

# Comprehensive Study of Fukuoka Airport Public Involvement (PI) Report Step 2

In this paper, we describes that the role of Fukuoka Airport in relation to the future prospect of Kyushu region. Based on this role, we also describes the estimation of the demand forecast of Fukuoka Airport.



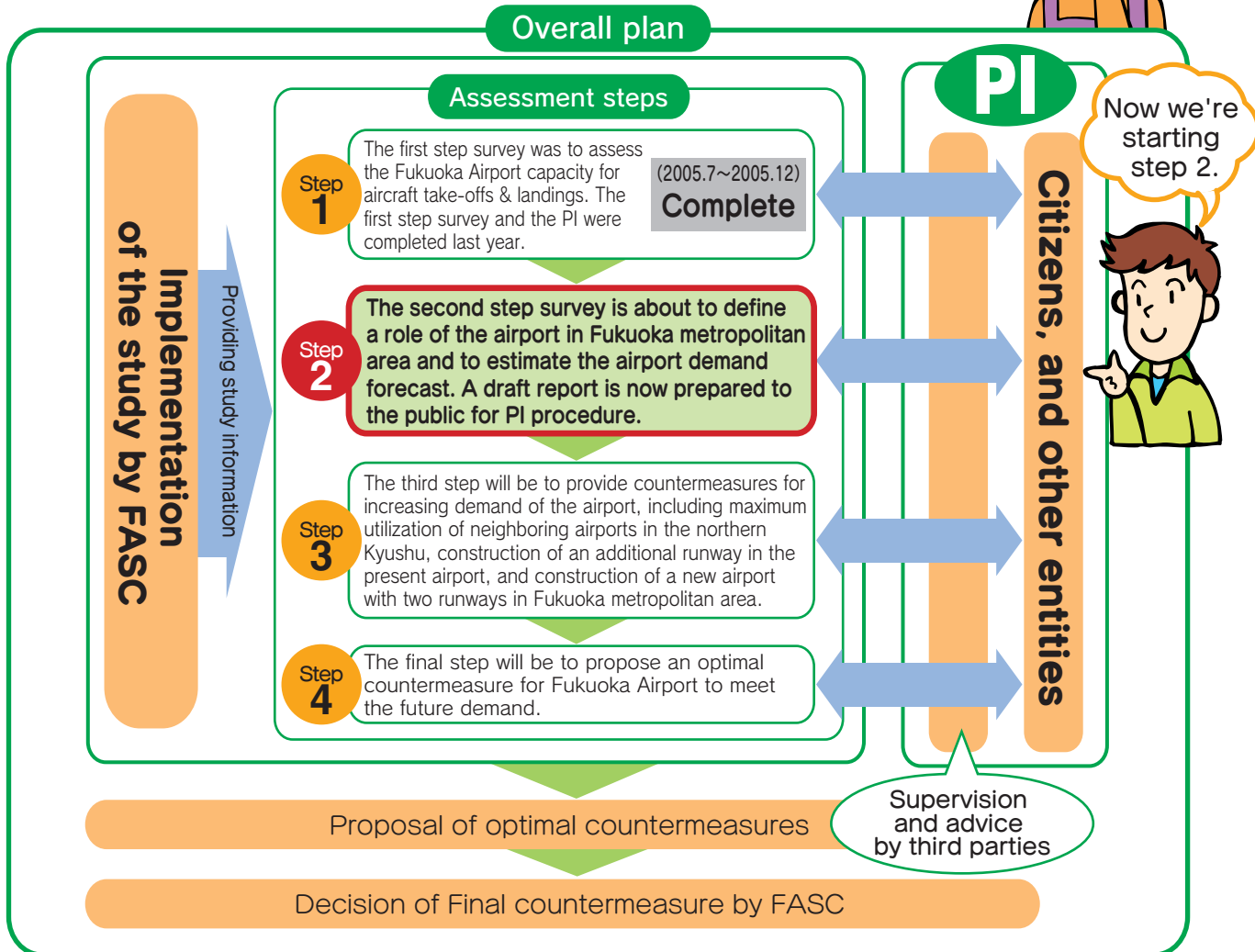
Let's explore together about Fukuoka Airport that will support the region in the future.



**1. Introduction .....1**  
**2. Future outlook for the region, and the role of Fukuoka Airport ..2**  
**3. Future demand forecast .....9**

Ministry of land, infrastructure and Transport (MLIT), Fukuoka Prefectural Government and City of Fukuoka organized Fukuoka Airport Study Commission (FASC) and started a study in order that the airport will maintain airborne network and provide proper services to the passengers in the future.

# How is the comprehensive study of Fukuoka Airport performed?



## What is PI?

Public involvement is the process of involving the public in the early stages of the transportation planning process through completion.



## Output from the first PI step survey is;

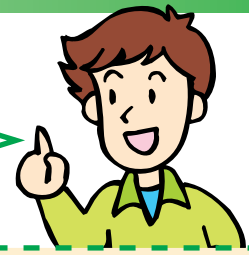
The capacity of Fukuoka Airport is assessed 145 thousands aircraft take-offs & landings per year. While the airport handled 136 thousands aircraft take-offs & landings in FY 2003, deterioration of service for passenger and inefficient aircraft operation are found in the airport.

If parallel taxiway is installed in front of domestic terminal, the capacity will be expected 149 thousands aircraft take-offs & landings in a year. The capacity of the airport, the service and the operational condition will be improved to some extent.

Here, second step survey, we provide you information on a future outlook for the region, the role of Fukuoka Airport and demand forecast in the future.



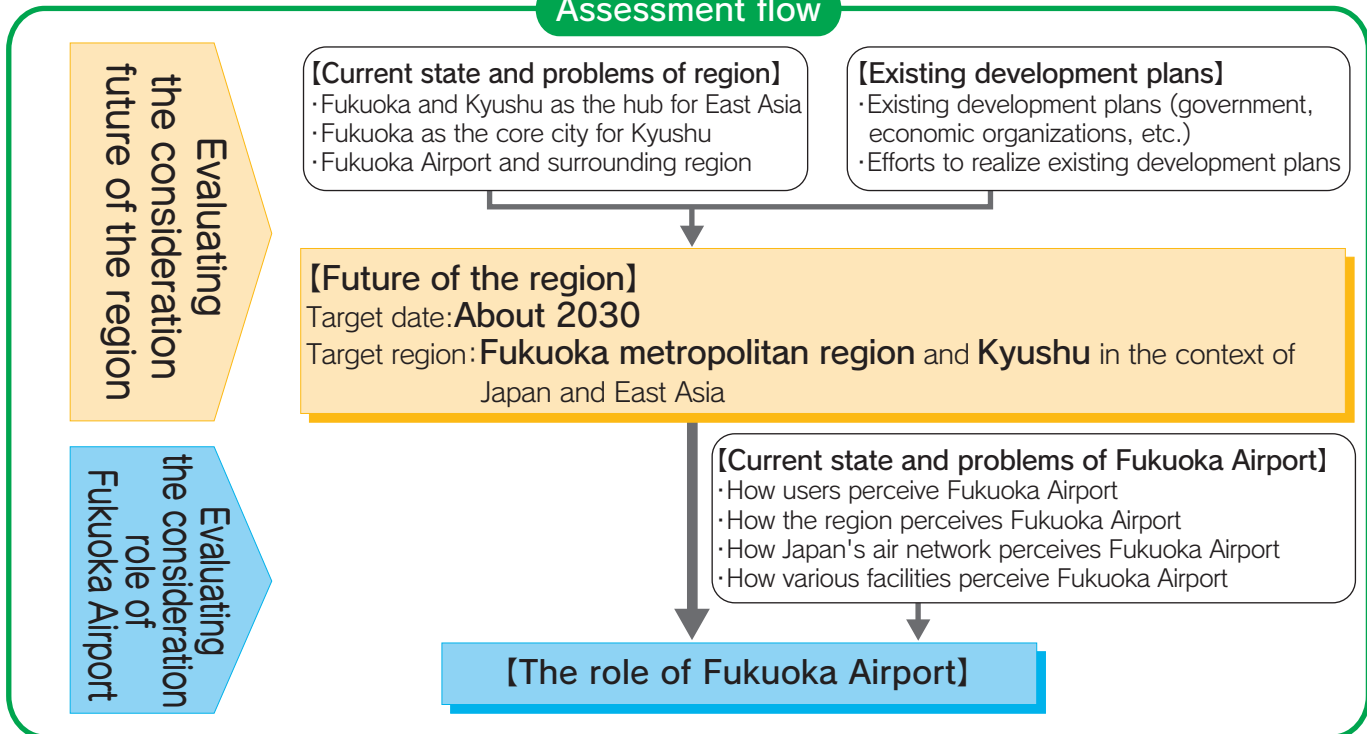
## How do you evaluate what the region will be like in the future, and the role the airport will play?



- Before we can evaluate the role of Fukuoka Airport, it is necessary to sketch out an image of what the region will be like in the future.
- We approached this by first investigating the current state of the region and the problems it faces, and existing development plans\*, and reviewing ongoing efforts to achieve these objectives. After the overall direction of existing policies and projects has been identified, we are able to better define the future state that the region is currently working to achieve, and what future should we be aiming to achieve.
- The role that Fukuoka Airport will play in the future state of the region has been formulated, base on the current state and problems of the airport as defined in step 1.

\* Existing development plans include plans at the national, Kyushu, prefectural and city levels.

### Assessment flow



## The first step is to define the state of the region in the future. What are the key points to consider?



- We have defined seven key points, based on the current state and problems of the region, and existing development plans.

### 7 key points in defining the future of the region

① Globalization

② Aging population and declining birthrate

③ Decentralization of government

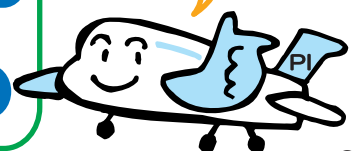
④ Diversification of senses of value

⑤ Information technology

⑥ Infrastructural management

⑦ Environmental awareness

The future of the region is discussed through these seven key points in the following pages.



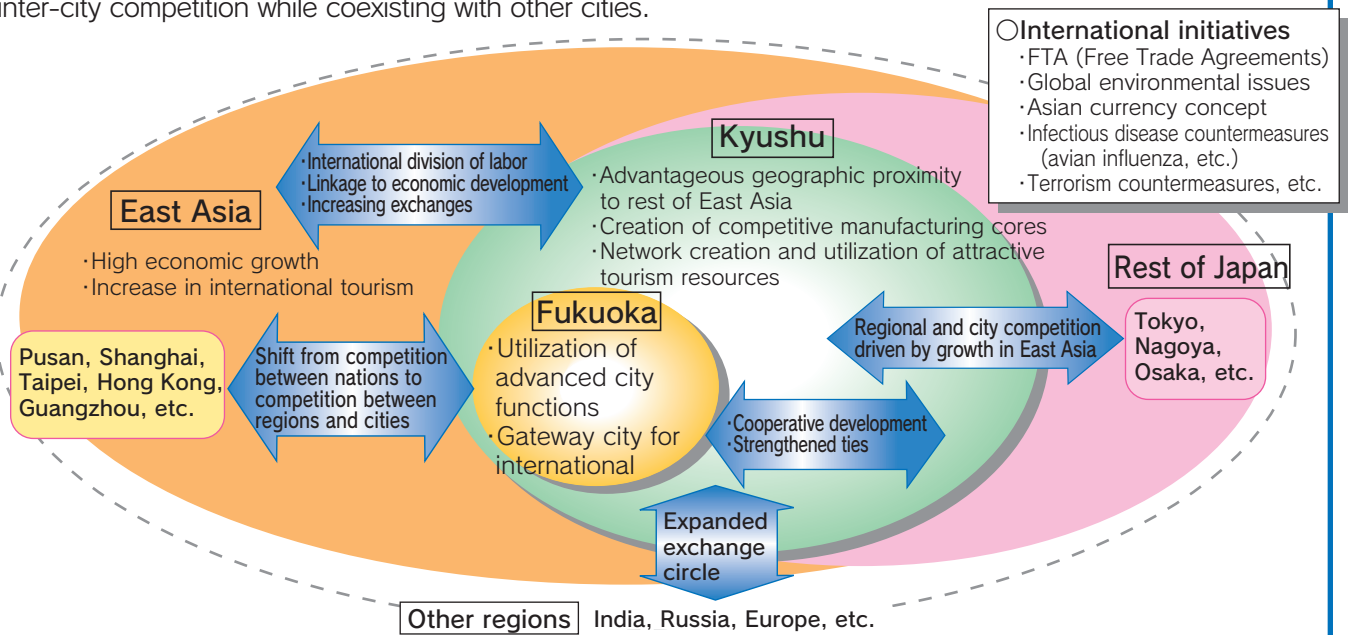


# What is the future of the region?

●The future state of the region is discussed below through each of the seven key points, including concrete plans to resolve existing problems and projects already under way.

