Silk Road in the Air

Research on the Role of Hong Kong on the AVIATIC SILK ROAD

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Abstract

The Belt and Road Initiative consists of both the Silk Road Economic Belt and 21st Century Maritime Silk Road. Launched by the Chinese Government, the Belt and Road Initiative seeks to enhance the free-flow of economic factors and efficient allocation of resources. Furthermore, it seeks to encourage greater market integration and to create conducive economic co-operation platform to benefit its regional users.

In the recent light, this B&R Initiative has not only begun improving globalisation through increased connectivity and bilateral ties between nations, it has driven many investors to centre their capital on the premise of what the B&R Initiative can offer. Conventionally, the B&R refers strictly to the land and sea use. However, the Aviatic Silk Road has shown to present enormous potential at many levels: economies, bilateral ties, airport hubs, airlines, alliances and also, the consumer himself/herself.

This academic paper seeks to identify and analyse the key stakeholders in this B&R Initiative. Using qualitative and quantitative data from academic and business reports, interviews with stakeholders and company surveying, this paper aims to gather and analyse respective airport hubs, airlines and alliances from B&R participating economies.

As Hong Kong, today is largely established for its financial and aviation sectors, this paper seeks to provide fair recommendations to relevant stakeholders. Balancing Hong Kong's strengths and weaknesses in the aviation sector, this paper draws key lessons learnt from previous case studies and attempts to identify potential strategies from different perspectives pertaining to Hong Kong. Henceforth, this paper covers air transport agreements, route network, demand forecast, maintenance and overhaul, financing, logistics and lastly, sustainability.

Key Words

Belt and Road Initiative, Hong Kong, Aviation Industry, Aviatic Silk Road, Role and Position.

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Silk Road Economic Development Research Centre

Analyst

Ryan Chan Ming-Tai

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Content

Content of Figures

Content of Tables

Terminology

FSC

FSC is the abbreviation of ‘Full Service Carrier’, commonly known as ‘Luxury Carrier’ or ‘Traditional Airlines’. In contrast to Low-cost Carrier, Full-Service Carriers generally provide inflight catering, free check-in luggage allowance, inflight entertainment, pillows and blankets and so on and all the services are included in the air ticket price.

Here are some examples of well-known Full Service Carriers: Cathay Pacific Airways, British Airways, Emirates Airlines, Qatar Airways and Singapore Airlines.

LCC

LCC is as known as ‘Low-cost Carrier’, also ‘Budget Airlines’, which is one of the business model in airline sector. The characteristics of ‘Low-cost carriers’ usually includes: low price ticket, narrow leg room (high density configuration), single type of fleet (reduce training and maintenance fee), point to point passenger services, quick turnaround time (increase aircraft usage), no-frills service (purchase inflight food and beverage) (CAPA, 2016).

Here are some examples of famous Low-cost Carriers: Ryanair, AirAsia, Southwest Airlines, Flyscoot and easyJet.

MROs

MROs is the acronym of Maintenance, Repair and Overhaul. It is playing the most vital role in the safety of the aviation industry. MROs is a service that assure the airworthiness of aircraft. The MROs mainly covers three capabilities: engine, component services and airframe (CAPA, 2016). The MROs service providers are commonly categorised into four types of group: in-house; independent 3rd party; airline subsidiaries and Original Equipment Manufacturers (OEMs) (CAPA, 2016).

Available Tonne Kilometres (ATKs)

Available Tonne Kilometres reflects the comprehensive carrying capacity in each flight, it is the product of available capacity and distance of each flight. Calculation Formula: Available Tonne Kilometres =∑ [Available Tonnes × Flight

Distance (Kilometre)] (Air China Limited, 2005).

Available Seat Kilometres (ASKs)

Available Seat Kilometres reflects the comprehensive carrying capacity in each flight, it is the product of available seats and distance of each flight. Calculation Formula: Available Seat Kilometres =∑ [Available Seats × Flight Distance (Kilometre)] (Air China Limited, 2005).

Available Freight Tonne-Kilometres (AFTKs)

Available Freight Tonne Kilometres reflects the comprehensive carrying capacity in each flight, it is the product of available freight and mail capacity and distance of each flight. Calculation Formula: Available Freight Tonne-Kilometres =∑ [Available Freight and Mail Capacity × Flight Distance (Kilometre)] (Air China Limited, 2005).

Revenue Tonne-Kilometres (RTKs)

Revenue Tonne Kilometres indicates the amount of freight of each flight. It is the product of actual transport volume and flight mileage. Calculation Formula: Revenue Passenger Kilometres = ∑ {Actual transport volume (Tonne) × Flight mileage (Kilometre)} (Air China Limited, 2005).

Revenue Passenger Kilometres (RPKs)

Revenue Passenger Kilometres indicates the amount of passenger of each flight. It is the product of actual passenger number and flight mileage. Calculation Formula: Revenue Passenger Kilometres = ∑ {Actual passenger number (per person) × Flight mileage (Kilometre)} (Air China Limited, 2005).

Load Factor

Load Factor reflects the utilisation of seat of each flight. It is the ratio of

passenger kilometres and available seat kilometres. Calculation formula: Load Factor =∑ {Revenue Passenger Kilometres (Passenger kilometres) / Available Passenger Kilometres} (Air China Limited, 2005).

Each indicator above has four sub-indicators, including total, domestic, international and district.

Cost Per Available Seat Kilometres (CASKs)

CASK is the ratio of main business cost and available seat kilometres of civil air transport. It reflects the unit cost level of civil air transport enterprise. Calculation Formula: Available Seat Kilometres Cost = Main business cost (dollar) / Available Seat Kilometres. (Air China Limited, 2005)

Main business cost indicates the sum of each direct cost for providing air transport service, which involves main business cost, sales cost, financial cost and management cost (Air China Limited, 2005).

Metal neutrality

Metal neutrality is described by the Department of Transportation of the United States (DoT) (the department which has the authority to issue immunity and regulate alliances) as a JV in which the airlines “become effectively indifferent to which plane or ‘metal’ carries a passenger. This form of cooperation is a similar substitution to a merger, because the JV airline affiliate typically involves full coordination of the major airline functions on the affected flights, including scheduling, capacity price planning, revenue management as well as marketing and sales” (Lufthansa Group, 2016) (Aviation strategy, 2011).

Abbreviation

AAHK – Airport Authority Hong Kong

AESEAN – The Association of Southeast Asian Nations

AHK – Air Hongkong

B&R – Belt and Road

CA – Air China

CAAC – Civil Aviation Authority of China

CAD – Civil Aviation Department Hong Kong

CX – Cathay Pacific

CZ – China Southern Airlines

EK – Emirates Airlines

EY – Etihad Airways

GPRD – Great Pearl River Delta

H&B – Hub and Spoke System

HAECO – Hong Kong Aircraft Engineering

HKG – Hong Kong International Airport

HKIA – Hong Kong International Airport

HKSAR – Hong Kong Special Administrative Region

HNA – Hainan Airlines Group

HU – Hainan Airlines

HX – Hong Kong Airlines

IST – Istanbul Ataturk Airport

KA – Cathay Dragon

MU – China Eastern Airlines

P2P – Point to Point System

SCO – Shanghai Co-operation Organisation

TK – Turkish Airlines

UO – Hong Kong Express Airways

1. Project Overview

1.1 The Belt and Road Initiative

The Silk Road was an ancient network of trade routes that inspired China's globalisation strategy in the 21st Century.

In a bid to enhance regional connectivity and embrace a brighter future together, Chinese President Xi Jinping, alongside the Chinese government, introduced their new Silk Road strategy in September 2013 (Ministry of Foreign Affairs, the People's Republic of China, 2013). The action plan, jointly released by the National Development and Reform Commission, Ministry of Foreign Affairs and Ministry of Commerce, offered insights into the China-initiated program's vision. It is also now officially termed as the Belt and Road Initiative.

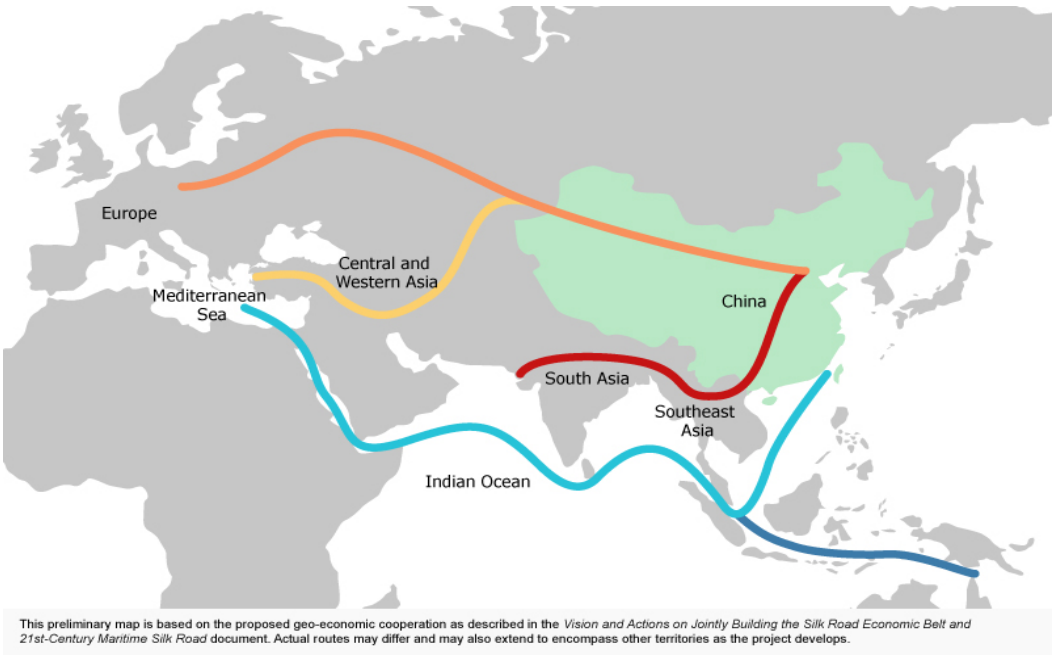


Figure 1.1 Belt and Road Map (HKTDC, 2016)

1.2 Hong Kong: Opportunities and Challenges under the Initiative

The Belt and Road Initiative refers to the Silk Road Economic Belt and the 21st Century Maritime Silk Road, as shown in figure 1.1. Launched by the Chinese Government, the Belt and Road Initiative is a significant development strategy that seeks to promote economic co-operation between China, Russia, European and Central Asian countries along the proposed route; connecting China to the Persian Gulf and the Mediterranean Sea through Central Asia and the Indian Ocean. The 21st-Century Maritime Silk Road is designed to go from China's coast to Europe through the South China Sea and the Indian Ocean in one route, and from China's coast through the South China Sea to the South Pacific in the other. This Initiative has been designed to smoothen the flow of economic factors and improve the efficiency of resource allocation (HKTDC, 2016). Furthermore, it aims to increase market integration and create a framework for regional co-operation that will benefit to all stakeholders economically.

The Belt and Road Initiative (abbreviated as the B&R Initiative hereafter) envisions international cooperation between the countries along the Belt and Road. Mutual benefit and common security are of the highest priorities. Generally, the five major goals of the Belt and Road Initiative are: policy co-ordination, facilities connectivity, unimpeded trade, financial integration, and people-to-people bonds. In terms of connectedness, the Belt and Road Initiative aims to connect Asia, Europe and Africa along five routes: (1) linking China to Europe through Central Asia and Russia; (2) connecting China with the Middle East through Central Asia; and (3) bringing together China and Southeast Asia, South Asia and the Indian Ocean. The 21st Century Maritime Silk Road, meanwhile, focusses on using Chinese coastal ports to: (4) link China with Europe through the South China Sea and Indian Ocean; and (5) connect China with the South Pacific Ocean through the South China Sea (HKTDC, 2016).

In addition to the five routes stated above, the B&R Initiative will take advantage of international transport routes as well as core cities and key ports to further strengthen collaboration. Additionally, six international economic co-operation corridors are to be built for this purpose. As illustrated in figure 1.2, the six corridors are New Eurasia Land Bridge, China-Mongolia-Russia, China-Central Asia-West Asia, China-Indochina Peninsula, China-Pakistan, and Bangladesh-China-India-Myanmar (HKTDC, 2016).

All in all, connectivity is largely emphasised as one of the most important five major goals of the Belt and Road Initiative (abbreviated as the B&R Initiative hereafter), not only limiting to the aspect of transportation, but also in the governance, commercial, financial, and humanities. To support the flourishing connectivity, existing bilateral and multilateral co-operation mechanisms will be utilised widely in the upcoming cooperation, especially in the upgrading of infrastructure. A more efficient connectivity between the B&R countries will be the first step to promote the integration of the development strategies of the countries along the route. The US$40 billion Silk Road Fund (HKTDC, 2016), the Asian Infrastructure Investment Bank (AIIB) and a new multilateral development bank (MDB), has been set up to complement the existing MDBs, in order to address infrastructure needs in Asia (AIIB, 2012).

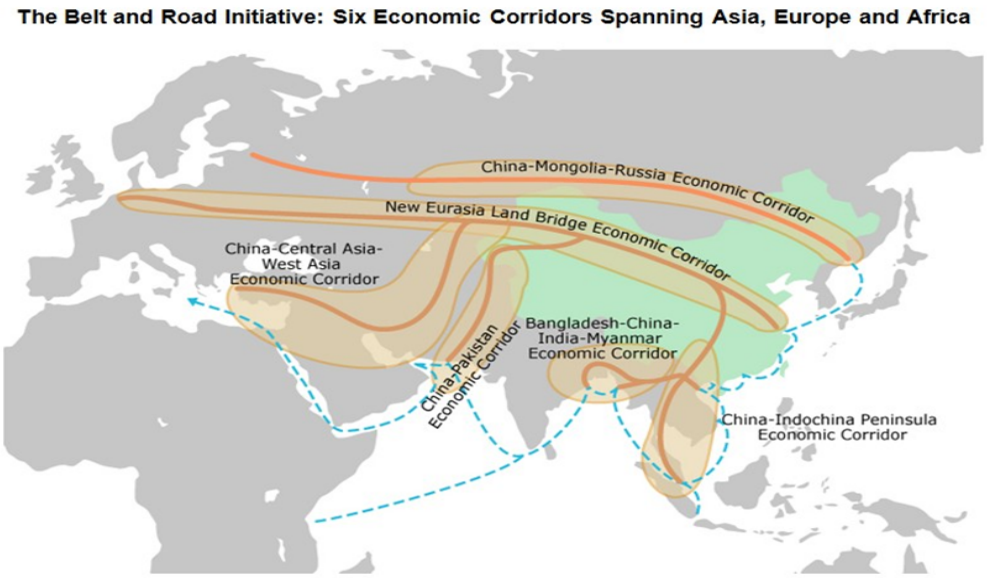


Figure 1.2 Belt and Road Six Corridors Map (HKTDC, 2016)

1.3 The Aviatic Silk Road: the New Silk Road in the New Century

Today, “New Silk Road”, as an intertwined set of economic integration initiatives seeking to link East and Central Asia, has taken hold, not just in China, but also in the United States.

In fact, the idea of a “New Silk Road” surfaced in the United States in the year of 2011. The US launched their vision of greater Central Asian economic and infrastructure integration in the hopes of supporting political stability as it withdrew from Afghanistan (CFR, 2015).

As for China’s Belt and Road Initiative, the five goals (policy co-ordination, facilities connectivity, unimpeded trade, financial integration, and people-to – people bonds) are seems like a regionalisation strategy, but it has far more visions in placed (HKTDC, 2016).

Both China and the United States have plans for developing energy resources in Turkmenistan, creating infrastructure in Pakistan and getting political influence with local governments in Asia, we have yet to see whether the two plans will create clashes between the two countries. In the meantime, other powers like India and Russia, are trying to establish their own approach to regional integration. Even though these ambitious projects may be the key to changing one of the world’s least connected areas, everyone must be able to deal with local rivalries, logistical roadblocks, security risks, and political uncertainty and so on (CFR, 2015).

Despite all the uncertainties and the sophisticated geopolitical situation, the construction of facilities is necessary to establish any form of connections, B&R initiative’s top priority. As mentioned above, the Aviatic Silk Road and Information Silk Road are new concepts and there are significant difference between the modern Silk Road and ancient one. While the Aviatic Silk Road

thrive to become more important amongst the Belt and Road bloc of countries, in this paper, the role of Hong Kong in this recent development will be discussed.

"International civil aviation can greatly help to create and preserve friendship and understanding among the nations and peoples of the world." – Preamble to the 1945 Chicago Convention (ICAO, 1999). Civil aviation allows movement of passengers around the world. According to (IATA, 2014) "in 2014, airlines will safely transport some 3.3 billion passengers and 50 million metric tons of cargo across a network of almost 50,000 routes. This connectivity has an immense economic footprint—58 million jobs and $2.4 trillion of business activity."

Within 100 years, aviation has become an essential part of our global infrastructure. Since the first commercial passenger flight operated by Commercial Airline in 1914, the aviation industry today has carried more than 65 billion people. International air transport grew at double-digit rates from its earliest post-1945 days until the first oil crisis in 1973. Much of the impetus for this growth came from technical innovation. Ever since the introduction of turbo-propeller aircraft in the early 1950s, transatlantic jets in 1958, wide-bodied aircraft and high by-pass engines in 1970 and later, advanced avionics were the main innovations. These innovations allowed us to create planes with greater speeds, increased size, and better unit cost control. Consumers and air carriers would then benefit from these changes; lower real fares and rates, increased real incomes and more leisure time. The end result was an explosion in demand for air travel. Nowadays, while innovation is still crucial in the industry, emerging markets are of significant importance in driving the demand (IATA, 2014).

The rapid growth of air travel in developing markets, such as Latin America and especially Asia, is changing the aviation industry in many ways. The first visible change is the thin profit margin. Much of the recent airline industry growth has been driven by low-cost carriers (LCCs), which now control some 25 percent of the worldwide market; some growth also came from continued gains by carriers

in developed markets.

Secondly, the airline landscape is also shifting. Middle East–based carriers such as Emirates, Etihad Airways, and Qatar Airways are taking a large slice of the formerly profitable Europe–Asia traffic from those continents' legacy airlines. They are highly dependent on connecting traffic, because their home markets are limited by the smaller population of their region. Their unique geographic positioning also offers them this advantage: they are able to reach most of the world's population within eight hours' flying.

Thirdly, consolidation and airline alliance will play a more important role in the industry. LCCs continue to experience above-average growth rates for the industry, particularly in emerging economies. However, these LCCs also need to find the right balance between making continual investments to improve the rising customer expectations on flight experience they offer and maintain their cost advantage.

The construction of the Aviatic Silk Road should take into account all these trends in the aviation industry. In the same light, Hong Kong has to find its position in this new Silk Road.

2. Scope of the Research

2.1 Regional Profiles

The Belt and Road Initiative seeks to promote connectivity in infrastructure, enhance trade relations, industrial co-operation, and foster greater integration in the financial and other sectors among the countries along the Belt and Road. Since the initiative envisions globally dispersed investment projects and trade, Hong Kong is well positioned to help companies seize these new opportunities and manage any related investment projects and business activities.

As we focus on the aviation industry, Hong Kong is poised to capitalise on the Aviation Silk Road. This is largely attributed to its foundation as an international hub with an independent legal system, low and simple tax structure, liberal trade and investment regimes, strong international networks, and free flow of information, capital and talent. In the same light, Hong Kong is renowned for its leading airport and its well-developed air transport services.

There are over 60 economies along the Belt and Road (HKTDC, 2016). The transport network extends from the east to the west, from the north to the south, and also from sea/river to land and to sky. Regionally, they can be classified into Southeast Asia, South Asia, Central and Western Asia, Middle East and Africa, Central and Eastern Europe. All the connections make the “Heartland”, named by Mackinder early last century (Mackinder, 1904), extremely important in the Belt and Road map.

As discussed in the former Chapter, there are six international economic co-operation corridors in the B&R Initiative. Five of them, the New Eurasia Land Bridge, China-Mongolia-Russia, China-Central Asia-West Asia, China-Pakistan, and Bangladesh-China-India-Myanmar, intersect and overlap in this “Heartland”, the other one is the China-Indochina Peninsula corridor.

The Heartland, or Pivot, lay at the centre of the world island. "The Geographical Pivot of History" was an article submitted by Halford John Mackinder in 1904 to the Royal Geographical Society that advanced his Heartland Theory. This idea becomes the foundation of his contribution to geopolitics. Under today's globalisation, it is still a valuable theory, geographically, strategically, economically, politically and socially. According to (Mackinder, 1904), the Earth's land surface was divisible into:

- The World-Island, comprising the interlinked continents of Europe, Asia, and Africa. This was the largest, most populous, and richest of all possible land combinations.
- The offshore islands, including the British Isles and the islands of Japan.
- The outlying islands, including the continents of North America, South America, and Australia.

In Mackinder's theory, this Heartland is a vast area that stretches from the Volga to the Yangtze and from the Himalayas to the Arctic. In the view of jurisdiction, the Heartland was the area of East Europe and Central Asia that ruled by the Russian Empire and after that by the Soviet Union.

Geographically, the Pivot encompasses all of Central Asia, large parts of Iran, and Russia as well.

The dissolution of the Soviet Union in 1991 once again created a situation of political vacuum in Central Asia. Because of the traditional culture, the resulting authoritarian but weak former Soviet satellite republics were still considered part of Russia's sphere of influence, but now Russia was only one amongst many competitors for influence in the new Central Asian states (Blouet, 2005). By 1996, Mongolia also asserted its independence away from Russia's influence. Furthermore, the North Caucasus Russian republic Chechnya claimed independence, leading to the First and Second Chechen Wars with Russia winning the latter.

Geostrategist and former United States National Security Advisor, Zbigniew Brzezinski (1997) analysed Central Asia in his “The Grand Chessboard”, terming the post-Soviet region the "Black Hole" and post-Soviet Central Asia (the Caucasus, former SSRs, and Afghanistan) in particular the "Eurasian Balkans." According to their analysis, this area is an ethnic cauldron, prone to instability and conflicts, without a sense of national identity, but rather a mess of historical cultural influences, tribal and clan loyalties, and religious fervour. Projecting influence into the area is no longer just Russia, but also Turkey, Iran, China, Pakistan, India and the United States.

The complicated political situation in this Heartland is accompanied with poor economic situation and volatile security situation. This might be a reason for China’s rising power in this area. While Shanghai Cooperation Organization (SCO) focuses mainly on security issues, strong investment from China does help these countries to improve their construction sector.

Besides its geographical location, which makes it so important in the world map, when it changed From Landlocked to Linked in, as target of CAREC’s program report, a balanced regional economic growth is one of the most important national development strategies of China. Moreover, China ought to play a role in this area with SCO.

The Central Asian Countries are also potential engine drivers for the world’s growth in the coming years. After World War II, Japan and Newly Industrialized Economies (NIEs, or Four Asian Tigers, include Hong Kong, Singapore, South Korea, and Taiwan) experienced their rapid growth. During the last three decades, BRICKS (Brazil, Russia, India, China and South Africa) lead the incremental part of the global economic growth. According to the World Bank, “the rapid economic expansion of China, Russia, and other nearby countries creates an unprecedented opportunity for Central Asia to emerge as a hub for trade and commerce (World Bank, 2016).” With a bright economic future, we

can contend that this area will also be very important in the construction of the Aviatic Silk Road. A better route network for a better connectivity is same crucial for the development here and the B&R Initiative.

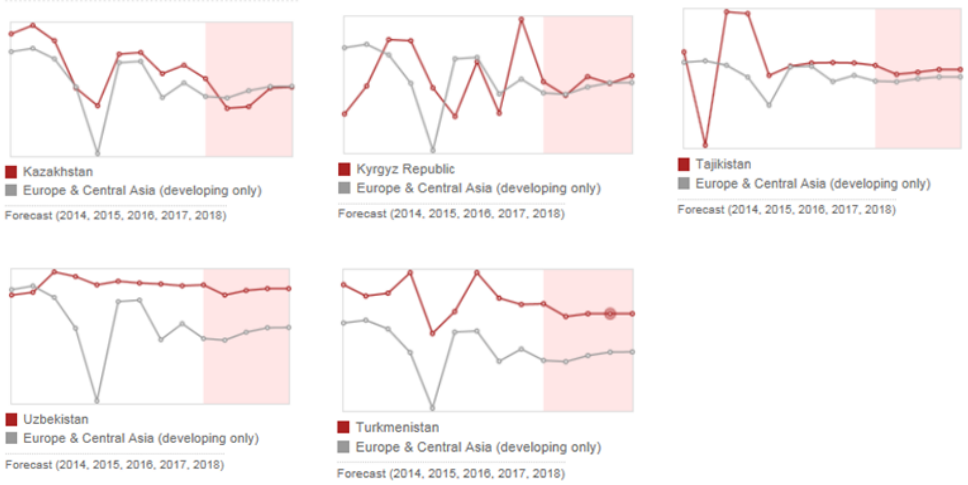


Figure 2.1 Central Asia GDP Forecast (World Bank, 2016)

2.2 The Aviation Industry

The aviation industry is the global transportation network that carries goods and passengers by air. While air travel was only made possible in the early 20th century, the aviation industry now generates billions of dollars in annual revenue. It also provides essential services to numerous other industries, from medicine and national defense to tourism and sports. The bulk of the worldwide aviation industry is involved in the use and manufacturing of airplanes.

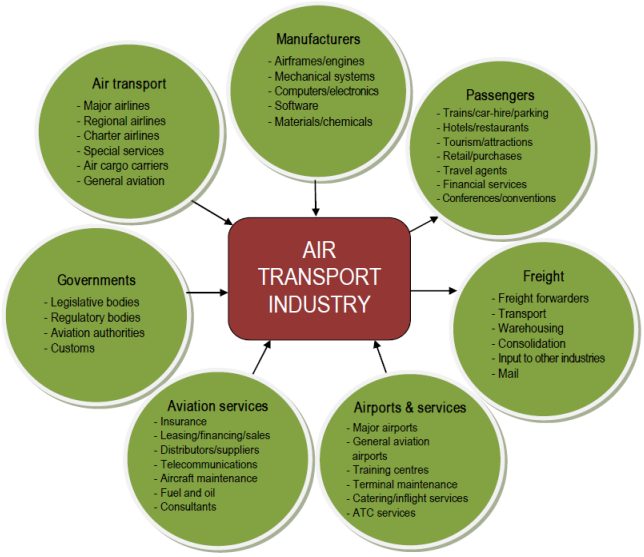


Figure 2.2 Air Transport Industry Classification (ILO, 2013)

In this paper, we will focus on civil aviation as the target industry for this research. Civil aviation has become a major industry; without air travel, mass international tourism would not exist, nor could global supply chains function. Air transport systems are interdependent, involving airlines, all service providers and authorities on the ground. A detailed air transport industry classification listed below in Figure 2.2.

Air transport has traditionally experienced higher growth than most other industries. While demand for air transport is closely linked with economic development, air transport is also an economic driver of a country's Gross Domestic Product (GDP). The contribution of air transport and related civil aviation industries to local, regional or national economies includes the output and jobs directly attributable to civil aviation as well as the multiplier or ripple effect upon other industries throughout the economy.

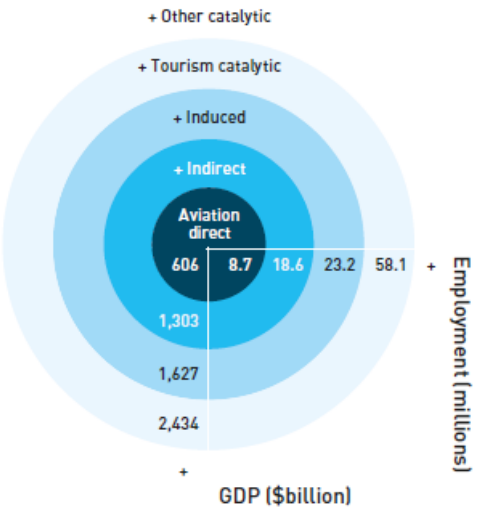


Figure 2.3 Aviation's Global Employment and GDP Impact (ATAG, 2014)

According to ATAG's report, Nearly 1,400 airlines operate a total fleet of over 25,000 aircraft. They serve almost 4,000 airports through a route network of several million kilometres managed by 173 air navigation service providers. Airlines transport over three billion passengers annually with revenue passenger kilometres (RPK) totaling nearly 5.5 trillion in 2012. Nearly 50 million tons of freight were carried by air in 2012, amounting to 185 billion freight ton kilometres (FTK).

The latest data from ICAO (2015), the total number of passengers carried on scheduled services rose to 3.3 billion in 2014, which is 5.5 per cent higher than last year, according to preliminary statistics compiled by ICAO. The number of departures reached 33 million globally in 2014, a 2.1 per cent increase compared to 2013.

Air transport is a major contributor to global economic growth. Aviation provides the only rapid worldwide transportation network, which makes it essential for global business and tourism. It plays a vital role in facilitating economic growth, particularly in developing countries.

In terms of domestic scheduled air services, overall markets grew by 5.6 per cent in 2014. North America, the world's largest domestic market with 44 per cent of the world domestic scheduled traffic, experienced 3.1 per cent growth in 2014. The Asia/Pacific region, which accounted for 38 per cent of world domestic scheduled traffic, grew strongly by 8.4 per cent in 2014 mainly due to an increase of 11.2 per cent in the domestic Chinese market and 7.9 per cent in the domestic Indian market. In 2014, economic growth improved in the high-income European region and the United States, resulting in higher traffic growth in these States. Continued strong international traffic expansion was also observed in the United Arab Emirates and China, and strong growth was experienced in domestic traffic in both the Russian Federation and India.

Low-cost carriers carried an estimated 900 million passengers in 2014, which is around 27 per cent of the world total scheduled passengers. This indicated a 10.3 per cent growth when compared to the number of passengers carried by low-cost carriers in 2013 which was almost double the world total average passenger growth rate.

Global air traffic has doubled in size every 15 years since 1977, and it is expected that between now and 2030 the numbers will double again. According to ICAO's latest forecast, the 3.3 billion airline passengers carried in 2014 are expected to grow to about six billion by 2030, and the number of departures is projected to rise to some 60 million in 2030.

With regard to new aircraft, the world's major manufacturers delivered about 1 600 new commercial aircraft in 2014 and have recorded net orders for about 3 100 new aircraft. Production is at record levels, and with book-to-bill ratios of around 2:1, order backlogs are expected to continue growing. While the declining price of jet fuel could dampen demand for new aircraft, traffic growth projections, low borrowing costs, improving airline profitability and the fleet replacement programmes of many carriers are expected to maintain the strength of the aircraft market.

In 2014, the total economic impact of aviation reached some 3.5 per cent of world GDP or 2.4 trillion US dollars. The sector supported the global employment of 58.1 million people, given its cross-cutting nature and multiple links to other economic sectors. Additionally, over half of the world's 1.1 billion tourists crossed State borders by air to reach their destinations.

Aviation generates 8.5 million jobs in 2014 and its direct economic impact reached approximately USD 700 billion. Over 1.1 billion tourists crossed international borders, over half of who travelled by air to their destinations and up to 80 percent of visitors to certain small island states. Air freight constitutes 34.6 per cent of world trade by value despite only 0.5 per cent by volume. Going forward, the international community must address the challenges of a rapidly expanding aviation sector.

Air transport provides significant social benefits as well. Air transport contributes to sustainable development. By facilitating tourism and trade, it generates economic growth, provides jobs, improves living standards, alleviates poverty and increases revenues from taxes. Increasing cross-border travel is a reflection of the closer relationships developing between countries, both from an individual perspective and at a country level. In the same way, eased restrictions on the movement of goods and people across borders facilitate the development of social and economic networks that will have long-lasting effects. This improved flow of people and goods benefits both the host and the originating countries, encouraging increased social and economic integration.

Aviation is a vital part of the increasingly globalised world economy, facilitating the growth of international trade, tourism and international investment, and connecting people across continents. The aviation industry itself is a major direct generator of employment and economic activity — in airline and airport operations, aircraft maintenance, air traffic management, head offices and

activities directly serving air passengers, such as check-in, baggage handling, on-site retail, cargo and catering facilities. All the above are industry scope of this research, while we do realise that we overlook activities of civil aerospace manufacturers selling aircraft and components to airlines and related businesses.

2.3 Research Methodology

Overall, the approach to be adopted in this paper would be policy-oriented with strong consideration in data collection. An analysis of policy suggestions using case studies can aid the Government in defining the future direction of Hong Kong aviation industry development. This research takes 6 months - a first 4 months for fieldwork collection of information, library research, and literature surveys, and a last 2 months for analyses and drafting of the report. The research focuses mainly on qualitative analysis and henceforth, the methodology adopted is in line with the tradition of social science research.

Literature review and second hand information collection will be used in all chapters for necessary analysis. The Aviatic Silk Road is part of Chinese government B&R Initiative. Government policies related (both central and provincial within China), opinions from inside and outside the industry, will also be paid strong attention to. Furthermore, the most updated reports of the professional journals will be collected to grasp the latest information and progress of socio-political-economic issues in the targeted region and industry. In this paper, we will also review the policy documents to keep track of those initiatives in real actions, and examine the rationales and concerns behind policy changes. Furthermore, the policies of foreign countries and practices of international organisations that are in relations to the Silk Road aviation industry will be analysed. In fact, we will focus on regional trade agreements and industrial development strategies on B&R countries, especially Central Asia.

Interviews with officials and experts are the main source of our first hand data. In this paper, we collect findings discussed with officials and industry experts by the snowballing method on future development plans, as well as to learn their insights on the probable approaches may take by authorities addressing the pressing political, social and economic issues. Interview questions are semi-opened and listed in Appendix A. Furthermore, field trips are made to some designated zones/districts (especially Central Asia) where there may be strong investment relevance and business implication for Hong Kong

enterprises. On-site interviews will be conducted with local authorities and institutions to understand the opportunities and potential obstacles.

Based on limited in-depth interview, the importance of the Aviatic Silk Road is unanimously agreed by interviewees. The construction of the Aviatic Silk Road is suggested to rely on different parties. For those existing line routes, Airline Companies have and will play a vital role. However, for new routes, governments should first negotiate visa and flight agreements. As for infrastructure in the Silk Road Aviation sector, Hong Kong may play a role in financing technology and management. In the forming of "Aviatic Silk Road", the most important initiative will come from two parties, the airline companies and the destination governments. Considering Hong Kong's advantages in Air traffic, some interviewees also suggest that the Government can continue their support on Aviatic Silk Road, in the form of diplomacy and capital.

Based on the existing flights, the future layout of Aviatic Silk Road should be better connected with Central Asia, South East Asia, Indian Sub-continent and western China. The potentially most profitable areas may lie in air cargo freight.

All in all, we will first analyse the various energetic B&R aviation hubs and airlines before focusing an in-depth analysis on Hong Kong aviation sector. Lastly, recommendations will be presented as to how Hong Kong can position itself to capitalise on the new B&R Initiative.

3. Belt and Road Airport Hubs Distribution

Aviation hubs are established based on the Hub and Spoke system. The function of the Hub and Spoke (H&B) system is to simplify the airline network, which is opposite to the 'point to point' (P2P) system. Using aviation hubs, airlines can fulfil their load factors and decrease their costs. Hence, the busiest airports in the world are generally international aviation hubs. According to the (Airport Council International, 2015), the 2015 world busiest airport rankings are as follows:

Table 3-1 World Busiest Airport 2015 (ACI, 2016)

RANK 2015	RANK 2014	AIRPORT CITY/ COUNTRY / IATA CODE	PASSENGERS	
			Enplaning and deplaning	Percentage change
1	1	Atlanta GA,USA (ATL)	101,491,106	5.5
2	2	Beijing, China (PEK)	89,938,628	4.4
3	6	Dubai, UAE (DXB)	78,010,265	10.7
4	7	Chicago O'Hare IL, USA (ORD)	76,949,504	9.8
5	4	Tokyo Haneda, Japan (HND)	75,316,718	3.4
6	3	London Heathrow, GB (LHR)	74,989,795	2.2
7	5	Los Angeles CA, USA (LAX)	74,937,004	6.1
8	10	Hong Kong, China (HKG)	68,283,407	8.2
9	8	Paris Charles De Gaulle, France (CDG)	65,766,986	3.1
10	9	Dallas Fort Worth, TX, USA (DFW)	64,072,468	0.9
11	13	Istanbul Ataturk, Turkey (IST)	61,836,781	9.2
12	11	Frankfurt, Germany (FRA)	61,032,022	2.5
13	19	Shanghai Pudong, China (PVG)	60,053,387	16.3
14	14	Amsterdam Schiphol, Netherlands (AMS)	58,284,864	6.0
15	18	New York John F. Kennedy NY, USA (JFK)	56,827,154	6.8
16	16	Singapore, Singapore (SIN)	55,448,964	2.5
17	15	Guangzhou, China (CAN)	55,201,915	0.8
18	12	Jakarta, Indonesia (CGK)	54,053,905	-5.5
19	17	Denver CO, USA (DEN)	54,014,502	1.0
20	22	Bangkok Suvarnabhumi, Thailand (BKK)	52,902,110	14.0

*B&R Airports are highlighted in blue/ HKIA is highlighted in yellow

Focusing on the Belt and Road (B&R) countries and regions airport, Beijing and Dubai were ranked second and third respectively; Dubai also had a remarkable growth of 10.7%. Hong Kong International Airport had about 68 million passengers in 2015, which ranked eighth on this list.

