Asia-Pacific Economic Cooperation

Develop Air Connectivity in the APEC Region

MALAYSIA

Tourism Working Group | October 2016

APEC Project: TWG 01 2014A

Produced by

International Air Transport Association

Head Office Canada:
800 Place Victoria, PO Box 113
Montreal H4Z 1M1, Quebec,
Canada

www.iata.org/consulting

For
Asia-Pacific Economic Cooperation Secretariat
35 Heng Mui Keng Terrace
Singapore 119616
Tel: (65) 68919 600
Fax: (65) 68919 690
Email: info@apec.org
Website: www.apec.org

APEC#216-TO-01.12

Asia-Pacific Economic Cooperation

Table of Contents

Glossary

The following section presents a list of commonly used expressions and abbreviations found in the report.

Connecting Potential – Common rates of passengers connecting beyond/behind when traveling through a hub to/from a particular region.

Induction/Stimulation – Initial spike in passenger demand when new non-stop service is offered due to better accessibility, shorter travel time, lower cost, etc.

List of Abbreviations

PDEW – Passenger daily each way (passenger demand in each direction between a select origin and destination).

SDEW – Seats daily each way (number of seats offered in each direction on a non-stop or one-stop flight segment).

OD – Origin and destination

Airport Codes:

AAQ – Anapa, RUS
ACA – Acapulco, MEX
ADL – Adelaide, AUS
AER – Sochi, RUS
AGU – Aguascalientes, MEX
AKJ – Asahikawa, JPN
AKL – Auckland, NZ
ANF – Antofagasta, CHL
AOR – Alor Setar, MAS
AQP – Arequipa, CHL
ARH – Arkhangelsk, RUS
ASF – Astrakhan, RUS
ATL – Atlanta, US
AUS – Austin, US
AYP – Ayacucho, PE
BCD – Negros Occidental, PH
BDJ – Banjarmasin, INA
BHE – Blenheim, NZ
BJX – Silao, MEX
BKI – Kota Kinabalu, MAS
BKK – Bangkok, THA
BLI – Bellingham, US
BMV – Buon Ma Thuot, VN
BNA – Nashville, US
BNE – Brisbane, AUS
BOS – Boston, US
BPN – Balikpapan, INA
BUR – Burbank, US
BWN – Bandar Seri Begawan, BD
BXU – Butuan, PH
CAN – Guangzhou, PRC
CBO – Cotabato, PH
CCP – Concepción, CHL
CEB – Cebu, PH
CEI – Chiang Rai, THA
CEK – Chelyabinsk, RUS
CEN – Ciudad Obregón, MEX
CGK – Jakarta, INA
CGO – Zhengzhou, PRC
CGQ – Changchun, PRC
CGY – Cagayan de Oro and Iligan, PH

CHC – Christchurch, NZ
CJA – Cajamarca, PE
CJC – Calama, CHL
CJJ – Cheongwon-gu, ROK
CJU – Jeju, ROK
CKG – Chongqing, PRC
CLT – Charlotte, US
CME – Ciudad del Carmen, MEX
CNS – Cairns, AUS
CNX – Chiang Mai, THA
CSX – Changsha, PRC
CTS – Hokkaido, JPN
CTU – Chengdu, PRC
CUN – Cancun, MEX
CUZ – Cusco, PE
CVG – Cincinnati, US
CXR – Nha Trang, VN
DAD – Da Nang, VN
DAL – Dallas, US
DCA – Washington, US
DEN – Denver, US
DFW – Dallas, US
DGO – Durango, MEX
DGT – Dumaguete, PH
DJB – Jambi City, INA
DLC – Dalian, PRC
DLI – Da Lat, VN
DME – Domodedovo, RUS
DMK – Bangkok, THA
DPS – Bali, INA
DRW – Darwin, AUS
DTW – Detroit, US
DUD – Dunedin, NZ
DVO – Davao City, PH
EAT – Douglas County, US
EWR – Newark, US
EZE – Buenos Aires, ARG
FAT – Fresno, US
FLL – Fort Lauderdale, US
FOC – Fuzhou, PRC
FSZ – Shizuoka, JPN
FUK – Fukuoka, JPN
GDL – Guadalajara, MEX
GEG – Spokane, US
GMP – Seoul, ROK
GUM – Tamuning and Barrigada, GUM
GYS – Guangyuan, PRC
HAK – Haikou, PRC
HAN – Ha Noi, VN
HGH – Hangzhou, PRC
HKG – Hong Kong, China, HKC
HKT – Phuket, THA
HND – Tokyo, JPN
HNL – Honolulu, US
HRB – Harbin, PRC
HUI – Hue, VN
HUZ – Huizhou, PRC
IAD – Washington, US
IAH – Houston, US
ICN – Seoul, ROK
ILO – Ilo, PE
IQQ – Iquique, CHL
IQT – Iquitos, PE
ISG – Ishigaki, JPN
ITM – Osaka, JPN
IWK – Iwakuni, JPN
JFK – New York, US
JHB – Johor, MAS
JJN – Quanzhou, PRC
JNZ – Jinzhou, PRC
JOG – Yogyakarta, INA
JUL – Juliaca, PE
KBR – Kota Bharu, MAS
KBV – Krabi, THA
KCH – Kuching, MAS
KGD – Kaliningrad, RUS
KHH – Kaohsiung, CT
KHN – Nanchang, PRC
KIX – Osaka, JPN
KKE – Kerikeri, NZ
KLO – Kalibo, PH
KMG – Kunming, PRC
KNH – Kinmen, PRC
KNO – Kuala Namu, INA
KOJ – Kirishima, JPN
KRR – Krasnodar, RUS
KUF – Samara, RUS

KUL – Kuala Lumpur, MAS
KWL – Guilin, PRC
KZN – Tatarstan, RUS
LAS – Las Vegas, US
LAX – Los Angeles, US
LED – Saint Petersburg, RUS
SVX – Yekaterinburg, RUS
LGA – NY–La Guardia, US
LGK – Padang Matsirat, Langkawi, MAS
LHW – Lanzhou, PRC
LIM – Lima, PE
LOP – Lombok, INA
LPF – Liupanshui, PRC
LPT – Lampang, THA
MBT – Masbate City, PH
MCC – Sacramento, US
MCO – Orlando, US
MDW – Chicago, US
MDZ – Mendoza, ARG
MEL – Melbourne, AUS
MEX – Mexico City, MEX
MFM – Macau, MAC
MIA – Miami, US
MLM – Alvaro Obregon, Michoacan, MEX
MNL – Manilla, PH
MRY – Monterey, US
MSP – Minneapolis–Saint Paul, US
MTT – Cosoleacaque, MEX
MTY – Apodaca, MEX
MZG – Magong City, CT
NBC – Nizhnekamsk, RUS
NGB – Ningbo, PRC
NGO – Nagoya, JPN
NKG – Nanjing, PRC
NKM – Nagoya, JPN
NNG – Nanning, PRC
NPE – Napier, NZ
NPL – New Plymouth, NZ
NRT – Tokyo, JPN
NSN – Nelson, NZ
NTG – Nantong, PRC
OAK – Oakland, US
OAX – Oaxaca, MEX
OKA – Naha, JPN
OOL – Gold Coast, AUS
ORD – Chicago, US
OVB – Novosibirsk, RUS
OZC – Ozamiz, PH
PDG – Sumatra, INA
PEK – Beijing, PRC
PEN – Penang, MAS
PER – Perth, AUS
PHL – Philadelphia, US
PHX – Phoenix, US
PIU – Piura, PE
PLM – Palembang, INA
PLW – Palu, INA
PMC – Puerto Montt, CHL
PMR – Palmerston North City, NZ
PNK – Pontianak, INA
POM – Port Moresby, PNG
PPQ – Paraparaumu, NZ
PQC – Phu Quoc, VN
PSP – Palm Springs, US
PUS – Busan, ROK
PVG – Shanghai, PRC
PVR – Puerto Vallarta, MEX
PXU – Pleiku, VN
PYX – Pattaya, THA
RDU – Raleigh, Durham, US
REP – Siem Reap, KHM
REX – Reynosa, US
RGN – Mingaladon, MMR
RNO – Reno, US
ROC – Rochester, US
ROT – Rotokawa, NZ
ROV – Rostov-on-Don, RUS
RSU – Yeosu, ROK
RTW – Saratov City, RUS
RXS – Roxas City, PH

