

OECD/ITF Roundtable

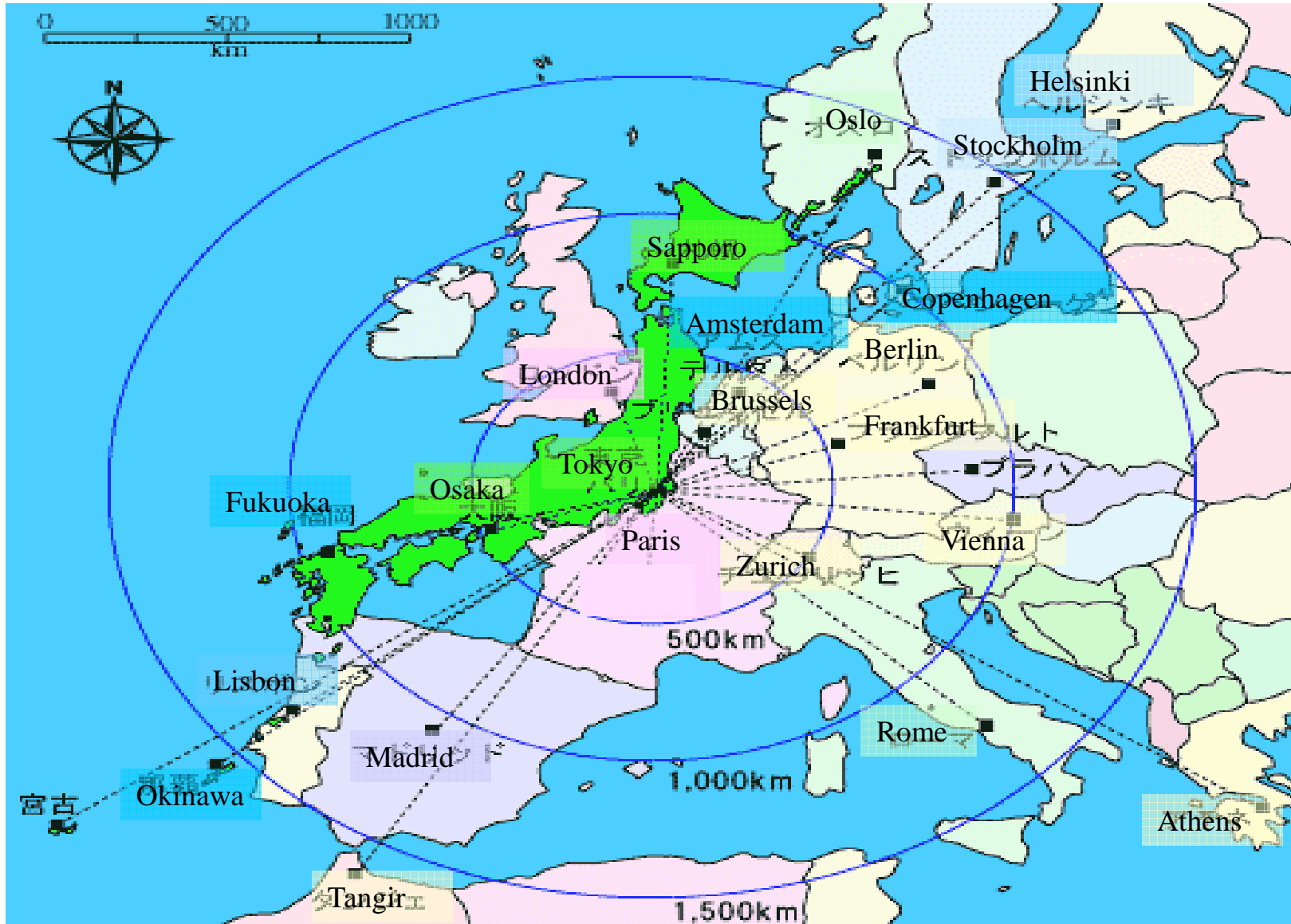
Paris, 21-22 February , 2013

Evolution of Metropolitan Airports in Japan -Airport Development in Tokyo and Osaka-

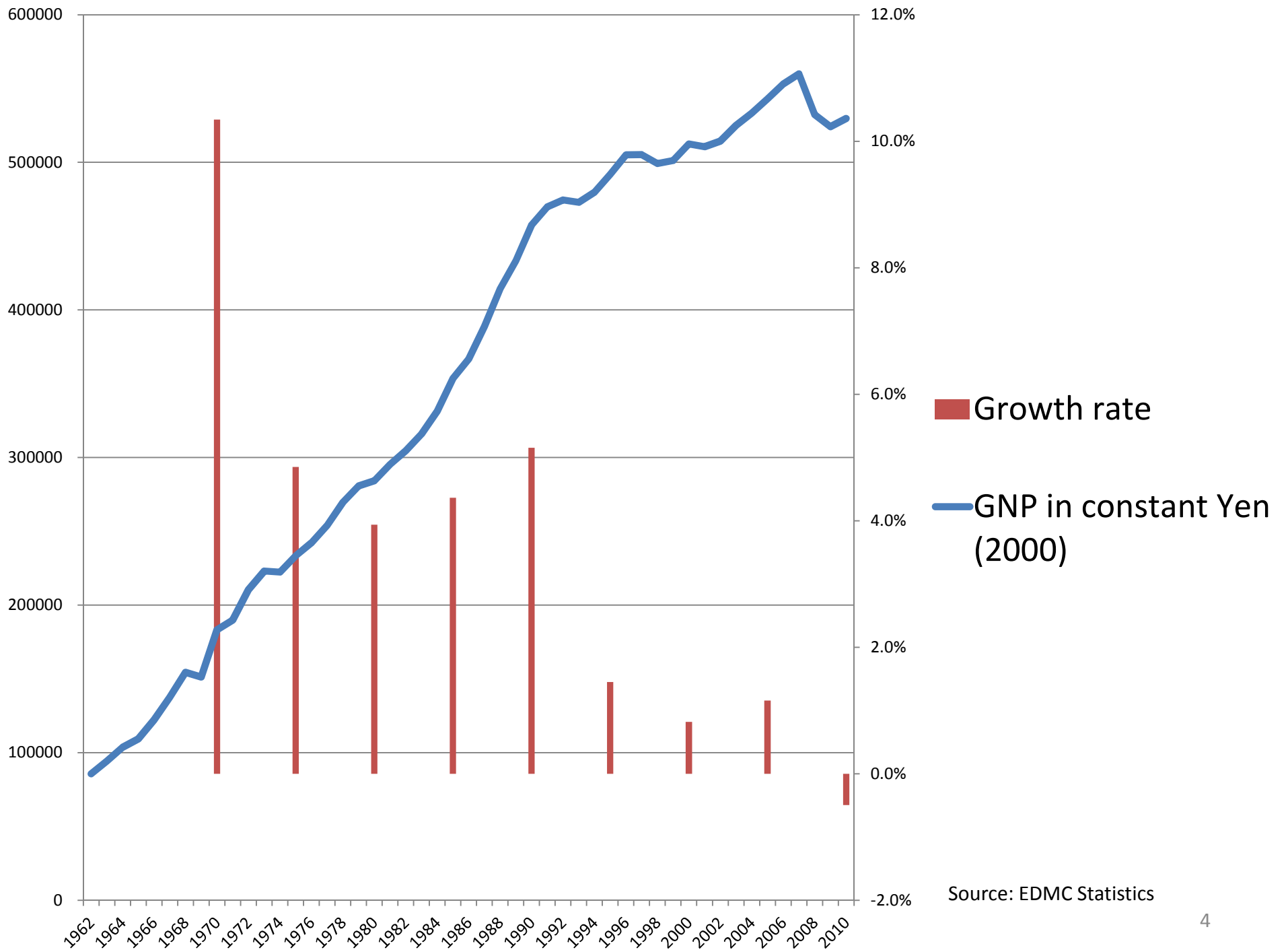
Katsuhiro YAMAGUCHI,
Visiting Researcher, University of Tokyo
Executive Officer, Corporate Strategy
New International Airport Company Ltd.,



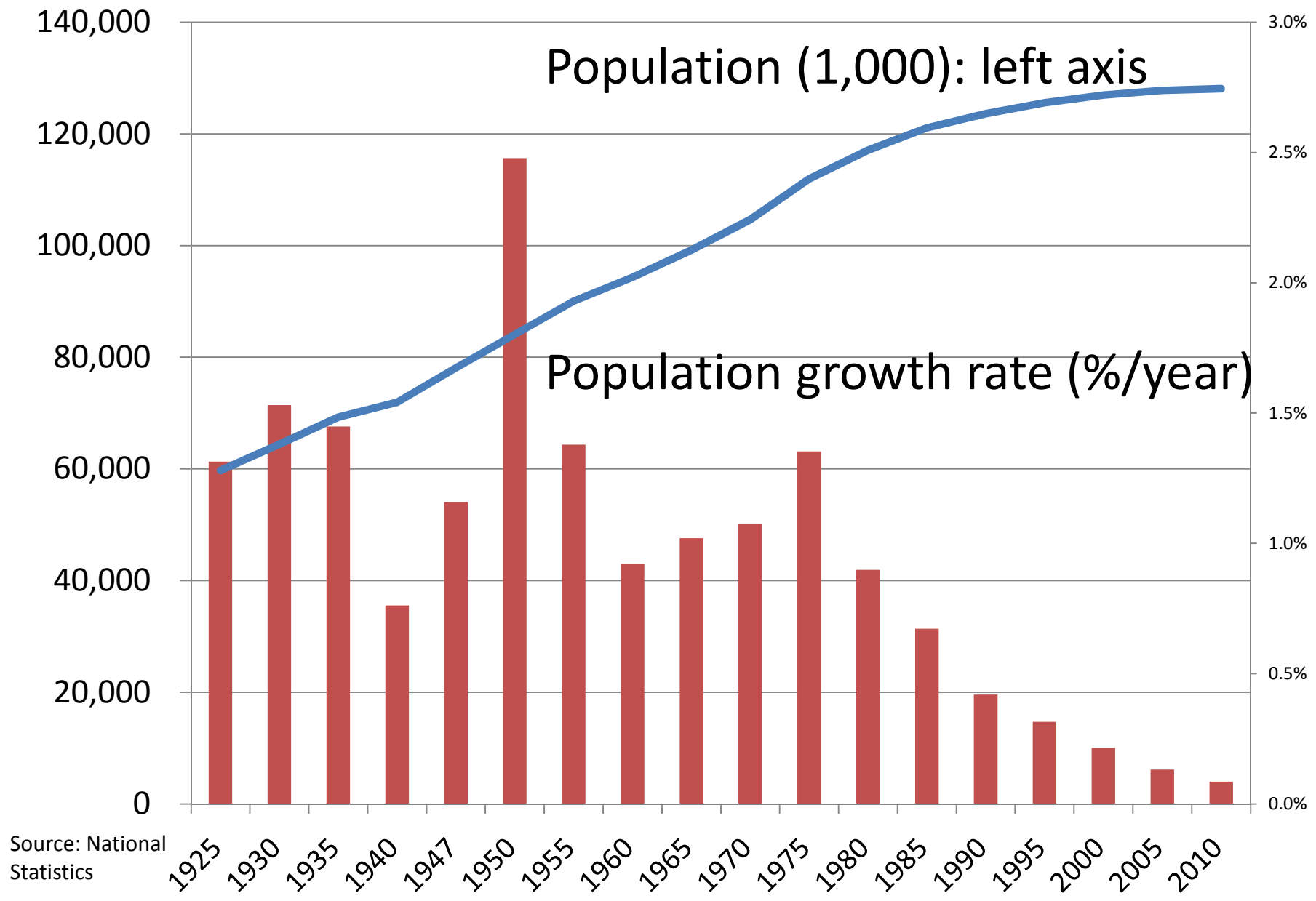
Overview of Japan



Source: Author



Source: EDMC Statistics



Source: National Statistics

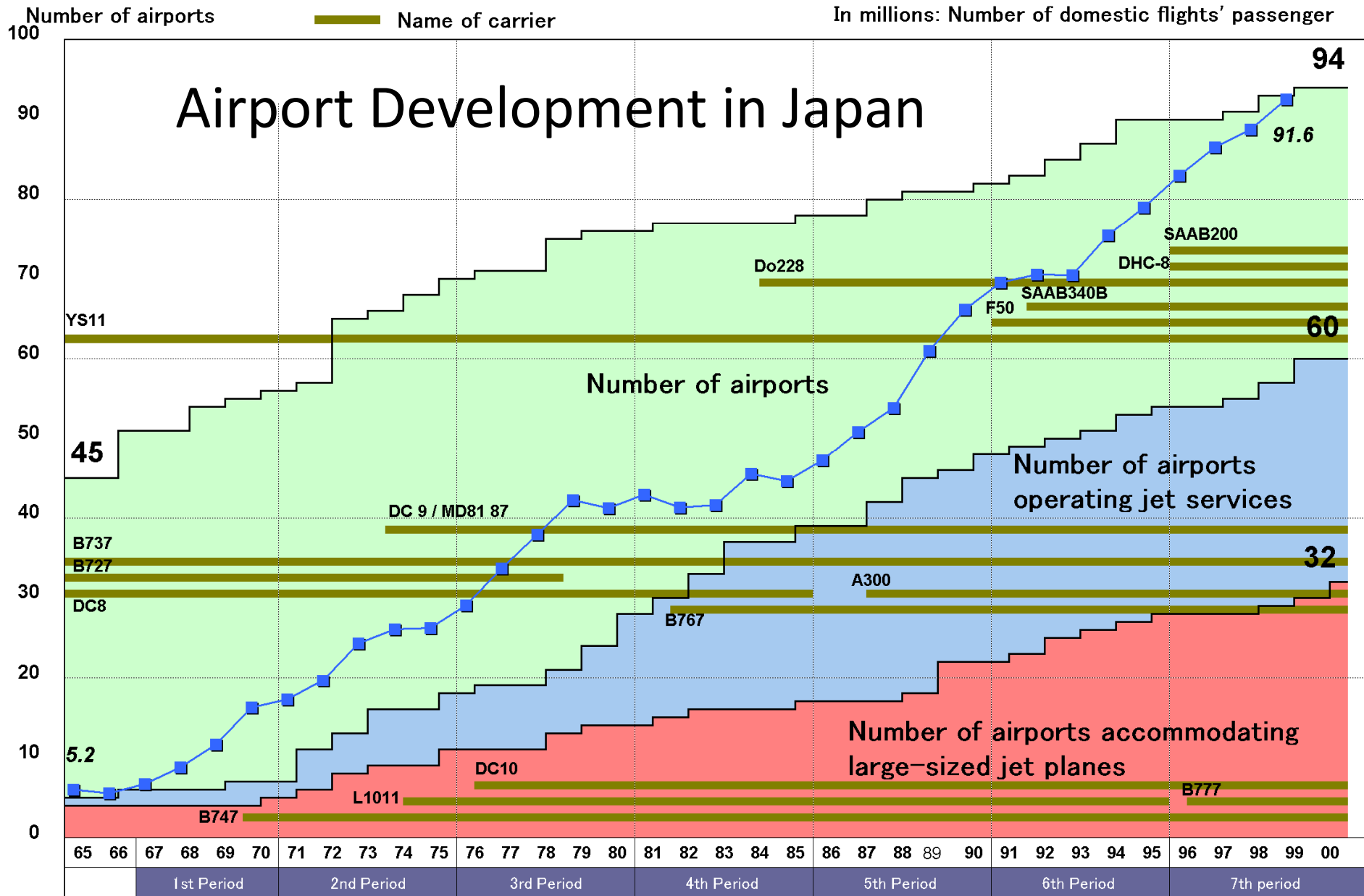
Agglomeration in the metropolitan areas

■ Large population and high population density in the metropolitan areas

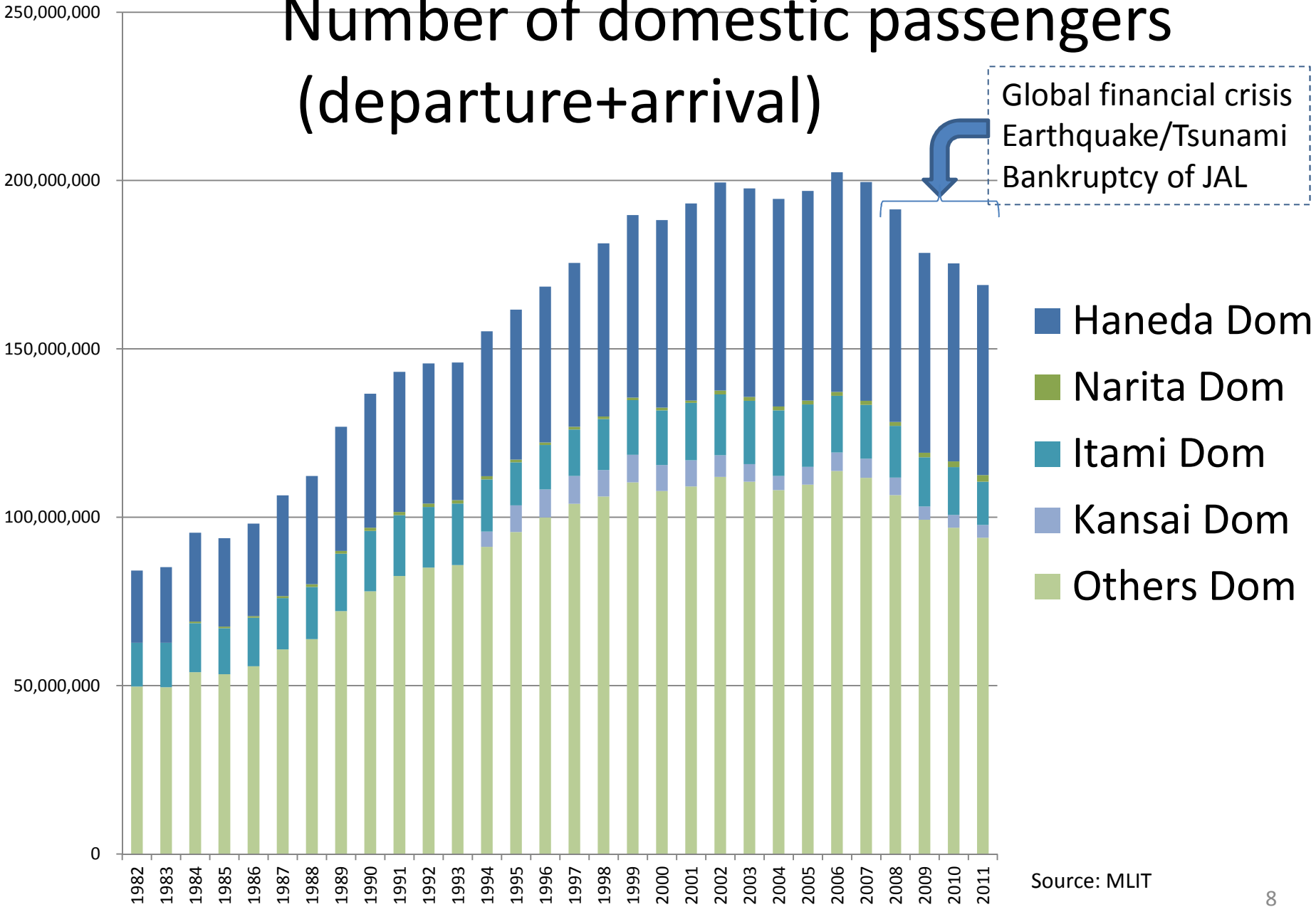
	Population (million)	Arable Land (km ²)	Population density (persons/km ²)
Tokyo Metropolitan Area	33 (26%)	6,830 (6%)	4,900
Osaka Metropolitan Area	17 (13%)	3,690 (3%)	4,600
National Total	128	121,000	1,060

[Source] Fiscal year 2005 National Census, Center for Spatial Information Science (CSIS) University of Tokyo.