Overall, while nearly half of the airports were B&R airports, these B&R countries airports have also indicated strong performance in their past years. In the following sections, several B&R aviation hubs will be discussed; each of the hubs' advantages and disadvantages will be analysed briefly. In this chapter, the classification of all airports by their air routes network allows us to differentiate the level of hubs.

3.1 International Aviation Hubs

3.1.1 Asia Pacific

3.1.1.1 Hong Kong Chek-Lap-Kok International Airport

Hong Kong is located in the heart of Asia; it is the gateway to the Asia-Pacific region and the gateway to the Mainland China. As the Hong Kong catchment area is tremendous, passengers departing from Hong Kong can arrive at almost half of all the world's population destinations within 5 hours flight time. At the same time, Hong Kong has a competitive advantage as an international business centre and centre of international finance. At present, there are more than 7,500 overseas and Mainland companies with offices in Hong Kong, with more than half of which are regional headquarters and regional offices. Meanwhile, Hong Kong also has a flourishing tourism sector with more than 54 million visitors are visiting Hong Kong in 2015, including business visitors, tourists, family visitors, etc. (Commerce and Economic Development Bureau HK, 2015). These are the main factors that support the Hong Kong International Airport in becoming a world aviation hub. More details will be discussed in the next chapter.

3.1.1.2 Beijing Capital International Airport

1. City and Airport Overview

Beijing is the capital of P.R. of China, which located in the north of China. It is the city of political, cultural, transportation, technological, international intercourse in China. Beijing is the Chinese largest hub and intersection for the railway, high-speed rail, highway, expressway and aviation. Currently, there are two civil airports in Beijing, which are Beijing Capital International Airport and Beijing Nanyuan Airport.

Beijing Capital International Airport (IATA: PEK) is located in the northeast of Beijing city, 25km from the city centre. Up to the March of 2016, Beijing Capital International Airport has three runways (01/19,18L/36L,18R/36R) and three terminal buildings, of which T3 is the current largest single terminal in the world. Terminal 1 serves the domestic routes of Hainan Airlines and its subsidiaries (while its international routes and Hong Kong, Macau and Taiwan flights operate from Terminal 2). Terminal 2 serves China Southern Airlines, China Eastern Airlines, SkyTeam members and other domestic and international flights. Terminal 3, the newest terminal, serves Air China, Star Alliance and Oneworld members (BCIA, 2011).

2. Airport Facts and Future Development

In 2015, Beijing Capital Airport, ranked the third world busiest airport, has recorded more than a total of 90 million passengers. As such, it acts as the largest aviation hub in China, even in the Northeast Asia region. Taking Nanyuan Airport into consideration, the total air passenger traffic of Beijing city reaches about 95 million.

Table 3-2 2015 Beijing Airport Traffic Statistics (CAAC, 2016)

Beijing	Passenger traffic	Aircraft movement	Cargo Traffic
Beijing Capital International Airport	90,203,000	590,199	1,889,439.5
Beijing Nanyuan Airport	5,265,201	42,129	36,755.6
Total Amount	95,468,201	632,328	1,926,195.1

Nonetheless, it is noteworthy that the capacity of Beijing Capital Airport is nearly saturated. Henceforth, a new Beijing Airport is under construction (CAPA, 2016), and it is expected to complete in the late 2019 to ease the overcapacity of Beijing Capital Airport. The new Beijing Airport will become an aviation hub of Jing-Jin-Ji (Beijing, Tianjin and Hebei Province) region. The passenger throughput is expected to reach 45 million passengers in 2020, and will be increased to 72 million in 2025. In retrospect, the aircraft movement will be able to achieve 620,000 per year.

3. Beijing Aircraft Maintenance, Repair and Operating

Aircraft Maintenance and Engineering Corp (AMECO) Beijing is a leading MRO provider in China. It is jointly-owned by Air China (60%) and Lufthansa (40%). With over 5,000 employees and four hangers at Beijing Capital International Airport, the company offers a wide range of services, including airframe, engine and component maintenance and painting (CAPA, 2016).

4. Belt and Road and Airport Network

The Civil Aviation Administration of China (CAAC) indicated that it is important for air operators to increase flight operations to foreign countries to build the 'Aviatic Silk Road' in order to establish an internationally competitive network air carrier in China. CAAC seeks to develop the national aviation industry strategy planning in a bid to further strengthen the civil aviation and the alignment of economic and social development. The establishment of a new integrated system of airport planning will aid in the coordination of the development of the Jing-Jin-Ji region, and thus, promote the airport integration

of the Jing-Jin-Ji region. Simultaneously, it will accelerate the construction progress of Beijing's new airport.

Beijing Capital Airport is serving a number of B&R cities, with the four largest Chinese air operators providing scheduled passenger service to AESEAN, CIS and SCO cities. At the same time, some B&R foreign airlines are operating schedule flights to PEK, see Appendix C。

As of April of 2016, Tajik Air will be able to launch its passenger service between Dushanbe and Beijing. The connection between China's capital and Central Asian countries is strengthening (CAPA, 2016).

3.1.1.3 Singapore Changi Airport

1. City and Airport Overview

Singapore has a remarkable geographical advantage. While located in the Southeast Asia, it also lies at the southernmost end of the continental Asia, which is the south entrance of Strait of Malacca (Maps of World, n.d.). The aviation industry in Singapore plays a vital role in the Singaporean economy. It also serves as the aviation hub of the Southeast Asia and even the Asia Pacific region (CAPA, 2010).

The largest airport in Singapore is the Singapore Changi Airport (IATA: SIN). Changi Airport has won four Skytrax's World Best Airport in a row, from 2013 to 2016 and is also one of the world's busiest passenger and cargo airport (CAPA, 2016).

The national carrier of Singapore is the Singapore Airlines (IATA: SQ), which operates a hub at Changi International Airport. SilkAir (IATA: MI) and Flyscoot (IATA: TZ) are wholly-owned subsidiaries of Singapore Airlines, which are regional airlines and Low-cost carriers respectively. Both airlines operate

scheduled passenger services from Singapore to destinations in Southeast Asia, South Asia and China. In response to the competition from AirAsia based in neighbouring Malaysia, Singapore-based low-cost carriers only began to operate from the year 2004 with the entrance of Valuair. Subsequently, two of the largest airlines of Singapore Changi Airport began operating their competing carriers, namely Singapore Airlines' Tiger Airways and Qantas' Jetstar Asia Airways (which merged with Valuair in 2005) (CAPA, 2016).

Presently, Changi Airport has three terminal buildings with 92 aerobridge stands and 42 remote stands (Changi, 2015). Changi Airport also owns three runways (02L/20R, 02C/20C, 02R/20L) in total, of which two of them are commercial purpose runways that can handle 45 flights per hour while the last one is for military use (02R/20L) (Civil Aviation Authority of Singapore, 2015).

2. Airport Facts and Future Development

At the end of 2015, Changi Airport has accounted a 2.5% increase in passenger traffic as compared to 2014. Singapore became the seventh world busiest airport in terms of international passenger traffic and ranked second in Asia behind Hong Kong Airport. Moreover, Singapore is one of the most important air cargo hubs in the world, handling over 1.85 million tonnes of freights and mails in 2015. It allowed Singapore to be ranked the seventh busiest cargo traffic airport in the world and fifth in Asia. The aircraft movements figure increased 1.4% from about 341,386 in 2014 to 346,334 in 2015.

Table 3-3 Changi Airport Annual Traffic Statistics (Changi Airport, 2016)

Singapore Changi Airport	Passenger Traffic	Airfreight (tonnes)	Aircraft Movements
2012	51,181,804	1,806,225	324,722
2013	53,726,087	1,850,233	343,800
2014	54,093,070	1,843,799	341,386
2015	55,448,964	1,853,087	346,334

In the future, Changi Airport is prepared for a new Budget Terminal by 2017 to replace the former one which was closed in 2012. The future Terminal 5 is also

expected to complete in the 2020s.

3. Airport Network

Singapore is the aviation hub of the Asia Pacific region. For regional flights, Singapore covers a various of secondary and third level cities in the South Asia and Asia Pacific region, also the capital and large cities. At meanwhile, Singapore is linking Europe and the Oceania continent, which also called the 'Kangaroo route'. Changi Airport is flying to 320 cities in around 80 countries worldwide operating by over 100 airlines.

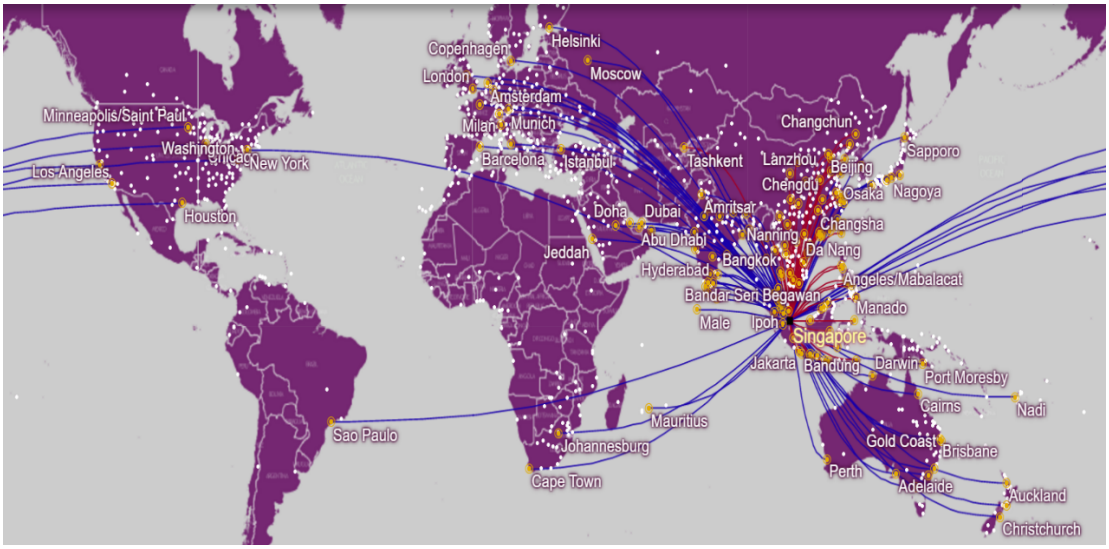


Figure 3.1 Singapore Changi Airport Route Map (Changi Airport, 2016)

To conclude, Changi Airport is the most important gateway and international aviation hub in the Southeast Asia region, linking AESEAN countries to the whole world through providing outstanding airport usage experience.

3.2.2 Middle East

3.2.2.1 Dubai International Airport

1. City and Airport Overview

Dubai is located in United Arab Emirates (UAE), and it has the largest population in UAE. Dubai International Airport (IATA: DXB) is one of the busiest airports in the Middle East and the world. Due to the successful business strategy of its home base air carrier Emirates Airlines and its remarkable location with an eight-hour catchment area encompassing two-third of the world population, Dubai International Airport has developed into a world international hub since its establishment in 1963. At the present time, DXB has three terminal buildings and two runways (12L/30R, 12R,30L) in parallel. Terminal 3 is mainly serving its home base FSC Emirates Airlines and its strategic partner Australian's Qantas Airways (CAPA, 2016).

2. Airport Facts and Future Development

DXB plays a vital role in the Dubai economy, with more than 90 thousand people employed and more than 400 thousand jobs provided indirectly. It also represents approximately 27% of Dubai's GDP and contributes more than 26.7 billion US dollars to Dubai's economy in 2014 (Oxford Economics, 2014).

Emirates Airlines is the largest airline operating at DXB as its home base. Over 65% of the flights depart from DXB are handled by Emirates and accounts for around 42% of the aircraft movement. The flydubai is the Low-cost carrier owned by Emirates, also based in DXB. As the fleet of flydubai is wholly narrow-bodied aircraft, it has a higher percentage on aircraft movement than passenger traffic at 22%. (The National Business 2016)

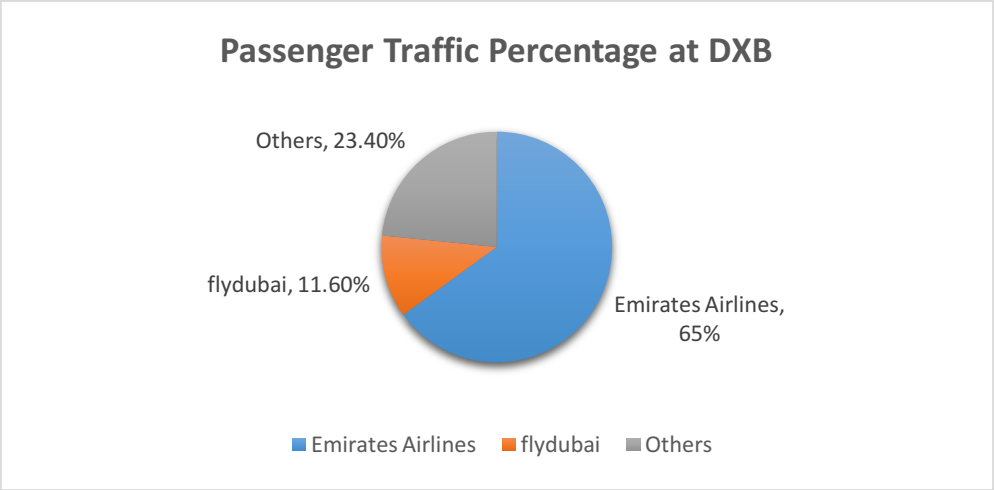


Figure 3.2 Passenger Traffic Percentage at Dubai Airport (AINonline, 2012)

Comparing the passenger traffic between 2014 and 2015, DXB has recorded an increase of 10.7%. This allowed DXB to rank third in the world busiest airport and the world busiest airport with the huge amount of international passengers. In fact, more than 70% are connecting passengers (AINonline, 2012).

Cargo volumes at Dubai International Airport grew 3.4% to 2.51 million tonnes last year despite the transfer of all pure cargo operations to the new Dubai World Central airport (Reuters, 2016). Emirates announced that the air cargo facilities would be handling more than 1 million tonnes of cargo annually by 2018. Dubai is expected to maintain its global air cargo hub status with its demand increasing by 8.3% annually (Cornin, 2015).

Table 3-4 Dubai International Airport Annual Traffic Statistics (Dubai Airport, 2016)

Dubai International Airport (DXB)	Passenger Traffic	Cargo Traffic (tonnes)	Aircraft Movements
2013	66,431,533	2,443,624	369,953
2014	70,473,893	2,423,677	357, 339
2015	78,014,838	2,506,092	403,517

3. Airport Network

Dubai Airport's air routes mainly consist of two Dubai based air carriers, Emirates Airlines and its Low-cost subsidiary flydubai. Emirates mainly operates international scheduled flights while flydubai provides regional Low-

cost passenger services.

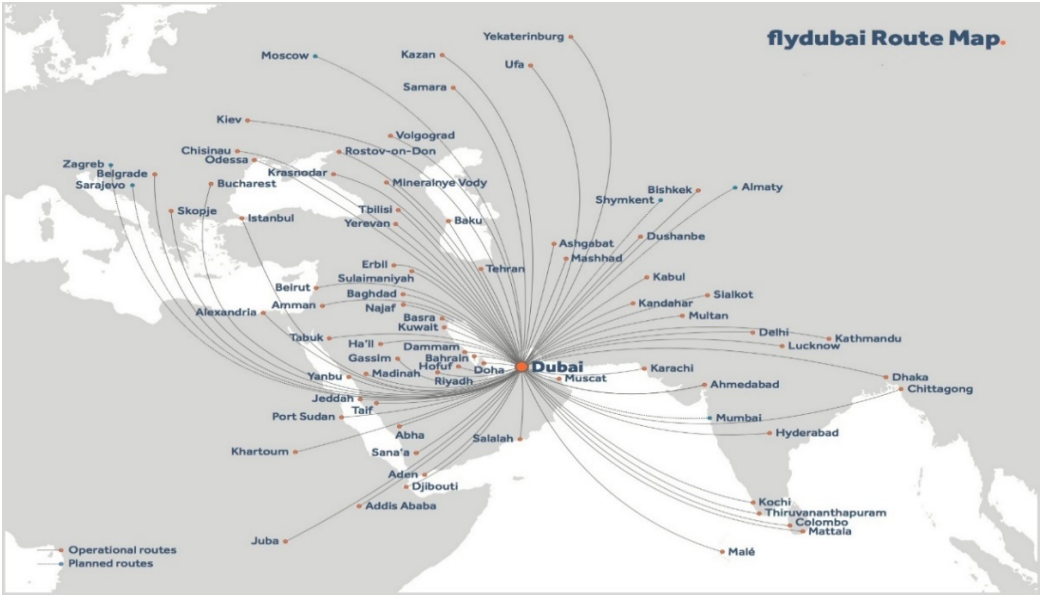


Figure 3.3 flydubai Route Map（Drum,2016）(world airline news, 2016)

The route map of flydubai has clearly shown that flydubai is flying from Dubai to most of the cities along Belt and Road countries and regions, serving the Commonwealth of Independent States (CIS), West Asia, Middle East, Sub-continental, Eastern European and North Africa countries. Furthermore, flydubai has added new destination routes to Slovakia, the Czech Republic, Bosnia, Bulgaria and Croatia in the May 2015 (The National Business, 2015).

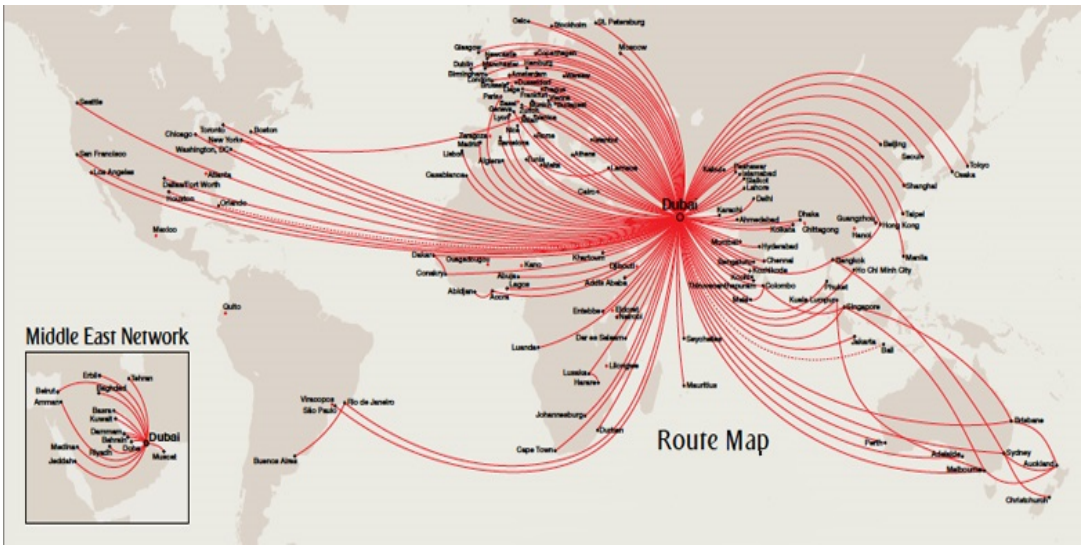


Figure 3.4 Emirates Airlines Route Map (Emirates Airlines, 2016)

As illustrated, Emirates Airlines' intercontinental flights thrive to link the world together. Together with its affiliate's regional air network, Dubai is definitely a

world aviation hub connecting the Belt and Road countries and regions together. As of January 2016, there are about 7,700 flights per week operated by 140 airlines to more than 270 destinations all around the six inhabited continents.

3.2.2.2 Istanbul Ataturk Airport

1. City and Airport Overview

Istanbul is the largest city in Turkey. Its population has reached 1.4 million, and it has become Europe's largest city and also the sixth largest city in the world. Istanbul is located in the northwest of Turkey, between the Black Sea and Sea of Marmara (Kastle, 1998) and it is the intersection of Silk Road and Maritime Silk Road.

Through its superior geographical advantage, massive population and the scale of the city, Istanbul has two airports on the both sides of Asia and Europe currently. On the side of Europe, Ataturk International Airport (IATA: IST) started its operations in 1953 (DHMI, 2015) and since then, it serves as the main hub for the Turkish aviation industry. The airport mainly handles international flights (DGCA, n.d). There are two terminals located in the airport as Domestic Terminal and International Terminal both operated by TAV with three operational runways. There are total of 125 airlines operating at IST (TAV, 2015). Major airlines serving IST are Turkish Airlines, British Airways, Emirates, Aeroflot, Lufthansa, KLM and Air France.

2. Airport Facts and Future Development

Combining passenger traffic of both Ataturk Airport and Sabiha Gokcen Airport, Istanbul is one of the largest aviation hubs in Europe and the world with nearly 90 million passengers. As of 2015, the used capacity of Ataturk airport is 61.8 million passengers per annum (DHMI, 2015) and 39% of the total traffic is accorded to connecting traffic (TAV, 2015).

Table 3-5 Istanbul Airport Passenger Traffic 2015 (TAV, 2016)

Istanbul	Passenger Traffic
Istanbul Ataturk Airport (IST)	61,836,781
Sabiha Gokcen International Airport	28,112,438
Total Amount	89,949,219

There are a total of 137 companies registered by the Directorate General of Civil Aviation (DGCA) to operate in IST as a cargo operator (DGCA, n.d). According to DGCA, IST is also the major port of cargo operations in Turkey.

Nonetheless, Istanbul faces issues of fast growing passenger traffic and it is observed that the surrounding land is restricting the expansion of Ataturk Airport. In 2008, DMHI had announced to build the third airport in Istanbul (anon, 2008). The first phase of the new airport, which consists of one main terminal building and two-satellite terminal building, is expected to complete in 2018(The National Business, 2016). Three runways will serve the new airport in 2018. By the fourth phase, the new airport will have six runways (Daily Mail, 2016) to accommodate the huge demand in 2028. Meanwhile, TAV announced that they will be building a new international terminal in Ataturk International Airport and increase the passenger capacity to 65 to 70 million by 2021 (Reuters, 2014).

3. Airport Network

Turkish Airlines is dominating approximately 50% of the market share in Turkey, following by the Turkish budget airline Pegasus Airlines with 19%.

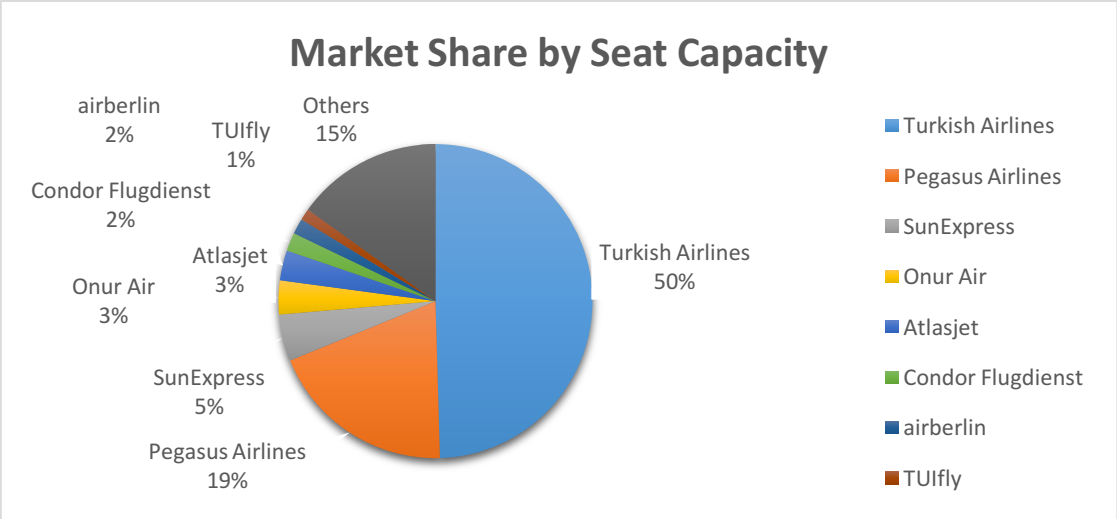


Figure 3.5 Turkey Air Operators Seat Capacity Share (DGCA, 2014)

Since 1990, Pegasus Airlines (IATA: PC) is the first low-cost carrier to serve Turkey. As a joint-venture airline between Aer Lingus, Silkair and Net Holding (Pegasus Airlines, 2015) headquartered in Istanbul, Pegasus Airlines was the first low-cost carrier to serve Turkey. At present, Pegasus Airlines is providing low cost services across three continents with over 90 destinations (Alternative Airlines, 2015). The strong performance of these two Turkey based airlines strongly sets the foundation of the two airports in Istanbul as an aviation hub.

Figure 3.6 Pegasus Airlines Regional Route Map (Pegasus Airlines, 2016)

3.1.3 Europe

3.1.3.1 London Heathrow Airport

1. City and Airport Overview

London is the capital of England and the United Kingdom. It is a leading global city and it has the world largest city airport system. Air transportation is highly developed in the city of London. While there are nine airports using the name of the "London Airport", London air passengers are mainly concentrated in six airports, namely London Heathrow (IATA: LHR), London Gatwick (IATA: LGW), London Stansted Airport (IATA: STN), London Luton Airport (IATA: LTN) and London City Airport (IATA: LCY). London Heathrow Airport is one of the world's busiest international airports; it was the world's largest international air passenger transport hub in 2013. Gatwick Airport is the second largest airport in London and generally provides international and regional flights. Stansted Airport, Luton Airport and Southend Airport are mainly responsible for Low-cost carriers and regional routes. Located in the city centre of London, London City Airport is the smallest airport and mainly serves business travellers and short-haul flights (CAPA, 2016).

2. Airport Facts and Future Development

As of 2015, the total passenger throughput of six airports of the Greater London is recorded to be a hefty 155.21 billion. This includes Heathrow airport with a total of 74.95 million passengers, ranking sixth in the world. In the same light, Gatwick Airport has a total around 40 million people; it is the second busiest airport in the UK. The passenger throughput of Stansted Airport and Luton Airport are mainly driven by demands for low-cost carriers like easyJet, Ryanair and Flybe. Furthermore, London is also the world's only city with four airports that handle more than 10 million passengers.

Table 3-6 London Airport System Traffic Statistics (CAA, 2016)

London Area Airports	Passenger Traffic		Cargo Traffic		Aircraft Movement	
	Scheduled	Charter	Freight	Mail	Scheduled	Charter
London Heathrow (LHR)	74,814,748	139,708	1,496,551	94,975	469,658	2,473
London Gatwick (LGW)	36,155,343	4,104,725	73,371	5,521	242,213	20,426
London Stansted (STN)	21,909,281	604,162	207,996	19,115	142,833	13,080
London Luton (LTN)	11,806,102	456,479	28,007	-	80,808	11,197
London City (LCY)	4,319,281	20	24	1,438	79,250	4,400
London Southend (SEN)	894,287	6,347	5	-	142,833	13,080
Total Amount	149,898,567	5,311,441	1,605,955	121,049	1,023,675	52,648

For London Heathrow Airport, the handling capacity has reached its saturation at 99% utilisation for a few years. On the other hand, although London Gatwick is operating under a single runway system, a project is underway to upgrade London Gatwick's running system into a two-runway system.

3. Airport Network

London is one of the largest cities in the world. The growing importance of the interconnectedness of its air routes confirms its position as an international aviation hub. London Heathrow has an intensive air route map in Europe. As a major European aviation hub, narrow-bodied aircrafts carry passengers from smaller cities to Heathrow for high demand destinations, covering most of the commerce and metropolitan centres across Europe.

Figure 3.7 London Heathrow Airport World Destination Map (Airport Watch, 2012)

For the Belt and Road countries, most of the capitals are connected with London Heathrow. Due to the high number of immigrants from India, Pakistan and Bangladesh, London Heathrow often schedule flights operating to the main cities among these countries. The destination map below has illustrated the destinations in the Middle East and West Asia countries. Most of the capitals in this region are covered by the Heathrow's network with an exception of Yemen's capital Sanna.

Figure 3.8 London Heathrow Airport Middle East Destination Map (Airport Watch, 2012)

In summary, London is the European largest aviation hub, connecting Europe to the rest of the world. With the saturation of capacity of the London's airports, the expansion projects of London Heathrow and London Gatwick are under discussion. It is important for London to remain as a European aviation hub and to serve the Belt and Road residents.

3.1.3.2 Amsterdam Schiphol Airport

1. City and Airport Overview

Located in the west of the country, Amsterdam is the capital and the largest city of the Netherlands. Randstad is a megalopolis consisting four largest cities of the Western Netherlands, which are Amsterdam, Rotterdam, The Hague and Utrecht. The population of this area totals about 7.1 million people, and it is the sixth largest metropolitan region in Europe. There are two major airports severing this populous area, Amsterdam Schiphol and The Hague Airport.

Amsterdam Schiphol Airport (IATA: AMS) is operated by the Schiphol Group, Amsterdam Schiphol Airport is the largest international airport of the Netherlands and the sixth largest airports in Europe in terms of passenger traffic. Schiphol was the world third busiest airport in terms of international passenger throughput in 2006. Schiphol hosts passenger and cargo traffic from over 50 regional and international airlines and acts as a hub for airlines including KLM, Martinair Cargo, Arkefly, transavia.com and Delta Air Lines. (CAPA, 2016)

2. Airport Facts and Future Development

In 2015, Schiphol welcomed more than 58 million passengers; 3.3 million more passengers as compared to 2014. Charter flights have slightly decreased in 2015, but the scheduled flights have soared about 7%.

Amsterdam is one of the most important air cargo hubs in Europe. As the end point of the Silk Road, AMS has recorded 1,620,970 tonnes of airfreight including the freight carried by passenger aircraft and the full freighter. Passenger freight has increased slightly while full freighter service decreased. Overall, the total amount of airfreight has a minor decrease in 2015.

Table 3-7 Amsterdam Schiphol Airport Traffic Statistics (Schiphol Airport, 2016)

Amsterdam Schiphol Airport (AMS)	Passenger Traffic	Cargo Traffic (tonnes)	Aircraft Movements

	Scheduled	Charter	Passengers freight	Full-freighter services	Scheduled	Charter	Full-freighter
2014	51,184,810	3,793,213	630,397	1,002,798	409,835	28,461	16,568
2014 Total	54,978,023		1,633,195		452,687		
2015	54,903,869	3,380,995	653,666	967,303	424,728	25,951	16,775
2015 Total	58,284,864		1,620,970		465,521		

3. Airport Network

Schiphol Airport is one of the major aviation hubs in Europe, connecting to 148 European destinations (Schiphol 2016). The figure below has illustrated that most of the European countries are connected with AMS.

Figure 3.9 Amsterdam Schiphol Airport Destination Regional Distribution Map (Schiphol Airport, 2016)

Asian cities departing from Schiphol Airport can take direct flights to 19 Middle East destinations and 22 Asia cities (Schiphol 2016). As its main base airlines, KLM is also one of the member of SkyTeam. Amsterdam has scheduled flights to Guangzhou, Beijing, Xiamen and Shanghai with code-share cooperation between three Chinese SkyTeam Alliance member China Eastern, China Southern and Xiamen Air.

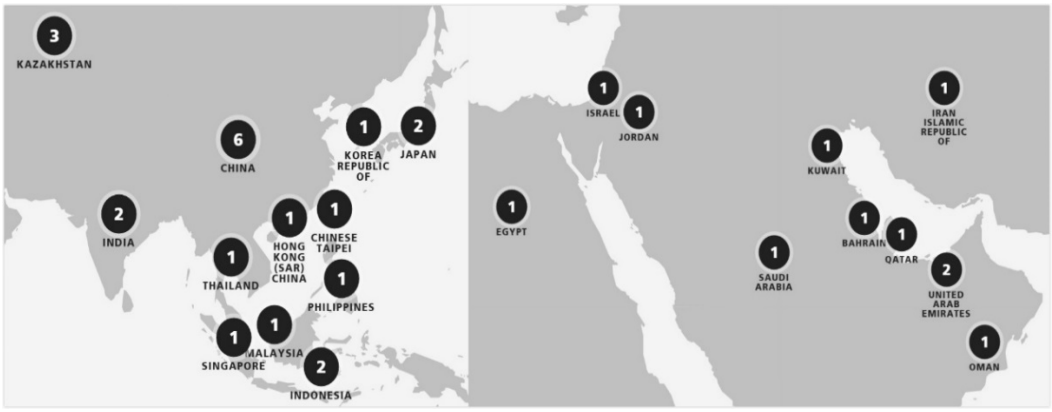


Figure 3.10 Amsterdam Schiphol Airport Destination Asia Distribution Map (Schiphol Airport, 2016)

3.1.3.3 Frankfurt Airport

1. City and Airport Overview

Frankfurt is the fifth largest city of Germany with 731.1 thousand residents. Frankfurt is in the centre of the second largest metropolitan region of Germany Frankfurt Rhine-Main Metropolitan Region, which has a large population of 5.5 million. After the expansion of the European Union (EU) in 2013, Frankfurt has become the EU's geographical centre (Stratfor, 2016).

Frankfurt Airport (IATA: FRA) is owned and managed by the Fraport AG (Fraport, 2015) and serves as the financial capital of Germany and the EU, Frankfurt. The airport is the busiest in Germany, and ranks among the largest in the world. FRA employs more than 80,000 people and is the largest place of employment at a single place in Germany. Frankfurt is the main hub of German national carrier Lufthansa. Frankfurt is a major European air cargo facility, serving over 20 cargo airlines, as well as being a major hub of Lufthansa Cargo.

2. Airport Facts and Future Development

In 2015, Frankfurt Airport has accounted for more than 61 million passengers with a 2.5% increase from 2014, of which approximate 55% were transfer passengers (Fraport, 2015). The cargo throughput of Frankfurt in 2015 was 2,114,579 tonnes and it made Frankfurt become the busiest cargo airport in

Europe. A total of 40% of airfreight in Frankfurt was carried by belly-hold cargo on passenger flights while the rest were carried by full-freighter aircraft (Fraport, 2015).

Table 3-8 Frankfurt Airport Traffic Statistics (Fraport, 2015)

Frankfurt Airport (FRA)	Passenger Traffic	Cargo Traffic (tonnes)		Aircraft Movement
		Freight	Mail	
2014	59,571,802	2,083,495	81,165	469,026
2015	61,040,613	2,030,861	83,718	468,153

3. Airport Network

The airport frequently ranks in the top airports for international destinations served, with well over 128 airlines operating scheduled, charter and cargo flights. Frankfurt has more than 297 destinations with more than 104 operating airlines carrying passengers from and to Frankfurt.

Analysing the destination map of Frankfurt below, FRA covers destination in six continents, almost all the major commerce and metropolitan centres across Europe, the Middle East, Asia, Africa, South America and North America are served directly from Frankfurt. For Belt and Road countries, it covers most of the capitals in Central Asia and West Asia, also a number of cities in Indian Sub-continent and Middle East countries.

Figure 3.11 Frankfurt Airport Destination Global Distribution Map (Airport Watch, 2012)

For regional flights, FRA has an incredible network, flying not only European capitals but also secondary and third level cities in Europe. Generally, Frankfurt airport is a European aviation hub in terms of its massive network and advanced airport facilities, linking Belt and Road countries and regions to European cities.

