



**Asia-Pacific
Economic Cooperation**

Develop Air Connectivity in the APEC Region

THE REPUBLIC OF THE PHILIPPINES

APEC Project: TWG 01 2014A

Produced by



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APEC#216-TO-01.21

Table of contents

Glossary	5
List of Abbreviations	5
1. Introduction to the project.....	10
2. Approach followed and data used.....	11
2.1 Data fueling the model	11
2.2 Gap analysis	12
2.3 Induction.....	14
2.4 Connecting potential	14
2.5 Demand growth.....	15
2.6 Other.....	15
2.7 Final route forecast.....	16
3. The Philippines.....	16
3.1 Economy and demographics	16
3.1.1 Demographics.....	16
3.1.2 Economy	17
3.1.3 Tourism	18
3.2 Aviation demand	18
3.2.1 Recent demand growth	18
3.2.2 Current air services from the Philippines	20
3.2.3 Aviation and the economy.....	20
3.2.4 Government position on aviation.....	21
3.3 Airport specific information	21
3.3.1 Busiest airports in the Philippines	21
3.3.2 Principal airline operators	22
4. Medium-term new route opportunities.....	23
4.1 Service gaps	23
4.1.1 Economy pair analysis	23
4.1.2 City pair analysis by APEC economy	25
4.2 Route traffic forecast.....	27
4.2.1 Preliminary feasibility/viability considerations	27

4.3	Proposed route analysis	28
4.3.1	Route MNL -YYZ	28
4.3.2	Route MNL-JFK.....	29
4.3.3	Route MNL-ORD	29
4.3.4	Route MNL-SEA.....	30
4.3.5	Route MNL-BNE	30
4.3.6	Route MNL-PER.....	31
4.4	High level feasibility analysis	31
4.4.1	Route MNL-YYZ	32
4.4.2	Route MNL-JFK.....	32
4.4.3	Route MNL-ORD	33
4.4.4	Route MNL-SEA.....	33
4.4.5	Route MNL-BNE	34
4.4.6	Route MNL-PER.....	34
5.	Conclusions and other opportunities	35
5.1	Connectivity improvement.....	35
5.2	Route frequency increase.....	35
5.3	Long-term new route opportunities.....	36
5.4	Development of aircraft technology	37
6.	Recommendations to improve air connectivity	37
6.1	Generic recommendations	37
6.2	Specific recommendations	38
6.3	How the APEC economy’s regulator can help	38
7.	Appendix.....	39
7.1	Overview of IATA and IATA Consulting.....	39
7.1.1	IATA.....	39
7.1.2	IATA Consulting.....	39
	Bibliography	42

Glossary

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

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

Induction/Stimulation – Initial spike in passenger demand when a 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

AUS – Austin, US

BOS – Boston, US

ACA – Acapulco, MEX

AYP – Ayacucho, PE

BPN – Balikpapan, INA

ADL – Adelaide, AUS

BCD – Negros Occidental,

BUR – Burbank, US

AER – Sochi, RUS

PH

BWN – Bandar Seri

AGU – Aguascalientes,

BDJ – Banjarmasin, INA

Begawan, BD

MEX

BHE – Blenheim, NZ

BXU – Butuan, PH

AKJ – Asahikawa, JPN

BJX – Silao, MEX

CAN – Guangzhou, PRC

AKL – Auckland, NZ

BKI – Kota Kinabalu, MAS

CBO – Cotabato, PH

ANF – Antofagasta, CHL

BKK – Bangkok, THA

CCP – Concepción, CHL

AOR – Alor Setar, MAS

BLI – Bellingham, US

CEB – Cebu, PH

AQP – Arequipa, CHL

BMV – Buon Ma Thuot,

CEI – Chiang Rai, THA

ARH – Arkhangelsk, RUS

VN

CEK – Chelyabinsk, RUS

ASF – Astrakhan, RUS

BNA – Nashville, US

CEN – Ciudad Obregón,

ATL – Atlanta, US

BNE – Brisbane, AUS

MEX

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

KBV – Krabi, THA	LOP – Lombok, INA	NNG – Nanning, PRC
KCH – Kuching, MAS	LPF – Liupanshui, PRC	NPE – Napier, NZ
KGD – Kaliningrad, RUS	LPT – Lampang, THA	NPL – New Plymouth, NZ
KHH – Kaohsiung, CT	MBT – Masbate City, PH	NRT – Tokyo, JPN
KHN – Nanchang, PRC	MCC – Sacramento, US	NSN – Nelson, NZ
KIX – Osaka, JPN	MCO – Orlando, US	NTG – Nantong, PRC
KKE – Kerikeri, NZ	MDW – Chicago, US	OAK – Oakland, US
KLO – Kalibo, PH	MDZ – Mendoza, ARG	OAX – Oaxaca, MEX
KMG – Kunming, PRC	MEL – Melbourne, AUS	OKA – Naha, JPN
KNH – Kinmen, PRC	MEX – Mexico City, MEX	OOL – Gold Coast, AUS
KNO – Kuala Namu, INA	MFM – Macau, MAC	ORD – Chicago, US
KOJ – Kirishima, JPN	MIA – Miami, US	OVB – Novosibirsk, RUS
KRR – Krasnodar, RUS	MLM – Alvaro Obregon, Michoacan, MEX	OZC – Ozamiz, PH
KUF – Samara, RUS	MNL – Manilla, PH	PDG – Sumatra, INA
KUL – Kuala Lumpur, MAS	MRY – Monterey, US	PEK – Beijing, PRC
KWL – Guilin, PRC	MSP – Minneapolis–Saint Paul, US	PEN – Penang, MAS
KZN – Tatarstan, RUS	MTT – Cosoleacaque, MEX	PER – Perth, AUS
LAS – Las Vegas, US	MTY – Apodaca, MEX	PHL – Philadelphia, US
LAX – Los Angeles, US	MZG – Magong City, CT	PHX – Phoenix, US
LED – Saint Petersburg, RUS	NBC – Nizhnekamsk, RUS	PIU – Piura, PE
SVX – Yekaterinburg, RUS	NGB – Ningbo, PRC	PLM – Palembang, INA
LGA – NY–La Guardia, US	NGO – Nagoya, JPN	PLW – Palu, INA
LGK – Padang Matsirat, Langkawi, MAS	NKG – Nanjing, PRC	PMC – Puerto Montt, CHL
LHW – Lanzhou, PRC	NKM – Nagoya, JPN	PMR – Palmerston North City, NZ
LIM – Lima, PE		PNK – Pontianak, INA

