

TIME	DESTINATION	FLIGHT	GATE	REMARKS
13:08	MANILA		13	ON TIME
13:24	NEW YORK		0	CANCELLED

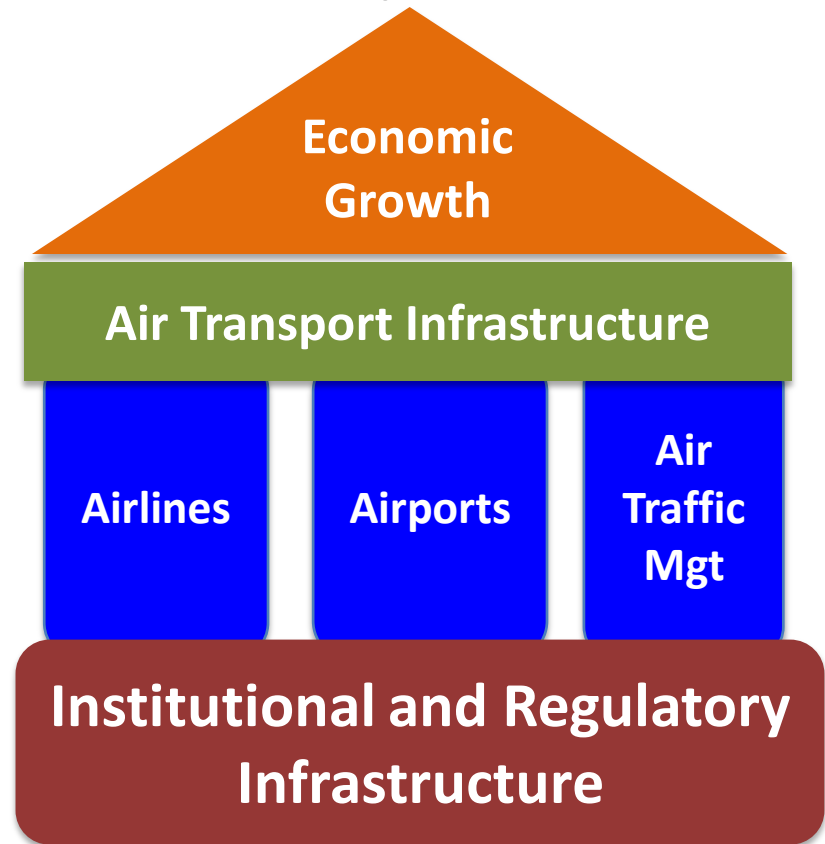
Air Transport Infrastructure Policy Brief

Maria Cherry Lyn S. Rodolfo
 15 February 2017

Objectives of the Policy Brief

- Provide a framework for understanding the various issues and recommendations raised by stakeholders over the years
- Explore the state of Philippine air transport infrastructure
- Present key recommendations to improve air transport infrastructure

3As of Air Transport Infrastructure



'Institutions create order and reduce uncertainty in the process of exchange'
(Douglass North, 1991)