Figure 3.12 Frankfurt Airport Destination Distribution Map (Airport Watch, 2012)

3.2. Regional Aviation Hub

3.2.1 Shanghai Hongqiao Airport

1. City Overview

Shanghai is China's economic, financial and shipping centre. Shanghai is also currently the only Chinese city with two large airports. Firstly, Shanghai Pudong International Airport (IATA: PVG), which is the third largest airport in P.R. China, achieved passenger throughput of 51.69 million in 2015, ranking third in Mainland China (excluding Hong Kong, Macao and Taiwan) and 19th in the world. Moreover, the international airline passenger throughput of PVG is ranked first in Mainland China (CAPA, 2016). Shanghai Hongqiao International Airport (IATA: SHA) is mainly operating domestic and regional flights. Passenger throughput in 2015 was around 37.97 million, ranking fourth in Mainland China. These two airports have clear defined roles, serving the whole Yangzi River Delta air passengers.

Table 3-9 Shanghai Airport Traffic Statistics (CAAC, 2016)

Shanghai	Passenger traffic	Aircraft movement	Cargo traffic
Shanghai Pudong International Airport (PVG)	60,053,387	590,199	3,275,231.1
Shanghai Hongqiao International Airport (SHA)	37,971,135	256,603	433,600.1
Total Amount	98,024,522	846,802	3,708,831.2

2. Airport Overview

Shanghai Hongqiao International Airport (IATA: SHA) is the smaller and more centrally located airport serving Shanghai and ranks among the busiest airports in China. Hosting domestic and regional passenger and cargo services, the airport is a hub for China Eastern Airlines (IATA: MU), Shanghai Airlines (IATA: FM) and Spring Airlines (IATA: 9C). The airport was the principal airport serving Shanghai until the construction of an international airport at Pudong. Services at Hongqiao are almost exclusively domestic and short-haul international, with

longer-haul services having been transferred to Pudong. Hongqiao Airport has two terminal buildings and two runways (18L/36R, 18R/36L).

To cater to the demand of the 2010 Expo in Shanghai, Hongqiao had completed an expansion project that cost around 15.3 billion yuan. The project mainly included a new runway, second terminal building, Hongqiao railway station, railway transportation terminal, car park and fast evacuates roads. After the expansion construction completed, Hongqiao transportation terminal became the world's largest integrated transportation hub.

3. Airport Network

Hongqiao Airport has an intensive domestic network, providing passenger scheduled flights and charter flights to more than 88 destinations in Asia Pacific region, in which only five international routes are offered to Hong Kong International Airport, Macau International Airport, Taipei Songshan Airport, Tokyo Haneda Airport and Seoul Gimpo Airport. For domestic flights, Hongqiao not only offers services to the provincial large cities but also second and third level cities in China.

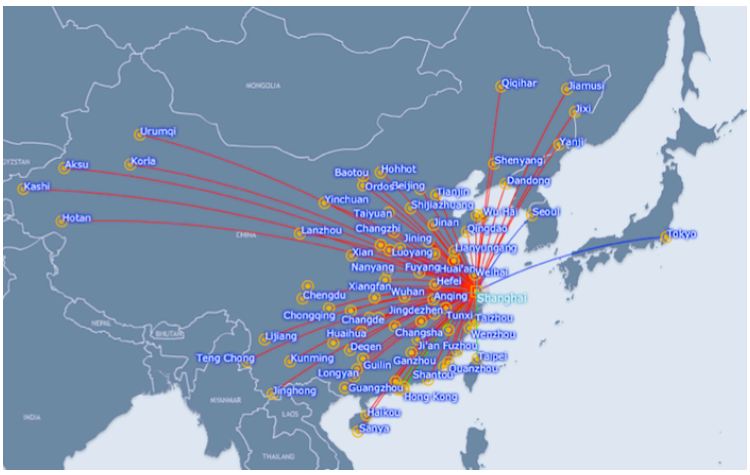


Figure 3.13 Shanghai Hongqiao Airport Regional Route Map (CAPA, 2012)

In addition, the holders of valid passports issued by 45 selected countries do not need a visa when transferring in Hongqiao Airport since January 2013. This policy reduces the inconvenience while passengers using the airport and also confirms the status of Hongqiao Airport as the Asia Pacific regional hub (Murray

and Coates, 2013).

3.2.2 Istanbul Sabiha Gokcen International Airport

1. Airport Overview

Istanbul Sabiha Gokcen Airport (IATA: SAW) is the second busiest airport in Istanbul and third busiest airport in Turkey, which started its operations in 2001 (DHMI, 2013). It is located in the Asia side of Istanbul and served 28.3 million passengers in 2015 (Sabiha Gokcen Airport, 2016). Pegasus Airlines has adopted this airport to be its main hub. There is one terminal with 42 gates including domestic and international flights (Flightglobal, 2014) and there is one runway (06/24) (DGCA n.d). The airport is operated by Malaysia Airports Holding (MAHB) Berhad (Sabiha Gokcen Airport, 2015).

2. Airport Facts and Future Development

Comparing the passenger numbers between March 2015 and March 2016, a 19% increase was recorded with domestic passenger and international passenger increasing by 23% and 12% respectively. There are 54 airlines serving the airport and low cost carriers generally prefer Sabiha Gokcen to Ataturk Airport due to the traffic density. (anon, 2014).

Cargo operations are served in Sabiha Gokcen Airport. The airport provides cold storage rooms and offices for cargo operators, the cargo facilities in SAW provide a huge amount of cargo traffic. (Sabiha Gokcen Airport 2015).

In 2009, a new terminal was completed for SAW with over 20 million passenger capacity (Strauss, 2009). According to the MAHB (anon, 2015), it is expected that the passenger numbers in SAW to increase to 33 million passengers.

Table 3-10 Istanbul Sabiha Gokcen Airport Annual Passenger Traffic (Sabiha Gokcen Airport, 2016)

Year	Domestic Passenger	International Passenger	Total
2012	9,752,385	5,120,525	14,872,910
2013	12,029,274	6,813,166	18,842,788
2014	15,028,257	8,603,626	23,631,883
2015	18,581,984	9,703,594	28,285,578

Turkish regional airport Sabiha Gokcen has intensive destination network in Europe, Turkish flag carrier Turkish Airlines and Low-cost Carrier Pegasus Airlines are operating regional schedule flights to most of the important cities in Europe.

Figure 3.14 Istanbul Sabiha Gokcen Airport Regional Route Map (Sabiha Gokcen Airport, 2016)

For domestic routes, SAW is serving most of the states in Turkey, linking Turkey cities to Europe, Middle East and West Asia.

Figure 3.15 Istanbul Sabiha Gokcen Airport Domestic Route Map (Sabiha Gokcen Airport, 2016)

Istanbul Sabiha Airport has given an example of a successful regional airport, the coordination and allocation of the aviation resource between Istanbul Ataturk Airport and Sabiha Airport allows Istanbul becomes the multiple transportation hub of the Eurasia. The connection of Istanbul airports can have a significant impact on the 'Aviatic Silk Road' construction.

3.3 China Portal Aviation Hubs

In 2010, the civil aviation administration of China issued the 2010/11 winter and spring season domestic routes business license. The flight review rules pointed to a total of 11 domestic hub airport, in which there are three major portal composite hub airport, and nine regional portal hubs.

This is in conjunction with the Civil Aviation Administration of China's (CAAC, 2011) plans to build an Air Silk Road and gathering airlines to develop international networks to build key nodes on the new Silk Road. CAAC strives to develop the aviation industry around the national development strategy and integrate the aviation industry with economic and social development. Efforts will be made to improve the function of large airports as international hubs and build global networks of international routes with good connectivity. Large airports such as the Beijing Airport, Shanghai Airport and Guangzhou Airport will concentrate on playing their role as international and transit hubs. Meanwhile, aviation logistics companies will make their contributions in the development of international aviation logistics centres (HKTDC, 2015).

In conclusion, the world-class aviation hubs generally own extraordinary geographical location. Additionally, there are usually the commercial, political or transportation centre of the country with large residential and floating population. There are some large cities that are having two or more airports because of the huge demand and over capacity of the airport. After analysing these airports, it provides us examples that how to develop the potential airports along the Belt and Road countries and regions according to the previous successful laws and rationales.

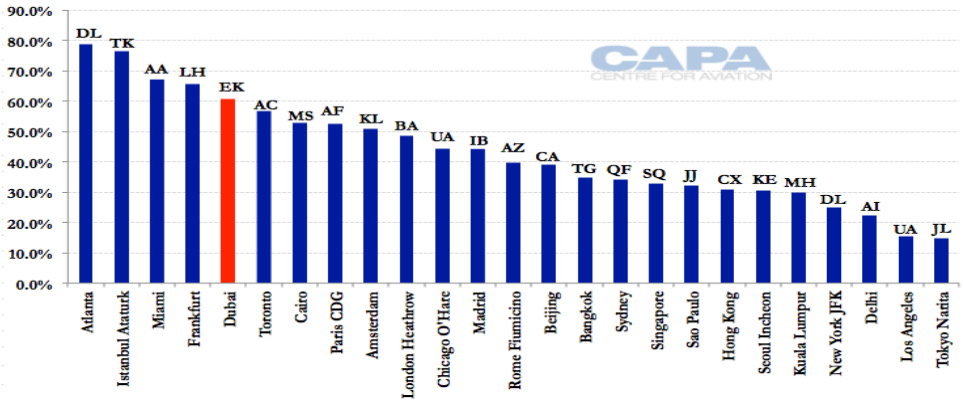


Figure 3.16 World Airports Home Base Airlines Seat Capacity Share (CAPA, 2013)

The bar chart above demonstrates the marker share of each home base carrier at each airport. For the world largest passenger traffic airport Hartsfield-Jackson Atlanta International Airport (IATA: ATL), it has Delta Air Lines (IATA: DL) dominating nearly 80% market share of the airport. For Istanbul Ataturk Airport (IATA: IST), which is one of the most important airport among Belt and Road airports, Turkish Airlines (IATA: TK) occupies more than 75% of market share and followed by Emirates (IATA: EK) has over 60% market share in Dubai Airport (IATA: DXB). In general, the airports have observed that many strong air carriers are supporting them to become an international or regional aviation hub.

Hence, it is essential to analyse the Belt and Road energetic air carriers, and find out the most successful strategy of them. In the next chapter, several Belt and Road air operators will be analysed as benchmark airlines.

4. Belt and Road Energetic Air Carriers

In the last chapter, the information of main aviation hubs among Belt and Road countries and regions have been illustrated and analysed. Most of the world-class airports are supported by strong home-base air carriers. Therefore, several energetic air carriers in the B&R countries will be analysed.

Today, air carriers are playing significant role in promoting Belt and Road construction. Airlines from China and Hong Kong have started operating in more routes and have increased flight frequency among Belt and Road countries and regions. The exploitation of new air routes is accelerating regional business cooperation and investment, cultural and technical communication and exchange and tourism.

In this chapter, several Belt and Road air operators will be analysed as benchmark airlines, in which the Belt and Road network will be carefully analysed.

4.1 Major Mainland China Based Air Carriers

4.1.1 China National Aviation Holding Company

Air China Limited (IATA: CA) (hereinafter “Air China") and its predecessor, the former Air China, were founded in 1988. According to the "Civil Aviation System Reform Programme" which was approved and passed by the State Department in October 2002, the former Air China consolidated with China National Aviation Company and China Southwest Airlines and founded China Aviation Group Company. Based on the combined air transportation resources of the three entities, the new Air China Company was established. On September 30th, 2004, approved by the State-owned Assets Supervision and Administration Commission of the State Council (SASAC), Air China Limited was officially

launched in Beijing, operating air transport services as its primary business is mainly controlled by the China Aviation Group. On December 15th 2004, Air China successfully listed in Hong Kong (HKEx: 0753) and London (LSE: AIRC) (Air China, n.d.).

Air China is China's exclusive national flag carrier for civil aviation, a member of the Star Alliance, which is the world's largest airline alliance. It ranks first among domestic airline brands (evaluated by the World Brand Laboratory as having a brand value of RMB 101.536 billion in 2015) and it is leading ahead of its domestic competitors in passenger and freight air transport and related services.

At a group level, Air China Limited remains the largest Chinese airline group and its RPKs were twice the size in 2015 compared with 2009 (CAPA, 2016). Air China has an intensive domestic network, severing more than 90 Chinese cities, and some major cities in the world.

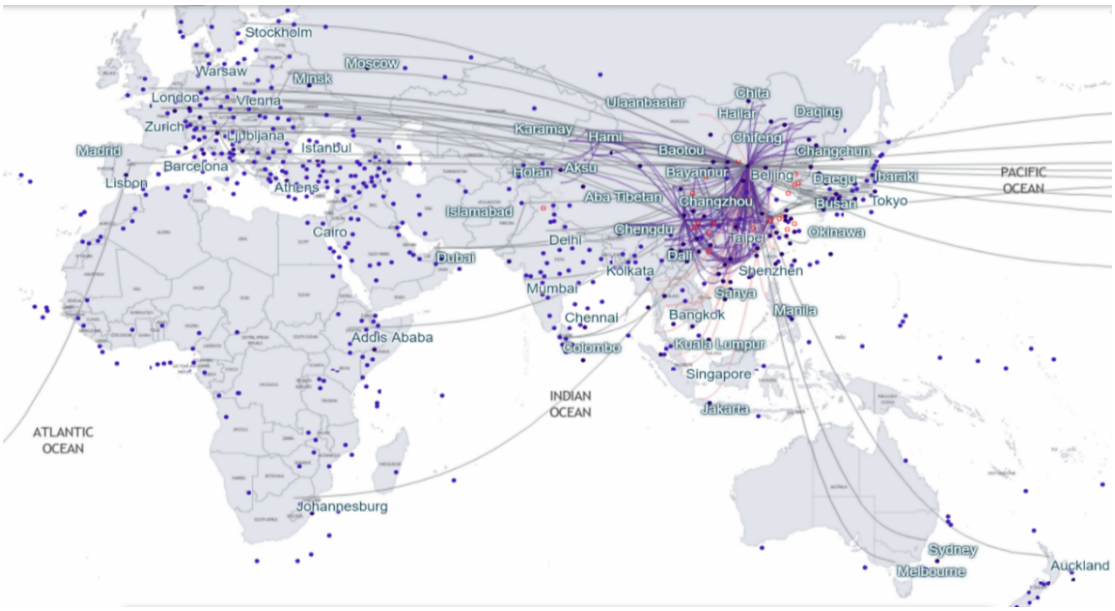


Figure 4.1 Air China Route Map (Star Alliance, 2016)

4.1.2 China Southern Air Holding Co.

China Southern Air Holding Co. (CSAHC) is a state owned Company founded in October 2002. It is one of the three major Chinese airline groups and it has an extensive network of domestic and international flights services from its main operational base at Guangzhou Baiyun International Airport (IATA: CAN). In 2016, the Group ranked first among all Chinese airlines in terms of its fleet size with 508 aircraft (PLANESPOTTER.NET, 2016), flight routes network and volume of passenger traffic. CSAHC currently owns 8 member corporations and has 6 subsidiary airlines after the 2002 China civil aviation integration and reorganisation.

Headquartered in Guangzhou, China Southern Airlines (IATA: CZ) is China Southern Air Holding Co.'s air transportation company. In the 2002 restructuring of China's civil aviation integration, Xinjiang Airlines and China Northern Airlines were merged into China Southern Airlines.

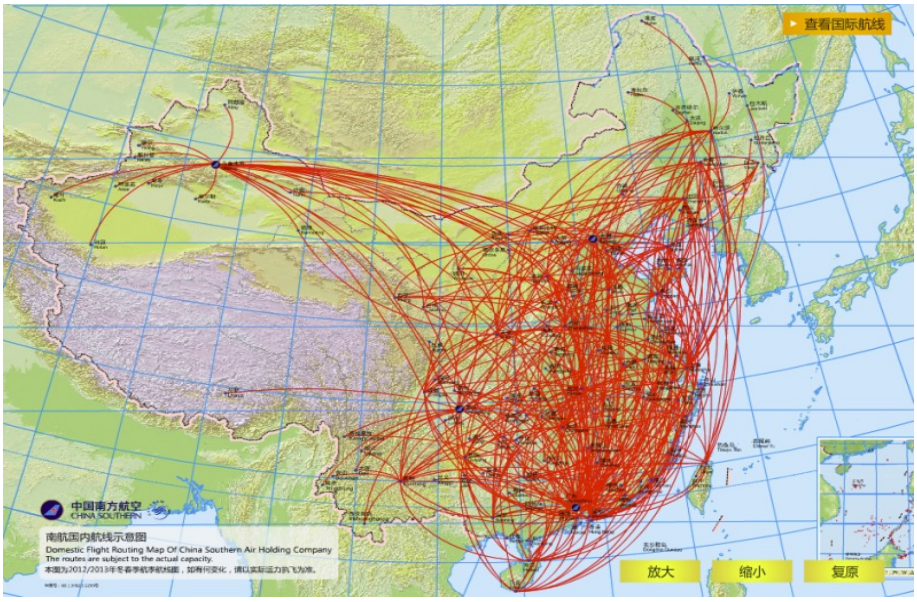


Figure 4.2 China Southern Airlines Domestic Route Map (China Southern, 2016)

From the Belt and Road network prospective, a year after the 'Vision and Actions' on Jointly Building Silk Road Economic Belt and 21st Century Maritime Silk Road' (National Development and Reform Commission, 2015) released, China Southern Airlines started to operate 179 new routes over 69 cities among

36 Belt and Road countries and regions, which 34 new routes and operated 36423 flights. It has established itself as the major air operator in the Belt and Road Regions (Zhou, 2016).

Departing from the Urumqi hub, China Southern has expanded the cooperation and international network to Belt and Road province in China, with some air routes like Lanzhou to Urumqi to Tbilisi, Lanzhou to Urumqi to St. Petersburg and so on. China Southern international network is shown below, CZ's direct flight to Central Asian and West Asian countries' capitals, which is counted as the most Belt and Road destinations in China.

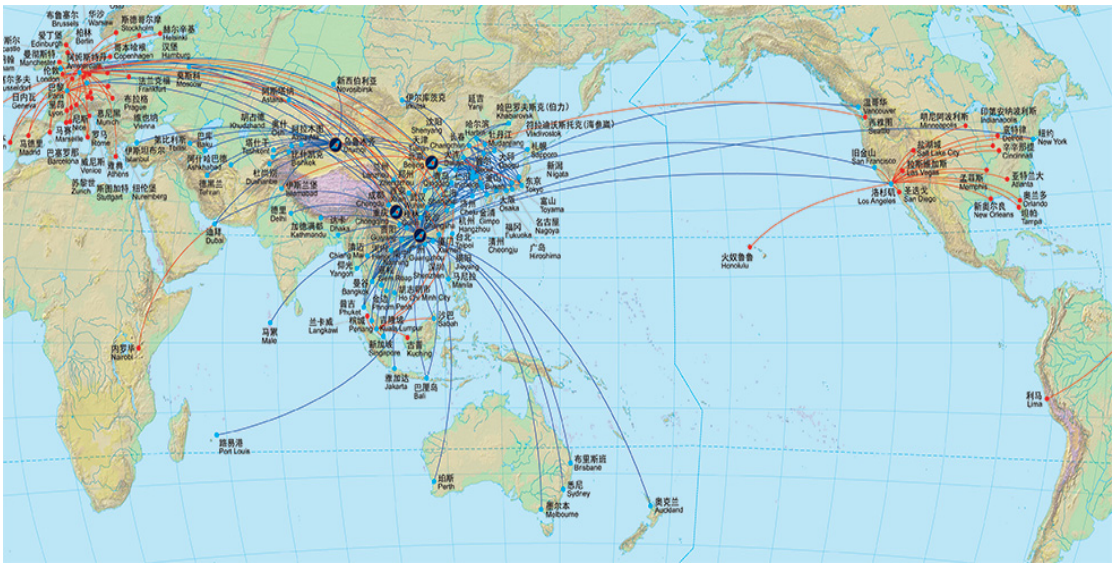


Figure 4.3 China Southern Airline Route Map (China Southern, 2016)

4.1.3 China Eastern Air Holding Company

Headquartered in Shanghai, China Eastern Air Holding Company (CEAH) is one of the three largest air transportation groups in China. CEAH has China Eastern Airlines (IATA: MU) is one of the three largest state-owned airlines in China, which based at Shanghai's two airports, Hongqiao and Pudong as well as Yunan Branch based at Kunming Changshui International Airport (IATA: KMG). MU operates international scheduled flights over 40 destinations and over 350 domestic destinations (CAPA, 2016). Shanghai Airlines was merged

with China Eastern Airlines in 2010 and joined SkyTeam in 2011.

Kunming is the gateway of Southwest China to Southeast and South Asian countries. Relying on MU's Yunnan province base, MU connects China to ASEAN and South Asian countries. Until 2011, Kunming has commenced more than 20 international flights scheduled by China Eastern, to develop Kunming Airport from a pure airport to an international airport hub, as well as match up the future strategy Yunnan province as the bridgehead of the China's southwest area.

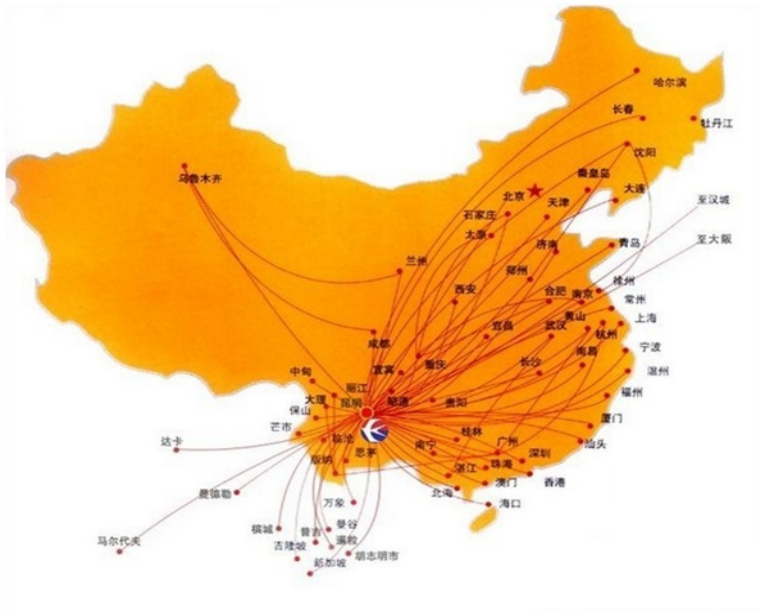


Figure 4.4 China Eastern Airline Regional Route Map (China Eastern, 2012)

4.1.4 Hainan Airlines Group

Hainan Airlines Group (hereinafter HNA Group) is expanding rapidly in the past decade. HNA Group was commenced in 1993, which is mainly based in Haikou, Hainan province. Additionally, Hainan Airlines has set up seven hubs located in Beijing, Xi'an, Taiyuan, Urumqi, Guangzhou, Dalian and Shenzhen.

As of December 2015, HNA Group has nearly 1150 aircraft serving domestic

and international air routes to more than 200 navigable cities and carried about 77.42 million passengers in 2015. Additionally, the group owns nearly 700 air transport enterprises covering different business fields such as finance, tourism, hotel, airport, property, commercial, logistics and eco-technology (HNA Group, 2016).

For licensed air operators, Hainan airlines is operating management of Tianjin Airlines, Deer Jet, Capital Airlines, China West Air, Aigle Azur, Lucky Air, Africa World Airlines, Urumqi Air, Fuzhou Airlines, Guangxi Beibu Gulf Airlines, Yangtze River Express Airlines, Guilin Airlines, myCARGO, Ghana AWA Airlines, French Aigle Azur and other airlines (HNA Group, 2015).

Hainan Airlines Airport Group manages and cooperates with 13 airports currently, mainly includes Haikou Meilan International Airport, Sanya Fenghuang International Airport, Qionghai Boao Airport, Yichang Sanxia Airport, Weifang Nanyuan Airport, Manzhouli Xijiao Airport, Anqing Tianzhushan Airport, Tangshan Sannvhe Airport and Songyuan Chaganhu Airport (HNA Group, 2015).

Aviation industry sector of Hainan Airlines Group continues to maintain high levels of operation quality. Hainan Airlines has won SKYTRAX five-star airlines five times and it is the only five-star airline in Mainland China. Moreover, Hainan Airlines is always making the best effort to ensure the safety and security of operations. Hainan airlines has won a title of honour for creating continuous safe operation records of 23 years, it leads the aviation safety data assessment institution in Germany JACDEC released "the world's most safety airlines list", with zero accident rate ranked fifth in the world and the top of the mainland airlines. Deer Jet is the only charter airlines that has won the ARGUS Platinum five-star and IS - BAO double certification of professional executive company, with Asia's leading official fleet (Hainan Airlines, 2015).

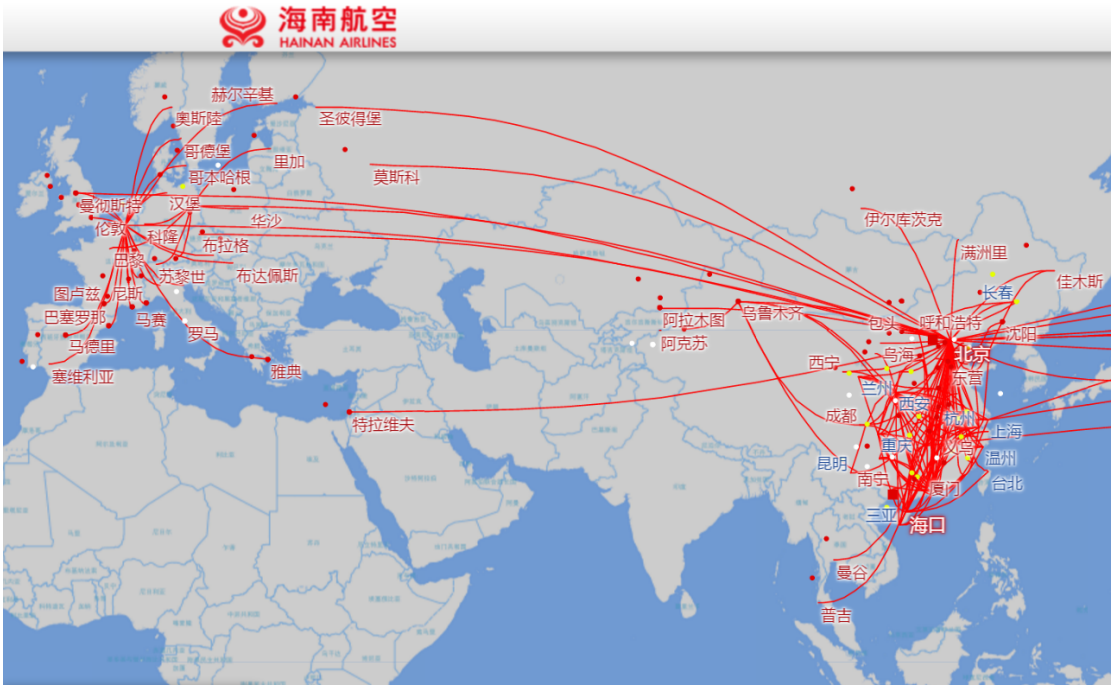


Figure 4.5 Hainan Airlines Route Map (Hainan Airlines, 2016)

In recent years, Hainan Airlines started to expand its network to European and North American secondary cities with its 787 fleet. In the Europe continent, Hainan has set Brussels as its major interchange hub and has begun cooperating with Brussels Airlines.

Alongside the Belt and Road initiative, Hainan Airlines has made several strategic moves to foster deeper cooperation. As of April 2016, Hainan Airlines initiated China's first direct flight to Israel; the Beijing-Tel Aviv route will foster deeper cooperation between the China and Israel in trade, science and technology and tourism (Xinhua, 2016). Furthermore, with the new Chongqing to Rome route, Hainan Airlines now has 14 connections on the Belt and Road (China Daily, 2016).

4.2 Middle East Based Air Carriers

4.2.1 Emirates Airlines

Founded in 1985, Emirates Airlines (IATA: EK) is subordinated to the Emirates Group and flag carrier of United Arab. Emirates Airlines is based in Dubai and it is the largest air carrier in the Middle East and also, one of the largest air carrier in the world. This group deals in travel and tourism industry and is also the owner of airport ground service company DNATA (CAPA, 2016).

According to The Emirates Group (2014), the total revenue generated by the group in 2013 was more than 23.9 billion dollars with an increase of 13.2% from the previous year. Emirates group operates in six continents and the operations include more than 1200 flights a week to various destinations around the globe. Dubai international airport is its hub. According to the Emirates Group (2014) this airline started its operations in 1985. The growth from 2 aircraft, which were on lease, has been huge. Globally, the largest fleet of A380 operator is Emirates Airlines.

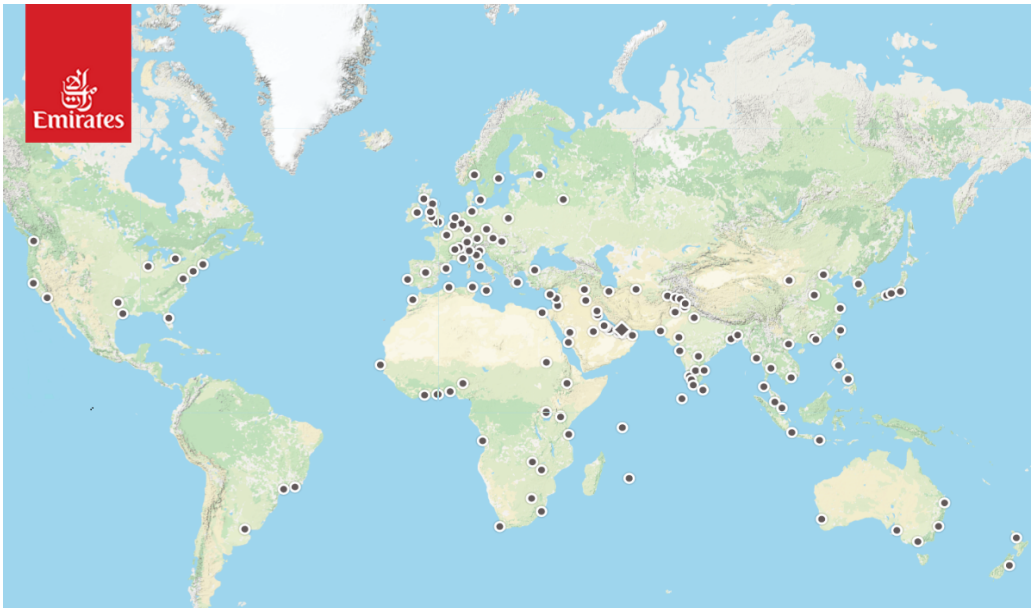


Figure 4.6 Emirates Airlines Destination Distribution Map (Emirates Airlines 2016)

Emirates have a vast network of flights, which covers six continents globally. In the Asia Pacific region, Emirates has codeshares to 101 cities beyond their

network with partners Bangkok Airways, Jetstar, Jetstar Asia, Qantas and Malaysia Airlines. Recently, their codeshare agreement with Bangkok Airways opened up an additional 15 Southeast Asian cities to the Emirates network last year. In Europe, Emirates also built a codeshare partnership with Flybe to open up 10 new destinations across the UK including Belfast, Edinburgh, Aberdeen, Isle of Man and Jersey, to Emirates passengers. Emirates launched a codeshare partnership with S7 airlines to open up more than 30 routes across Russia, and linked their two Russian gateways of Moscow and St. Petersburg, allowing more customers to experience the best of Russia in one single travel itinerary.

In recent light, Emirates' international airport operations division announced several key milestones including its entry into the Americas with the acquisition of RM Ground Services in Brazil. Emirates' DNATA strengthened its presence in Italy with a strategic 30% investment in Milan based ground handler, Airport Handling SPA, and acquired the cargo handling operations of Aviapartner at Schiphol Airport in Amsterdam. In Pakistan, Gerry's DNATA added three new airports to its operations, taking their overall presence in the country to seven airports.

4.2.2 Turkish Airlines

Founded in 1933, Turkish Airlines (IATA: TK) is a Turkish state owned flag carrier. With 108 countries, Turkish Airlines is the largest carrier worldwide in regard to number of flying countries. With its 32 million international passengers, Turkish Airlines is 7th largest airline in the world. Over the previous year, the number of passengers increased by 13.3% from 48.3 million in 2013 to 54.7 million in 2014. The number of passengers has increased by 13.2% on the domestic routes and by 13.3% of international routes. According to AEA (Association of European Airlines) data, Turkish Airline increased its market share to 14.6% successfully and has taken second place among European carriers in regards to air passenger traffic. Cargo and mail transportation rose

in parallel to the passenger increasing and grew by 18.1% to 667,743 tonnes.

Turkish Airline's total revenue rose by 12.7% in 2014 to US$ 11 billion. In 2014, the total revenue can be divided into 88.3% resulting from passenger revenue and 8.8% from cargo revenue. During the same period, the compound annual growth rates (CAGR) in global passenger and cargo revenues increased by 4.7% and 1.6% respectively.

Turkish Airlines joined Star Alliance in April 2008. Together with the Star Alliance network, Turkish Airlines provides domestic, regional and international schedule air service to Europe, Africa, North America, South America and Asia, and more than 270 destinations.

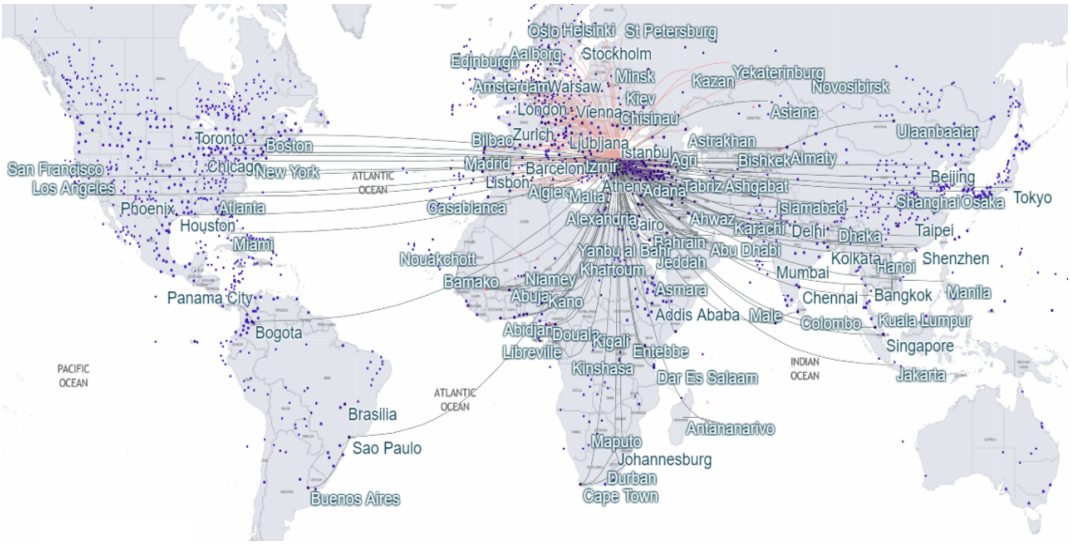


Figure 4.7 Turkish Airlines Route Map (Star Alliance, 2016)

As figure 4.2 illustrates, Turkish Airlines has an intensive air network and displaying its remarkable home base location as an international aviation hub. Turkish Airlines covers most of the Belt and Road countries and regions, which is one of the most important airliners linking the Aviatic Silk Road. With the ongoing construction of the New Airport in Istanbul, Turkey is preparing to become the world's aviation hub.

4.2.2 Qatar Airways

Qatar Airways is the flag carrier of Qatar found in 1993, and started its operation in the early 1994, which is based at Doha Hamad International Airport and it is fully owned by the Qatar Government. Qatar Airways is one of the members of oneworld alliance.

Qatar Airways is one of the airlines operating the most modern fleet. Qatar Airways has 157 aircrafts in total, including Boeing 777-200LR, Boeing 777-300ER, Boeing 787-8, Airbus A380, Airbus A350-900, Airbus A330-300, Airbus A340-600, Airbus A330-200, Airbus A320-200, Airbus A321-200 and Airbus A319-100LR. (Qatar Airways, 2016). In the future, there are 26 aircraft including the new generation Airbus aircraft of A320NEO is expected to deliver.

Figure 4.8 Qatar Airways Route Map (Qatar Airways, 2016)

Qatar Airways is one of the three largest Gulf airlines and fast growing world airline, operates schedule service from Doha to 140 destinations covering Middle East, Africa, Asia, Europe, Latin America and North America. Qatar Airways flies to 83 destinations in 52 Countries across Asia, Africa, North America and Europe. In India, Qatar Airways flies to Amritsar, Ahmadabad, Goa,

Chennai, Delhi, Mumbai, Hyderabad, Kochi, Thiruvananthapuram and Kozhikode.