## ① Globalization

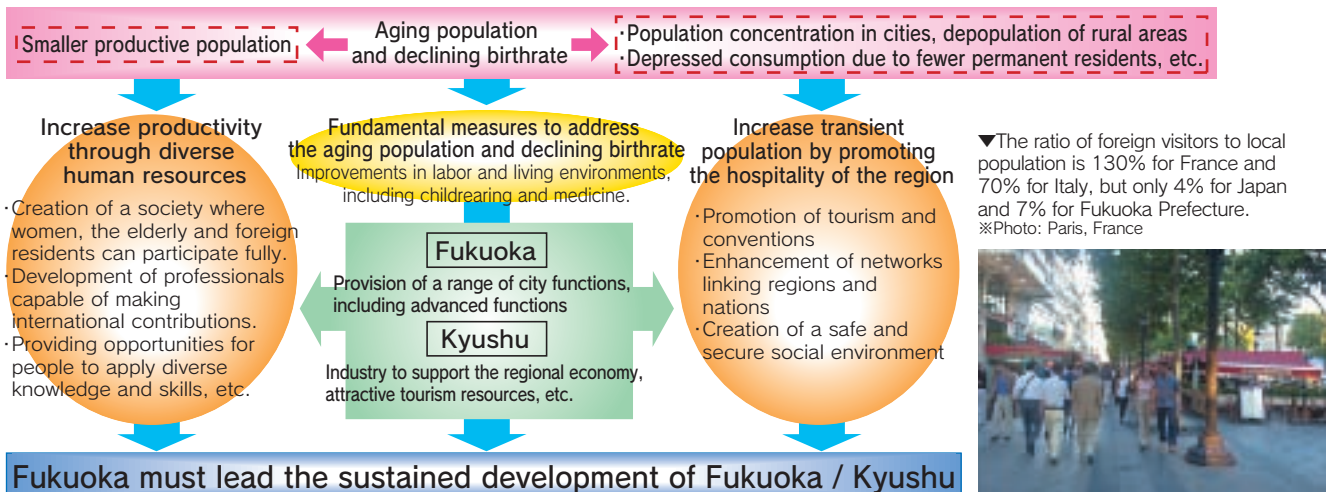
Barriers between regions and nations are becoming lower in recent years, and the movement of people, goods, money and information is more active than ever, thanks to rapid globalization. Fukuoka, Kyushu enjoys a geographic advantage with respects to the fast growing cities of East Asia. It is essential for Fukuoka to utilize this geographic proximity to ensure a share of the overall growth driven by regional and inter-city competition while coexisting with other cities.



Future state of the region: **Coexisting with the international society, especially in fast-growing East Asia**

## ② Aging population and declining birthrate

The aging population and declining birthrate is a trend that is affecting all of Japan, and is expected to result in a smaller workforce in the future. To maintain its vitality, Fukuoka and Kyushu will have to implement fundamental policies to address the issue. In addition, it will be essential for Fukuoka to drive programs designed to heighten the attractiveness of Kyushu overall, promoting increases in productivity and transient population.



Future state of the region: **Attracting diverse people from Japan and overseas, and providing a wide range of opportunities**

### ③Decentralization of government

The Japanese government is currently working to decentralize authority and transfer revenue sources to local governments, and regions are seeking increased independence. For Fukuoka and Kyushu to become independent regions, it will be essential to develop their own unique competitiveness, such as the advantageous proximity to the rest of East Asia.

- Regional potential equivalent to that of a nation
- Diverse and sophisticated needs
- Domestic and international competitiveness

#### Constructing an independent region

- Construction of an efficient administrative system capable of responding quickly, accurately and autonomously to regional needs
- Regional development through deregulation, international contribution and international corporate activity

#### Transition from international exchange to international contribution

Fukuoka: Development from a Japanese hub city to an exchange city representative of all of East Asia  
 Kyushu: Development from a region in western Japan to a hub region for East Asia

#### ▼Comparison of Kyushu and Holland

Kyushu is very similar to Holland in terms of land area, population and GDP, and indeed has potential on a par with that nation.

Item	Kyushu	Holland	Remarks
Area (km <sup>2</sup> )	39,910	41,528 (1.04)	Kyushu:2004 Holland:2002
Population (Thousand)	13,446	16,105 (1.20)	Kyushu:2000 Holland:2002
GDP (\$100 million)	3,459	4,190 (1.21)	2002

※Kyushu excluding Okinawa. Numbers in parentheses indicate ratio to Kyushu  
 Sources: World Statistics 2006, Japan Statistics 2006 (Statistics Bureau, Ministry of Internal Affairs and Communications), Kyushu Data Book 2006 (Nishinippon Shimbun)

#### ▼Fukuoka and the surrounding region: making an international contribution as a key center in East Asia



Photo: EU headquarters in Brussels, Belgium  
 Source: Ministry of Land, Infrastructure and Transport

Future state of the region: **A competitive, independent region that utilizes its regional strengths**

### ④Diversification of senses of value

Senses of value are changing from defining the quality of life in terms of quantity of goods to a definition based on spiritual and emotional fulfillment, resulting in a rise in potential demand for leisure activities, especially travel. It is essential that Fukuoka and Kyushu utilize their extensive natural, historical, cultural and other resources to promote diverse exchanges, and create balanced and high-quality lifestyles for leisure activities.

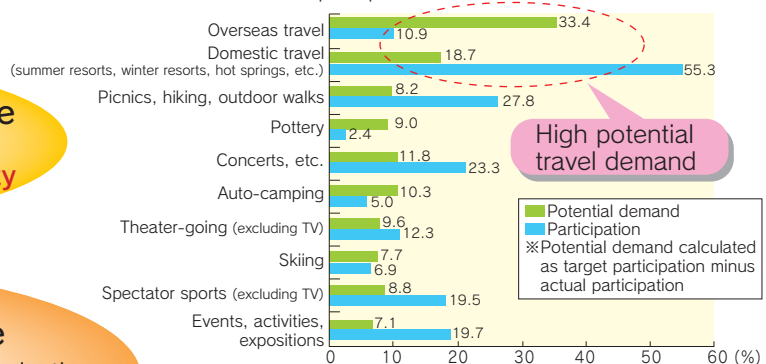
Diversifying senses of value  
 Lifestyle evaluation:  
 Changing from quantity to quality

Extensive exchange  
 with many different people

- Utilize the rich natural, historical, cultural and other resources of Fukuoka and Kyushu
- Utilize convenient transportation networks to other domestic and international points

Achieve a balanced and high-quality lifestyle

#### ▼Potential demand and participation



Source: Leisure White Paper 2005 (Japan Productivity Center for Socio-Economic Development)

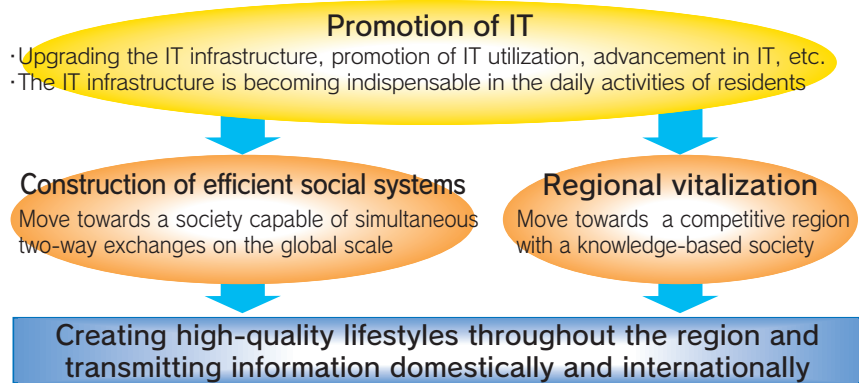
#### ▼The Kyushu National Museum, a new hub of cultural and academic exchange for the region



Future state of the region: **A region where diverse people engage in exchange with each other, and experiencing truly rich lifestyles**

## ⑤ Information technology

Information technology (IT) is adopted on a global scale today, Fukuoka and Kyushu will need to not only construct efficient social systems through the widespread adoption of IT, but also utilize the accumulation of IT-related industry in Fukuoka to vitalize the region, providing residents with high-quality lifestyles and transmitting information to Japan and the world.



▼R&D sites in the information services industry (Fukuoka Soft Research Park)



Future state of the region: **A region where IT is utilized to create knowledge, and transmit information domestically and internationally**

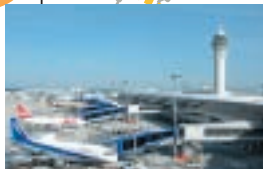
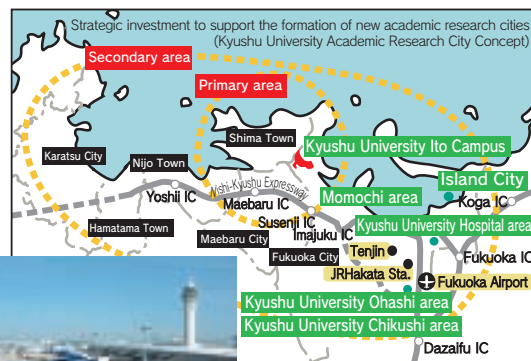
## ⑥ Infrastructural management

Both the national and regional governments are in financial difficulty. In the future will require effective and strategic enhancement to infrastructure based on selection and concentration will be required. It will be essential to improve regional competitiveness by emphasizing the hub character of Fukuoka in infrastructural development plans for Fukuoka and Kyushu.

- Sound government financial state through administrative restructuring and streamlining
- Utilization of compact and sophisticated city functions of Fukuoka
- Active utilization of private sector in the form of investment and expertise from private enterprise

Move towards a region with maximum efficiency and benefit through timely and effective minimal investment effectively at the optimal time

**Formation of a strategic infrastructure**  
Infrastructural management through selection and concentration, enhancing domestic and international competitiveness

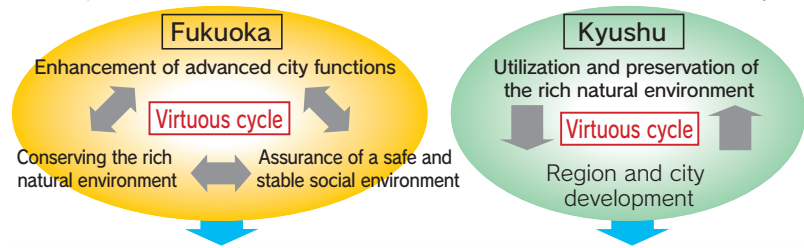


◀ Chubu Airport, realized through capital and expertise from the private sector  
Source: Tokoname city HP

Future state of the region: **A region with global competitiveness made possible by strategic infrastructure**

## ⑦ Environmental awareness

Today, global environmental problems and limited natural resources are key issues for society. It will be essential for Fukuoka and Kyushu to work to preserve the rich natural environment of the region and take the lead in global environmental protection measures, with the aim to create a fascinating and sustainable region where urban development and environmental awareness coexist in a virtuous cycle.



◀ Advanced city functions in downtown Fukuoka

▼ The rich natural environment of island in Hakata Bay (Noko Island)



▼ A social environment that promotes the effective utilization of resources and energy (Fukuoka Clean Energy Co., Ltd. Tobu Plant)



- Virtuous cycle formed between city and environment to enhance the fascination of the region and the city
- Maintain a high standard of living and preserve the rich natural environment
- International contribution through advanced environmental technologies and programs

Future state of the region: **A region where a sustainable virtuous circle exists between city development and environmental awareness**

## What is required of Fukuoka Airport in the future, based on its current status and issues?



●Based on the current status and issues of Fukuoka Airport identified in PI Step 1, this section discusses what will be required of Fukuoka Airport in the future through four viewpoints: ① the users, ② the region, ③ the air transport network, and ④ the airport facility.

