform Media GmbH. It was the official carrier at the Expo 2000 in Hannover. The VeloTaxi System utilises independent drivers running on scheduled routes on their own account. They may have to pay a minor service fee to cover the daily expenses such as maintenance and insurances. The business model of VeloTaxi system does not rely on passenger fares but the advertising income can make up the major revenue of the system. The operation of VeloTaxi has been expanded from 30 vehicles in 1997 to 35 locations all over Germany, Australia and other European and Asian countries (Figure below). In 2004, VeloTaxi has transported over 360,000 passengers in Berlin alone.

Example of a VeloTaxi (VeloTaxi WM 2010)

Figure 36 Distribution of Locations of VeloTaxi Operations (VeloTaxi WM 2010)

(a) Locations in Germany

(b) International Locations

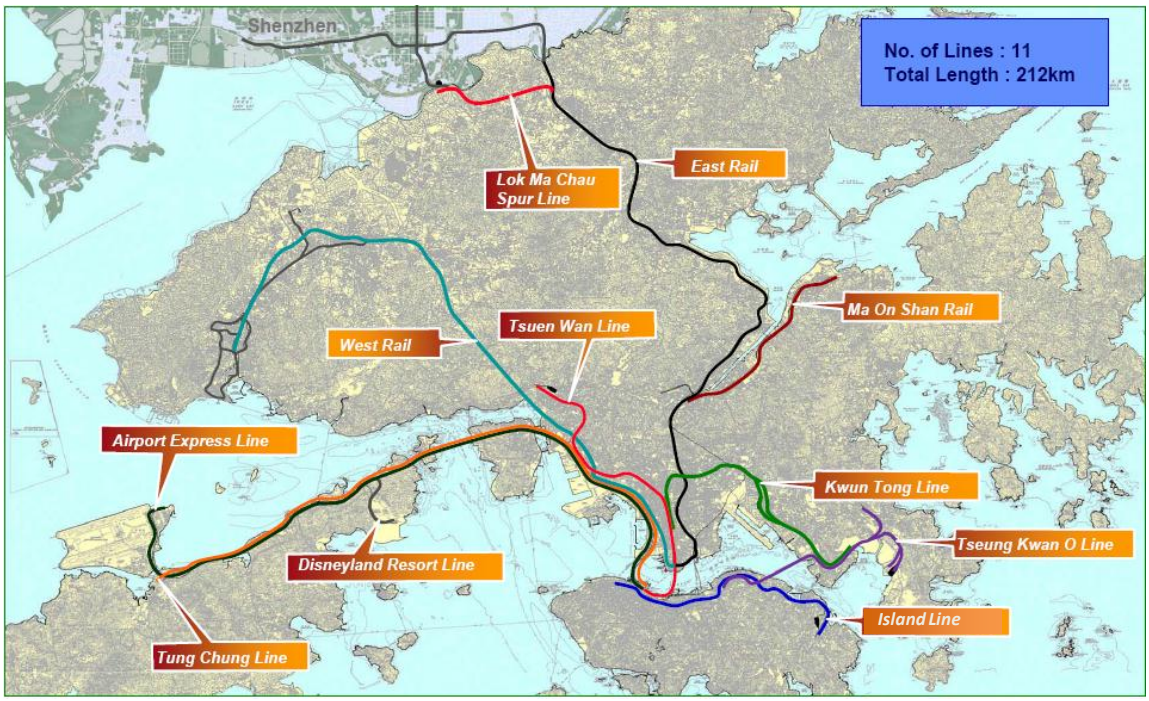
Annex H

Existing Railway Network and Possible New Rail Lines

The Existing Railway Network

The existing 11 railway lines within Hong Kong are shown below.

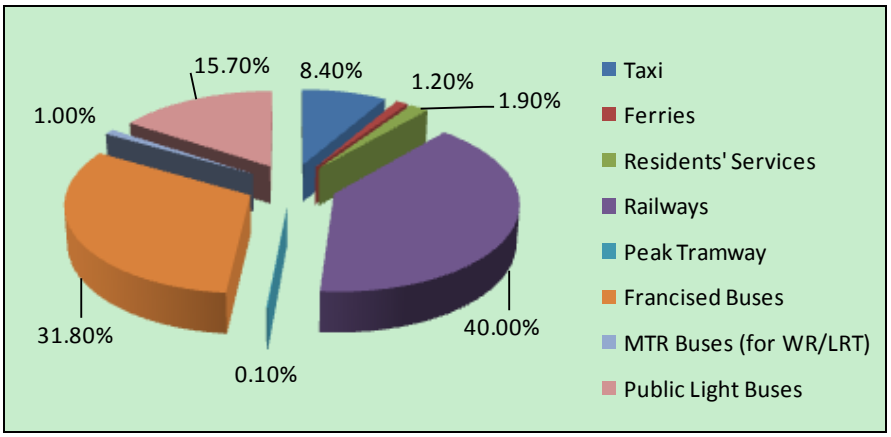
Figure 37 Existing Railway Network in Hong Kong



Source: MTRC, Hong Kong

There is about 4.1M daily passenger journey of passenger using railway which accounts for about 40% of mode share of average daily public transport passenger as shown in the following figure.

