



## **Current Market Outlook** 2012-2031

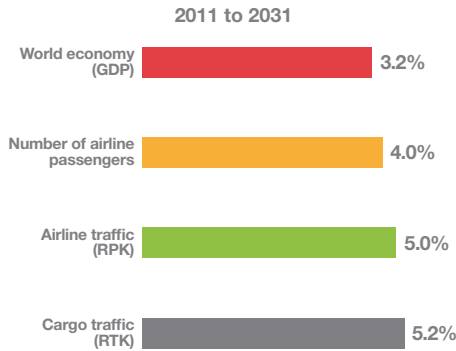


# Outlook on a Page



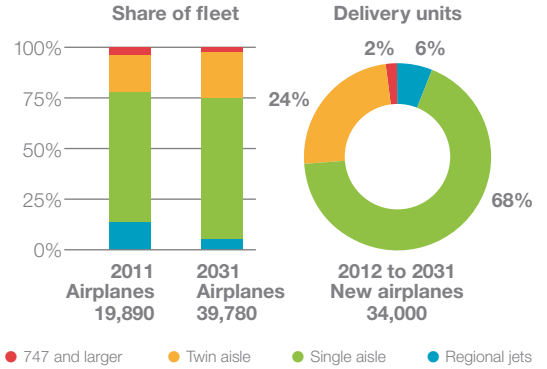
## World regions

Market growth rates



## World regions

Market value: \$4,470 billion



## World regions

Key indicators and new airplane markets

### Growth measures

Regions		Asia Pacific	North America	Europe	Middle East	Latin America	CIS	Africa	World
World economy	(GDP) %	4.6	2.6	1.9	3.9	4.1	3.4	4.4	3.2
Airline traffic	(RPK) %	6.4	2.8	4.1	6.4	6.6	4.7	5.6	5.0
Cargo traffic	(RTK) %	5.9	4.5	4.6	5.7	5.9	5.0	5.8	5.2
Airplane fleet	%	5.5	1.4	3.2	4.8	5.1	1.7	3.4	3.5

### Market size

Deliveries		12,030	7,290	7,760	2,370	2,510	1,140	900	34,000
Market value	(\$B)	1,700	820	970	470	260	130	120	4,470
Average value	(\$M)	140	110	130	200	100	110	130	130
Unit share	%	35	22	23	7	7	3	3	100
Value share	%	38	18	22	10	6	3	2	100

### New airplane deliveries

Large	320	40	200	190	0	30	10	790
Twin aisle	3,230	1,320	1,440	1,100	340	250	270	7,950
Single aisle	7,990	5,040	5,800	1,060	2,080	700	570	23,240
Regional jets	490	890	320	20	90	160	50	2,020
<b>Total</b>	<b>12,030</b>	<b>7,290</b>	<b>7,760</b>	<b>2,370</b>	<b>2,510</b>	<b>1,140</b>	<b>900</b>	<b>34,000</b>

### Market value (2010 \$B, catalog prices)

Large	110	10	70	70	0	20	2	280
Twin aisle	860	340	370	310	80	50	70	2,080
Single aisle	720	440	520	80	170	50	50	2,030
Regional jets	10	30	10	10	10	10	2	80
<b>Total</b>	<b>1,700</b>	<b>820</b>	<b>970</b>	<b>470</b>	<b>260</b>	<b>130</b>	<b>120</b>	<b>4,470</b>

### 2011 fleet

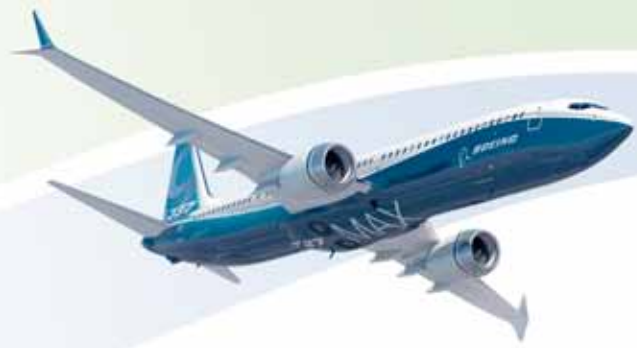
Large	340	120	190	70	0	60	10	790
Twin aisle	1,080	1,030	680	470	140	170	140	3,710
Single aisle	3,170	3,730	3,160	470	1,020	650	410	12,610
Regional jets	120	1,770	410	60	110	200	110	2,780
<b>Total</b>	<b>4,710</b>	<b>6,650</b>	<b>4,440</b>	<b>1,070</b>	<b>1,270</b>	<b>1,080</b>	<b>670</b>	<b>19,890</b>

### 2031 fleet

Large	460	110	230	170	0	50	10	1,030
Twin aisle	3,490	1,740	1,630	1,170	440	310	330	9,110
Single aisle	9,230	6,090	6,120	1,320	2,850	970	850	27,430
Regional jets	490	890	340	50	160	170	110	2,210
<b>Total</b>	<b>13,670</b>	<b>8,830</b>	<b>8,320</b>	<b>2,710</b>	<b>3,450</b>	<b>1,500</b>	<b>1,300</b>	<b>39,780</b>

Market values above 5 have been rounded to the nearest 10.

# Long-Term Market



## Purpose of the forecast

The *Current Market Outlook* is our long-term forecast of air traffic volumes and airplane demand. The forecast has several important practical applications. It helps shape our product strategy and provides guidance for our long-term business planning. We have shared the forecast with the public since 1964 to help airlines, suppliers, and the financial community make informed decisions.

Each year we start new, so we can factor the effects of current business conditions and developments into our analysis of the long-term drivers of air travel. The forecast details demand for passenger and freighter airplanes, both for fleet growth and for replacement of airplanes that retire during the forecast period. We also project the demand for conversion of passenger airplanes to freighters.

## Air travel continues to be resilient

The remarkable resilience of air travel is amply documented in nearly 50 years of published editions of the Boeing *Current Market Outlook*.

Commercial aviation has weathered many downturns in the past. Yet recovery has followed quickly as the industry reliably returned to its long-term growth rate of approximately 5 percent per year. Despite uncertainties, 2011 passenger traffic rose 6 percent above 2010 levels. We expect this trend to continue over the next 20 years, with world passenger traffic growing 5 percent annually. Air cargo traffic has been moderating after a high period in 2010. Air cargo contracted by 2.4 percent in 2011. Expansion of emerging-market economies will, however, foster a growing need for fast, efficient transport of goods. We estimate that air cargo will grow 5.2 percent annually through 2031.