* Urban Employment Area (UEA) defined by Kanemoto, Y., and K. Tokuoka (2002) is used as “metropolitan area” in this paper. “Greater Tokyo” and “Greater Osaka” shall mean UEA of Tokyo 23 Wards, Yokohama, Saitama and Chiba combined, and UEA of Osaka, Kyoto and Kobe combined, respectively.

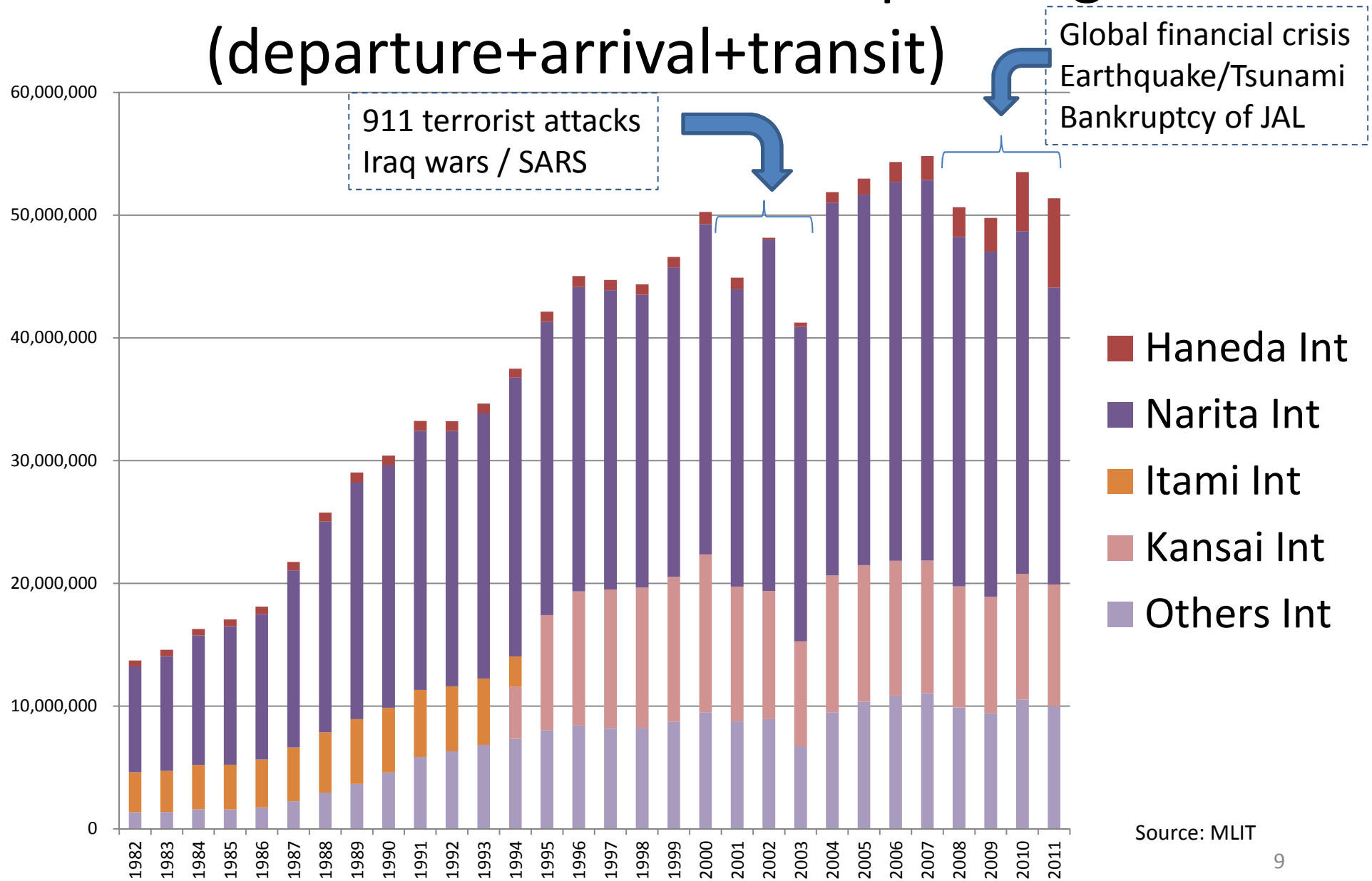


Number of domestic passengers (departure+arrival)



Source: MLIT

Number of international passengers (departure+arrival+transit)



Source: MLIT

History of Airports in Tokyo: Haneda Airport and Narita Airport

History of Haneda Airport



1931

Source: MLIT

History of Haneda Airport



(大東京名所) 東京国際空港

The Tokyo international air port.

1955

Source: MLIT

History of Haneda Airport



1959

Source: MLIT

History of Haneda Airport



1964

Source: MLIT

History of Haneda Airport



1970

Source: MLIT

15

History of Haneda Airport



1980

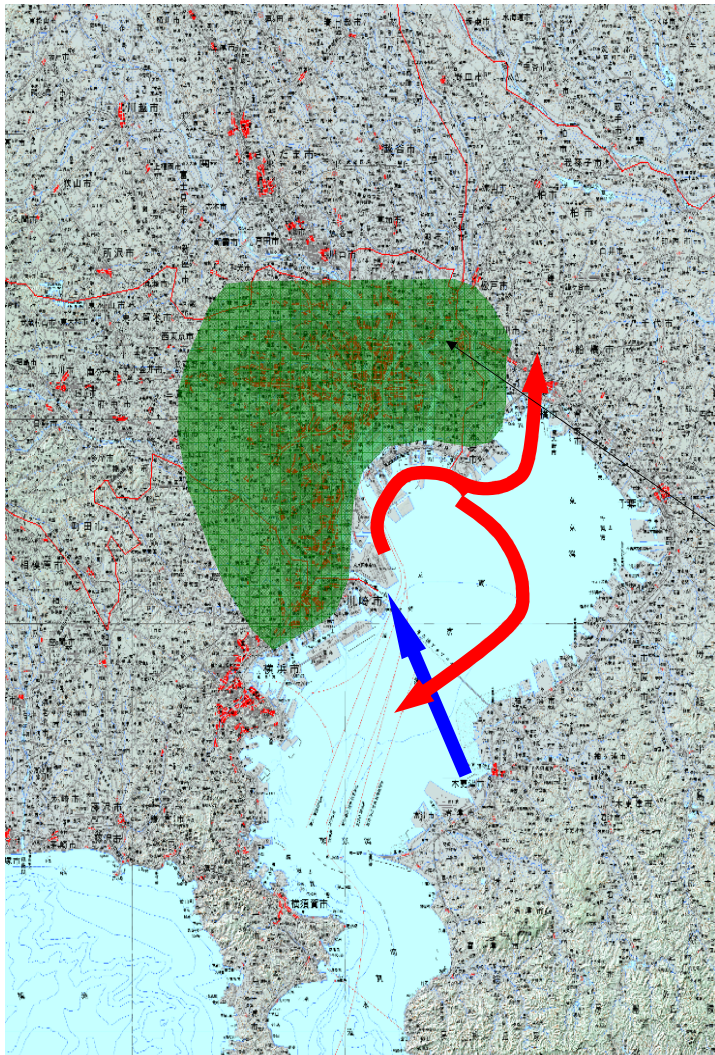
Source: MLIT

History of Haneda Airport



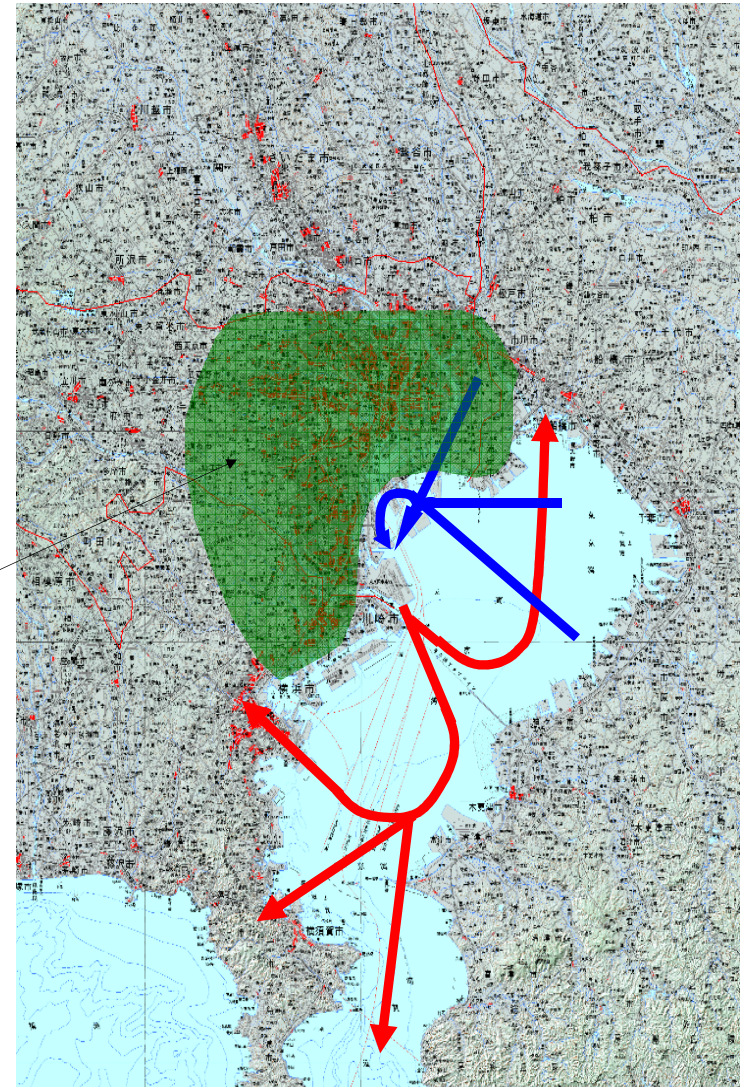
1997

Source: MLIT



Heavily populated area

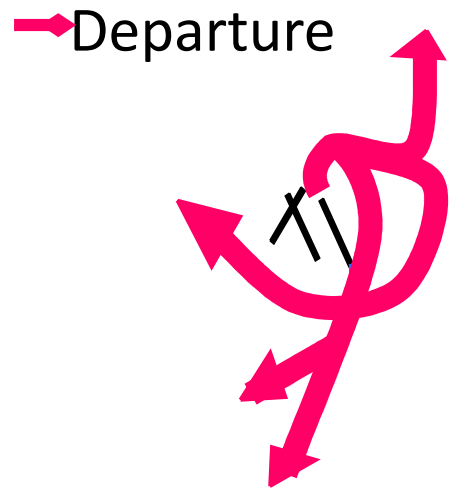
Flying over the area is restricted



Comparison of Haneda and Heathrow

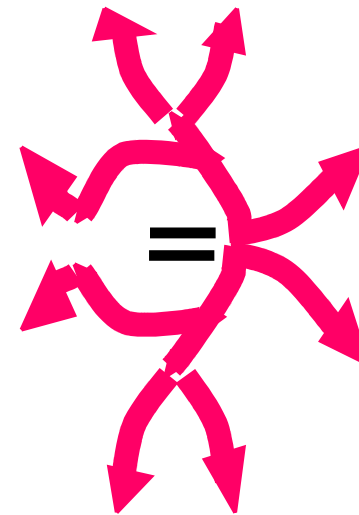
Haneda

(before 2010 re-expansion)



320,000/year

Heathrow

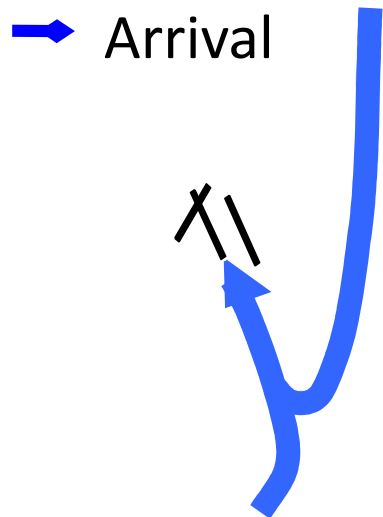


480,000/year

Comparison of Haneda and Heathrow

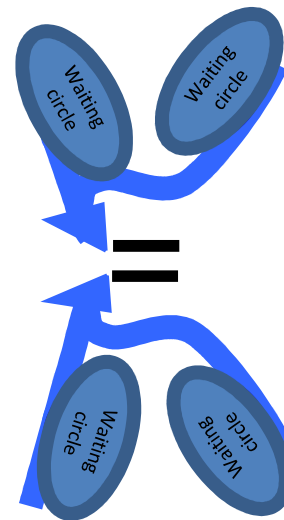
Haneda

(before 2010 re-expansion)