Figure 38 Distribution of Average Daily Public Transport Passenger by Mode (Dec 2010)



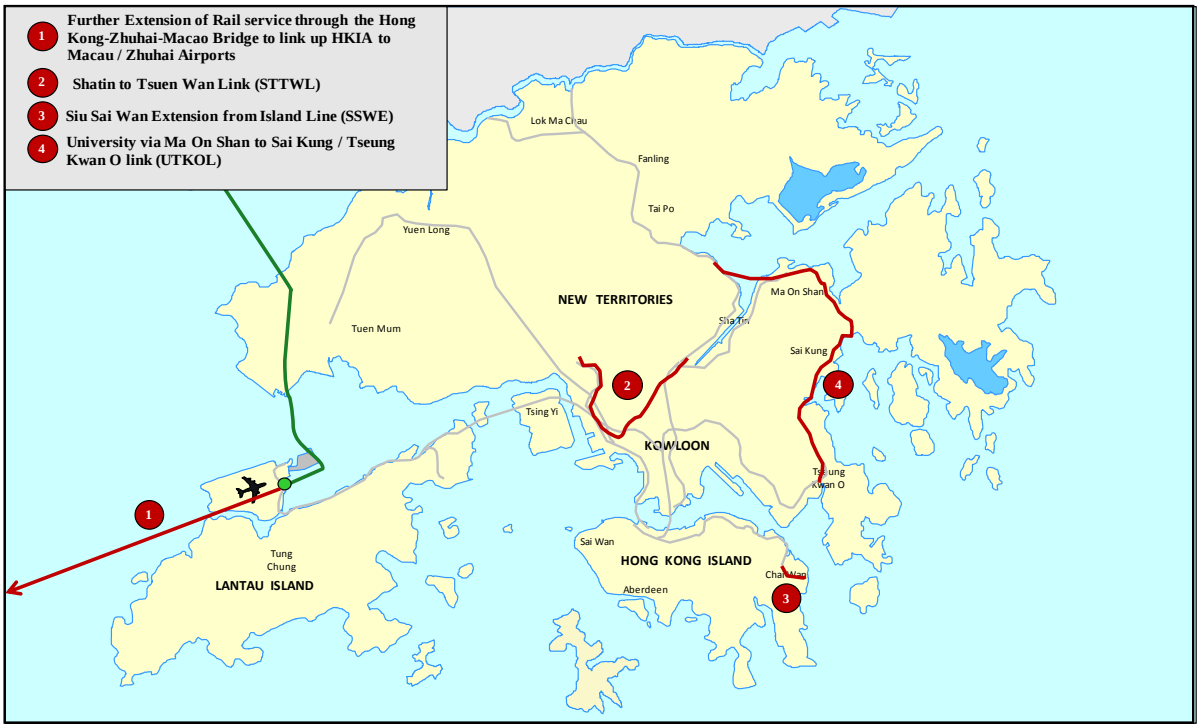
Source: Monthly Digest (Dec 2010), Transport Department, Hong Kong

The Possible Rail Lines

Despite the planned links, there are still some missing links that are worthwhile for further exploration. These missing links will help complete the railway network. They include:

- Extension of Island Line to Siu Sai Wan
- University via Ma On Shan to Sai Kung / Tseung Kwan O link
- Shatin to Tsuen Wan Link (maybe of lower priority)

Figure 39 Possible Railway Lines For Further Studies



Extend Island Line to Siu Sai Wan (SSWE)

SSWE can extend the current Island Line to Siu Sai Wan. Siu Sai Wan was a proposed station of the MTR of Hong Kong. Plan was revealed in 2001 to extend the Island Line to Siu Sai Wan on the eastern end of the Hong Kong Island, after many calls from the Eastern District Board (later District Council) since 1991.

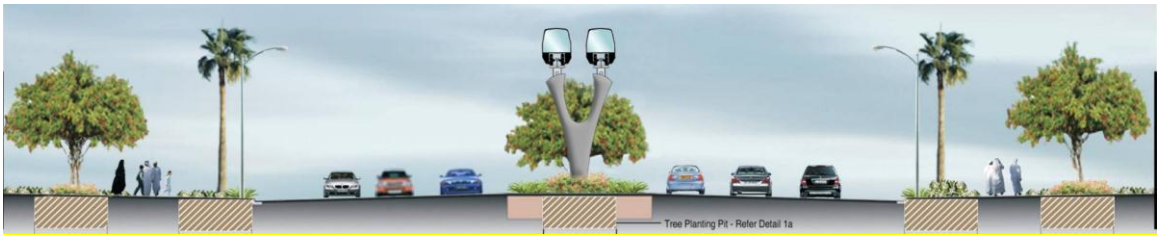
Although the population size in Siu Sai Wan is large enough to support a station, the alignment of the existing Island Line makes it difficult to extend the line from the terminus Chai Wan Station. Such an extension would require a U-shaped tunnel passing through the Pottinger Peak. An alternative plan was to build a Y-shaped branch from Heng Fa Chuen. The plan was later shelved, despite continued calls from the District Council.