SAN – San Diego, US
SCL– Santiago, CHL
SEA – Seattle, US
SFO – San Francisco, US
SGN – Ho Chi Minh, VN
SHA – Shanghai, PRC
SHE – Shenyang, PRC
SIN – Singapore, SGP
SIP – Simferopol, UKR
SJC – San Jose, US
SJD – San Jose del Cabo, MEX
SLC – Salt Lake City, US
SLP – San Luis Potosi, MEX
SMF – Sacramento, US
SNA – Santa Ana, US
SOC – Solo/Surakarta, INA
SPN – Saipan, US
SRG – Semarang, INA
STL – St. Louis, US
STW – Stavropol Krai, RUS
SUB – Surabaya, INA
SVO – Moscow, RUS
SVX – Koltsovo, RUS
SWA – Jieyang Chaoshan, PRC
SYD – Sydney, AUS
SYO – Sakata, JPN
SYX – Sanya, PRC
SZX – Shenzhen, PRC
TAC – Tacloban, PH
TAM – Tampico, MEX
TAO – Qingdao, PRC
TAV – Tau, ASM
TBP – Tumbes, PE
TDX – Trat, THA
TGG – Kuala Terengganu, MSA
TGZ – Chiapa de Corzo, MEX
TIJ – Tijuana, MEX
TKG – Bandar Lampung, INA
TLC – Toluca, MEX
TNA – Jinan, PRC
TPE – Taipei, CT
TPP – Tarapoto, PE
TRC – Torreon, MEX
TRU – Trujillo, PE
TSA – Songshan, CT
TSN – Tianjin, PRC
TTJ – Tottori, JPN
TXG – Taichung, CT
TYN – Taiyuan, PRC
UFA – Ufa, RUS
UIH – Qui Nhon, VN
UKB – Kobe, JPN
UPG – Makassar, INA
URC – Urumqi, PRC
USM – Koh Samui, THA
VCL – Chu Lai, VN
VDH – Dong Hoi, VN
VER – Veracruz, MEX
VII – Vinh, VN
VKO – Moscow, RUS
VOZ – Voronezh, RUS
VSA – Villahermosa, MEX
VVO – Vladivostok, RUS
WAG – Whanganui, NZ
WEH – Weihai, PRC
WLG – Wellington, NZ
WNZ – Wenzhou, PRC
WRE – Whangarei city, NZ
WUH – Wuhan, PRC
WUX – Wuxi, PRC
XIY – Xi'an, PRC
XMN – Xiamen, PRC
YEG – Edmonton, CDA
YGJ – Yonago, PRC
YHZ – Halifax, CDA
YKA – Kamloops, CDA
YLW – Kelowna, CDA
YNJ – Yanji, PRC
YOW – Ottawa, CDA
YPR – Prince Rupert, CDA
YQM – Moncton, CDA
YQR – Regina, CDA
YSJ – Saint John, CDA
YTS – Timmins, CDA

YUL – Montreal, CDA

YVR – Vancouver, CDA

YWG – Winnipeg, CDA

YXC – Cranbrook, CDA

YXS – Prince George, CDA

YXT – Terrace-Kitimat, CDA

YYB – North Bay, CDA

YYC – Calgary, CDA

YYJ – Victoria, CDA

YYZ – Toronto, CDA

YZP – Sandspit, CDA

YZR – Sarnia, CDA

ZAL – Valdivia, CHL

ZCL – Calera de Victor Rosales, MEX

ZQN – Queenstown, NZ

ZUH – Zhuhai, PRC

1. Introduction to the project

The APEC Secretariat and Economies have observed that the flow of goods, services, capital and people in the APEC Region is constrained by air connectivity limitations and gaps that exist between the APEC economies, particularly between the Americas and Asia Pacific. Improving connectivity is a long-term target of the APEC economies. The APEC Tourism Working Group (TWG) and Transport Working Group (TPTWG) are particularly interested in pursuing this long-term target.

This Project (the "Project") was proposed in 2014 by Thailand and co-sponsored by Australia; Indonesia; Malaysia; Peru; the Philippines; and Chinese Taipei and aims to develop air connectivity in the APEC Region and in turn stimulate a more efficient flow of goods, services, capital and people. The Project has the following objectives:

- To develop market demand-based recommendations for potential new routes, improved flight schedule connection times, and hubs between APEC economies based on analysis of air passenger flow, schedules and new aircraft range capability, including analysis of the number of seats, flights and air traffic.
- To help airlines and regulators develop more accurate demand predictions so they can in turn help APEC economies by providing better air connectivity services, capacity and schedules.

The Project was approved in December 2014, with IATA Consulting selected as the consultant in May 2015. IATA was mandated to complete the following tasks:

1. Develop market demand-based recommendations for potential new routes.
2. Provide recommendations to improve connections between flights at the main hubs linking the APEC economies.
3. Determine which APEC market pairs could benefit from the introduction of new aircraft with extended range.

2. Approach followed and data used

This section explains the methodology applied by IATA and presents the data used to feed the various underlying analysis. To conduct the analysis, IATA took systematic steps identified in Figure 1.

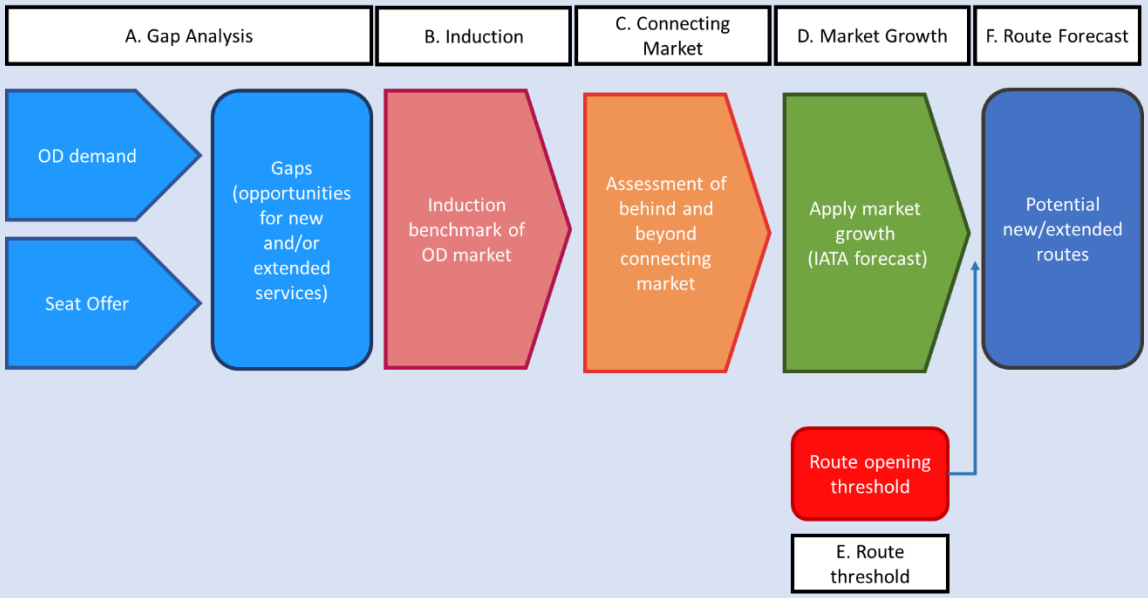

Figure 1: Process used to complete analytical work

The first step involved a demand-supply gap analysis aimed at identifying the unserved routes, presenting potential demand for future development. The size that this potential demand could actually represent if turned into direct service in the future was subsequently forecast, using realistic assumptions related to induction, connecting potential and demand growth.