### ①The users'

- Emphasis on travel time, time of stay at destination, and frequency of flights
- Heaviest traffic occur in mornings and evenings
- Satisfaction with Fukuoka Airport is high in comparison with other airports
- There are many routes with low satisfaction (for example, routes with low flight frequency)



Fukuoka Airport will have to maintain existing direct flights and develop new ones, assure flight frequency and various access, and enhance benefits such as by reducing costs.

### ②The regional

- The airport has developed with the surrounding region  
(Some land is privately-owned, requiring an understanding of the history of the region and the airport.)
- The airport contributes to the regional economy and lives of the residents  
(The airport provides about 800 billion yen annually in indirect economic effects to Kyushu, as well as supporting private aircraft use, better access to remote islands, and improves disaster and information activities.)
- Effect on the structure of the city  
(Including easy access to the city center, concentration of production and distribution functions in areas near the airport, and height restrictions on city buildings.)
- Effect on the city environment  
(Airport is built within the city limits, causing local environmental issues such as aircraft noise. In addition, an accident could cause significant damage.)



Fukuoka Airport will have to continue to support the economic activities of Fukuoka and Kyushu, as well as cultural and civic activities, while working to assure aircraft safety and implement environmental measures such as aircraft noise reduction.

### ③The air transport network

- The domestic air transport network facilitates transport between northern Kyushu and the three major urban areas within the Kyushu-Yamaguchi region, and to remote islands.  
(Fukuoka Airport is 4th in terms of domestic passenger volume, and 3rd in terms of domestic freight tonnage.)
- The international air transport network, facilitates transport between Fukuoka and other cities in East Asia.  
(4th in Japan in terms of international passenger volume and international freight tonnage.)
- Strong basic demand and easy access to the Fukuoka urban area from other regions in Kyushu has caused demand growth and helped create the air transport network.



Based on continuing upgrading of domestic and international airports and economic growth throughout East Asia, Fukuoka Airport will have to further enhance its domestic and international air transport networks, utilizing its proximity to the rest of East Asia.

### ④The airport facility

- There are capacity-limiting factors including parking, runways and taxiways.
- Congestion is on the increase at Fukuoka Airport, resulting in limitations during peak periods.
- Effects on users are becoming apparent, such as difficulty in making reservations on domestic routes for Fridays, when demand peaks.
- On international routes, there is fluctuation depending on which day of the week and the season, based on tourism characteristics.
- For noise control and other reasons, Fukuoka Airport can only be used between 7:00 and 22:00.



Fukuoka Airport will have to provide the capacity needed to fulfill forecasted mid- and long-range demands as well as user demands during peak periods.

The roles of Fukuoka Airport are described on the following pages, based on the future vision for the region and the current status and issues of the airport.





# What role will Fukuoka Airport play?

●The role that Fukuoka Airport will play in the future has been outlined in the four basic points below, based on the future state of the region and the current issues that the airport faces.

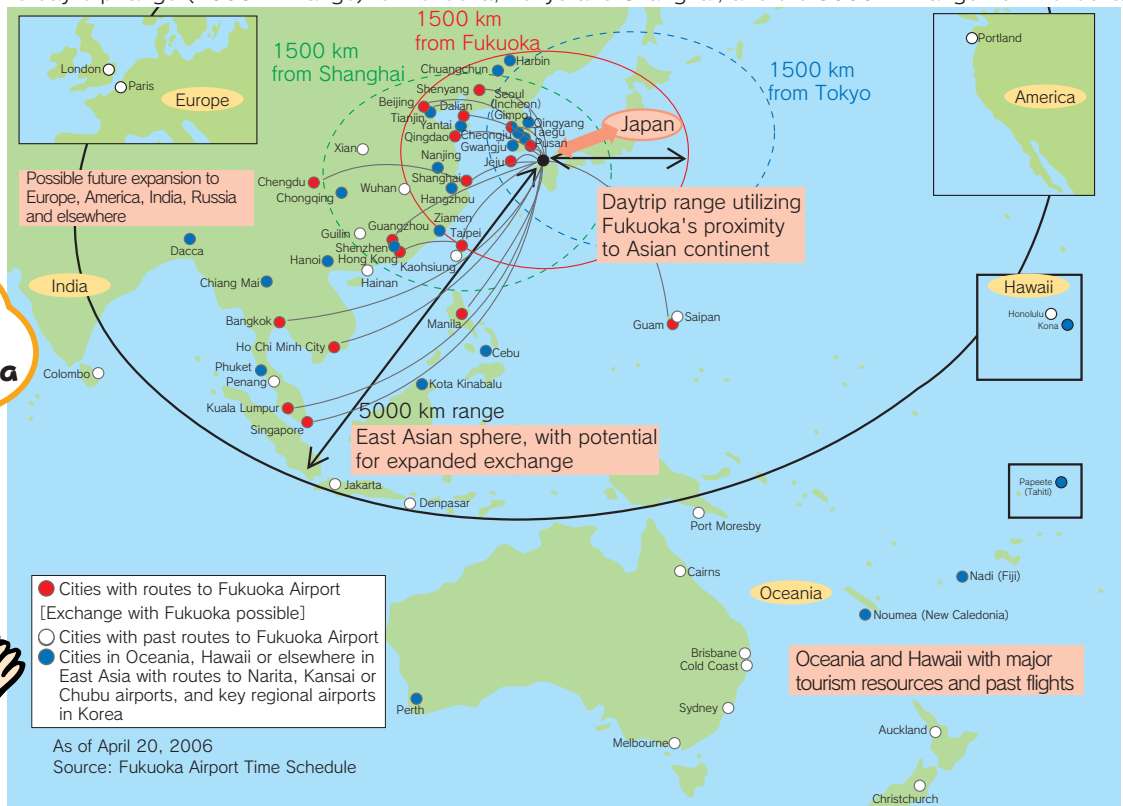
The role of Fukuoka Airport **1**

**Linking Fukuoka to Japan and other nations and supporting expansion of mutual exchange**

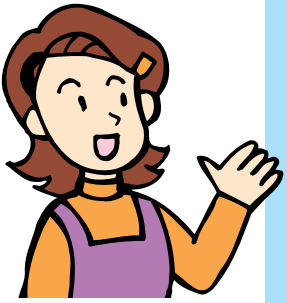
【Required action】  
**Expansion of the air transport network**

■As globalization, aging society and declining birthrate continue, the continued development of the region will require Fukuoka Airport to provide closer ties between Fukuoka and Kyushu on the one hand, and the rest of East Asia on the other, utilizing the extensive domestic air transport network that Fukuoka Airport already possess.

▼The day-trip range (1500-km range) for Fukuoka, Tokyo and Shanghai, and the 5000-km range from Fukuoka



**Fukuoka is close enough to the rest of East Asia for day trips!**



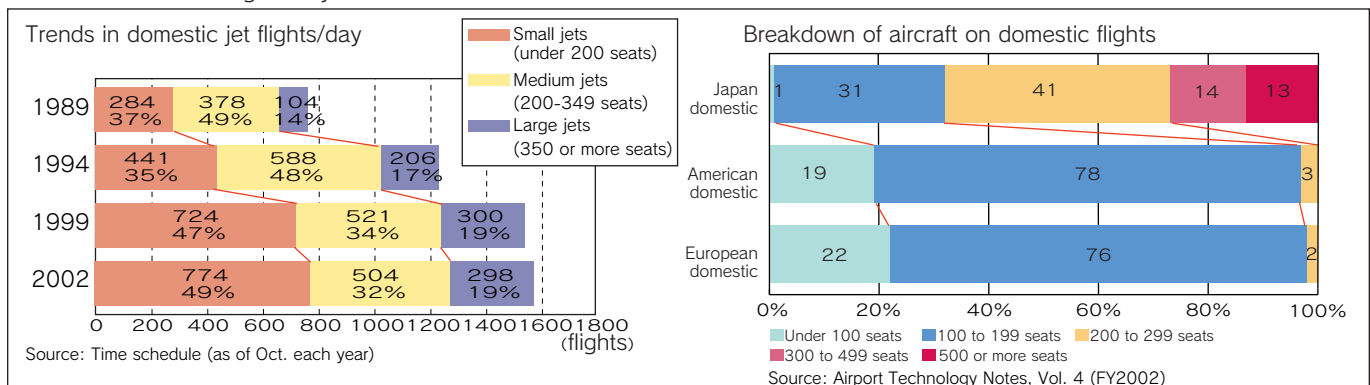
The role of Fukuoka Airport **2**

**An airport to support improved service and air transport demand**

【Required action】  
**Ensure airport capacity**

■Fukuoka Airport will have to establish new routes and offer additional flights to satisfy future demand. From the global perspective, with deregulation in air transport, there is a trend towards smaller aircraft and more frequent usage.

▼Trends in domestic flights/day





The role of Fukuoka Airport **3**

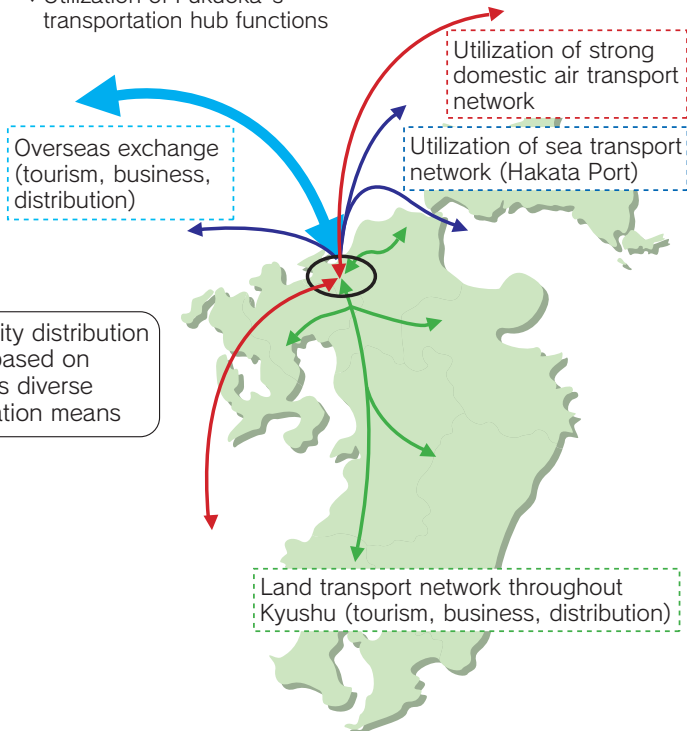
**An airport for fast, inexpensive and comfortable transport, utilizing Fukuoka's multi-modal transport functions**

【Required action】

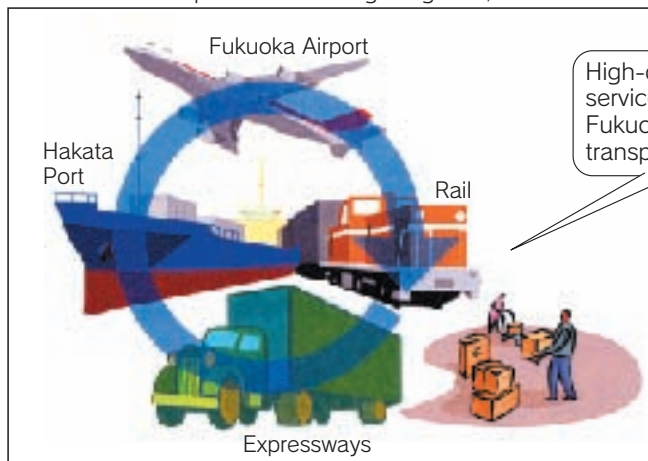
**Improved convenience for users**

■ Fukuoka is situated close to ports and harbors, with well-developed rail and road networks. Fukuoka Airport must utilize these characteristics to transport both passengers and goods quickly, inexpensively and comfortably to destinations, to provide enhanced customer convenience.