University via Ma On Shan Link to Tseung Kwan O Link (UTKOL)

Currently passengers from MOS going to the North NT need to change to East Rail Line at Tai Wai Station. The UTKOL rail links the Ma On Shan Rail, looping back to the University / Tai Po Market Station via Science Park. It will shorten the rail trip from Ma On Shan heading north. UTKOL can also further extend to serve the Sai Kung district. It can intersect with the TKO Line at Hang Hau Station or Tseung Kwan O Station, where passengers can interchange with the TKO Line. Due to the terrain constraints and the current limited demand, elevated LRT or monorail can be considered. Further study is required to determine which type of rail will be the best.

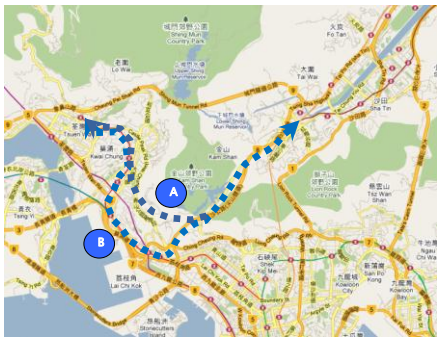
Monorail may be one of the option which has the advantages of smaller footprint, lighter structure and less obstruction of sunlight – more environmentally friendly. It has more elegant construction and can reduce structural requirement and no overhead powerlines is required.

Figure 40 Possible Monorail System for UTKOL



Source: http://www.urbanaut.com/

Shatin / Tai Wai and Tsuen Wan Link (STTWL)



STTWL aims at connecting Shatin and Tsuen Wan directly. There could be two possible options, one linking Shatin / Tai Wai and Tsuen Wan directly (direct linkage) and another linking Shatin /Tai Wai and Tsuen Wan via Kwai Chung (larger catchment). This link however may be of lower priority.

Annex I

Existing Road Network and Planned Road Links

Existing Road Network

Hong Kong's roads are among the most heavily used in the world. In June 2010, there were over 590,000 vehicles on 2,071 kilometres of roads - 446 on Hong Kong Island, 459 in Kowloon and 1,166 in the New Territories. There are 15 major road tunnels, 1,293 flyovers and bridges as well as 1,169 footbridges and subways to keep people and goods on the move. The following figure shows the existing road network within Hong Kong.

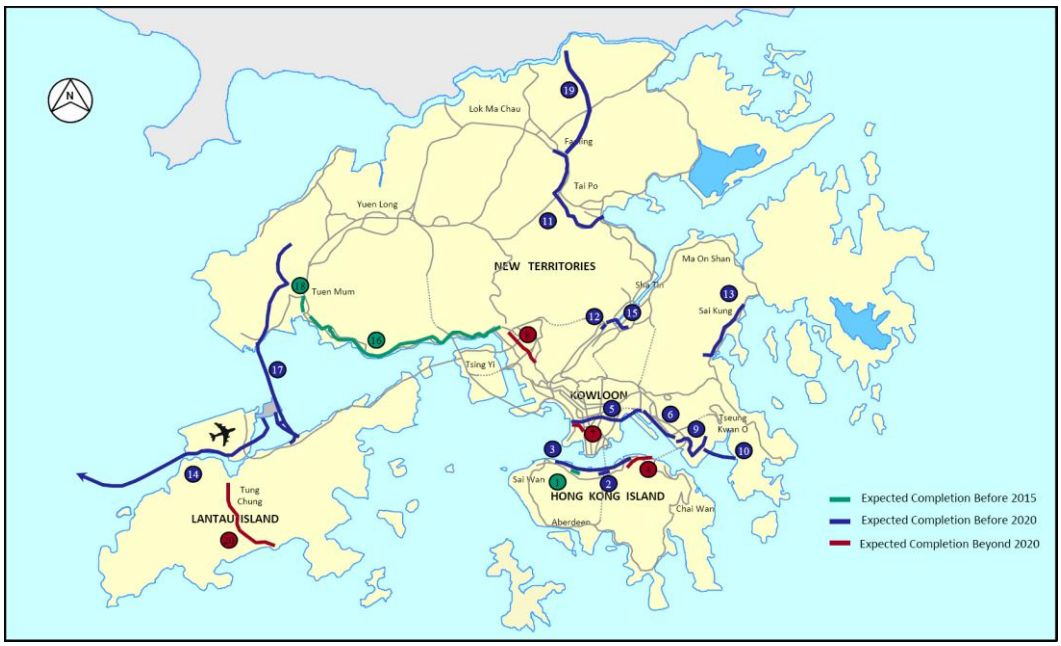
Figure 41 Existing Highway Network in Hong Kong

Source: Highways Department, Hong Kong

Planned Road Links

To cope with the traffic growth, there will be about 20 roads to be built. The planned road links up to and beyond 2020 is shown in the following figure.