2.1 Data fueling the model

Principal data for the model originates from Airport IS. IATA's Airport IS system uses IATA billing and settlement plan data to provide detailed demand and supply information on total air traffic. This data has been available for over a 10-year historical period (since 2005).

Approximately 18,500 international APEC routes were analyzed in the execution of this study. Airport IS data was particularly relevant in the gap analysis and assumption development.

Academic articles and published ratios were also used to justify some of the assumptions, including induction and origin destination traffic captured through direct service.

For some of the other variables used in the final traffic determination, economic forecasts were extracted from IHS Global Insight, one of the world's largest commercially available economic databases.

Tourism data was extracted from the World Travel and Tourism Council.

2.2 Gap analysis

IATA applied a funnel approach in conducting the analysis. It first considered the market at the economy pair level, followed by city pairs leading to a market potential assessment (see figure below). Both seat supply and seat demand were considered in the analysis to identify gaps in air service.

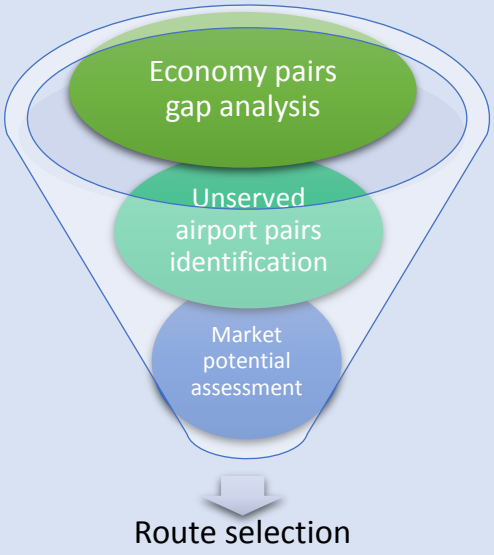

Figure 2: Funnel approach used to conduct analysis

The economy pair analysis allowed IATA to identify unserved markets.

As an example, this analysis showed that there was an average daily demand of 1,535 Passengers Daily Each Way (PDEW) in 2015 that flew via existing connecting routings between Malaysia and Indonesia, while an average of 14,637 direct (on non-stop service) seats were offered daily each way.

When extending the analysis down to the city pairs, it was possible to identify the largest unserved markets between the two economies: 67 Passengers Daily Each Way (PDEW) travelled between PEN and DPS in 2015.

The top 30 unserved routes for Malaysia are presented in the table below.

Origin Airport	Origin Economy	Destination Airport	Destination Economy	2015 OD Demand (PDEW)	non-stop seats in 2015 (SDEW)	1-stop seats in 2015 (SDEW)
PEN	Malaysia	DPS	Indonesia	67	0	0
PEN	Malaysia	SGN	Viet Nam	67	0	0
PEN	Malaysia	NRT	Japan	57	0	0
KUL	Malaysia	LAX	United States	50	0	0
KCH	Malaysia	DMK	Thailand	48	0	0
KUL	Malaysia	JFK	United States	48	0	0
BKI	Malaysia	DMK	Thailand	45	0	0
KBR	Malaysia	SIN	Singapore	42	0	0
PEN	Malaysia	ICN	Republic of Korea	36	0	0
KCH	Malaysia	HKG	Hong Kong, China	34	0	107
PEN	Malaysia	MEL	Australia	34	0	0
LGK	Malaysia	DMK	Thailand	34	0	0
PEN	Malaysia	KIX	Japan	33	0	0
KCH	Malaysia	CGK	Indonesia	33	0	0
KUL	Malaysia	FUK	Japan	32	0	0
PEN	Malaysia	BDO	Indonesia	32	0	0
SBW	Malaysia	SIN	Singapore	32	0	0
KUL	Malaysia	SFO	United States	31	0	0
KUL	Malaysia	IAH	United States	31	0	0
PEN	Malaysia	MNL	The Philippines	30	0	0
LGK	Malaysia	CGK	Indonesia	30	0	0
PEN	Malaysia	PER	Australia	29	0	0
KBR	Malaysia	DMK	Thailand	28	0	0
PEN	Malaysia	HAN	Viet Nam	28	0	0
BKI	Malaysia	KNO	Indonesia	27	0	0
PEN	Malaysia	JOG	Indonesia	26	0	0
KCH	Malaysia	SGN	Viet Nam	26	0	0
SBW	Malaysia	DMK	Thailand	25	0	0
PEN	Malaysia	CNX	Thailand	25	0	0
PEN	Malaysia	PEK	China	24	0	0

Figure 3: Top 30 unserved routes from Malaysia, 2015 data

2.3 Induction

To determine realistic estimates of the success of new air service, various assumptions were considered and applied to current passenger demand.

Induction is a well proven concept that explains how new direct air service has a significant impact on increasing the total number of O&D passengers on a city-pair market. This is due to product improvement: shorter travel time, greater convenience and more affordable ticket prices. The extent to which the market will be stimulated varies based on current levels of service (price and flight

frequency) offered on a particular route. As stated in the Successful Air Service Development presentation (ICF International, 2014) a market's first non-stop flight can stimulate demand by 100% to 300%.

IATA quantified this induction value to show a relationship between two primary factors: region pair and the size of the market before a new route is initiated.

The table below shows the stimulation rates considered for this analysis of Malaysia. For some instances where inadequate data (less than 4 routes) to conduct a region pair analysis was available, other variables were considered, including the average of all routes, the average of long-haul routes or the average of short-haul routes, depending on the specific market.

Market	Base of 10,000 Annual Pax	Base of 25,000 Annual Pax	Base of 50,000 Annual Pax
All APEC Economies	130%	42%	18%
Long Haul	101%	36%	16%
Short Haul	150%	50%	21%
Australasia - South East Asia	159%	75%	44%
North America-Asia	104%	40%	
Asia - South East Asia	162%	53%	
Asia - North East Asia	155%	58%	27%
South East Asia - China	203%	78%	
South East Asia - North East Asia	125%		
Within Asia	160%	55%	24%
Within Southeast Asia	205%		

Figure 4: Stimulation rates applied to the analysis

2.4 Connecting potential

Increasing the quality of connections through alliance agreements, codeshares, shorter journey times or fewer stops increases overall travel demand in connecting markets. It is a normal phenomenon for new routes to not only increase demand for the city pairs served but also for beyond and behind destinations that are now more easily accessible (Swan, 2008). On long-haul routes, typically two-thirds of the passengers will make a connection.

IATA's analysis found that connecting markets would stimulate at various rates depending on the region of origin and the hub airport being flown through. These ratios are applied in determining the impact of a new route on connecting flows.

Connecting rates to be applied in this project for flights connecting at the main Malaysian hub were estimated based on traffic from various regions flying through KUL as well as the foreign hubs being flown to and from Malaysia.

	KUL
Australia	54.90%
Asia	28.50%
South East Asia	32.40%
China	28.00%
North Asia	23.30%

Figure 5: Average rate of connecting passengers at the hub airport in Malaysia

2.5 Demand growth

This refers to the consideration of the natural growth observed on a market segment. IATA Economics publishes a detailed inter- and intra-regional global traffic forecast. These demand growth forecasts were used to provide a regionally specific rate of growth to and from Malaysia between 2016 and 2018. Growth was typically seen to be around 5%. Demand growth also refers to the fact that approximately 80% of a market will choose a non-stop flight option if it is available (Belobaba, 2015).

2.6 Other

Other factors, including distance and available traffic rights, were used to refine the assessment of potential new service to be offered. Distance considers the feasibility of offering a non-stop flight with existing technology, using 15,000km as a maximum distance. Available traffic rights consider the bilateral agreements between economies and the current use of those bilateral rights.

2.7 Final route forecast

After conducting the gap analysis and applying the established rates from the various assumptions, the future market potential was estimated, as illustrated in Figure 6 below for the PEN-SGN route.