▼ Utilization of Fukuoka's transportation hub functions



▼ Fukuoka's transport network integrating land, sea and air



The role of Fukuoka Airport **4**

**An airport to coexist with the local region, supporting the independent development of Fukuoka and Kyushu**

【Required action】

**Widespread air transport usage with safety and environmental considerations**

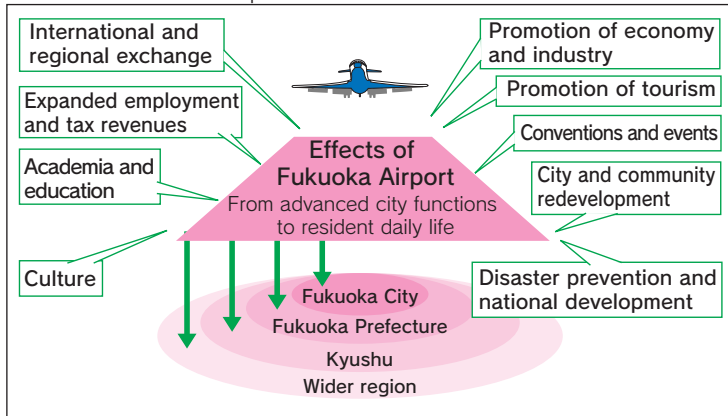
■ Fukuoka Airport must contribute to people's lives through widespread usage of air transport for international exchange, distribution, disaster and emergency activities, and support the independent development of Fukuoka and Kyushu. Airport operation will have to involve assurance of safety for the surrounding area, efforts to reduce environmental impact, and a combination of reduced financial load and increased convenience through effective and efficient design and management.

▼ Japan Coast Guard helicopter used for disaster and emergency activities

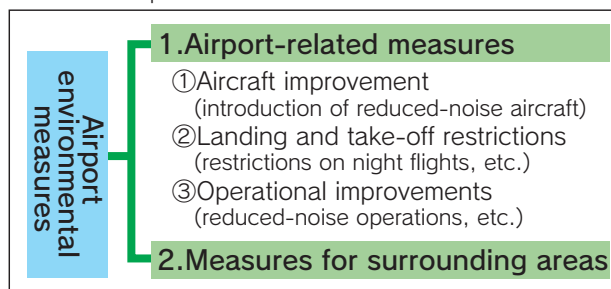


Source: Japan Coast Guard 7th Region website

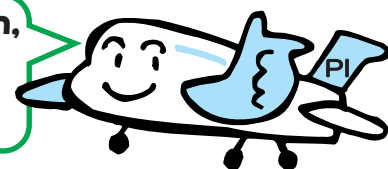
▼ Effects of Fukuoka Airport



▼ Fukuoka Airport environmental measures stance



**This completes the discussion of the future state of the region, and the role of Fukuoka Airport. On the next page you'll find forecasts of air transport demand.**





## How large will demand be in the future?

### Forecasting method

- Future demand for air transport is divided into four categories, namely **domestic passengers, international passengers, domestic freight and international freight**.
- Forecasts were calculated for **FY 2012, 2017, 2022 and 2032** (※1), by first calculating the probable world situation for each year (※2), then estimating the number of passengers, freight and flights for Fukuoka Airport accordingly. Demand forecasts are based on actual data for FY2004.

### Explanation

- ※1. The 2012, 2017 and 2022 dates were chosen for short- and mid-term forecasts, and 2032 was selected as a long-term forecast date.
- ※2. Demand forecasts are based on assumptions about social and economic conditions that are likely to exist at that time, and different assumptions will result in different forecasts. Three possible GDP values were used to develop three different forecasts.
- ※3. Air transport demand was estimated with widely used traffic volume prediction techniques.
- ※4. Demand forecasts estimate potential air transport demand. Actual demand will be affected by factors such as the number of flights offered.

### Items covered by air transport demand forecasts

Domestic passengers  
Passenger volume, flights

International passengers  
Passenger volume, flights

Domestic and international freight  
Tonnage

## What will happen to domestic passenger traffic?



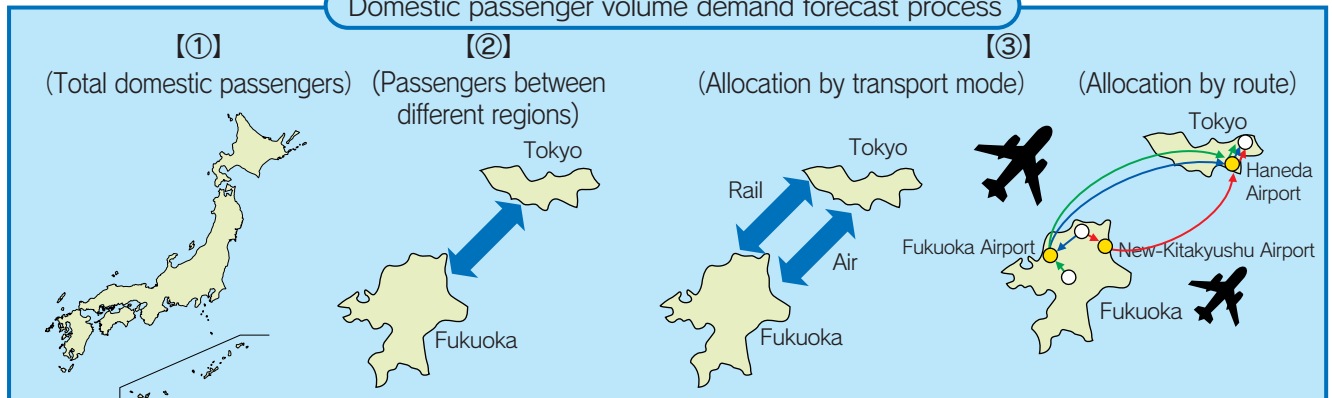
### Calculation process

- First, the **total number of domestic passengers** is calculated (※1), including not only airline, but also railway and roadway. 【①】 Proceed to page 10.
- Next, this total volume is classified into **trips between different regions**, and the number (for example, Fukuoka to Tokyo or Kitakyushu to Tokyo) calculated. 【②】 Proceed to page 11.
- Finally, the **number of passengers per route are allocated to different modes** (air, rail, road). For passengers using air transport, which airports and routes will be used are also calculated. (※2) 【③】 Proceed to page 12.

### Explanation

- ※1. This covers only medium- and long-distance travel of 200 km or more.
- ※2. Passengers from Fukuoka departing Fukuoka Airport, for example, would be calculated separately from passengers from Kitakyushu also departing Fukuoka Airport, but both would be counted as passengers using Fukuoka Airport.

### Domestic passenger volume demand forecast process



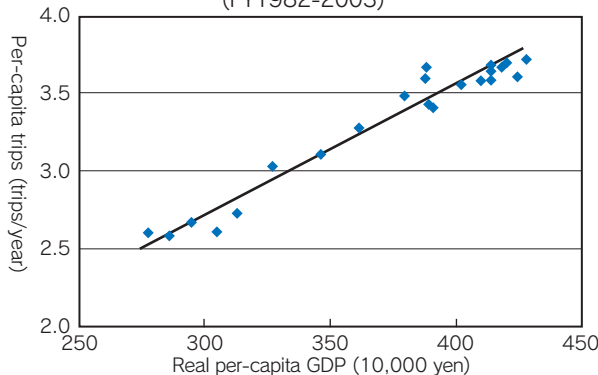
① Calculating total domestic passengers

- Future passenger numbers are calculated as **future population x trips per person in the future.**
- Per-capita trips in the future are calculated based on the close relationship to **real per-capita GDP** (※1).
- Future population is based on population forecasts issued by the National Institute of Population and Social Security Research.

Explanation

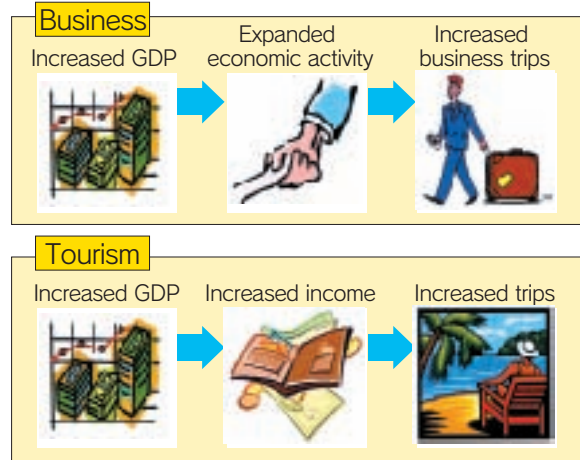
※1. Per-capita trips and real per-capita GDP have a proportional relationship as indicated below. Per-capita trips were estimated from real GDP predictions, assuming that this trend will continue.

▼Correlation between per-capita trips and real per-capita GDP (FY1982-2003)



※Real per-capita GDP based on CY1995 prices. Covers trips of 200 km or more between Prefectural capital cities supported by air routes.  
Sources: Airline Passenger Traffic Survey, Major National Air Route Traffic Survey, Citizen Economic Yearbook, National Census Report

▼Relationship between trips and real GDP



※2. The future real GDP for the three cases are calculated, based on the forecasts in 'Structural Reform and Medium-Term Economic and Fiscal Perspectives - FY2004 Revision (Jan. 20, 2005; Council on Economic and Fiscal Policy)' (referred to as 'Reform and Perspectives' below), and 'Japan's 21st Century Vision'.

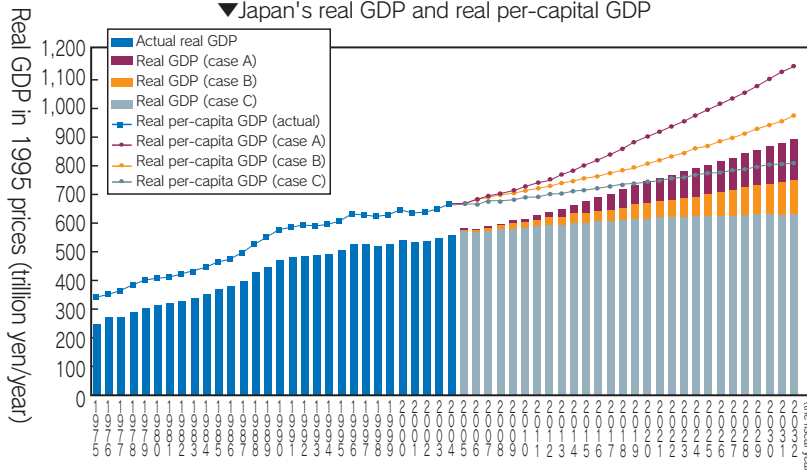
**Case A:** Structural reform is assumed to continue, supporting economic growth the scenario of progress in 'Reform and Perspectives'.

**Case B:** Structural reform is assumed to stagnate, with no improvement in productivity in the scenario of no reform and flat growth in Reform and Perspectives.

**Case C:** The sluggish economic conditions that prevailed during the 1990s are assumed to continue.

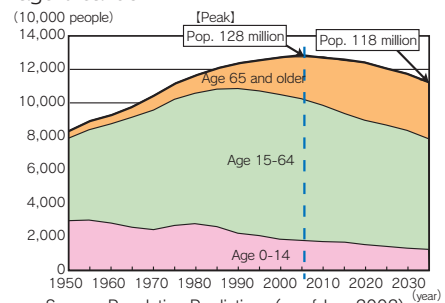
GDP growth assumptions (annual %)	FY	2005	2006	2007	2008	2009	2010	2011	2012	2013-2020	2021-2030	2031-
CaseA		1.6	1.5	1.5	1.6	1.5	1.6	1.6	1.5	2.0	1.5	1.5
CaseB		1.6	1.4	1.3	1.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0
CaseC		0.8	0.8	0.7	0.7	0.7	0.7	0.6	0.6	0.3~0.6	0.1~0.3	0.1

▼Japan's real GDP and real per-capita GDP



Sources: Citizen Economic Yearbook, Structural Reform and Medium-Term Economic and Fiscal Perspectives - FY2004 Revision (Jan. 20, 2005; Council on Economic and Fiscal Policy) Japan's 21st Century Vision (Apr. 2005; Japan's 21st Century Vision Committee)

▼Japan's future population and age breakdown



Source: Population Predictions (as of Jan. 2002), National Institute of Population and Social Security Research

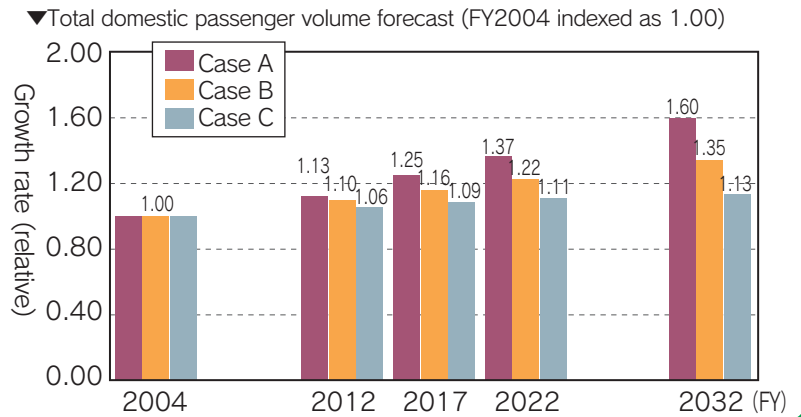
Japan's population is expected to decline gradually in the future.