Figure 42 Planned Road Infrastructures in Hong Kong



Annex J

Dedicated Public Transport Corridors

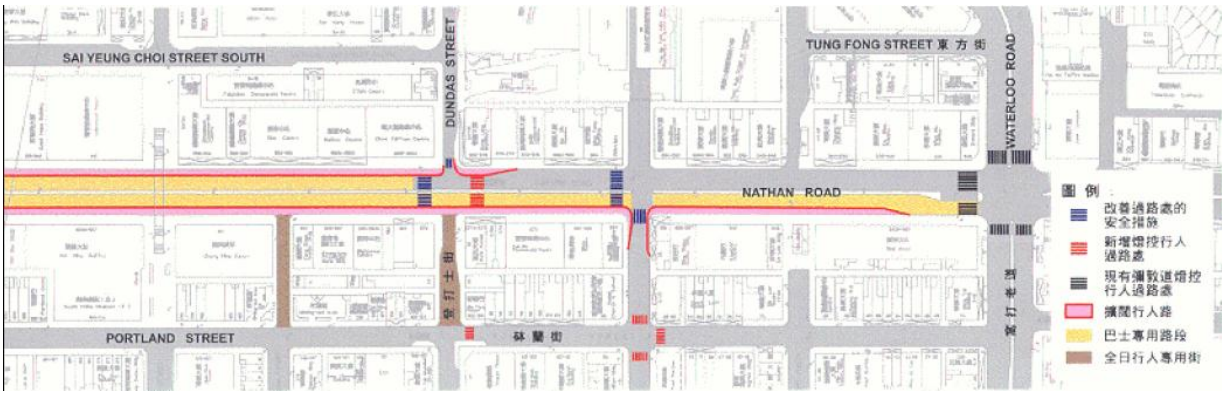
A dedicated public transport corridor is designed for the exclusive use of PT (e.g buses). It can be in its own right-of-way, or in a railway or highway right-of-way. By running high-capacity transit vehicles at high frequencies, these types of dedicated PT corridors can achieve passenger capacities per hour equal to many light rail transit systems. Dedicated PT corridors usually have on-line stations, constructed so that there is room for overtaking stopping PT vehicles.

Dedicated busways are often designed as low-cost precursors to future rail corridors. In Ottawa, the Transitway was designed with the intention of upgrading to light rail in the future as ridership growth justified additional investment. Curitiba in Brazil was planning to convert its most heavily used busway to light rail transit originally.

Strategic distributor roads on Hong Kong Island (eg Hennessy Road, Queens Road Central) and Kowloon (Nathan Road) are very congested. The problem may be alleviated by rationalising bus services and giving them priority.

Bus services on the main corridors on Hong Kong Island and Nathan Road, with core, rapid and prioritised services on these corridors could be restructured to replace the multiple routes that currently serve them. To be successful, incoming buses would need to converge in specially designed public transport interchanges where passengers could change buses quickly, conveniently, and in comfort – sheltered from the heat, cold and rain. The result should be fewer buses on the main corridors, but operating a highly efficient service on protected routes with good ancillary facilities. Bus Rapid Transit systems developed elsewhere may be a model for Hong Kong.

Figure 43 Bus Services Improvement Schemes for Nathan Road



Source: Transport Department

Annex K

Minimising Road Opening Works

Utility Tunnel

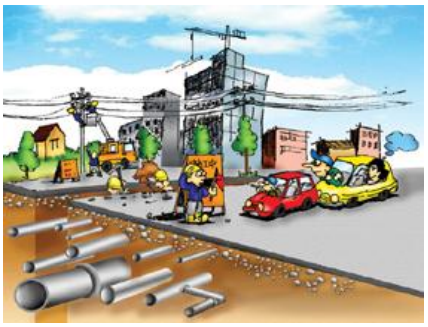
Utility Tunnel is one of the options to minimize the need for excavation. The structure built above the earth and underground containing more than two sorts of public utilities, and its facilities including drainage, ventilation, lighting, communication, electricity, and relevant systems of surveillance and detection. A utility tunnel is a subterranean space for wires, conduits, pipes, and other conveyances used in the delivery of utilities with enough room for a human to enter.

A common utility duct, sometimes called a common utility conduit, is any structure – above, on, or below ground – that carries more than two types of public utility lines.

Utility Tunnels have been constructed worldwide to concentrate, and protect utility and supply lines. They are commonly used in the US, Canada, Europe, South Africa, Australia and some Asian countries such as Japan, Singapore, Taiwan and Malaysia.

Utility tunnel has not been widely used in Hong Kong. It can be considered to be implemented in some busy roads such as Nathan Road and Gloucester Road to minimize the need for road opening. Some advantages of utility tunnels are:

- Reduced road digging costs that involve traffic, road restoration difficulties and safety hazards
- Reduced maintenance costs
- Reduced energy losses
- Utilization of public ground
- Better use of resources
- Knowledge about the utilities
- Monitoring and control
- Lower material and pipeline costs
- Encourage mid and long-range thinking
- Improved public safety



Although the initial investment costs of the construction of utility tunnels is high, construction method such as trenchless technology allows reduction in cost.

Rollpave Technology

Rollpave is a thin, rollable surface with a thickness of approximately 3 cm. By using induction, the surface can be adhered in place and removed from the bottom layer very quickly. This road surface is intended for quick maintenance, replacement and overlaying of road layers on paving that provides sufficient support.

The road surface is also useful for open and dense surfaces on civil engineering structures and for emergency repairs that need to be carried out quickly because no cooling-off time is needed.

Rollpave has been tested and under observation on a couple of bypasses of highways in Netherlands under a test called “Road to the Future” program sponsored by the Dutch Road Authority.