Origin Airport	Destination Airport	Destination Economy	2015 OD Non-direct Demand	1 OD Captured Though Deorect Service	2 OD Stimulation	4 Behind/Beyond Connecting Potential	Caculations
PEN	DPS	Indonesia	(A) 67	(B) 80%	(C) 79%	(D) 0%	
				(1) 54	43		(1) = AxB
				(2)			(2) = 1xC
			Subtotal	(3)	97		(3) = 1+2
		PEN - DPS Total Market Potential (2015 Base)				(4) 97	(4) = 3/(1-D)

Figure 6: Example of the various assumptions being applied to determine the potential for new air service.

3. Malaysia

A summary of Malaysia's economy and demographics, aviation demand, and airport specific information is presented in this section.

3.1 Economy and demographics

Malaysia is located in Southeast Asia and separated into two regions: Peninsular Malaysia and East Malaysia. The Peninsular Malaysia region shares boarders with Thailand whilst East Malaysia shares borders with Brunei Darussalam and Indonesia. The capital city of Malaysia is Kuala Lumpur.

3.1.1 Demographics

Malaysia's population was estimated at 30.75 million in May 2016. It is estimated that the population will grow to 38.9 million by 2040 based on a projected growth rate of approximately 1% per annum (United Nations, 2016). Urbanisation rate between 2010-2015 was approximately 2.66% per annum. In 2015, Malaysian urban population accounts for 74.4% of total population (Central Intelligence Agency, 2015).

District/ Federal Territory	Population (millions)
1. Kuala Lumpur (Capital)	1.67
2. Johor Bahru	1.39
3. Kinta	0.77
4. Seremban	0.56
5. Timur Laut	0.52

Figure 7: Population of Malaysia's 5 most populous cities in 2010 (Source: 2010 Census)

3.1.2 Economy

Malaysia has developed as a diversified exporter of electrical appliances, electrical parts and components, palm oil, and natural gas. Malaysia's annual GDP growth rate reached 5% in 2015. Malaysia's economy has experienced a slowdown in 2015 due to a fall in commodity prices and a generally weak global environment (ADB, 2016). Malaysia's top export destinations as a percentage of total exports include: Singapore (13.9%), China (13%), Japan (9.5%), the United States (9.4%), Thailand (5.7%) and Hong Kong, China (4.7%) (Central Intelligence Agency, 2015).

3.1.3 Tourism

Tourism plays an important role in the Malaysian economy, representing spending of MYR60.7 billion per year (Oxford Economics, 2016). The tourism market is forecast to increase over 2016, growing at 7.9% and rise by 4.5% per annum between 2016 and 2026. It will represent 4.5% of total GDP by 2026.

On 1 March 2016, the Minister of Tourism and Culture Malaysia officially launched a visa exemption and e-Visa programme to facilitate easier access to Malaysia for tourists travelling from China and will later incorporate other countries such as India; Myanmar; Nepal; and Sri Lanka (Tourism Malaysia, 2016).

3.2 Aviation demand

Malaysia is a popular destination for both leisure and business travellers. Leisure travellers generated 50.1% of total direct tourism and travel GDP (WTTC, 2016). Malaysia's move towards launching visa-exemptions for numerous nations and the adoption of the ASEAN open skies agreement is expected to induce growth in demand for aviation services.

3.2.1 Recent demand growth

Passenger air traffic to and from Malaysia has grown at an average of 7.9% p.a. between 2005 and 2015. The Malaysia Airports Holdings Berhad forecasts year-on-year passenger traffic growth will reach 2.5% in 2016. Overall, Malaysia will see a growth of 7% in passenger traffic and expect to handle over 120 million passengers in 2016 (Malaysia Airports, 2016).

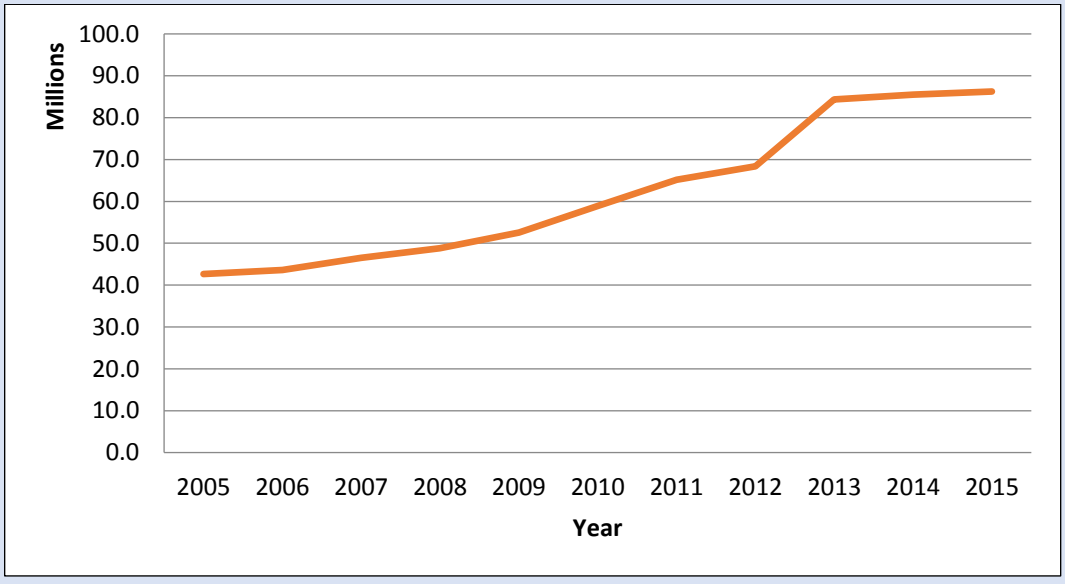

Figure 8: Total air traffic Malaysia 2005-2015 (Source: Albatross Airport, 2016).

3.2.2 Current air services to Malaysia

Current services from Malaysia are heavily concentrated in the SE Asia region. No trans-pacific services are currently flown from Malaysia to the APEC economies in North and South America.

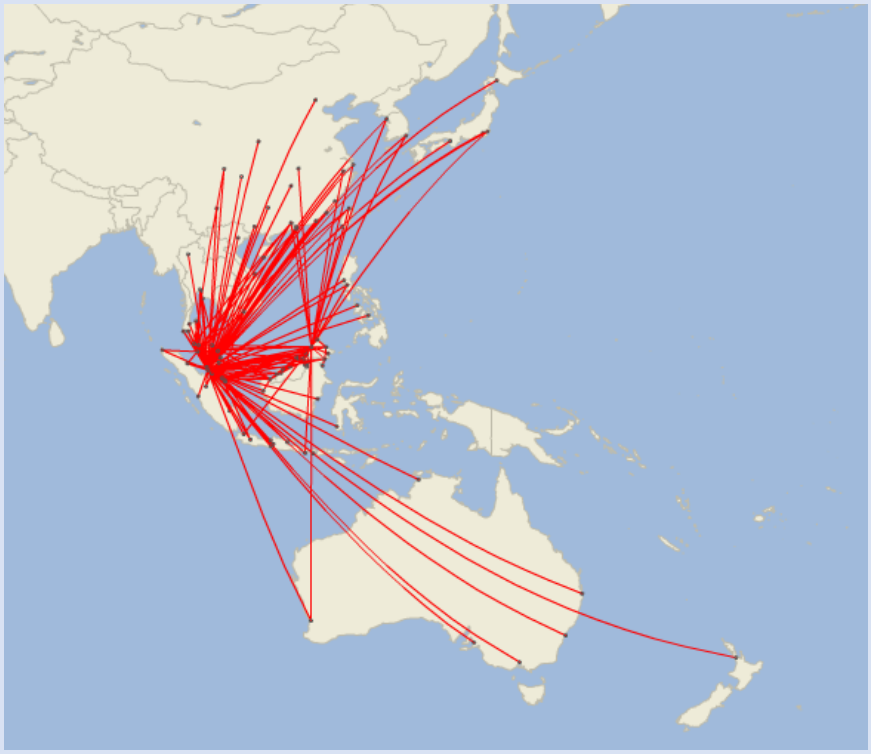

Figure 9: Non-stop service to and from Malaysia and top APEC destinations March 2016 (Source: Airport IS)

3.2.3 Aviation and the economy

Economic Footprint

In 2009, the aviation sector contributed MYR7.3 billion (1.1%) to Malaysia's GDP (Oxford Economics, 2011). This comprises direct and indirect spending. Catalytic benefits through tourism are estimated at another MYR17.2 billion bringing the total benefits to MYR24.5 billion (3.6% of GDP).