Qatar Airways manages their cargo with Qatar Airways Cargo. The New Doha International Airport provides freight facilities to the cargo carriers. The Qatar Airways cargo service covers 21 destinations, out of which 17 are served by Qatar Airways' passenger service, in 52 Countries across Asia, Africa, Europe and North America. Now, Qatar Airways Cargo fleet includes three Airbus A300-600RF and the airline will be using Boeing 777-F aircraft for its Far East and European routes. Qatar Airways reduced its growth rate to around 13% from 2012 to 2014 but has accelerated since 2015. It has returned to pre-2011 growth levels despite now expanding from a significantly larger base. In 2015, Qatar Airways saw a 19% growth and a 23% growth is projected for 2016. This could tick upwards more as Qatar has announced new services but not yet filed schedules.

As a result of Qatar accelerating growth while Emirates is constrained by capacity at its hub of Dubai International, Qatar has come close to growing as much as Emirates in 2016. Emirates' 2016 ASK production increase is similar to levels seen in 2013 and 2015 but it is still lower than the peak in 2012. The strong growth of Qatar alone compares to 2015 airport traffic in which Abu Dhabi and Doha collectively serviced as many passengers as Dubai International.

Qatar's growth is occurring through route thickening but also the launch of new destinations. In 2011, Qatar overtook Emirates for number of destinations served. With Qatar beginning an upwards trajectory faster than Emirates, the gap has widened in 2016 with Qatar serving a dozen over destinations more than Emirates (CAPA, 2016).

4.3 Airline Alliance

For airline alliance, IATA has issued a clear definition under its document 'Recommended practice 1008' that three or more airlines participate in joint venture or commercial relationship, for instance codeshare agreements. Alliance commonly is under a single commercial name or brand, and the commercial name or brand is promoted to the public through the alliance. Also the name or brand of the alliance is for identifying the services at airports or other service delivery points where the bilateral agreements are existing between airlines and other airlines (IATA, 2016). Alliance can also be seen as a strategic long term partnership between two or more airlines (Oum et al., 2000). Globally, there are three main airlines alliance which are Star Alliance, SkyTeam and **one**world.

4.3.1 Star Alliance

Star Alliance is founded in 1997, which is the first airline alliance in the world. Currently, Star Alliance has 28 members, and each airline has its own enterprise culture and characteristics of service. Star Alliance is headquartered in Frankfurt, Germany, where coordinates and organises the activities and operations of Star Alliance, including airport public place, aviation infrastructure, communication projects and other services to enhance passenger's travel experience. In terms of passenger traffic, member number and destination number, Star Alliance is the largest alliance at the present time (Star Alliance, 2016).

Table 4-1 Star Alliance Member Airlines and Information (Star Alliance, 2016)

Member (Airline)	Register Country (Territory)	Member (Airline)	Register Country (Territory)
Adria Airways	Slovenia	Egyptair	Egypt
Aegean Airlines	Greece	Ethiopian	Ethiopia
Air Canada	Canada	EVA Air	Taiwan
Air China	China	LOT Polish Airlines	Poland
Air India	India	Lufthansa	Germany
Air New Zealand	New Zealand	Scandinavian Airlines	Sweden, Denmark, Norway
ANA	Japan	Shenzhen Airlines	China
Asiana Airlines	Korea	Singapore Airlines	Singapore
Austrian	Austria	South African Airlines	South Africa
Avianca	Columbia	SWISS Air	Switzerland
Brussels Airlines	Belgium	TAP Portugal	Portugal
Copa Airlines	Panama	Thai Airways	Thailand
Croatia Airlines	Croatia	Turkish Airlines	Turkey
United Airlines	United States		

*B&R Airlines are highlighted in yellow

Through the air network of Star Alliance, passenger have access to arrive more than 192 countries with 1330 airports, which is about 98% of the world countries/ regions. Focusing on Belt and Road members, Star Alliance has several key member airlines among the Belt and Road countries. Air China, Air India, Turkish Airlines, Singapore Airlines, Thai Airways, LOT Polish Airlines and Egyptair are the flag carriers as well as the largest airlines in their register countries or regions respectively.

4.3.2 SkyTeam

SkyTeam Alliance is founded in June 2000. Headquarter of Skyteam is in Amsterdam, Netherlands. The originators of SkyTeam alliance were Air France, Delta Air Lines, Aero Mexico and Korean Air. After the merger of Air France and KLM, the alliance became the second largest alliance in the world.

Up to April 2016, SkyTeam has 20 member airlines and giving passenger access to more than 1,057 destinations over 179 countries (SkyTeam 2016). In 2015, SkyTeam has recorded approximate 665.4 million passenger traffic, it is ranked second in the world alliance passenger traffic ranking.

Table 4-2 SkyTeam Member Airlines and Information (SkyTeam, 2016)

Member (Airline)	Register Country (Territory)	Member (Airline)	Register Country (Territory)
Aeroflot	Russia	Delta Air Lines	United States
Aerolineas Argentinas	Argentina	Garuda Indonesia	Indonesia
Aero Mexico	Mexico	Kenya Airlines	Kenya
Air Europa	Spain	KLM Royal Dutch Airlines	Netherlands
Air France	France	Korean Air	Korea
Alitalia	Italy	MEA	Lebanon
China Airlines	Taiwan	Saudia Arabian Airlines	Saudi Arabia
China Eastern	China	TAROM	Romania
China Southern	China	Vietnam Airlines	Vietnam
Czech Airlines	Czech Republic	Xiamen Airlines	China

*B&R Airlines are highlighted in yellow

Focusing on the Belt and Road airlines, SkyTeam is playing a vital role in Mainland China and Taiwan. China Southern Airlines and China Eastern Airlines are the largest air carrier in Mainland China and China Airlines is the flag carrier in Taiwan. In 2013, SkyTeam has promoted 'Go Greater China' with four airlines in Greater China region aim to enhancing the service and flight frequency of cross-strait air routes and strengthening the collaboration between the Mainland air carriers and China Airlines.

Therefore, SkyTeam is playing a significant role among the B&R regions, especially in the North Asia. The most important gateway to Belt and Road regions from Mainland China are mainly operated by SkyTeam members as their home base hubs.

4.3.3 **one**world

oneworld is an alliance established in the 1st February, 1999. The founders of oneworld were American Airlines, British Airways, Cathay Pacific and Qantas Airways. As of 2016, oneworld has 14 member airlines and about 30 subsidiary airlines. Oneworld is the smallest alliance of the three largest alliance in the world in terms of destination amount and passenger numbers in 2016.

Table 4-3 **one**world Member Airlines and Information (oneworld, 2016)

Member (Airline)	Register Country	Member (Airline)	Register Country

	(Territory)		(Territory)
British Airways	United Kingdom	airberlin	Germany
American Airlines	United States	Cathay Pacific	Hong Kong SAR, China
Finnair	Finland	Iberia	Spain
Japan Airlines	Japan	Latam	Chile
Malaysia Airlines	Malaysia	Qantas	Australia
Qatar Airways	Qatar	Royal Jordanian	Jordan
S7 Airlines	Russia	SrilLankan Airlines	Sri Lanka

*B&R Airlines are highlighted in yellow

Due to the Cathay Pacific being one of the members of oneworld alliance, oneworld dominates more than half of the seat capacity at Hong Kong Airport. Meanwhile, Cathay Dragon also contributes seat capacity to oneworld alliance at Hong Kong Airport. At present, the third largest air operator in HKG in terms of seat capacity is Hong Kong Airlines. Hong Kong Airlines has not joined any alliances, and most of the Low-cost carriers which operate flight to HKG are unaligned with the 'Big three' alliance in the world. Hence, the second largest proportion of seat capacity at HKG is the unaligned airlines, with 24%. Lastly, Star Alliance and SkyTeam occupies a similar seat capacity at HKG, while Star Alliance is more than Skyteam.

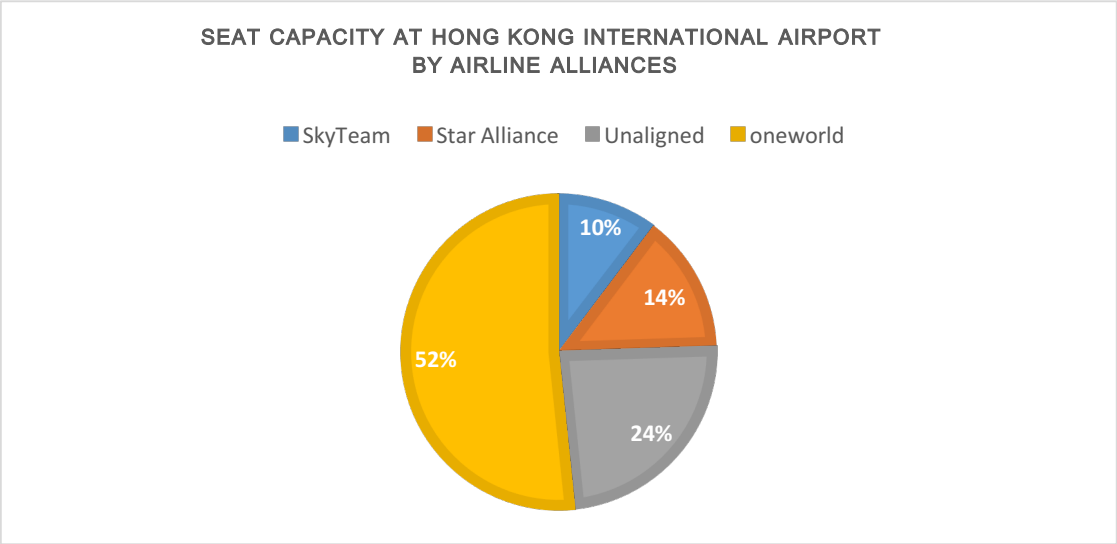


Figure 4.9 Seat Capacity at Hong Kong International Airport by Airline Alliances (CAPA, 2015)

4.3.4 Other Alliances

While some leading airlines in B&R countries such as Emirates Airlines, Etihad

Airways, Hainan Airlines and so on are not engaged in strategic alliances like those above, some are collaborating in a partnership to enhance passenger experience, seamless transfer flights and aircraft maintenance efficiency.

In 2013, Emirates and Qantas has signed an agreement and collaboration between the two airlines will see a considerable increase in the number of destinations accessible to Qantas passengers. Transferring in Dubai, Australian passengers now have access to 65 destinations in the Middle East, North Africa, the UK and Europe via the joint Qantas and Emirates network. Between the two airlines, 98 flights a week will operate between Australia and Dubai. Flights will land at Dubai Airport's new Terminal A, purpose built for A380s and used exclusively by the two airlines. Additionally, two Low-cost Carrier alliances has been formed in the early 2016.

4.3.4.1 U-FLY Alliance

The U-FLY Alliance is an alliance which consists by Hong Kong and Chinese Low-cost Carriers. Including the Hong Kong's LCC Hong Kong Express Airways, Kunming's Lucky Air, Urumqi's Urumqi Air and Chongqing's West Air (U-FLY Alliance, 2016).

The Executive Chairman and President Ma Zhimin is the former CEO of Hong Kong Express Airways and the CEO of U-FLY Alliance is Andrew Cowen from Hong Kong Express Airways.

Commonly, the four LCCs of U-Fly alliance are affiliates of Hainan Airlines Group, while the three Mainland U-Fly airlines count 6 hubs in China.

Figure 4.10 U-FLY Alliance Route Map (CAPA, 2016)

For the network of U-Fly alliance, the alliance has given some examples to illustrate the connections between Hong Kong and Mainland China Hubs. Hong Kong passengers can fly HK Express to Kunming in Yunnan Province and fly to more destinations in the Yunnan province through West Air's network (U-FLY Alliance, 2016). Similarly, Yunnan passengers from small cities can take West Air to Kunming and transferring to Hong Kong flight forwarding to the destinations in Asia Pacific region.

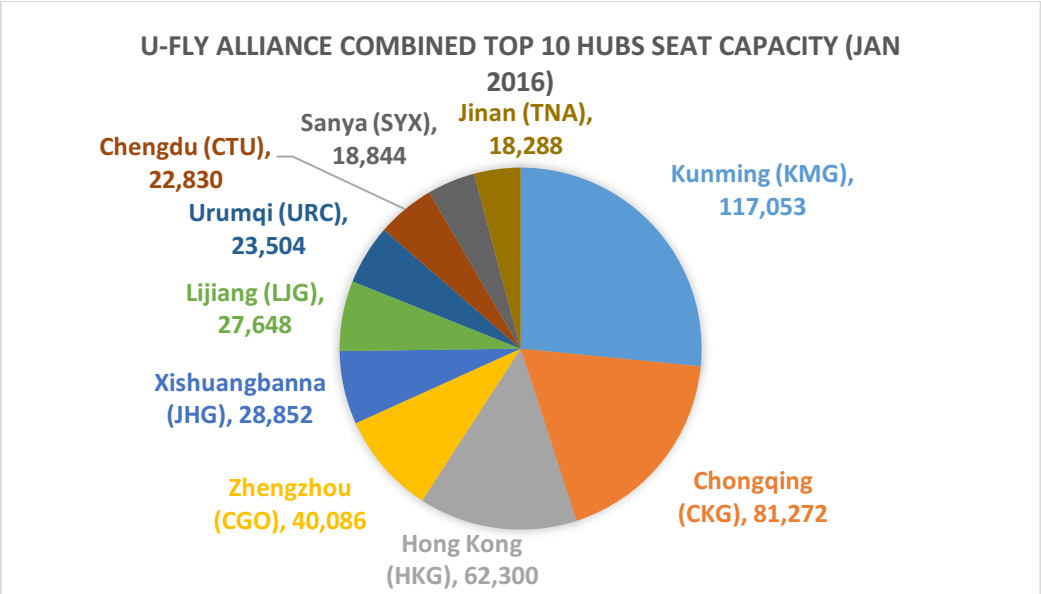


Figure 4.11 U-FLY Alliance Combined Top 10 Hubs Seat Capacity (JAN 2016) (CAPA, 2016)

Figure 4.11 illustrates that the hub distribution of U-FLY Alliance airlines is covering most of the important secondary cities in the Asia Pacific regions, establishing a secondary and third level city air network. The U-FLY Alliance brings together four of North Asia's fastest growing LCCs, linking networks connecting Lhasa to Tokyo, Harbin to Phuket. Initially having a major focus on China, other LCCs will join the U-FLY alliance over time, multiplying the number of destinations that can be reached either direct or with only one stop.

4.3.4.2 Value Alliance

In the May 2016, six Asia Pacific budget airlines announced to set up the present largest Low-cost carrier alliance in the world. The name of the alliance is Value Alliance, partners including Singapore's Flyscoot, Tigerair, Thailand's Nokscoot, Nok Air, Australia's Tigerair Australia, Japan's Vanilla Air, Philippine's Cebu Pacific and Korea's Jeju Air.

Value Alliance owns a 176 fleet and serving over 160 destinations. Passengers can purchase air tickets in and new ticket distribution platform Air Black Box (ABB) is established. The new ticket distribution system allows the 8 airline members' website will sell each other members' air tickets as well as the demonstration of best price of tickets (CARNOC, 2016). The CEO of Vanilla Air indicated that, the ABB connection engine can enhance the correlation between the airlines while the members are using different passenger service system (PSS).

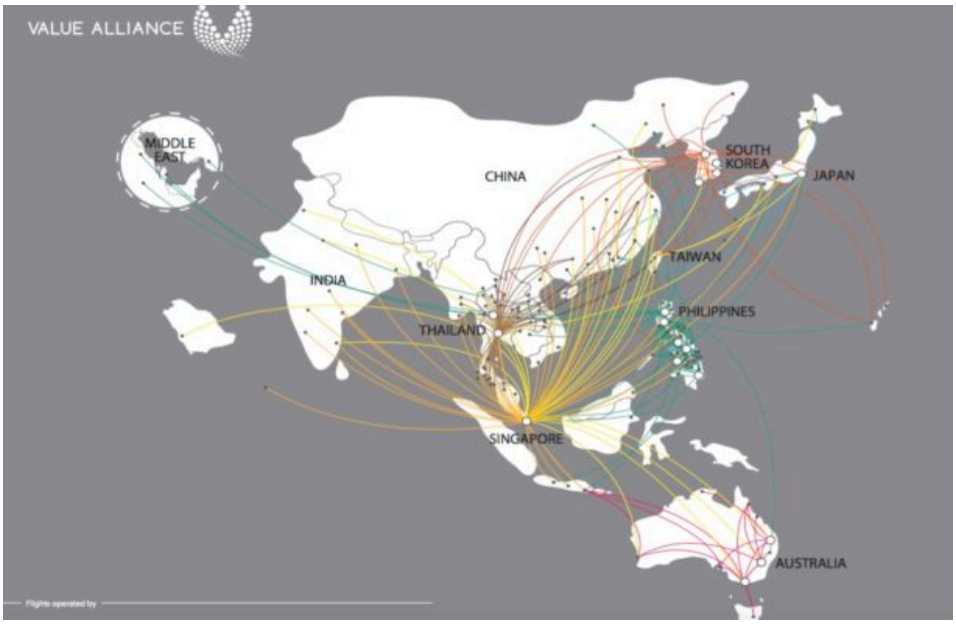


Figure 4.12 Value Alliance Route Map (CAPA, 2016)

The route map above illustrates that the alliance is covering most of the major destinations in the Southeast Asia, Oceania, Indian Sub-continent and North Asia (mainly focusing on Japan and Korea). This situation reflects the fierce competition in the Southeast Asia region and it is looking to expand its market share in the Asia Pacific region.

Currently, many Belt and Road energetic airliners are responding to the call of the initiative, strongly expanding route network, commit to connect the B&R cities together. With fierce competition along the B&R countries and regions of the aviation hub base airlines, Hong Kong as an Asia-Pacific and international aviation hub, Hong Kong base airline should actively expand their route network, and cooperate with the Hong Kong International Airport to maintain and improve service quality and efficiency of transit flights. Fierce competition among airline alliances may also enjoy more benefits for B&R passengers, such as seamless connection of the connecting flights, quality of services, and also the flight mileage accumulation of FFPs. Hong Kong may try to seek air cargo demand among South, West and Central Asia. In this case, more and more people will get to know Belt and Road countries with the establishment of business contacts.

5. Case Studies

In fact, the potential of the Silk Road Economic Belt and Maritime Silk Road has been explored before the Belt and Road Initiative launched. The developing aviation industry of B&R countries and regions require support from different aspect. Therefore, organisations, institutions and enterprise, either from private, governmental or PPP model may support and help construction and development of the Aviatic Silk Road, for instance, financing, construction, investing or cooperation and so on.

Several successful cases of cooperation and investment also inspire Hong Kong as an international aviation hub and financial centre for supporting and helping the development of B&R aviation industry. In the meantime, the following case studies has demonstrated the collaboration between B&R countries and other foreign countries, these cases depict an optimal prospect of the potential airline enterprises, airports and MROs, providing enlightenment and confidence for Hong Kong government, enterprises and investors.

5.1 Scandinavian Airlines and Thai Airways Joint-venture Business

Scandinavian Airlines System Aktiebolag is also known as SAS AB, which headquartered in Stockholm, Sweden. It is also Nordic region's largest listed airline and travel group. The SAS Group offers air transport and related services from its base in Northern Europe. The company is listed on the Nordic Exchange in Stockholm (Nordic Business 2006).

In 1960, Thai Airways (IATA: TG) had a joint venture with Scandinavian Airlines (SAS), which held a 30 percent share of the new company valued at two million Thai baht. The purpose of the joint venture was to create an international wing for the domestic carrier Thai Airways Company. SAS also provided operational, managerial, and marketing expertise, with training assistance aimed at building

a fully independent national airline within the shortest possible time. The carrier's first revenue flight was on 1 May 1960. Flights were operating in nine overseas Asian destinations from Bangkok. On the 30th March, 1977, the joint venture between Thai Airways and SAS came to an end, SAS transferred all of the 30% shares to Thai Airways Company (Thai Airways 2016). Thai nationals, through training and experience, were gradually able to assume full managerial responsibility and the number of expatriate staff duly decreased, with expatriates accounting for less than one percent of staff based in Thailand in 1987 (Market Line, 2016).

Until today, after development over four decades, Thai Airways Group is one of the most successful group in the Asia Pacific region. Thai Airways Group incorporates Thai Airways International which is the flag carrier of Thailand, hybrid regional carrier Thai Smile and its Low-cost Carrier Nok Air. Thai Airways International is a founding member of Star Alliance and operates an extensive international and domestic network of air passenger and cargo services from its base at Bangkok Suvarnabhumi Airport (IATA: BKK). Thai Smile commenced services on 7th July 2012 and received its own Air Operator's Certificate on 31st Mar 2014, distinguishing the carrier as a subsidiary of Thai Airways rather than a business unit. Thai also holds a 39% stake in associate LCC, Nok Air (CAPA, 2016).

It is a successful case of an experienced aviation enterprise helping Belt and Road countries to establish its own flag carrier. The management experience, training assistance and aircraft renting accelerated the establishment of a new air carrier. In fact, with its vast experience in the aviation industry, Hong Kong is poised to utilise its resources and experience to invest and support potential Belt and Road air carrier establishment or development.

5.2 ERBD Invested Kazakhstan's Air Astana Maintenance Business

EBRD is known as the European Bank for Reconstruction and Development which is an international financial institution established in 1991 and headquartered in London, U.K. EBRD has members from North America, Africa, Asia and Oceania with United Stated holds the largest shares and it is owned by 65 countries and 2 European institutions. EBRD is a multilateral developmental investment bank which utilises investment to set up market economies and supporting development in around 30 countries from Central Europe to Central Asia (EBRD, 2016).

Air Astana is the flagship carrier of the Republic of Kazakhstan and also one of the most dynamic airlines in the Central Asia. It is owned by the Kazakh national wealth fund, Samruk-Kazyna (51%) and BAE Systems (49%). The airline operates 64 scheduled flights from Almaty and Astana with its 30 aircraft fleet. In 2015, Air Astana has won four the Best Airline Central Asia/India awards in a row and Best Airline Staff Service Asia/India for the third time (Air Astana 2016).

In the late 2015, EBRD has announced that Air Astana is receiving a loan with 14 million US dollars to support the develop programme of the Kazakhstani flag carrier. The first aircraft maintenance equipment in the country is financed with the loan, and to serve the wide-bodied aircraft. The technical maintenance centre is located at Astana International Airport to cater the demand of the fast-growing capital (EBRD, 2016).

The facilities of the maintenance at Astana Airport including an aircraft hangar, storage area, administration offices and specialised vehicles garage, and they are financed by the EBRD (EBRD 2016).

Currently, international airlines including Air Astana must have their large aircraft maintained outside Kazakhstan, mainly in the UK and China. The new facility will enable Air Astana (which will also offer access for other airlines) to

service large planes in Kazakhstan. The new maintenance facility will create highly skilled jobs. Air Astana is already planning skill transfers for future employees of the facility, using best European practice (EBRD, 2016).

In this case, European bank is supporting the construction establishment and development of the Belt and Road countries financially. As the financial service and aviation centre of the Asia Pacific region, Hong Kong is well positioned to capitalize on its economic clout and MRO experience and talents to propel growth in the Belt and Road countries and regions. The participation in the Belt and Road MROs market can create potential investment opportunities for Hong Kong.

5.3 Korean Air Cargo and Uzbekistan Airways Cargo Expand Partnership

The Belt and Road Air Carrier, Uzbekistan Airways Cargo has expanded the partnership between Korean Air Cargo with commencing new air cargo services to Iran's Teheran Imam Khomeini International Airport (Air Cargo News, 2016).

Korean Air Cargo has enjoyed the successful operation of freighter services between Uzbekistan's Navoi (IATA: NVI), and Germany's Frankfurt (IATA: FRA) through the partnership in Uzbekistan. After the expansion of partnership, it would be able to operate flights from Navoi to Tehran twice a week.

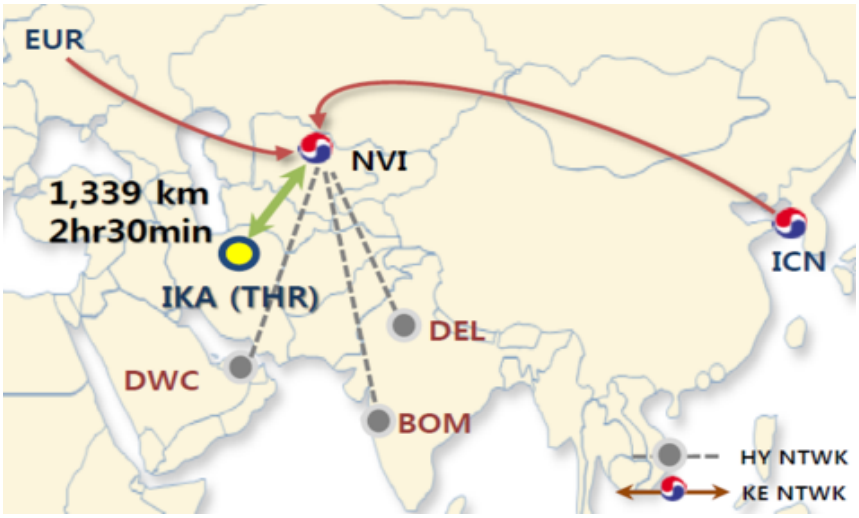


Figure 5.1 Korean Air Cargo and Uzbekistan Airways Cargo Partnership Map (Air Cargo News, 2016)

The analyst Transport Intelligence practice leader (Thomas Cullen, 2016) has said that the removal of the sanction regime in Iran had triggered a flood of business and trade.

Incheon International Airport (IATA: ICN) is the largest airport in South Korea, also one of the busiest cargo airport in the world. The cargo throughput of ICN was 2,595,674 tonnes and ranked fifth of the world busiest cargo airport in 2015 (ACI, 2016). ICN is the air cargo hub of East Asia, the cargo terminal Complex comprises 6 cargo terminal, 5 warehouses, administration offices and 36 freighter parking aprons.

Incheon Airport is one of the major competitor of Hong Kong Airport in the air cargo market. Seoul Incheon Airport is planned to expand its airport to five runway system, and expected to reach cargo throughput to 5.8 million tonnes in 2020. The fierce competition in Asia Pacific region is increasing, Hong Kong Airport needs to seek more co-operation to maintain the status as an aviation hub.

However, Belt and Road Initiative is a golden opportunity for Hong Kong to build its ‘Aviatic Silk Road’. Central Asia and Middle East are the critical paths of Asia and Europe, and this allows Hong Kong to seek air cargo demand in this region.

6. Hong Kong Aviation Industry Strengths and Advantages

In the previous chapter, several Belt and Road facts and current aviation status has been analysed, several B&R investment and cooperation case studies have been illustrated. Hong Kong is one of the world famous civil aviation hub in terms of passenger and cargo as well as aeronautical centre. Hong Kong International Airport is supporting financial services, trading and logistics, tourism and producer and professional services, which are called the four pillar industries of Hong Kong with providing around seventy-three thousand working positions and providing highly professional aviation and supporting business at the airport. In this chapter, Hong Kong aviation industry strengths and advantages will be listed for providing information and direction for the future recommendation and conclusion.

6.1 Hong Kong International Airport Current Excellent Management

In Hong Kong, there are two main aviation organisations in charge of the aviation management and affairs of Hong Kong, which are the Airport Authority Hong Kong and the Civil Aviation Department of Hong Kong. These two organisations have clear division of responsibility.

6.1.1 The Airport Authority Hong Kong

The Airport Authority Hong Kong (hereinafter AA) was formed in 1995 (initially as the Provisional Airport Authority in 1990) through Airport Authority Ordinance and is independent of the government financially. There are plans to corporatise the AA and to list it on the Hong Kong Stock Exchange and to partially sell it to the public. The Airport Authority Hong Kong (AA) is a statutory body wholly owned by the Hong Kong S.A.R. Government. The AA is responsible for the

operation and development of HKIA.

The AA dedicates to managing and operating a safe, secure and efficient Hong Kong International Airport, also providing the users of HKIA with a memorable airport experience and top ranking customer service. Furthermore, the AA is extending its influence to the Great Pearl River Delta (GPRD) market and beyond the Mainland China market (Hong Kong Airport, 2016).

6.1.2 The Civil Aviation Department of Hong Kong

The main responsibilities of the Civil Aviation Department of Hong Kong (hereinafter CAD), including the provision for aircraft operating in Hong Kong, flight information region of air traffic control service, maintain air traffic order and provide flight information and alert services when the aircraft has emergency incident or accident. CAD is also responsible for coordinating search and rescue operations (Hong Kong Airport, 2014).

6.1.3 Hong Kong International Airport Management Achievements

Figure 6.1 Hong Kong International Airport Passenger Traffic Growth (HKIA, 2016)

The figure above has demonstrated that HKIA served more than 64 million

passengers in 2015, and the trend of steady growth helped HKIA maintain its international aviation hub status. There are many uncertain factors of the future passenger traffic demand forecast. According to the assumption of the Gross Domestic Product (GDP) growth, the traffic demand of HKIA is forecasted base on the GDP growth (HKIA, 2014). It is expected the average annual growth of passenger traffic can achieve 3.6% optimistically (HKIA, 2014).

Hong Kong Airport mainly operates wide-bodied aircraft. In addition to setting new records for cargo throughput and flight movements, for the first time in the airport's history. The number of aircraft movement was also ascending and nearly achieved 396 thousand in 2015 as the passenger number was increasing.

Figure 6.2 Hong Kong International Airport Aircraft Movement Annual Growth (HKIA, 2016)

Hong Kong International Airport (HKIA) enjoyed another strong year in fiscal 2014/15, ended 31 March 2015. Under AAHK's management, the turnover of HKIA is increasing steadily every year (see Figure 6.3), and it is recorded a historic high amount with more than 16 billion HK dollars in the fiscal year of 2014/2015.

Figure 6.3 Hong Kong International Airport Turnover (HKIA, 2016)

Hong Kong is one of the world best airports which has been named 'The World Best Airport' over 60 times since its establishment in July 1998 (SCMP, 2016). Hong Kong Airport is always making good impression in the user's minds and providing extraordinary experience to passengers to gain excellent reputation all over the world. The recent achievements and awards are shown the table below.

Table 6-1 Hong Kong International Airport Awards and Recognitions (SCMP, 2016)

Year	Recognition / Award	Awarding Organisation (s)
2016 (FEB)	Airport of the Year	Air Transport World
2015	Asia Pacific Airport of the Year – Industry Choice Award	Payload Asia
	Best Airport - Asia	Asia Cargo News
	Travel Hall of Fame	TTG
	Air Cargo Excellence Award	Air Cargo World
2014	Best Airport in China	Business Traveller China
	Travel Hall of Fame	TTG
	Air Cargo Award of Excellence	Air Cargo World
	Asia Pacific Airport of the Year – Industry Choice Award	Payload Asia
	World's Best Airport	Smart Travel Asia
2013	Best Airport in China	Business Traveller China
	Air Cargo Award of Excellence	Air Cargo World
	Travel Hall of Fame	TTG
2012	Best Airport	TTG
	Best Airport in China	Business Traveller China
	Air Cargo Award of Excellence	Air Cargo World
	Best Airport in Asia Pacific	Frequent Business Traveller
2011	World's Best Airport	Skytrax
	Best Airport in China	Business Traveller China
	Best Airport	Conde Nast Traveller
	Best Airport	TTG
	Best Airport	Smart Travel Asia
	Inductee with Distinction – Director General's Roll of Excellence	Airports Council International
	Asian Airport Efficiency Excellence Award	Air Transport Research Society
	Air Cargo Excellence Award	Air Cargo World

The high operational efficiency of HKIA is mainly due to its farsighted planning:

1) **Masterplan**. Hong Kong International Airport (HKIA) at Chek Lap Kok, which allows 24-hour operation, was opened with a single runway and facilities in July 1998. The second runway and associated facilities were opened in May 1999. In view of long-term passenger and cargo growth, after the public consultation conducted in 2011, Airport Authority Hong Kong (AAHK) has proposed to the government to construct a third runway. In March 2015, the Executive Council approved the third runway expansion, which will allow HKIA to handle 102

million passengers, 8.9 million tonnes of cargo and 607,000 aircraft movements per year by 2030.

In cooperating with the construction of the Hong Kong Link Road, which will connect the Hong Kong – Zhuhai – Macau Bridge with the new Hong Kong Boundary Crossing Facilities (HKBCF), new infrastructure projects to enhance the airport's capacity have been started, such as the Midfield Development project which includes a new Midfield Concourse with 20 parking stands is already established.

2) **Running system**. All air cargo terminals in the airport are privately-run. The largest one is known as the SuperTerminal 1 (ST1). ST1 is one of the most advanced and largest air cargo facilities in the world. It can handle over 3.5 tonnes of cargo. In 2015, Hong Kong Air Cargo Terminal Limited (HACTL), which operates ST1, received the Air Cargo Handling Agent of the Year award by Air Cargo Week. Asia Airfreight Terminal (AAT), another cargo handling terminal at HKIA, was added in March 2007. Cathay Pacific's cargo terminal, the third at HKIA, has been put into full operation since October 2013. It has an annual handling capacity of 2.6 million tonnes, increasing Hong Kong's air cargo handling capacity by 50% to 7.4 million tonnes.

3) **Well managed supplement**. To supplement the cargo terminals, there is an airfreight forwarding centre at HKIA, providing space for warehousing, loading platforms, truck parking bays and offices.

4) **New technology adoption**. In an effort to enhance operational efficiency, HKIA has adopted the printing of integrated radio frequency identification (RFID) baggage tags since January 2008. The new tags, which combine an embedded RFID chip with a barcode, replace traditional barcode-only baggage tags. RFID tags can be read more quickly and contain more information, with readable rates at 97% or above compared with 80% for barcodes. It greatly decrease the

loss ratio of luggage.

6.1.4 Mainland China Airport Investment and Co-operation

The Airport Authority Hong Kong has three main investment and cooperation projects in Mainland China. The investment in Hangzhou Xiaoshan International Airport and joint ventures in Shanghai Hongqiao and Zhuhai airport are performing well in the recent years. The table below has shown the detailed statistics of each invested and joint-venture airports.

Table 6-2 Hong Kong Airport Mainland Investment and Co-operation Achievements Statistics (HKIA, 2014)

Airports	Shares	Passenger capacity	Passenger capacity %	Aircraft movement	Cargo capacity	Cargo capacity %	Destinations
Zhuhai International Airport	55% (2006)	4.08m	+41.2%	36,135 (+39%)	22,128 tonnes	+18.6%	44
Hangzhou Xiaoshan International Airport	35% (2006)	25.5m	+15.4%	213,300 (+11.9%)	398,600 tonnes	+8.3%	121
Shanghai Hongqiao Airport	- (2009)	38m	+6.7%	253,325 (+3.9%)	432,000 tonnes	-	

6.1.3.1 Hangzhou Xiaoshan International Airport

Since 2006, Hangzhou Airport and Hong Kong Airport has a joint venture with HKIA acquired a 35% shares in Hangzhou Xiaoshan Airport.

In 2014, passenger throughput at HXIA grew 15.4% from the previous year, to 25.5 million, flight movements increased 11.9%, to 213,300, and cargo volume rose 8.3%, to 398,600 tonnes. These growth rates put Hangzhou Airport in the top three among the top ten busiest airports in Mainland China. In this year's Airport Service Quality (ASQ) survey conducted by Airports Council International, Hangzhou Airport ranked third among airports serving 15-25

million passengers annually.

Hangzhou airport's destinations increased to 121 cities in 2014, a 12% increase from the end of 2013. 8 new international routes, including services to Moscow and Paris were added during the year, bringing international throughput to more than 3 million passengers.

6.1.3.2 Shanghai Hongqiao International Airport

Shanghai Hongqiao International Airport has been managed by a joint venture between AAHK since 2009.

Passenger throughput and flight movements at Hongqiao airport set new records in 2014, growing 6.7% from 2013 to 38 million passengers, and 3.9 %, to 253,325 movements. During the year, Hongqiao airport was named the Best Domestic Airport in China in the annual Skytrax survey and scored 4.8 in the ASQ survey. The ASQ rating was the best ever for Hongqiao airport, which placed 14th worldwide. In October 2014, management agreement between HKIA and Hongqiao Airport entered a new phase in which the joint-venture gains additional responsibilities and a greater degree of autonomy. In addition, a three-year renovation project in Terminal 1 began in the December 2014.