In order to minimize the disturbance caused by road works and road pavement, rollpave could be one of the systems to be considered in Hong Kong if the test results this technology turns out to be successful.

Annex L

Maintenance/Operation/Management (MOM) Mode of the Strategic Highway Network

Existing Road and Traffic Management/ Maintenance Arrangement

At present, the Hong Kong government is responsible for the traffic control, traffic management and highways maintenance for public roads in Hong Kong.

Table 7 Road and Traffic Management / Maintenance in Hong Kong and the Responsible Government Departments

Road and Traffic Management / Maintenance	Responsible Department(s)
Traffic Control and Surveillance	Transport Department / Electrical and Mechanical Services Department
Traffic Operation and Management	Transport Department and Traffic Police
Road Maintenance	Highways Department

Outsourcing of the operation and maintenance of the road asset is more common in the US but almost all roads are operated and maintained by the central or local government in the UK. However, there is also a successful example in Hong Kong.

The management, operation, and maintenance (MOM) of the Tsing Ma Control Area TMCA was contracted out to a private operator, Transport Infrastructure Management Ltd. and the Government Monitoring Team (GMT) is responsible for monitoring of the operator's performance to ensure that its standards of performance meet the contract requirements.

The Tsing Ma Control Area (TMCA) is an integrated expressway system linking the new Airport to Kowloon Peninsula and the North West New Territories. It comprises the Kwai Chung Viaduct, Rambler Channel Bridge, Cheung Ching Tunnel, Ting Kau Bridge, the Lantau Link (consisting of Tsing Ma Bridge, Ma Wan Viaduct, and Kap Shui Mun Bridge), and part of the North Lantau Expressway (up to Yam O Interchange). The TMCA has a total length of 17 km and its total construction cost is $21 billion in money of the day (MOD) prices.

The table below shows that TMCA has been managed under strict performance targets by the private operator.

Table 8 TMCA Performance Indicators

		Pledged target	Percentage of achieving the target in 2009 (%)	Percentage of achieving the target in 2010(%)	Target in 2011 (%)
1	Respond to traffic accident/vehicle breakdown from the tunnel tube, expressway and bridges	Within 5 minutes	99.7	99.77	98
2	Remove breakdown vehicle/obstacle from the tunnel tube, expressway and bridges	Within 12 minutes	99.66	99.7	95
3	Inform users of traffic obstruction inside Tsing Ma Control Area through the Variable Message Signs	Within 2 minutes	100	100	95
4	Inform users of traffic obstruction inside Cheung Tsing Tunnel through Public Address and the Broadcasting Systems	Within 5 minutes	100	100	95
5	Keep the average carbon monoxide (CO)concentration level inside the tunnel at all times	Below 100ppm	100	100	100
6	Keep visibility inside the tunnel at all times	Below an extinction coefficient of 0.005/m	100	100	100
7	Reply to public complaint	Within 7 working days	100	100	100

Source: Transport Department

Further Enhancements

Subsequent to the successful example of the TMCA, the concept of outsourcing of asset management can actually be applied to the management of the roads and road tunnels in Hong Kong by district. For example: (i) Tsing Ma Control Area, (ii) Tsing Sha Control Area, (iii) NT East, (iv) NT West, (v) Kowloon East, (vi) Kowloon West, (vii) Hong Kong Island and (viii) Road Tunnels, as shown in the following figure.

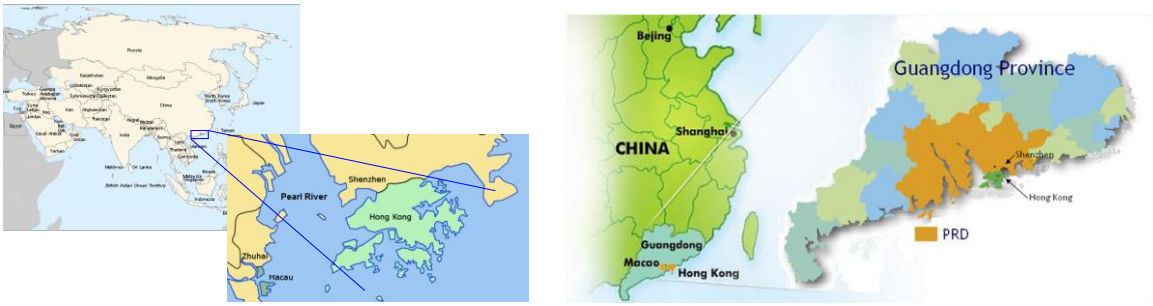
Figure 44 Proposed District-wise MOM mode for Transport Asset Management

Annex M

Trend of Increasing Cross Boundary Traffic and Further Enhancement of Rail Link

Hong Kong is located at the heart of the Pearl River Delta (PRD), with its economy characterized by free trade, low taxation and minimum government intervention. It is the world's 11th largest trading economy, with Mainland China as its most significant trading partner.