From an employment perspective the sector supports 102,000 jobs directly and indirectly, and a further 243,000 people through the catalytic effects.

Consumer Benefits

The aviation industry has benefits for visiting friends and family and the shipping of high value products. In 2009, a total of 38 million passengers and 805,000 tonnes of freight travelled to, from and within Malaysia by air (Oxford Economics, 2011).

Long-term impact

Economically, aviation has a long-term impact in Malaysia. According to Oxford Economics (2011), air travel enables long-term economic growth by:

- Opening up foreign markets to Malaysian exports;
- Lowering transport costs, particularly over long distances, helping to increase competition

because suppliers can service a wider area and potentially reduce average costs, through increased economies of scale;

- Increasing the flexibility of labour supply, which should enhance allocative efficiency and bring down the natural rate of unemployment;
- Encouraging Malaysian businesses to invest and specialize in areas that play to the economy's strengths;
- Speeding the adoption of new business practices, such as just-in-time-inventory management that relies on quick and reliable delivery of essential supplies;
- Raising productivity and hence the economy's long-run supply capacity. It is estimated that a 10% improvement in connectivity relative to GDP would see an MYR434 million per annum increase in long-run GDP for the Malaysian economy.

3.2.4 Government position on aviation

Following two major air tragedies involving Malaysia Airlines flights 370 and 17, the Malaysian government has established an independent regulation under the Malaysia Aviation Commission Act 2015. The regulator holds the responsibility to regulate economic matters within the industry and promote a more efficient and transparent market (Malaysian Aviation Commission, 2016). The government has been an active player in the aviation industry and continues to promote the growth of the industry by promoting tourism and related activities. Malaysia has signed the ASEAN open skies policy agreement and is pursuing further liberalisation of the aviation market.

3.3 Airport specific information

3.3.1 Busiest airports in Malaysia

Rank	Airport	Total Passengers	% of Total Passengers
1	KUL	48,934,118	56.72%
2	BKI	6,571,628	7.62%
3	PEN	6,261,177	7.26%
4	KCH	4,771,696	5.53%
5	JHB	2,581,966	2.99%
6	LGK	2,336,177	2.71%

Figure 10: Busiest airports in Malaysia (Source: Albatross Airport, 2016).

Figure 11: Map of Malaysia's busiest airports (Source: SRS Analyzer)

Kuala Lumpur International Airport (KUL)

Kuala Lumpur International Airport is the principal hub airport of Malaysia and a major airport in Southeast Asia. It is surrounded by four main cities: Kuala Lumpur, Shah Alam, Seremban and Malacca. KUL is approximately 45 kilometers from Kuala Lumpur's city center. Its busiest international routes include SIN, CGK, HKG and BKK. It currently operates two terminals and transported more than 48 million passengers in 2015.

Kota Kinabalu Airport (BKI)

Kota Kinabalu Airport is Malaysia's second largest airport and is located approximately 8 kilometers from the city of Kota Kinabalu. It acts as the main gateway to Sabah and Borneo. BKI has a single runway and is equipped to handle large aircrafts such as the Boeing 747. It currently operates two terminals and has a passenger capacity of 9 million per annum.

Penang Airport (PEN)

Penang Airport is located 16 kilometers south of Georgetown, the capital city of Penang. It has a passenger capacity of 6.5 million per annum with a cargo capacity of 360,000 tonnes.

Kuching Airport (KCH)

Kuching Airport is located approximately 11 kilometers south of Kuching city. It has a passenger capacity of 5 million per annum. It is also the airbase for the Royal Malaysian Air Force.

Langkawi Airport (LGK)

Langkawi Airport is located on the duty-free island of Langkawi in Kedah. It currently has two runways and transported 2.3 million passengers in 2015. It has a maximum capacity of 2.5 passengers per annum.

3.3.2 Principal airline operators

A number of major airlines are based in Malaysia, these include: AirAsia Berhand, Malaysian Airlines, MASWings airlines and FireFly airlines.

Air Asia Berhand

Air Asia Berhand is a low-cost airline based in KUL with hubs also established in BKI, PEN, JHB and KCH. It is part of the AirAsia Group. It is the largest Malaysian airline based on fleet size and destinations. It provides services to 100 destinations in 22 nations.

Malaysia Airlines

Malaysia Airlines is the flag carrier of Malaysia with its headquarters located at KUL. It also owns two subsidiary airlines: Firefly and MASwings. The airline flies to 55 destinations across Southeast Asia, North Asia, South Asia, the Middle East, Australia and Europe. It provides a gateway between Europe and Australian and New Zealand. It currently has a fleet of 76 aircrafts including Boeing 737-800, Airbus A380 and Airbus A330-300 with an average fleet age of 3.7 years.

Firefly airline

Firefly airline is a subsidiary of Malaysia Airlines and operates from two hubs: Sultan Abdul Aziz Shah Airport and Penang International Airport. It focuses on serving markets in Malaysia; Indonesia; Singapore; and Thailand. It currently has a fleet of 17 aircrafts, including the ATR 72-500 and ATR 72-600.

MASWings

MASwings operates domestically in Malaysia serving the Sarawak and Sabah region and provides a single international route service to TRK. It is a subsidiary of Malaysia Airlines. It currently operates a fleet size of 20 aircrafts including the ATR 72-500, ATR 72-600 and DHC-6 Series 400.

4. Medium-term new route opportunities

This section of the report is dedicated to explaining the potential future air service developments to and from Malaysia within the APEC region over the next three years. Service gaps, route traffic forecasts, and high-level feasibility analysis conducted are hereby presented.

4.1 Service gaps

As part of the process, air services to Malaysia were considered at both an economy pair and a city pair basis.

4.1.1 Economy pair analysis

The following table outlines the supply and demand for air travel between Malaysia and other APEC economies. The data essentially shows the economy pairs where

- non-stop service is sufficiently supplied (in green),
- air service is adequate but may need to be improved in the long term (in yellow); and
- air service is at a shortfall and should be improved in the medium term (in red).

Origin/Destination Economy	O/D Demand (PDEW)	O/D Non-Stop Seat Offer (SDEW)	One Stop Seat Offer (SDEW)	Ratio of Demand to Supply
Australia (AUS)	1,965	4,893	0	40%
Brunei Darussalam (BD)	493	935	0	53%
Canada (CDA)	57	0	0	*
Chile (CHL)	1	0	0	*
People's Republic of China (PRC)	4,243	5,951	567	65%
Hong Kong, China (HKC)	1,947	3,552	0	55%
Indonesia (INA)	8,678	14,643	2	59%
Japan (JPN)	1,679	2,084	0	81%
Republic of Korea (ROK)	1,446	2,026	0	71%
Malaysia (MAS)	52,733	89,772	1,050	58%
Mexico (MEX)	5	0	0	*
New Zealand (NZ)	102	282	293	18%
Papua New Guinea (PNG)	5	0	0	*
Peru (PE)	2	0	0	*
The Republic of the Philippines (PH)	1,179	1,896	0	62%
Russia (RUS)	7	0	0	*
Singapore (SGP)	6,687	11,640	160	57%
Chinese Taipei (CT)	1,477	1,996	0	74%
Thailand (THA)	4,390	8,138	0	54%
United States (US)	326	0	0	**
Viet Nam (VN)	1,576	2,576	0	61%

Figure 12: Total demand-to-supply ratio PDEW (Source: IATA analysis of Airport IS Data)

*** Delineates an economy pair with no air services that has inadequate demand to consider air services in the long term**

**** Delineates an economy pair with no air services that may have adequate demand for service in the long term (next 10 years)**

Typical ratios found in highly liberalized international markets with adequate capacity for demand ranges from 60% to 80%.
In some cases, the demand-to-supply ratio is less than 60%, however supply is still adequate as the low percentage figure may be representative of high rates of connecting passengers flying between economies (not shown in the above table – only OD traffic is displayed).