Air Transport Stimulates Economic Growth

Global Total Aviation Economic Impacts:2014



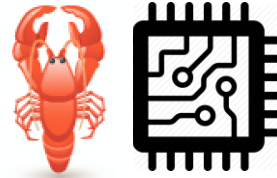
3.6 B
passengers



\$2.7 T
GDP contributions



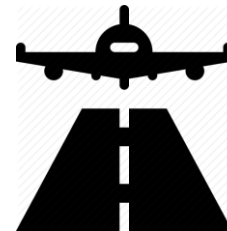
63 M
jobs



\$6.4 T
value of air cargo



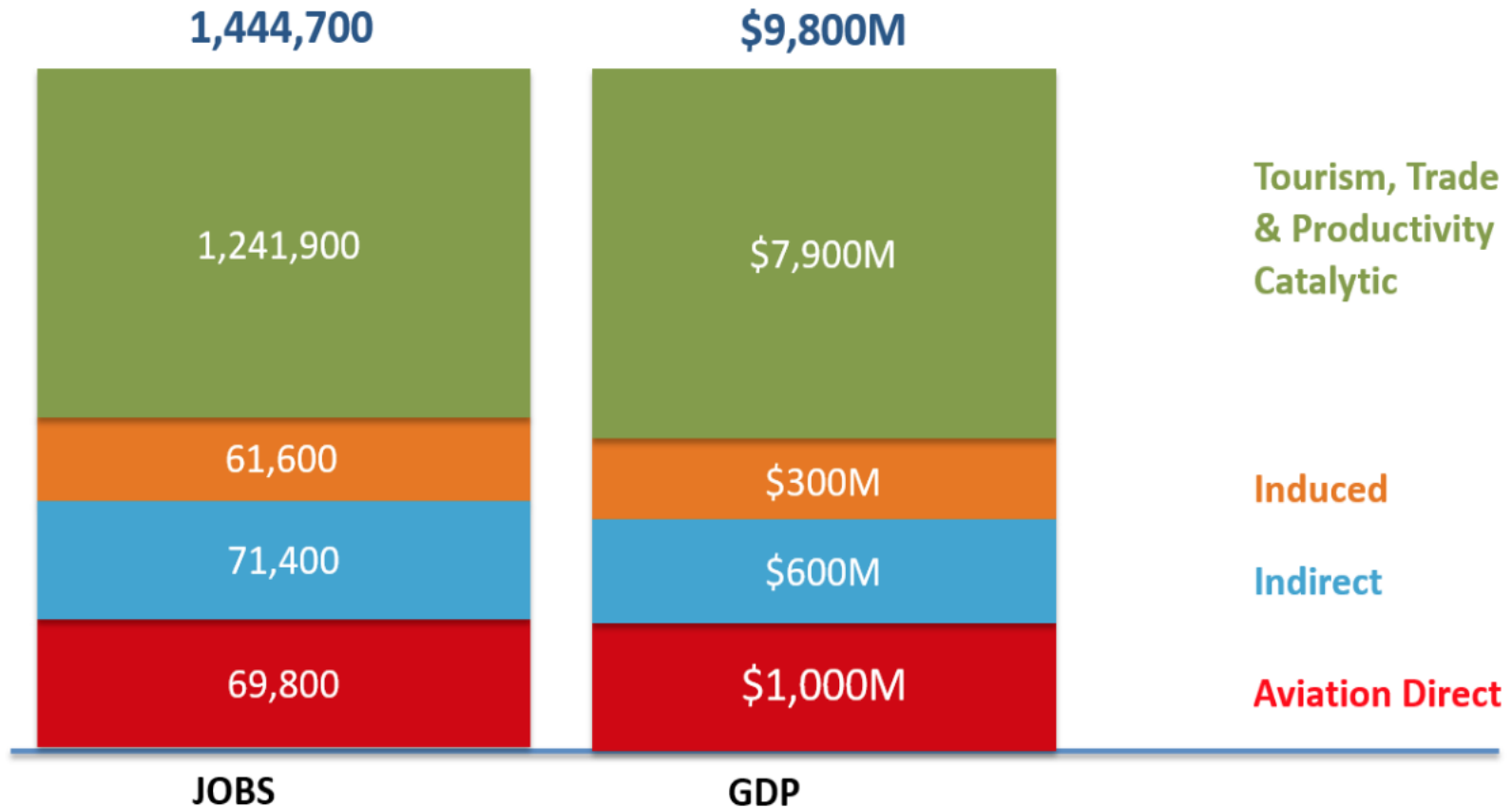
54%
of international tourists
travel by air



\$37 B
airport infrastructure
investments

Air Transport Stimulates Economic Growth

Total Aviation Economic Impacts in the Philippines



Source: IATA

Air Transport Stimulates Economic Growth

Total Aviation Economic Impacts in the Philippines

2014

60 M passengers

1.4 M jobs

\$10 B GDP

2035

140 M passengers

3.4 M jobs

\$23 B GDP

Air Transport Benefits from Economic Growth

Region	Sensitivity of Air Passenger Traffic Growth to GDP Growth Benchmarks
World	2.2
OECD	1.8
Latin America Caribbean	1.5
Sub-Saharan Africa	1.5
Middle East North Africa	0.9
East Asia	2.0
South Asia	3.9

In 2015, the value for the Philippines was only 1.5.

The Philippine air transport industry is not able to capitalize on the growth of the Philippine economy.