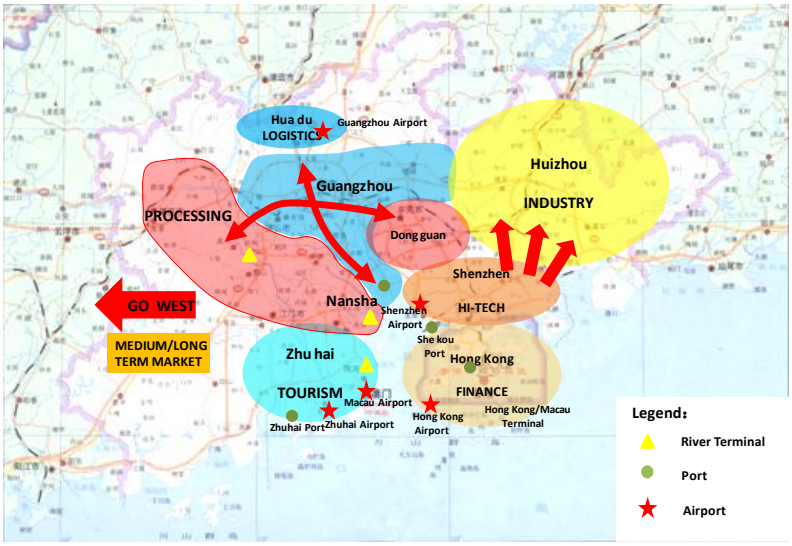
Figure 45 Positioning of Hong Kong



Source: Transport and Housing Bureau, Hong Kong

Hong Kong, as the financial centre in this region, is a popular venue for setting up regional headquarters or representative offices for multinational companies to manage their businesses in the Asia Pacific, particularly in Mainland China.

Figure 46 Functions of Hong Kong in PRD



Source: Guangdong Province Commission of Population and Family Planning, China

Based on a government survey, as at 2 June 2008, there were 3,882 regional headquarters (RHQs) and regional offices (ROs) in Hong Kong representing their parent companies located outside Hong Kong, a 21% increase from five years ago. Of these companies, 84% were responsible for business in the Mainland China, confirming Hong Kong's role as a gateway to the Mainland.

According to the Twelfth Five-Year Plan, the region will stick to its strategic orientation toward high-end development, build a new stronghold for independent innovation, forge a number of advanced manufacturing bases that rank high among their world counterparts in both scale and quality, foster a batch of internationally competitive world-class enterprises and brands, develop a system of service

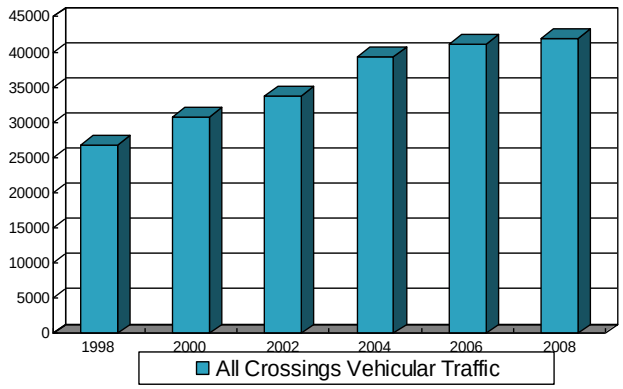
industries to match Hong Kong as an international financial center, and develop into an international center for shipping, logistics, trade, conferences and exhibition, tourism, and innovation that has a different positioning from Hong Kong.

The PRD region is ranked high among all Chinese economic regions in terms of economic strength, attain stronger ability to influence and lead the surrounding areas, forge a multi-layer community of industries around the region in which the different layers complement each other with resources, have interrelated industries, and experience different levels of development, and develop into the leading force for the development of is peripheral areas and the Pan-Pearl River Delta Region as well as a more powerful engine for the development of the whole country.

Through the "Individual Visit Scheme" and "Closer Economic Partnership Arrangement, CEPA" implemented in 2003/2004, the process of the integration and development of SZ&HK has been further accelerated, and the cross-boundary vehicles and personnel maintained a sustained growth in higher speed.

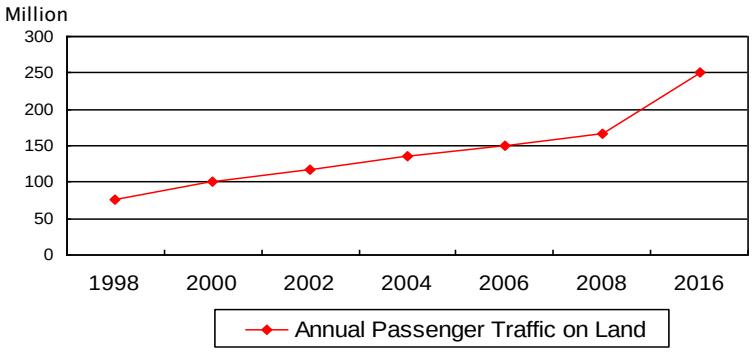
In 1998, the daily cross-boundary vehicular was just about 26,800 but it has been increased to 42,000 in 2008. Regarding the annual landside traffic passenger, it has been increased from 77 million in 1998 to 162.8 million in 2008 and the projection for 2016 may hit 250 million[6] as shown in the following figures.