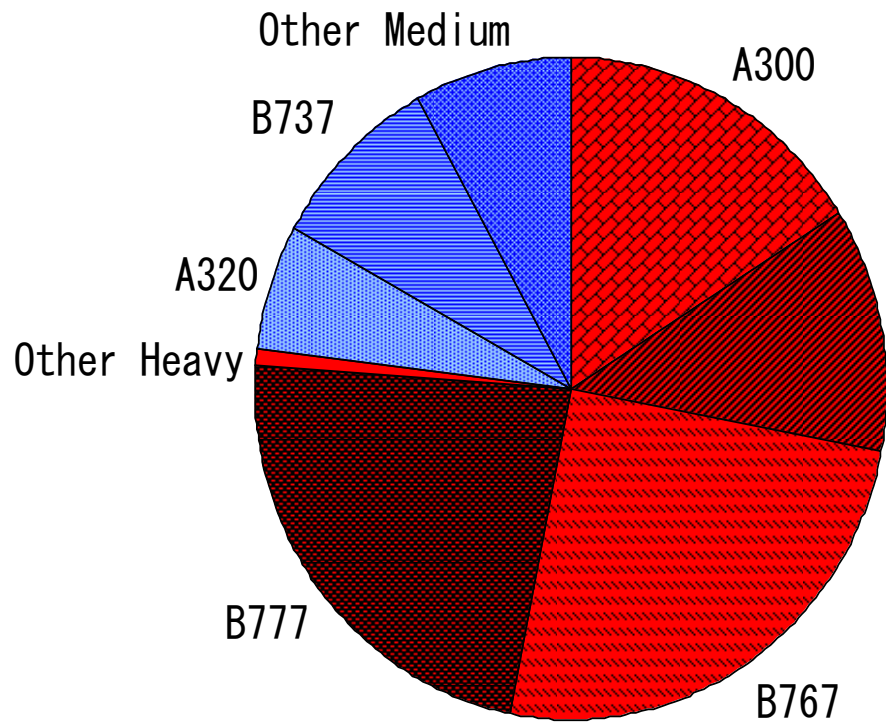
320,000/year

Heathrow

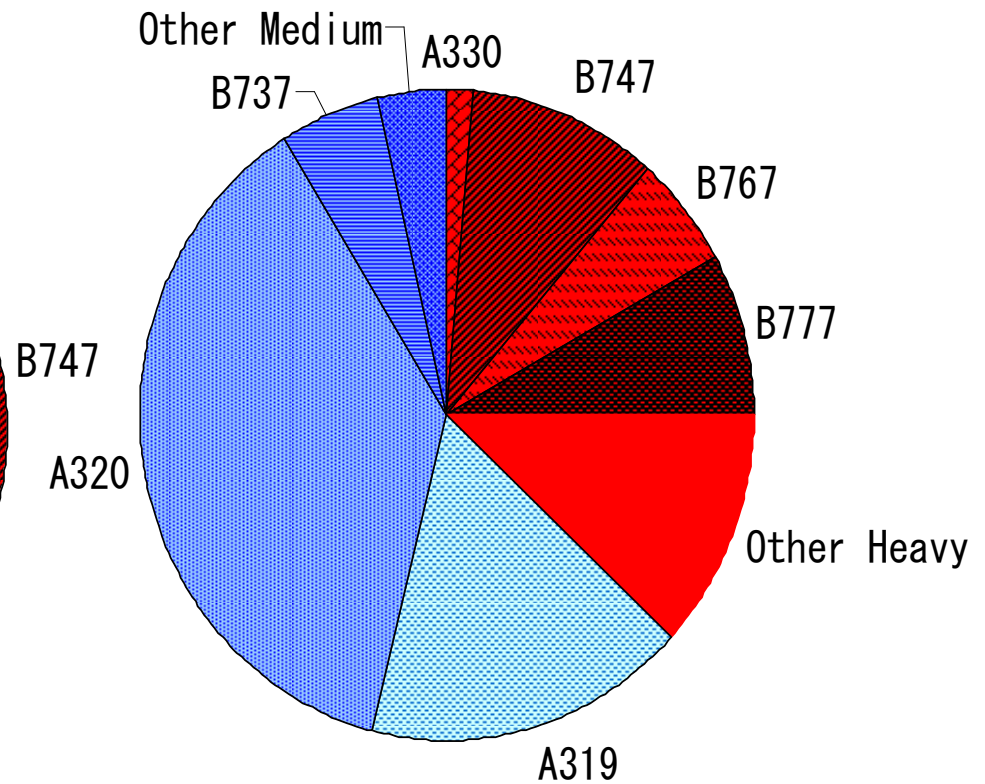


480,000/year

Haneda Fleet Mix

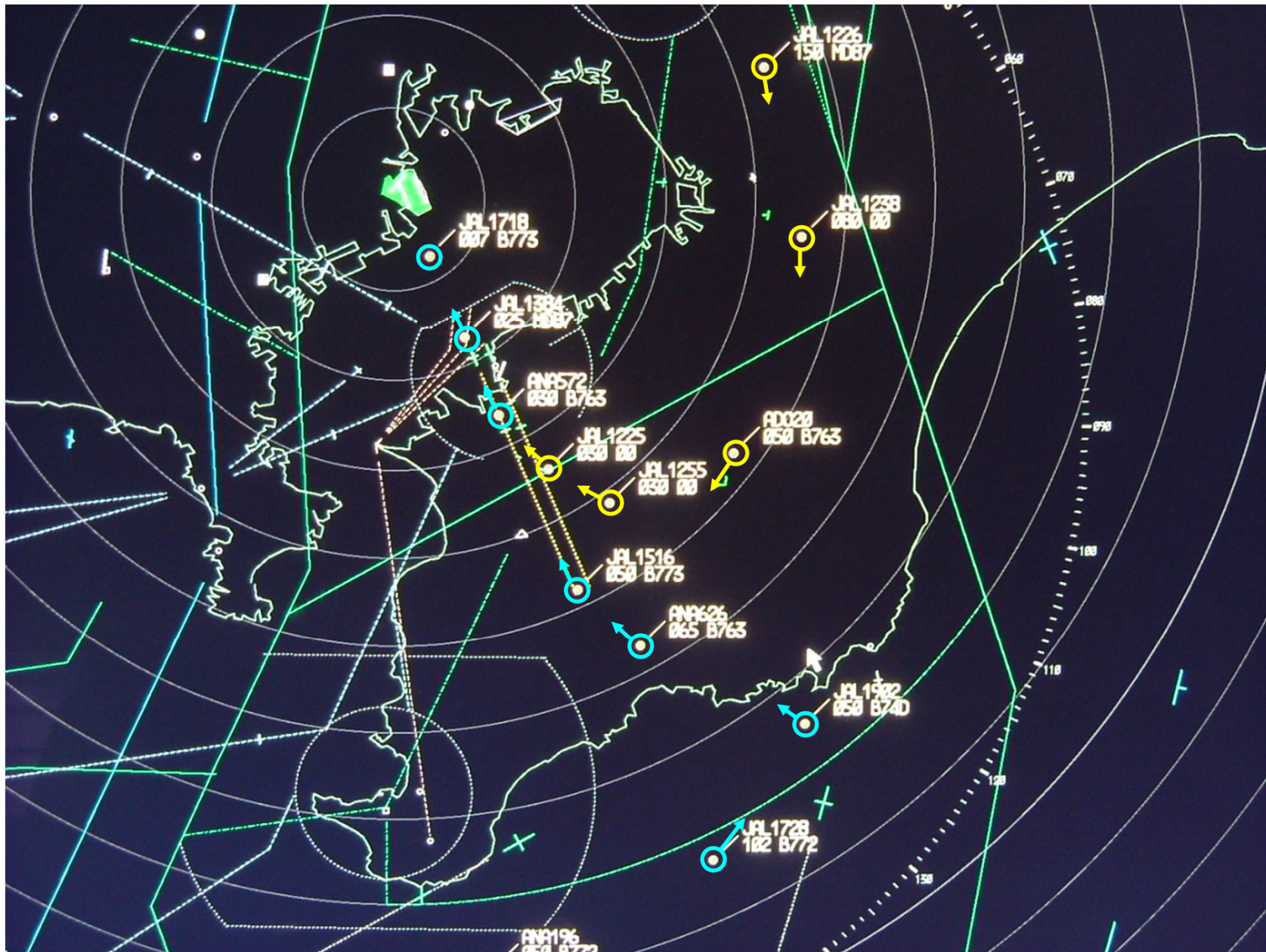


Heathrow Fleet Mix



→ large wake-turbulence

Aircraft queuing up to land at Haneda Airport from the south



Source: MLIT

Haneda Airport after completion of the fourth runway



2010

Source: MLIT

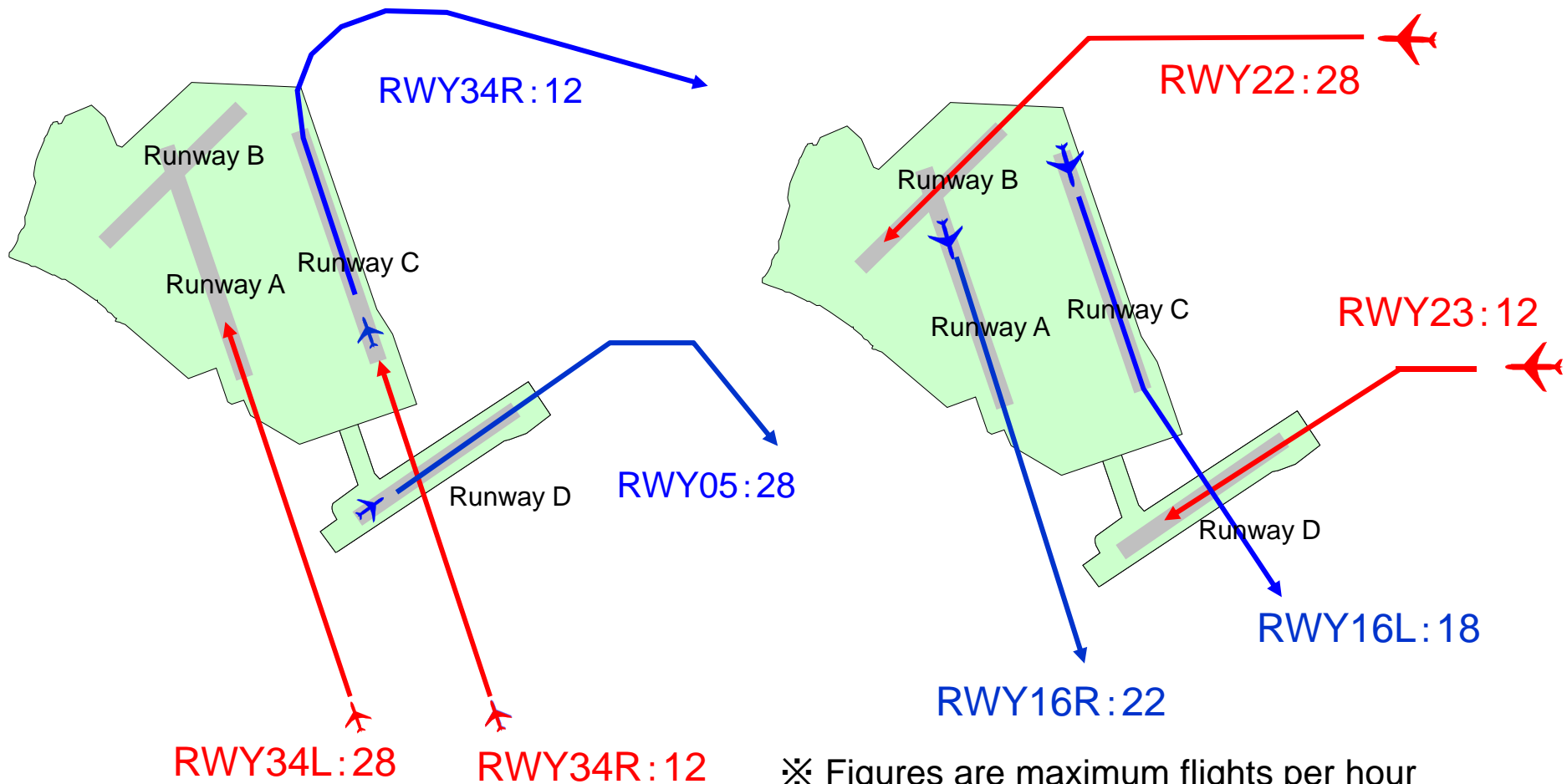
Take-off and landing path at Haneda After 2010 re-expansion

→ Take-off

→ Landing

North-wind

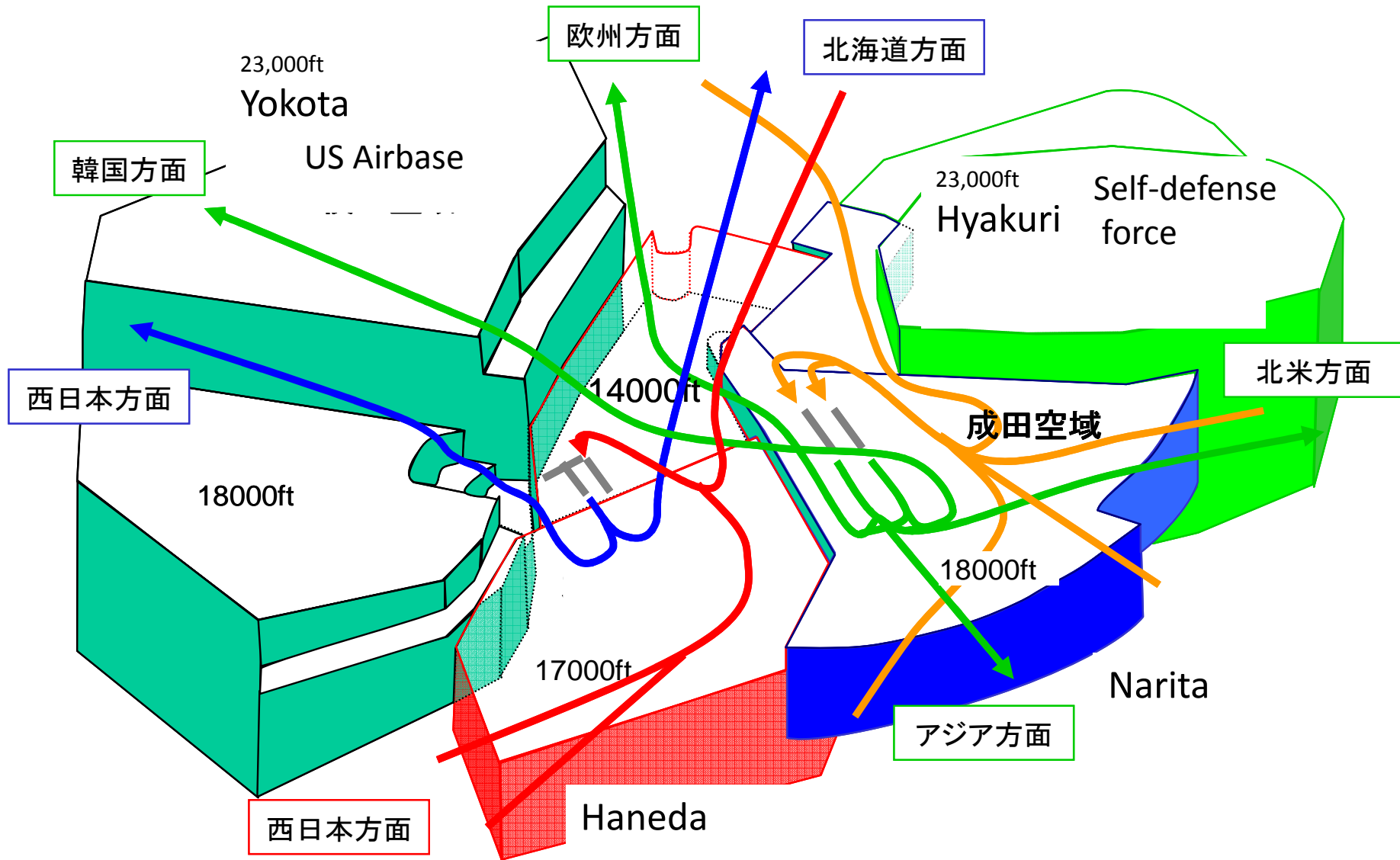
South-wind



※ Figures are maximum flights per hour

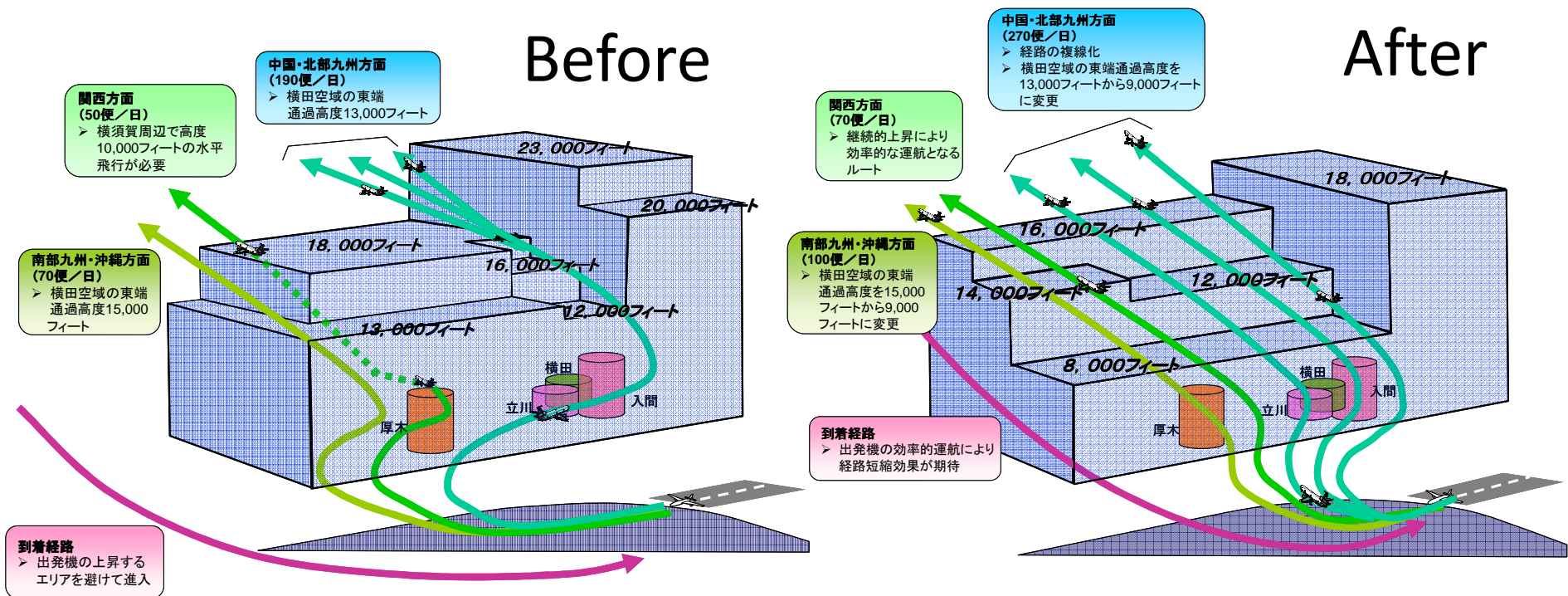
Source: MLIT

Air space in Greater Tokyo Area



Re-designing of airspace in Tokyo area

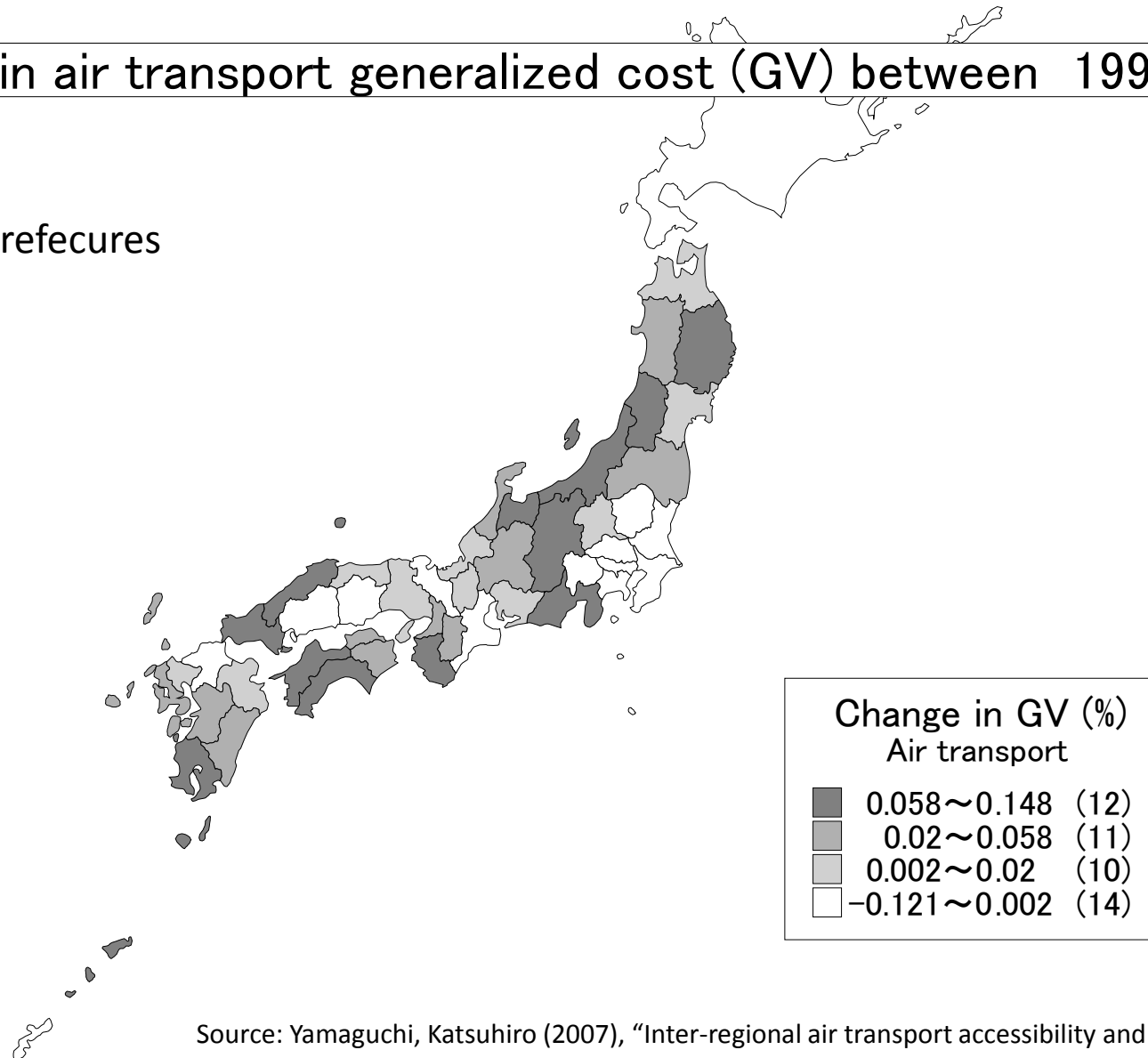
- Coordination with airspace managed by Yokota US Airbase -