6.1.3.3 Zhuhai International Airport

AAHK acquired a fifty-five percent share in Zhuhai Airport in 2006 and Zhuhai Airport is managed by a joint venture between AAHK. (Hong Kong Airport，2015)

In 2014, Zhuhai airport recorded an excellent performance. Passenger throughput rose 41.2% and aircraft movements increased 39%, to a record 4.08 million passengers and 36,135 movements. Domestic cargo volume grew to

22,128 tonnes, 18.6% increase compare with 2013, while the number of domestic scheduled flights destinations increased to 44 more destinations from 2013 (CAAD, 2015).

Upon the strong traffic growth, Zhuhai airport is researching ways of renewing and expanding its facilities. This includes reactivating the eastern wing of the passenger terminal and building a new cargo terminal. The airport is also exploring ways to enhance co-operation and facilitate passenger flows with Hong Kong International Airport in preparation for the commissioning of the Hong Kong–Zhuhai–Macao Bridge (Hong Kong Airport, 2015).

6.1.4 Hong Kong International Airport Safety Performance

Safety is the most important thing in aviation industry all the time, whether aviation organisations, air operators, or airports always place safety at the very first position of their operations.

The figure below has illustrated the Effective Implementation (EI) audit of the flight Safety Information Exchange (FSIX) by International Civil Aviation Organisation (ICAO) (ICAO, 2016). Each section is rated from 0% to 100%, with 0% means “Not Implemented” and 100% means “Fully Implemented”.

The figure of Hong Kong SAR and global average are compared below. It is clear to see that Hong Kong SAR is much higher than the global average in each section, which means Hong Kong has an incredible flight index and highly implemented ICAO’s civil aviation safety regulations.

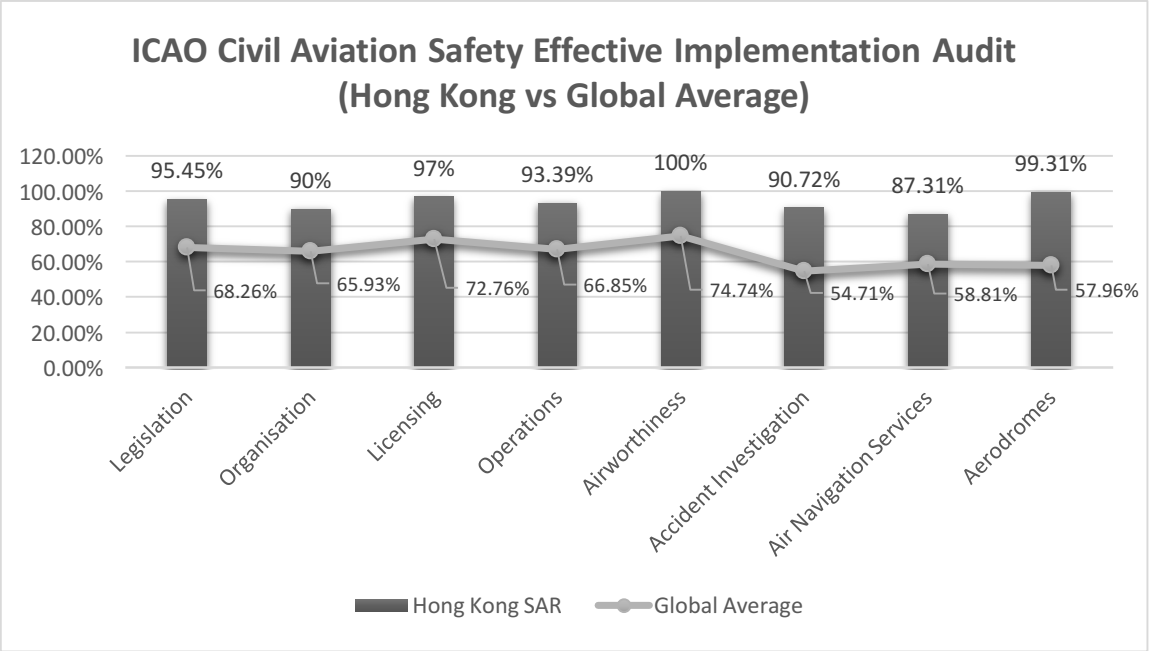


Figure 6.4 2016 Hong Kong Civil Aviation Safety Effective Implementation Audit (ICAO, 2016)

Moreover, HKIA is making a great effort on safety, the trend of HKIA Composite Safety Index (CSI) is decreasing every year, see Figure 6.2. A series of safety talks to enhance the safety awareness of employees, training lessons also make workers more professional and reduce the rate of accident and injury (HKIA, 2014).

Figure 6.5 Hong Kong International Airport Composite Safety Index (HKIA, 2016)

Hong Kong can utilise the strengths of managing safety issues and maintaining safety level to export its technique to Belt and Road Airlines and Airports to enhance their safety level, and cater to ICAO's requirement and implement the safety regulations.

6.2 Hong Kong Airport Air Network

Hong Kong International Airport is connected to about 190 destinations globally in which 47 in Mainland China. In terms of flight frequency and amount of destinations, Hong Kong Airport destinations mainly focus on East Asia, including Mainland China, Taiwan, Japan, Korea and AESEAN countries presently.

Figure 6.6 Hong Kong Airport Regional Route Map (OAG, 2016)

Some of the long haul destinations are distributed to European countries, North America, Oceania and few in Sub-continent and Africa. On the contrary, Hong Kong has no direct passenger schedule flights to South America, West Asia and Central Asia excluding Kazakhstan's Almaty.

This situation corresponds to Hong Kong major business communication target, Hong Kong citizens major travel destinations and the origin countries or regions of the Hong Kong visitors.

From the major traveling destinations of Hong Kong citizens, Hong Kong residents are keen on Northeast Asian countries and regions, such as Mainland China, Taiwan, Japan and Korea. Concentrating on Belt and Road tourist market. Southeast Asian countries like Thailand, Indonesia, Singapore, and Malaysia and so on are the popular places of Hong Kong tourists.

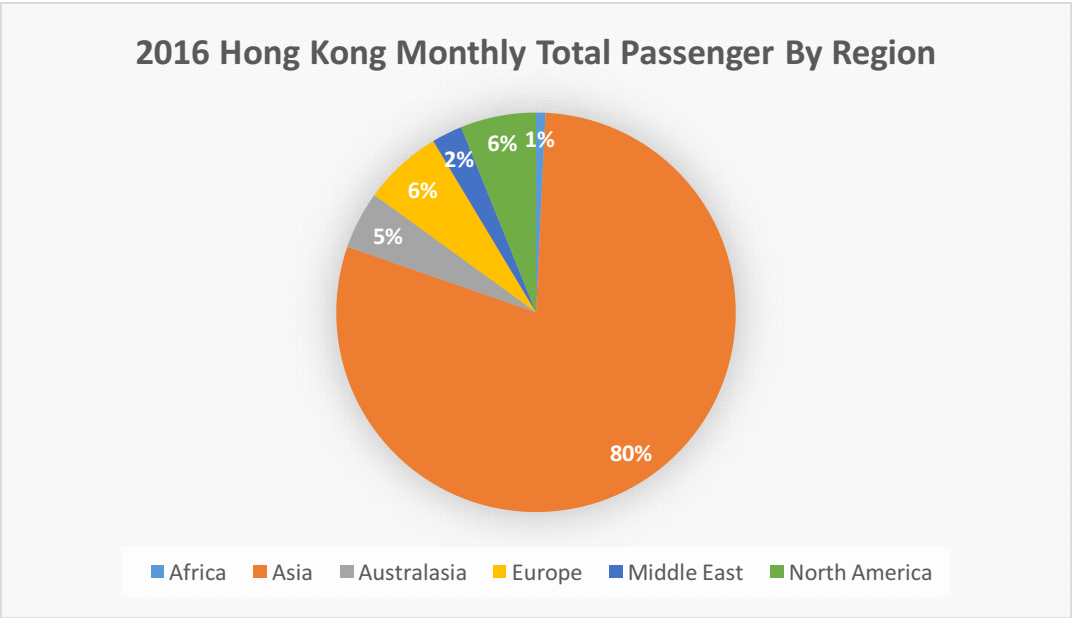


Figure 6.7 Hong Kong Monthly Total Passenger by Region (Partnership Net, 2016)

On the other hand, Hong Kong visitors are mainly come from Mainland China with nearly 72% of the total visitor amount. Followed by the Southeast Asian and South Asian countries with 8%. Visitors from Europe/Middle East/Africa is ranked third with around 221,673 (5%) while North Asia is slightly less than Europe/Middle East/Africa. To conclude the top four visitors' origin, tourist and business travellers from Belt and Road countries and regions are the majorities visiting Hong Kong. The proportion of Hong Kong visitors' origin is generally corresponding to the percentage of Hong Kong citizens' major travelling destinations.

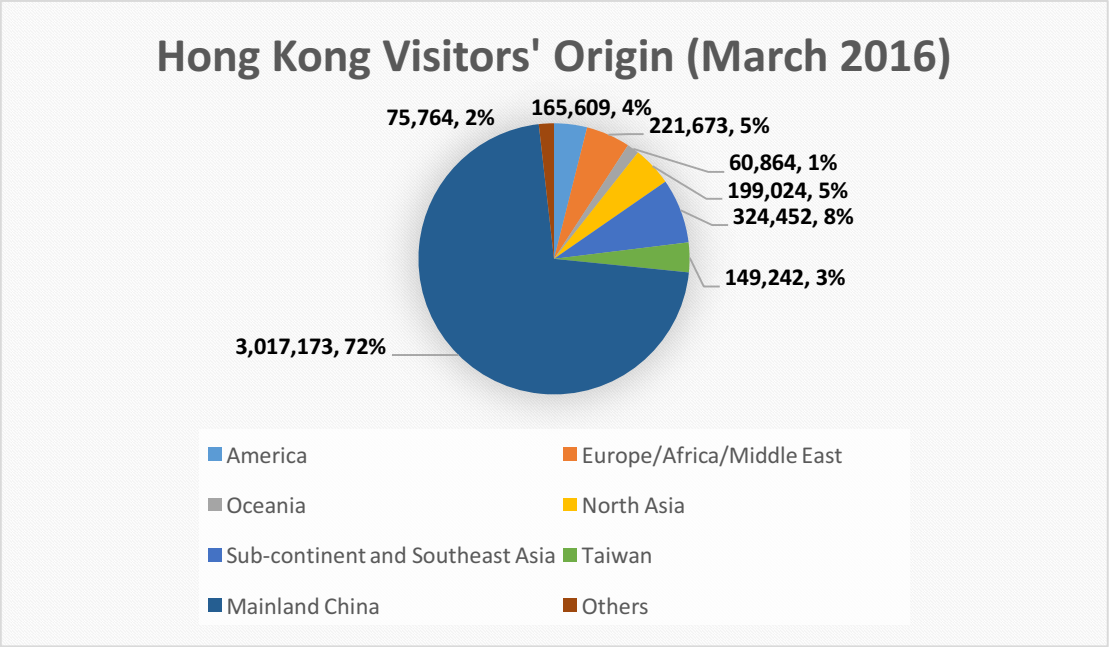


Figure 6.8 Hong Kong Visitors' Origin (March 2016) (Partner Net, 2016)

6.3 Hong Kong Airport Air Cargo Achievements

Hong Kong is ranked first of world busiest cargo traffic airport from 2010 to 2015, it is expected that the strong performance is going to extend, and it is predicted that Hong Kong is still ranked top 10 of this list in 2025 (HKIA 2014).

Hong Kong International Airport (HKIA) aims to provide the "best-value" services to airport users in the most efficient and effective manner. To optimise land-use and enable economies of scale in airport support and related cargo services, HKIA has franchised most aviation logistics activities to specific service providers. Each franchise is tendered strictly within the guidelines of the Independent Commission Against Corruption (ICAC) and awarded on a build-operate-transfer (BOT) basis. HKIA works in partnership with the franchisees, regularly reviewing their performance and comparing them with accepted international and industry standards. There are several franchisees and air cargo equipment are shown below the table.

Table 6-3 Hong Kong International Airport Cargo Facilities Information (HKIA, 2014)

Cargo	Operator	Designed capacity	Total investment	Land area
First Tier cargo handling facilities				
Asia Airfreight Terminal	Asia Airfreight Terminal Co Ltd.	1.5 million tonnes per annum	HK$ 2.5 billion	8 hectares
DHL Central Asia Hub	DHL Aviation (Hong Kong) Ltd.	Handle over 35,000 parcels and 40,000 documents per hour	HK$1.6 billion	3.5 hectares
Hong Kong Air Cargo Terminals	Hong Kong Air Cargo Terminals Ltd.	2.6 tonnes per annum	HK$ 8 billion	17 hectares
Cathay Pacific Cargo Terminal	Cathay Pacific Service Ltd.	2.6 tonnes per annum	HK$ 5.9 billion	11 hectares
Airmail Centre	Hong Kong Post	Handles 700,000 mail items per day	-	2 hectares
Second Tier cargo handling facilities				
Marine Cargo Terminal	Chu Kong Air-Sea Union Transportation Co Ltd.	150,000 tonnes per annum	-	400 metre quay front for berthing
Airport Freight Forwarding Centre	Airport Freight Forwarding Centre Ltd.	-	-	6 hectares
Tradeport Logistic Centre	Tradeport Hong Kong Ltd.	-	-	1.4 hectares

Air cargo is acting a vital role in Hong Kong freight transportation. Calculated by the value of goods, air freight and land transport have replaced maritime transport as the major modes of transport in the total trade in goods of Hong Kong since 2005. Currently, Hong Kong International Airport has approximately 350 air freight flights per week. Air freight occupied 41% of the total import amount and 37% total export is carried by air transport (HKTDC, 2016).

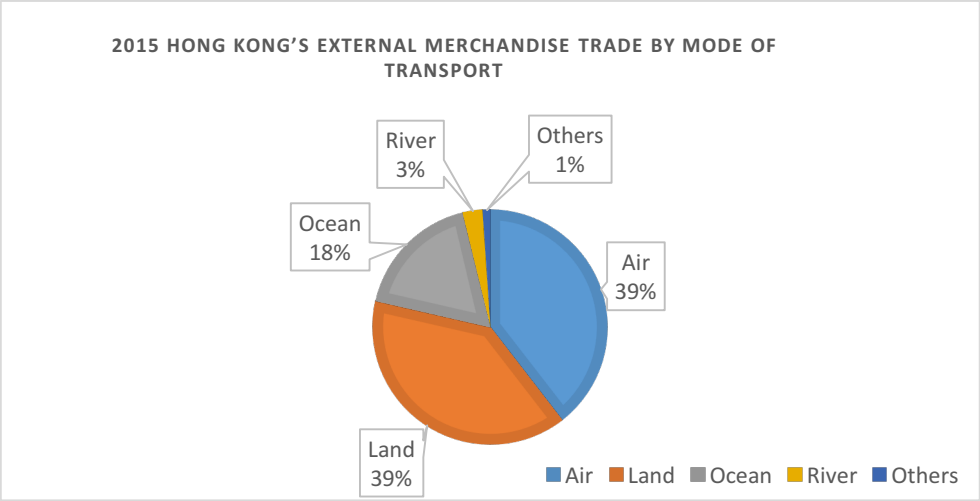


Figure 6.9 2015 Hong Kong's External Merchandise Trade by Mode of Transport (Census and Statistics Department, 2016)

Mainland China has replaced United States became the largest export destination of Hong Kong in 2005. The value of total export to Mainland China by air freight has increased significantly from 2005 to 2015, with an annual average 9.6% increase.

Figure 6.10 Major Trading Partners in Hong Kong's Total Export by Air (Census and Statistics Department, 2016)

On the other hand, Mainland China is still the biggest import supplier by air in 2015.The import value Mainland and Taiwan has surged in the past decade, growing at the annual average of 10.1% and 7.9% respectively. See figure 6.12,

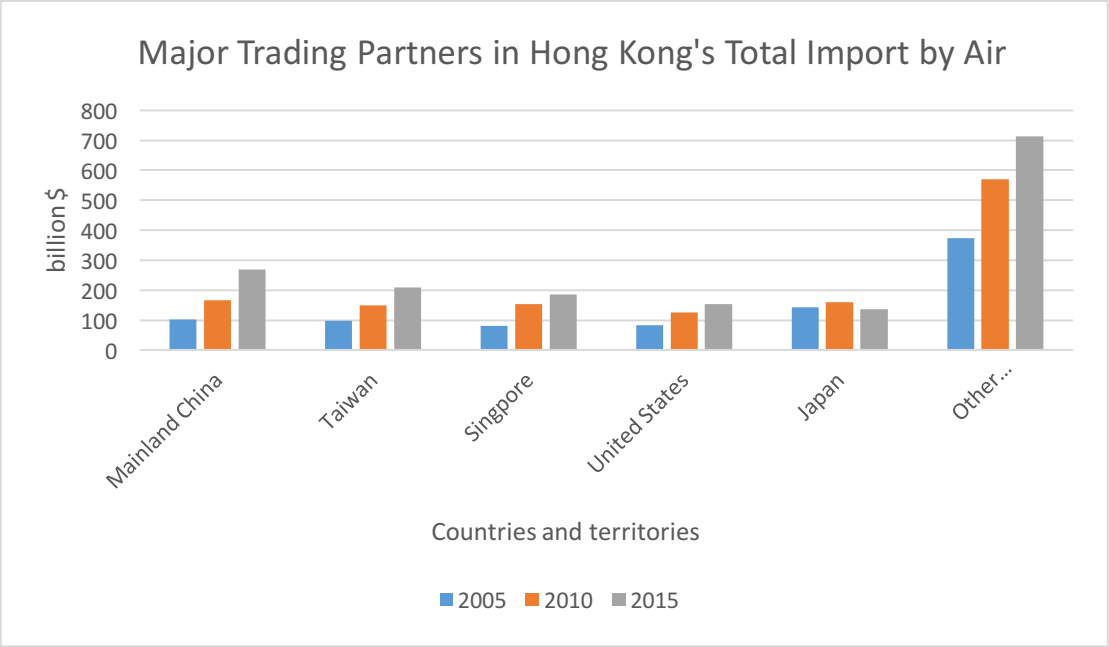


Figure 6.11 Major Trading Partners in Hong Kong's Total Export by Air (Census and Statistics Department, 2016)

6.4 Hong Kong Major Air Transport Enterprises

International aviation hub is supported by large local base airlines. Hong Kong International Airport has four passenger airlines which are Cathay Pacific, Cathay Dragon, Hong Kong Airlines and Hong Kong Express Airways, and the first two airlines and next two are in two major airline groups respectively.

As the Figure shown below, Cathay Pacific has more than 538,040 passengers per week, followed by its affiliate Cathay Dragon with nearly 250,000 passengers. Hong Kong Airlines is ranked third as its later establishment, but now it has strong expansion and development. Hong Kong Express is ranked fourth after by its sister company Hong Kong Airlines. For the fifth place, China Airlines is benefited by the strong passenger traffic between Taiwan and Hong Kong. In conclusion, Hong Kong Airport has powerful airlines and the status of Hong Kong Airport as an aviation hub in Asia is consolidated by home based airlines.

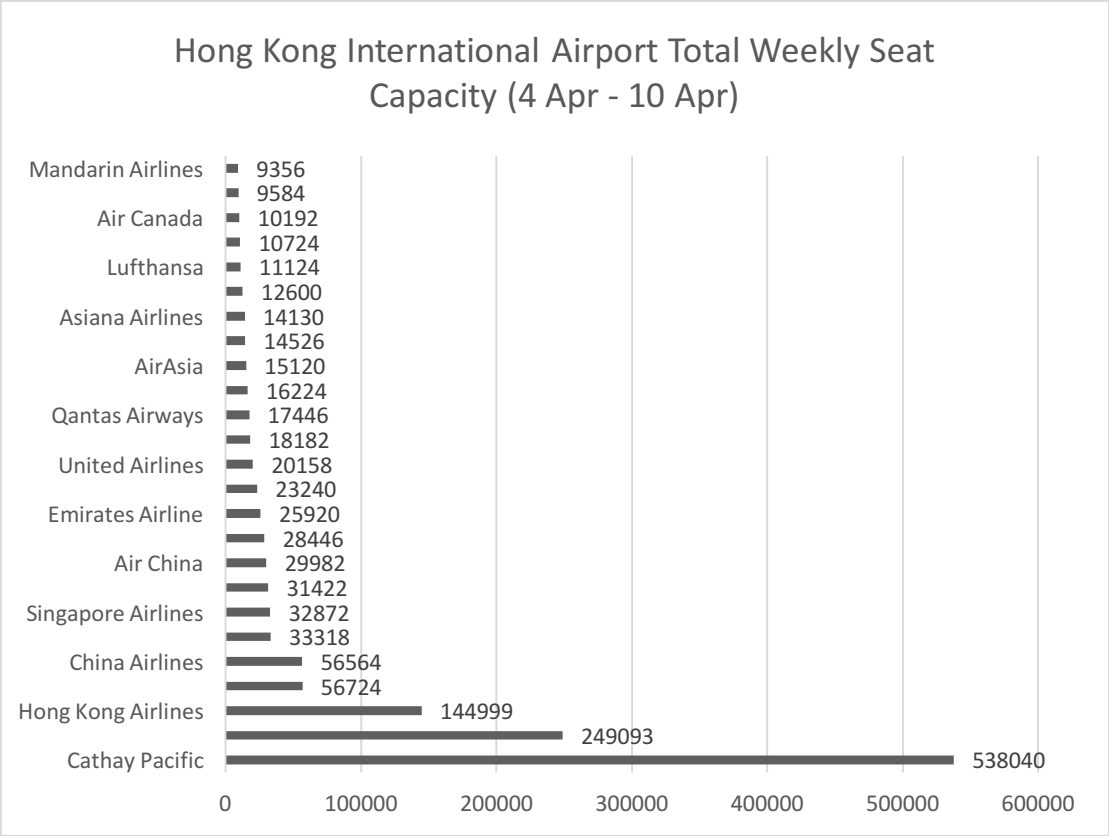


Figure 6.7 Hong Kong International Airport Total Weekly Seat Capacity (CAPA, 2016)

6.4.1 Cathay Pacific Group

The Cathay Pacific group (HKEx: 0293, OTCBB: CPCAY) is the part of Swire Pacific Ltd. Cathay Pacific group consists of operating company namely Cathay Pacific Airways (IATA: CX), Cathay Dragonair (IATA: KA) and Air Hong Kong (ICAO: AHK) (IATA: LD). AHK is a cargo airline 60% owned by CX. CX has interest in Air China (IATA: CA) and Air China Cargo. CX operates business in other aviation related sectors, mainly Cathay Pacific Catering Service (H.K.) Limited (CPCS), Hong Kong Aircraft Engineering Company Limited (HAECO), Cathay Pacific Service Limited (CPSL), Hong Kong Airport Services Limited (HAS) and Swire Travel Limited.

6.4.1.1 Cathay Pacific Airways

1. Airline Overview

Cathay Pacific Airways (IATA:CX) is an international full service carrier (FSC) registered and based in Hong Kong, and also having substantial investments in Hong Kong, these investments involve with catering, ground handling companies and cargo terminal in Hong Kong International Airport.

CX was found in 1946 and CX was acquired by the Swire Group. Since then Cathay Pacific has expanded rapidly in the 1960's and 1970 's. Hong Kong was the hub of China and Asia Pacific in the 1980's, CX was benefited rapid development of the global economy, and seized the chance to established a global network quickly. After that, CX is ranked Hong Kong aviation industry leader, reached a preliminary scale to an international airline. In 2006, Cathay Pacific has formally completed the acquisition of Dragonair and Air Hong Kong. Since then, CX became one of the Asian largest airline (Cathay Pacific, 2016) (CAPA, 2016).

2. Cross-shareholding Relationship

Additionally, Cathay Pacific has a strategic partnership with Air China (IATA: CA). Cathay has a cross-shareholding relationship with the Star Alliance member Air China. CA holds 29.99% of the issued share capital of CX, it is a substantial shareholder of CX. Simultaneously, Cathay Pacific holds 20.99% of the issued share capital of CA, it is a major shareholder of CA (CAPA, 2009).

3. Airline Fleet

Moreover, the scale of the fleet is 146 and Cathay Pacific is one of the airline who is operating whole wide-body aircraft in the world, and this trend is expected to sustain in the future, Cathay Pacific continues to invest heavily for new types of aircraft. The environmental friendly aircraft Airbus A350-900 XWB is prepared to deliver to Cathay Pacific in 2016 (CAPA, 2016), it will support Cathay Pacific to fulfil its strategic objectives, providing premium inflight

experience, and operating long haul flights with fuel efficient airplanes. For the larger A350-1000 XWB, it is expected to start its delivery in 2018, and it will serve the North American destinations while the A350-900 serving the European countries (CAPA, 2016).

Table 6-4 Cathay Pacific Airways Fleet Information (CAPA, 2015, Cathay Pacific, 2016)

Airlines	Fleet number	Wide bodied	Narrow bodied	On order	Average age (Year)	Main aircraft type	Owned/Leased Ratio
Cathay Pacific Airways	146	146 (124 Pax, 22 Freighter)	0	71	7.9	B777, B747, A330, A350	50.7% Owned; 34.2% Leased; 15.1% Owned (Freighter)

4. Airline Network

Cathay Pacific is operating international routes with scheduled passenger and cargo services to 188 destinations in 47 countries and regions. Code-share agreements, primarily with its **one**world alliance partners. In the June of 2016, Cathay Pacific will start to launch a new schedule flight to Spain's Capital Madrid (Cathay Pacific, 2016).

Focusing on Belt and Road cities, Cathay Pacific has no direct flights to Central Asia and West Asia countries, but operating schedule flight to Southeast Asian and Indian Subcontinent countries by an intensive route map.

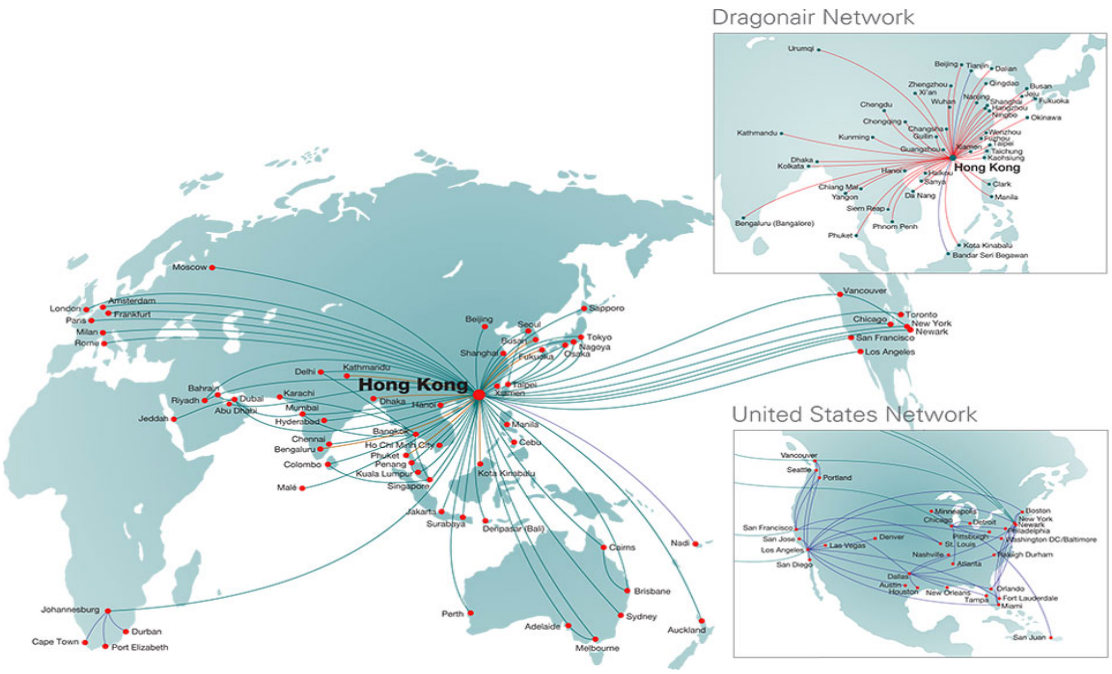


Figure 6.13 Cathay Pacific Airways Route Map (Cathay Pacific, 2016)

5. Airline Performance

In retrospect, The Cathay Pacific Group reported an increase in profits from HK$3,150 million in 2014 to HK$6,000 million in 2015. The main source of profits stemmed from the low fuel prices. As the high passenger load factors experienced in the first half of the year continues to reign in the second half, this reflected strong economy class demand. However, Premium class demand was not as strong as expected on some long-haul routes. Air cargo demand, which came under pressure during the second quarter of the year, remained weak in the second half (Annual Report, 2015).

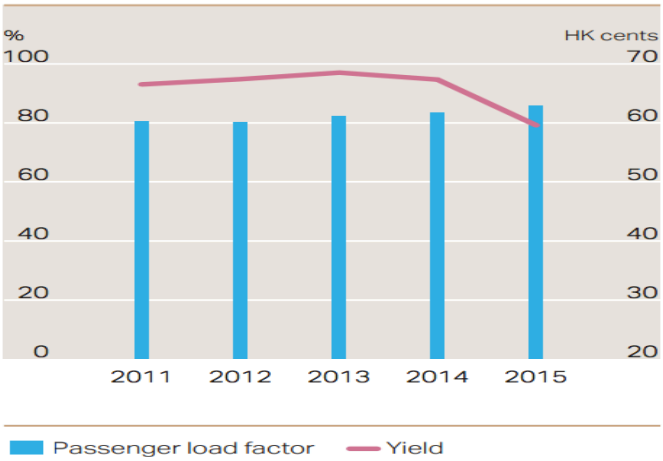


Figure 6.8 Cathay Pacific Airways Passenger Load Factor and Yield (SCMP, 2016)

There is a general steady increase in passenger load factor (capacity utilisation). However, as the passenger yield (unit profitability) is dropping, this may affect the company's management in the long run (SCMP, 2016)

As mentioned by Bocom International analyst Geoffrey Cheng, changing traffic patterns have mixed impacts on Cathay's yield outlook due to the balancing of both revenue and passenger mix such as in the case of transiting traffic.

Under the Centre for Aviation, it is also contended that markets outside Hong Kong offer greater growth potential. While the Hong Kong full-service demand is saturated, there is ample opportunities in the budget-end of the market (SCMP, 2016).

Cathay filled 85.7 per cent of its seats last year, an all-time high load factor and an increase of 2.4 percentage point's year-on-year. Subsequently, Cathay Pacific will try to capture more of the growing traffic demand out of and into Mainland China (SCMP, 2016).

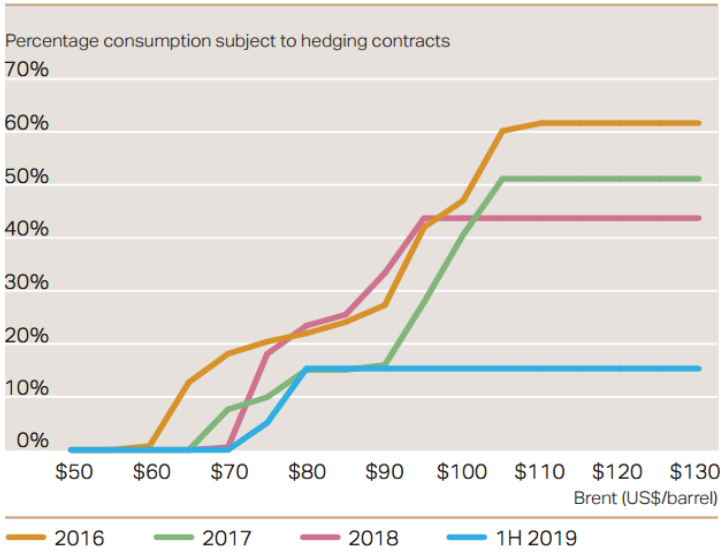


Figure 6.9 Cathay Pacific Hedging Contract Consumption Percentage (SCMP, 2016)

Since Cathay Pacific's significant hedging loss in 2008, there is an improvement in risk management of fuel prices. The Company ensures a maximum fuel hedging exposure at varying Brent oil prices.

In recent times Cathay has pushed its network and financial performance through efficiency, making better use of aircraft and selling seats that would have otherwise flown empty. Earlier in 2015 Cathay noted its 777-300ER utilisation of 16 hours made it the world's third highest operator in terms of utilisation (CAPA, 2015).

6. Latest Development

Cathay Pacific has recently agreed on a partnership with Germany's national airline, Lufthansa Cargo to generate freight routes between Hong Kong and Europe. Lufthansa and Cathay both mentioned that they would work together on network planning, sales, IT and ground handling (Air Cargo News, 2016). Meanwhile, Eastman Aviation Solution has been selected by Cathay Pacific Group for a main engine oil fleet conversion (Aviation Week, 2016).

6.4.1.2 Cathay Dragon

1. Airline Overview

Cathay Dragon (IATA: KA), a regional airline registered and based in Hong Kong, is wholly owned subsidiary of Cathay Pacific, the former Dragonair was founded in May 1985. In 2007, Dragonair joined the **one**world alliance. As of 2016, there are about 3,345 staffs working worldwide for Cathay Dragon. In the early 2016, the parent company of Dragonair has announced that the image of Dragonair is going to be rebranded, changing the livery to the Cathay Pacific's featuring brush wing logo with red background (CAPA, 2016). The major subsidiaries of Cathay Dragon include, Lufthansa Service Hong Kong Ltd. (LSG), Dah-Chong Hong-Dragonair Airport GSE Service Ltd. (DAS) and HAS GSE Solutions Ltd (Dragonair, 2016).

2. Airline Fleet

The fleet numbers of KA is 40 with different types of aircraft, including narrow-body aircraft and wide-body aircraft, the specific aircraft type information is shown below. These aircraft are operating on scheduled flight to 53 destinations in Greater China and Asia (Dragonair, 2016).

Table 6-5 Cathay Dragon Fleet Information (CAPA, 2015) (Dragonair, 2016)

Airlines	Fleet number	Wide bodied	Narrow bodied	On order	Average age (Year)	Main aircraft type	Owned/Leased Ratio
Cathay Dragon	42	19	23	1	13.5	A330, A320, A321	26.8% Owned; 73.2% Leased

3. Airline Network

As a regional airline, Dragonair is mainly serving the Asia Pacific region and few cities in the Indian Subcontinent. The airline network consists 53 destinations in which 23 Mainland China destinations. Cathay Dragon is utilising its home base advantage, covering half of the world population in the five-hour catchment area. Cathay Dragon is serving most of the commercial and metropolitan cities in Mainland China, flying about 400 flights weekly to

Mainland China, using the role of HKIA as a gateway of Mainland to serve the Asia Pacific region. The network of Cathay Dragon feeds its parent firm Cathay Pacific with more long haul flight passengers.