Figure 47 Increasing Trend of Cross Boundary Vehicular and Passenger Traffic on Land



Source: Transport and Housing Bureau, Hong Kong

[6] Figures from the Transport and Housing Bureau, Hong Kong, 2009

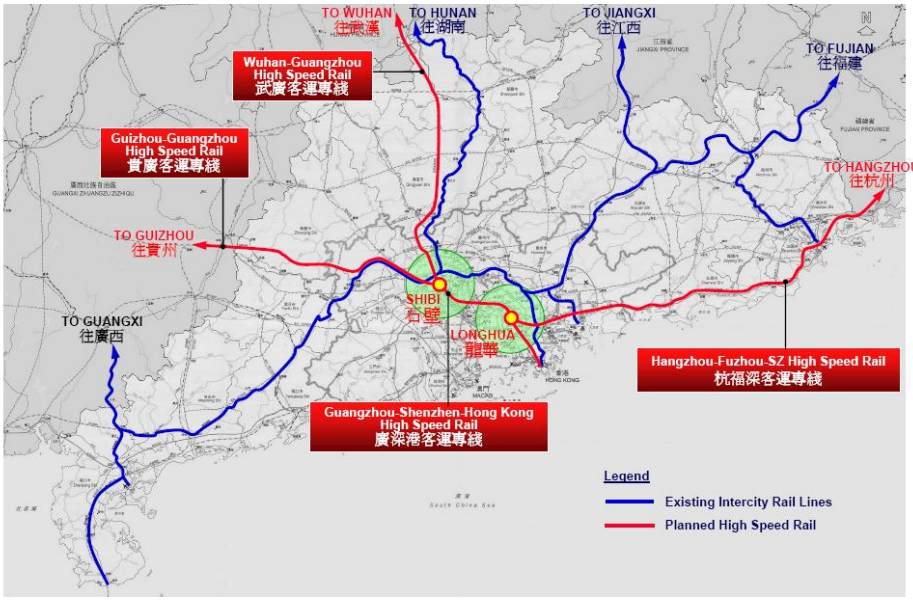


Source: Transport and Housing Bureau, Hong Kong

Whether there is a well developed infrastructures to enhance the accessibility will certainly impact on whether Hong Kong can continually act as an important international gateway in this region. Therefore, intercity rail transit network in the region should be constructed as quickly as possible, the railway, expressway, and intra-region express trunkline networks have to be improved, and the transport connection between the two sides of the Pearl River estuary should be strengthened.

Regarding the land transportation, there are currently 6 main cross-boundary boarders between Hong Kong and Shenzhen including Luohu Port, Huanggang Port, Man Kam To Port, Sha Tau Kok Port, Futian Port and Shenzhen Bay Port. For the railway transport, there are 2 cross-boundary railways serving railway passengers including the Luohu Railway and Futian/Lok Ma Chau Extension Railway. For the road transport, there are 4 cross-boundary highways, named Huanggang/ Lok Ma Chau Highway, Man Kam To Highway, Sha Tau Kok Highway, and Shenzhen Bay Expressway.

Figure 48 Existing Intercity Railway Lines and Planned High Speed Rails



Source: MTRC, Hong Kong

Annex N

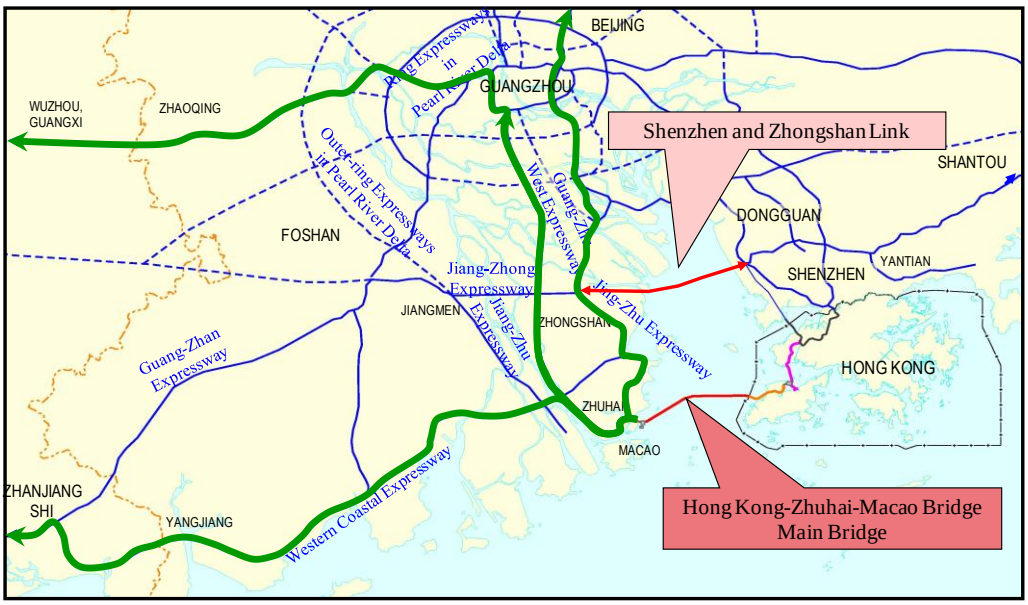
Road Links to Maintain and Enhance Hong Kong's Position in the Region

While all the attention has been paid on the HZMB which is currently under construction connecting Hong Kong with Macao and Zhuhai, Guangdong government has been busy planning a second crossing of the Pearl River Delta.