Based on cross-country comparisons using ICAO data from 1994-2013

Source: Bourguignon, F. and P. Darpeix (2016)

Quality of Air Transport Infrastructure in the Philippines

Pillars	2009	2012	2013	2014	2015	2016
Available airline seat km/week, millions ^(a)	28 (715.9)	26 (970.2)	26 (1,036.1)	25 (1,171.2)	27 (1,206.5)	27 (1,301.6)
Quality of air transport infrastructure	100 (3.7)	112 (3.6)	113 (3.5)	108 (3.6)	98 (3.7)	116 (3.2)
Quality of Overall Infrastructure	98 (3.1)	98 (3.6)	98 (3.7)	95 (3.3)	106 (3.3)	112 (3.0)
No. of Economies	133	144	148	144	140	138

The score of **3.2** for the quality of air transport infrastructure was a result of an Executive Opinion Survey (conducted from January to June 2016) where respondents were asked to respond to the question: *In your country, how is the quality (extensiveness and condition) of air transport [1 = extremely underdeveloped—among the worst in the world; 7 = extensive and efficient—among the best in the world].*

The first figure for each economy represents its rank out of the number of economies covered in the survey. The second figure in parentheses refers to the values 1-to-7 (7= highest) scale unless otherwise annotated with an asterisk (*) which represents actual data.

Source: WEF Global Competitiveness Reports (various years)

Quality of Air Transport Infrastructure in ASEAN: 2016

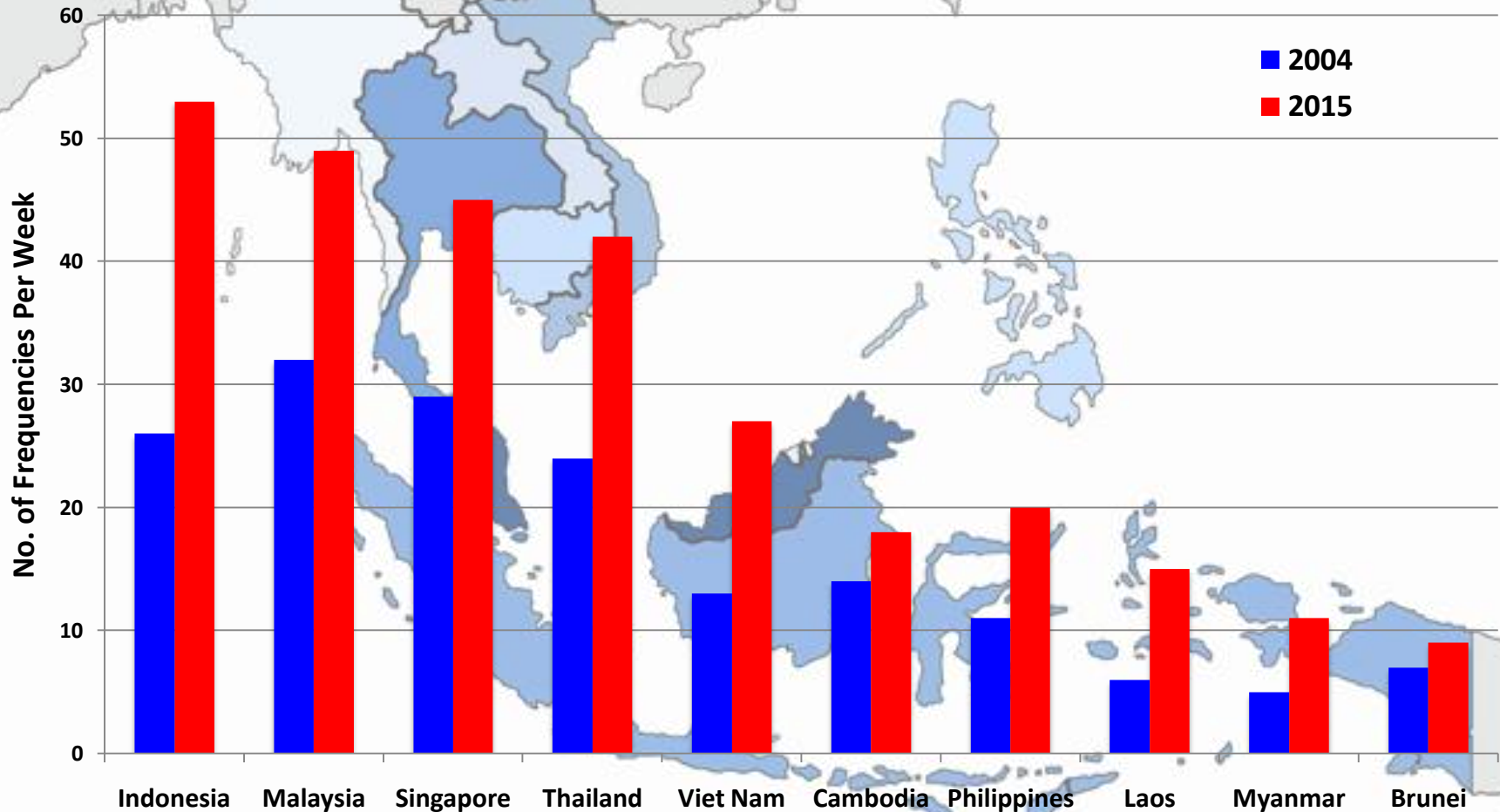
Pillars	SIN	MAL	THAI	INDO	BRU	VIET	CAM	LAO	PH
Available airline seat km/week, millions	20 (2,480)	23 (1,922)	15 (3,141)	14 (3,228)	100 (50)	29 (1,195)	81 (107)	115 (29)	27 (1,302)
Quality of air transport infrastructure ^(a)	1 (6.9)	20 (5.7)	42 (5.0)	62 (4.5)	84 (4.1)	86 (4.1)	99 (3.9)	100 (3.8)	116 (3.2)
Quality of Overall Infrastructure	2 (6.4)	19 (5.5)	72 (4.0)	80 (3.8)	67 (4.1)	85 (3.6)	95 (3.4)	81 (3.7)	112 (3.0)