Some empirical analysis in Japan

Change in air transport generalized cost (GV) between 1995–2000

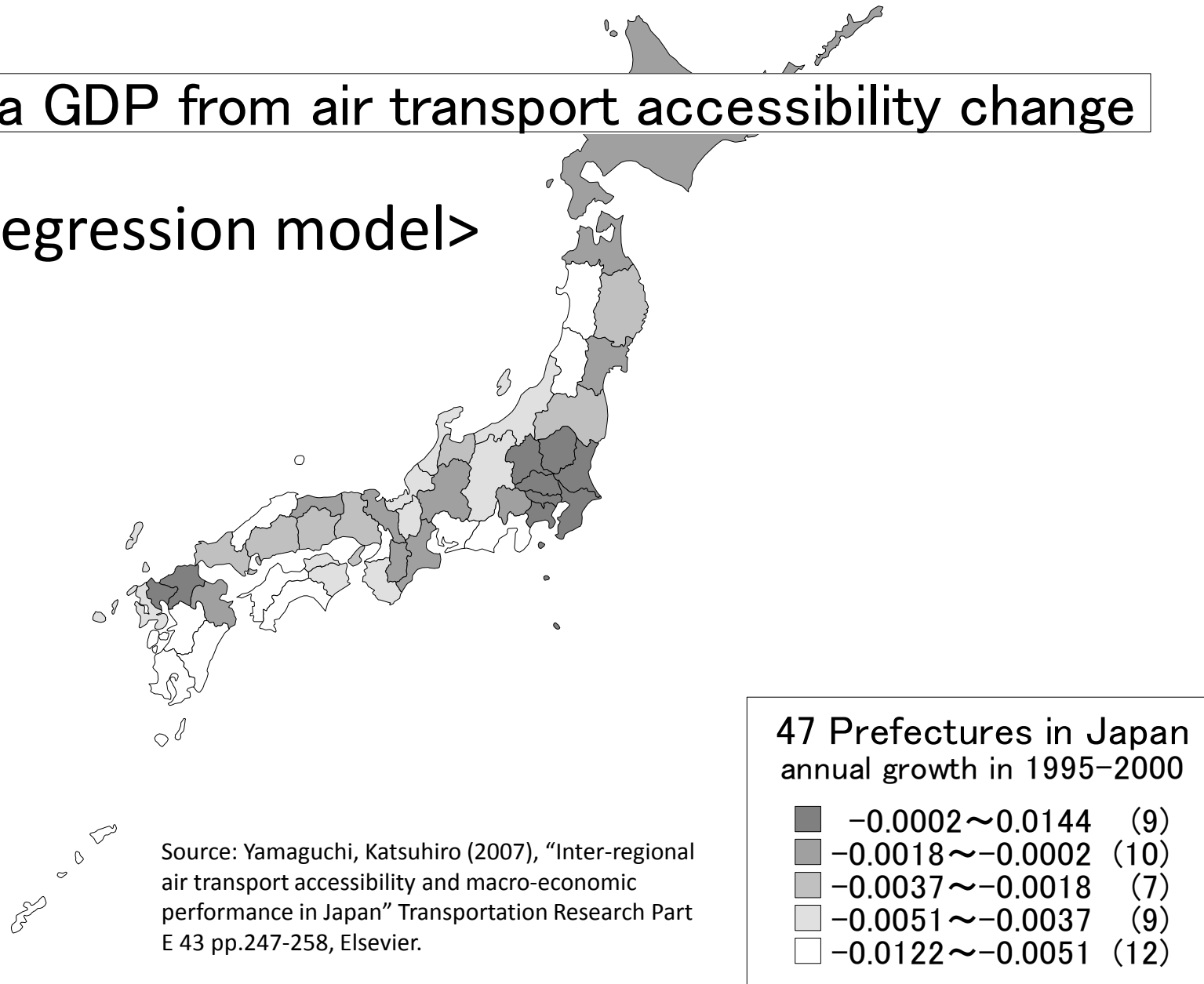
47 Prefecures



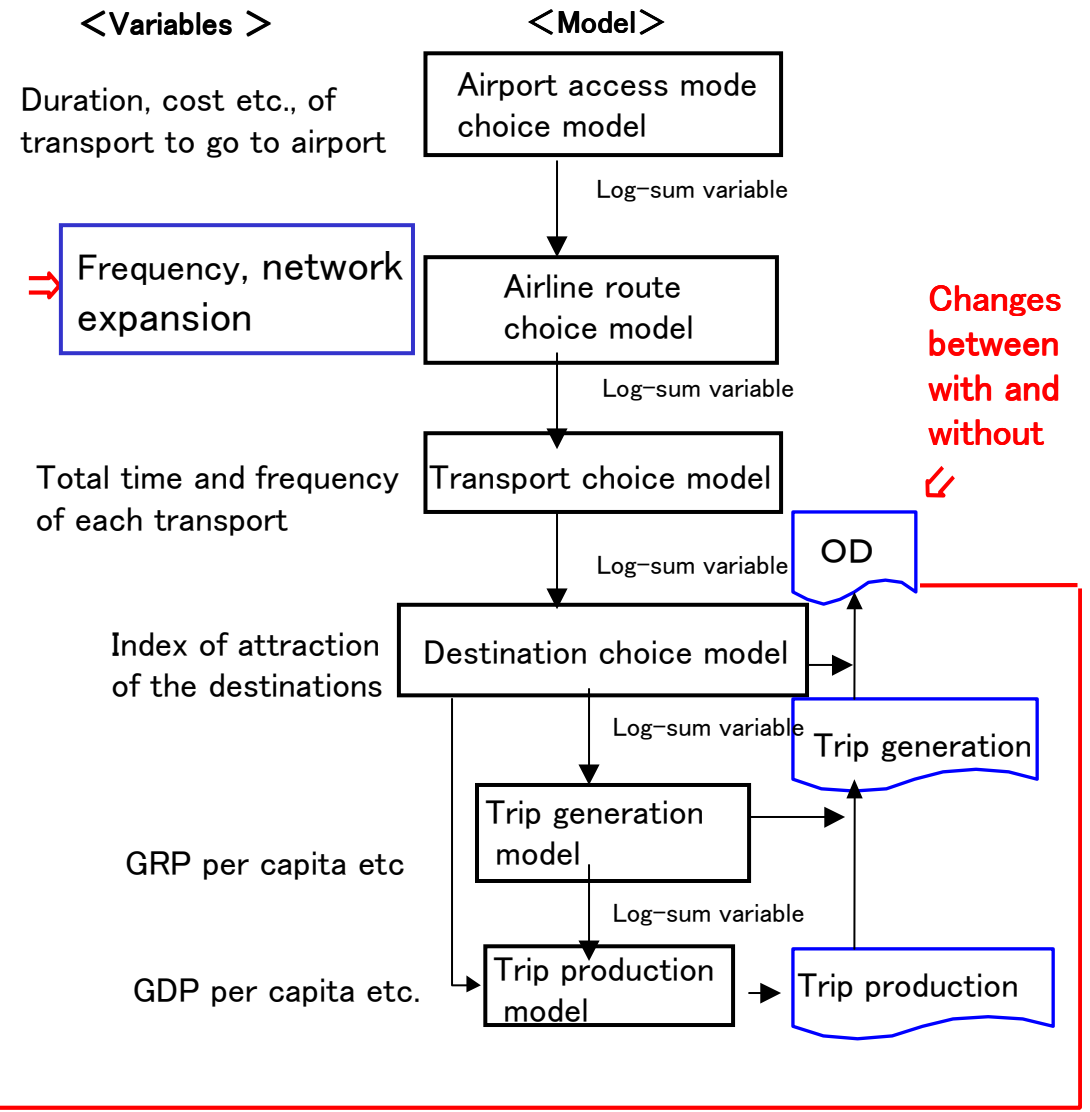
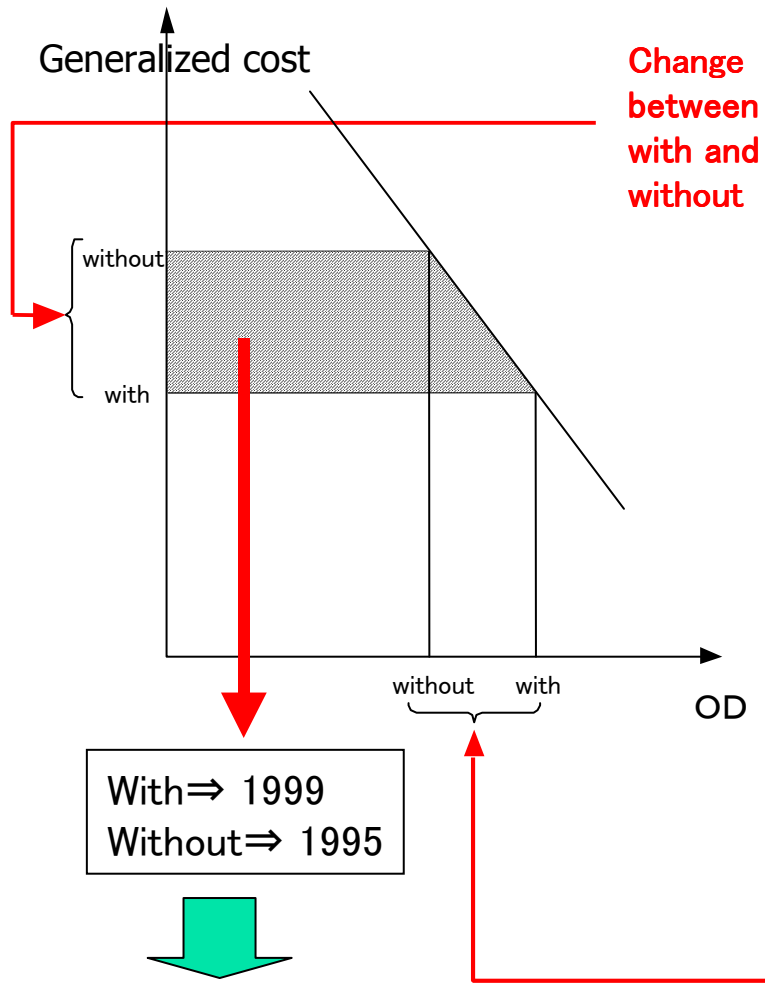
Source: Yamaguchi, Katsuhiko (2007), "Inter-regional air transport accessibility and macro-economic performance in Japan" Transportation Research Part E 43 pp.247-258, Elsevier.

Per capita GDP from air transport accessibility change

<Barro regression model>



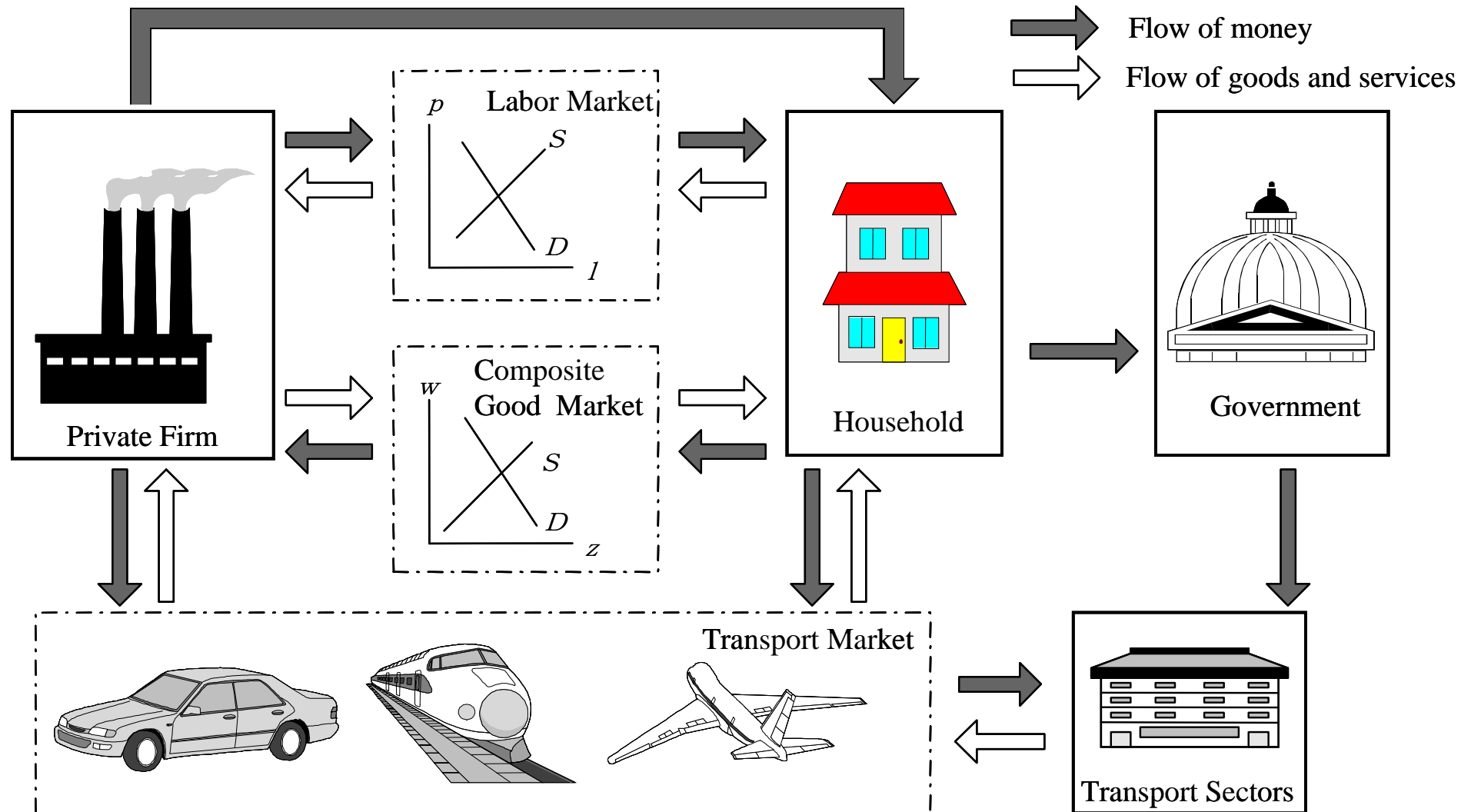
Partial equilibrium benefit analysis of connectivity improvement



Source: Policy Research Institute, MLIT.

SCGE model benefit analysis of Haneda re-expansion

Japan divided into 9 zones



Source: Ueda, Takayuki, A. Koike, K. Tsuchiya and K. Yamaguchi (2005), "Spatial Benefit Incidence Analysis of Airport Capacity Expansion: Application of SCGE Model to the Haneda Project" in Global Competition in Transportation Markets: Analysis and Policy Making, Research in Transportation Economics Vol. 13, Elsevier.

	Partial equilibrium model (annual benefit)	Spatial CGE model (annual benefit)
Re-expansion of Haneda Airport	79 billion yen (880 million USD) B/C= 6	143 billion yen (1,590 million USD)

Note: Only deals with domestic market.
No externalities considered.

Slot allocation at Haneda (and Itami) for domestic flights

- Civil Aeronautics Law stipulates that slots at Haneda (and Itami) shall be “allocated” to airlines and reviewed every five years by the central government (no market-based measures).
- Until 1998, allots were allocated between ANA, JAL, JAS (merged in 2002) basically in 2:1:1 ratio.
- Affirmative action for new airlines introduced since their entry in 1998.
- A number of slots are reserved for routes to/from regional airports.

Haneda

- Opened with one runway
- Two runways (crossed)
- Turbo-jet aircrafts cause severe noise issue. Curfew introduced
- Expansion starts by reclaiming bay area

Narita

1931

1950

1962

1978

1984

1992

- Planning starts
- Chiba: Tomisato → Sanrizuka
- March opening blocked by radicals' raid. Finally starts operation in May

➤ Terminal 2 opened

Haneda

(Annual capacity 300,000)

- Three runways (Parallel + Cross) completed. Curfew completely withdrawn
- Re-expansion (fourth runway) and re-internationalization authorized

- Fourth runway opened, international schedule flights re-started (Annual capacity 410,000 +40,000 at midnight)

Narita

(Annual capacity 200,000)

- Second runway (provisional) opened (runway shifted north)

- Second runway completed

- Simultaneous take-off & landing (Annual capacity 300,000)