**Demand forecasts are based on a variety of assumptions.**

### 3. Future demand forecast

Using the total medium-range passenger volume for FY2004 as the index, Case A is expected to show a growth of 1.13 times in 2012 and 1.37 times in 2022. Case B forecasts are for 1.10 and 1.22 times, respectively, and even Case C is expected to show growth. Note that even with the same forecasting method, different assumptions will yield different results.

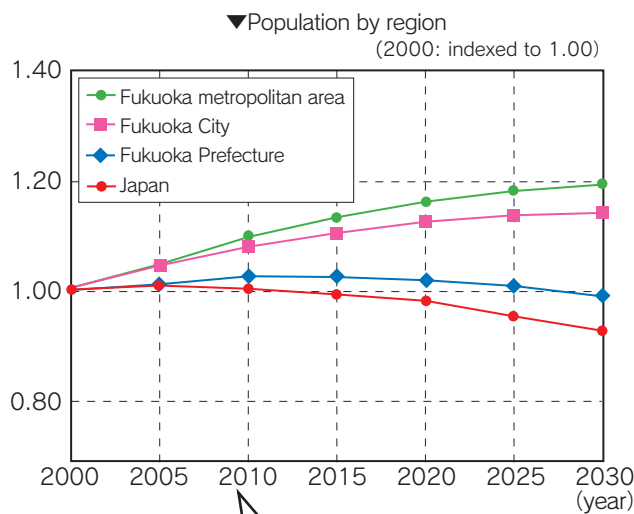


#### ② Calculating passenger volume between different regions

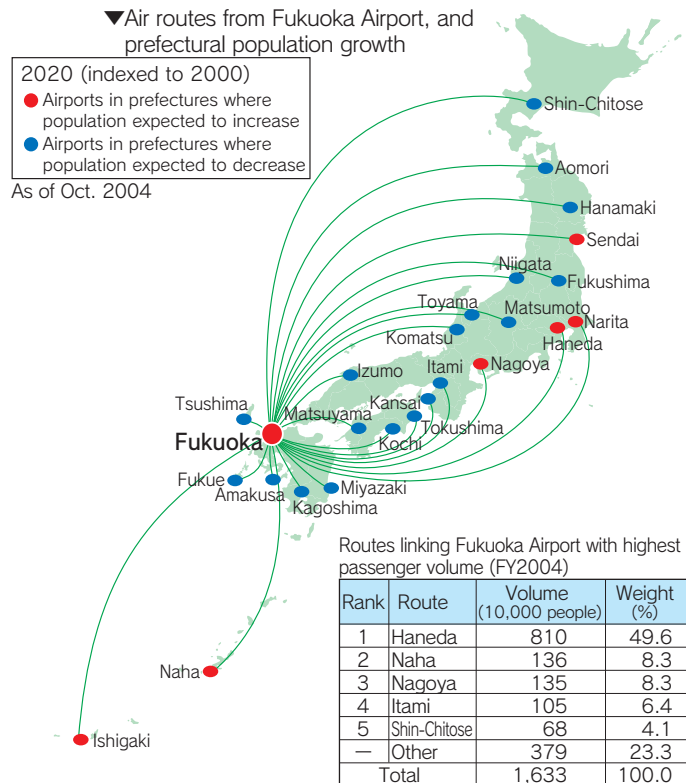
- Existing point-to-point (※1) passenger data is used as the basis, and modified in accordance with factors such as improvement in the transport network and transportation services (※2).
- The future transportation service level is based on actual data for Oct. 2004.
- Passenger volume by destination is estimated based on the above, adjusted for **future real regional GDP (GRP) and population (※3)**.

#### Explanation

- ※1. Japan was divided into 480 regions (Fukuoka Prefecture 85, other Kyushu regions 177, other regions in Japan 218).
- ※2. An improvement in the transport network between two points will improve convenience for travel between them, leading to an increase in demand. Forecasts include a higher rate of growth for these regions than other regions where no improvement in the transport network is expected.
- ※3. It is predicted that the population of Japan will gradually decline, but the population of Fukuoka metropolitan area will continue to grow. In addition, the population of major prefectures linked to Fukuoka by air is also expected to grow.



The population of Fukuoka Prefecture, and especially Fukuoka City and the greater Fukuoka metropolitan area, is expected to grow at a faster rate than most other regions in Japan.



Sources: Japanese Population Forecasts (as of Jan. 2002), Population Forecasts by Prefecture (as of Mar. 2002), Population Forecasts by Administrative Region (as of Dec. 2003); National Institute of Population and Social Security Research



**A change in the underlying assumptions will cause a change in the forecasts.**

③ Passenger volume forecasts by transport mode and route

- Passenger volume is allocated by **mode of transport**. For air transport, passenger volume is also allocated by **route**. Concretely, passenger volume is weighted to favor the shortest travel time, lowest cost and highest frequency of operation.
- Demand forecasts take the opening of Shizuoka Airport and the Hyakuri Air Field into account, as well as new Shinkansen routes and expressways.
- Aircraft trip passengers are calculated, and used to determine the total passenger volume for Fukuoka Airport.
- The last step involves dividing total passengers by the **passengers per aircraft (※1)** to calculate the **number of flights (take-offs and landings)** for the airport.

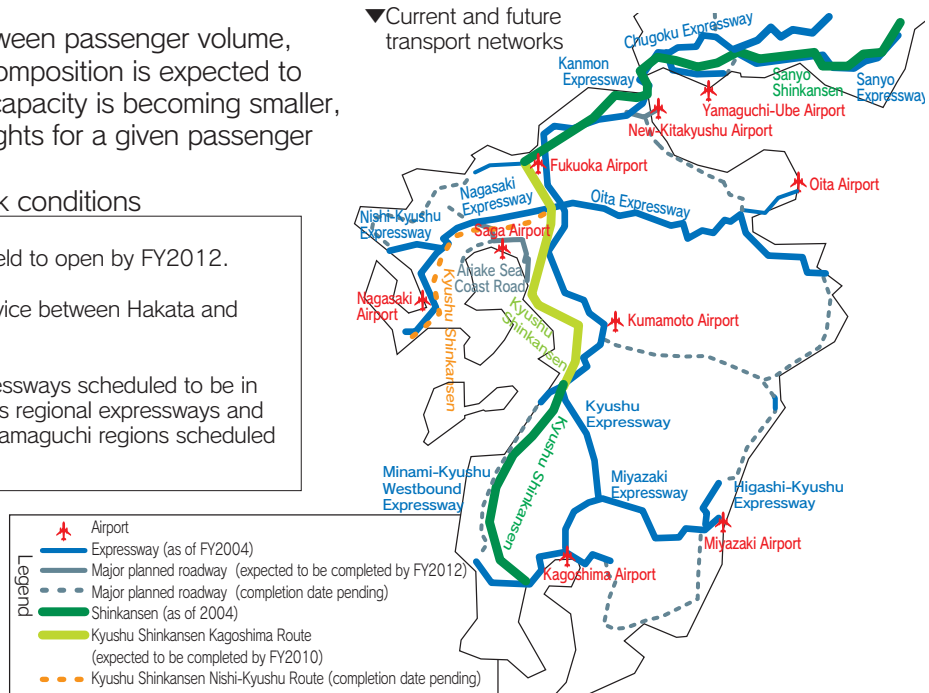
Explanation

※1. The existing relationship between passenger volume, number of flights and fleet composition is expected to remain fairly stable. Aircraft capacity is becoming smaller, which would require more flights for a given passenger volume.

Transport network conditions

- Airports  
Shizuoka Airport and Hyakuri Air Field to open by FY2012.
- Railways  
Kyushu Shinkansen to offer full service between Hakata and Shin-Yatsushiro by FY2010, etc.
- Expressways  
Limited-access expressways: Expressways scheduled to be in service by FY2012 nationwide, plus regional expressways and national roads in the Kyushu and Yamaguchi regions scheduled to be in service by FY2012.

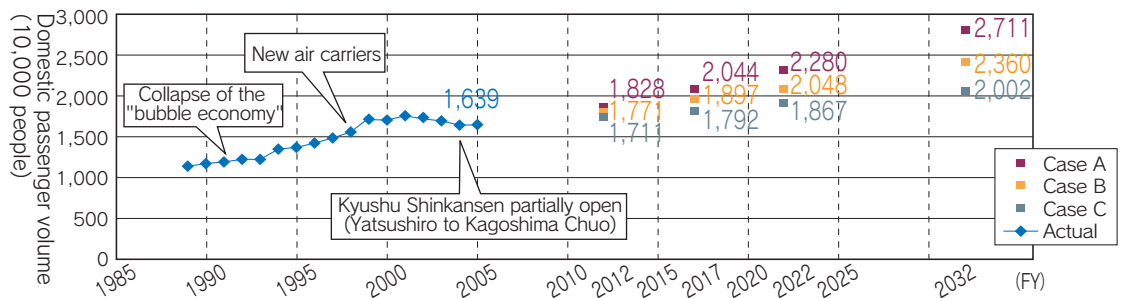
※2. Future demand is calculated for transport network expected to be in service in 2012. Case A (2032) also takes into account of transport network elements expected to enter service in 2013 or beyond.



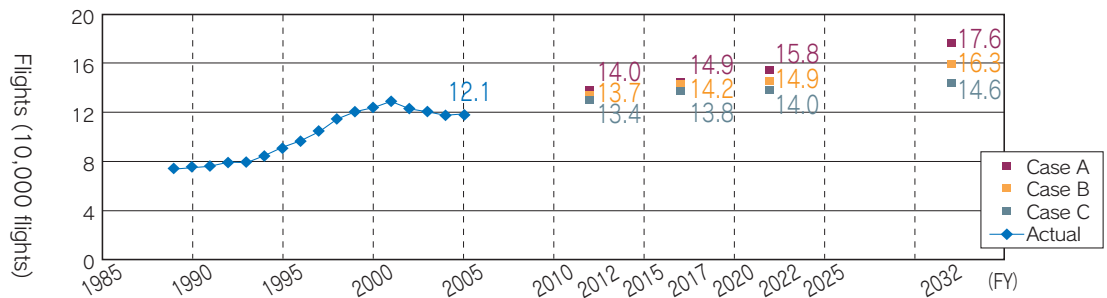
Sources: Future of the Kyushu Block with Respect to Infrastructural Upgrading, Kyushu Regional Planning Bureau, Ministry of Land, Infrastructure and Transport (Mar. 2004), Future Vision Chugoku 21 "2004", Future Vision Chugoku 21 Committee (July, 2004) Expressway Yearbook, JH public information, Report on Realizing Regional Tie-Ups (Saga Airport Improvement Promotion Committee, Mar. 2004)

Domestic passenger volume forecasts

▶ Annual domestic passenger volume for Fukuoka Airport (arrival and departure)



▶ Annual domestic flights for Fukuoka Airport (arrival and departure)



(Date for 2005 is provisional)

※Fukuoka Airport's passenger volume has been flat in recent years, probably due to competition with other transport modes.