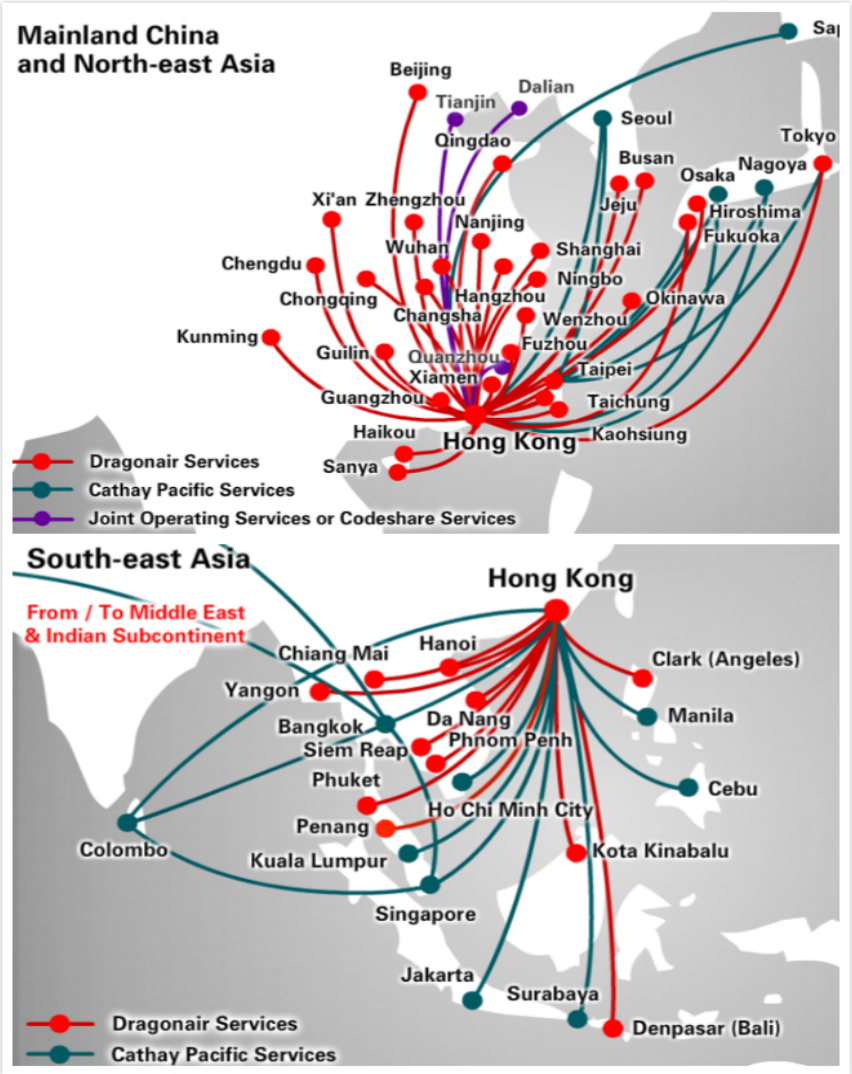


Figure 6.16 Cathay Pacific and Dragonair Asia Pacific Route Map (Dragonair, 2016)

For the South Asia cities, most of the air routes are operated by Cathay Pacific, only Nepal's Kathmandu, Bangladesh's Dhaka and India's Kolkata and Bengaluru are operated by Dragonair.

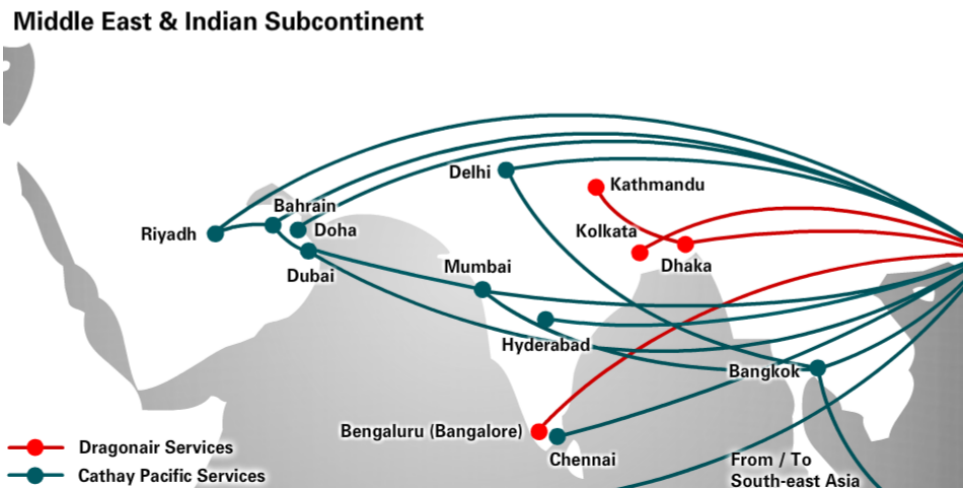


Figure 6.17 Cathay Pacific and Dragonair Middle East and Indian Subcontinent Route Map (Dragonair, 2016)

4. Airline Performance and Future Development

Cathay Dragon is always the best regional airline in the world, providing excellent service and extraordinary air travel experience to passengers. The airline's expertise has been recognised in its winning the Best Airline – China category for six consecutive years in the respected Skytrax passenger survey. It has also been voted "Best Regional Airline Asia" in the survey in 2011, 2013 and 2015, as well as "World's Best Regional Airline" in 2010, 2011, 2013 and 2015 (Dragonair 2016).

Cathay Dragon has seen the potential demand in Mainland secondary cities considerably.

6.4.1.3 Air Hong Kong

Air Hong Kong is an all-cargo carrier based in Hong Kong. In 2002, DHL acquired a 40% shareholding in Air Hong Kong from Cathay Pacific Airways, which retains 60% of the carrier. Under this arrangement, Air Hong Kong operates express cargo services from its Hong Kong hub to 12 Asian cities for DHL.

At present, AHK provides the DHL express freight services, also provides each air freight for the Cathay Pacific's cargo business. Customers just through Cathay Pacific in freight offices around the world or Cathay Pacific freight enquiry and booking space within the site to be able to use the same goods as Cathay Pacific cargo transportation service.

6.4.2 Hong Kong Airlines

6.4.2.1 Hong Kong Airlines

1. Airline Overview

Hong Kong Airlines (IATA: HX) was founded in 2001 as its predecessor CR Airways and has grown to become one of Hong Kong's largest carriers. Hong Kong Airlines is a full service carrier established in 2006 and rooted in Hong Kong (Hong Kong Airlines, 2016).

In September of 2006, HNA group director of Xinhua airlines Mr. Meng Jianqiang has purchased the remaining 55% shares, it allows Hainan Airlines became the main shareholder in Hong Kong airlines. After the Mainland's fourth largest aviation enterprises Hainan Airlines invest in the CR Airways, the airline has rebranded to Hong Kong Airlines. Since 2011, Hong Kong Airlines is the world famous aviation rating agency SKYTRAX's 4-Star airline (Hong Kong Airlines, 2016).

2. Airline Fleet

As an affiliate airline of the Hainan Airlines Group, the carrier operates services with narrow-bodied and wide-bodied aircraft. Hong Kong owns one of the youngest fleet in the world with an average 3.7-year air fleet. Hong Kong Airlines has aggressive growth plans, with a large order book of aircraft including the Airbus A350-900XWB. The young fleet and environmental friendly aircraft can help Hong Kong Airlines reduce its fuel cost and the air and noise

pollution. HX is going to utilise the brand new A350 for their long haul flight to Oceanian and North American destinations (CAPA, 2015).

Table 6-6 Hong Kong Airlines Fleet Information (Hong Kong Airlines, 2016) (CAPA, 2015)

Airlines	Fleet number	Wide bodied	Narrow bodied	On order	Average age (Year)	Main aircraft type	Owned/Leased Ratio
Hong Kong Airlines	30	19 (14 Pax, 5 Freighter)	11	20	3.7	A330, A320 A330F	80% Owned; 20% Leased Freighter

3. Airline Network

Currently, Hong Kong Airlines is operating schedule flights to Northeast Asia, Southeast Asia, and Australia. Meanwhile, cooperates with partners providing

Code-share flight throughout Asia, Africa and Indian subcontinent. Recently, Hong Kong Airlines has increased the number of secondary destinations in Mainland China as well as the flight frequencies from Hong Kong to Shanghai and Beijing, among two of the busiest routes are Taipei and Bangkok.

For the long-haul flights, Hong Kong Airlines is expanding their network to Australian secondary destinations such as Gold Coast, Cairns and Auckland in 2016, in order to reduce its cost per available seat kilometres (CASK) (CAPA, 2015).

Figure 6.186.10 Hong Kong Airlines Route Map (Hong Kong Airlines, 2016)

Focusing on Belt and Road countries and regions, HX is operating direct schedule flights to 5 destinations in Southeast Asia and a couple of codeshare flights among the B&R countries and regions. Hong Kong geographical advantage allows Hong Kong Airlines connects North Asia and Southeast Asia, while Hong Kong Airlines has recorded 38% of the total passengers are transit passengers in 2015 (Hong Kong Airlines, 2016).

Hong Kong Airlines also signed a couple of codeshare agreements between a several of Belt and Road airlines. Hong Kong Airlines and Air Astana has signed a codeshare agreement of the passenger flights between Kazakhstan's Almaty and Hong Kong. This move allows passengers from Almaty to book tickets for the destinations like Indonesia, Malaysia, Taiwan, and Vietnam and so on. Oppositely, Hong Kong citizens can arrive Central Asian destinations through Almaty International Airport's Central Asia air network.

Table 6-7 Hong Kong Airlines Code-share Partnership (Hong Kong Airlines, 2016) (CAPA,2014)

Airline	Airline Code	Home Base	Codeshare Routes
Hong Kong Airlines	HX	Hong Kong	15
Hainan Airlines	HU	China	9
China Eastern Airlines	MU	China	3
Air Astana	KC	Kazakhstan	1
EVA Air	BR	Taiwan	-
Garuda Indonesia	GA	Indonesia	8
Etihad Airways	EY	United Arab Emirates	2
Shanghai Airlines	FM	China	-
Air India	AI	India	6
Air Seychelles	HM	Seychelles	3
Air Mauritius	MK	Mauritius	3

4. Airline Performance

After the development in the past decade, Hong Kong Airlines has increased its market share to 8% in 2015. It has around 6 million passengers were carried by Hong Kong Airlines in 2015, from 5.1 million in 2014. Additionally, the revenue has increased 20% to 30% in spite of a smaller increase in capacity.

Aircraft utilisation is being improved from about 9 hours/day to 10.5/day on A320s, and 10 hours/day to 11.5 hours/day on A330s. Long haul flying to Australia (the immediate opportunity) would help increase A330 utilisation to up to 13 hours.

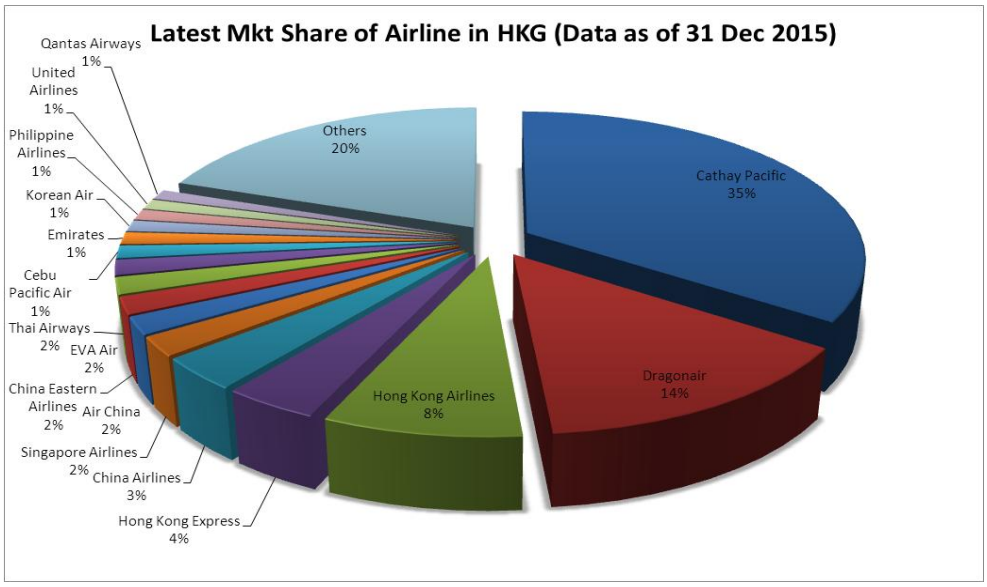


Figure 6.19 Marker Share in Hong Kong International Airport (CAPA, 2016)

5. Latest Development

Hong Kong Airlines has held a ground-breaking ceremony of its flight training centre in February, 2016. The centre will occupy a gross ground area about 23,000 square metres and it will include a safety training hall that can accommodate training rooms, classroom as well as a full-size mock aircraft cabin. The construction is expected to complete in the late 2017. The president of Hong Kong Airlines Mr. Zhang Kui said that the equipment can consolidate the status of Hong Kong as an international and regional hub. The facilities will help motivate Hong Kong citizens to develop their career in aviation industry (Flightglobal, 2015).

6.4.2.2 Hong Kong Express Airways

1. Airline Overview

Hong Kong Express Airways (IATA: UO) is a subsidiary Low-cost airline of HNA Group, which operating scheduled flights from its main base Hong Kong Chep Lap Kok Airport to Northeast Asia and Southeast Asia destinations. Hong Kong Express Airways changed its business to Low-cost carrier in 2013 (Flightglobal, 2013). In 2014, Hong Kong Express has changed their new logo and livery

design to red and violet, with Hong Kong's skyline elements. This new design helped to create a fresh, dynamic symbol of Hong Kong Express, said by Hong Kong Express CEO Andrew Cowen (Flightglobal, 2014). Until 2016, Hong Kong Express is still the only Hong Kong based Low-cost Carrier (Hong Kong Express 2016). On the other hand, Hong Kong Express has increased its employee number from 400 to 600 in 2014 (Flightglobal, 2014).

2. Airline Fleet

Hong Kong Express Airways is highly matching the Low-cost business model, Hong Kong Express Airways is changing their fleet to the whole A320 family, and they have 12 Airbus A320-200 up to the end of July 2015 (CAPA FLEETS 2015).

Table 6-8 Hong Kong Express Airways Fleet Information (Hong Kong Express, 2016) (CAPA, 2015)

Airlines	Fleet number	Wide bodied	Narrow bodied	On order	Average age (Year)	Main aircraft type	Owned/Leased Ratio
Hong Kong Express Airways	12	0	12	0	4.4	A320	100% Leased

Among this aircraft fleet, 7 of them are owned by its sister airlines Hong Kong Airlines, the rest of the aircraft are owned by Hong Kong Aviation Capital and BOC Aviation respectively (CAPA FLEETS, 2015). Moreover, Hong Kong Express Airways planned to return its five CFM International CFM56 engines aircraft to Hong Kong Airlines, thereby unifying the engine of fleet to International Aero Engines' V2500 engines in 2015 (Flightglobal, 2015). Also, UO has a young fleet (average 4.4 years) compare with its competitor Cathay Pacific Group. In the future, Hong Kong Express plans to add 6 new A321s to cater the demand of some popular routes. However, leasing A321 will make the unified fleet become mixed fleet. The UO's CEO Andrew Cowen has explained that it is because the slot constraint in HKIA, so UO has to consider a larger aircraft (Flightglobal, 2014).

3. Airline Network

Hong Kong Express Airways is mainly serving the Asia Pacific Region with its Low-cost services. As a sister airline of Hong Kong Airlines, Hong Kong Express mainly aim at leisure market and price sensitive passengers, while Hong Kong Airlines is aiming at middle level passengers. Hong Kong Express Airways are flying to secondary airports or second and third level cities in the region like Wuxi, Taichung, Ningbo and so on. This business methodology is called the 'Dual-Brand Strategy' (CAPA, 2013). It is highly matching the business model of Low-cost Carrier, when the airline is reducing its operating costs.

Figure 6.11 Hong Kong Express Airways Destination Map (Hong Kong Express, 2016)

As a member airline of U-FLY Alliance, Hong Kong Express Airways is serving several B&R destinations, providing Low-cost services to cater the demand of low consumption population and connecting Belt and Road cities through Hong Kong as an Asia Pacific aviation hub.

4. Airline Performance

Punctuality is a good way to set up brand recognition, many airlines want to establish 'on time airline' brand awareness, but almost failed (Shaw, 2011). Punctuality is one of the most difficult tasks for airlines to achieve. However, the

punctual performance helps Hong Kong Express Airways to differ themselves. Hong Kong Express has a significant on time performance with 81% of its flights being on time (measured as take-off within 15 minutes of the scheduled time) (Flightstas.com, 2015). This performance has beaten other Hong Kong-based airlines. It enhances passengers' experience and establishes punctual airline brand recognition to the customers. However, the usage of aircraft has achieved 12.5 hours per day, but the benchmark is 15 hours per day (Cowen 2013), and there is space to improve.

6.5 Hong Kong Maintenance, Repairing and Overhaul (MRO)

HKIA is a centre of aeronautical engineering and aircraft maintenance. It possesses world-class facilities, know-how and workforce to deliver the most advanced aircraft maintenance and engineering services. At HKIA, there are fourteen maintenance stands, one engine run-up facility, one compass calibration pad and four aircraft base maintenance hangars to serve different model of aircraft.

There are three aircraft maintenance franchisees at HKIA: Hong Kong Aircraft Engineering and China Aircraft Services provide both line and base maintenance services, while Pan Asia Pacific Aviation Services specialises solely in line maintenance.

Hong Kong is a centre of aeronautical engineering and aircraft maintenance, because of the growth of Asia region, Hong Kong is one of the biggest beneficiaries from this increase of demand. Furthermore, Hong Kong Aircraft Engineering Company Limited has more than 60 years MRO operating experience and a great amount of subsidiaries which are distributed around Asia Pacific region.

6.5.1 Hong Kong Aircraft Engineering Company Limited

The HAECO group known as the Hong Kong Aircraft Engineering Company Limited, of which Swire Pacific holds 75%, is a global leader in aircraft engineering services. The group holds significant business interests in Mainland China through its subsidiary, Taikoo (Xiamen) Aircraft Engineering Company Limited (TAECO).

The HAECO group employs over 14,000 staff, of which 5,100 are based in Hong Kong. The company was founded in 1950, listed on the Hong Kong stock market since 1965, following a merger between Swire's Pacific Air Maintenance Services (established in 1947) and Jardine Air Maintenance Company, and draws on more than 60 years of aircraft engineering expertise to serve the MRO market of entire Asia Pacific region.

7. Hong Kong Aviation Strategy in the Aviatic Silk Road

The previous chapter has enumerated the strengths and advantages of Hong Kong aviation industry. Hong Kong can utilise its advantages in aviation industry to expand its aviation market and enhance its influence in Belt and Road countries.

However, the participation of Hong Kong in Aviatic Silk Road could not be successful in a short moment, it is difficult to accomplish in an action. Hence, the establishment of Aviatic Silk Road need to be accomplished by a couple steps. The flow chart below briefly demonstrates the entire progress of the establishment of the Air Silk Road. Several recommendations of Hong Kong aviation strategy in the Air Silk Road are going to illustrate in the following sections.

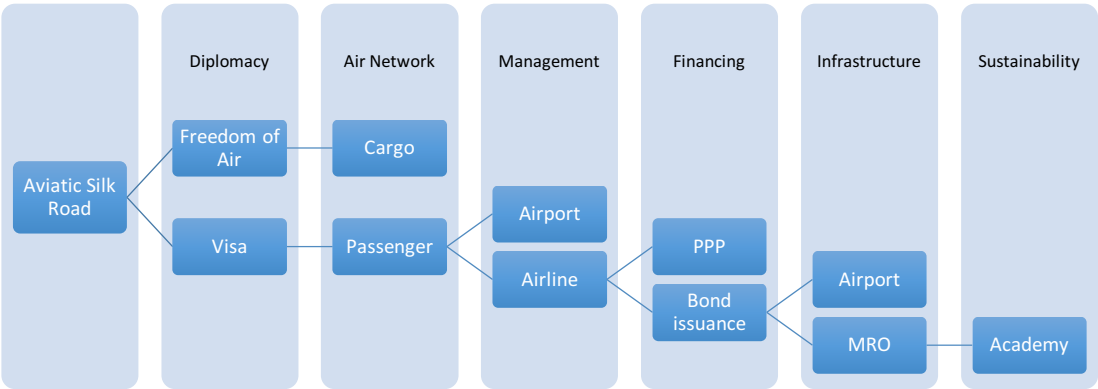


Figure 7.1 Aviatic Silk Road Strategy

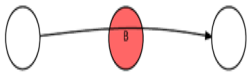
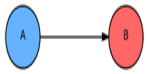
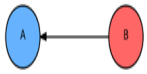
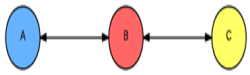
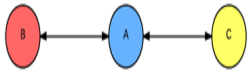
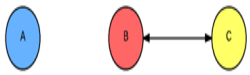
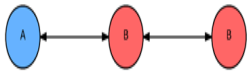
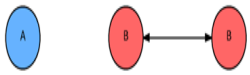
7.1 Structuring Multilateral Air Transport Agreement

7.1.1 Freedom Rights of the Air

Started in 1944, the Freedoms of the Air are international commercial aviation agreements between two countries, which grants a country's airline the privilege to enter and land in another country's airspace. Totally, there are nine freedom rights including five basic freedom rights and the 4 extended freedom rights. The illustration of the nine freedom rights has illustrated on the table below (Table 7-1).

A safe, secure and sustainable global aviation system, based on the effective implementation of global standards and which leaves no country behind, provides the nations of the world with efficient access to global markets (ICAO, 2015). ICAO, the United Nations' Specialised Agency for civil aviation, recently launched a No Country Left Behind (NCLB) campaign to better identify and coordinate assistance to states. This in turn permits them to realise and benefit from any and all improvements in their civil aviation capacities and the connectivity they support (ICAO, 2015).

Table 7-1 Nine Freedoms of the Air (ICAO, 2015)

Freedom	Description	Illustration	Example
1st	the right to fly over a foreign country without landing	1st 	Toronto – Mexico City by a Canadian company, overflying the USA
2nd	the right to refuel or carry out maintenance in a foreign country without embarking or disembarking passengers or cargo	2nd 	Toronto – Mexico City by a Canadian company, stopping for fuel in the USA
3rd	the right to fly from one's own country to another	3rd 	Toronto – Chicago by a Canadian company
4th	the right to fly from another country to one's own	4th 	Toronto – Chicago by a US company
5th	the right to fly between two foreign countries on a flight originating or ending in one's own country	5th 	Doha – Bangkok – Kuala Lumpur by a Qatari company
6th	the right to fly from a foreign country to another while stopping in one's own country for non-technical reasons	6th 	Dubai – Cairo – Paris by an Egyptian company
7th	the right to fly between two foreign countries while not offering flights to one's own country	7th 	Tokyo – Los Angeles by a Singaporean company
8th	the right to fly inside a foreign country, continuing to one's own country	8th 	Chicago – New York City – Toronto by a Canadian company
9th	the right to fly inside a foreign country without continuing to one's own country	9th 	Las Vegas – New York, by a French company

All the Bilateral Air Services Agreements and Air Services Transit Agreements of Hong Kong are shown in Appendix A. In about 60 Belt & Road countries, Hong Kong has signed bilateral aviation agreement or international air services transit agreement between 40 countries (Department of Justice, 2015). According to the 2016 Policy Address (Policy Address, 2016) by the Hong Kong Chief Executive, Hong Kong government will continue to negotiate with Belt & Road countries to sign more bilateral civil aviation agreement to consolidate the status of Hong Kong international aviation hub.

As a member of ICAO, and one of the international hubs in Asia, Hong Kong needs to strengthen its Multilateral/Bilateral Air Transport Agreement with others, to liberalise the Aviatic transportation one step at a time.

The liberalisation of air transport usually refers to the open skies, or the Freedoms of the air (See Table 7-1). “Open skies” is an international policy concept that calls for the liberalisation of rules and regulations in the international aviation industry—especially commercial aviation—in order to create a free-market environment for the airline industry. For many years, Hong Kong is prudential on its Open sky policy. Under the construction of Aviatic Silk Road, if Hong Kong wants to build itself as one of the node cities, changes will be necessary.

The liberalisation of air transport might be one of the hardest tasks. The industry pioneer, the United States has begun pursuing Open Skies agreements as early as 1979. For years, the US mainly deals with smaller nations or individual European states in the liberalisation of aviation. For example, in 2001, the United States signed the Multilateral Agreement on the Liberalization of International Air Transportation (MALIAT) with Brunei, Chile, New Zealand, and Singapore four relatively.

However, significant changes have happened in recent years. The initial EU–US Open Skies Agreement was signed in Washington, D.C., on April 30, 2007. The agreement became effective March 30, 2008. Phase two was signed in June 2010. This EU–US Open Skies Agreement is a multilateral open skies air transport agreement between the entire European Union and the United States. The agreement allows any airline of the European Union and any airline of the United States to fly between any point in the European Union and any point in the United States. Airlines of the United States are also allowed to fly between points in the European Union. While, airlines of the European Union are also allowed to fly between the United States and non-EU countries like Switzerland. The Agreement replaced and superseded previous open skies agreements

between the US and individual European countries.

This kind of dramatic changes also happened in Asia. The ASEAN Multilateral Agreement on Air Services and the ASEAN Multilateral Agreement on the Full Liberalisation of Air Freight Services which were simultaneously approved on May 20, 2009 in Manila, Philippines are multilateral air transport agreements among the ten-member Association of Southeast Asian Nations. These two agreements which took effect on January 1, 2010, call for a calibrated and gradual implementation in each contracting state, to allow countries with less developed airline industry to cope up with more developed ones. It is part of the broader ASEAN Air Transport Integration and Liberalisation Plan. The ASEAN Open Sky Agreement is the Southeast Asia's major aviation policy, it is geared towards the development of a unified and single aviation market among ASEAN members.

Generally, the air carriers need the approval of the governments to fly over or operate commercial flights between the nations, and the rights are negotiated between governments while under political pressure.

Among the Belt and Road countries, there are two historic organisations are playing vital role for the regional economic, cultural, political and military cooperation between these nations. SCO is mainly focusing on the Belt countries while ASEAN is focusing Maritime Road countries. These two salient organisations can act as lubricant between the member states air freedom negotiation.

SCO

SCO is known as Shanghai Cooperation Organisation and it is the Eurasia organisation for political, economic and military cooperating purposes. Founded in by six member states, China, Russia, Tajikistan, Uzbekistan, Kazakhstan and Kyrgyzstan. As of June 2016, the organisation has 8 member states which are

the new joining states India and Pakistan and the six founder states.

Table 7-2 SCO Members List (SCO, 2016)

Founders	Members	Observers	Dialogue Partners	Guest Attendances
China Russia Tajikistan Kazakhstan Uzbekistan Kyrgyzstan	Pakistan India	Afghanistan Belarus Iran Mongolia	Armenia Azerbaijan Cambodia Nepal Sri Lanka Turkey	ASEAN CIS Turkmenistan

ASEAN

Association of Southeast Asian Nations, is abbreviated as ASEAN. In 1967, four foreign affair ministers have held a meeting at Bangkok, and announced that the ASEAN has established. The common goal of the association is to promote economic, social and cultural progress and development of each country in Southeast Asia, and maintain peace and stability in Southeast Asia.

Table 7-3 ASEAN Members List (ASEAN, 2016)

Members	Dialogue Partners
Indonesia Malaysia Singapore Philippines Brunei Vietnam Laos Myanmar Cambodia	China Japan India Korea Australia Russia European Union United States New Zealand

ASEAN is the major trade and investment partners of Hong Kong, ASEAN is second largest trading partner of Hong Kong, but also the fifth largest foreign investment destination and the sixth largest source of investment of Hong Kong (Hong Kong Economy, 2014). ASEAN has implemented export-oriented trade policy in order to reduce costs and open the market. Currently, Hong Kong has signed bilateral free trade agreements with a number of ASEAN countries, including the "ASEAN - China Free Trade Agreement." Hong Kong is the gateway of the Mainland China, the agreements would bring more business opportunities for Hong Kong as an Asia Pacific regional aviation hub, as well as the world's busiest cargo airport. At the same time, bilateral economic cooperation has promoted the flow of people, so that increased demand for

passenger flights. Therefore, Hong Kong and the ASEAN countries can take to expand cooperation and investment in the aviation sector, and to maintain and increase the number of passengers, to consolidate Hong Kong's position as an aviation hub and popular tourist destinations.

View of such significant changes in the industry, it is time for Hong Kong, and in the mean time for Mainland China, to consider about their open sky policies. To build up the Aviatic Silk Road, this liberalisation is foremost the most essential before all other things. In reality, along the Belt and Road, Hong Kong is better connected with South East Asia. Hence, more multilateral agreements with ASEAN will be a wise choice. To connect with a landlocked Central Asia, negotiation with local government in existing destinations (such as Almaty Kazakhstan, or Chinese western cities (such as Chengdu, Chongqing, Xi'an, and Urumqi)) governments around the region, to obtain some kind of beyond traffic rights, would be better choice. Multilateral agreement with Central Asian countries might be possible if the Shanghai Cooperation Organisation or other regional organisation initiate regional free market in air transportation.

7.2 Better Route Network

Better connectivity increases tourism and trade, eventually, generating numerous economic benefits e.g. poverty reduction, job creation and resource mobilisation. Once established through suitable commitments and investments, this growth will subsequently feed into aviation re-investment, supporting projected targets for network growth and efficiency, thus creating a sustainable and healthy cycle between national aviation and economic development.

From Figure 7.2 and 7.3, we can see that Hong Kong is better connected with Eastern China, East and Southeast Asia, while lack of connections with Central Asia, Western Asia, Africa and South America. It is understandable this route network depends on aviation demand, and basically, economic development and population density, as well as the flight distance.

Figure 7.2 Flight Route Map from Hong Kong (OAG, 2016)

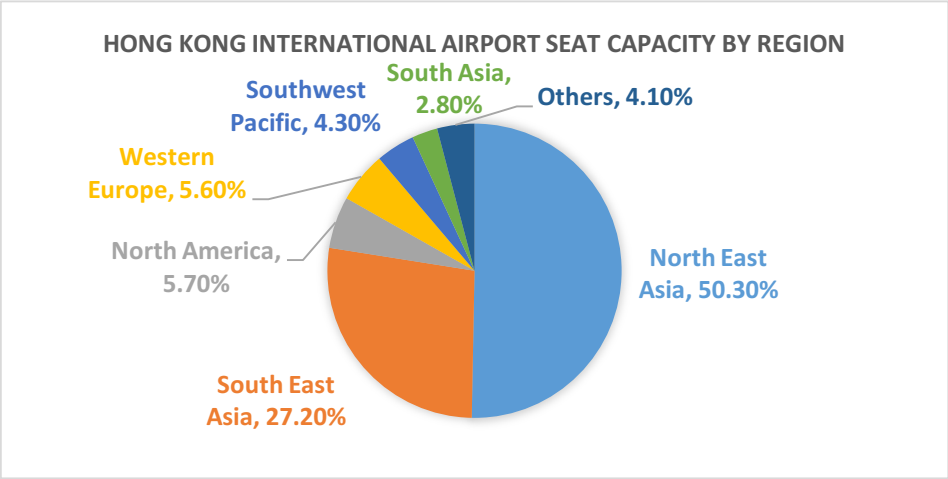


Figure 7.3 Hong Kong International Airport Seat Capacity by Region (CAPA, 2016)

Under the Belt and Road Initiative, and with a potential rising demand, a better connection with those developing countries may need to plan in advance. On the B&R Initiative map, as mentioned in the beginning of this report, Central Asia is the epicentre of one of the first waves of globalisation under China's ancient Silk Road. This Heartland connected eastern and western markets, spurred immense wealth, and intermix cultural and religious traditions.

Nowadays, though the five Central Asian countries, consisting of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, though they are not yet key trading markets or popular destinations for Hong Kong companies, they are playing an increasingly pivotal role in the China-Central Asia-Western Asia Economic Corridor. Currently, except for Air Astana (having Kazakhstan as one of their international routes), none of other airlines fly from Hong Kong to Central Asian Region.

Of course, a better connectivity could be fulfilled by direct route handled by one Airline Company, but well managed connecting flight also works. Different kinds of airline cooperation such as code share and airline alliance, could satisfy the goal of better connectivity. For instance, to improve the connectivity between Hong Kong and Central Asia, Hong Kong based airlines could fly directly to their economic or political centres, which will be the most convenient for passengers and logistics. But take consider of other restrains, totally appeared as financial cost, what seems the most convenient way will not be the best choice. Existing connections imply other choices, at least in the near future. Hong Kong now has direct flight with Almaty of Kazakhstan, and Chinese cities Chengdu, Chongqing and Xi'an. With well managed transit, and under necessary bilateral air transport agreement, economic and convenient connections will easily be fulfilled. Better route plans for airlines should take consider the demand as well as government agreements for better route plans. Efficient interaction between airline companies and governments are necessary and crucial for a better route network arrangement.

Additionally, Asian countries are developing at an extraordinary pace, India's GDP in 2000 was 476 billion USD, and in 2015 it has reached over 2000 billion USD making it the 7th highest in the world. A massive improvement in economy and a large population has allowed the aviation sector to flourish in India. Domestic capacity grew by 10.2 % in 2015, the most in the world. Domestic traffic increased by up to 19.8%.

There is still potential for India's aviation industry to grow even further. The number of travellers each year is expected to double by 2025. Many airports are in development, a large number of citizens will be able to easily travel by plane in the future, increasing passenger and demand will encourage growth in the economy.

Pakistan is also in a similar situation. With the rise in numbers of Pakistani

middle class choosing to travel by air, a new policy (NAP, 2015) introduced by the Pakistani government aims to align Pakistan's national aviation policies with ICAO standards, attract foreign firms to invest in domestic carriers, encourage Public Private Partnerships(PPP) and ensure long term, sustainable economic growth and prosperity of Pakistan. IATA (International Air Transport Association) predicts a 9.5% growth per year in domestic air travel over the next 20 years, two times the world average annual growth rate of 4.1%.

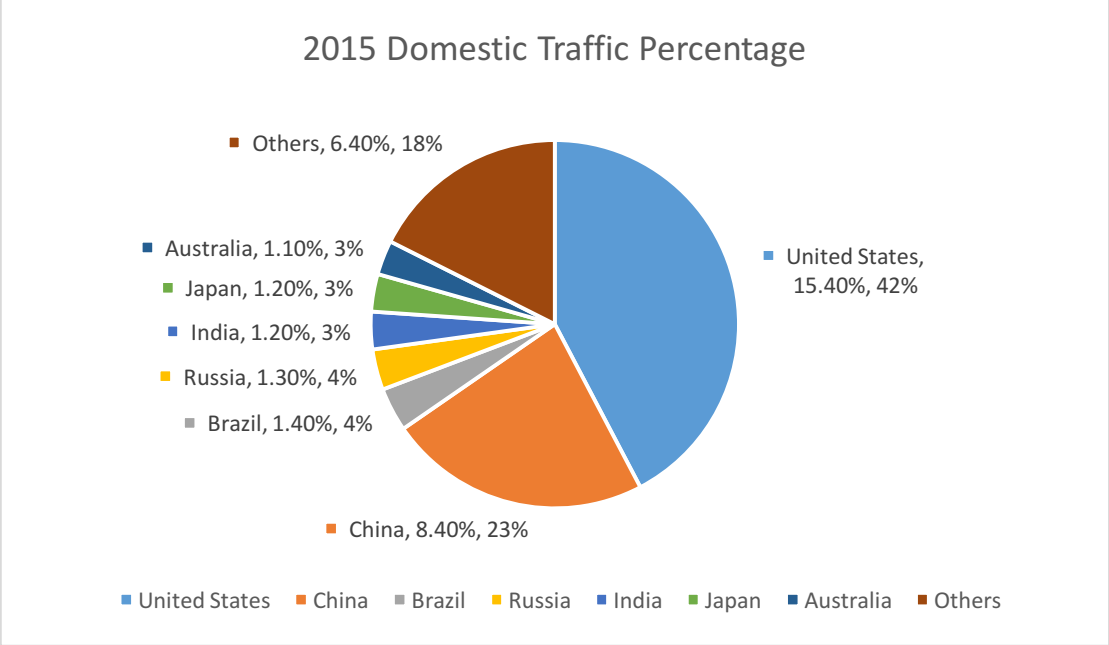


Figure 7.4 2015 Domestic Traffic Percentage (IATA, 2016)

Table 7-4 2015 vs 2014 Aviation Growth (IATA, 2016)

2015 vs 2014	RPK Growth	ASKs Growth	PLF
Australia	3.2%	1.2%	77.9
Brazil	-5.4%	-4.0%	80.1
China	8.2%	8.2%	76.7
India	25.0%	25.2%	87.5
Japan	1.2%	-2.9%	64.7
Russia	-3.4%	-8.0%	70.0
United States	4.9%	4.1%	84.1

Domestic	5.1%	4.2%	79.9

Therefore, Hong Kong can try to seek the air freight and passenger demand in this region. Connecting South Asia and other continents such as Oceania, America, and East Asia via Hong Kong, to maintain the status of Hong Kong Airport as an international aviation hub.

However, OAG (2015) has indicated that the airport supporting facilities and infrastructure of the India Sub-continent still need to improve to cater the tremendous air passenger demand. Not only in India, has the economic and population growth in Asia Pacific region led the passenger and air cargo demand in the entire region. Airports like Seoul Icheon, Hong Kong, Bangkok, Tokyo Haneda, Manila, Jakarta, Kuala Lumpur and Taipei all have ambitious masterplan to expand the handling capacity of airports to cater the tremendous demand. Hence, opportunities do not only exist in countries where aviation industry is still developing, but also in some countries where the business is more mature.