## The shape of the market

We forecast a long-term demand for 34,000 new airplanes, valued at \$4.5 trillion. These new airplanes will replace older, less efficient airplanes, benefiting airlines and passengers and stimulating growth in emerging markets and innovation in airline business models. Approximately 23,240 airplanes (68 percent of new deliveries) will be single-aisle airplanes, reflecting growth in emerging markets, such as China, and the continued expansion of low-cost carriers throughout the world. The twin-aisle segment will also increase, from a 19 percent share of today's fleet to a 23 percent share in 2031. The 7,950 new twin-aisle airplanes will allow airlines to continue expansion into more international markets.

## Current Market Outlook 2012-2031



### UPDATED!

Randy Tinseth introduces the Asia Pacific subregions

## Airplanes in service 2011 and 2031

Size	2011	2031
Large	790	1,030
Twin aisle	3,710	9,110
Single aisle	12,610	27,430
Regional jets	2,780	2,210
<b>Total</b>	<b>19,890</b>	<b>39,780</b>

## Demand by size 2012 to 2031

Size	New airplanes	Value (\$B)*
Large	790	280
Twin aisle	7,950	2,080
Single aisle	23,240	2,030
Regional jets	2,020	80
<b>Total</b>	<b>34,000</b>	<b>4,470</b>

\*\$ values throughout the CMO are catalog prices.

## Key indicators 2011 to 2031

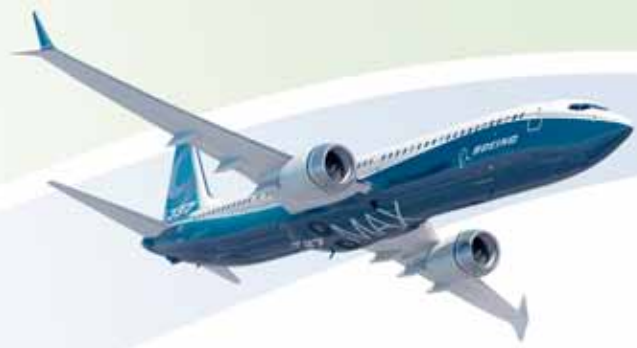
Growth measures	
World economy Gross domestic product (GDP)	<b>3.2%</b>
Airplane fleet	<b>3.5%</b>
Number of passengers	<b>4.0%</b>
Airline traffic Revenue passenger-kilometers (RPK)	<b>5.0%</b>
Cargo traffic Revenue tonne-kilometers (RTK)	<b>5.2%</b>

## Demand by region 2012 to 2031

Region	New airplanes	Value (\$B)
Asia Pacific	12,030	1,700
Europe	7,760	970
North America	7,290	820
Middle East	2,370	470
Latin America	2,510	260
CIS*	1,140	130
Africa	900	120
<b>Total</b>	<b>34,000</b>	<b>4,470</b>

\*Commonwealth of Independent States.

# Market Developments



## Airlines responding and adapting

Boeing factors a wide variety of market forces and influences into the long-term forecast that the company produces each year. At the broadest level, global economic growth is expected to average 3.2 percent over the next 20 years, fostering 5.0 percent annual growth in passenger traffic and 5.2 percent annual growth in cargo traffic.

In response to market pressures, airlines are deploying capacity more strategically to help boost yields and cover higher fuel expenses. Airlines are optimizing airplane utilization more closely to seasonal demand fluctuations, and passenger load factors remain near historic highs. The number of new-generation airplanes in the parked fleet remains low, indicating that airlines are shifting utilization to their most efficient assets. These activities are projected to help the global airline industry achieve a profitable year, despite below-average economic growth and oil prices that are likely to average in the triple digits for the full year—a scenario that would have seemed unbelievable just a decade ago.

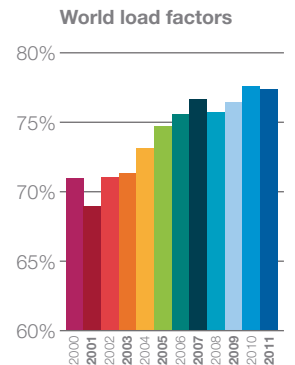
## Dynamic industry

The industry continuously adapts to varied market forces, including fuel price, economic growth and development, environmental regulation, infrastructure, market liberalization, airplane capabilities, other modes of transport, business models, and emerging markets. Each of these forces can have both positive and negative impacts on the industry. For example, on the negative side, rising fuel prices have become a major component of airline costs. On the positive side, the rise in fuel prices has prompted manufacturers to produce more fuel-efficient airplanes, such as the 787 and 737 MAX. High fuel costs have also encouraged airlines to explore cost-cutting opportunities and new sources of revenue to help offset the effects of fuel prices. Impacts such as these inform our analysis of aviation market developments.

## Market developments

World passenger load factors at historic highs

Source: ICAO



## Market developments

Key indicators



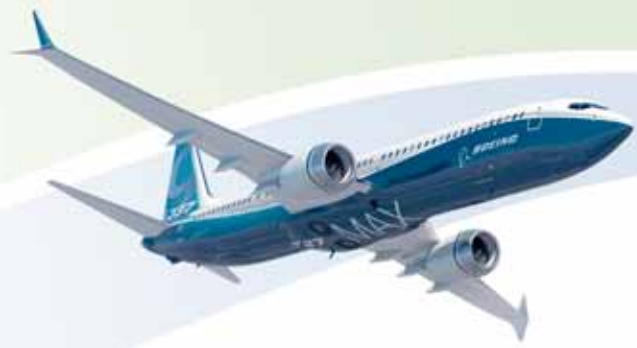
## Market developments

Airline traffic growth rates

		2011 to 2031					
		Africa	Latin America	Middle East	Europe	North America	Asia Pacific
<b>Asia Pacific</b>		7.4%	5.4%	7.2%	5.7%	4.8%	<b>6.7%</b>
<b>North America</b>		6.0%	5.1%	6.4%	3.8%	<b>2.2%</b>	
<b>Europe</b>		4.8%	4.6%	5.1%	<b>3.5%</b>		
<b>Middle East</b>		6.9%	–	<b>5.1%</b>			
<b>Latin America</b>		8.3%	<b>6.5%</b>				
<b>Africa</b>		<b>6.2%</b>					

# Market Developments

## Business Environment



### Continued passenger demand growth

With first-quarter data in hand, 2012 appears to be another challenging year for the airlines. Economic forecasters expect that the European debt crisis will tip Europe into recession and reduce growth in other regions. Global economic growth is projected to lag behind the long-term average into 2013.