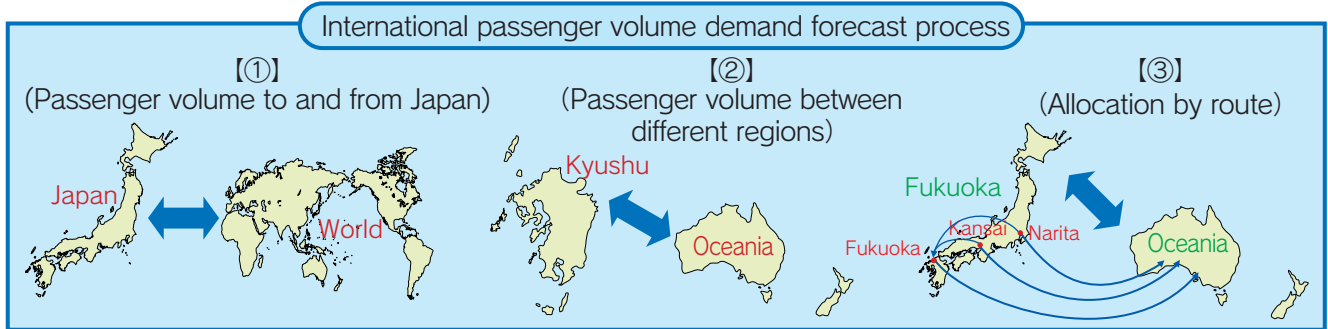
# What about international passengers?

## Calculation process

- First the **passenger volume between Japan and overseas points** is calculated separately for Japanese and foreigners, and for Japanese by business and tourism. 【①】 See center section, page 13
- Next, this total volume is classified into **trips between different regions**, and the number (for example, Fukuoka to Oceania or Tokyo to Oceania) calculated. 【②】 See page 14
- The last step is to calculate which **airports and routes the passengers use, including transfers** (※1). 【③】 See page 14.

## Explanation

※1. For example, in addition to a direct flight from Fukuoka to Oceania, it is also possible to transfer at Narita, Kansai or other airports. Where multiple routes exist, the calculations include what percentage of passengers uses which route.



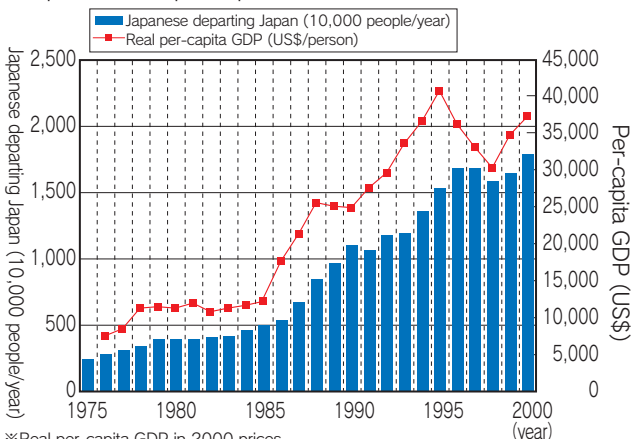
## 【①】 Calculating passenger volume to and from Japan

- The number of future Japanese departing Japan is calculated as **the future population x international departures per capita** (※1).
- Future population is based on population forecasts issued by the National Institute of Population and Social Security Research.
- Per-capita international departures in the future are calculated based on **Japanese real per-capita GDP, overseas real GDP, and exchange rates, especially yen to the dollar** (※2).
- Foreign passengers entering Japan are calculated based on Japanese real GDP, overseas real GDP, and exchange rates.

## Explanation

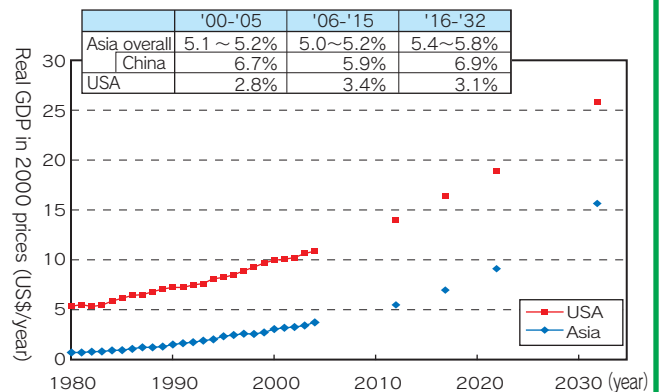
- ※1. Future population and future real GDP is calculated from the same assumptions used to calculate domestic passenger volume (see page 10, ※1 and 2).
- ※2. Future overseas real GDP are based on forecasts issued by the World Bank, the Cabinet Office of the government of Japan and other organizations. Future exchange rates are based on past actual averages.
- ※3. The Visit Japan Campaign under way now is actively promoting foreign visits to Japan, but it has not been factored in. This campaign, if effective, will cause an increase in the number of foreign visitors to Japan.

▼Correlation between Japanese departing Japan and real per-capita GDP



※Real per-capita GDP in 2000 prices   
 Source: Immigration annual statistics, Ministry of Justice

▼Real future GDP for Asian nations and USA



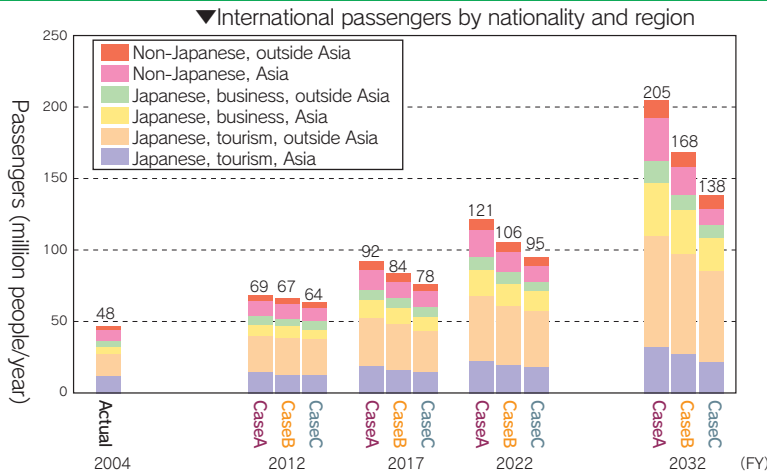
※"Asia" here consists of Korea, China, Taiwan, Hong Kong, Singapore, Malaysia, the Philippines, Thailand and Indonesia.   
 Sources: Global Economic Prospects (Nov. 2004, World Bank)   
 World Economic Trends Fall, 2004 (Nov. 2004, Director-General for Policy Planning and Evaluation, Cabinet Office of the government of Japan)

【2】 Calculating passenger volume between regions

- In the same way as for domestic passenger volume, existing passenger flow patterns (※1) are used as the basis, and adjusted for expected improvements in the future transport network and transportation services (※2).
- Passenger volume between regions is then calculated, with the future real GDP (GRP) per regions taken into consideration.

Explanation

- ※1. In the same way as for domestic passenger volume, international passengers are allocated to 20 regions (Asia 9, other 11). See page 134 for details.
- ※2. Calculation is the same as for domestic passenger volume (see page 11, ※2).
- ※3. Total passengers arriving in and departing Japan are expected to grow 1.4 times from FY2004 to FY2012, and 2.5 times from FY2004 to FY2022.



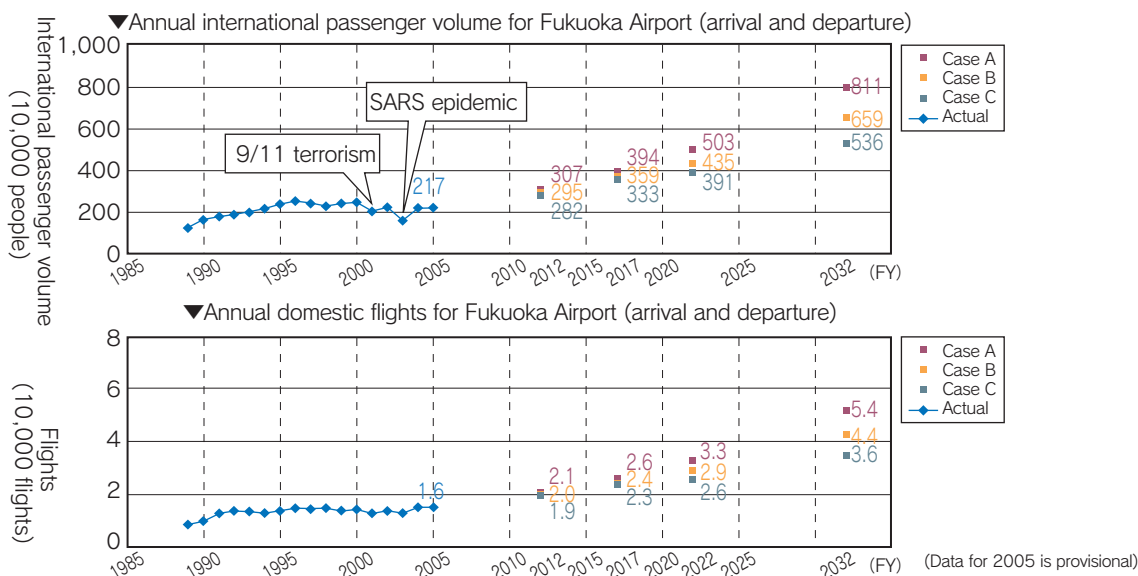
【3】 Calculating passengers by route

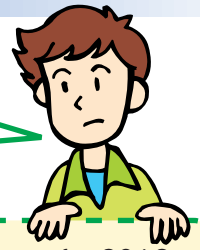
- Passenger volume by destination is allocated by **airport and route used**. In the same way as for domestic passengers, passenger volume is weighted to favor routes with the shortest travel time, lowest cost and highest frequency of operation.
- Passenger volume is calculated for each airport by route (direct, transfer) to determine the total passenger volume for Fukuoka Airport.
- The last step involves dividing total passengers by **the passengers per aircraft** (※1) to calculate **the number of flights for the airport**. (This is the same as for the domestic passenger volume forecast.)

Explanation

- ※1. The existing relationship between passenger volume, number of flights and fleet composition is expected to remain fairly stable. However, larger aircraft are expected to enter into service on some routes to handle increases in passenger volume, based on the experience of Narita Airport.
- ※2. International passenger volume is based on existing routes. New or cancelled routes may affect demand.
- ※3. China has experienced rapid economic growth in recent years, and new routes linking Fukuoka Airport may be added in the future.

International passenger volume forecasts





# What is the air transport demand forecast for Fukuoka Airport?

- Growth in air transport demand for Fukuoka Airport is expected in all three cases, with forecasts for 2012 showing a total annual passenger volume, for both domestic and international flights, of between 19.93 and 21.35 million, with annual take-offs and landings of between 153,000 and 161,000. For 2022 the passenger forecast is between 22.58 and 27.83 million, and between 166,000 and 192,000 flights.
- Demand forecasts represent potential demand based on assumptions about the economy at each date, so careful monitoring of differences between the assumptions and actual conditions is required.