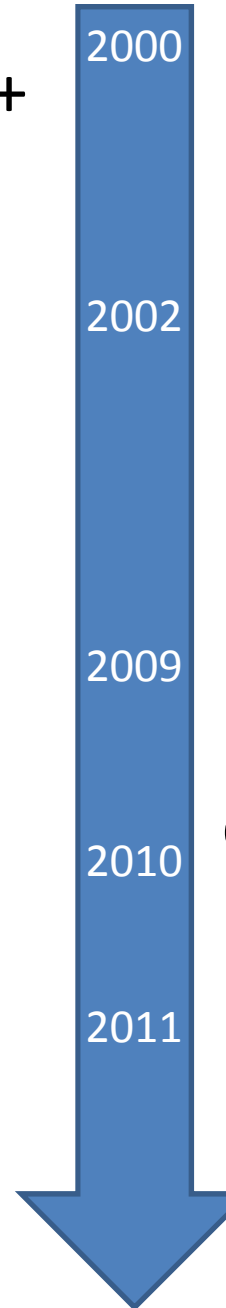
2000

2002

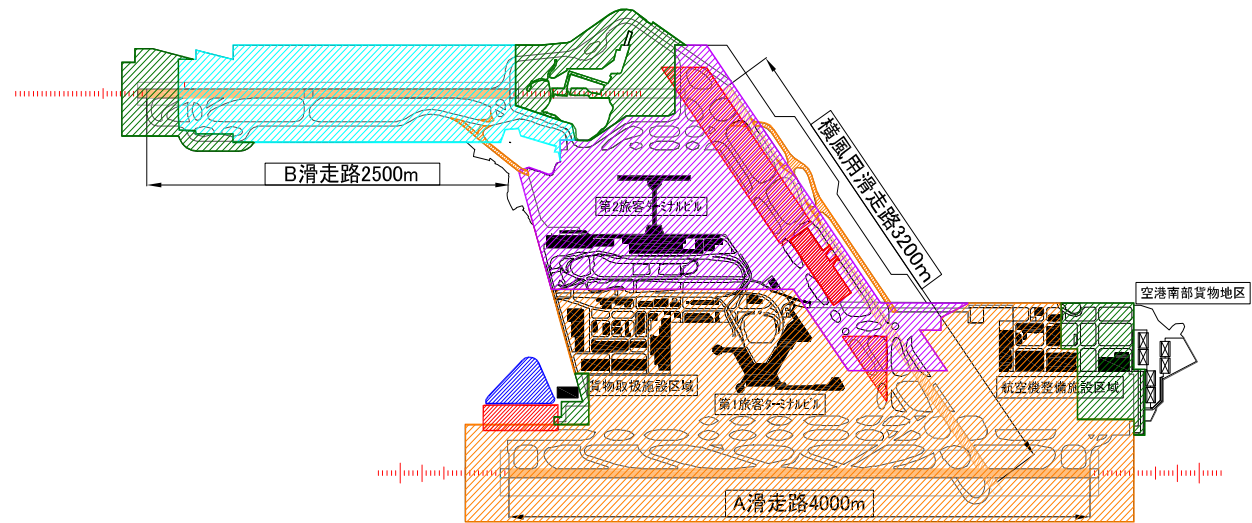
2009

2010

2011

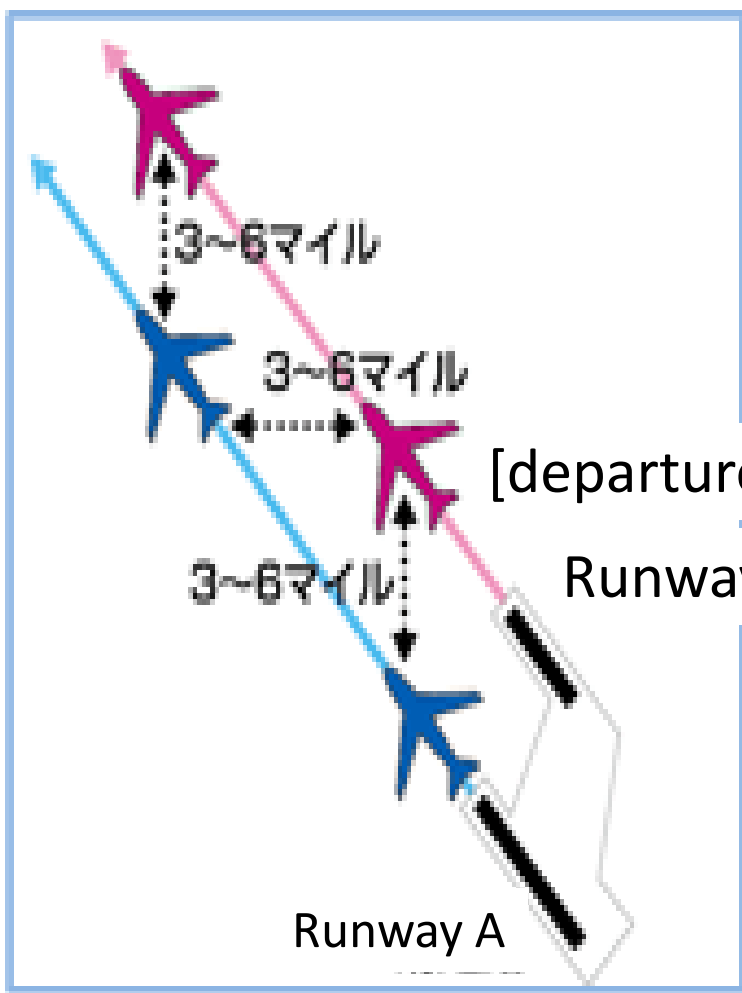


Development of Narita Airport

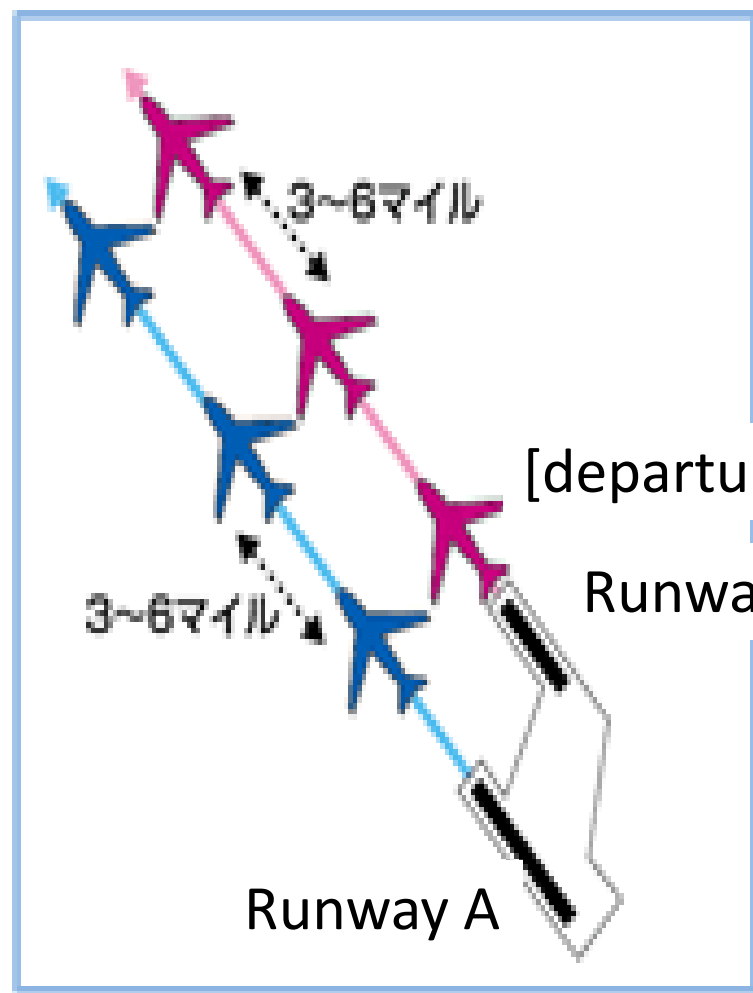


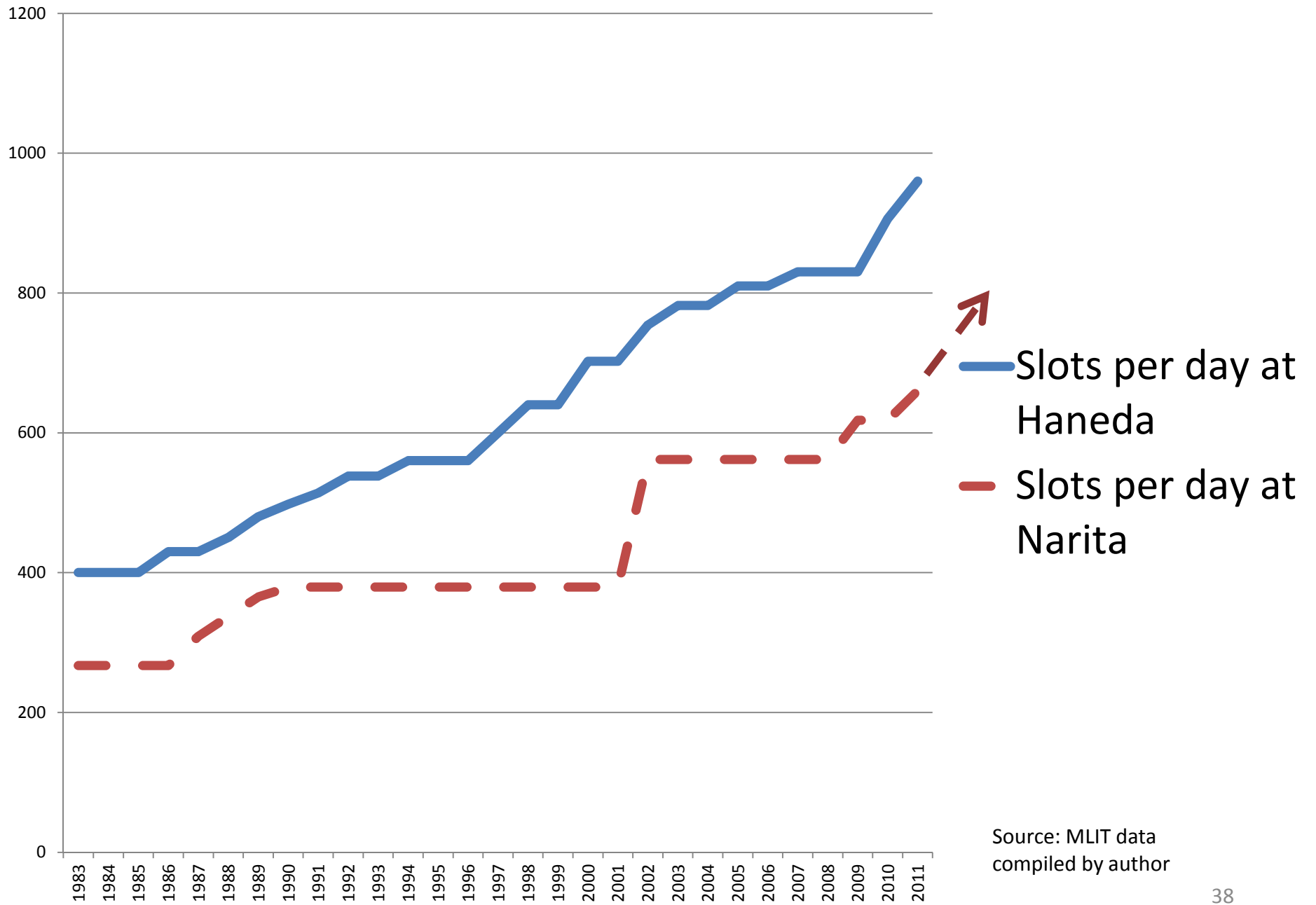
- 1978 (Opening of the airport)
- 1992 (Opening of Terminal 2)
- 2002 (Opening of Runway B (provisional – 2180m))
- 2009 (Extension of Runway B to 2500m)

[past]



[present]



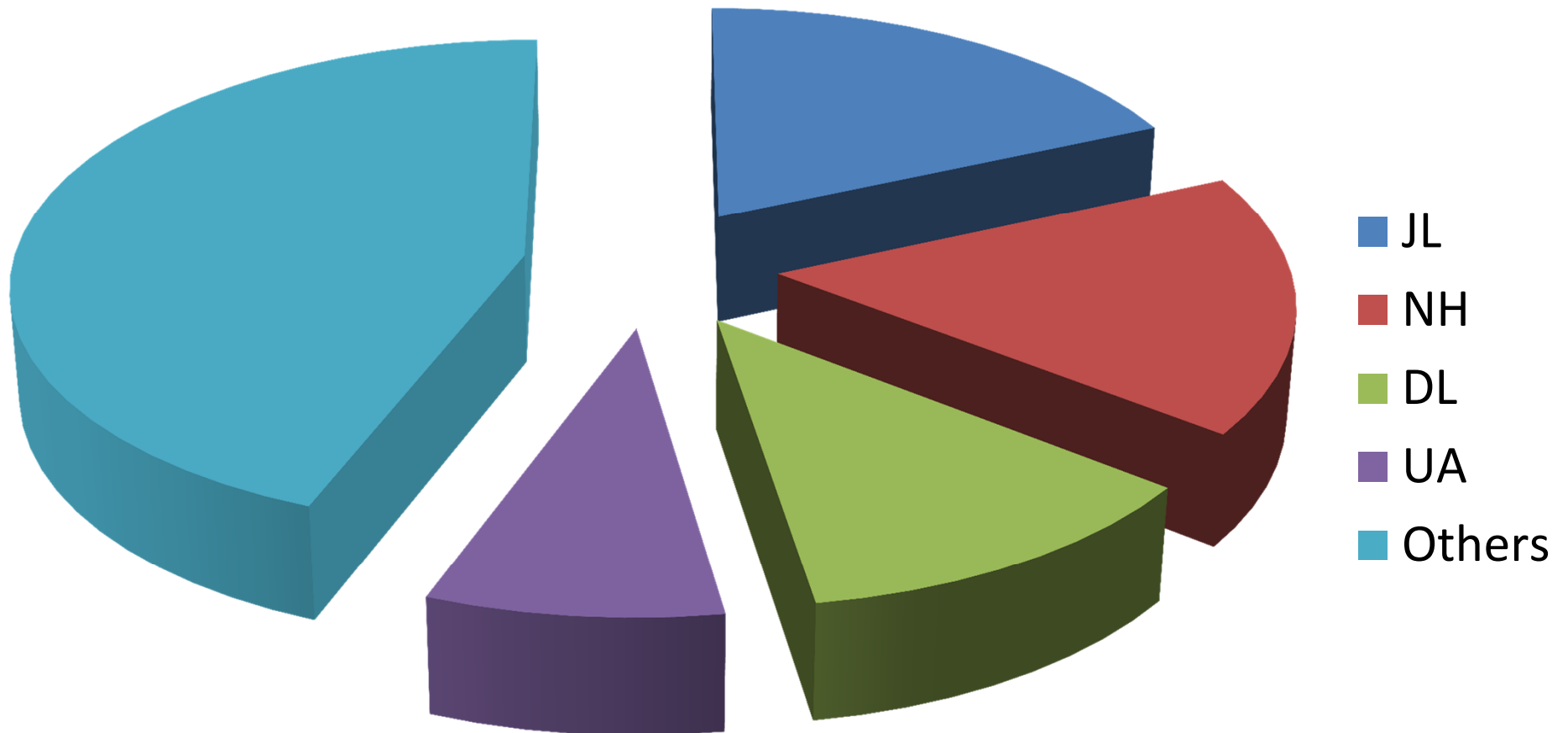


Source: MLIT data
compiled by author

Slot allocation at Narita (and Haneda) for international flights

- Slots at Narita (and Haneda) are “allocated” back-to-back with traffic rights based on ASAs. IATA historical rules applied (no market-based measures).
- Until 1985, JAL was the single national flag carrier. Since 1985, ANA operates in international routes. ANA has been pressing hard to acquire Narita slots and re-internationalization of Haneda.
- After bankruptcy of JAL in 2010, slots at Narita has been balanced between JAL and ANA. Slots for international flights at Haneda has been allocated in equal terms.

No dominant airline at Narita

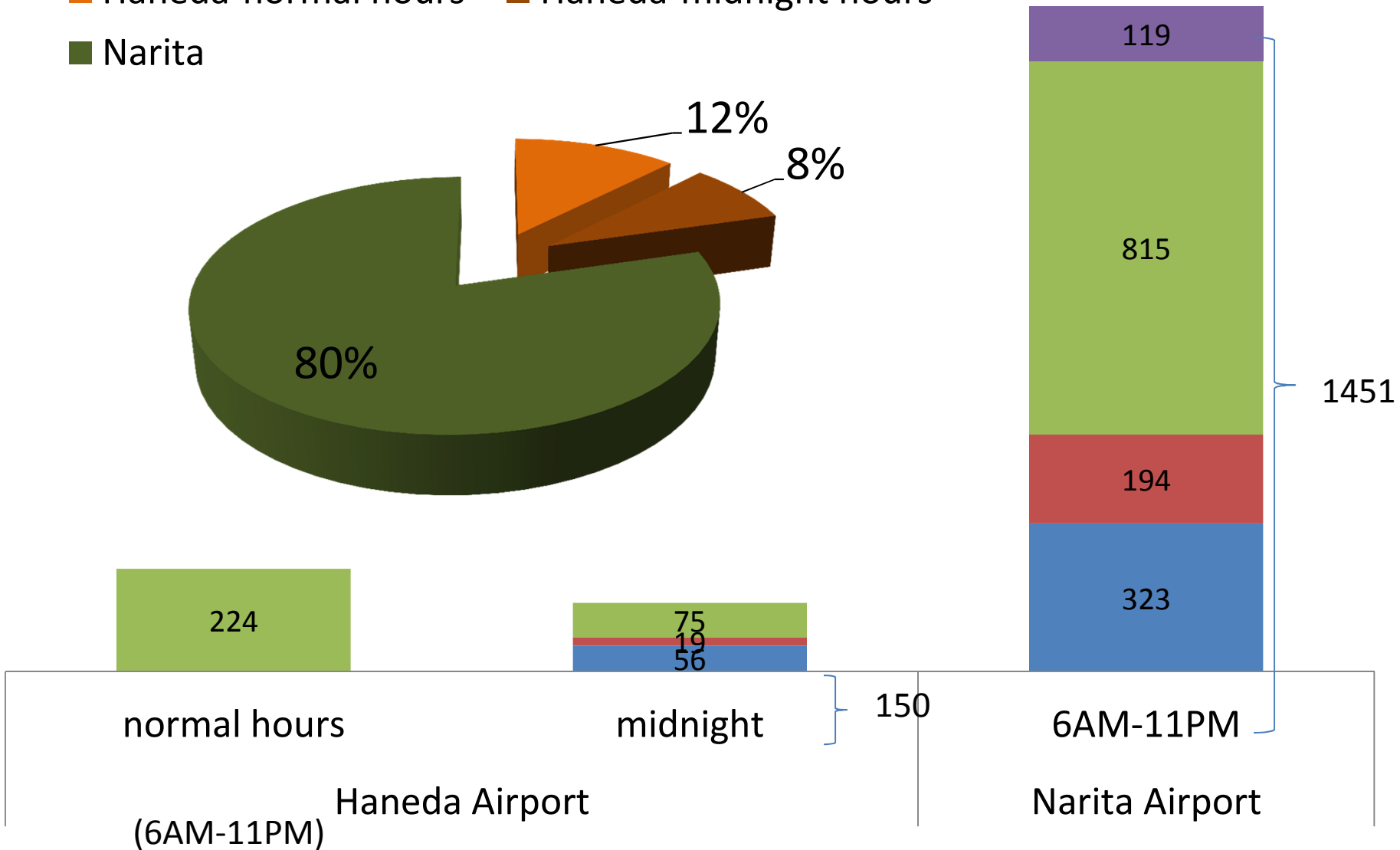
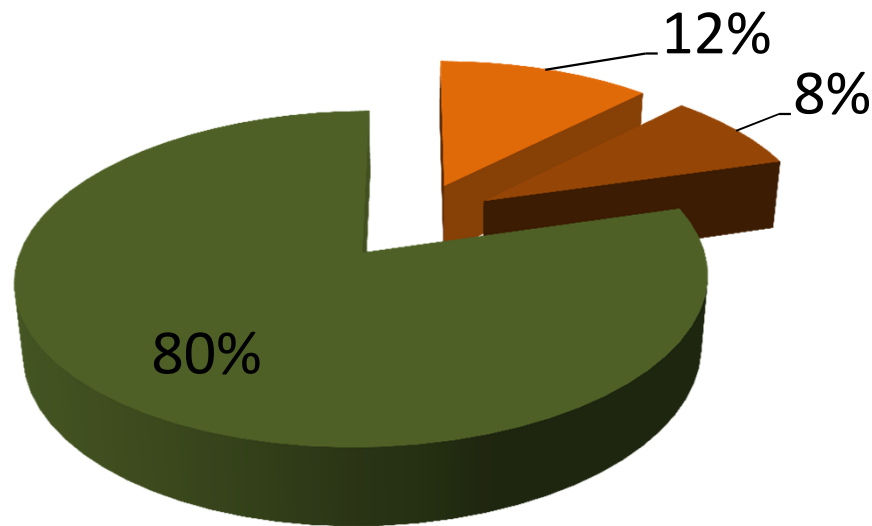