Despite the sub-par economic outlook, air passenger demand is forecast to grow at close to the long-term average rate of 5 percent in 2012. Trends that drove above-average passenger growth in 2011 have continued into 2012: economic growth and expanding middle classes in emerging markets; liberalization and new airline business models that stimulate demand; and corporate focus on revenue growth, which bolsters demand for business-class travel.

Air cargo traffic growth, on the other hand, has loitered below the long-term average since 2011, weighed down by weak economic growth, spiking fuel prices, and supply chain shocks. Historically, air cargo traffic has been a reasonable indicator of current economic health, rather than of future economic performance or global passenger trends. Air cargo traffic correlates well with long-haul passenger traffic, while the strong demand for short-haul travel has made overall passenger traffic resilient to the challenges that have recently faced air cargo.

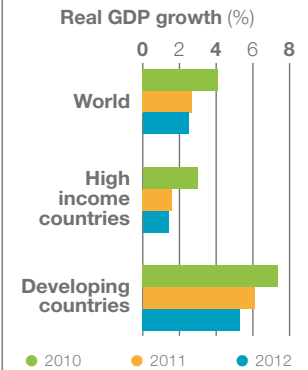
### Oil price pressures easing

Beyond the weak economic environment, the key external challenge for airlines has been volatile oil prices. After spiking in early 2012 in response to Middle East supply concerns, Brent crude oil prices dropped below \$100 per barrel for the first time since early 2011 as a result of fluctuations in both demand and supply outlooks. On the demand side, projections are declining as economists cut near-term global economic growth forecasts to reflect the impacts of the Eurozone debt crisis. Investor demand for oil and other commodities is also dropping as investors move from commodities to safer assets like US treasury bonds. On the supply side, projections are increasing as OPEC and US production rises. In the long term, energy forecasters are reassessing supply projections and, in some cases, moderating future price projections, to reflect improving North American oil shale prospects. Lower jet fuel prices will bolster near-term airline profitability outlooks, despite the uncertain economic outlook.

### Business environment

#### Near-term economic challenges

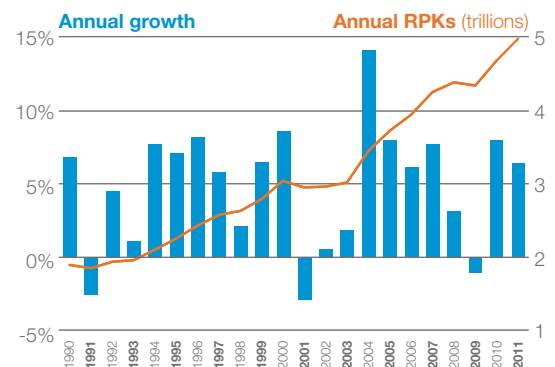
Source: World Bank  
June 2012 forecast



### Business environment

#### Passenger traffic resilient

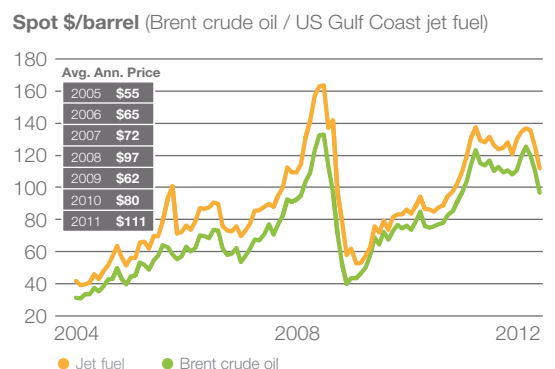
Source: ICAO



### Business environment

#### Oil and jet fuel prices elevated and volatile

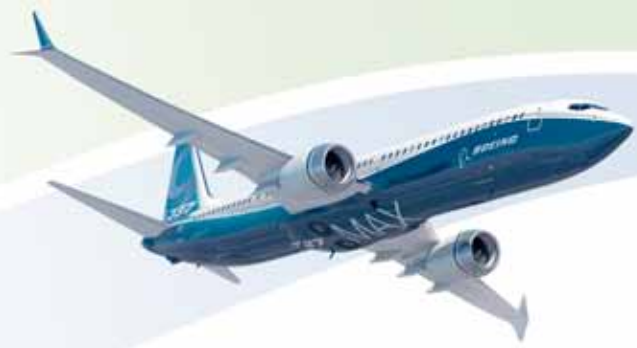
Source: EIA





# Market Developments

## Today's Fleet



### Historical fleet

Before looking at today's fleet, let's take a step back for some historical perspective. Before the deregulation of the US aviation industry, the world jet fleet in 1977 comprised approximately 6,500 airplanes, the majority of them single aisle. Boeing and McDonnell Douglas provided 65 percent of the fleet, mainly 707s and 727s. There were roughly 290 airlines, with the top ten having more than a 50 percent fleet share. The top ten airlines were very similar: all large network carriers, the majority located in North America, providing both domestic and international service. Today, three of those top ten airlines--Eastern, TWA, and Pan Am--are no longer in service.

### Current trends

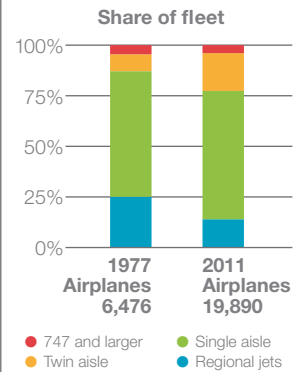
Today there are more than 900 airlines in operation. Boeing is still the dominant manufacturer, with 50 percent of the in-service jet fleet. The airlines with the largest fleets are a diverse mix, including low-cost carriers and cargo carriers, as well as airlines originating outside North America.

Single-aisle airplanes still comprise an overwhelming majority of the fleet, reflecting little change in share percentage, having risen to 63 percent of the fleet in 2011, compared to 62 percent in 1977. The number of single-aisle airplanes, however, has grown by 200 percent to more than 12,600 airplanes from 4,000 during the same period. The number of twin-aisle airplanes rose 600 percent to 3,700 from 518. Only the regional jet category reported a large percentage decline, down 11 percentage points, although the number of regional jets has increased by 1,100 since 1977.