(a) The score of **3.2** for the Philippines was a result of an Executive Opinion Survey (conducted from *January to June 2016*) where respondents were asked to respond to the question: *In your country, how is the quality (extensiveness and condition) of air transport [1 = extremely underdeveloped—among the worst in the world; 7 = extensive and efficient—among the best in the world].*

The first figure for each economy represents its rank out of the 138 economies covered in the survey. The second figure in parentheses refers to the values 1-to-7 (7= highest) scale unless otherwise annotated with an asterisk (*) which represents actual data.

Source: WEF Global Competitiveness Report 2016-2017

Intra-ASEAN air connectivity, 2004 and 2015



Source of basic data: Official Airline Guide

Airport and Air Space Constraints in Southeast Asia

- Runways and airport congestion,
- Lack of wind-shear detection devices or advanced weather radar in most airports,
- Lack of “air traffic flow management” systems that can track planes automatically like those used in North America and Europe,
- Lack of accuracy of legacy air navigation technology,
- Short or badly designed runways with poor drainage,
- Lack of modern landing navigation systems or proper runway lights in secondary airports,
- Lack of long-term investments in ANSPs and human capital, and
- Lack of financial autonomy of civil aviation authorities and ANSPs; and lack of priority in national budgets.

The Asia-Pacific region is projected to have the largest fleet of passenger and freighter aircraft among all sub-regions by 2035 (Airbus, 2016).

In Southeast Asia, airlines are preparing to harness the growth of the Asia-Pacific region and the opportunities from the ASEAN Open Skies.

Aircraft orders by select ASEAN-based airlines

Airline	Orders	Deliveries	In Operation
Air Asia	575	171	174
Air Asia X	96	20	30
Cebu Air	73	39	49
Garuda Indonesia	58	36	25
Lao	2	2	4
Lion Air	237	25	3
Malaysian Airlines	39	39	25
Philippine Airlines	102	73	47
Silk Air	27	27	15
Singapore Airlines	144	77	51
Thai Airways International	85	81	24
Tiger Air	88	49	24
Vietjet Air	99	19	36
Vietnam Airlines	51	41	67

*Summary to 31st August 2016

Source: Ascend Airbus

Select Airport Development Programs in Southeast Asia



Hanoi: Investments of at least \$5B to double the capacity of Hanoi Airport from 25 M in 2014 to 50 M by 2030

Bangkok: Programmed expansion of Suvarnabhumi airport from 45 M passengers per annum to 60 M by 2019 and 90 M by 2021.



Manila: Improvement of terminals; Increasing efficiency in allocation of airport slots in NAIA



Kuala Lumpur: Development of the swathe of land around KLIA in Sepang into an aviation hub called KLIA aerotropolis

Singapore: Construction of T5 with 50M pax capacity; expected to reach 137M with completion of T4 and T5



Jakarta: Expansion of terminals from the design capacity of 26 M passengers per annum to 62 M; planned construction of 3rd runway