POM – Port Moresby, PNG	SFO – San Francisco, US	SYX – Sanya, PRC
PPQ – Paraparaumu, NZ	SGN – Ho Chi Minh, VN	SZX – Shenzhen, PRC
PQC – Phu Quoc, VN	SHA – Shanghai, PRC SHE – Shenyang, PRC	TAC – Tacloban, PH
PSP – Palm Springs, US	SIN – Singapore, SGP	TAM – Tampico, MEX
PUS – Busan, ROK	SIP – Simferopol, UKR	TAO – Qingdao, PRC
PVG – Shanghai, PRC	SJC – San Jose, US	TAV – Tau, ASM
PVR – Puerto Vallarta, MEX	SJD – San Jose del Cabo, MEX	TBP – Tumbes, PE
PXU – Pleiku, VN	SLC – Salt Lake City, US	TDX – Trat, THA
PYX – Pattaya, THA	SLP – San Luis Potosi, MEX	TGG – Kuala Terengganu, MSA
RDU – Raleigh, Durham, US	SMF – Sacramento, US	TGZ – Chiapa de Corzo, MEX
REP – Siem Reap, KHM	SNA – Santa Ana, US	TIJ – Tijuana, MEX
REX – Reynosa, US	SOC – Solo/Surakarta, INA	TKG – Bandar Lampung, INA
RGN – Mingaladon, MMR	SPN – Saipan, US	TLC – Toluca, MEX
RNO – Reno, US	SRG – Semarang, INA	TNA – Jinan, PRC
ROC – Rochester, US	STL – St. Louis, US	TPE – Taipei, CT
ROT – Rotokawa, NZ	STW – Stavropol Krai, RUS	TPP – Tarapoto, PE
ROV – Rostov-on-Don, RUS	SUB – Surabaya, INA	TRC – Torreon, MEX
RSU – Yeosu, ROK	SVO – Moscow, RUS	TRU – Trujillo, PE
RTW – Saratov City, RUS	SVX – Koltsovo, RUS	TSA – Songshan, CT
RXS – Roxas City, PH	SWA – Jieyang Chaoshan, PRC	TSN – Tianjin, PRC
SAN – San Diego, US	SYD – Sydney, AUS	TTJ – Tottori, JPN
SCL – Santiago, CHL	SYO – Sakata, JPN	TXG – Taichung, CT
SEA – Seattle, US		TYN – Taiyuan, PRC
		UFA – Ufa, RUS

UIH – Qui Nhon, VN	WRE – Whangarei city, NZ	YUL – Montreal, CDA
UKB – Kobe, JPN	WUH – Wuhan, PRC	YVR – Vancouver, CDA
UPG – Makassar, INA	WUX – Wuxi, PRC	YWG – Winnipeg, CDA
URC – Urumqi, PRC	XIY – Xi'an, PRC	YXC – Cranbrook, CDA
USM – Koh Samui, THA	XMN – Xiamen, PRC	YXS – Prince George, CDA
VCL – Chu Lai, VN	YEG – Edmonton, CDA	YXT – Terrace-Kitimat, CDA
VDH – Dong Hoi, VN	YGJ – Yonago, PRC	YYB – North Bay, CDA
VER – Veracruz, MEX	YHZ – Halifax, CDA	YYC – Calgary, CDA
VII – Vinh, VN	YKA – Kamloops, CDA	YYJ – Victoria, CDA
VKO – Moscow, RUS	YLW – Kelowna, CDA	YYZ – Toronto, CDA
VOZ – Voronezh, RUS	YNJ – Yanji, PRC	YZP – Sandspit, CDA
VSA – Villahermosa, MEX	YOW – Ottawa, CDA	YZR – Sarnia, CDA
VVO – Vladivostok, RUS	YPR – Prince Rupert, CDA	ZAL – Valdivia, CHL
WAG – Whanganui, NZ	YQM – Moncton, CDA	ZCL – Calera de Victor Rosales, MEX
WEH – Weihai, PRC	YQR – Regina, CDA	ZQN – Queenstown, NZ
WLG – Wellington, NZ	YSJ – Saint John, CDA	ZUH – Zhuhai, PRC
WNZ – Wenzhou, PRC	YTS – Timmins, CDA	

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.

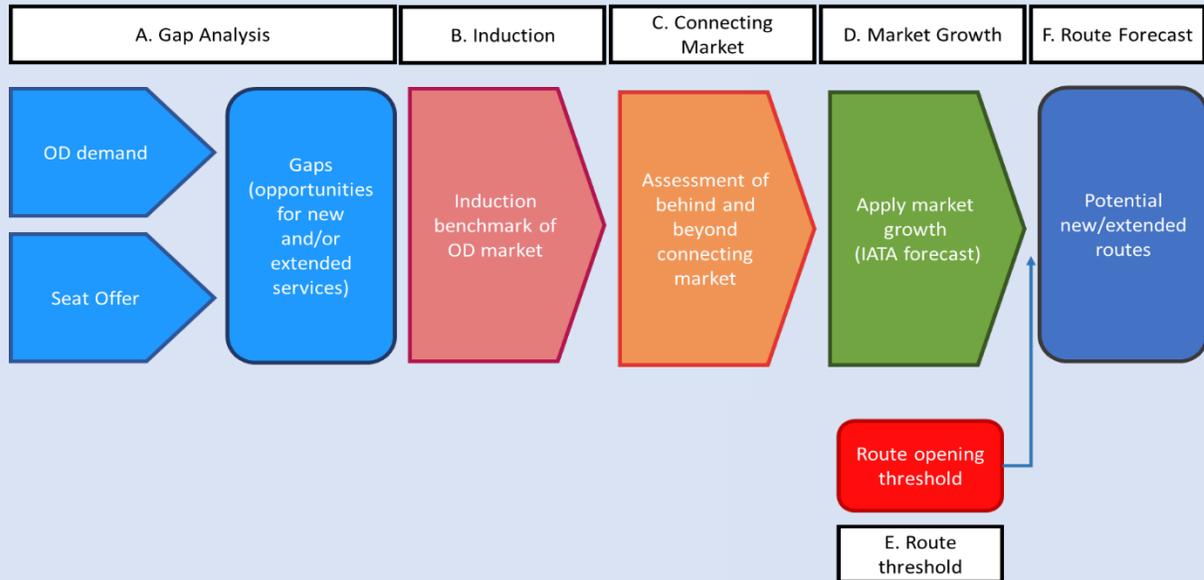


Figure 1: Process used to complete analytical work

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

2.1 Data fueling the model

The first step involved a demand-supply gap analysis aimed at identifying the unserved route, 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 forecasted, using realistic assumptions related to induction, connecting potential and demand growth.

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.

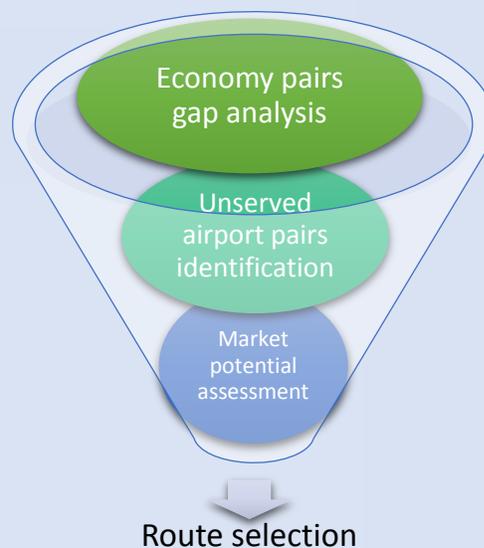


Figure 2: Funnel approach used to conduct Analysis

The economy-pair analysis allowed to identify unserved markets.