At year end 2011, at least 30 percent of the installed commercial fleet was based in the United States. The second largest share belongs to China, with 9 percent. Russia, the United Kingdom, and Germany, at a combined 12 percent share, split the third largest share about evenly. Commercial airplane backlogs indicate that the geographical diversity of the order base is growing. The United States and China retain their respective top two positions as new entrants, including India, the United Arab Emirates, Malaysia, and Indonesia, gain a significant presence. Russia also has a sizable backlog of aircraft on order and will remain a large base for the commercial aviation industry.

### Today's fleet

Tripled since 1977



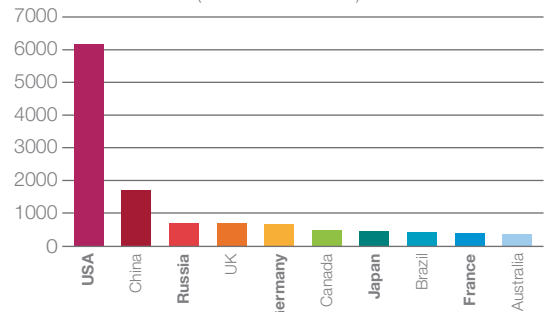
### Today's fleet

In-service fleet: 19,890

Source: Ascend

### Largest in-service jet fleet at year-end 2011

(Jets over 30 seats)



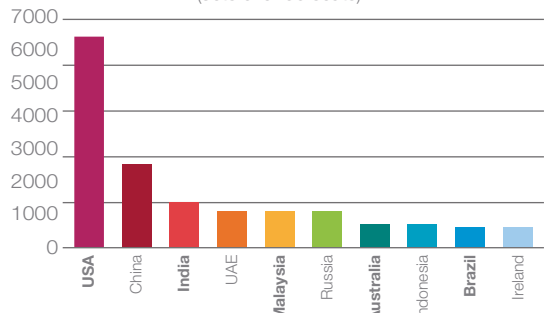
### Today's market

Backlog year-end 2011: 9,230

Source: Ascend

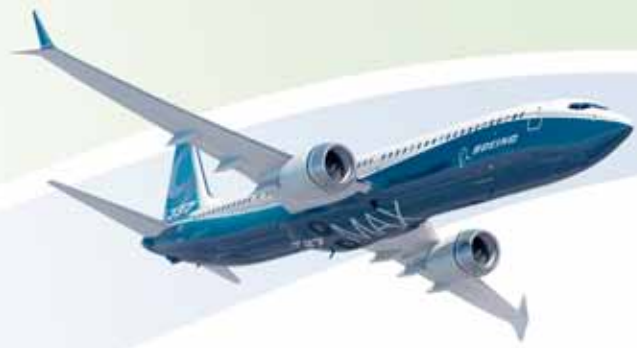
### Backlog by country at year-end 2011

(Jets over 30 seats)



# Market Developments

## Infrastructure



### Infrastructure investment remains crucial

Sustained investment in aviation infrastructure is crucial to the continuing growth of commercial aviation. Airports, national airspace management agencies, and airlines share challenges and opportunities of aviation growth.

Boeing analysis indicates that projected commercial air traffic growth will increase congestion at certain airports around the world as demand for takeoffs and landings reaches or surpasses airport capacity over the next 20 years. The world's busiest airports, such as London's Heathrow, have already reached their limits for hourly airplane movements, even with slot controls.

Many airports have capacity to meet projected traffic growth. Other airports have the capacity to handle demand efficiently during off-peak hours, but are constrained during morning and/or evening hours when demand is highest. Continued infrastructure investment is particularly important in regions, such as China, Northeast and Southeast Asia, India, and Latin America, where aviation growth outpaces planned infrastructure development.

### Capital improvements

Airport authorities around the world are investing in large capital projects, including new or improved runways, terminal expansions, and entirely new airports. These investments can significantly increase airport capacity, but are substantial, and development times typically extend more than a decade from initial planning to completion of construction. Community noise and environmental concerns often stretch development times further and may limit the scope of expansion.

### Airspace management enhancements

Many national and regional airspace management agencies are engaged in programs to overhaul airspace systems. For example, the United States is implementing the NextGen program to help airports run smoother and avoid long takeoff lines on the runway. This type of program is implemented gradually, and the improvements in airport efficiency will be realized over time.

Airlines have implemented a number of approaches to manage airport crowding. In particular, airlines have replaced smaller airplanes such as regional jets with larger single-aisle airplanes, helping to ease demand for takeoff and landing slots during peak periods. Creating secondary hubs and expanding service to secondary airports also can ease congestion at the busiest airports. Airline alliances have proven effective in allowing airlines to expand route systems without duplicating services that would add to congestion.

In sum, although airports and governmental air services agencies will need to continue investing in infrastructure improvements, and airlines will need to evolve strategic responses at some airports, congestion will not be a major limiting factor to commercial air traffic growth during the forecast period.

### Infrastructure

Infrastructure is crucial to growth

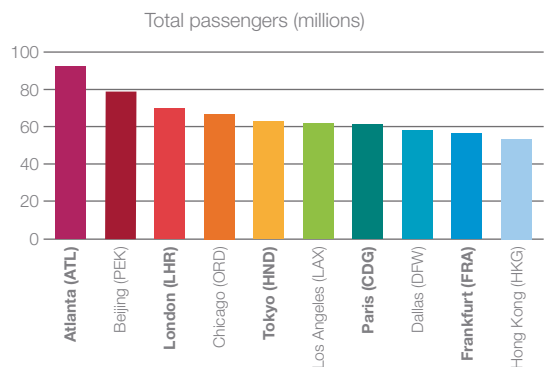
Flag	Flight	Route
LG	302	LUXEMBURG
AZ	419	TURIN
LH	1122	NEAPEL
LH	1906	MADRID
LH	1022	STUTTGAR
AF	1701	LYON
AY	822	HELSINKI
AA	071	SFRANCIS
AF	743	PARIS
LH	1116	VENEDIG
DL	023	DALLAS
GA	892	AMSTERDA