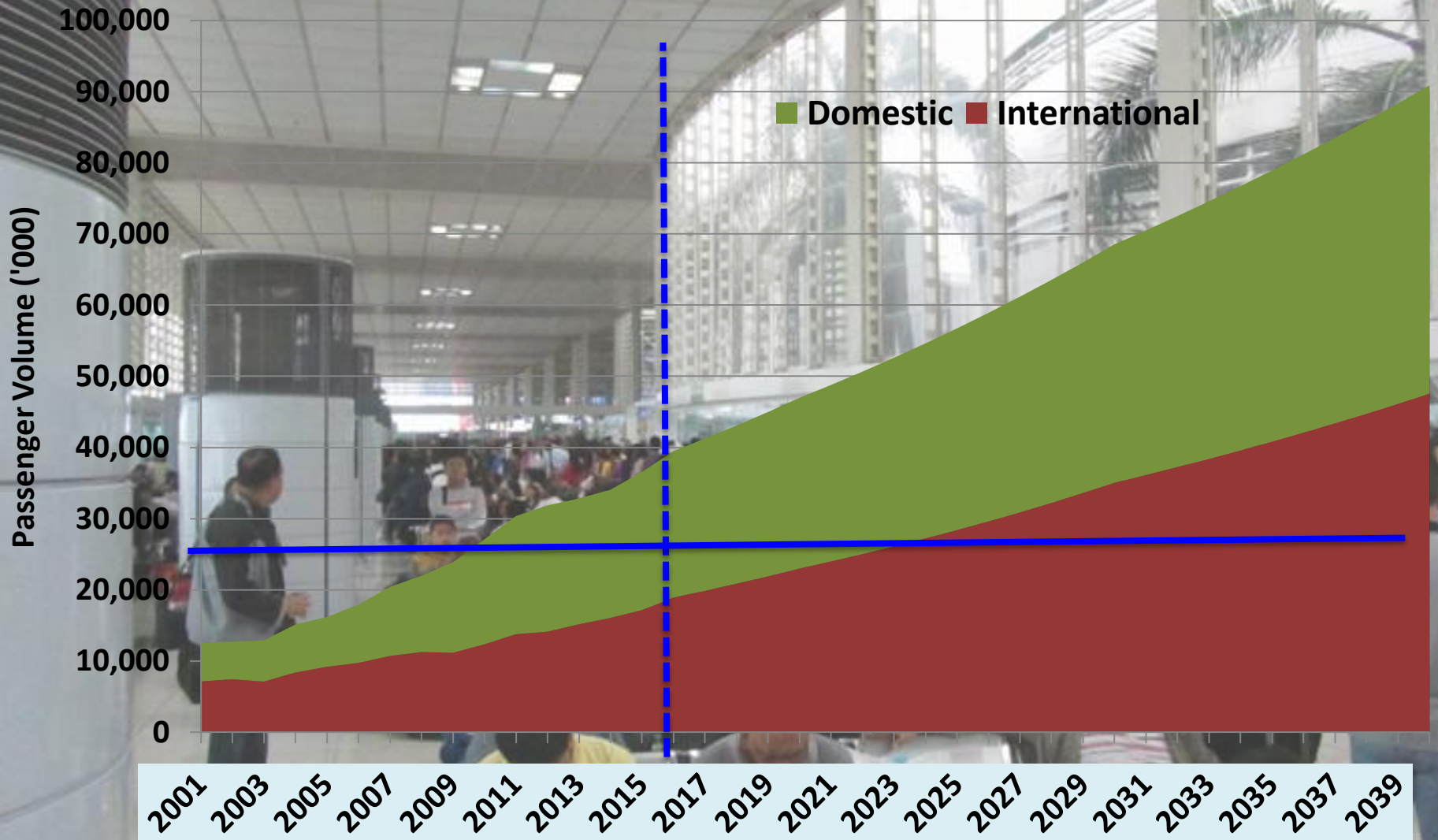
Binding Constraints to Air Transport Growth in the Philippines