Source: JTB timetable data (September 2012) compiled by author

■ America
 ■ Europe/Mid-East
 ■ Asia
 ■ Pacific

■ Haneda-normal hours
 ■ Haneda-midnight hours

■ Narita



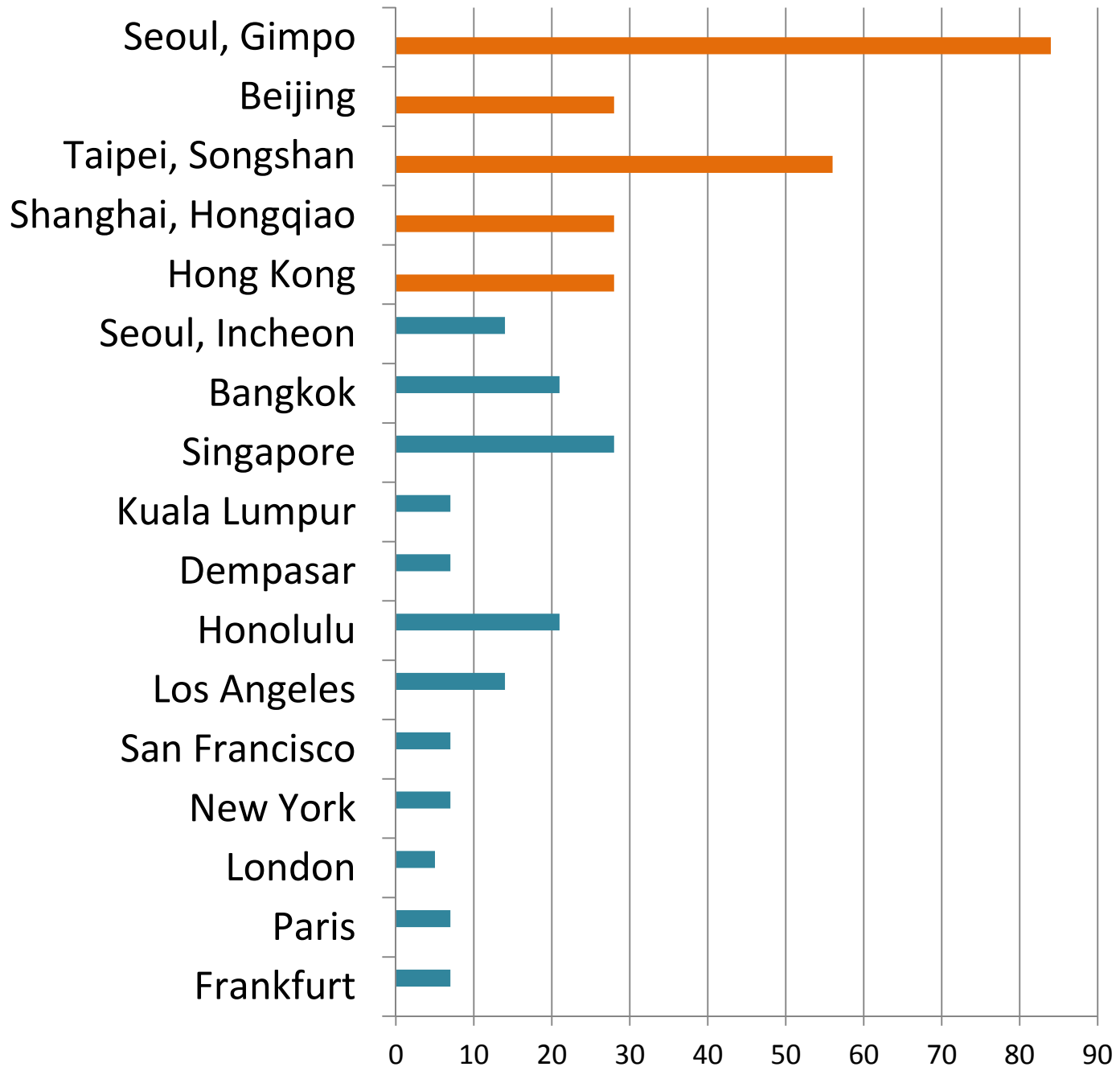
International Passenger Schedule flights per week as of September 2012
 Source: JTB timetable data (September 2012) compiled by author

International Passenger Schedule flights per week as of September 2012

Haneda Airport

■ Midnight hours
■ Normal hours
(6AM-11PM)

Source: JTB timetable data (September 2012) compiled by author



History of Airports in Osaka: Itami Airport, Kansai Airport and Kobe Airport



Overview of Kansai Area

Gateway to World Heritage sites and other popular destinations → Prospect for Growth



Himeji-jo
(World Heritage)



Kobe Beef



Historic Monuments of Ancient Kyoto
and Traditional Culture
(World Heritage)



Osaka food
culture



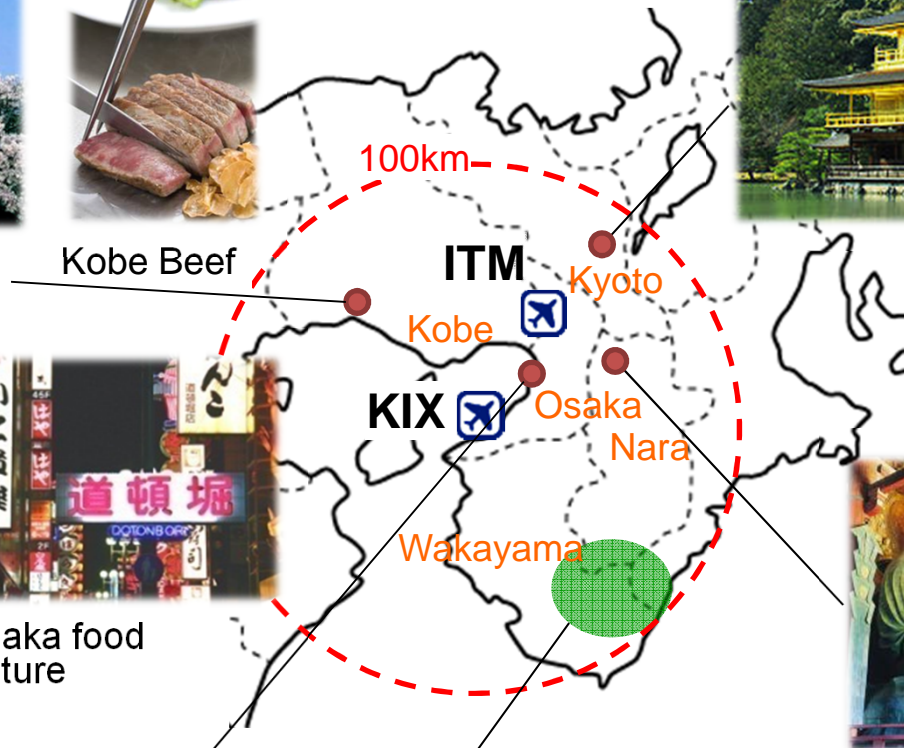
Universal
Studios
Japan



Sacred Sites and Pilgrimage
Routes in the Kii Mountain Range
(World Heritage)



Historic Monuments of Ancient Nara
(World Heritage)



Itami Airport, Kansai Airport and Kobe Airport

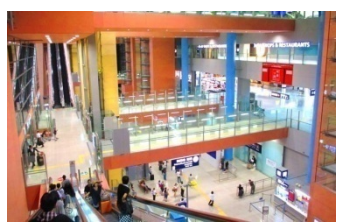


Kobe Airport



Itami Airport

Kansai Airport



Terminal 1



Terminal 2 (LCC)



Itami

- Opened with one runway (1,828m)
- Turbo-jet aircrafts cause severe noise issue. Curfew introduced.
- Law suites filed against government for suspension and compensation.
- Second runway (parallel) opened.
- Number of flights capped at 370 (200 for turbo-jets).
- Supreme Court rejects suspension but orders compensation.

1939

1965

1969

1970

1977

1981

Kansai (KIX)

- Planning starts.
- Five locations, including Kobe, considered. City of Kobe rejects the idea.
- Location chosen 37 km south of CBD and 5 km off-shore.

Itami/Kobe

- International flights shifted to Kansai Airport.
- Kobe Airport opened with single runway. Domestic only. Capacity limited due to air route conflict with Kansai.

Kansai (KIX)

1994

- Opened with single runway (3,500m), 24 hours operational .

2005

2007

- Second runway (4,000m) opened.

2012

- Kansai & Itami integrated.
- LCC boom from KIX.
- Terminal 2 (LCCT) opened.
- FedEx hub planned to be completed.

2014

- Operational rights of Kansai and Itami planned to be sold (concession).

LCC Business Model and KIX Airport Strategy



FSC

Cover wide range of market segment with emphasis on business trips

Low price, no-frills

Price

Market segment

LCC

Focus on leisure and personal trips

Facilitate introduction of KIX- based national LCC

Dramatic growth of LCC at KIX



Peach Aviation, based at Kansai International Airport, has been established.
We built **the first-ever terminal dedicated to LCC flights in Japan.**

Overview of LCC business based at KIX

The brand name of “**Peach**” was announced in May 2011.

◎ **Based at Kansai International Airport, LCC business in domestic and international flight services** are promoted.

◎ The operation started in March 2012.

- Domestic: Fukuoka, Sapporo, and Nagasaki (March 2012); Kagoshima (April 2012); and Okinawa (October 2012).
- International: Incheon (May 2012), Hong Kong (July 2012), and Taipei (September 2012)



Copyright © Peach Aviation

Expected to have 10 aircraft and annual passengers of 4 million in two years' time.

Expected to have 15 to 20 aircraft and annual passengers of 6 million within five years.

Jetstar Japan started operation in July 2012.

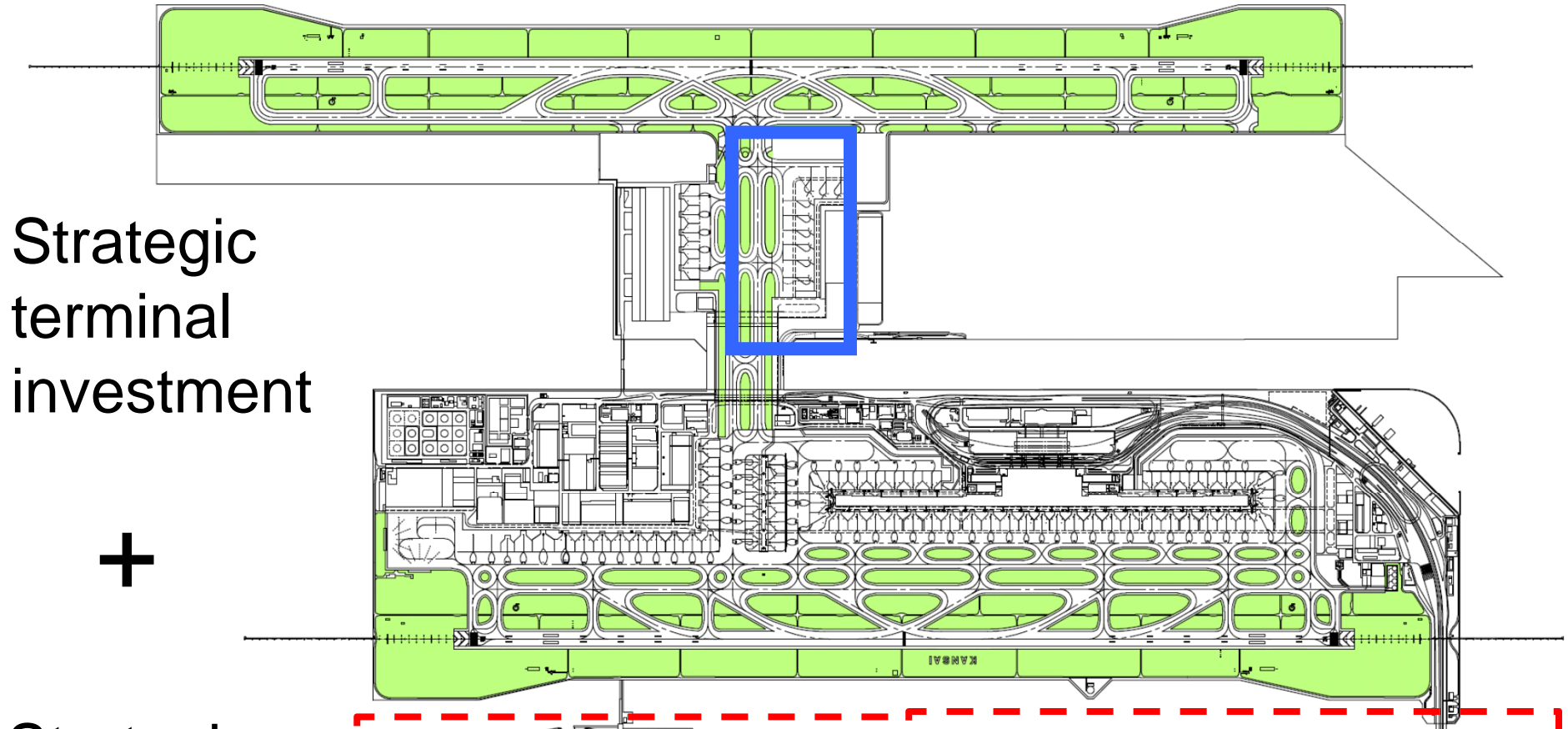
- Domestic: Narita (July 2012); Sapporo and Fukuoka (August 2012); and Okinawa (November 2012)

Jetstar Japan has announced to establish its second base at KIX.



Copyright © Jetstar Japan Co., Ltd

LCC Business Model and KIX Airport Strategy (3)



Strategic terminal investment

+

Strategic pricing policy

- 80% discount for additional flights in the first year
- Adding incentives for second and third year –from 2013S

Concept of Terminal 2



The concept: “Functionality; Economic Efficiency; and Safety and Security”

- Total floor area of approx. 30,000 m²
- Single-story building (partly two-story)
- Used for both international and domestic flights
- No passenger boarding bridges, boarding via ramp after walking to an aircraft



- 9 new stands
- Small aircraft can move without a towing vehicle



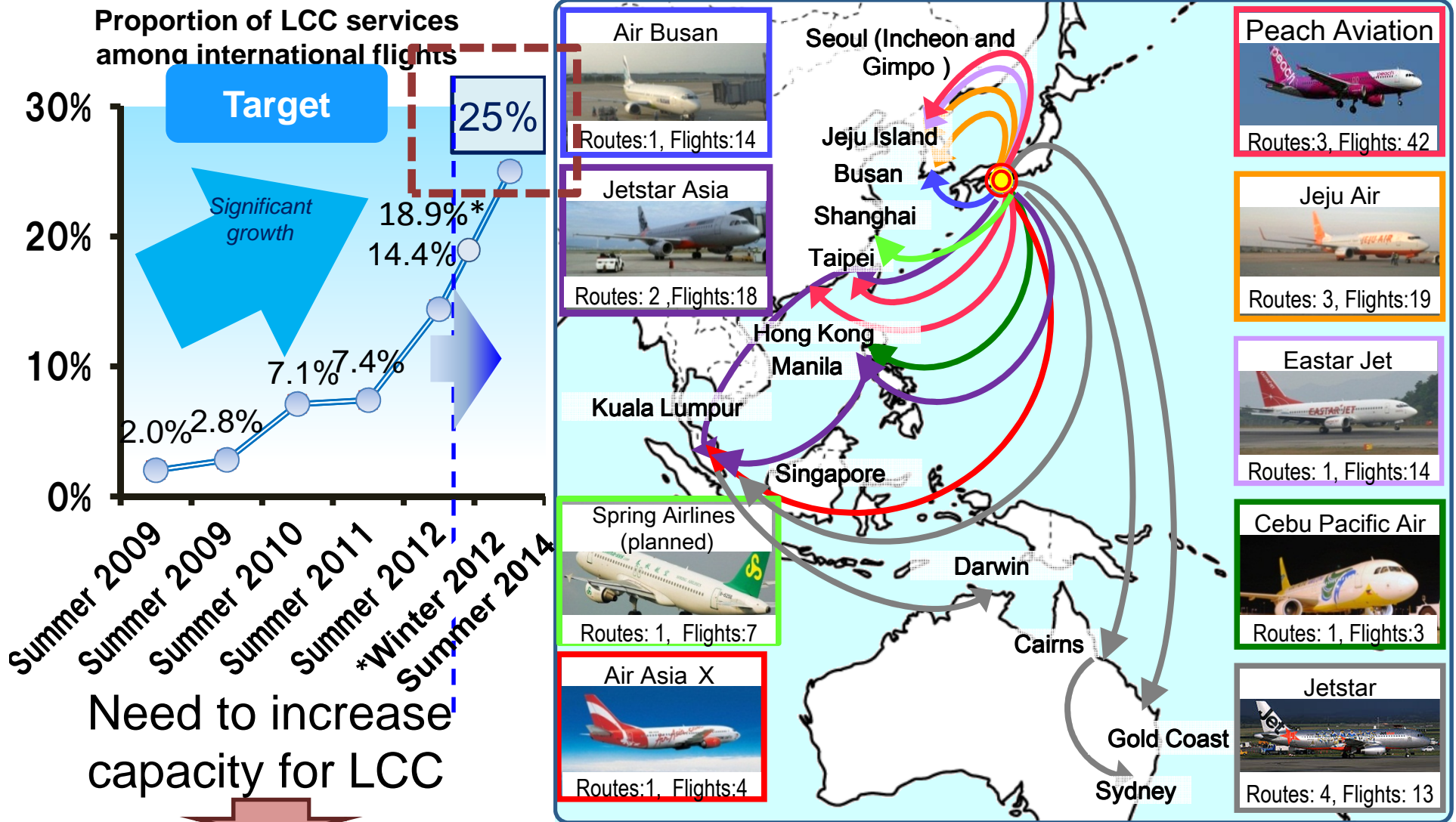
Entrance of the Terminal building

Passenger Waiting Area inside the Terminal building



Opened on 28th October, 2012

Further LCC growth ahead at KIX



* The numbers of flights are based on the Winter 2012 International Flight Schedule
 ** In the domestic market, Peach Aviation and Jetstar Japan in operating



Recent Cargo Initiative

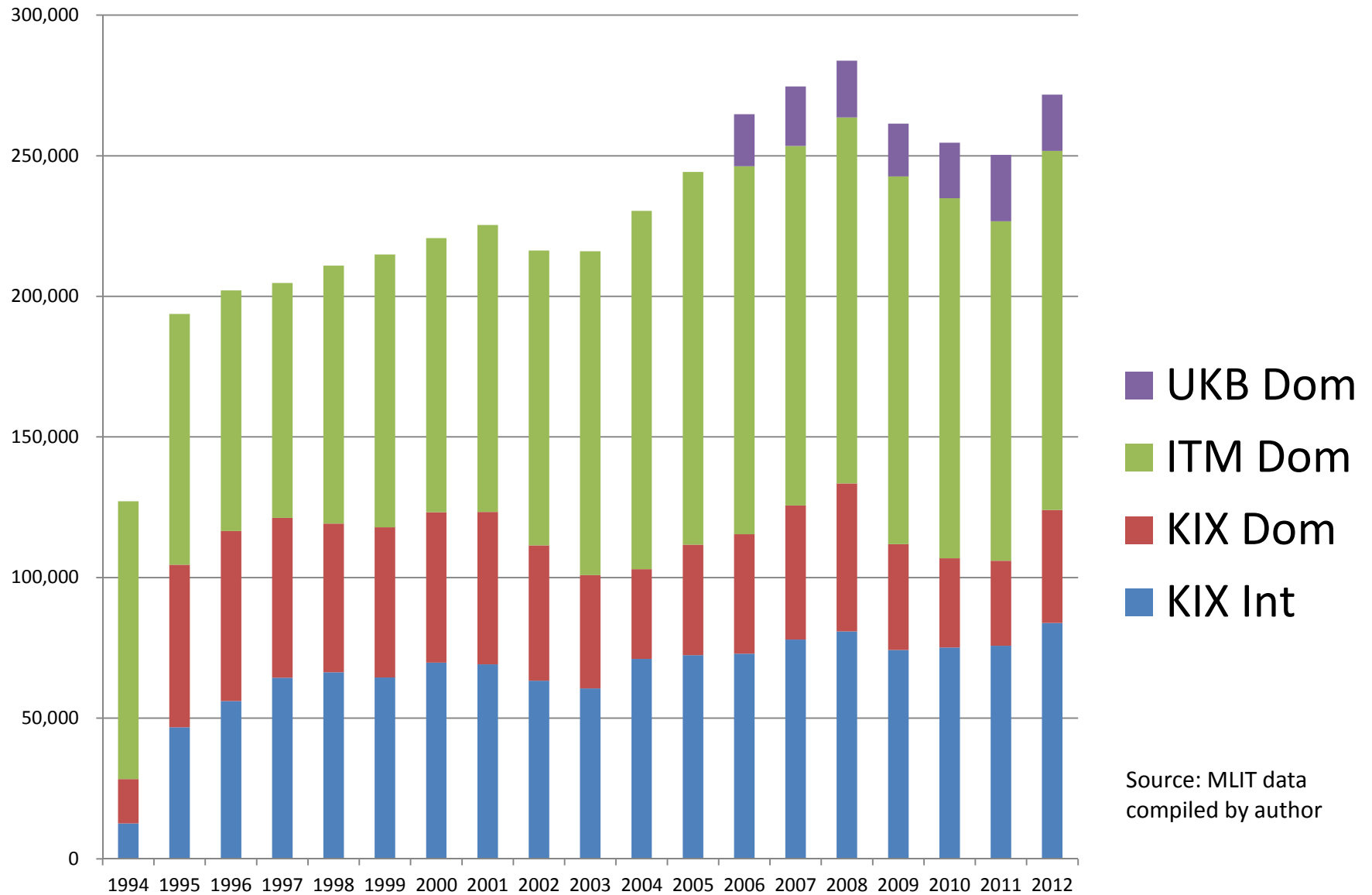
- KIX** ■ FedEx will establish a new North Pacific Regional Hub at KIX in Osaka to serve as a consolidation point for shipments from northern Asia to the U.S. It's expected the facility will be in operation in Spring 2014.