Where demand-to-supply ratios are higher than 80%, seat offer should be increased between economy pairs (e.g. Malaysia and Japan at 81%, where the non-stop supply only covers a portion of the total demand between the economies).

Based on the above analysis at the economy level, Malaysia may have an opportunity to improve service to 7 economies in the long term (highlighted in yellow in the above table), and could take actions to improve service with Japan in the medium term (highlighted in red). The following section will look into greater details at these shortfalls in supply at a city pair level.

4.1.2 City pair analysis by APEC economy

When considering the shortfall in service on a city pair level, 23 routes have a demand of 30 or greater PDEW with no non-stop service, as illustrated in the table below. These 23 routes are spread throughout the different economies identified at the economic pair analysis in the previous section. This section explains in greater details the economy pairs with air service development potential to Malaysia.

Origin Airport	Origin Economy	Destination Airport	Destination Economy	2015 OD Demand
PEN	Malaysia	MEL	Australia	34
PEN	Malaysia	MEL	Australia	34
PEN	Malaysia	PVG	China	70
KCH	Malaysia	HKG	Hong Kong, China	34
PEN	Malaysia	DPS	Indonesia	67
KCH	Malaysia	CGK	Indonesia	33
PEN	Malaysia	BDO	Indonesia	32
LGK	Malaysia	CGK	Indonesia	30
PEN	Malaysia	JOG	Indonesia	26
PEN	Malaysia	NRT	Japan	57
PEN	Malaysia	KIX	Japan	33
KUL	Malaysia	FUK	Japan	32
PEN	Malaysia	MNL	The Philippines	30
PEN	Malaysia	ICN	Republic of Korea	36
KBR	Malaysia	SIN	Singapore	42
SBW	Malaysia	SIN	Singapore	32
KCH	Malaysia	DMK	Thailand	48
BKI	Malaysia	DMK	Thailand	45
LGK	Malaysia	DMK	Thailand	34
KUL	Malaysia	LAX	United States	50
KUL	Malaysia	JFK	United States	48
KUL	Malaysia	SFO	United States	31
KUL	Malaysia	IAH	United States	31
PEN	Malaysia	SGN	Viet Nam	67

Figure 13: APEC routes to Malaysia with over 30 PDEW with no non-stop service (Source: IATA analysis of Airport IS data).

Australia (AUS)

Between Australia and Malaysia, there was a demand of close to 2,000 PDEW in 2015 and is currently adequately served by 4,800 direct seats per day. Capacity between the two economies are mostly concentrated in KUL, with the exception of a direct route from BKI to PER.

Brunei Darussalam (BD)

Brunei Darussalam has direct service from Kuala Lumpur and Kota Kinabalu. In 2015, the demand between the two economies was close to 500 PDEW with a seat offer of over 900 seats a day and therefore the demand is well served.

People's Republic of China (PRC)

In 2015, there was an average total demand of 4,243 PDEW between all points in Malaysia and all points in China. Direct services are operated from KUL, PEN, LGK, and BKI to 18 major cities in China.

Chinese Taipei (CT)

Services between Malaysia and Chinese Taipei are considered adequate at present, but in the medium term there is a potential to increase frequencies between the two economies in order to cater the traffic demand growth.

Indonesia (INA)

Indonesia is the largest international market from Malaysia with more than 8,600 PDEW. Overall the two economies have adequate levels of service with over 14,000 seats offered per day. However, PEN-DPS is identified as one of the potential routes that can be opened to cater for the strong leisure demand.

Japan (JPN)

At the economy level, demand for flights between Japan and Malaysia is above 80%, making Japan a priority when studying opportunities for frequency increase. At present, non-stop services are concentrated in KUL, with services to ITM, NRT, HND and CTS. Direct services also exist between BKI and NRT.

The Republic of the Philippines (PH)

Demand to the Philippines is almost 1,200 PDEW with a supply of close to 1,900 seats. The air services between the two economies are adequately served both in terms of frequencies and destinations.

Republic of Korea (ROK)

Supply for non-stop flights to the Republic of Korea is at 2,000 seats per day with a demand of just under 1,500 PDEW. Non-stop services are offered between KUL-ICN and PUS, and between BKI-ICN. At present the supply is still sufficient but it is recommended that Malaysia continues to monitor the growth of the market for opportunities to increase frequencies in the medium term.

Thailand (THA)

The market between Malaysia and Thailand is one of the more mature markets with services optimized both in terms of the number of routes and the frequencies. Some secondary cities of the two economies are also linked with the help of low cost carriers so the air services between the two member economies can be considered sufficient at this point in time.

Viet Nam (VN)

On an economy pair standpoint, air services between Viet Nam and Malaysia are adequately served right now, with just over 2,500 seats per day serving 1,560 passengers per day each way. However, it is identified that the route between PEN and SGN has a potential to be opened as a new air route and this opportunity will be further analysed in section 4.3.

4.2 High-level feasibility considerations

City pairs with 30 PDEW (10,950 annual passengers one-way) were considered as the minimum threshold for analysis. As shown in the previous section, 23 city pairs to and from Malaysia met this criterion.

As a way to further define a potentially viable route, IATA used two metrics: distance and market size. Due to aircraft range restrictions, city pairs more than 15,000km from each other were eliminated. The second criterion used the application of induction and connection potential rates (unique to each region and route type) to the existing OD demand in order to determine whether the route would garner a minimum demand of 158 PDEW for ultra-long-haul routes (over 12,000km), 130 PDEW for long-haul routes (between 4,000km and 12,000km), or 75 PDEW for short-haul routes (under 4,000km) in the coming three years with behind and beyond potential and OD stimulation factored in (see section 4.3 below for detailed breakdown of the factors).

This filtering process led to the selection of eight routes that are presented in the table below with more details in the next section.

Origin Airport	Origin Economy	Destination Airport	Destination Economy	2015 OD Demand	2015 Estimated Market Potential	Distance viable for non-stop flight with current technology	Market size adequate for non-stop service in the medium term	Proposed Route
PEN	Malaysia	PVG	China	70	96	✓	✓	Yes
PEN	Malaysia	DPS	Indonesia	67	97	✓	✓	Yes
PEN	Malaysia	SGN	Viet Nam	67	106	✓	✓	Yes
PEN	Malaysia	NRT	Japan	57	83	✓	✗	No
KUL	Malaysia	LAX	United States	50	91	✓	✗	No
KCH	Malaysia	DMK	Thailand	48	77	✓	✗	No
KUL	Malaysia	JFK	United States	48	60	✓	✗	No
BKI	Malaysia	DMK	Thailand	45	73	✓	✗	No
KBR	Malaysia	SIN	Singapore	42	82	✓	✗	No

Figure 14: Summary of high-level route feasibility considerations

4.3 Proposed route analysis

IATA narrowed the above selection to three different routes from Malaysia. This section decomposes the route potential and presents a forecast of the current demand in the medium term.

4.3.1 Route #1 PEN-PVG

PEN-PVG 2015 total route potential definition:

Origin Airport	Destination Airport	Destination Economy	2015 OD Non-direct Demand	1 OD Captured Though Deorect Service	2 OD Stimulation	4 Behind/Beyond Connecting Potential	Caculations
PEN	PVG	China	(A) 70	(B) 80%	(C) 56%	(D) 9%	
				(1) 56	32		(1) = AxB
				(2)			(2) = 1xC
			Subtotal	(3)	87		(3) = 1+2
		PEN - PVG Total Market Potential (2015 Base)				(4) 96	(4) = 3/(1-D)

Based on 2015 demand figures, IATA estimates that the PEN-PVG route presents a potential of 96 PDEW for a direct service between the two cities.

This potential would grow to 113 by 2018 as displayed in the short-term forecast in the following table. This forecast uses the 2015 estimated demand and applies to it the IATA inter- and intra-regional global traffic forecast published by our Economics Division.