As an example, the analysis showed that there is a daily demand of 2,300 Passengers Daily Each Way (PDEW) via existing connecting routes between the Philippines and the United States while no non-stop services are presently available.

When extending the analysis down to the city pairs it was possible to identify the largest unserved routes between the two economies. There are, for instance, 202 PDEW traveling between MNL and the New York City area.

The top 30 unserved routes from the Philippines to the entire APEC region are presented in the table below.

Origin Airport	Origin Economy	Destination Airport	Destination Economy	2015 OD Demand	Non-Stop Seats in 2015	Demand Excess over Supply
MNL	The Philippines	YYZ	Canada	224	-	224
MNL	The Philippines	JFK	United States	202	-	202
MNL	The Philippines	IAH	United States	99	-	99
MNL	The Philippines	BNE	Australia	85	-	85
MNL	The Philippines	PER	Australia	68	-	68
MNL	The Philippines	YYC	Canada	60	-	60
MNL	The Philippines	AKL	New Zealand	59	-	59
MNL	The Philippines	ORD	United States	58	-	58
MNL	The Philippines	MIA	United States	57	-	57
MNL	The Philippines	YWG	Canada	55	-	55
MNL	The Philippines	MSY	United States	47	-	47
MNL	The Philippines	SEA	United States	45	-	45
MNL	The Philippines	YEG	Canada	44	-	44
MNL	The Philippines	IAD	United States	42	-	42
MNL	The Philippines	YUL	Canada	39	-	39
DVO	The Philippines	HKG	Hong Kong, China	35	-	35
MNL	The Philippines	PEN	Malaysia	30	-	30
CEB	The Philippines	FUK	Japan	30	-	30
MNL	The Philippines	RSU	Republic of Korea	30	-	30
MNL	The Philippines	EWR	United States	28	-	28
MNL	The Philippines	LAS	United States	27	-	27
MNL	The Philippines	ADL	Australia	26	-	26
MNL	The Philippines	ATL	United States	26	-	26
MNL	The Philippines	BOS	United States	24	-	24
MNL	The Philippines	CTS	Japan	23	-	23
DVO	The Philippines	NRT	Japan	23	-	23
CEB	The Philippines	BKK	Thailand	22	-	22
MNL	The Philippines	CHC	New Zealand	22	-	22
MNL	The Philippines	DFW	United States	21	-	21
DVO	The Philippines	ICN	Republic of Korea	21	-	21

Figure 3: Top 30 unserved routes from the Philippines to APEC, 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 the Philippines. 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: Induction rates used during the analysis

2.4 Connecting potential

Increasing the quality of connections through alliance agreements, codeshares, shorter journey times or less stops, increases overall travel demand on 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 which are now more easily accessible (Swan, 2008). On long-haul routes, typically two thirds of the passengers will make a connection.

Based on IATA’s analysis it was 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. For the Philippines it is both the hubs at the destinations flown to and the hubs within the Philippines which will have an impact on this value. The table below presents the connecting ratios of hubs within the Philippines on routes to/from the particular regions.

	MNL
North America	17.4%
Australia	19.6%
Asia	15.0%
South East Asia	15.8%
China	15.4%
North Asia	10.4%

Figure 5: Connecting potential rates used when flying to/from APEC regions and MNL

	NRT	CAN	TPE	SIN	SYD	YYZ	LAX	JFK/EWR
South East Asia	19.9%	17.5%	16.2%	17.5%	13.0%	49.6%	31.3%	55.4%

Figure 6: Connecting potential rates used when flying from the Philippines to select group of international hubs

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 the Philippines 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 7 below for the MNL-PER 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	Calculations	
MNL	PER	Australia	(A) 68	(B) 80%	(C) 77%	(D) 20%		
				(1) 54	42		(1) = AxB	
				(2)			(2) = 1xC	
			Subtotal	(3)	96		(3) = 1+2	
			MEL - PER Total Market Potential (2015 Base)				(4) 119	(4) = 3/(1-D)

Figure 7: Example of the various assumptions being applied to determine the potential for a new air service.

3. The Philippines

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

3.1 Economy and demographics

The Philippines is an archipelagic economy composed of 7,107 islands divided in 18 regions. Located in the Southeast corner of the South China Sea, the Philippines is neighbored by Malaysia to the west, Indonesia to the South and Chinese Taipei and China to the North.

3.1.1 Demographics

The Philippines' population is estimated at 102,250 million as of 2016, making it the seventh most populous in Asia, and 12th in the world (United Nation, 2016). About one quarter of the economy's population is concentrated within and around the Metropolitan Manila region, one of the twelve metropolitan regions of the Philippines. The Philippines' population density is approximately 343 people per square kilometre (United Nations, 2016).

The Philippines contains a diverse range of ethnic groups, including Tagalog (28.1%), Cebuano (13,1%), Ilocano, Bisaya, Hiligaynon, Bikol, and Waray. Being at the crossroads of the West and East, the Philippines receives migrants from diverse nations: two important non-indigenous minorities are the Chinese and the Spaniards. There are approximately 10.2 million Filipinos work or reside abroad, with destinations including Japan; Malaysia; the US and the Middle East (Commission On Filipinos Overseas, 2013). Due to the American administration in the colonial times, English remains one of the Philippines' two official language, alongside with Filipino.

The Philippines' population is expected to grow at an average annual rate of 1.6 % over the next 10 years (United Nations, 2016), increasing from the past 1.4% annual growth rate between 2005 and 2015.

About 44% of the Philippines' population lives in urban areas (World Bank,2014). Major urban cities include:

City	Population (million)
1. Quezon City	2.76
2. Manila	1.65
3. Caloocan	1.49
4. Davao City	1.45
5. Cebu City	0.87
6. Zamboanga City	0.81
7. Antipolo	0.68
8. Pasig	0.67

Figure 8: Largest cities in the Philippines, Source: Philippine Statistics Authority (2010 Census)

3.1.2 Economy

The Philippines is a newly industrialized economy. Its economy has been transitioning from agriculture-based to services and manufacturing-based. The agricultural sector employs around 32% of the labour force, and accounts for 14% of GDP. The industrial sector employs around 14% of the workforce and accounts for 30% of GDP. Meanwhile, 47% of workers involved in the services sector are responsible for 56% of GDP. In 2015, the Philippines was the 40th largest economy of the world and ranked 124th in terms of per capita income (International Monetary Fund, 2016). The Philippines's GDP growth has been approximately 6.3% p.a. over the past three years.

The top export destinations are China; Hong Kong, China; Japan; Singapore; and the United States. Primary exports include semiconductors and electronic products, transport equipment. The top import origins are China; Japan; Korea; the United States and other parts of Asia. Main imports include electronic products, mineral fuels, lubricants and related materials.

The short-term prospect for economy growth is good, given the solid growth last year in 2015 generated by strong domestic demand, despite drag from net exports. Growth is projected to pick up with higher investment and consumption. Sustaining strong growth will require policy continuity supporting the development of infrastructure and human capital, improvements to the investment climate, and governance reform. (Asian Development Bank, 2016)

3.1.3 Tourism

The Philippines is an archipelagic economy composed of 7,107 islands divided in 18 regions. It is known for having its rich biodiversity, which is the main tourist attraction in this economy. Its beaches, mountains, rainforests, islands, and diving spots are among the economy's most popular tourist destinations. The economy's rich historical and cultural heritage is also one of the attractions of the Philippines.