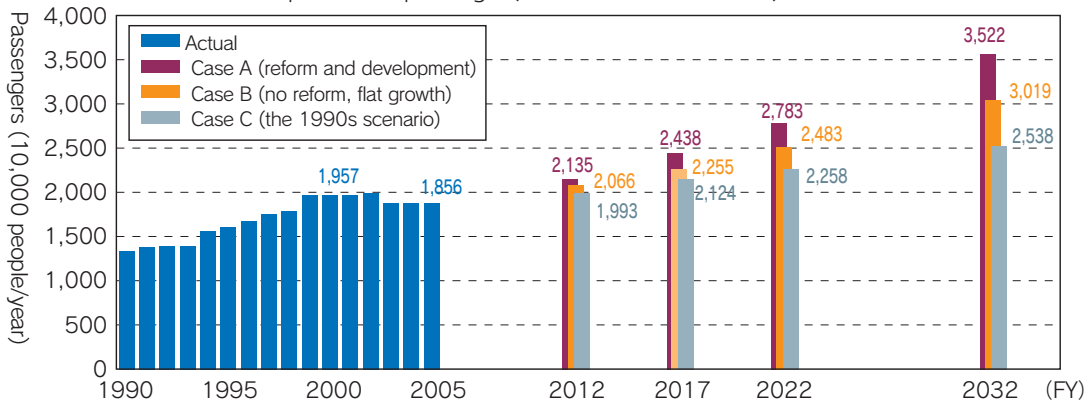
▼Demand forecast cases and results

Assumptions Cases	<ul style="list-style-type: none"> <li>Shizuoka Airport and Hyakuri Air Field opened</li> <li>Kyushu Shinkansen Kagoshima route fully opens</li> <li>Expressways and regional expressways open for service as expected by FY2012</li> </ul>	Forecast results			
		FY2012	FY2017	FY2022	FY2032
Case A (reform and development)	Economic growth forecast due to continuing reform	2,135 31.9 16.1	2,438 37.2 17.5	2,783 42.4 19.2	3,522 52.2 23.0
Case B (no reform, stagnate growth)	Little productivity increases due to slow reform	2,066 30.5 15.7	2,255 33.0 16.6	2,483 35.7 17.9	3,019 41.3 20.6
Case C (the 1990s scenario)	Japanese economy repeats the economic sluggishness of the 1990s	1,993 28.7 15.3	2,124 29.8 16.0	2,258 30.7 16.6	2,538 31.5 18.1

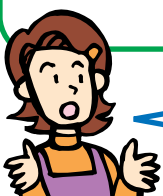
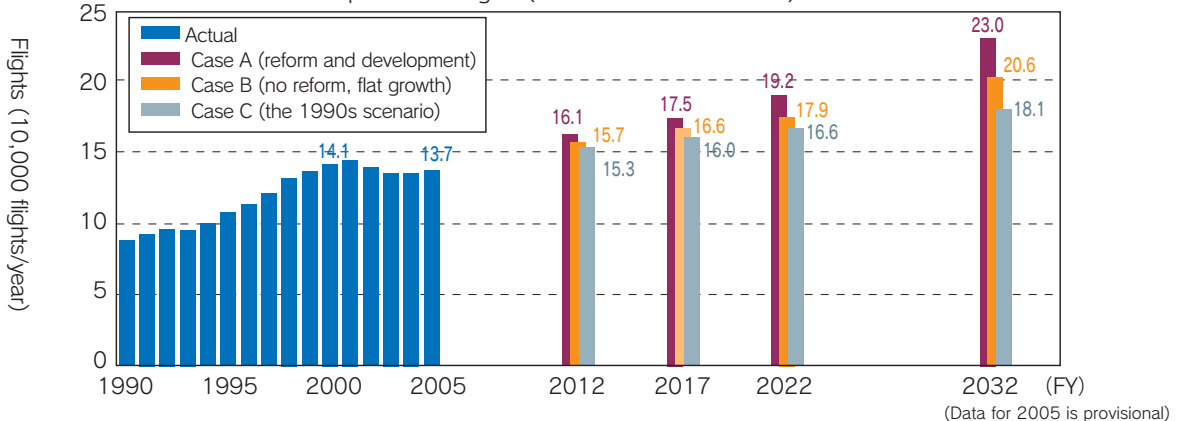
Refer to detailed version for air freight forecasts.

※The above air freight forecasts assume transport in passenger jet freight compartments, and do not include freight-only flights.

▼Fukuoka Airport annual passenger (domestic and international) volume forecast



▼Fukuoka Airport annual flights (domestic and international) forecast



It will be important to monitor the actual situation as it develops.



# What would happen if access to New-Kitakyushu Airport and Saga Airport becomes more convenient?



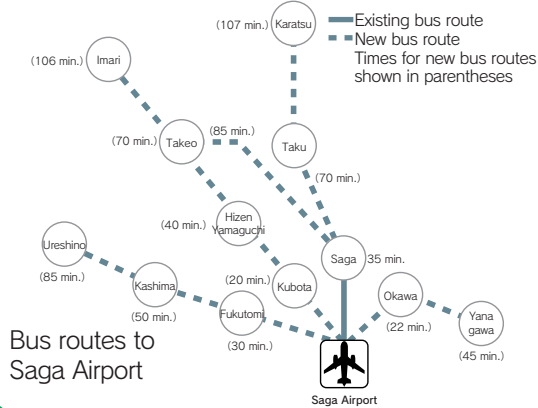
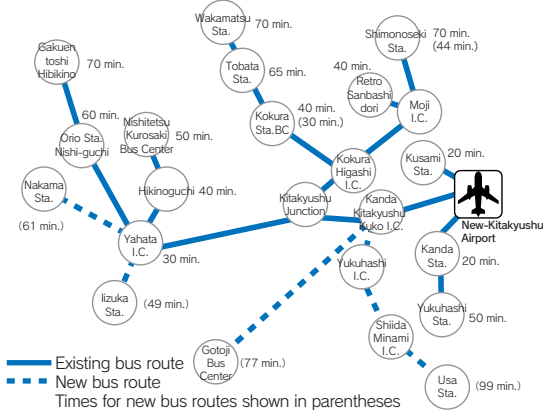
- Trial calculations were performed to evaluate how more convenient access to New-Kitakyushu Airport and Saga Airport would affect the supply-demand situation. It will be important to monitor usage of the newly-opened New-Kitakyushu Airport and its effects on Fukuoka Airport.
- Access transportation used in these trial calculations did not take operating authority or profitability into account.

## Improved airport access cases

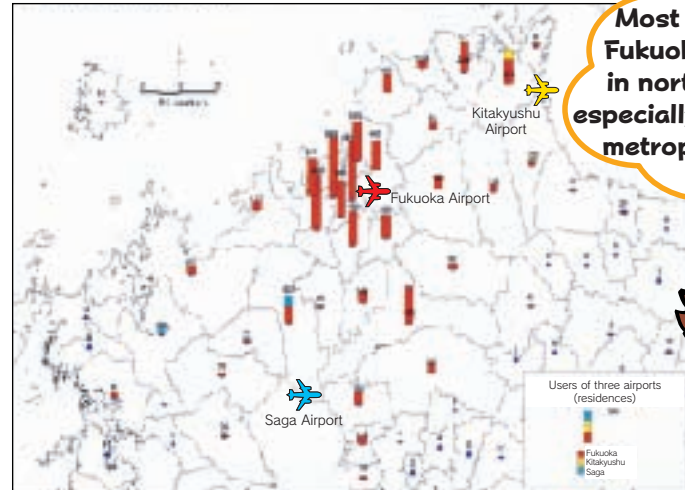
### Case (A-1)

Expanded bus service to New-Kitakyushu Airport and Saga Airport

Bus routes to New-Kitakyushu Airport



### ▼ User distribution for Fukuoka, Kitakyushu and Saga airports



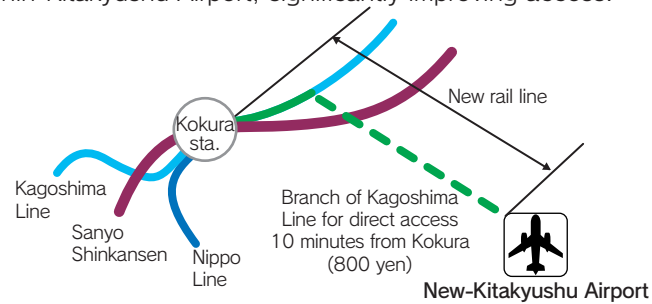
Most people using Fukuoka Airport live in northern Kyushu, especially in the Fukuoka metropolitan region.



Source: Based on FY2003 survey of air transport (Civil Aviation Bureau, Ministry of Land, Infrastructure and Transport)

### Case (A-2)

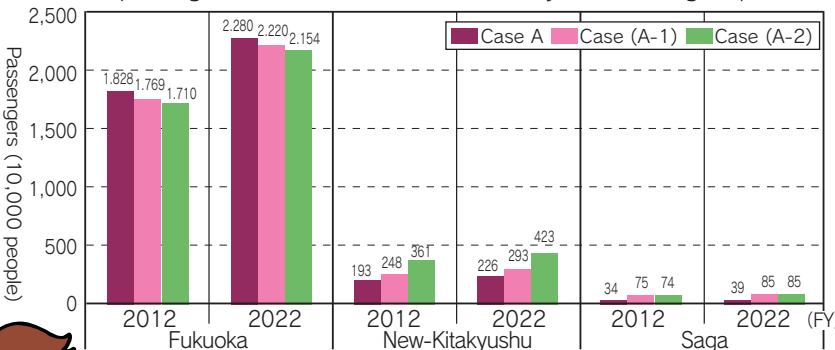
In addition to the bus routes described in Case (A-1), this case also assumes the establishment of a new rail access route to Shin-Kitakyushu Airport, significantly improving access.



## Effects on Fukuoka Airport demand situation

● In the above scenarios where access to nearby airports is improved, annual flights to and from Fukuoka Airport are forecast to drop by about 2,000 to 7,000 flights, with a corresponding decline in domestic passengers by about 3% to 6%. These effects will be assessed in PI step 3 and beyond.

### ▼ Domestic passenger forecasts for Fukuoka, New-Kitakyushu, and Saga airports



### ▼ Effects on Fukuoka Airport demand situation

Fukuoka Airport domestic passenger forecasts	Top line: Passengers (10,000 people/FY)		Bottom line: Flights (10,000 flights/FY)	
	FY2012	FY2022	FY2012	FY2022
Case A	1,828	2,280	14.0	15.8
Case (A-1)	1,769 (59)	2,220 (60)	13.8 (0.2)	15.7 (0.1)
Case (A-2)	1,710 (118)	2,154 (126)	13.3 (0.7)	15.5 (0.3)

Difference from Case A shown in parentheses

The New-Kitakyushu Airport has just opened, and actual performance and effects will have to be assessed.





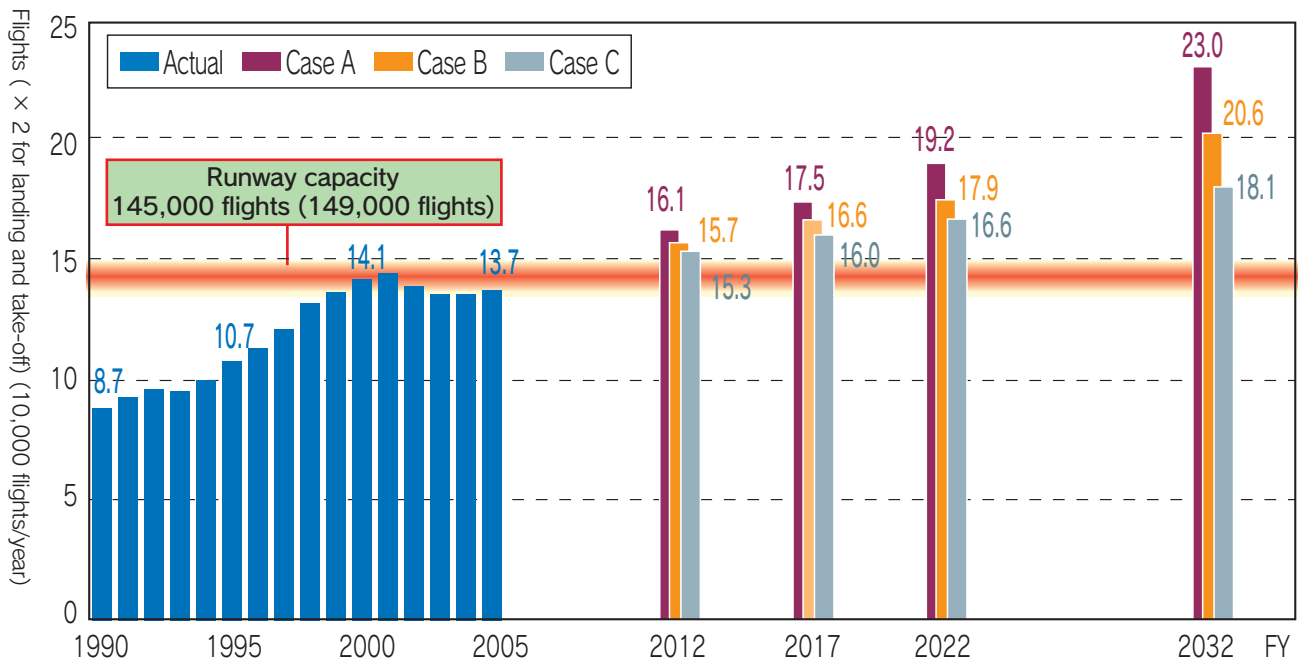
# Based on the forecasts, what will the capacity of Fukuoka Airport be like in the future?