Investment in infrastructure is key to growth

### Infrastructure

2011 busiest airports by passengers

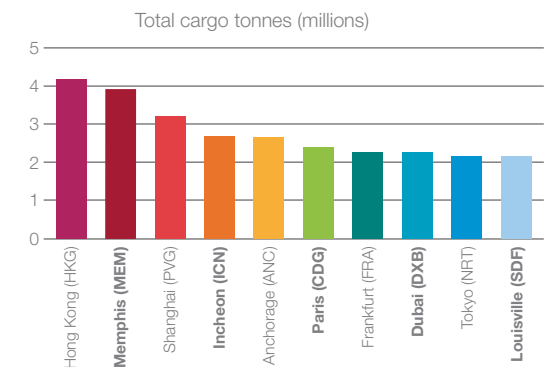
Source: ACI  
www.airports.org



### Infrastructure

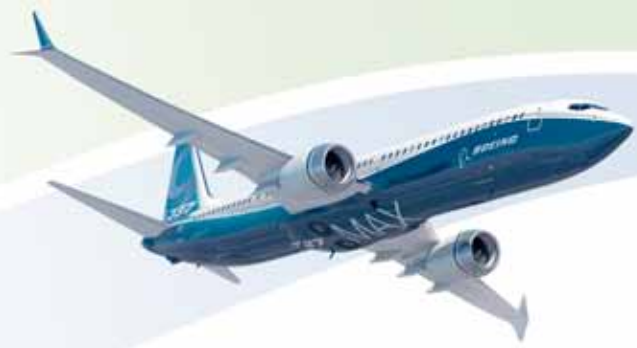
2011 busiest airports by cargo

Source: ACI  
www.airports.org





# Market Developments High-Speed Rail



## Limited competition with commercial aviation

Our long-term forecast considers the impact that other technologies, including high-speed rail (HSR), have on air travel. In 2010, worldwide railways carried 45 percent less passenger traffic, but 45 times more cargo traffic than commercial aviation. The total distance covered by railway networks was a mere 2.5 percent that of the aviation network. Analysis of the data shows that (1) railways are well suited for carrying passengers over relatively short distances (terrain permitting), whereas aviation excels for longer journeys; (2) railways are an efficient mode for overland cargo transport; and (3) aviation is very effective for creating large transportation networks without heavy investment in infrastructure.

It has been almost 50 years since Japan introduced the world's first modern HSR service between Tokyo and Osaka. By the end of 2012, China will be operating 13,000 kilometers of HSR--more than the rest of the world combined. Yet, HSR still accounts for less than 2 percent of the world's railway lines, and only six nations have HSR networks with tracks longer than 1,000 kilometers.

## Capital intensive, sizable life-cycle carbon footprint

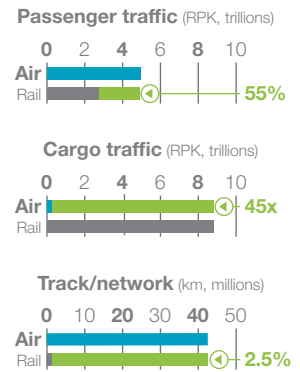
China's unprecedented HSR program entailed a 2-trillion-RMB investment in a 13,000-kilometer network. In addition to the large capital investment, the infrastructure construction had significant impact on the environment. In 2009 alone, China's HSR program consumed 20 million tonnes of steel and 120 million tonnes of concrete. The carbon emissions associated with just the raw materials amounted to approximately 150 million tonnes of CO<sub>2</sub>--roughly equivalent to a quarter of the annual CO<sub>2</sub> emissions for all the world's airlines. Yet, Boeing analysis shows that passenger traffic on the 2012 HSR network would account for less than 2 percent of the domestic revenue passenger-kilometers flown by Chinese carriers in 2009.

## Intermodal strategies

HSR could compete with some airlines in high-volume, high-yield markets. Yet, the relatively short routes where HSR excels represent only a small portion of the market served by commercial aviation. Airline assets are highly flexible, because airplanes can be easily redeployed to more lucrative markets. In addition, the infrastructure investment for a comprehensive aviation network is much lower than for ground modes of transport. Aviation's network connectivity simply cannot be replicated by ground-based modes. Opportunities to develop intermodal solutions can potentially combine the advantages of both HSR and aviation.

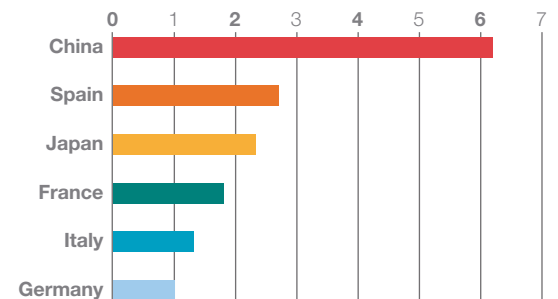
### High-speed rail Rail<sup>1</sup> vs. air<sup>2</sup>

Source:  
<sup>1</sup>2010 UIC members  
<sup>2</sup>2010 ICAO/Boeing



### High-speed rail Top high-speed rail countries

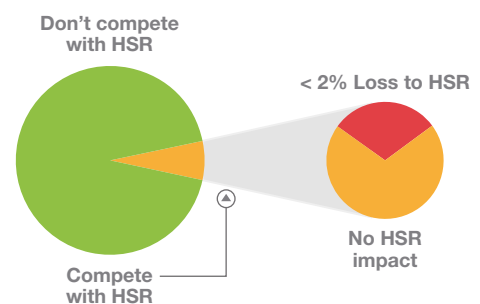
High-speed rail in service  
(km, 5/2012)



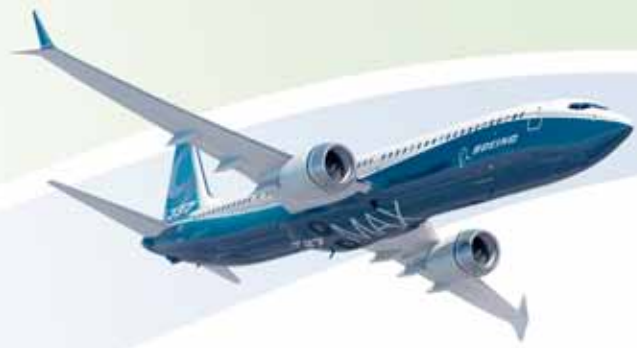
### High-speed rail China's impact on domestic aviation

Source:  
2009 Domestic RPK CAAC

China's HSR Impact on aviation



# Market Developments Environment



## Environmental challenges for the airplane market

For both economic and environmental reasons, airline customers demand ever-increasing fuel efficiency. Boeing and the aviation industry have committed to ambitious CO<sub>2</sub> emissions targets to achieve carbon-neutral aviation growth beyond 2020 and halve net carbon emissions by 2050 (compared to 2005). Boeing is playing a leadership role in leveraging technology and innovation in support of the industry's strategy by

- Improving the performance of current jetliners and introducing new airplanes, such as the 787 Dreamliner, 747-8, and 737 MAX, that are significantly more efficient than the airplanes they replace.
- Enabling greater operational efficiency through improved airline operations and advocating for global air traffic management system infrastructure modernization.
- Championing the commercialization of sustainable aviation fuels that produce 50 percent or lower life-cycle CO<sub>2</sub> emissions than conventional fuels.