“We find that the location of KIX is convenient for both the major Asian markets and cities in the United States, and it has also had outstanding 24-hour operations since its opening in 1994.”
(Source: NKIAC/FedEx press release dated May 25, 2012)

FedEx®
Express



Number of take-off and landing per year

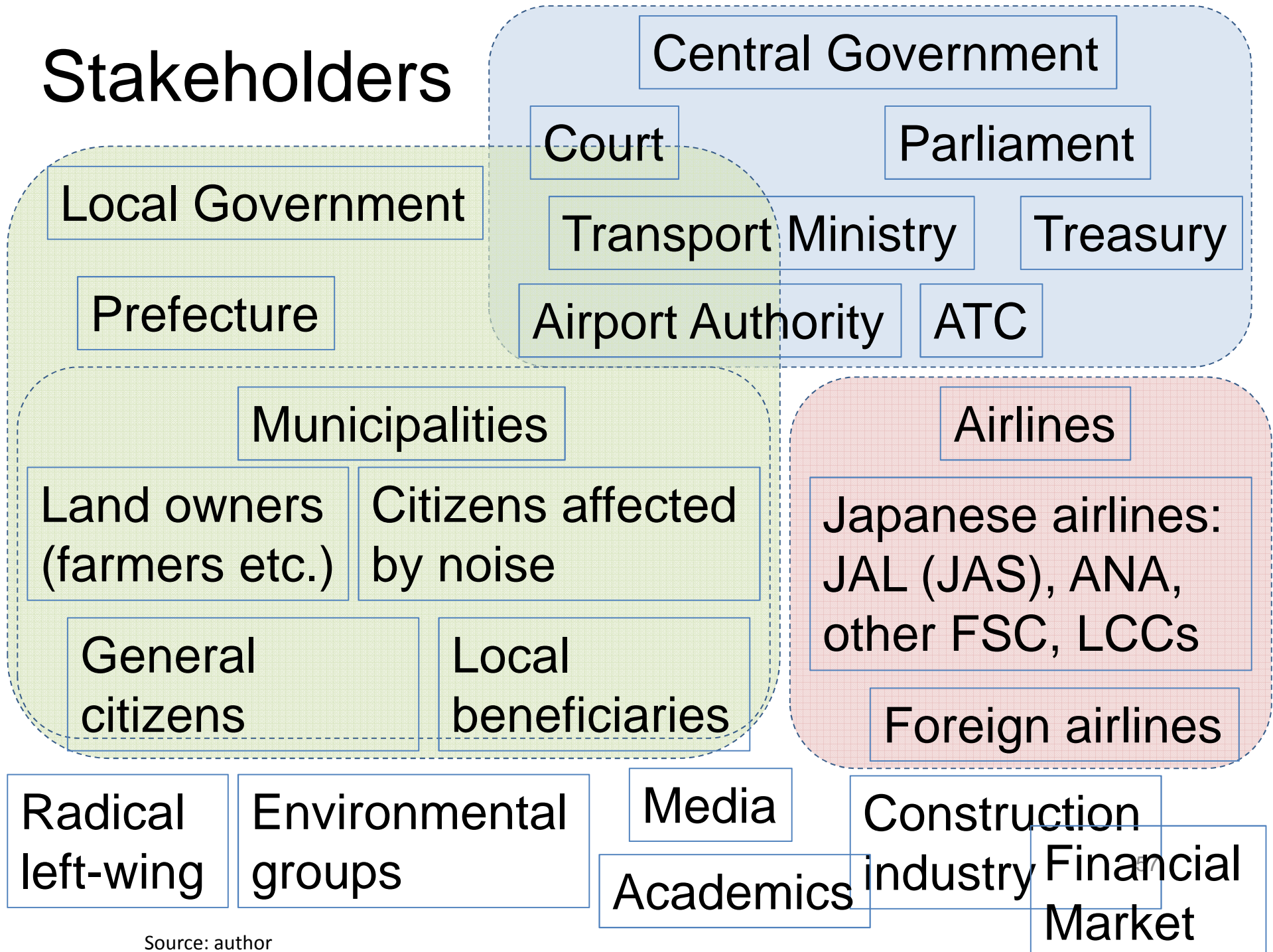


Source: MLIT data
compiled by author

Overcoming the difficulties in metropolitan airport development

- Simultaneous planning of land-use and air-space
- Taking advantage of aircraft development and avionics innovation
- Coping with diversity of stakeholders
- Bearing in mind the “historical path dependence” of airport development

Stakeholders



Implications for future airport development in large urban area

KAIZEN

- “KAIZEN”
- Continuous improvement of current system.
- Need to taking advantage of improvement in aircraft and avionics technology.

e.g. Kansai & Itami integrated

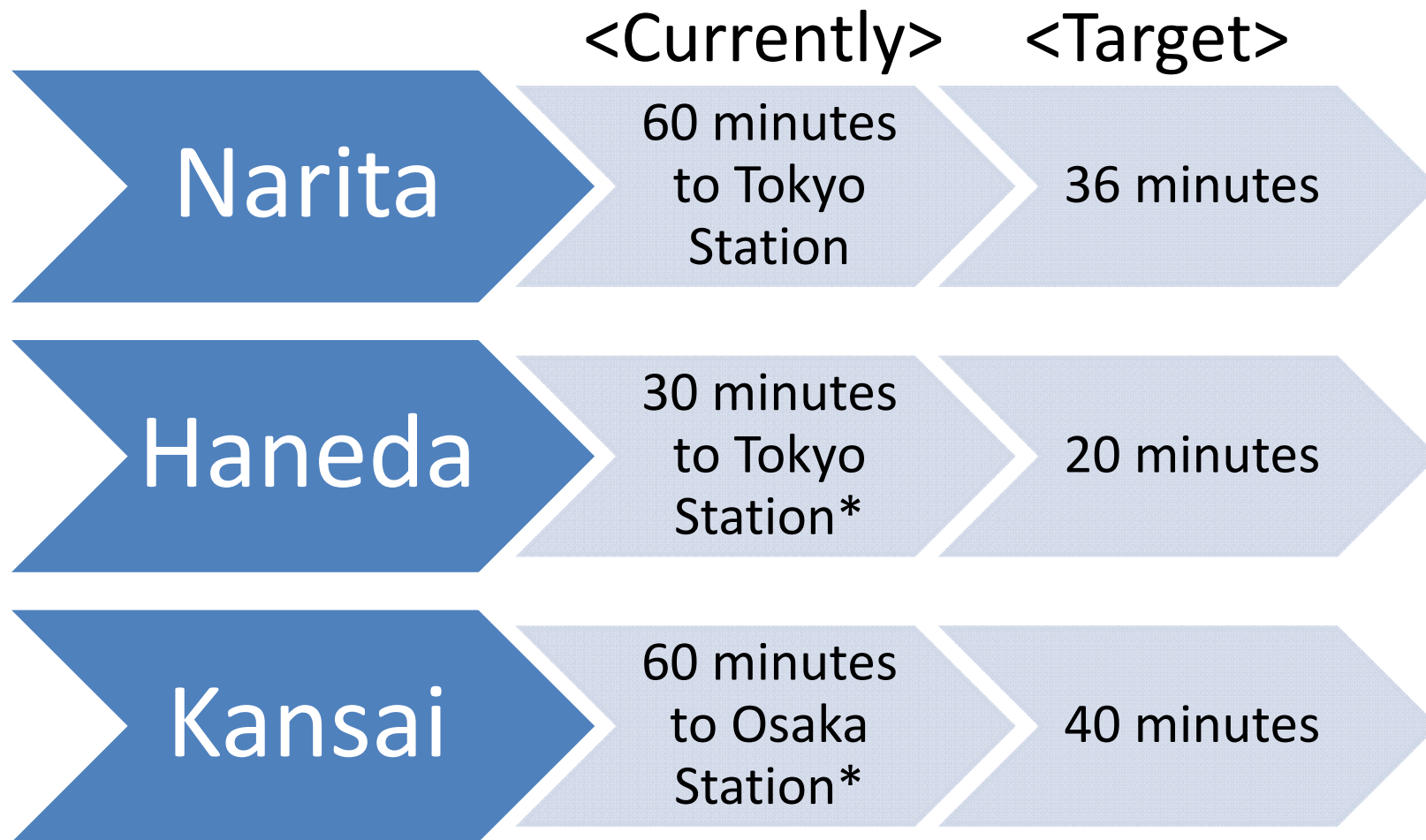
- Propeller aircraft slots (170 per day) converted into low-noise aircraft slots to allow low-noise turbo-jets in addition to 200 slots per day for turbo-jets in general (as of April 2013).

Stimulating local interest groups

e.g. Narita vs. Haneda

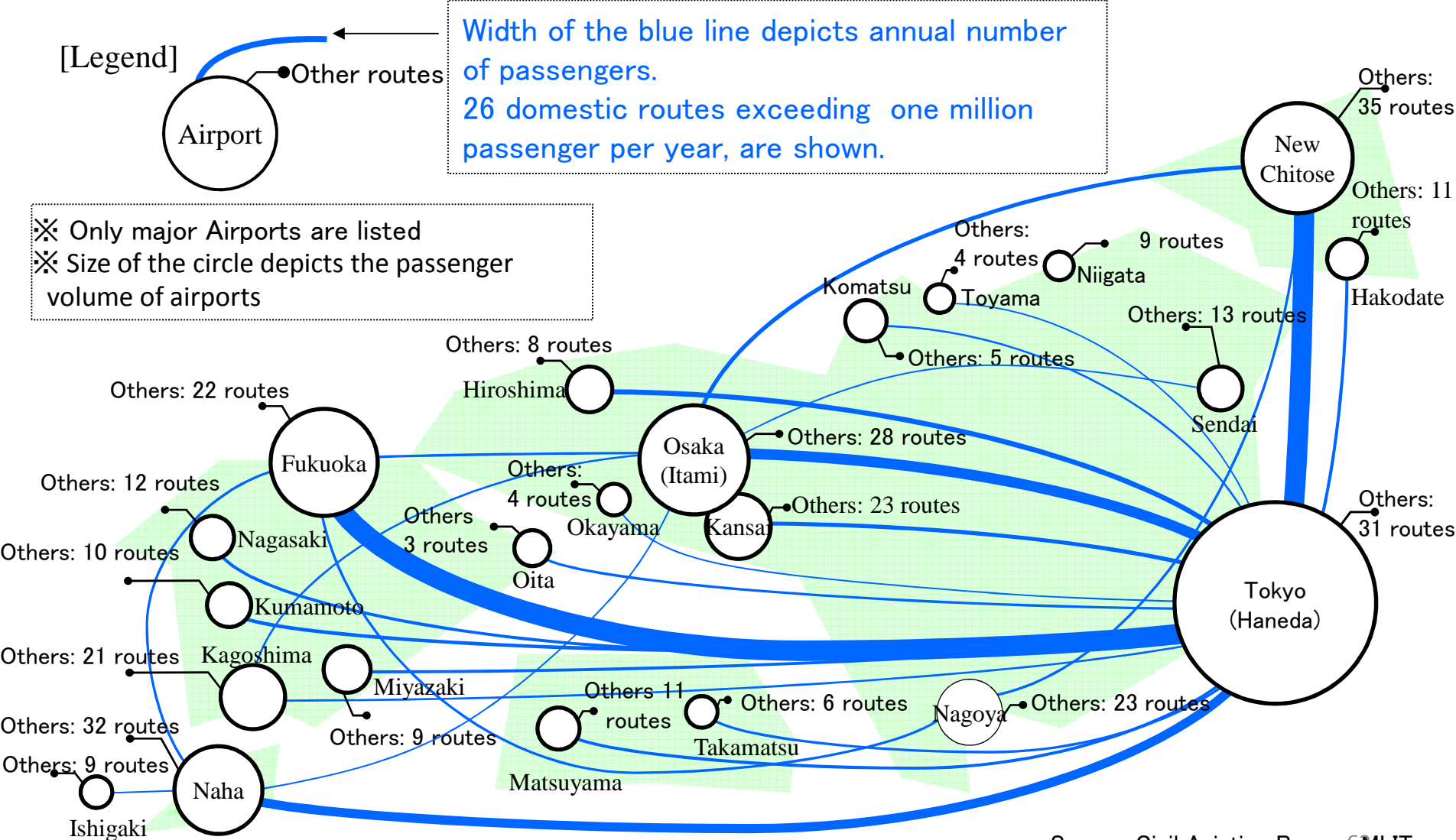
- Narita is now facing strong competition from Haneda in international flights.
- Narita is responding by facilitating entry of new airlines. Open Sky Agreements will be applicable when slots reach 300,000 per year.
- LCCs have entered but curfew is detrimental.
- Narita is trying to relax curfew after 23:00. Consultations are going on with local residents.

Improving access to/from airport








* Transfer necessary

Multi-modal perspective



Current Shinkansen Network

			In Operation	1,484miles (2,388km)
	Under Construction	485miles (780km)		
	Planned	112miles (180km)		

As of 2012

Sanyo Shinkansen

334miles (554km)



Joetsu Shinkansen

168miles (270km)

Hokuriku Shinkansen

73miles (117km)

Tohoku Shinkansen

419miles (675km)



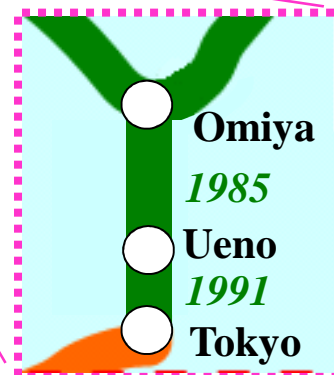
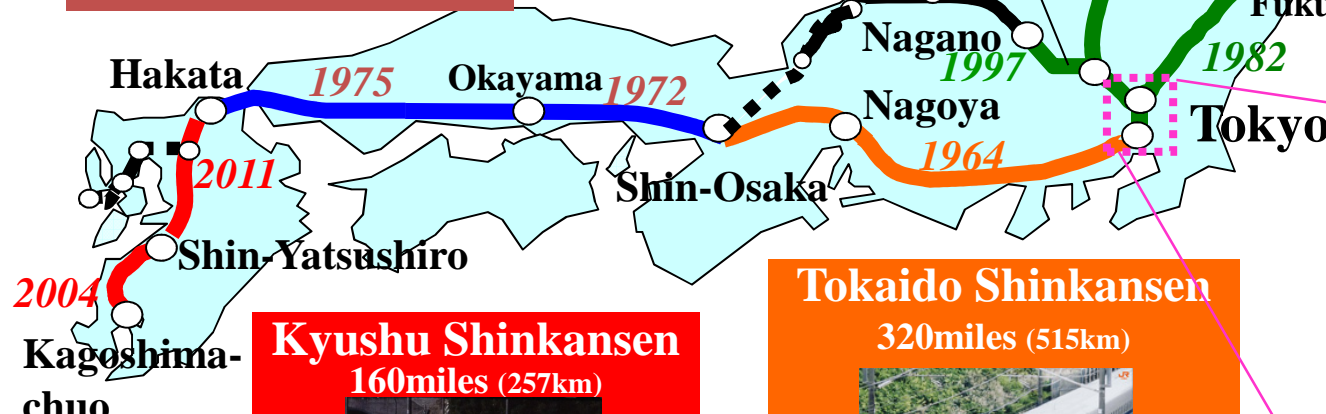
Tokaido Shinkansen

320miles (515km)