Tourism is an important sector for the Philippine economy. In 2014, tourism contributed to 11.2% of the Philippine GDP, and this share is forecast to grow to 16.9% by 2025. (World Travel and Tourism Council, 2015). In 2013, the economy attracted 4,681,307 visitors (Philippines Department of Tourism). In the Philippine National Tourism Plan (NTDP) for 2011 and 2016, one of the key area of focus is to increase connectivity between the Philippines and its major growth markets such as China, and increase the capacity of secondary international airports.

3.2 Aviation demand

3.2.1 Recent demand growth

The Philippines traditionally has been a popular tourism destination in Southeast Asia and the demand of aviation had grown significantly partly thanks to the development of low cost carriers in the economy serving both domestic and international markets. With ASEAN open skies and the potential open skies agreement between ASEAN and EU, the Thai aviation market is set to grow at a strong pace in the short to medium term.

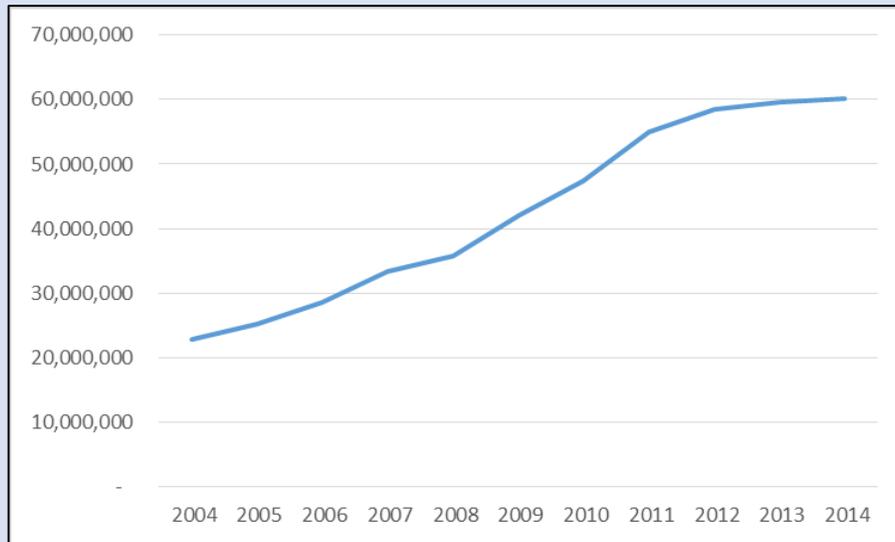


Figure 9: Total air traffic of the Philippines 2004-2015 (Source: Albatross Airport, 2016)

Like many other APEC economies in Southeast Asia, air services across the Pacific from the Philippines to North and South America are not always feasible. This is partly due to the limitations in current aircraft technology in terms of range. It is also costly for the airlines to operate such ultra-long-haul routes. At present, a lot of the trans-Pacific traffic is routed through other aviation hubs in the APEC economies in North Asia such as HKG, HND, and NRT and ICN. IATA anticipates these hubs will continue to perform their current function in the short to medium term. However, it is expected that more trans-Pacific routes will turn into direct service when new aircraft with longer ranges comes online (such as the B777-8/-9/-10 and the A350-900ULR) in the next five years or so.

Long-term impact

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

- Opening up foreign markets to the Philippines exports
- Lowering transport costs, particularly over long distances
- Increasing the flexibility of labor supply, which should enhance allocative efficiency and bring down the natural rate of unemployment
- Encouraging the Philippines 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 a PHP 5.1 billion per annum increase in long run GDP for the Thai economy

3.2.4 Government position on aviation

The Philippines, being an economy with 7,107 islands, relies heavily on aviation both domestically and internationally. The international gateway to the Philippines had traditionally been MNL and CEB but the government had been encouraging more airports to open up international services. In recent years, the Philippines government is also actively pursuing public private partnership in the bid of improving the airport facilities and expansions.

The Philippines had also been upgraded by the FAA from Category 2 to Category 1 in 2014, with the EU lifting the ban for the Philippines in 2015. This will allow airlines in the Philippines to start operating more long-haul services, in particular to the US and Europe.

3.3 Airport specific information

3.3.1 Busiest airports in the Philippines

MNL is the gateway and the busiest airport in the economy and itself has captured 57% of the total aviation market in the Philippines.

Rank	Airport	Most Recent Annual Traffic Statistics	% of Total Market
1	MNL	34,091,159	57%
2	CEB	6,839,849	11%
3	DVO	3,442,264	6%
4	KLO	2,317,494	4%
5	ILO	1,677,632	3%
	Other Airports	11,738,894	20%

Figure 11: Top 5 busiest airports in the Philippines (Source: Albatross Airport, 2016).

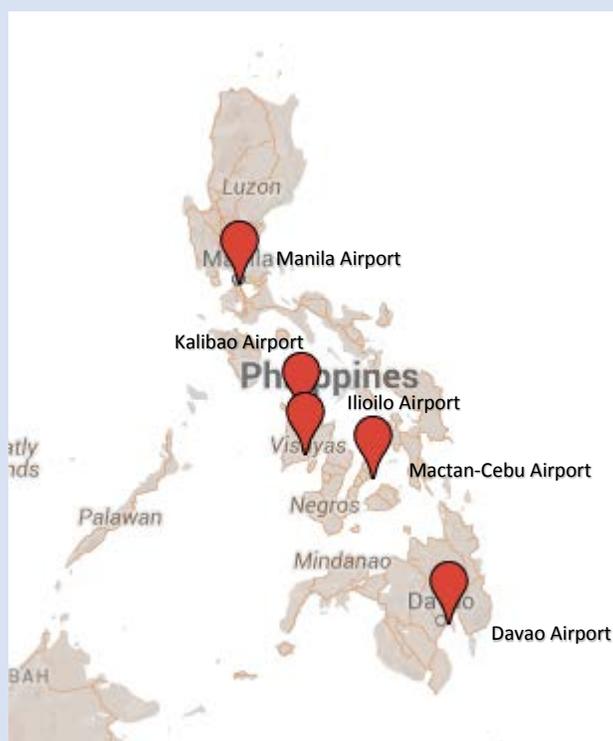


Figure 12: Map of the Philippines' busiest airports (Source: Google maps)

3.3.2 Principal airline operators

There are three airlines with international scheduled services to APEC economies are based in the Philippines:

Philippine Airlines

Philippine Airlines is the flag carrier of the Philippines and started operating in 1941. The main hub is in MNL with operating base in CEB.

Philippine Airlines has a current fleet of 87 aircraft with another 14 new aircraft on order.

Internationally within the APEC region, Philippine Airlines provides service to Australia; Brunei Darussalam; Canada; China; Hong Kong, China; Indonesia; Japan; Republic of Korea; Malaysia; New Zealand; Singapore; Chinese Taipei; Thailand; the United States; and Viet Nam.