## Sustainable aviation fuels

Sustainable aviation fuel received a significant boost in the past year when the ASTM international standards organization approved the commercial use of fuel blends. Since that approval, conventional jet fuel blends with up to 50 percent biofuel derived from sources such as jatropha, camelina, algae, and other oils have been used on more than 1,500 commercial flights. Increasing the availability of sustainable aviation fuel is a critical component of aviation's strategy to reduce life-cycle emissions by 50 percent compared to conventional fuels. Meeting airline fuel demand at price points comparable to those of petroleum-based fuels requires continued investment and government policy support. Boeing will continue to be a catalyst and advocate in both arenas.

## Airport environment and growth

The *Current Market Outlook* projects a doubling of the commercial airplane fleet by 2031. This will require many constrained airports to increase capacity. In some regions of the world, particularly Europe, airport communities have expressed concerns about the environmental effects of increased operations and airport expansion. Finding the appropriate balance between growth and community concerns takes time and can slow or limit progress in a region's capacity planning. The combination of new, cleaner and quieter airplanes like the 787, and innovative operational procedures that take advantage of Required Navigational Performance (RNP) and other technologies, holds the potential to improve the environment around airports while enabling airports to sustain regional economic growth.

### Environment

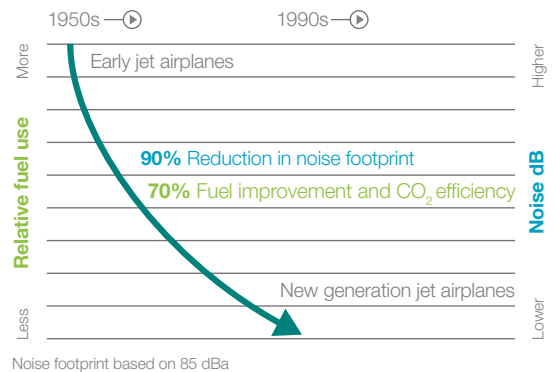
#### 747-8 Freighter Biofuel flight



Meeting aviation's environmental challenge

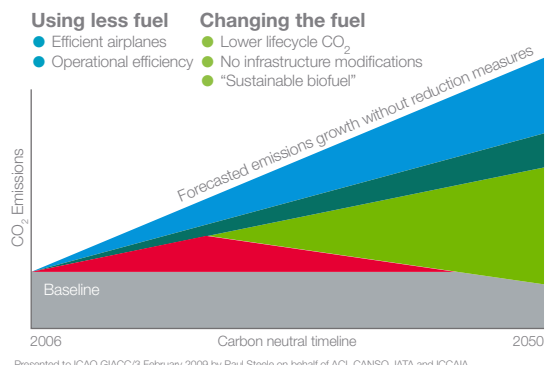
### Environment

#### Track record of significant progress



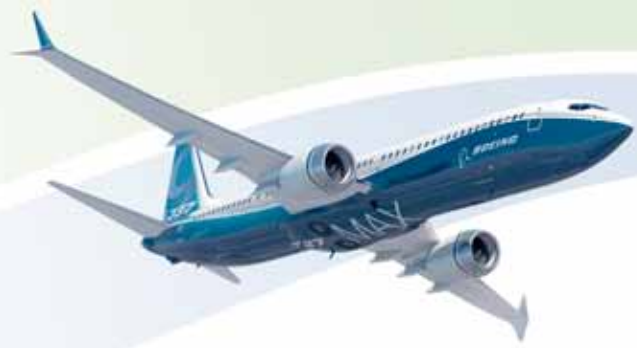
### Environment

#### The commercial aviation challenge—carbon neutral growth



# Market Developments

## Global Trends



### Industry growth amid economic uncertainty

Boeing's business analysis includes extensive study of global geopolitical dynamics that influence commercial aviation. This research focuses on current events as well as long-term trends. The analysis helps to determine risk and opportunity in the commercial aviation market as a whole, and in specific regions around the world.

Recent global events, including regional political turmoil, energy price volatility, and debt crises, have dampened global economic growth. Although growth is expected to return, albeit slowly, the risks of persistent high oil prices and debt contagion could have lasting effects. A slowdown of trade liberalization could constrain economic growth in some regions, prolonging and delaying the recovery, which would adversely affect demand for air travel and new airplanes.

### Level playing field and aviation liberalization

Government assistance for civil aircraft development remains a concern. Recent World Trade Organization rulings have made clear that such government support must be provided on commercial terms. In the area of export finance, the recent reauthorization of the US Export-Import Bank charter helps level the playing field for aircraft manufacturers and airlines.

Liberalization of aviation services stimulates competition, giving passengers more choices and generally reducing ticket prices, which in turn increases demand for air travel. Unlike trade liberalization, air services liberalization has not slowed significantly, despite continued resistance from some governments. This resistance stems primarily from concern about allowing increased levels of foreign ownership in domestic airlines.

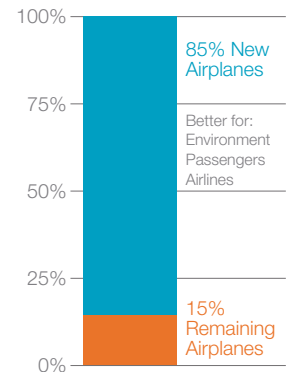
### Infrastructure, security, and environment

The *Current Market Outlook* projects that the global large commercial airplane fleet will double by the year 2031. The resultant global air traffic growth will necessitate infrastructure investments, as initiatives to modernize air traffic management provide crucial enhancements to both system capacity and efficiency.

While significant improvements in aviation security have been made globally since 9/11, constant vigilance is still required. Security concerns will continue to affect commercial aviation operations.

The aviation industry is addressing environmental challenges with a three-pronged strategy of designing more efficient and safer aircraft, improving operational procedures, and developing sustainable biofuels. Moreover, governments around the world are aligning with the industry's strategies to reduce emissions and achieve carbon-neutral growth. This approach will allow the industry to continue strong growth over the long term, despite anticipated regulatory constraints.