- **NAIA Congestion**
 - Terminal
 - Runway: configuration and utilization



Photo credit: Veronica Domingo

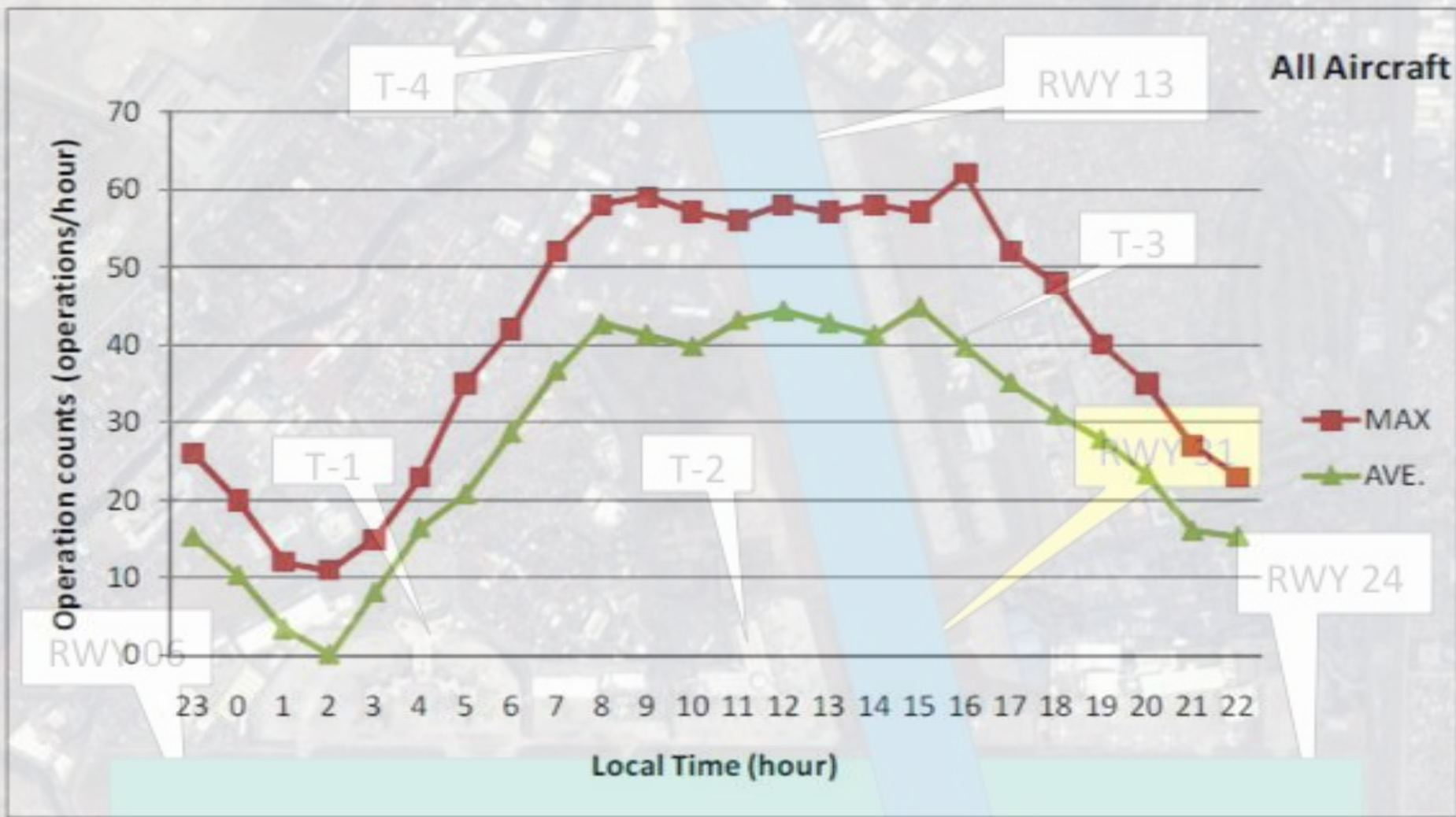
Congested Terminals



Actual data: 2001 to 2016; JICA forecasts: 2017 to 2040

Photo credit: Veronica Domingo

EXISTING NAIA CONFIGURATION



Data used for analysis: Manila control tower monthly and daily traffic count, CAAP

Source: JICA

Concentration of flights during the day due to lack of night-rated airports
 General aviation operations mixed with commercial flights during the peak hours

Binding Constraints to Air Transport Growth in Philippines

- **NAIA Congestion**
 - Terminal
 - Runway: configuration and utilization
- **Institutional Environment: Providing linkages where there should be convergence; de-coupling where there should be independence**
 - *Weak link between airport planning, budgeting, and implementation*
 - *Inter-department (e.g. airports, roads, water, power) and within departments (e.g. new airports being opened without navigational aids)*
 - *Weak and ineffective regulatory/institutional infrastructure*
 - *CAAP as regulator, operator and investigator*
 - *Regulators as revenue generating agencies*

Recommendations

- 1. Decongest and improve NAIA**
- 2. Implement a multi-airport policy and system in the Greater Capital Region and develop Clark International Airport**
- 3. Develop secondary international gateways and provincial airports**
- 4. Modernize and strengthen transport institutions**
- 5. Improve business environment and travel facilitation**