Cebu Pacific

Cebu Pacific is an LCC in the Philippines with hubs in MNL and CEB airport. It started operations in 1988 and since then grown to a fleet size of 56 aircraft today. It has also on order 49 new aircraft and will be delivered between 2016 and 2021.

Internationally within the APEC region, Philippine Airlines provides service to Australia; Brunei Darussalam; China; Hong Kong, China; Indonesia; Japan; Republic of Korea; Malaysia; Singapore; Chinese Taipei; Thailand; and Viet Nam.

AirAsia Philippines

AirAsia Philippines was established in 2010 and based at MNL. It has a fleet of 10 A320 aircraft with 20 of the same type on order.

As an affiliate airline of the AirAsia Group, AirAsia Philippines extensively serves the APEC economies in Asia with services to China; Hong Kong, China; Indonesia; Malaysia; Singapore; Thailand; and Viet Nam

4. Medium-term new route opportunities

This section is dedicated to explaining the potential future air service developments to and from the Philippines within the APEC region over the next three years. Service gaps, route traffic forecasts, and high level feasibility analysis will be conducted.

4.1 Service gaps

As part of the process, air services to the Philippines were considered at an economic pair and city pair basis.

4.1.1 Economy pair analysis

The following table outlines supply and demand for air travel between the Philippines 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)
- Air service is at a shortfall and should be improved in the medium term (in red)

Typical ratios found in highly liberalized domestic markets with adequate capacity for demand ranges 60% to 80%. This range is attributed to the fact that aircraft usually fly at under 80% load factors, and there is a natural phenomenon for approximately 20% of passengers to take connecting options.

Origin Economy	Demand (PDEW)	Non-Stop Seat Offer (SDEW)	One-Stop Seat Offer (SDEW)	Ratio of Demand to Supply
Australia (AUS)	861	899	81	88%
Brunei Darussalam (BD)	126	277	0	45%
Canada (CDA)	663	478	159	104%
Chile (CHL)	5	0	0	*
People's Republic of China (PRC)	1,381	1,961	158	65%
Hong Kong, China (HKC)	2,566	5,337	0	48%
Indonesia (INA)	350	367	0	95%
Japan (JPN)	2,565	3,910	95	64%
Republic of Korea (ROK)	3,965	5,728	0	69%
Malaysia (MAS)	1,179	1,896	0	62%
Mexico (MEX)	7	0	0	*
New Zealand (NZ)	109	0	86	127%
Papua New Guinea (PNG)	76	87	0	87%
Peru (PE)	4	0	0	*
The Republic of the Philippines (PH)	57,657	83,281	337	69%
Russia (RUS)	13	0	0	*
Singapore (SGP)	2,798	4,530	306	58%
Chinese Taipei (CT)	773	1,373	0	56%
Thailand (THA)	800	1,534	0	52%
United States (US)	2,426	1,436	604	119%
Viet Nam (VN)	328	435	0	75%

Figure 13: Total daily demand (PDEW), non-stop seat offer (SDEW), one-stop seat offer (SDEW) and demand-to-supply ratio (Source: IATA analysis of Airport IS Data)

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

In some cases, the demand-to-supply ratio is under 60%. In such instances supply is adequate and the low percentage figure may be representative of high rates of connecting passengers flying between economies. Where demand-to-supply ratios are higher than 80%, seat offer could be increased between economy pairs.

Based on the analysis at the economy level, the Philippines may need to improve service to six economies in the long term (highlighted in yellow) and could take actions to increase service frequencies with six

economies in the medium term if traffic levels grow (highlighted in red). The remaining nine destination economies are adequately served at an economy pair level or have inadequate demand for non-stop services. The following section will look into greater detail 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 to city pairs in the Philippines, 24 routes were examined which have a demand of 25 or greater PDEW with no non-stop service. The following section provides a narrative explaining the phenomenon seen at a combined economic-pair and city-pair level for the economies where air service development is a possibility.

Origin City	Origin Economy	Destination City	Destination Economy	Demand PDEW
MNL	The Philippines	BNE	Australia	85
MNL	The Philippines	PER	Australia	68
MNL	The Philippines	ADL	Australia	26
MNL	The Philippines	YYZ	Canada	224
MNL	The Philippines	YYC	Canada	60
MNL	The Philippines	YWG	Canada	55
MNL	The Philippines	YEG	Canada	44
MNL	The Philippines	YUL	Canada	39
DVO	The Philippines	HKG	Hong Kong, China	35
CEB	The Philippines	FUK	Japan	30
MNL	The Philippines	PEN	Malaysia	30
MNL	The Philippines	AKL	New Zealand	59
MNL	The Philippines	RSU	Republic of Korea	30
MNL	The Philippines	JFK	United States	202
MNL	The Philippines	IAH	United States	99
MNL	The Philippines	ORD	United States	58
MNL	The Philippines	MIA	United States	57
MNL	The Philippines	MSY	United States	47
MNL	The Philippines	SEA	United States	45
MNL	The Philippines	IAD	United States	42
MNL	The Philippines	EWR	United States	28
MNL	The Philippines	LAS	United States	27
MNL	The Philippines	ATL	United States	26

Figure 14: APEC routes to/from the Philippines over 25 PDEW with no non-stop service (Source: IATA Analysis of Airport IS data).

Australia (AUS)

Demand for flights to the Philippines was slightly less than the total supply offered, yet service offer is below the optimal rate. Non-stop service is offered between MNL to many points in Australia including CNS, DRW, SYD, and MEL. Bilateral restrictions were placing a limit on growth between the Philippines and Australia, although a 16% increase in bilateral seat capacity is planned from June 2016 (Australian Government, 2016). A non-stop option to commence in the medium term is suggested

between BNE and MNL (see section 4.3 below). There is also sufficient demand to increase frequency between MNL and MEL.

Canada (CDA)

At both an economy-pair and city-pair level, Canada and the Philippines are inadequately connected. In recent years there has been a doubling in the bilateral flight frequencies allowed between the two economies from 7 to 14 weekly flights (Philippine Flight Network, 2014). At a city-pair level, MNL-YYZ represents the APEC route with the largest non-stop demand in PDEW with no non-stop service. Suggested new services between MNL and YYZ are outlined in section 4.3 below.

Hong Kong, China (HKC)

Hong Kong, China and the Philippines are overall well served at an economy-pair level with many routes between HKG and various points of the Philippines. Certain routes such as DVO-HKG will become viable to offer in the long term, and other routes such as ILO-HKG and KLO-HKG could have increased frequencies in the short term.

Japan (JPN)

Japan and the Philippines are currently well aligned with supply and demand. As growth continues there will be need to increase capacity on certain services in the medium term such as CEB-NGO (section 5.2) and new routes will become viable in the long term such as CEB-FUK, or MNL-CTS (section 5.3).

Republic of Korea (ROK)

Korea is the largest international APEC market from the Philippines. The economy pairs are currently well aligned with a demand-to-supply ratio of 69%. In the medium term, there will be a possibility of increased capacity on MNL-CJU (section 5.2), and in the long term there may be a possibility of additional non-stop services such as MNL-RSU (section 5.3).