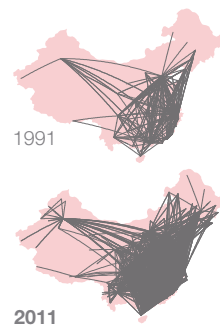
### Global trends 20 years in the future



### Global trends China domestic frequencies

Source: August OAG

Domestic frequencies 22-fold since 1991.



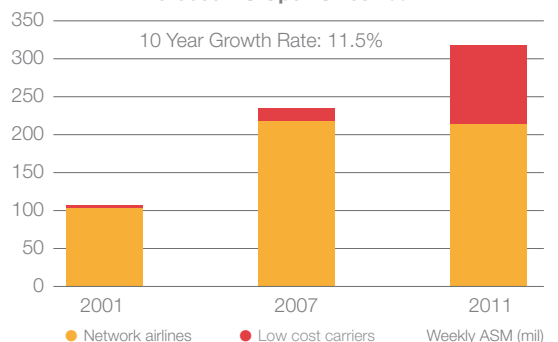
	1991	2011
Total weekly ASKs*	508	11,395
Weekly frequencies	2,165	47,791
Total airport pairs	170	1,085
Airplane size (seats)	147	149

\*Available seat-kilometers.

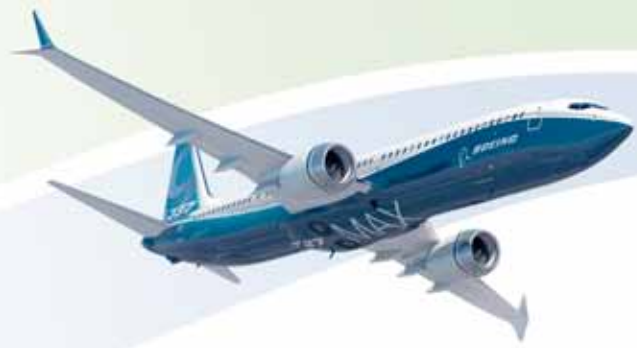
### Global trends Liberalization has stimulated service

Source: August OAG

#### Morocco-EU Open Skies 2007



# Methodology



## Practical value for Boeing and the industry

The long-term forecast contained in Boeing's *Current Market Outlook* guides product strategy and provides the basis for business plan development. We have shared the forecast with the public since 1964 to help airlines, suppliers, industry organizations, academia, and financiers make informed business decisions and benchmark other forecasts or analyses.

## Air travel demand is resilient

Global and regional economic cycles profoundly affect air travel demand, so it is essential to take the current phase of the economic cycle into account in developing the long-term forecast. Historically, declines in economic activity are often associated with unexpected events. The resilience of air travel demand to a disruptive event depends on the nature of the event and the extent to which the event affects air travel, directly or indirectly. For example, events related to personal safety, such as pandemic, war, or threats against aircraft, have a greater effect than commercial or political events. Perturbations from the long-term demand trend are typically relatively short lived, lasting around 12 months. The role air travel plays in the fabric of society is key to its resilience. Air travel is an essential part of personal and business life for many travelers. The Internet, mobile connectivity, and social media are increasingly integrated into daily life, including how we research, discuss, plan, and book travel. At the same time, improved airplane technology and efficiency are allowing airlines to make air travel more affordable, so airfares generally represent a smaller portion of total trip costs.

## Development process for air travel demand outlook

Our air travel demand forecast is developed by constructing and matching top-down and bottom-up analyses. Bottom-up analysis involves forecasts of traffic between and within individual countries, based on economic predictions, growth momentum, historical trends, travel attractiveness, and projections of the relative openness of air services and domestic airline regulation. Additionally, government statistics on inbound and outbound visitors and tourism receipts are included to identify and cross-check trends. Countries are grouped into geographical regions that generate air traffic flows between and within the regions. In the top-down approach, global and regional markets are similarly projected on aggregated variables. The bottom-up and top-down projections are then reconciled, allowing for the effects of industry and airline business model developments. Further, positive or negative region-specific developments, including population dynamics, shifts toward or away from other modes of transport, and emergence of new air services, are factored in. The resulting regional traffic forecasts are used in developing the airplane demand forecast.

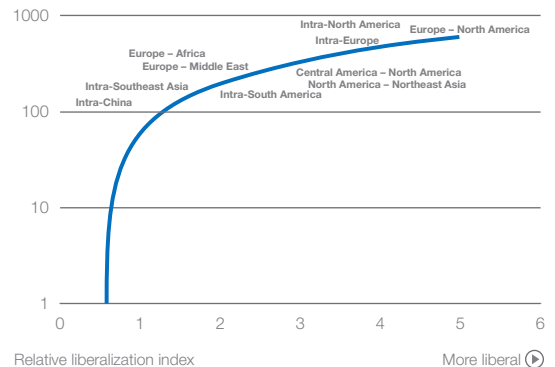
### Methodology 2012 traffic outlook



## EXPLORE!

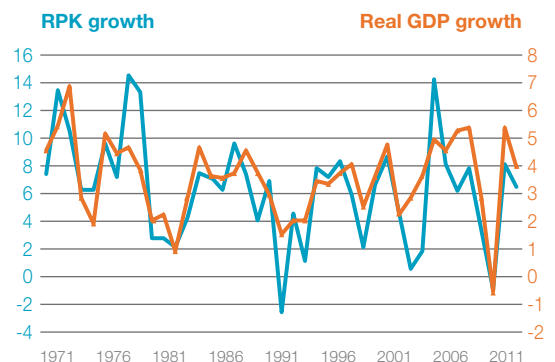
The methodology behind the 2012 traffic outlook