Economy Pair	City Pair	2015 Base	2016	2017	2018
Malaysia-China	PEN-PVG	96	102	107	113

4.3.2 Route #2 PEN-DPS

PEN-DPS 2015 total Route potential definition:

Origin Airport	Destination Airport	Destination Economy	2015 OD Non-direct Demand	1 OD Captured Though Deorect Service	2 OD Stimulation	4 Behind/Beyond Connecting Potential	Caculations
PEN	DPS	Indonesia	(A) 67	(B) 80%	(C) 79%	(D) 0%	
				(1) 54	43		(1) = AxB
				(2)			(2) = 1xC
			Subtotal	(3)	97		(3) = 1+2
		PEN - DPS Total Market Potential (2015 Base)				(4) 97	(4) = 3/(1-D)

Based on 2015 demand figures, IATA estimates that the PEN-DPS route presents a market potential of 97 PDEW for a direct service between the two cities.

This potential would grow to 113 by 2018 as displayed in the short-term forecast in the following table. This forecast uses the 2015 estimated demand and applies to it the IATA inter- and intra-regional global traffic forecast published by our Economics Division.

Economy Pair	City Pair	2015 Base	2016	2017	2018
Malaysia-Indonesia	PEN-DPS	97	102	107	113

4.3.3 Route #3 PEN-SGN

PEN-SGN 2015 total Route potential definition:

				1	2	4	
Origin Airport	Destination Airport	Destination Economy	2015 OD Non-direct Demand	OD Captured Though Deorect Service	OD Stimulation	Behind/Beyond Connecting Potential	Caculations
PEN	SGN	Viet Nam	(A) 67	(B) 80%	(C) 80%	(D) 9%	
				(1) 53	43		(1) = AxB
				(2)			(2) = 1xC
			Subtotal	(3)	96		(3) = 1+2
		PEN - SGN Total Market Potential (2015 Base)				(4) 106	(4) = 3/(1-D)

Based on 2015 demand figures, IATA estimates that the PEN-SGN route presents a market potential of 106 PDEW for a direct service between the two cities.

This potential would grow to 124 by 2018 as displayed in the short-term forecast in the following table. This forecast uses the 2015 estimated demand and applies to it the IATA inter- and intra-regional global traffic forecast published by our Economics Division.

Economy Pair	City Pair	2015 Base	2016	2017	2018
Malaysia-Viet Nam	PEN-SGN	106	112	118	124

4.4 Proposed scheduled operations

This section considers the above route through three main operational/feasibility criteria:

- air service agreements
- airline network strategies and fleets
- route economics

Additionally, proposed operational aspects of the route are presented, including an indicative start date based on market maturity, a proposed airline to serve the route, type of aircraft to be used, flight frequency, and estimated load factors.

4.4.1 Route #1 PEN-PVG

The PEN-PVG route could be served by China Eastern and act as a feeder service to China Eastern's trans-Pacific operations in PVG.

China Eastern can make use of its A320 aircraft configured with 159 seat. Considering the estimated market potential of 119 PDEW in 2017, the service could start with a frequency of six times a week and provide an adequate load factor on the route. The proposed service would operate at an estimated average load factor of 75% as illustrated below:

Route (non-directional)	Minimum Opening Date	Airline	Aircraft	# of Seats	Frequency per week	Number of Pax per Flight	Load Factor
PEN-PVG	2017	China Eastern	A320	159	6	119	75%

In terms of air service agreements, IATA does not foresee any issues for this route to be operated based on the current high-level policies in place between China and Malaysia.

4.4.2 Route #2 PEN-DPS

AirAsia, with its hub operations in PEN, is ideal for the route, considering the market potential estimated for 2017 of 143 PDEW. A 5-weekly service could be offered from route opening. The proposed service would operate at an estimated average load factor of 79% as illustrated below:

Route (non-directional)	Minimum Opening Date	Airline	Aircraft	# of Seats	Frequency per week	Number of Pax per Flight	Load Factor
PEN-DPS	2017	AirAsia	A320	180	5	143	79%

In terms of air service agreements, IATA does not foresee any issues for this route to be operated based on the current high-level policies in place between the two economies.

4.4.3 Route #3 PEN-SGN

Jetstar Pacific, with its hub in SGN, is considered as one of the potential candidates to open this new route.

Considering the estimated demand of 131 PDEW in 2017, a six-weekly frequency could be operated in the beginning.

The proposed service would operate at a healthy estimated average load factor of 73% as illustrated below:

Route (non-directional)	Minimum Opening Date	Airline	Aircraft	# of Seats	Frequency per week	Number of Pax per Flight	Load Factor
PEN-SGN	2017	Jetstar Pacific	A320	180	6	131	73%

In terms of air service agreements, IATA does not foresee any issues for this route.

5. Conclusions and opportunities

In addition to the development of new air services in the medium term, other opportunities for air service development, such as connectivity improvement, route frequency increases, and long-term developments are also presented.

5.1 Connectivity improvement

This section identifies poorly connected markets that could be better served by improved connecting times, hence granting additional access to already existing yet less accessible connecting markets.

IATA examined flights departing to and from KUL. Based on optimal connecting time-related considerations, IATA developed a series of suggested improvements pertaining to certain flight schedules. Suggested improvements are listed below:

- Malaysia Airlines flight 140 from SYD could significantly optimize connection time if it was to arrive two to three hours later than its current scheduled 03:20 arrival. Most onward departures for Malaysia Airlines occur after 07:00.
- Malaysia Airlines 129 to MEL is currently departing at 10:30. By delaying the departures for 20 minutes, it will allow better connections from domestic cities of JHB, AOR and TGG.
- For Air Asia X flight 237 from PER arriving at 12:15, it is currently necessary to wait 3-4 hours for many onward connections including key markets such as HKT, TPE and PVG. Having the flight arrive 2 hours later would optimize these connections.
- The AirAsia X flight 506 to ICN and flight 532 to ITM are both departing at 01:00. By delaying both departures to 01:40, it will allow connections from six more cities in the region, namely KCH, HKT, KBR, DPS, PEN and SUB.

5.2 Route frequency increase

IATA considered all of the international non-stop routes from Malaysia to determine whether the current non-stop supply adequately matches the demand. Numerous city pairs from Malaysia with inadequate non-stop service were identified.

Due to the fact that most aircrafts only fly at an average 80% load factor, the ideal demand-to-supply ratio should be under 85%. All of the 20 identified routes in the table below have demand-to-supply ratios of greater than 85%.

Origin Airport	Origin Economy	Destination Airport	Destination Economy	2015 OD Demand (PDEW)	Non-stop Seats in 2015 (SDEW)	Demand Excess over supply (PDEW)	Ratio of Demand to non-stop Supply
PEN	Malaysia	TPE	Chinese Taipei	131	90	41	146%
KUL	Malaysia	NGO	Japan	75	45	29	164%
PEN	Malaysia	CGK	Indonesia	249	222	27	112%
KUL	Malaysia	WUH	China	27	8	19	337%
KUL	Malaysia	KHH	Chinese Taipei	48	36	12	134%
PEN	Malaysia	SUB	Indonesia	87	77	10	113%
KUL	Malaysia	CTS	Japan	51	43	7	117%
JHB	Malaysia	KNO	Indonesia	69	64	4	107%
KUL	Malaysia	CSX	China	35	31	3	110%
PEN	Malaysia	BTJ	Indonesia	53	51	2	104%
MYY	Malaysia	SIN	Singapore	103	103	0	100%
JHB	Malaysia	DMK	Thailand	47	47	-1	99%
JHB	Malaysia	DMK	Thailand	47	47	-1	99%
BKI	Malaysia	CGK	Indonesia	116	118	-2	98%
PEN	Malaysia	HKT	Thailand	35	41	-6	86%
BKI	Malaysia	NRT	Japan	55	63	-8	88%
JHB	Malaysia	LOP	Indonesia	58	71	-12	83%
KCH	Malaysia	PNK	Indonesia	85	101	-16	84%
JHB	Malaysia	SGN	Viet Nam	101	118	-17	86%
LGK	Malaysia	SIN	Singapore	280	325	-44	86%

Figure 15: List of routes with potential for frequency increase

Strategies to improve the non-stop service could involve adding an additional weekly frequency or increasing the size of the aircraft serving the route. Each route has different operational constraints depending on the distance and type of market being served (short-haul vs. long-haul or business vs. leisure market).