Malaysia (MAS)

Much like Japan and the Republic of Korea, the Philippines is currently at an acceptable level of supply on flights to Malaysia. Opportunities lie in the long-term development on routes such as MNL-PEN.

New Zealand (NZ)

Although there is strong daily demand of approximately 109 PDEW, there are currently no non-stop flights between the Philippines and New Zealand. New Zealand is the largest market from the Philippines with no non-stop service. A one-stop service recently commenced between MNL and AKL with a stop in CNS Australia on a narrow body A320 aircraft. Although the market is likely not large enough for non-stop flights on a wide-body aircraft between AKL and MNL, in the long term this will become a viable possibility (see section 5.3).

United States (US)

The United States is the market with the highest demand-to-supply ratio from the Philippines in the APEC region. There are currently 3 routes which have adequate demand for non-stop services from

MNL including JFK, ORD, and SEA (presented in section 4.3). Additionally, there is adequate demand to increase non-stop capacity between MNL and LAX (section 5.2). Initiating service or increasing capacity will improve overall service to the numerous cities in the US with high levels of daily demand for flights to the Philippines. Distance was a limiting factor on operating routes to the US yet as aircraft technology has improved it is possible to serve a number of destinations non-stop.

4.2 Route traffic forecast

Selected routes which have strong development potential are further examined. A traffic forecast based on historical market trends, induction, connecting potential and expected economic and tourism development is presented in this section.

4.2.1 Preliminary feasibility/viability considerations

City-pairs with 25 or greater PDEW (9,125 annual passengers each way) were considered as the minimum threshold for analysis. 24 Routes to and from the Philippines met this criterion as shown in the previous section.

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 with distance over 15,000km apart from one another are eliminated. The second criteria 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 158PDEW 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 six routes are presented in the table below.

This potential would grow to 459 by 2018, as displayed below. 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 OD	2016	2017	2018
The Philippines-Canada	MNL-YYZ	397	417	438	459

4.3.2 Route MNL-JFK

2015 MNL-JFK 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	Calculations	
MNL	JFK	United States	(A) 202	(B) 80%	(C) 13%	(D) 17%		
				(1) 161	21		(1) = Ax B	
				(2)			(2) = 1xC	
			Subtotal	(3)	182		(3) = 1+2	
			MNL - JFK Total Market Potential (2015 Base)				(4) 220	(4) = 3/(1-D)

IATA estimates that the MNL-JFK route could have presented a market potential of 220 PDEW in 2015 if a direct service was to be introduced.

This potential would grow to 255 by 2018, as displayed below. 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
The Philippines-United States	MNL-JFK	220	232	243	255

4.3.3 Route MNL-ORD

2015 MNL-ORD 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	Calculations	
MNL	ORD	United States	(A) 58	(B) 80%	(C) 47%	(D) 60%		
				(1) 47	23		(1) = Ax B	
				(2)			(2) = 1xC	
			Subtotal	(3)	69		(3) = 1+2	
			MNL - ORD Total Market Potential (2015 Base)				(4) 172	(4) = 3/(1-D)

IATA estimates that the MNL-ORD route would have presented a base market potential of 172 PDEW in 2015 if a direct service was to be introduced.

This potential would grow to 199 by 2018, as displayed below. 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
The Philippines-United States	MNL-ORD	172	181	190	199

4.3.4 Route MNL-SEA

2015 MNL-SEA 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	Calculations	
MNL	SEA	United States	(A) 45	(B) 80%	(C) 62%	(D) 60%		
				(1) 36	23		(1) = AxB	
				(2)			(2) = 1xC	
			Subtotal	(3)	58		(3) = 1+2	
			MNL - SEA Total Market Potential (2015 Base)				(4) 146	(4) = 3/(1-D)

IATA estimates that the POM-MEL route could present a market potential of 67 PDEW in 2016 if a direct service was to be introduced.

This potential would grow to 74 by 2018, as displayed below. 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
The Philippines-United States	MNL-SEA	146	154	161	169

4.3.5 Route MNL-BNE

2015 MNL-BNE 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	Calculations	
MNL	BNE	Australia	(A) 85	(B) 80%	(C) 64%	(D) 20%		
				(1) 68	44		(1) = AxB	
				(2)			(2) = 1xC	
			Subtotal	(3)	111		(3) = 1+2	
			MNL - BNE Total Market Potential (2015 Base)				(4) 138	(4) = 3/(1-D)

IATA estimates that the POM-MEL route could present a market potential of 67 PDEW in 2016 if a direct service was to be introduced.

This potential would grow to 74 by 2018, as displayed below. 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
The Philippines-Australia	MNL-BNE	138	146	153	162

4.3.6 Route MNL-PER

2015 MNL-PER 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	Calculations	
MNL	PER	Australia	(A) 68	(B) 80%	(C) 77%	(D) 20%		
				(1) 54	42		(1) = AxB	
				(2)			(2) = 1xC	
			Subtotal	(3)	96		(3) = 1+2	
			MNL - PER Total Market Potential (2015 Base)				(4) 119	(4) = 3/(1-D)

IATA estimates that the POM-MEL route could present a market potential of 67 PDEW in 2016 if a direct service was to be introduced.

This potential would grow to 74 by 2018, as displayed below. 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
The Philippines-Australia	MNL-PER	119	126	132	139

4.4 High level feasibility analysis

This section considers the above route through three main 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 MNL-YYZ

MNL-YYZ is an ultra-long-haul route (approximately 13,300km) which would need to be served by a wide-body aircraft capable of operating this distance, such as a Boeing 777, Boeing 787, Boeing 747, Airbus A380, Airbus A340, or Airbus A350.

Air Canada was chosen based on higher rates of connection on routes to/from South East Asia through YZZ than the connecting rates to North America in MNL. Air Canada is also planning major fleet growth in the coming years and the 777-200 would provide the necessary range to serve this route.

Considering the 2016 estimated demand, a daily or twice daily service could be operated as from inception. The proposed service would therefore allow for up to a 90% average load factor, as illustrated below:

Route (non-directional)	Minimum Opening Date	Airline	Aircraft	# of Seats	Flight Frequency per Week	Number of Pax per Flight	Load Factor
MNL-YYZ	Now	Air Canada	Boeing 777-200	270	12	243	90%

Finally, in terms of air service agreements, IATA does see a potential road block for the operation of this route. In 2014 the number of allowed flights between the economies was doubled from 7 to 14 (Philippine Flight Network, 2014). The majority of these route allocations are used on flights to YVR (approximately 9 per week in 2015). This point should however be further validated based on the official bilateral agreements in place (not available for consultation to IATA).

4.4.2 Route MNL-JFK

MNL-JFK is an ultra-long-haul route (approximately 13,700km) which would need to be served by a wide-body aircraft capable of operating this distance such as a Boeing 777, Boeing 787, Boeing 747, Airbus A380, Airbus A340, or Airbus A350.