- The capacity of Fukuoka Airport was evaluated based on the forecasts (※1).
- According to the demand forecasts, excess annual runway capacity will disappear by early 2010s, leading to increased congestion and making it impossible to fully meet demand.
- Continued monitoring is required to track changes in the underlying assumptions of the forecasts, or in the actual usage of Fukuoka Airport.

## Runway capacity

- The capacity of Fukuoka Airport's runways is taken as 32 (33) flights per hour, for a total of 398 (409) flights/day, or 145,000 (149,000) flights/year (※2).
- According to the demand forecasts, annual runway capacity will be exceeded in 2012 for all three scenarios.

### Annual runway capacity



## Explanation

※1. In addition to runway capacity, indices that can be used to evaluate future Fukuoka Airport capacity include ① excess flight-handling capacity during peak times, ② capacity of possible new runways, ③ periods of heavy flight take-off/landing congestion, and ④ difficulty in making reservations. These factors were defined in PI report step 1, but the terminology used has been reviewed in accordance with specific content.

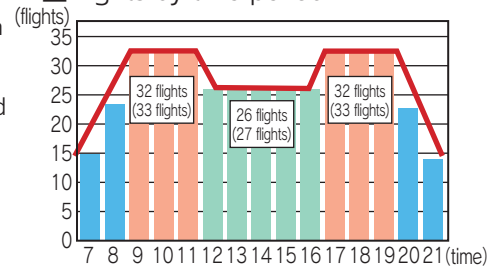
※2. Basic approaches to runway capacity

Runway capacity per-hour varies with factors, including direction of runway use, ratio of take-offs and landings, and ratio of large aircraft. In this assessment a representative value of 32 (33) flights per-hour was used as the appropriate number for processing of flights on a daily basis. The runway capacity per-day was set at 398 (409) flights, based on 32 (33) flights during the morning peak hours (※3), and 26 (27) flights during the rest of day (80% of peak), with early morning and night traffic at present levels. Annual capacity was calculated as 365 times the daily capacity, or 145,000 (149,000) flights. Note that the actual number of flights handled may be different from these values.

Values given in parentheses indicate runway capacity with the assumption that a second, parallel taxiway is constructed on the east side of the airport.

※3. Peak hours: 9:00 to 11:00 and 17:00 to 19:00, a total of 6 hours.

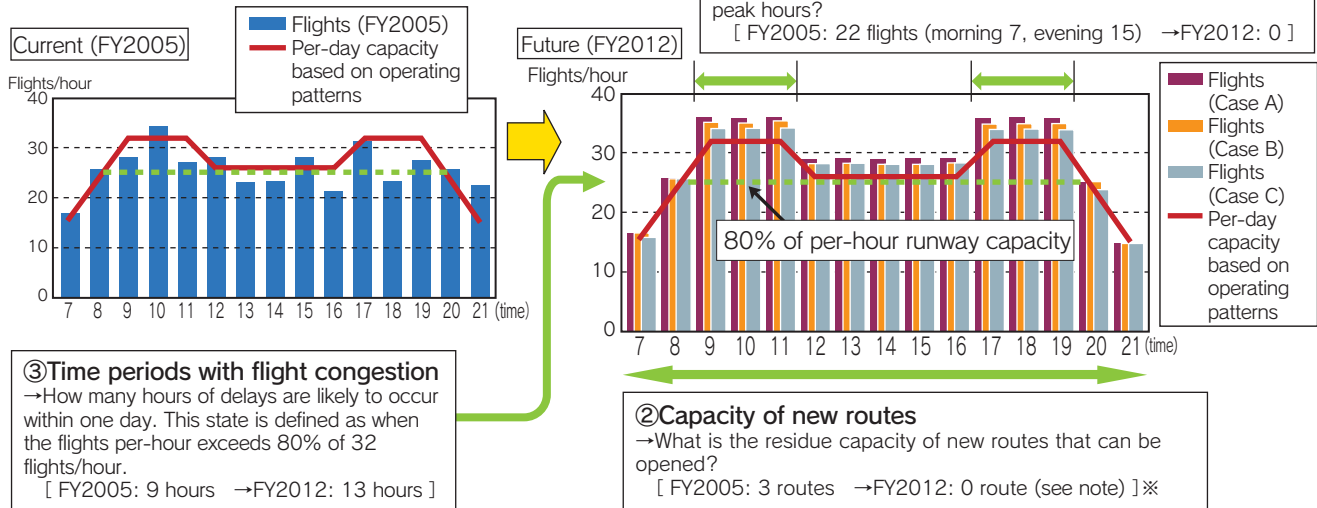
### Flights by time period



**Congestion and potential for increased flights**

- These forecasts show that flights per-day will exceed runway capacity in all three scenarios in 2012.
- This means that it will be difficult to increase the number of flights throughout the day, especially during morning and evening peak hours. This makes it difficult to open new routes or increase the number of flights on existing routes, in turn making it difficult to expand the air transport network supporting domestic and international exchange, and presenting an obstacle to such exchange.
- Aircraft congestion will continue throughout the day, making delays more likely.

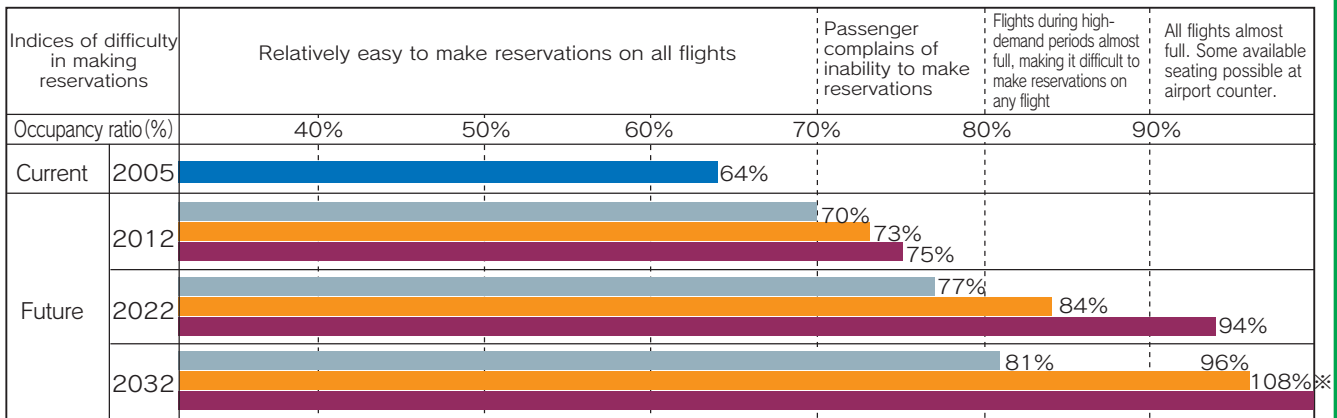
**Flights by time period**



※ Defined as being able to handle two round-trip flights during morning and evening peak periods, for flights departing in the morning and returning in the evening, to and from Fukuoka Airport and destination.

**Difficulty in making reservations**

- The occupancy ratio is the percentage of aircraft seats that are filled. More passengers will lead to airlines using larger aircraft or increasing the number of flights, so that the occupancy ratio is usually about 60 to 70%.
- If the number of flights cannot be increased beyond the future runway capacity, the aircraft occupancy ratio will gradually rise, making it more difficult to make reservations. Difficulty in making reservations was estimated using the Fukuoka-Haneda route as an example.



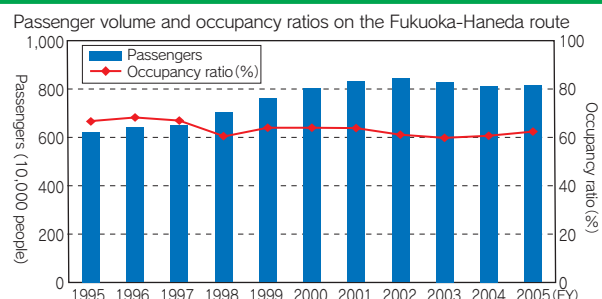
Average monthly occupancy ratio based on November 2005, using the Fukuoka-Haneda route as an example.

※ People trying to make reservations for flight exceed monthly average capacity.

Legend: Actual (blue), Case A (purple), Case B (orange), Case C (grey)

**Explanation**

- Passenger volume on the Fukuoka-Haneda route has increased 1.3 times in ten years, but a corresponding increase in the number of flights has maintained the occupancy ratio at about 60 to 70%, with an average of 63%.
- Even with the occupancy ratio, currently reservations may be full several days in advance depending on the time and day.



## PI Report Step 2 Summary

### ●Future vision for the region, and the role of Fukuoka Airport

The role required of Fukuoka Airport for realising the future vision for the region and resolving current issues.

- An airport that links Fukuoka with the rest of Japan and the world, and supports the expansion of mutual exchanges (i.e. expansion of the air transportation network).
- An airport that supports improvements in transportation services, and air transport demand (Ensuring airport capacity).
- An airport that supports the independent development of Fukuoka and Kyushu (support widespread use of air transport with regards for safety and the environment).

### ●Future air transport demand forecasts

The results of the forecasts are summarized below. However, it is essential to monitor changes in the underlying assumptions of the forecasts, air transport demand trends for Northern Kyushu and other factors.

- Domestic air passenger volume is expected to increase together with Japanese economic growth and increases in the population of Fukuoka metropolitan region.
- International air passenger volume is expected to increase together with Asian economic growth and population growth.
- Fukuoka Airport is expected to lose excess runway capacity in the early 2010s, making it difficult to meet the demand.

### ●Possible responses

Possible responses will be proposed in PI step 3. These will then be evaluated in step 4.

- Future responses
- Collaborations with nearby airports (New Kitakyushu, Saga).
  - Additional runways at existing airport
  - Construction of a new airport



The airport has many roles to play to ensure that Fukuoka remains a fascinating place to live.



We have to think about the airport together, for the future of Fukuoka.

**We are looking forward to hearing your opinion!**

Please visit our website.

A limited number of copies (Japanese only) is available at Fukuoka Prefecture and Fukuoka City administrative information corners.

## Announcements concerning PI Report Step 3

### Evaluation process



In step 3 the proposals to be evaluated will be discussed, along with the evaluation guideline.

I wonder what proposals are possible for Fukuoka Airport?



I wonder how do we evaluate a proposal?



FUKUOKA KUKO CHOSA RENRAKU CHOSEI KAIGI (Fukuoka Airport Study Commission)  
<http://www.fukuokakuko-chosa.org/>

Kyushu Regional Planning Bureau, Ministry of Land, Infrastructure and Transport (Airport PT Office)  
 2-5-33 Otemon, Chuo-ku, Fukuoka 810-0074  
 Tel: 092-752-8601 Fax: 092-724-2480  
<http://www.pa.qsr.mlit.go.jp>

Fukuoka Prefecture (Airport Planning Division, Airport Planning Bureau)  
 7-7 Higashi-Koen, Hakata-ku, Fukuoka 812-8577  
 Tel: 092-643-3216 Fax: 092-643-3217  
<http://www.pref.fukuoka.lg.jp>

Osaka Civil Aviation Bureau, Ministry of Land, Infrastructure and Transport (Airport Planning and Adjustment Section)  
 4-1-76 Otemae, Chuo-ku, Osaka 540-8559  
 Tel: 06-6949-6469 Fax: 06-6949-6218  
<http://www.ocab.mlit.go.jp>

Fukuoka City (Airport Promotion, General Planning Bureau)  
 1-8-1 Tenjin, Chuo-ku, Fukuoka 810-8620  
 Tel: 092-711-4102 Fax: 092-733-5582  
<http://www.city.fukuoka.jp>