Hong Kong Airport is located at the one of the busiest air space in the world – Pearl River Delta. The management experience of the intensive air space can help India air space management and air control service. On the other hand, Hong Kong poised to participate the AIIB, Hong Kong may invest aviation infrastructure construction in the South Asia, sustain its critical role as the Asia Pacific financial centre in financing Aviatic Silk Road projects.

All in all, China's Belt and Road Initiative will create many development opportunities for Hong Kong, India and Pakistan, arrangements should be made in order to take advantage of the potential demand of the Indian sub-continental countries.

Alliances between international airlines have become a dominant feature of the airline industry. Many customers demand a ‘from anywhere to anywhere’ service, which is impossible for one single airline to deliver. Moreover, there are significant economies of density that can be achieved by merging networks. Many city-pair markets would not support a viable regular service on local point to point traffic alone, and a means of channelling connecting traffic to generate sufficient traffic density is necessary.

Moreover, alliances are highly important in the aviation industry. This is because cross-border mergers, which are typical in other industries, are prohibited for airlines in many jurisdictions. The evident need for network co-operation has led to a rapid expansion of alliance relationships, as a close substitute for mergers. More recently, airlines have set up joint ventures to serve specific markets which have made airline partners’ revenue from the JV independent of the airline which actually flies the passengers. This ‘metal neutrality’ is significant in that it maximises the opportunity for pro-competitive efficiency gains from density economies.

Table 7-5 Population and GDP Level in Southeast and Central Asia Nations (Department of Economic and Social Affairs, 2016)

	Country	2015 Estimated Population ('000)	2015 GDP Current Price (Billion USD)	2015 GDP Per Capita, current PPP$, compared to US (US=100)
South East Asia	Brunei	423	11.8	193.4
	Cambodia	15,578	18.2	8.5
	Indonesia	257,564	859.0	27.0
	Laos	6,802	12.5	12.9
	Malaysia	30,331	296.2	63.9
	Myanmar	53,897	67.0	13.3
	Philippines	100,699	292.0	17.6
	Singapore	5,604	292.7	207.1
	Thailand	67,959	395.3	39.1
	Timor-Leste	1,185	4.2	13.7
	Vietnam	93,448	191.5	14.6
Sub total		**633,490**	**2440.4**	**38.52**
	Country	**2015 Estimated Population ('000)**	**2015 GDP Current Price (Billion USD)**	**2015 GDP Per Capita, current PPP$, compared to US (US=100)**
Central Asian	Kazakhstan	17,625	173.2	59.0
	Kyrgyzstan	5,940	7.2	8.2
	Tajikistan	8,482	7.8	6.7
	Turkmenistan	5,374	35.7	40.0
	Uzbekistan	29,893	65.7	14.7
Sub total		**67,314**	**289.6**	**43.02**

Table 7-2 shows the population and GDP level of South East Asian Countries and Central Asian Countries. If the hypothesis that a similar positive correlation exists among air traffic demand, travel distance, and GDP level holds is accepted, there will be a potential demand for air traffic between Hong Kong and Central Asia, especially when transit flight could be counted in the local demand. Recognising the favorable population data and the economic prospect for such countries and the fact that this region is one of the focus areas under the Belt and Road Initiative, it is suggested to subsequently opening-up the routes with these countries for Hong Kong based carriers in the near future is recommended.

In interviews for this study, respondents raised that the air transportation generally establish air freight connections before re-establish passenger route network. In this case, Hong Kong air transport companies can try to seek more air freight demand in South Asia, West Asia and Central Asia to establish the Belt and Road air cargo network. More people will gradually know more about B&R countries through business contacts. In addition, Hong Kong may try to research development projects in potential tourism market of B&R countries, while the promote Hong Kong's tourism in B&R countries, coupled with the airline routes and negotiations between government for opening business and leisure travellers preferential visa, to reduce the inconvenience of visa for tourism to attract B&R tourists to visit Hong Kong and more Hong Kong citizens visit B&R cities. Connecting B&R countries and regions and Hong Kong together through the Aviatic Silk Road, consolidate the status of Hong Kong as an international aviation hub, but also for the future application of the air freedom rights between Hong Kong and B&R countries and regions.

7.3 Rising Demand in Airport Construction and Service

Centre for Aviation (CAPA, 2016) forecasts a yearly “USD 200 billion investments in 394 new airports” in their report of Global airport construction review 1Q2016. According to their database, while the number of existing airport projects has increased since the beginning of 2015, new airport projects have increased dramatically, by over 25%. Their 2014 report found airport construction projects to the value of USD 385 billion globally, and the 2015 report found a value of USD 543 billion globally - including new ones and continuations of existing ones previously listed.

Yet despite air transport’s clear economic significance and demonstrated ability to serve as a foundation and catalyst for global connectivity and economic growth, for the last 10 years, there is no sufficient investment in aviation, including airport construction. According to ICAO, only 2.6 per cent of global 2005-2015 funding for infrastructure and services has supported aviation

development.

The Central Asian countries previously had a unified infrastructure system under the former Soviet Union, intended to transport commodities for processing and production. As air freight was not cost efficient, air transport was not of priority in the transportation of raw materials. However, due to a lack of finance after their independence, land transportation networks fell into despair. Central Asian infrastructure development plans are designed to accommodate regional integration recent years. In 2012, under the coordination of the Central Asia Regional Economic Cooperation Programme (CAREC), participating countries such as the five Central Asian countries have agreed to implement more than $23 billion in new regional transport infrastructure projects. This capital injection will contribute to six major corridors linking ports in eastern China with the Caucasus, Kazakhstan to Karachi and Gwadar to Pakistan. Nonetheless, air traffic is still not a focal point.

However, disrepair airports needs to be rebuilt as the catalytic effect of airports and air transportation yield construction demand in the area. Nowadays, according to the *Investment Guide to the Silk Road* by (UNCTAD, 2014), the larger Central Asian Silk Road countries have several airports each:

Kazakhstan has 20 airports (12 international airports)

Uzbekistan 25 (5 international airports)

Kyrgyzstan has 5 airports (2 international airports)

Tajikistan has 3 international and several local airports

Turkmenistan has 6 airports (2 of which are international)

As seen above, there is immense potential in Airport reconstruction, especially those emerging area in the B&R Initiative. Although Hong Kong International Airport (HKIA) was established only in 1998, it has come a long way of construction a world class airport (Skytrax, 2016).

Airports are complex businesses that operate in unique and evolving physical, financial and regulatory environments. Thus, monitoring industry activity based on quantifiable barometers is critical to evidence-based decision making. With well operated airport experience, advantages also lie in the integrated export service, such as baggage and ramp handling, aircraft maintenance services, air traffic control services, collaborative decision making, etc.. A success case is the AAHK and Mainland airport projects, of which all recorded a significant growth in passenger, cargo and aircraft traffic.

With the industrial advantage, we believe the rising construction demand can benefit to HK's aviation industry as a whole, and will be more attractive under an encouraged government policy.

Hong Kong also has advantage in Commercial Aviation, Recreational Flying and the Government Flying Service. Cathay Pacific Airways Limited operates four B747, 68 B777 (including 51 B777-300ER), 43 A330, eight A340 aircraft and 25 B747 freighters providing scheduled services throughout Asia, Australia, Europe, the Middle East, New Zealand, North and South America and South Africa. Hong Kong Dragon Airlines Limited operates 18 A330, 15 A320 and eight A321 aircraft to provide scheduled passenger services in the region. Air Hong Kong Limited operates scheduled all cargo services with 10 A300-600 and three B747 freighters between Hong Kong and many destinations in Asia. Hong Kong Express Airways Limited operates 12 A320 aircraft for scheduled passenger services to Japan, the Mainland, Malaysia, South Korea and Thailand. Hong Kong Airlines operates 12 A330, eight A320 aircraft, and five A330 freighters to provide scheduled passenger and cargo services to Bangladesh, India, Indonesia, Japan, Kazakhstan, the Mainland, Malaysia, Singapore, Taiwan, Thailand, Turkey and Vietnam. Metrojet Limited operates one GV and one B737BBJ aircraft for non-scheduled passenger services to cities around the world. TAG Aviation Asia Limited operates three BD700-1A11, one BD700-1A10, and three G450 aircraft for non-scheduled passenger

services to destinations worldwide. Hong Kong Airlines Corporate Jet Management Limited operates one G550 for non-scheduled passenger services to various countries. Skyshuttle (formerly Heli Express) Limited operates two AW139 helicopters for passenger charters between Hong Kong and Macau. Heliservices (Hong Kong) Limited operates two SA315B, and two MD900 helicopters for local passenger charters and aerial works. All these services can help in the development stage of B&R initiative with better management and professional support.

7.4 Great Demand in Maintenance, Repairing and Overhaul

Maintenance is a potential market in the next decade, especially in Asia regions. Generally, aircraft maintenance occupies around 10 to 15% of the total operational cost for each flight (McFadden &, Worrells, 2012).

The global commercial aircraft fleet stands at about 24,000 aircraft in 2015. Approximately one-third is operated in North America. Around 20% is in Western Europe while Eastern Europe has only 5%. Asia Pacific, China, and India combined have slightly more than a quarter of the world's fleet.

However, the composition will be changing over the next decade. The North American share is expected to experience a decline of seven percent. Oppositely, the Asia Pacific markets anticipate the highest growth rates with around 7%, which representing more opportunities for the MRO industry. Hence, Asia is driving the growth of the global of the global MRO market, and Asia will be the largest MRO market by 2023. See figure 7.4.

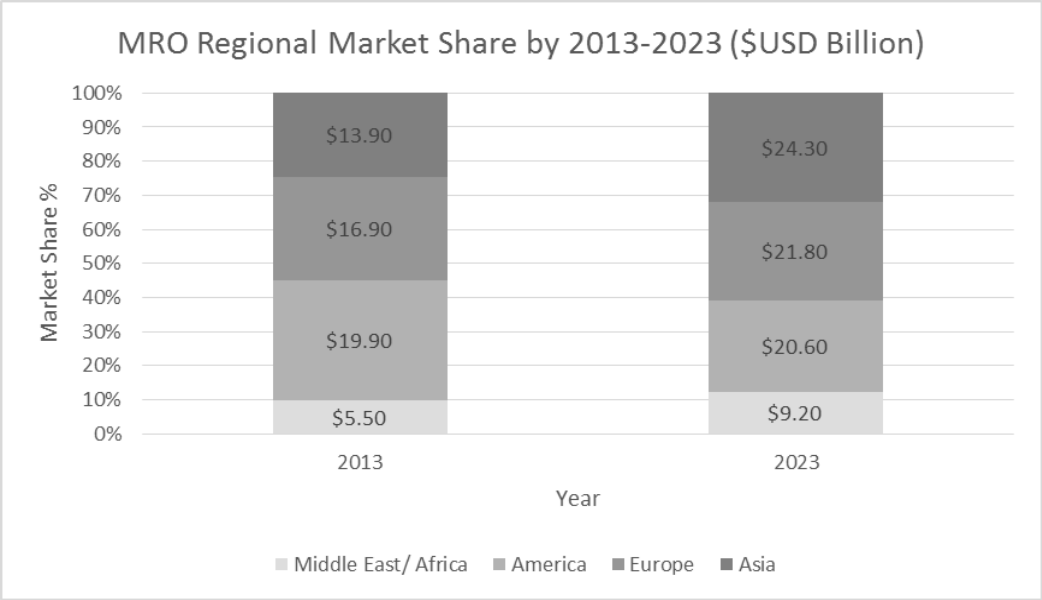


Figure 7.5 MRO Regional Market Share by 2013-2023 (TeamSAI Inc., 2013)

The bar chart below has a more detailed classification of regions. It is clear to see that the Asia Pacific region (exclude China) is leading the MRO spend growth in the world, while China is expected a 5.4 billion US dollars growth from 2014 to 2024 as a single country. Middle East is ranked third (5.4 billion USD) and Eastern Europe stands the forth place. The countries in the first four region are mainly Belt and Road countries and region. The huge MRO market is expected to be exploited and some countries has already started investing or co-operating in the Belt and Road potential MRO markets.

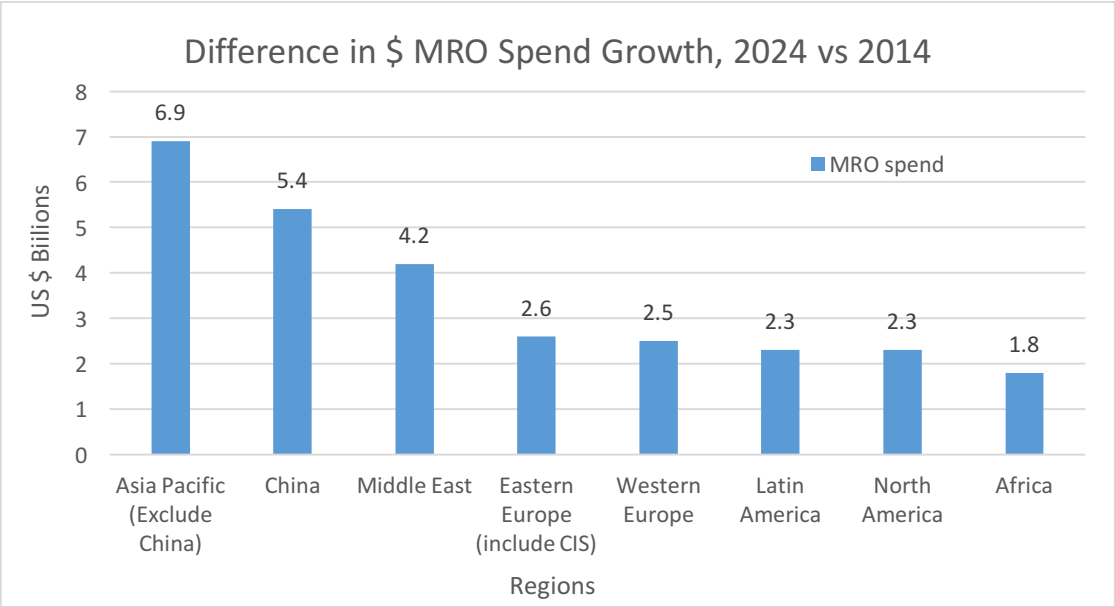


Figure 7.6 Difference in $ MRO Spend Growth, 2024 vs 2014

In the next decades, the Belt and Road MRO market will lead the demand, the potential is huge that some of the organisations or investors has started to invest and cooperate with these potential states, such as the EBRD case study mentioned in Chapter five. Hence, Hong Kong can invest Central Asian and India Subcontinent market and support the aircraft maintenance infrastructure construction in B&R countries. Simultaneously, technical support can provide to these regions as a co-operation model, sending engineering talents to B&R countries and regions to provide technical assistance or attract local and B&R students to the new established Hong Kong Civil Aviation Academy to acquire aircraft maintenance and overhaul skills and knowledge.

7.5 Project Financing, PPP and Bond Issuance

With rising demands in airport construction and service, there is ample opportunity for Hong Kong to play an essential role in the Project financing and other financial services, such as international leasing trade, settlement of RMB transactions, etc. Generally speaking, internationalisation of Renminbi offers Hong Kong a great opportunity in financial offshore centre building. Real opportunity and risk lies in new financial settlement, transactions, and financial product innovation encompassed with rising market demand.

Project finance is defined by the International Project Finance Association (IPFA) as the following: “The financing of long-term infrastructure, industrial projects and public services based upon a non-recourse or limited recourse financial structure where project debt and equity used to finance the project are paid back from the cash flow generated by the project.” (Investopedia, 2015）

Poor governance and corruption may undermine the economies of developing countries. International organisations as the World Bank could practice their fiduciary obligation to assure shareholders and stakeholders that funds are purely used for their intended purposes. This can strengthen governance and anti-corruption measures in its borrower countries. Henceforth, private

investors are more redundant in this area. To deal with the government or local business from a developing country, a combination of public credit and business credit will be optimal.

There has been a tremendous growth internationally in the use of the Public Private Partnership (PPP) approach to deliver large scale, long term facilities and services for the community. More and more governments, including many in Asia, have come to appreciate the improvements in service quality and value for money that well prepared PPP projects can achieve. PPPs are now an established part of public procurement in advanced and developing countries alike.

A PPP is a contractual arrangement involving the private sector in the delivery of public services. As the name suggests, this partnership bases itself on the responsibility for the delivery of services to be shared between the public and private sectors, both of which bring their complementary skills to the enterprise.

In order to achieve a successful PPP, a careful analysis of the long-term development objectives and risk allocation is essential. The legal and institutional framework in the country also needs to support this new model of service delivery and provide effective governance and monitoring mechanisms for PPPs. A well-drafted PPP agreement for the project should clearly allocate risks and responsibilities. Hence, transparency, good governance and anti-corruption mechanisms could guarantee investors' benefits. Advantages for Hong Kong in this area will be undoubted.

While Hong Kong is highly advanced in the planning, construction, technology, management and service integration of aviation sector, with the help of PPPs model, Hong Kong private investors from both aviation industry and financial institutions may play a mutually beneficial important role.

Another financial opportunity from Aviatic Silk Road could be the issuance of Infrastructure Bonds. Hong Kong is developing into a multi-currency capital market and a major debt market (HKTDC, 2016). After the introduction of a US dollar Clearing System in August 2000, a second foreign currency clearing system Euro Clearing was implemented in April 2003, followed by the implementation of a full-fledged Renminbi RTGS system in June 2007.

Hong Kong's debt market is relatively small compared to its banking and equity markets. However, growth of the market has been very rapid and the outstanding amount of Hong Kong dollar debt securities had increased to 63% of GDP in 2014, compared with only 8% of GDP in 1994. The construction of Aviatic Silk Road will offer an opportunity to alleviate Hong Kong's debt market again. Recently, RMB bonds had emerged as a new driving force for the development of Hong Kong's bond market. With positive efforts in the construction of Aviatic Silk Road, we may find a way with our own technological advantage in support of the development of Hong Kong as an offshore China business centre.

Hong Kong has established over 3 decades of experience in building itself as an Islamic Financial platform (HKMA, 2008). To enhance Hong Kong's role as an Islamic Finance platform, the Hong Kong government has amended tax laws for preparing an inaugural sukuk issuance under the Government Bond (GB) program with the issuance size ranging between US$500 million and US$1 billion. Amendments inclusive, the amendment bills of Inland Revenue and Stamp Duty Legislation (Alternative Bond Schemes) and Trust Law were passed in 2013; the Loans (Amendment) Bill 2014 was passed in March 2014 to allow issuance of sukuk under the Government Bond (GB) Programme. In September 2014, the Hong Kong government issued an inaugural sukuk under the GB programme with an issuance size of US$1 billion. This was the world's first Islamic bond issued by an AAA-rate government. A series of investor meetings (Roadshows) regarding potential sukuk issuance have been arranged in Asia, the Middle East, Europe and the US starting since September 2014.

Aviatic Connections with Central Asia then have triple meanings in bond issuance: industrial, regional, and religious. We can certainly contend this will be beneficiary to Hong Kong's financial centre position.

7.6 Aviation Logistics - a Potential Increment

The air transport industry can be divided into the cargo and passenger sectors. These two sectors overlap since over half of Hong Kong's airfreight is carried in the holds of passenger aircraft rather than pure freighters. There are scheduled and non-scheduled carriers operating in both the cargo and passenger sectors. In the cargo sector, there are two major cargo types, namely, express cargo and heavy-lift cargo.

Cargo markets showed solid improvement in 2014. The upturn in the global economic cycle helped bolster confidence and international trade and therefore heightened demand for air freight. This led to a 5.8% expansion in FTKs in 2014, but the freight load factor remained low, at 45.7%. Capacity, meanwhile, increased 3.7% for the year, mostly among airlines in Asia-Pacific. International trade is expected to continue growing at the same pace in 2015 as in 2014 on the back of a slightly healthier global economy. Hence, there is strong support for further expansion in FTKs.

The relationship between world trade and air cargo is looser than previously. As shown in Figure 7.6, the loss of air cargo business is attributed to alternative transport modes and the move toward on-shoring. At the top end of the air cargo market, integrators are taking an increasing share of the business. At the bottom end, there is a modal shift to less-expensive sea transport. There has also been overall weakness in world trade growth, with on-shoring and increasingly protectionist measures putting a brake on cross-border economic activity. As shown in the table, the upturn in the global economic cycle boosted trade 4% in 2014. That, in turn, resulted in positive growth in air cargo demand.

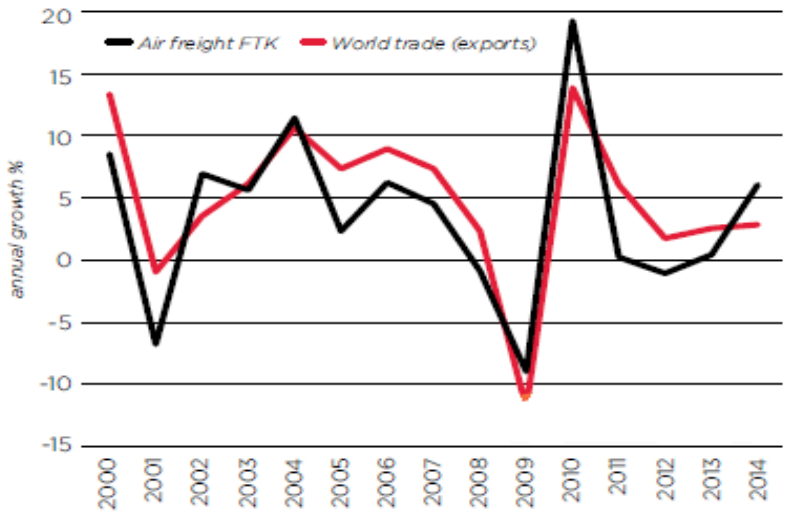


Figure 7.7 Air freight and world trade growth (IATA, 2015)

Sources: cited from IATA, *Annual Review 2015,* original data from IATA, WTO

The value of connectivity is clear while airport connections continue to rise. There are almost 52,000 scheduled airport pairs and this connectivity resulted in goods worth $6.8 trillion being carried by air in 2014. Total air freight tonnage for the year exceeded 51 million metric tons. As one of the regional hubs for Asia, Hong Kong is connected with most urban centres in Asia and half of the world's population within 5 hours of flight time. Currently, more than 100 airlines operate about 1,100 flights daily, linking the Hong Kong International Airport (HKIA) to about 190 destinations worldwide including 50 destinations on the Chinese mainland. This better connectivity, makes HKIA continued to rank as one of the world's busiest airport in terms of international cargo throughput since 2006.

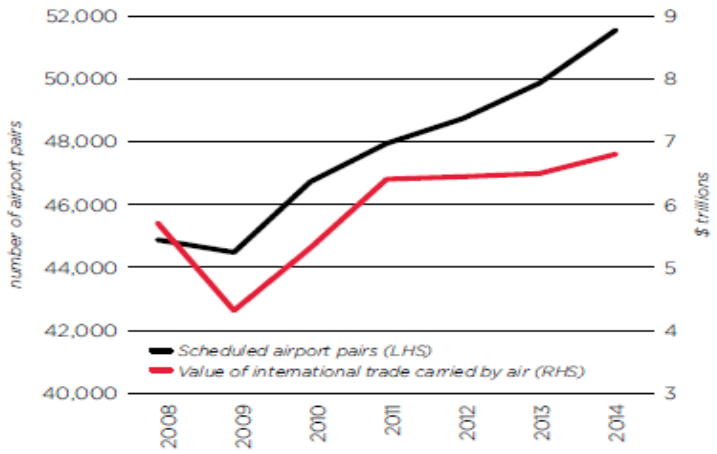


Figure 7.8 Airport connections and value of international air freight (IATA, 2015)

Sources: cited from IATA, *Annual Review 2015,* original data from SRS Analyser, WTO, Colography Group

According to aforementioned chapter, Hong Kong's trade by Air mainly serves its re-export and production of Mainland. With the increase demand in India for ITC devices, export to India went up 15.8% YOY in the first ten months of 2015. In line with the changing in the global production system and rising demand in some emerging region, countries along the Belt and Road are worthy of attention and better air connections should be planned in advance.

Table 7-6 Percentage Share of Air Cargo Value (Census and Statistics Department, 2015)

	2013	2014	2015 (Jan-Oct)
Total exports	35.2%	36.5%	37.3%
Domestic exports	27.4%	28.7%	26.7%
Re-exports	35.4%	36.6%	37.5%
Imports	39.4%	40.8%	41.3%

Air transport is becoming an increasingly important factor of Hong Kong trade. As shown in table 7-3, 37% and 41% of Hong Kong's total exports and imports were done through air transport in the first ten months of 2015. This data set was 26% and 19% in 1980 respectively. Hong Kong's efficiency in customs clearance and its status as a free port are amongst the main contributors to this rapid increase. Simple customs clearance and 24-hour operation of HKIA provides convenience for aviation logistics. In 2014, Hong Kong's total exports

by air reached HK$ 1,339 billion, up 6.8% from 2013. For imports by air in the same year, they reached HK$ 1,723 billion, up 7.8% from 2013.

Table 7-7 Air Cargo: Main Items of Hong Kong External Merchandise Trade (Census and Statistics Department 2015)

Trade by air	2014	
Major export items	HK$ billion	% share
Telecommunications equipment	385.3	28.8%
Thermionic and parts thereof	238.2	17.8%
Pearl, precious stones (finished and unfinished)	132.8	9.9%
Major import items		
Thermionic and parts thereof	701.8	40.7%
Telecommunications equipment	195.3	11.3%
Pearl, precious and semi-precious stones	171.5	10.0%

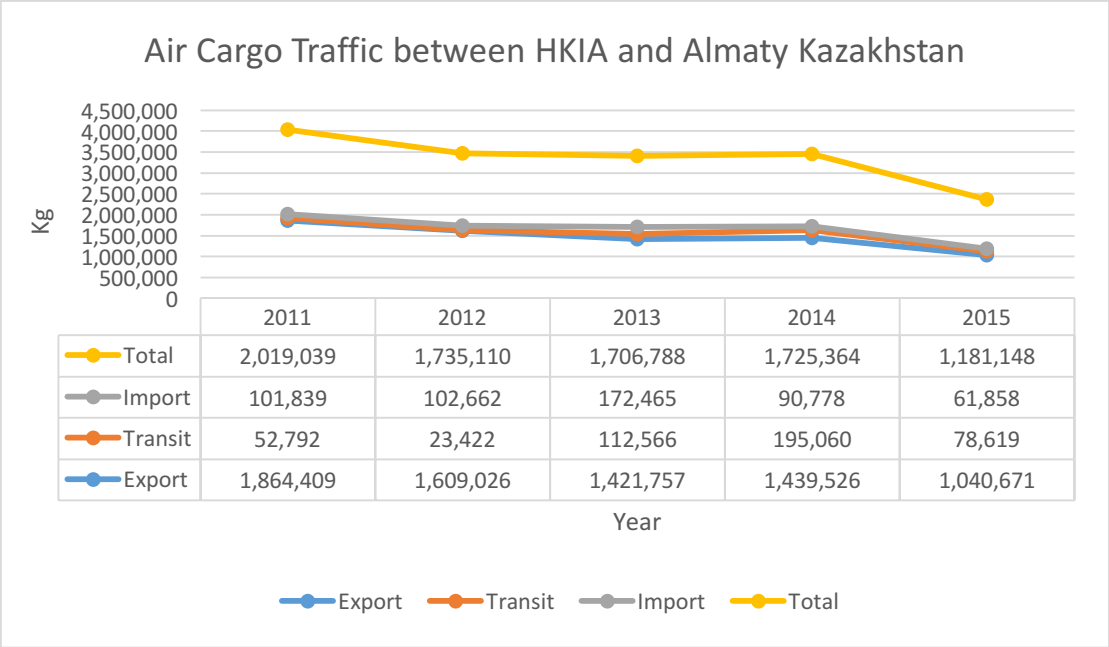
As we focus on Central Asia, these landlocked yet Eurasian-heart located continent governments have all prioritised the transport sector in their development strategies, and have laid out ambitious plans to develop their transport infrastructure and institutions across the region. Attracted by its strategic location, improved infrastructure and commitments by regional governments to build strong links to the international market, multinationals have started to tap into the opportunities offered by the resurgence of the Silk Road as an international transport route. Major investment opportunities exist in infrastructure development and modernisation, and provision of transportation and logistics services in the region.

It is not surprising that Central Asian countries not only lag behind developed countries, but also countries in Eastern Europe and East Asian. Despite its strategic location, the region as a whole is held back by a lack of truly integrated logistics providers. As an example, the railway freight delivery is unpredictable,

the ability to trace goods in transit is also limited, terminal and rail yard layout is dispersed, and domestic trucking and other services are also of poor quality. Currently, very few multimodal transportation hubs exist in the Silk Road region, but they could significantly help to reduce transport distances and time. Undoubtedly, air transport will be the most efficient one, especially when we take the demonstration effect into consideration.

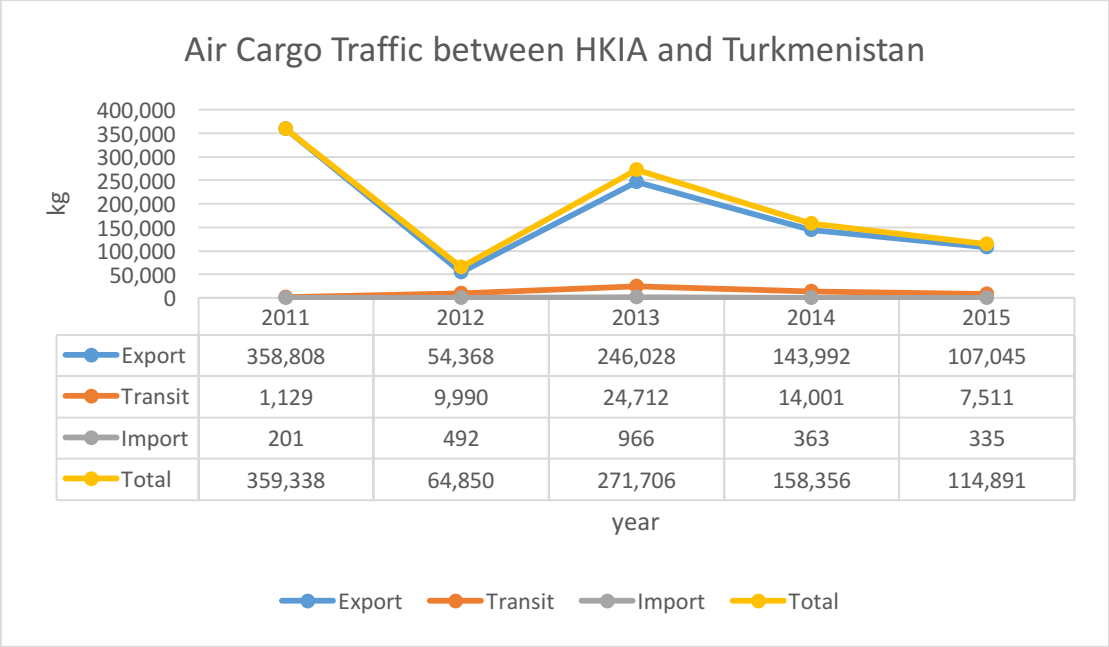
In a bid to tap onto one of the most promising international transit transportation routes, countries such as Kazakhstan and Uzbekistan are proactively targeting integrated transport and logistics service providers for investment. For example, Mr. Nursultan Nazarbayev, the President of Kazakhstan called for the construction of transport and logistics outside the country with foreign partners to meet the objective of doubling transit capacity by 2020 and increasing it tenfold by 2050. Uzbekistan also has an ambitious plan to build the country into a transit transport hub in the region (UNCATD, 2014). To meet the growing demands for professional transportation and logistics service, international investors have started to expand on this market. According to (UNCTAD, 2014), prominent investment projects in recent years include: DHL's (Germany) investment in cargo terminals in Kazakhstan; Unico Logistics' (Republic of Korea) investment in Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan; and Rhenus Logistics' (Germany) investment in Kazakhstan and Uzbekistan.

Five line charts below shows the air cargo between Hong Kong and Central Asian Hub Airports. As seen in the data, we may observe a decline during the last several years, which is an opposite direction compared to the total air cargo. It is understandable based on the development gap and inconvenient connectivity. However, there is still potential in developing aviation logistics in this strategic location, due to three reasons: 1) its strategic position; 2) its backwardness advantage; 3) positive forecasting of its economy. These combined factors offer a potential emerging demand for many business opportunities, aviation logistics, passenger flight, and other related services.