5.3 Long-term new route opportunities

As the growing economy continues to drive air traffic growth, some routes identified in section 4 are expected to become viable in the longer term:

Origin Airport	Origin Economy	Destination Airport	Destination Economy	2015 OD Demand	2015 Estimated Market Potential	Distance viable for non-stop flight with current technology	Market size adequate for non-stop service in the long term	Proposed Route
KCH	Malaysia	HKG	Hong Kong, China	34	72	✓	✓	Yes
PEN	Malaysia	NRT	Japan	57	83	✓	✓	Yes

Figure 16: Long-term route opportunities

5.4 Development of aircraft technology

The latest aircraft available on the market, Airbus' A350-900 and Boeing's B787-9, are capable of flying ultra-long-haul routes. The technical capabilities of these aircraft will allow new direct routes to be operated between APEC economies across the Pacific. The following map illustrates the range limit[1] of the A350-900 and B787-9.

Figure 17: Range limit for the latest generation of aircraft from Kuala Lumpur (Source: GCMap)

6. Recommendations to improve air connectivity

The various recommendations to improve air connectivity both generically and specifically for each APEC member economy are presented in this section.

6.1 Generic recommendations

This chapter provides recommendations applicable to all economies, such as greater liberalization of air routes by allowing more access and the elimination of curfews and operational restrictions.

- Continue to liberalize the air services market to other APEC economies, allowing the fullest access to Malaysian airports.

[1] For illustration only. Based on published range for the base model of each aircraft type. Specific operating conditions may affect the range of the aircraft.

- Encourage airlines to explore the opportunities on the ultra-long-haul market when they take delivery of new generation of long-haul aircraft.

6.2 Specific recommendations

- Ensure that adequate planning is in place for other international airports in Malaysia such as PEN and BKI to cater for long-term traffic growth.
- Closely work with the airline industry to enhance sustainability and profitability of the industry.

6.3 How the APEC economy's regulator can help

- Work closely with different stakeholders, for example Malaysia Tourism, the Chamber of Commerce, etc., to gain a deeper understanding of the development of the aviation demand.
- Ensure that the major international airports have the adequate investment and improvement program to cater for future traffic demand.
- Explore the possibility of relaxing visa requirements for tourists.
- Reduce Passenger Movement Charge on international air passengers.

7. Appendix

7.1 Overview of IATA and IATA Consulting

7.1.1 IATA

IATA – The International Air Transport Association was founded in 1945 as the prime vehicle for inter-airline cooperation in promoting safe, reliable, secure and economical air service for the benefit of the world's consumers. IATA is fully committed to supporting the commercial aviation industry's stakeholders and governments in their efforts to achieve profitability and long-term viability.

IATA's mission:

- To represent, lead and serve the airline industry.

IATA's vision:

- To be the force for value creation and innovation, driving a safe, secure and profitable air transport industry that sustainably connects and enriches our world.

IATA in numbers:

- 250+ member airlines
- 83% of total air traffic
- $387B processed by IATA financial systems
- 1,400+ employees
- 54 offices in 53 countries

7.1.2 IATA Consulting

IATA Consulting overview

IATA Consulting has comprehensive experience in the full array of business challenges facing the aviation sector. Serving the airline industry for 70 years, IATA has developed unrivalled practical experience, which we bring forth to provide the best solutions to our clients.

With our depth and breadth of aviation industry experience, we assist clients to maximize the value of their operating model, realize growth ambitions and gain insights that translate into sustainable competitive advantages.

IATA Consulting has expertise in the following areas:

SAFETY & FLIGHT OPERATIONS

Solutions for aviation organizations and airlines to improve safety, efficiency and air transport management.

ENVIRONMENT & ECONOMICS

Solutions for fulfilling the vision of a safer, more competitive and sustainable aviation industry.

AIRLINES

Solutions to achieve real and lasting results in every aspect of airline commercial and operational management.

AIRPORTS, PASSENGERS & SECURITY

Solutions to plan your airport efficiently to avoid costly mistakes and profit from untapped opportunities.

GROUND HANDLING & CARGO

Solutions to optimize your operations and improve your safety and security while reducing costs.

Our Clients

IATA Consulting has successfully demonstrated its capabilities by providing airlines, airports, tourism offices and other organizations with accurate, unbiased and reliable high quality information and analysis to help them define and understand their markets, while ensuring their long-term facility development and financial success.

IATA is trusted by multiple clients all over the world including airlines, airports, governments and aviation institutions.

Why IATA Consulting was chosen for this project

IATA has, over time, recruited and retained some of the most highly experienced and capable aviation consulting resources within the aviation industry. Due to its position at the heart of the industry, IATA has access to exceptionally skilled and informed subject matter experts and specialists. IATA Consulting's objective is to make a positive difference in its clients' performance, while delivering quality services to all industry stakeholders.

IATA Consulting provides its customers with vast knowledge and expertise in all sectors of the industry worldwide. Our approach has been finely tuned to leverage IATA's global presence and industry thought leadership position in the development of tailored solutions that fit with local cultural considerations and embody international best practices. Our consultants rely on international state-of-the-art standards, unmatched access to data, and products and expert resources to provide cost-efficient and highly informed solutions.

IATA is backed by a robust set of decision support tools, Airport IS and Pax IS have been essential to undertake this study.

Airport IS and **Pax IS** are the most comprehensive aviation databases available in the marketplace, capturing 100% of traffic around the world and bringing together total market supply and demand under a single platform. The data provided is accurate and reliable as it is captured through IATA's Billing and Settlement Plan (BSP).

Bibliography

- Albatross Airport. (2016). Retrieved from World Airports Traffic Report: https://www.airport-information.com/data
- Airport Intelligence Services. (2016). *Airport IS reports.* Retrieved from https://airport-is.com/ais/siteMenu.jsp
- Belobaba, P. (2015). *The Global Airline Industry.* Wiley Publishing.
- Central Intelligence Agency . (2016). *The World Factbook: Chinese Taipei*. Retrieved from https://www.cia.gov/library/publications/the-world-factbook/geos/tw.html
- Department of Statistics. (2016). Retrieved from https://www.statistics.gov.my/
- ICF International. (2014). *Successful Air Service Development.*
- International Monetary Fund. (2016). *List of per capita nominal GDP for countries and dependencies.* Retrieved from http://www.imf.org/external/index.htm
- Malaysia Airports. (2016). Retrieved from http://www.malaysiaairports.com.my/
- Malaysian Aviation Commission. (2016). Retrieved from http://www.mavcom.my/en/home/
- Oxford Economics. (2011). *Economic Benefits from Air Transport in Malaysia.* Retrieved from https://www.iata.org/policy/Documents/Benefits-of-Aviation-Malaysia -2011.pdf
- World Travel and Tourism Council. (2016). *Travel and Tourism Economic Impact.* Retrieved from http://www.wttc.org//media/files/reports/economic%20impact%20research/countries%202016/malaysia2016.pdf
- Swan, W. (2008). *Forecasting Air Travel with Open Skies.* Retrieved from Seabury Airline Planning Group: www.sauder.ubc.ca/.../Forecasting%20Asia%20Open%20Skies.ashx
- Tourism Malaysia. (2016). Retrieved from http://www.tourism.gov.my/

Produced by

International Air Transport Association

Head Office Canada:
800 Place Victoria, PO Box 113
Montreal H4Z 1M1, Quebec,
Canada

www.iata.org/consulting

For
Asia-Pacific Economic Cooperation Secretariat
35 Heng Mui Keng Terrace
Singapore 119616
Tel: (65) 68919 600
Fax: (65) 68919 690
Email: info@apec.org
Website: www.apec.org

APEC#216-TO-01.12