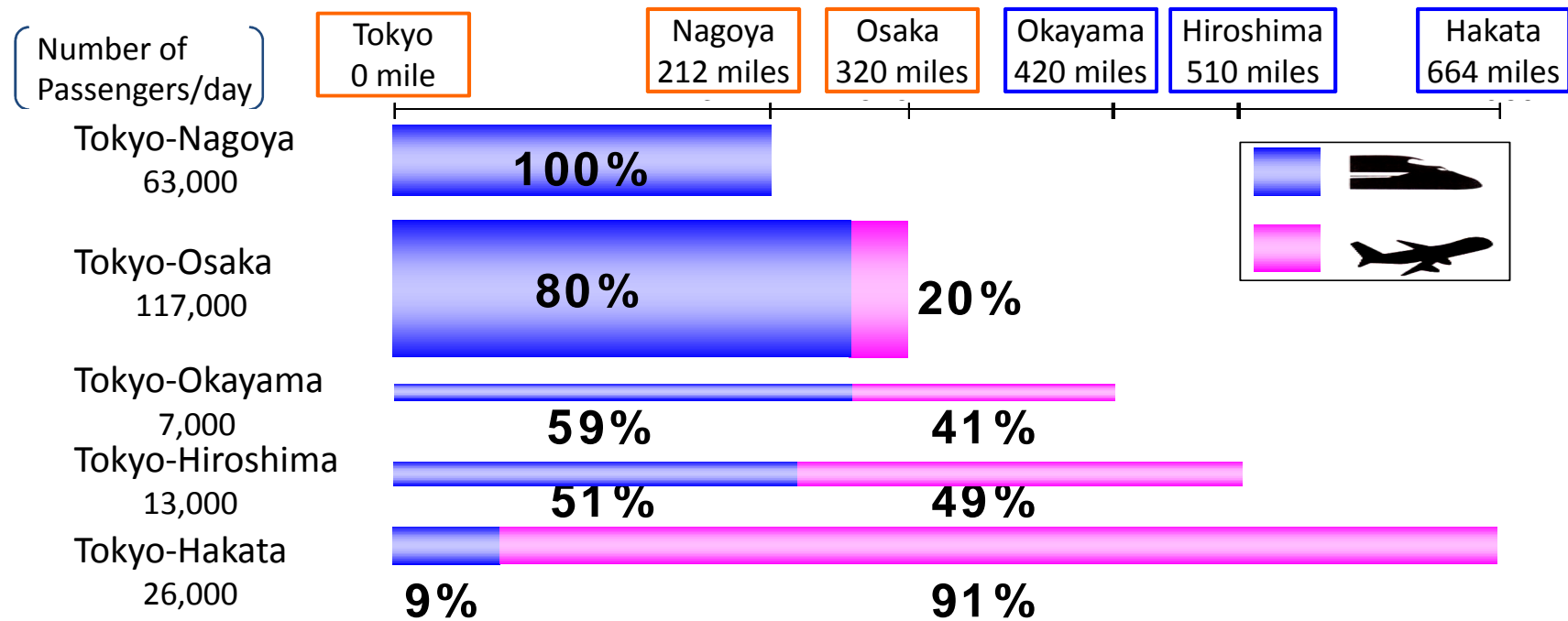
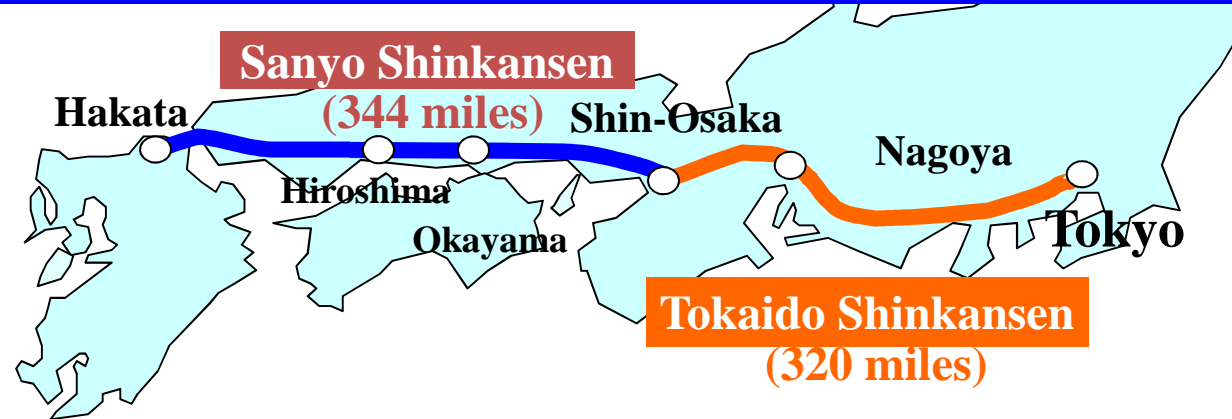
Kyushu Shinkansen

160miles (257km)

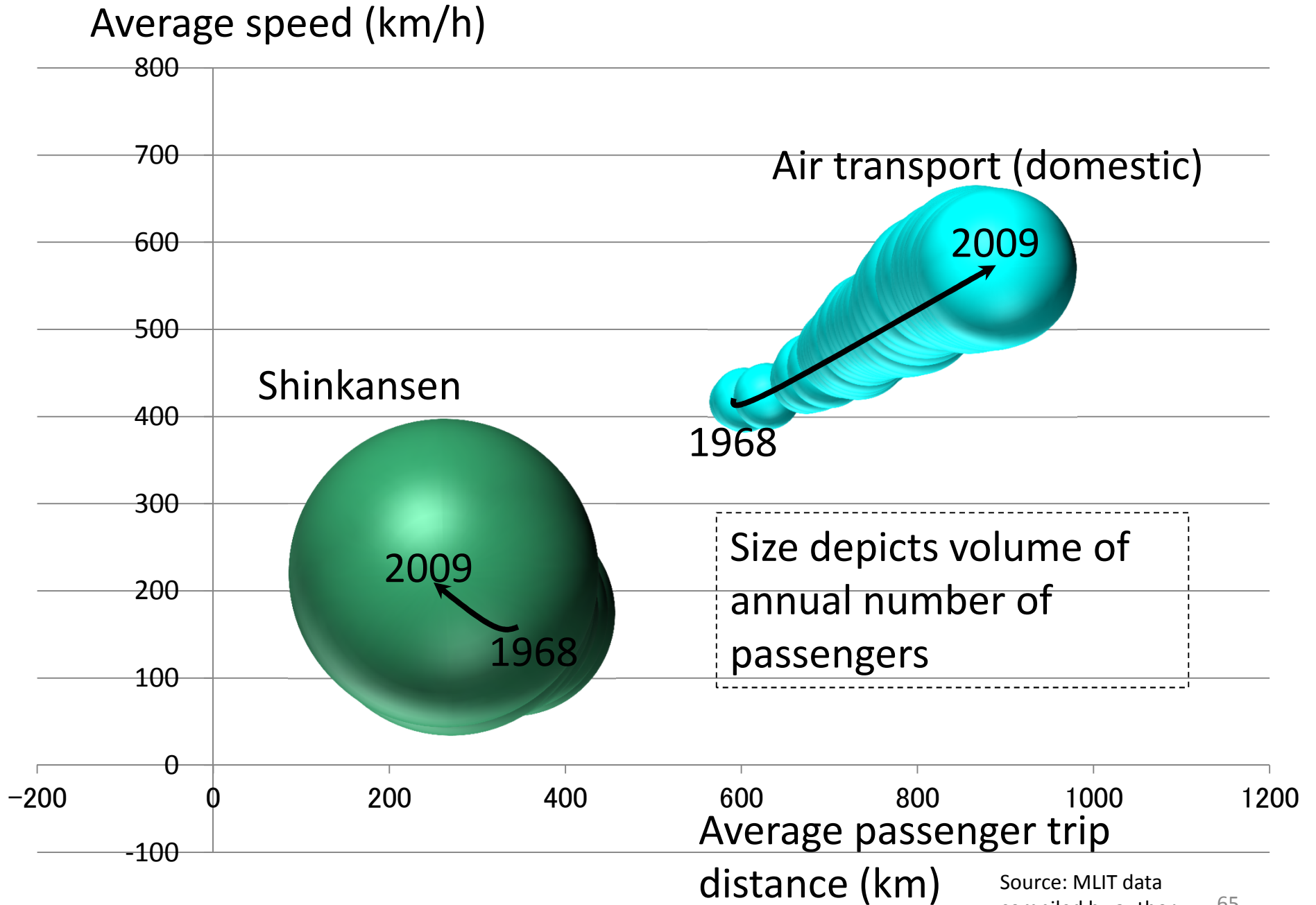


Source: Railway Bureau, MLIT

Share of the Shinkansen and Air Transport



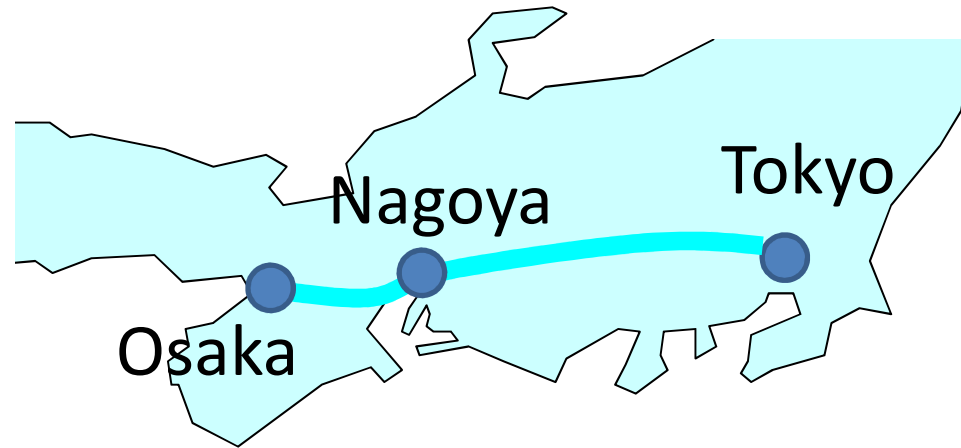
Source: Market share is the percentage of all railway and airline services based on the inter-prefectural data of the Inter-Regional Passenger Mobility Survey (FY 2005), published by the MLIT.



Source: MLIT data
compiled by author

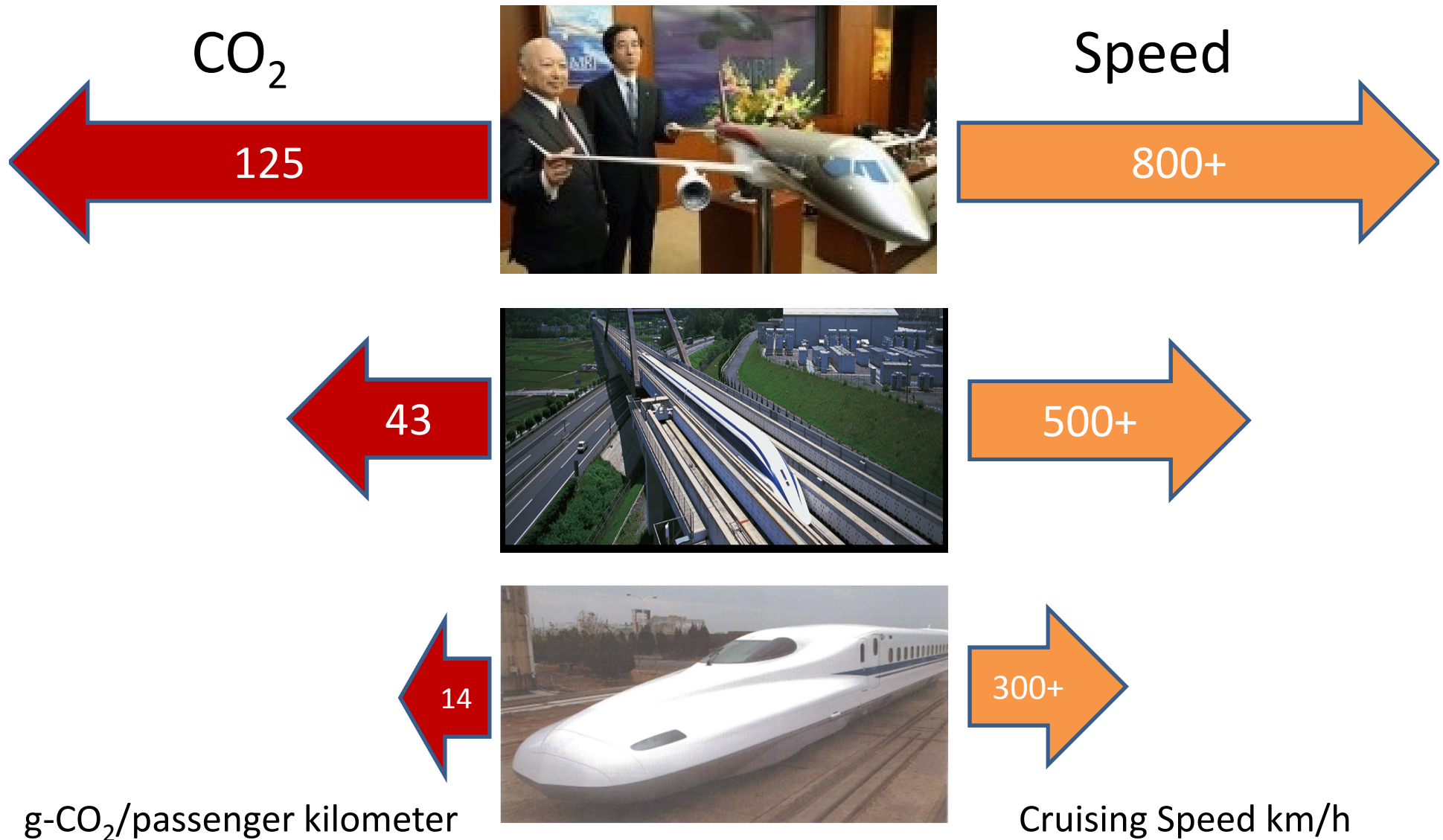
Maglev Super-express

JR Central Maglev
Super-express plan
Tokyo=Nagoya by
2027, Tokyo=Osaka
by 2045.

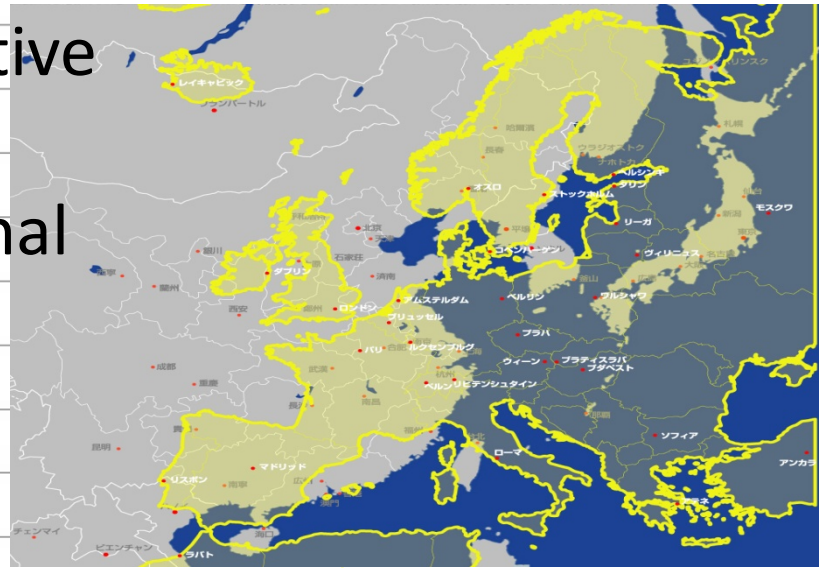
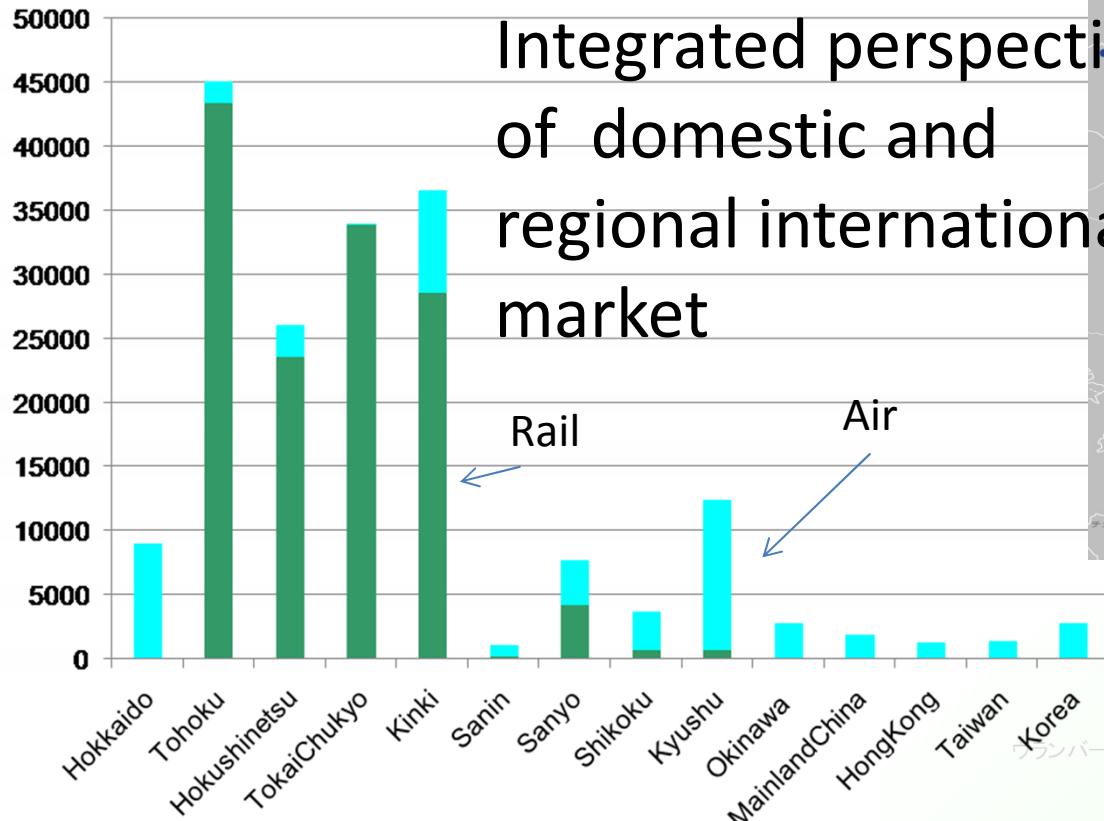


Source: MLIT

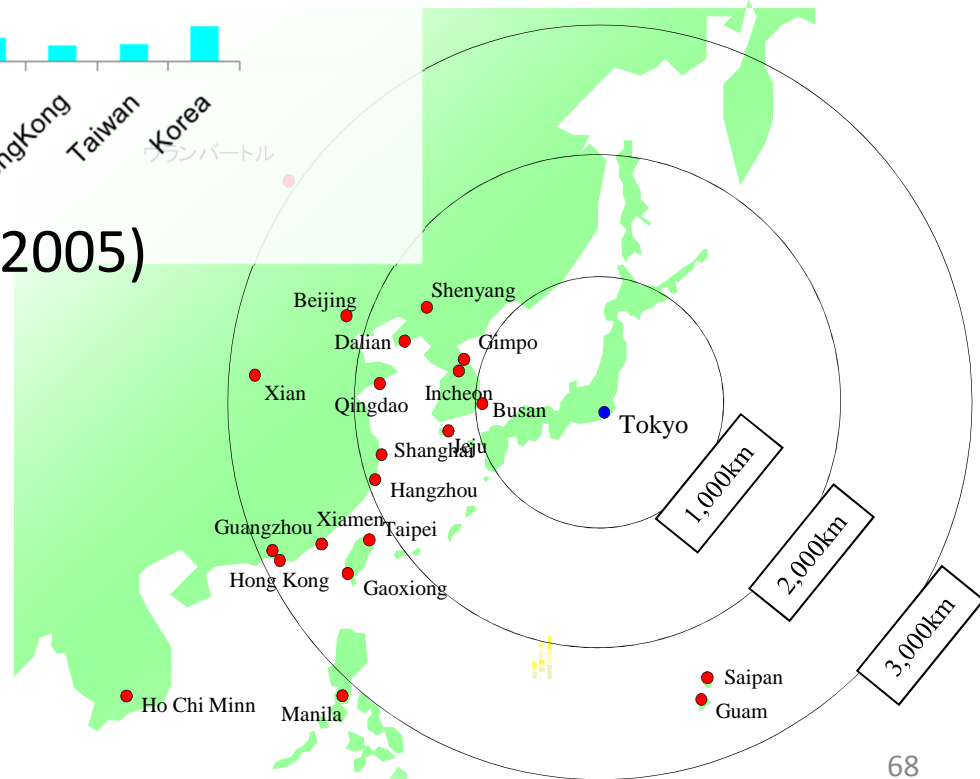
Comparison of Air Transport, Maglev and Shinkansen



Source: MLIT



Number of trips from Tokyo (2005)



Source: MLIT data

Thank you for your attention



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