Delta Airlines was chosen based on higher rates of connection on routes to/from Southeast Asia through JFK than the connecting rates to North America in MNL. Delta is the only carrier which has a hub in either of the city pairs with an aircraft capable of operating this distance. The 777-200 LR would be needed on a segment of this distance. Currently Delta offers a 1-stop service on this route (stopping in NRT).

Considering the 2016 estimated demand, a daily service could be operated as from inception. The proposed service would therefore allow for up to an 86% average load factor, as illustrated below:

Route (non-directional)	Minimum Opening Date	Airline	Aircraft	# of Seats	Flight Frequency per week	Number of Pax per Flight	Load Factor
MNL-JFK	Now	Delta Airlines	Boeing 777-200	270	7	232	86%

Finally, in terms of air service agreements, IATA does see a potential road block for the operation of this route based on high level policies in the Philippines and the United States. This point should however be further validated based on the official bilateral agreements in place (not available for consultation to IATA).

4.4.3 Route MNL-ORD

MNL-ORD is an ultra-long-haul route (approximately 13,100km) which would need to be served by a particular wide-body aircraft capable of operating this distance.

United Airlines was chosen based on higher rates of connection on routes to/from Southeast Asia through ORD than the connecting rates to North America in MNL. The Boeing 787 would provide the necessary range and an adequate capacity to serve this route.

Considering the 2016 estimated demand, six times per week service could be operated as from inception. The proposed service would therefore allow for up to an 83% average load factor, as illustrated below:

Route (non-directional)	Minimum Opening Date	Airline	Aircraft	# of Seats	Flight Frequency per week	Number of Pax per Flight	Load Factor
MNL-ORD	Now	United Airlines	Boeing 787-8	255	6	211	83%

Finally, in terms of air service agreements, IATA does see a potential road block for the operation of this route based on high level policies in the Philippines and the United States. This point should however be further validated based on the official bilateral agreements in place (not available for consultation to IATA).

4.4.4 Route MNL-SEA

MNL-SEA is a long-haul route (approximately 10,700km) which would need to be served by a wide-body aircraft.

Delta Airlines was chosen based on its hub presence in Seattle and higher rates of connection on routes to/from Southeast Asia through SEA than the connecting rates to North America in MNL. SEA is a strategic location for beyond/behind connections on Asian flights to other parts of the USA new international terminal will be built in Seattle in the coming years increasing capacity for additional routes such as MNL-SEA.

Considering the 2016 estimated demand, a 4 times weekly service could be operated as from inception. The proposed service could therefore allow for up to a 92% average load factor, as illustrated below:

Route (non-directional)	Minimum Opening Date	Airline	Aircraft	# of Seats	Flight Frequency per week	Number of Pax per Flight	Load Factor
MNL-SEA	Now	Delta Airlines	Airbus A330-300	293	4	269	92%

Finally, in terms of air service agreements, IATA does see a potential road block for the operation of this route based on high level policies in the Philippines and the United States. This point should however be further validated based on the official bilateral agreements in place (not available for consultation to IATA).

4.4.5 Route MNL-BNE

MNL-BNE would serve both a mixed market of mainly tourism and returning expatriates. Philippine Airlines was chosen to offer the non-stop service as the carrier already has a presence with a one-stop service through DRW on the BNE-MNL route. As the air travel market has grown in both economies, non-stop service is now a viable option.

Overall Philippine Airlines has been growing and expanding its network in recent years, the carrier is well positioned to provide onward connections from MNL to other destinations with estimates of approximately 20% of passengers travelling through Manila to/from Australasia making a connection. The A330 is an adequately sized long-haul aircraft for the route. The Proposed service would operate at an estimated load factor of 78% as illustrated below:

Route (non-directional)	Minimum Opening Date	Airline	Aircraft	# of Seats	Flight Frequency per Week	Number of Pax per Flight	Load Factor
BNE-MNL	Now	Philippine Airlines	Airbus A330	368	3	286	78%

4.4.6 Route MNL-PER

Perth being the largest city in Western Australia has posted a lot of business and leisure opportunities. The route demand is relatively small at present but it is anticipated to grow to a reasonable size by 2018 to justify a 3-weekly service by Philippine Airlines with an estimated load factor of 66%

Route (non-directional)	Minimum Opening Date	Airline	Aircraft	# of Seats	Flight Frequency per Week	Number of Pax per Flight	Load Factor
MNL-PER	2018	Philippine Airlines	Airbus A330	368	4	244	66%

In terms of Air service agreements, IATA does not foresee any issues for both the MNL-BNE and MNL-PER route to be operated based on the current high level policies in place in Australia and The Republic of the Philippines. Based on a brief consultation of the Australian Airports Association report on liberalizing Australia's Air service agreements (Australian Airports Association, 2015), and the Australian government's register of available capacity (Australian Government, 2016) there appears to be adequate capacity between the economy pairs at the present time.

5. Conclusions and other 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 international flights from MNL and was able to identify some improvements on flight schedules that will increase the flight connectivity in MNL.

- Philippine Airlines flight 502 from SIN currently arrives into MNL at 14:20. The onward connections to NRT, YVR, PUS, BCD and CEB can be enabled by bring forward the arrival time by 40 minutes.
- Philippine Airlines flight 733 from BKK arrives into MNL at 03:15. Connections to TAC, CEB, MBT, OZC, RXS and BXU will be enabled if the arrival time is brought forward by 30 minutes.
- Philippine Airlines flight 102 to LAX currently leaves MNL at 21:00. By pushing back the departure time by 30 minutes, it will enable connections from BCD, CEB, DVO, TAC and HKG.
- Cebu Pacific flight 109 from HKG currently lands in MNL at 10:35. By bringing forward the arrival time by 40 minutes it will allow onward connections to TAC, BCD, DGT, CGY and CEB.
- Cebu Pacific flight 311 from TPE arrives in MNL at 03:10. By bringing forward the arrival time by 45 minutes, it will allow onward connections to TAC, CBO, DVO, CGY and CEB.

5.2 Route frequency increase

IATA considered all of the existing international non-stop routes from The Republic of the Philippines to determine whether the current supply adequately matches the demand. IATA identified 15 routes where capacity could be increased immediately or in the in the near future.

Due to the fact that most aircraft only fly at an average 80% load factor, and most flights have a significant percentage of beyond and behind connecting passengers on-board, the ideal demand-to-supply ratio should be under 80%. All of the identified routes in the table below have demand-to-supply ratios of greater than 80%. The higher the ratio of demand to non-stop supply indicates the routes which are the most inadequately served.

Origin Airport	Origin Economy	Destination Airport	Destination Economy	2015 OD Demand	Non-Stop Seats in 2015	Demand Excess over supply	Ratio of Demand to non-stop supply
MNL	The Philippines	MEL	Australia	139	128	11	109%
ILO	The Philippines	HKG	Hong Kong, China	75	64	11	117%
KLO	The Philippines	HKG	Hong Kong, China	74	69	4	106%
MNL	The Philippines	LAX	United States	493	490	3	101%
ILO	The Philippines	SIN	Singapore	56	57	-1	99%
MNL	The Philippines	HKT	Thailand	42	51	-9	82%
CEB	The Philippines	NGO	Japan	68	78	-10	87%
MNL	The Philippines	KHH	Chinese Taipei	81	92	-11	88%
CEB	The Philippines	KIX	Japan	128	140	-12	91%
MNL	The Philippines	HAN	Viet Nam	60	74	-15	80%
KLO	The Philippines	ICN	Republic of Korea	529	645	-115	82%

Figure 16: Description of the route for frequency increase

From the analysis, the route which could benefit the most from additional frequencies or a larger aircraft is MNL-MEL which is currently served 3 days per week on an Airbus A330.