1. Decongest and Improve NAIA

On air traffic management

- a) continue to cap the number of movements per hour in NAIA to 40 for safety reasons
- b) for the CAB and the air panel to close certain time slots already exceeding the safe number of aircraft movements per hour at Manila and instead offer Clark, Cebu, Davao, and other airports as alternates;
- c) make NAIA a premium airport and address the hoarding of slots and non-use of slots for a certain period by imposing heavy penalties;
- d) transfer general aviation to Sangley airport in Cavite, Clark and Subic;
- e) increase flexibility in Air Traffic Flow Management (ATFM) procedures;
- f) ensure visibility and input into day-to-day ATFM and slot scheduling decisions for airlines;
- g) improve infrastructure and sectorization to address communication issues and frequency congestion,
- h) urgently implement data link communications (CPDLC) and surveillance (ADS-C) in the oceanic sectors;
- i) improve training, particularly regular cyclical training utilizing “lessons learnt” from incident investigations; and
- j) ensure the capabilities enabled by new Communications, Navigation and Surveillance Air Traffic Management (CNS/ATM) project are fully implemented with controller support tools and procedures.

Items e to j are IATA recommendations



1. Decongest and Improve NAIA



On airport airside operations (IATA, 2016)

- a) install ground movement aids that are installed and maintained to ICAO Annex 14 standards at a minimum;
- b) constructing the rapid exit taxiways;
- c) update airfield charts and make them accurate with adequate notation for ground hazards;
- d) establish airport short message service to enable proper hazard identification and risk management processes, including a system to collect, investigate, and provide feedback on airline safety reports;
- e) provide up-to-date assessment of airport obstacles and terrain through completed aeronautical surveys;
- f) ensure airport charts are current and changes are promulgated within the ICAO guidelines to allow updates of airline flight management systems;
- g) provide interconnections among the terminals.

Actions to Decongest and Improve NAIA:


Jun 2016 – Jan 2017

Action Programs	Remarks
1. Removed the overnight aircraft parking privileges of airlines	All terminal bays should be used for loading and unloading of passengers only.
2. Issued joint DOTr-CAAP-CAB-MIAA memorandum circular no. 2016-02 (dated July 28, 2016) that prevents the use of the runway by general aviation, except for helicopter operations, medical evacuations, and aircraft on emergency, from 1200H to 1900H	On-time performance of commercial flights increased starting September 2016. The on-time performance of some Philippine air carriers operating 77% to 80%, the highest during the year.
3. Initiated the bidding for the rapid exit taxiways, previously delayed for several years.	On Dec 2016, the MIAA issued the bid documents for Package 1: Civil Works for the Rapid Exit Taxiways 06/24 (approved budget of Php 212.8 M)
4. Conducted dialogues with the stakeholders for the transfer of general aviation to Sangley, Clark, Subic and other airports	<p>On Dec 2016, DOTr issued notice of invitation to bid for the Php 552.87 M repairs and restoration of Sangley Airport to enable the transfer of general aviation services from NAIA.</p> <p>On January 2017, the DOTr postponed the bidding per request of the Philippine Reclamation Authority (PRA) to clarify issues related to any development in Sangley Airport.</p>

Actions to Decongest and Improve NAIA: Jun 2016 – Jan 2017

Action Programs	Remarks	
5. Conducted dialogues with the air carriers for the movements of some flights to Clark	<i>PAL</i>	Effective Dec 16, 2016: Daily Clark-Caticlan-Clark Effective Jan 1, 2017: Clark-Incheon-Clark (daily) Effective Jan 30, 2017: Clark-Cebu-Clark (4x per week to increase to daily on March 26, 2017) Effective Feb 1, 2017: Clark-Davao-Clark (3x per week to increase to 4x per week on March 26, 2017) Effective Mar 26, 2017: <ul style="list-style-type: none"> • Clark-Puerto Princesa-Clark (3x per week) • Clark-Coron-Clark (daily)
	<i>Cebu Pacific</i>	Effective Dec16, 2016 <ul style="list-style-type: none"> ○ Increase from 3 to 6 times weekly of Clark-Cebu-Clark flights ○ Increase from 7 to 10 times weekly of Clark-Hong Kong-Clark flights
	<i>Air Asia</i>	Effective Mar 27, 2017: Clark-Kalibo-Clark (3x per week)
6. Conducted dialogues with various agencies to complete the one-stop shop for OFWs in Clark	Inauguration of the one-stop shop center for OFWs in Clark(Sep 2016)	
7. Implemented crackdown on carriers taking over the daytime slots of other airlines	This move contributed to the improvement in the on-time performance of airlines	
8. Increased number of night-rated airports	In 2016: Caticlan, Legaspi, Dumaguete (limited) and Roxas By end of 2017: Cotabato, Ozamis and Dipolog	

2. Implement a multi-airport policy and develop Clark International Airport



The map shows the Philippines with two overlapping catchment basins. A blue circle highlights the Clark area, and an orange circle highlights the NAIA area. Labels for various cities are scattered across the map.