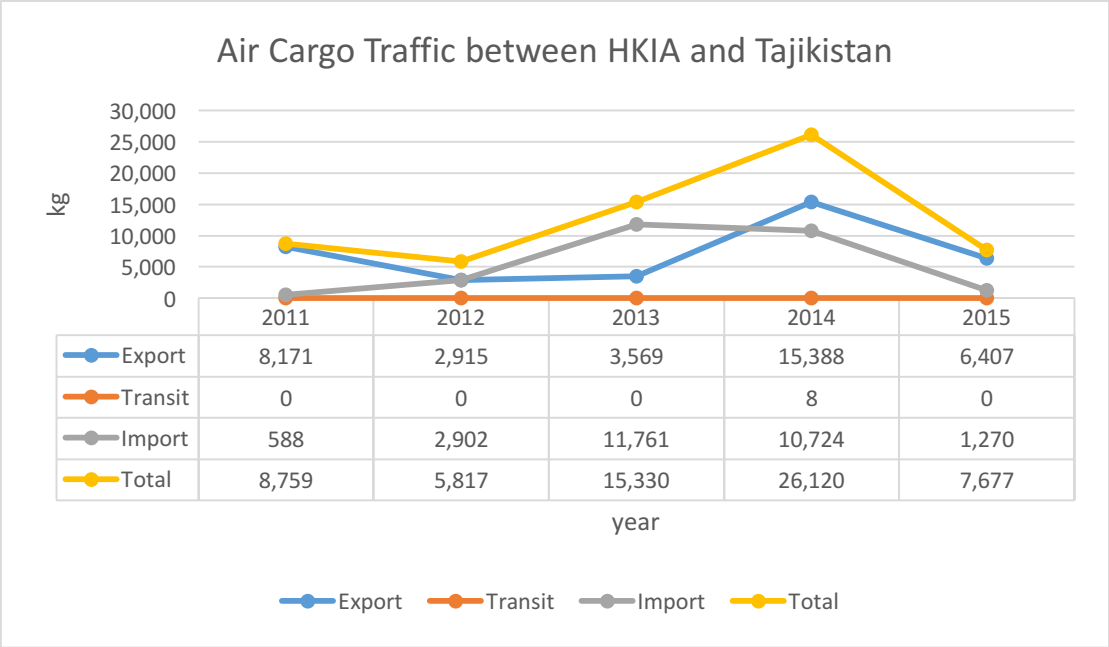
	2011	2012	2013	2014	2015
Total	2,019,039	1,735,110	1,706,788	1,725,364	1,181,148
Import	101,839	102,662	172,465	90,778	61,858
Transit	52,792	23,422	112,566	195,060	78,619
Export	1,864,409	1,609,026	1,421,757	1,439,526	1,040,671

Figure 7.9 Air Cargo between Hong Kong and Kazakhstan Airports (HACTL & AAT, 2016)



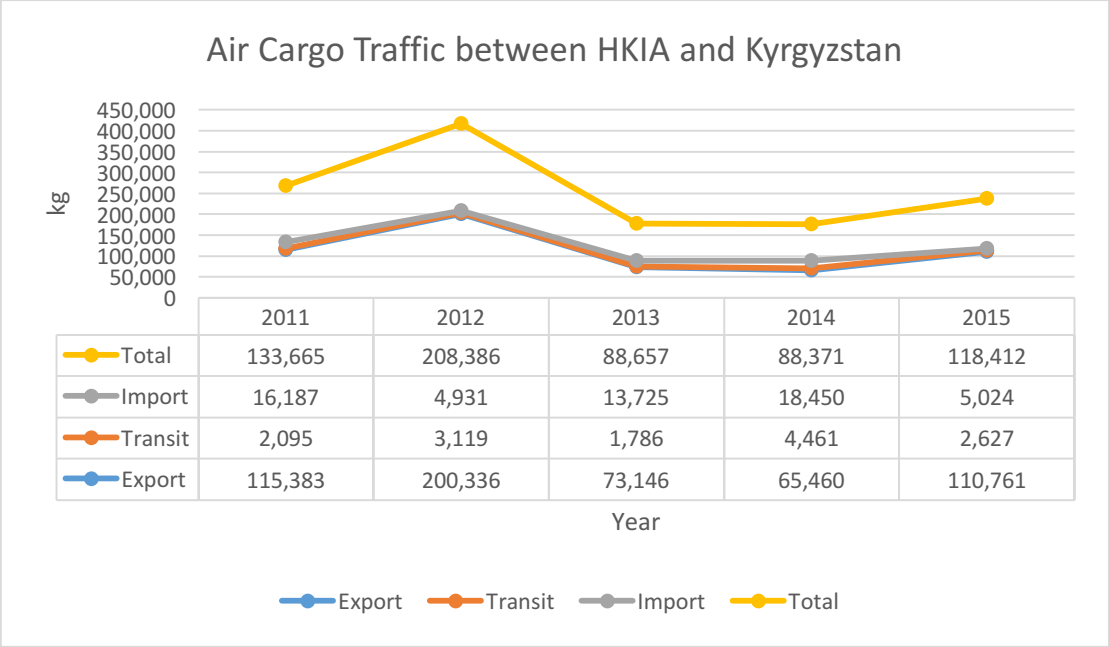
	2011	2012	2013	2014	2015
Export	358,808	54,368	246,028	143,992	107,045
Transit	1,129	9,990	24,712	14,001	7,511
Import	201	492	966	363	335
Total	359,338	64,850	271,706	158,356	114,891

Figure 7.10 Air Cargo between Hong Kong and Turkmenistan Airports (HACTL & AAT, 2016)



	2011	2012	2013	2014	2015
Export	8,171	2,915	3,569	15,388	6,407
Transit	0	0	0	8	0
Import	588	2,902	11,761	10,724	1,270
Total	8,759	5,817	15,330	26,120	7,677

Figure 7.11 Air Cargo between Hong Kong and Tajikistan Airports (HACTL & AAT, 2016)



	2011	2012	2013	2014	2015
Total	133,665	208,386	88,657	88,371	118,412
Import	16,187	4,931	13,725	18,450	5,024
Transit	2,095	3,119	1,786	4,461	2,627
Export	115,383	200,336	73,146	65,460	110,761

Figure 7.12 Air Cargo Traffic between HKIA and Kyrgyzstan Airports (HATCL, AAT, 2016)

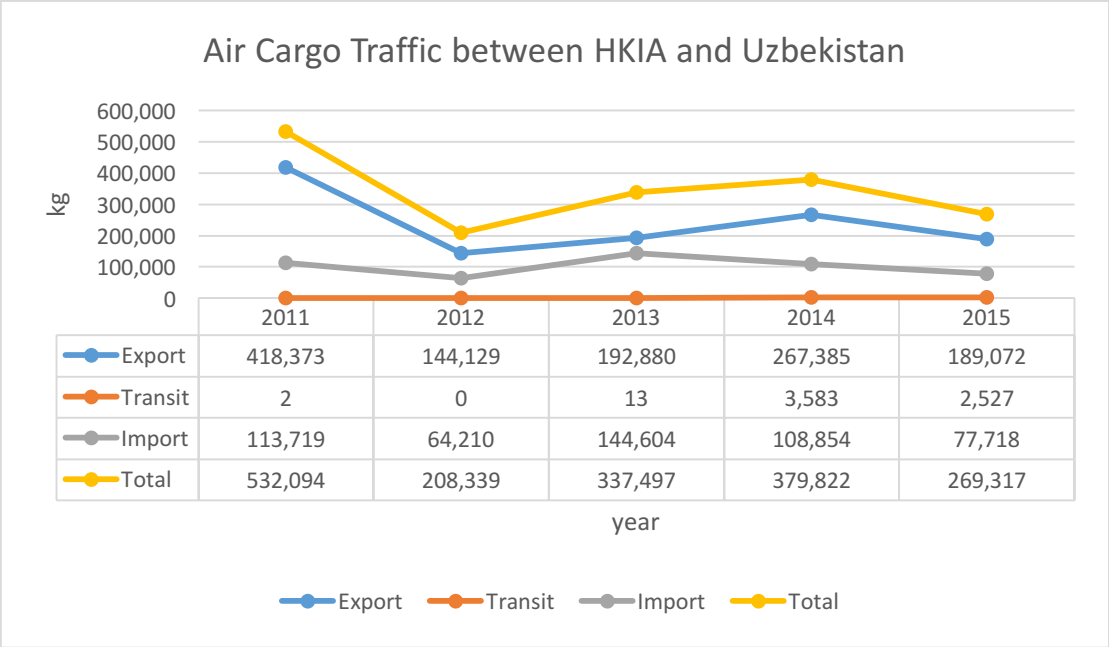


Figure 7.13 Air Cargo between Hong Kong and Uzbekistan Airports (HACTL & AAT, 2016)

7.7 Effective Policy to Ensure Sustainability

Besides the policies amended over time by Civil Aviation Department of the Government, such as the Air Navigation (Hong Kong) Order 1995,[1] Effective policies are also needed to ensure sustainable investment and competitiveness of the aviation industry. The need to ensure that mobilising investment can contribute to sustainable development should be deeply considered as a priority for most, if not all governments.

United Nations Conference on Trade and Development (UNCTAD, 2015) has published its *Investment Policy Framework for Sustainable Development* in 2015. In this report, UNCTAD proposed a new generation of investment policies. "New generation" investment policies in the UNCTAD reports, emphasis to

[1] Please take note that the Air Navigation (Hong Kong) Order 1995 (Cap. 448 sub. leg. C) (the Order) had been amended by the Air Navigation (Hong Kong) Order 1995 (Amendment) Order 2008 (L.N. 77 of 2008). The amendments came into effect on 1 January 2009.
The Order, as amended by L.N. 77 of 2008, the official title of the Order remains to be "Air Navigation (Hong Kong) Order 1995", is available from the Bilingual Laws Information System (BLIS) in the website of the Department of Justice. It can be accessed from the website: http://www.legislation.gov.hk/eng/home.htm.

“place inclusive growth and sustainable development at the heart of efforts to attract and benefit from investment. They address specific investment policy challenges at the national and international levels. At the national level, these include integrating investment policy into development strategy, incorporating sustainable development objectives in investment policy and ensuring investment policy relevance and effectiveness. At the international level, there is a need to strengthen the development dimension of international investment agreements (IIAs), balance the rights and obligations of States and investors, and manage the systemic complexity of the IIA regime.” This will be same true for Hong Kong’s policy making.

Aviation development refers to a wide range of infrastructure, besides airport construction mentioned above, human resources, training, and related capacity-building activities also same important to the industry. The ultimate goal of these efforts is to realise a safe and efficient air transport foundation, to improve and upgrade the facilities and management, and to achieve sustainability in a given State. As discussed earlier is this report, investment in Aviation industry is different from others, Hong Kong should work well with international organisations, not only regional organisations like ASEAN and SCO, but also specialised aviation organisations or associations as IATA and ICAO, Specialised international organisations practice more important roles in the industry with global recognised standard. For example, the UN specialised agency, the International Civil Aviation Organisation (ICAO), once ICAO-compliant air transport connectivity is established, and it begins to support expanded tourism and many other local and regional socio-economic development goals for States and Regions. Opportunities for local citizens, businesses and producers to access foreign supplies and markets begin to multiply significantly, and further important benefits for governments and societies are realised through improvements in medical transport, emergency response and cultural exchange, and so on.

With the new UN Sustainable Development Goals (SDGs), governments

should work with specialised organisations by not only serving an essential coordinating role, but also by providing planning and monitoring tools to develop practical and effective business cases supporting dependable socio-economic returns on investment.

A safe, secure and sustainable global aviation system, based on the effective implementation of global standards and which leaves no country behind, can provide the nations of the world with efficient access to global markets. This global view of a sustainable aviation system will be of paramount importance as Hong Kong government deals with other economies. Better connectivity with countries along the Belt and Road, will aid in the increase in tourism and trade, thereby generating numerous economic benefits bilaterally, supporting economic development, job creation and resource mobilisation.

Besides the above mentioned macro level benefits, effective policy also ensure the industrial competitiveness of Aviation in Hong Kong. As analysis in Chapter 6, Hong Kong has obviously advantage in Aviation industry, such as airlines management, airport management and MRO.

For an economic entity, besides innovation, there are economies of scale and economies of scope to consider. Under constraint of anti-trust act, more and more enterprises from developed markets are prudent to their business expansion, both vertically and horizontally. Then make innovation more crucial, for both one enterprise and the whole industry.

Successful innovation is the most important way to maintain an industry's advantage. But successful innovation relies not only on enterprises. According to innovation system theory, innovation and technology development are results of a complex set of relationships among actors in the system, which includes enterprises, universities and government research institutes. The National Innovation System is the flow of technology and information among people,

enterprises and institutions: enterprises realise technology and management, and discover bottle neck for further development; institutions supported by government contemplate and test their findings to provide solutions for the industry development; universities train students for the industry, technological and administrative. Without effective government policy, fluent flow of technology and information among education, enterprises and research institutions is impossible, therefore core technological advantage could be easily loss to the rivals, or flow out with production process.

Besides industrial leaders introduced in Chapter 6, Hong Kong also has some other advantage services, such as The Hong Kong Business Aviation Centre (BAC), and The Hong Kong Aviation Club.

The Hong Kong Business Aviation Centre (BAC) is located within the confines of the airport and has its own terminal and facilities. It provides a full range of services for executive aircraft, including ground handling, baggage handling, fueling, security and flight planning. Designated spaces are also provided at the BAC for private aircraft. Hangar 3 was commissioned in May 2012 to meet growing business needs. The Hong Kong Aviation Club conducts recreational flying in Hong Kong, undertakes flying training for private pilots and provides facilities for private owners. The Government Flying Service provides short and long range search and rescue services, police support, medical evacuation as well as flights for other Government purposes. The fleet comprises three AS332, four EC155 helicopters, one Z-242L, one Diamond DA 42 NG and two BAe 4100 aircraft.

May serve growing business needs along the Belt and Road countries directly, or help universities to train their local professional personnels in Hong Kong.

Advantage field of Hong Kong enterprises in Central Asia and hence other developing countries along the Belt and Road, besides the above mentioned

aviation industry, should also include education and training, real estate, catering industry, tourism and financial services industry. In developing countries, unstable government policy and fickle administrative, sometimes unfriendly, could be a common issue. This unwelcome reality makes all business cooperation with these countries are high related to the host government; hence government relationship between local and host will be necessary and fatal.

For co-operation in the areas of professional services, those accompany aviation outbound, individual professional's willingness for providing cross-border service, effective communication between the two governments, and mutual recognition of qualification, as well as the transparent and efficiency of the host countries' administrative departments, are all influential factors. Hong Kong government will be far-sighted if it could lay out an anchor to whirlwind, to build a good communication platform to enhance the future interests.

A good communication platform for Hong Kong Government is CEPA (The Mainland-Hong Kong Closer Economic Partnership Arrangement). Within aviation industry, CEPA benefits some supporting services.

Since the implementation of the Regulations on Foreign Investment in the Civil Aviation Industry in August 2002, China has been allowing foreign companies to invest, through joint ventures, in the construction of runways, passenger terminals and cargo terminals, as well as in other supporting services such as ground services, aircraft maintenance, air catering, hotels and restaurants, and aviation fuel supply. Under China's WTO commitment, foreign services providers are permitted to operate minority-owned joint venture aircraft and maintenance services enterprises. Foreign investment in air traffic control remains off-limits.

So it is understandable that CEPA just benefit limited Hong Kong services

suppliers (HKSS) only (HKTDC, 2014). Under CEPA, Hong Kong services suppliers (HKSS) are allowed to establish contractual joint venture, equity joint venture or wholly-owned operations to provide airport management services and airport management training and consultation services for small and medium airports. Moreover, they are also allowed to set up wholly-owned operations to provide 7 types of ground services. However, the period of validity of the contract for airport management services should not exceed 20 years, which is shorter than the 30-year limit stipulated in the aforementioned Regulations regarding foreign invested joint ventures.

On 18 December 2014, the Agreement between the Mainland and Hong Kong on Achieving Basic Liberalisation of Trade in Services in Guangdong (i.e. the Guangdong Agreement) was signed for implementation from March 2015. Under the Agreement, Hong Kong airlines are allowed to sell air tickets and hotel packages in their Guangdong offices or through their official websites directly, without engaging mainland sales agents. In November 2015, the Chinese mainland and Hong Kong signed the Agreement on Trade in Services, extending the geographical coverage to the whole mainland, which will be implemented from June 2016.

In face of the construction of Aviatic Silk Road, CEPA should deepen the bilateral aviation cooperation. According to the Civil Aviation Department of HKSAR, the Hong Kong Air Traffic Management Division (HKATMD) is responsible for the provision of air traffic control service, flight information service and alerting service within the Hong Kong Flight Information Region (FIR) as assigned by the International Civil Aviation Organization (ICAO). The airspace covers a total area of 276,000 square kilometres extending over the South China Sea.

At present, the HKATMD handles more than 370 thousand (international and local) aircraft movements which operated into and out of Hong Kong International Airport, and more than 220 thousand movements which transited

the FIR, including traffic into & out of Macao International Airport every year. It might be the right time to work on further cooperation between Hong Kong and other PRD main airports and deepen the cooperation in aviation industry under CEPA. A more liberalised aviation transport cooperation between the Mainland and Hong Kong, will not only benefit the two sides, but also for further cooperation between Hong Kong and other nations like ASEAN countries. Hence, it may helpful to the South China Sea disputes. Furthermore, the liberalisation of aviation should be put on the agenda one day if China determines to play its role in the new pattern forming of world economy. For a small open economy like Hong Kong, freedom rights also necessary to consolidate its own advantage in aviation.

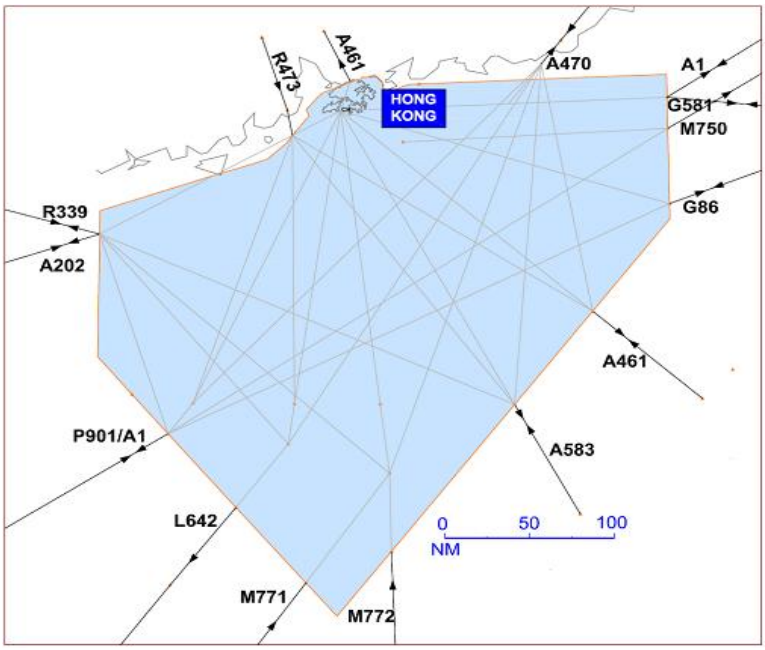


Figure 7.14 The Hong Kong Flight Information Region (area in blue) with airways and routes (CAD, 2016)

Government's support is essential to Hong Kong's participation in Belt and Road and the Aviatic Silk Road construction. The Hong Kong Government decided to establish the Civil Aviation Academy to foster local and regional aviation talents (Policy Address, 2016). Talent is the most important factor in maintaining sustainable development. Hong Kong can use scholarship and fund to attract high-qualified and professional aviation personnel to teach at the start-up Civil Aviation Academy. At the same time, attracting B&R students to study aviation knowledge and management experience in Hong Kong. In

contrast, Hong Kong can also output talents like developed countries, sending local aviation personnel to B&R countries or regions, in order to expand influence and visibility of the Hong Kong aviation industry along the Belt and Road.

In addition, the government should support the aviation enterprises and tourism enterprises to seek for opportunities among the Belt and Road. More double taxation relief agreements between Hong Kong and B&R countries signed, to ensure the security and convenience for business cooperation.

8. Conclusion

All in all, upon analysing the different aspects of Aviatic Silk Road, this research paper hereby concludes that the Belt and Road Initiative provides a very precious opportunity for Hong Kong to participate in the establishment of B&R countries and regions.

As discussed, many major airports and airlines among the B&R countries and regions, Asia Pacific, Middle East, and Europe have better development growth as compared to other regions. Great annual growth is highly anticipated for the Indian Subcontinent. On the other hand, Central and Western Asian countries have enormous development potential, especially in their aviation infrastructure. As such, we can expect resilience in capital investments into various aspects of the aviation sector such as logistics and maintenance.

Another keen observation is that most of the energetic air carriers along the Belt and Road are operational in international aviation hubs. Nonetheless, it is no surprise that strong performing airports have very dense traffic, largely attributed to their successful home base carriers. As carriers thrive to capitalise on the growth in Belt and Road routes, the increased connectivity supports many Belt and Road economies. As more and more strategic alliances position themselves to take advantage of the new Belt and Road routes, we can expect growth in investment capital in various aspects of the aviation sector such as infrastructure, logistics and maintenance. In this case, establishing international aviation hubs in the populous Belt and Road regions can indeed, enhance the connectivity of Aviatic Silk Road.

On the other hand, Hong Kong has strong competitive advantages in the aviation industry. Hong Kong possesses excellent efficiency in cargo operating; the Hong Kong Airport is among the best in the world in terms of air cargo throughput and passenger traffic. Furthermore, the rich experience in aircraft maintenance and overhaul allows Hong Kong to participate and invest in Belt

and Road potential MRO markets. In the management aspect, Hong Kong airport and air carriers can co-operate more with B&R airports and airlines through expanding its management market from Mainland China to these foreign countries. Lastly, Hong Kong is also highly developed in the fields of capital and financial management.

Taking these strengths into considering, Hong Kong is poised to play a vital role in the Aviatic Silk Road. With her experience in the aviation sector, Hong Kong can position herself to leverage on the growth of B&R countries and regions aviation industry. The key factor lies in Hong Kong's ability to outsource capital and knowledge in order to accelerate the development of B&R aviation sector.

The co-operation between Thai Airways and SAS is the most successful one, as Thai Airways has become one of the most influential airlines in the AESEAN countries. On the other hand, EBRD and Korean Air have started co-operating and investing in the Central Asia countries. This strategic move signals confidence in investing capital in the B&R countries and regions. The many strategic investments by airlines suggest growth potential in the aviation sector in the B&R countries and there is an invaluable need to forecast the passenger and air cargo demand in order to better justify the prospective investment.

The infrastructure market of B&R countries depicts a heavy demand for capital and technical expertise. As a financial centre of the Asia Pacific region, Hong Kong is renowned for its transparency, government structure and anti-corruption. Therefore, Hong Kong can utilise this platform to invest or issue infrastructure bonds for B&R countries, if necessary. In the meantime, Hong Kong can continue to rally support from various stakeholders to accelerate the progress of Aviatic Silk Road formation.

Nonetheless, Hong Kong may face some difficulties in the process of the Aviatic Silk Road establishment. Firstly, the opening degree of visa of Central Asian

countries are low, it is inconvenient for travellers to visit. Secondly, the freedom rights of the air need to be negotiated for increasing the opening level. Thirdly, the high political and business operational risks among some of the B&R regions do not allow investor to make great amount of investment in these countries.

For the first step, Hong Kong can co-operate with the Central government and international organisations like SCO or ASEAN, to promote Hong Kong enterprises to invest and co-operate with B&R countries and regions. As seen previously, “Open Skies” has boosted the development of the aviation sector. In addition, Hong Kong may try to research development projects in potential tourism market of B&R countries, while the promote Hong Kong's tourism in B&R countries, coupled with the airline routes and negotiations between government for opening business and leisure travellers preferential visa, to reduce the inconvenience of visa for tourism to attract B&R tourists to visit Hong Kong and more Hong Kong citizens visit B&R cities.

Hong Kong airline companies can try to seek more air freight demand to establish the Belt and Road air cargo network. More and more citizens will gradually know more about B&R countries through business contacts. Connecting B&R countries and regions and Hong Kong together through the Aviatic Silk Road, consolidate the status of Hong Kong as an international aviation hub, but also for the future application of the air freedom rights between Hong Kong and B&R countries and regions.

However, Hong Kong should seize the opportunity to expand its aviation sector globally. Utilising the rich aviation management experience and governmental structure advantage, they can invest in the construction of B&R airports and airlines. Airport Authority Hong Kong and air logistics enterprises can also try to expand into B&R regions, providing airport management, airport construction and other advisory services for the B&R airport, and utilise efficient cargo handling experience provide consultancy services for the B&R airport cargo

station to while invest in or cooperate with B&R air cargo terminals, in order to establish the Aviatic Silk Road freight network.

This has the potential to transform the structure of the aviation industry in Hong Kong from a pure air transport logistics industry to a management outsourcing aviation industry. The increased connectivity of Aviatic Silk Road will also support Belt and Road regions' economic, tourism, business and cultural communication and in turn, create more development and employment opportunities for the future of Hong Kong.

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Appendix

Appendix A - Interview Questions on AVIATIC SILK ROAD

Interview Questions on AVIATIC SILK ROAD

This survey is conducted to investigate the foreseeing of the Aviatic Silk Road. Our questions are mainly concentrated in the evaluation of the current situation and prospects of the Aviatic Silk Road. Your opinions on the feasibility of the proposed construction of the Aviatic Silk Road; the role and advantages of Hong Kong and its aviation industry; the importance of Central Asia in the Aviatic Silk Road will be highly valuable to our research. Of course, these questions are semi-opened. If you are considering some more questions other than these, we will be very interested in and grateful to hear any objective thinking and good advice from you.

Attachment 1: Interview questions

1 · Your company/department information

2 · In your opinion, is the "Aviatic Silk Road" the same important as other infrastructure construction in the Belt and Road initiative?

a) How important is "Aviatic Silk Road"?

b) "Aviatic Silk Road" construction needs what kinds of supports?

c) In the forming of "Aviatic Silk Road", the most important initiative might come from?

3 ·In your opinion, based on the existing flights, what the future layout of "Aviatic Silk Road" should be? What are the most profitable potential items?

a) the most promising regions and cities for the "Aviatic Silk Road"?

b) the potential active participants in the construction?

c) the best potential routes?

d) the most capable agents in the construction (international organizations, such as SCO, national and local governments, investors, key players from the aviation industry)?

4 · What do you think of the pros and cons of Hong Kong's aviation industry in the construction of the "Aviatic Silk Road" in the future?

a) Passenger, freight?

b) Airlines, business operations?

c) Shipping Management?

d) Airport planning, construction, operation and management?

5 · According to the flights information, HK is lack of connectivity with Central and Western Asia. Could you share some forecasting based on your expertise with us?

6 · In your opinion, to promote "Aviatic Silk Road", the main difficulties and obstacles will be political, economic or technical? What are they?

Attachment 2：Trustee interview institutions and personnel information

This research is a cooperative project, the main participating institutions including the Silk Road Economic Development Research Centre and the Hong Kong Polytechnic University and the China Business Centre.

1，Research Organisation：

China Business Centre is an affiliated research and training Institute of Hong Kong Polytechnic University. The centre's studies are mainly focusing on policy and application research, as well as Mainland China and the relevant overseas economic system. In terms of study and training, the Centre has set up extensive cooperation network in Mainland China and East Asia regions, and enjoy a certain reputation.

China Business Centre undertakes multiple research subject for Hong Kong SAR Government Central Policy Group. Also undertake research for China's Ministry of Commerce as project consultant, including the cross-strait economic and trade research, the trend of the foreign trade of Taiwan, and research related to policy suggestions for the Central Government. In addition, the Centre also undertakes multiple research subject for the Mainland and overseas government bodies, and China, Hong Kong and foreign enterprises.

Silk Road Economic Development Research Centre was established by a group of Silk Road seasoned academics, specialists and businessmen are intrigued by topics concerning the B&R. They have gathered together and found the Silk Road Economic Development Research Centre for study purpose. On top of that, members also wish to share with the public about their perspectives on the subject. The goal of the centre is not only to examine the effect and future development of the B&R, but also to give suggestions on how Hong Kong can fit into the B&R initiative, from beginning to future.

2，Research Personnel：

Mr. Joseph Chan Nap-kee, Chairman of Silk Road Economic Development Research Centre, Vice Chairman of Hong Kong Energy and Minerals United Associations, Principal Director and Founding Partner of Oriental Patron, and Chairman of Kaisun Energy Group Ltd. Holds a Master's degree of International Marketing and a Diploma of Chinese Economic and Trade Investment.

Mr. Chan worked for a major international bank prior to co-founding Oriental Patron and has more than 20 years of experience in banking, corporate finance and the securities industry. The distribution network and information channels Mr. Chan possesses include eminent global fund managers and financial institutions. He maintains a sustainable relationship between listing companies and corporate and institutional investors.

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Wang Yuqing, Ph.D., a researcher of the Hong Kong Polytechnic University China Business Centre. Earned PhD Sociology at University of Queensland. Worked at Renmin University of China, Chinese Electronic Information Industry Development Institute of the Ministry of Information Industry, China Petrochemical Corporation Management Cadre College and other units, and joined the research team of CBC in early 2007. Has been involved in research and presided over China Ministry of Information Industry, Chinese Ministry of Commerce, Chinese Education Department, the National Development and Reform Commission, the National Social Science Fund, the National Natural Science Funds entrusted. Has been participated in a number of research since joined the Centre and published a number of achievements.

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Dr. Simon-Hoey Lee earned his PhD. in Law from Tsinghua University, Master in Development Studies from SOAS of University of London, Master in Government and Public Administration from Chinese University of Hong Kong, BA from HKBU and LLB from Tsinghua. Dr. Lee's research interests include Hong Kong Basic Law, Chinese legal system, constitutional law and international public law. He is also Advisor to the Program on International Financial Systems, Harvard Law School, Visiting Fellow at the CCPL (2013), Faculty of Law HKU, Part-time Researcher, Law School Tsinghua University.

Dr. Lee is now a member for the Basic Law Promotion Steering Committee and Curriculum Development Council of the HKSAR Government. Dr. Lee was Director of Strategy Management Department at China Resources, responsible for company oversea investment and related research. Dr. Lee has worked in poverty-stricken areas of Guizhou Province and is a Youth Member of the Central Policy Unit of the HKSAR Government and Director on Legal Research Project of the Hong Kong Constitutional Review at Tsinghua University.

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Appendix B – Hong Kong Bilateral Air Service Agreements Information

Countries	Date of Entry into Force	Gazette No.	Gazette Date
Australia	15.9.1993	Special Supplement No. 5 to Gazette No. 37 Vol. CXXXV	17.9.1993
Austria	1.12.1998	Special Supplement No. 5 to Gazette No. 11 Vol.3	19.3.1999
Bahrain	3.3.1998	Special Supplement No. 5 to Gazette No. 17 Vol. 2	24.4.1998
Bangladesh	24.10.2000	Special Supplement No. 5 to Gazette No. 27 Vol. 5	6.7.2001
Barbados	18.6.2015	Not yet gazetted	-
Belarus (Note 1)	3.12.1999	Special Supplement No. 5 to Gazette No. 8 Vol. 4	25.2.2000
Belgium	1.7.2003	Special Supplement No. 5 to Gazette No. 49 Vol. 2	4.12.1998
Brazil	16.3.1994	Special Supplement No. 5 to Gazette No. 38 Vol. CXXXIII	20.9.1991
Brunei	9.1.1989	Special Supplement No. 5 to Gazette No. 4 Vol. CXXXI	27.1.1989
Cambodia	17.1.2000	Special Supplement No. 5 to Gazette No. 52 Vol. 4	29.12.2000
Canada	24.6.1988	Special Supplement No. 5 to Gazette No. 45 Vol. CXXX	11.11.1988
		Amendment to the Agreement: Special Supplement No. 5 to Gazette No. 36 Vol. CXXXVIII	6.9.1996
Croatia	30.1.2003	Special Supplement No. 5 to Gazette No. 35 Vol. 8	27.8.2004
Czech Repulic	26.4.2002	Special Supplement No. 5 to Gazette No. 23 Vol. 6	7.6.2002
Denmark	14.3.2000	Special Supplement No. 5 to Gazette No. 7 Vol. 5	16.2.2001
Ethiopia	14.7.2009	Special Supplement No. 5 to Gazette No. 9 Vol. 15	4.3.2011
Fiji	3.12.2009	Not yet gazetted	-
Finland	1.4.2000	Special Supplement No. 5 to Gazette No. 36 Vol. 4	8.9.2000
France	10.5.1991	Special Supplement No. 5 to Gazette No. 36 Vol. CXXXII	7.9.1990
Germany	23.6.1997	Special Supplement No. 5 to Gazette No. 19 Vol. CXXXVII	12.5.1995
		Amendment to the Agreement: Special Supplement No. 5 to Gazette No. 21 Vol. CXXXIX	23.5.1997
Hungary	19.11.2001	Special Supplement No. 5 to Gazette No.38 Vol. 5	21.9.2001
Iceland	29.10.2004	Not yet gazetted	-
India	10.10.1996	Special Supplement No. 5 to Gazette No. 45 Vol. CXXXVIII	8.11.1996
Indonesia	27.6.1997	Special Supplement No. 5 to Gazette No. 24 Vol. CXXXIX	13.6.1997
Israel	8.9.1998	Special Supplement No. 5 to Gazette No. 44 Vol. 2	30.10.1998
Italy	19.1.1998	Special Supplement No. 5 to Gazette No. 45 Vol.	8.11.1996

		CXXXVIII	
Japan	18.6.1997	Special Supplement No. 5 to Gazette No. 12 Vol. CXXXIX	21.3.1997
Jordan	28.8.2004	Special Supplement No. 5 to Gazette No.31 Vol. 13	31.7.2009
Kenya	21.5.2004	Special Supplement No. 5 to Gazette No.36 Vol. 13	4.9.2009
Korea, R.O.	9.7.1996	Special Supplement No. 5 to Gazette No. 20 Vol. CXXXVIII	17.5.1996
Kuwait	1.3.2013	Special Supplement No. 5 to Gazette No. 33 Vol. 13	14.8.2009
Kyrgyz*	15.7.1999	Special Supplement No. 5 to Gazette No. 31 Vol. 3	6.8.1999
Laos	9.9.2009	Not yet gazetted	-
Lithuania*	7.7.2000	Special Supplement No. 5 to Gazette No. 29 Vol. 2	17.7.1998
Luxembourg	6.6.2003	Special Supplement No. 5 to Gazette No. 3 Vol. 3	12.2.1999
Malaysia	4.3.1991	Special Supplement No. 5 to Gazette No. 10 Vol. CXXXIII	8.3.1991
Maldives *	18.5.1998	Special Supplement No. 5 to Gazette No. 23 Vol.2	5.6.1998
Maldives	11.6.2009	Special Supplement No. 5 to Gazette No. 51 Vol.14	24.12.2010
Mauritius	3.7.1998	Special Supplement No. 5 to Gazette No. 9 Vol.3	5.3.1999
Mexico	1.5.2008	Special Supplement No. 5 to Gazette No. 4 Vol.14	29.1.2010
Mongolia	24.5.2000	Special Supplement No. 5 to Gazette No. 35 Vol. 4	1.9.2000
Myanmar	11.6.1997	Special Supplement No. 5 to Gazette No. 13 Vol. CXXXIX	27.3.1997
Nepal	29.10.1998	Special Supplement No. 5 to Gazette No. 9 Vol. 3	5.3.1999
Netherlands	26.6.1987	Special Supplement No. 5 to Gazette No. 26 Vol. CXXIX	26.6.1987
		Amendment to the Agreement: Special Supplement No. 5 to Gazette No. 2 Vol. CXXXIX	10.1.1997
New Zealand	22.2.1991	Special Supplement No. 5 to Gazette No. 9 Vol. CXXXIII	1.3.1991
		Amendment to the Agreement of 22.2.91 : Special Supplement No. 5 to Gazette No. 34 Vol. CXXXVIII	23.8.1996
Norway	2.6.2000	Special Supplement No. 5 to Gazette No. 8 Vol. 5	23.2.2001
Oman	26.3.1999	Special Supplement No. 5 to Gazette No. 12 Vol. 3	26.3.1999
Pakistan	17.2.1998	Special Supplement No. 5 to Gazette No. 12 Vol. 2	20.3.1998
Papua New Guinea	29.1.2014	Special Supplement No. 5 to Gazette No. 46 Vol. 2	13.11.1998
Philippines	26.6.1997	Special Supplement No. 5 to Gazette No. 23 Vol. CXXXIX	6.6.1997
Qatar	16.12.2013	Special Supplement No. 5 to Gazette No. 13 Vol. 3	1.4.1999
Russia	1.6.2010	Special Supplement No. 5 to Gazette No. 30 Vol. 3.	30.7.1999
Saudi Arabia	27.6.2006	Special Supplement No. 5 to Gazette No. 13 Vol. 12.	28.3.2008
Seychelles	24.6.2013	Not yet gazetted	-
Singapore	30.4.1996	Special Supplement No. 5 to Gazette No. 20 Vol. CXXXVIII	17.5.1996

South Africa	18.3.2000	Special Supplement No. 5 to Gazette No. 37 Vol. 4	15.9.2000
Sri Lanka	24.2.1993	Special Supplement No. 5 to Gazette No. 8 Vol. CXXXV	26.2.1993
Sweden	14.3.2000	Special Supplement No. 5 to Gazette No.9 Vol. 5	2.3.2001
Switzerland	1.2.1993	Special Supplement No. 5 to Gazette No. 6 Vol. CXXX	12.2.1988
Thailand	12.6.1997	Special Supplement No. 5 to Gazette No. 15 Vol. CXXXIX	11.4.1997
Turkey	20.4.2001	Special Supplement No. 5 to Gazette No. 43 Vol. 1	23.10.1998
Ukraine*	31.1.2002	Special Supplement No. 5 to Gazette No. 10 Vol. 6	8.3.2002
United Arab Emirates	29.4.1998	Special Supplement No. 5 to Gazette No. 3 Vol. 3	22.1.1999
United Kingdom	25.7.1997	Special Supplement No. 5 to Gazette No. 6 Vol. 1	8.8.1997
United States of America	7.4.1997	Special Supplement No. 5 to Gazette No. 18 Vol. CXXXIX	2.5.1997
Vietnam	10.9.1999	Special Supplement No. 5 to Gazette No.50 Vol. 4	15.12.2000

Appendix C - Beijing Capital International Airport Destinations List

Airlines	Belt and Road Destinations
Aeroflot	Moscow
Aurora	Khabarovsk
Air Astana	Almaty, Astana
AirAsia X	Kuala Lumpur
Azerbaijan Airlines	Baku
Cathay Pacific	Hong Kong
Cebu Pacific	Manila
China Airlines	Kaohsiung, Taipei–Taoyuan
EgyptAir	Cairo
El Al	Tel Aviv
Emirates Airlines	Dubai
Etihad Airways	Abu Dhabi, Nagoya
EVA Air	Taipei-Taoyuan
Garuda Indonesia	Denpasar/Bali, Jakarta
Hong Kong Airlines	Hong Kong
Iran Air	Tehran
Iraqi Airways	Baghdad, Basra
LOT Polish Airlines	Warsaw
Mahan Air	Tehran-Imam Khomeini
Malaysia Airlines	Kuala Lumpur
Mega Maldives	Male, Tokyo Narita
MIAT Mongolian Airlines	Ulaanbaatar
NordStar Airlines	Krasnoyarsk-Yemelyanovo
Pakistan International Airlines	Islamabad, Karachi, Lahore, Tokyo-Narita
Philippine Airlines	Kalibo, Manila
Qatar Airways	Doha
S7 Airlines	Irkutsk, Khabarovsk, Krasnoyarsk–Yemelyanovo, Novosibirsk, Ulan-Ude, Vladivostok, Yakutsk
Singapore Airlines	Singapore

SriLankan Airlines	Colombo
Tajik Air	Dushanbe
Thai Airways	Bangkok-Suvarnabhumi
Turkmenistan Airlines	Ashgabat
Turkish Airlines	Istanbul Ataturk
Ukraine International Airlines	Kiev
Ural Airlines	Bangkok–Suvarnabhumi, St Petersburg (begins 30 May 2016), Yekaterinburg
Uzbekistan Airways	Tashkent
Vietnam Airlines	Hanoi, Nha Trang