Flights from HKG to ILO and KLO in the Philippines are also underserved, particularly considering the fact that many passengers make beyond and behind connections through HKG.

The largest market which could benefit from capacity improvement is MNL-LAX. LAX serves as a main connecting gateway from MNL to other points in North America and Peru and Chile. This route is typically served twice per day on Philippine Airlines, with no North American carrier yet on the market.

5.3 Long-term new route opportunities

As economic growth is expected to continue within the Philippines and other destinations flown to, many 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 is Viable for Non-Stop Flight with Current Technology	Market size Adequate for Non-Stop Service in Long Term	Proposed Route
MNL	The Philippines	IAH	United States	99	121	✓	✓	Yes
MNL	The Philippines	AKL	New Zealand	59	109	✓	✓	Yes
DVO	The Philippines	HKG	Hong Kong, China	35	73	✓	✓	Yes

Figure 17: Currently projected long term viable routes from the Philippines

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 limit¹ of the A350-900 and B787-9.

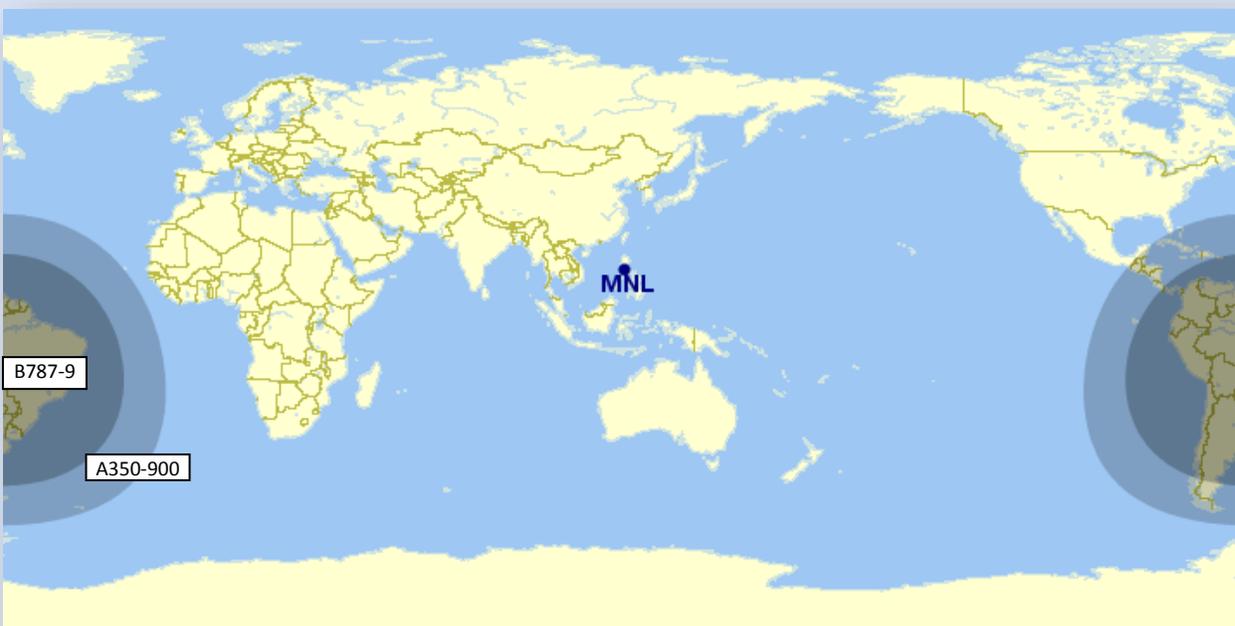


Figure 18: Range limit for the latest generation of aircraft from Manila (Source: GCMaP)

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 Philippine 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.

- Explore the feasibility to lift potential restrictions in place at the Philippine airports.

6.2 Specific recommendations

- Keep investing in operational safety and efficiency to maintain international standards.
- Ensure capabilities and capacity of the existing airports remains adequate to cater future demand.
- Increase capacity at MNL and improve the overall level of service at the airport.

6.3 How the APEC economy's regulator can help

- Work closely with different stakeholders such as the Philippines Department of Tourism and the Local Chamber of Commerce etc. to gain a deeper understanding of the development of the aviation demand.
- Maintain a liberal visa policy to facilitate international tourism.
- Reduce Passenger Movement Charge on international air passengers. In particular, reduce travel tax and MNL airport's Terminal Fee.

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.

400+
projects since 2006

200+
clients

80+
countries



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

- Airport Intelligence Services. (2016). *Airport IS reports*. Retrieved from <https://airport-is.com/ais/siteMenu.jsp>
- Albatross Airport. (2016). Retrieved from World Airports Traffic Report: <https://www.airport-information.com/data/>
- Asian Development Bank. (2016). Retrieved from <http://www.adb.org/countries/philippines/economy>
- Australian Airports Association. (2015). *Liberalising Australia's Air Services Agreements: An Economic Opportunity*. Retrieved from <https://airports.asn.au/web/dev/uploads/others/Deliotte%20Executive%20Overview%20-%20An%20Economic%20Opportunity%20August%202015.pdf>
- Australian Government. (2016). *Register of Available Capacity*. Retrieved from https://infrastructure.gov.au/aviation/international/files/register_available_capacity_150316.pdf
- Belobaba, P. (2015). *The Global Airline Industry*. Wiley Publishing.
- ICF International. (2014). *Successful Air Service Development*.
- International Business Publications. (2015). *Business and Investment Opportunities Yearbook*. Washington: Global Investment Center.
- International Monetary Fund. (2016). *List of per capita nominal GDP for countries and dependencies*. Retrieved from <http://www.imf.org/external/index.htm>
- Oxford Economics. (2011). *Economic Benefits from Air Transport in Philippines*. Retrieved from <https://www.iata.org/policy/Documents/Benefits-of-Aviation-Philippines-2011.pdf>
- Philippine Flight Network. (2014). *Canada and Philippines Establish New Air Agreement*. Retrieved from <http://www.philippineflightnetwork.com/2014/05/philippine-airlines-canada-flights.html>
- Swan, W. (2008). *Forecasting Air Travel with Open Skies*. Retrieved from Seabury Airline Planning Group: www.sauder.ubc.ca/.../Forecasting%20Asia%20Open%20Skies.aspx
- The World Bank. (2016). Retrieved from Urban Population : <http://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS>

- World Travel and Tourism Council. (2015). *Travel and Tourism Economic Impact*. Retrieved from <http://www.wttc.org/-/media/files/reports/economic%20impact%20research/countries%202015/philippines2015.pdf>

Produced by



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APEC#216-TO-01.21