25 M catchment basin including
33% of the total OFW population
– Northern NCR, Central and
North Luzon

Ramos Administration in 1994, JICA (2012, 2014) and IATA (2013, 2016) recommended the development and utilization of Clark as alternate to NAIA in the immediate to short-term (“dual airport”). In the medium to long-term, Clark will be developed to meet the demands of Central and North Luzon and other destinations.

27 M catchment basin of NCR
and CALABARZON

Need for a new capital gateway to serve Metro Manila and Southern environs

Philippines

2. Implement a multi-airport policy and develop Clark International Airport

Proposed Airport Sharing for GCR Under the JICA-Assisted Roadmap

Airport	Actions Required			
	Immediate-term (2013-2016)	Short-term (2017-2020)	Medium-term (2020-2025)	Long-term (2025 and beyond)
NAIA	Improve existing terminals and taxiways, etc.	Continue improvement of existing terminals and taxiways, etc.	Partially transfer some domestic operations to Sangley.	Close NAIA upon opening of New NAIA.
Clark	Develop LCC terminal, etc. as required to share NAIA demand	Develop required facilities/services to meet demand (NAIA and C&N Luzon)	Develop required facilities/services to meet demand (NAIA and C&N Luzon)	Develop required facilities/services to meet demand (NAIA and C&N Luzon)
Sangley (SRA)	Transfer to CAAP Design/implement necessary measures to share function of NAIA	Operate as third runway of NAIA under one single ATC with possible access by high speed boat and improved roads		Integrate development with New NAIA (in case of Sangley as new NAIA)
Plaridel	Expand and improve to accommodate all GA operations.			
New NAIA	Project plan/design: FS, EIA/ECC, ICC approval, etc.	Design/construct seawalls/reclamation and access bridge(road and rail).	Site development, construction of airport and related facilities and services.	Inaugurate New NAIA.

Source: JICA-NEDA Roadmap

Where will the new capital gateway be located given the roadmap and the unsolicited proposals? An announcement of the government's decision will definitely help industry stakeholders plan for the future.

3. Develop secondary international gateways and provincial airports

- Implement privatization of the O&M for Davao, Iloilo, Bacolod-Silay, Laguindingan and Bohol
- Accelerate completion of Daraga and Bohol Airports and re-classify as international
- Improve the domestic airports (i.e. terminal expansion, installation of night landing facilities, redevelopment to increase runway length and widen runway, provision of ancillary infra – roads, water, power, telecoms)
- Position the Philippines in the regional tourism and high value air transport-related industries and services and invest in the inter-modal transportation network:
 - *Utilize as guide: tourism plan 2017-2022, comprehensive industrial strategy and industry roadmaps, trade and economic cooperation agreements*

4. Modernize and strengthen institutions

- Strengthen the CAAP as the agency in charge of safety and regulatory oversight
 - *Amend RA 9497*
 - *Separate conflicting functions as operator and developer of airports and investigator*
 - *Create separate entity on airport development, operations and maintenance*
 - *Create independent entity on aircraft accident and investigation*
 - *Corporatize or privatize provision of air traffic control services*
- Set a clear framework on regulation of privatized airports and ownership rules of airline-related entities
- Amend Public Services Act of 1936

5. Improve business environment and facilitate travel

- Incentivize charter flights to develop new and/or expand existing air routes
- Provide 24-7 border control services in international airports without imposing additional fees/charges to airlines and passengers
- Issue and implement Executive Order on Advance Passenger Information System
- Assess effects of higher jet fuel excise taxes on the tourism and trade goals

TIME	DESTINATION	FLIGHT	GATE	REMARKS
13:08	MANILA		13	ON TIME
13:24	NEW YORK		0	CANCELLED
13:44				ED
13:				ME
14:0				ME
14:				ED
1:				Y
1:				E

Thank You.