The Guangdong Government has thrown its weight behind a plan to link Shenzhen with Zhongshan via a bridge across the estuary. It still needs approval from the local city governments, but if it can be approved, it will only take 30 minutes to travel from Zhongshan to Shenzhen and Guangzhou airports and only one hour to Hong Kong.

The following figure shows the planned road network in the region. The two major road projects include the Shenzhen and Zhongshan Link and the Hong Kong – Zhuhai – Macao Bridge (HZMB). The Highways Department has estimated daily traffic volume of the HZMB will be about 9,200 ~ 14,000 vehicles when the HZMB opens in 2016. In 2035, the daily traffic volume of the HZMB will be increased to 35,700 ~ 49,200 vehicles. The government has been considering means to broaden the availability and flexibility of cross-boundary travel for private cars.

Figure 49 Planned Regional Road Linkages in PRD



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KY Leung

THE STUDY TEAM MEMBERS

Dr. HUNG Wing-tat, Leader of the Study Team, has over 20 years of lecturing as well as conducting researches and consultancy works in the areas of transport planning, pavement engineering, road safety, vehicle exhaust and noise emissions. He serves many professional bodies including the Chartered Institutes of Logistics and Transport and the Hong Kong Society for Transportation Studies. He served as an expert advisor to the Capital Works Committee of Kowloon-Canton Railway Corporation, the Hong Kong 2030 Planning Study and the Greater Pearl River Delta Township Collaboration Development Planning Study. He published over 160 papers in top referenced journals, conferences and books and he is also a regular writer in local newspapers. He is now an associate professor in the Department of Civil and Structural Engineering, The Hong Kong Polytechnic University.

Sue CHAN has 14 years of extensive experience in the areas of airport and logistic planning, transport economics, planning and modelling, airport demand and revenue analysis and forecasting, transport strategy and operations review, fare and ticketing policy, business process re-engineering, financial feasibility studies and project management. She has been involved in and/or managed a number of aviation, highways, rail, and logistics studies in Hong Kong, China, Korea and Australia. She has also undertaken extensive research, quantitative and qualitative analysis often involving extensive stakeholder consultations for both public and private clients. Having worked on a variety of transport projects involving international team, Ms Chan has strong experience in client liaison and correspondence management. She also has high proficiency in written and spoken English, Putonghua, Fujian, Malay and Indonesian.

Dr. TONG Hing-yan has a PhD and over 10 years research and professional experiences in transportation. He is currently a lecturer in PolyU, Hong Kong Community College. He was a Senior Transport Engineer / Analyst in Wilbur Smith Associates worked on projects from different Asian cities including, Hong Kong, Taiwan, Indonesia and numerous cities in mainland. Transport consulting project experiences ranged from urban transport studies (e.g. comprehensive transport study for CBD in different mainland cities), public transport studies (e.g. Hong Kong Bus Fare Adjustment Mechanism), intelligent transportation systems (e.g. Taiwan Highway Network ITS System), transport planning and traffic engineering.

Mr. LEUNG Wai Chung, Derek is a chartered planning professional and an experienced transport planner specialising transport planning and modeling practice. He has extensive transport planning experience and has worked in Mainland China, Malaysia, Middle East, Korea and Hong Kong. He leads the China operation of a transport planning consulting firm which carries out various types of transport studies and projects. He has vast experience of transport planning, public transport planning, integrated land use and transport planning studies. His areas of specialization include: Urban Transportation Planning, Public Transport Planning, Urban Traffic Management Studies, Traffic Impact Studies, Traffic and Revenue Forecasts and Traffic Engineering projects.

Michael, Chi Bun CHENG- Biography
I have been working in the transport and logistics industry for about 30 years serving both the public sector and the commercial firms. Started my career as a supervisor of the government fleets I was involved in different types of improvement projects for different departments,

which enriched my research and problem solving skills. After 5 years' employment as a civil servant I switched to the private sector in the field of chemical waste transportation, distribution management in retailing, and third-party logistics for over 10 years.
Beginning from 2003 I embarked my career as an academic in teaching transport and logistics in HKU SPACE and SCE of HKBU. Since then I have been involved in several logistics and transport researches. Until 2011 research projects that have been completed include investigation of the Transformation of Hub Port City to a Global Supply Chain Management Centre- the case of Hong Kong, Inland Water Transport Study of the Pearl River Delta, and the Development of Container Trade of Hong Kong.

Dr. Jason LAU graduated from the University of Waterloo (Canada) with a Bachelor of Mathematics (Honours) degree. He received a Master of Science degree from Carleton University (Canada), majoring in mathematics. He recently completed the requirements for the degree of Doctor of Philosophy. His doctoral thesis, titled 'Characterization of On-road Vehicle Emissions and Air Quality in Densely-built Environment', discusses the characteristics of vehicle emissions under urban driving conditions and how measurements at an air quality monitoring station can be affected by vehicle emissions and the station's surroundings.

Yutin KI, a graduate from HKU BA, majoring in Human Geography. Yutin had been working in a transport consultancy between 2007-09, and had involved in some large scale projects in Hong Kong and Guangzhou, especially in public transportation planning. He has also been working as the secretary in Transport Policy Committee of the CILTHK since 2006.