### Methodology Relative liberalization and traffic

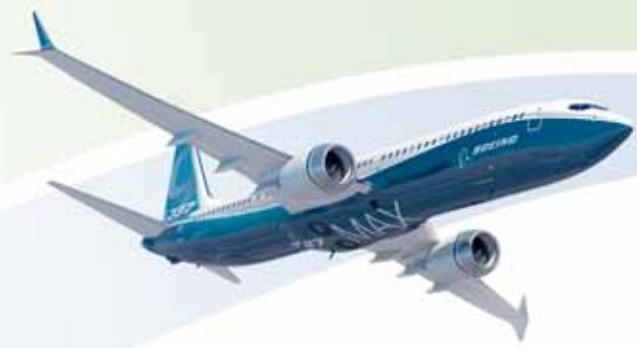


### Methodology World passenger traffic growth vs. GDP

Source:  
ICAO  
GDP-IMF







# Methodology—continued

## Philosophy behind the forecast

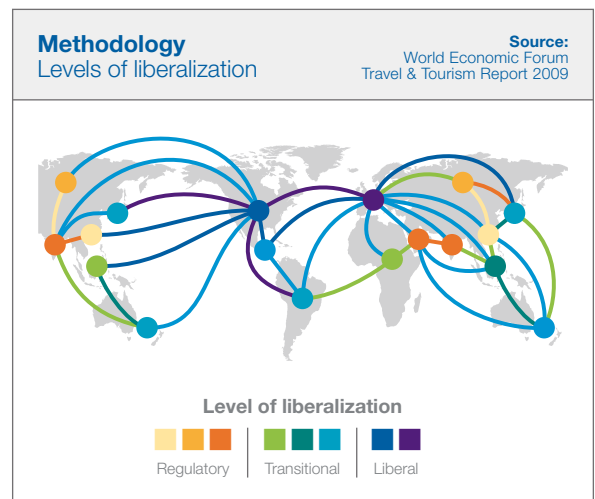
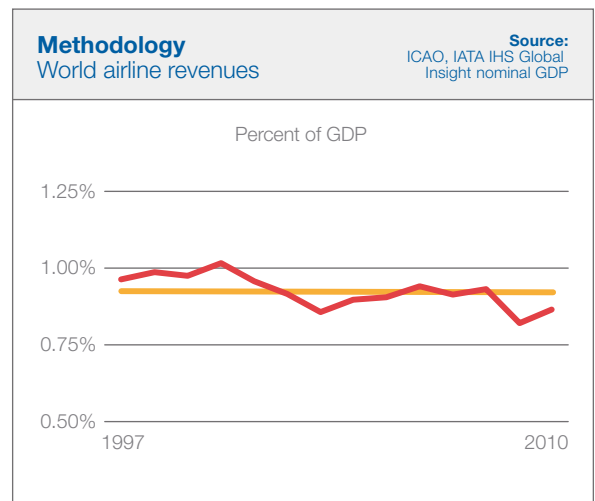
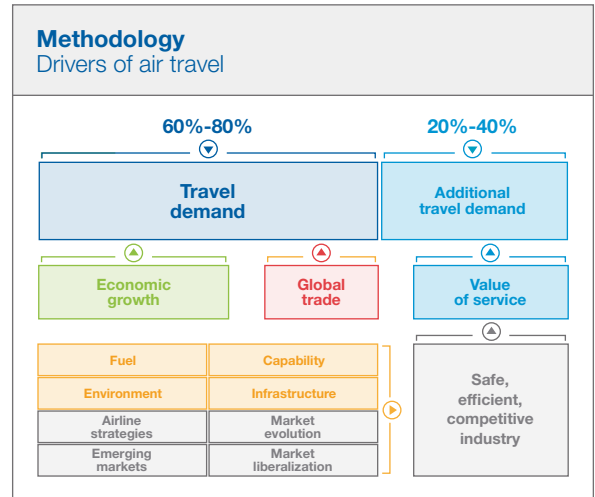
Growth in air travel, measured in revenue passenger-kilometers (RPK), has historically outpaced economic growth, represented by GDP. At the global level, the relationship is

$$RPK (growth) = GDP (growth) + f(t)$$

where  $f(t)$  is a time-varying function that typically centers around 2 percent.

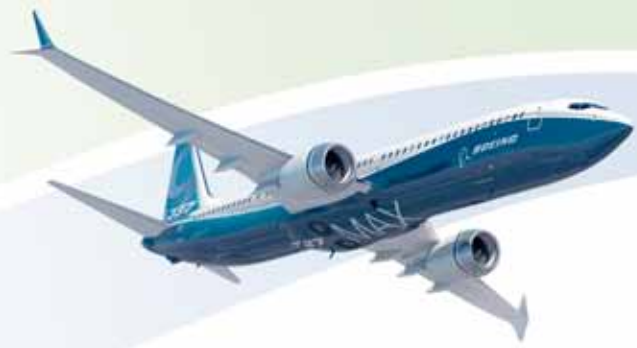
This leads us to conclude that, at the regional level, about 60 to 80 percent of air travel growth can be attributed to economic growth, which in turn is driven by trade. This conclusion is consistent with the observation that countries whose economies are tied to trade tend to have higher rates of air travel. Air travel revenues consistently average about 1 percent of GDP in countries around the world, regardless of the size of the national economy. Globally, air travel has consistently tended toward this historical share of GDP. With a few exceptions, most countries move toward the general trend over the long term. The time-varying function  $f(t)$  accounts for the 20 to 40 percent of air travel growth that is not directly associated with GDP growth. This component of growth derives from the value travelers place on the speed and convenience that only air travel can offer. For example, the value travelers place on choice of arrival and departure times, routings, nonstop flights, choice of carriers, service class, and fares stimulates increased aviation services.

Liberalization is the primary driver of value creation in the global air transport network, typically spurring a “bump” in traffic demand. Studies suggest that as the relative openness of a country’s bilateral air service rises from the 20th to the 70th percentile, the resulting increase in traffic can boost air travel demand by 30 percent. Often, improved air services directly and indirectly stimulate economic growth, creating a virtuous circle that leads to further air transport growth, which in turn leads to added economic growth, and so on. The percentage of air transport growth that comes from economic development compared to the percentage that comes from the value of air travel services is an indicator of the maturity of an air travel market. Although individual regions may exhibit signs of slowing due to maturing markets, other regions continue or begin to grow vigorously. Current global percentages do not indicate that the world aviation market is nearing maturity in aggregate.





# Forecast Indicators



## New airline business models and emerging economies

Each year, we begin our analysis for the *Current Market Outlook* by examining key industry indicators, including fuel, market liberalization, airline capabilities, airline strategies, emerging markets, economic growth, high-speed rail, and the environment. Worldwide economic activity is the most powerful driver of commercial air transport growth and the resulting demand for airplanes. The global gross domestic product (GDP) is projected to grow 3.2 percent per year for the next 20 years, driving worldwide air passenger traffic to average 5.0 percent and air cargo traffic to average 5.2 percent annual growth over the same period.

## Global growth spurred by emerging economies

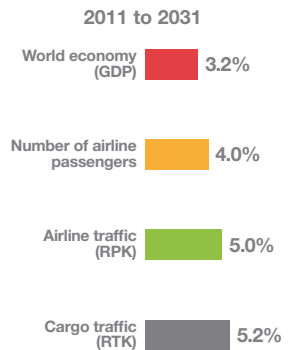
Emerging economies are projected to grow 5 percent per year over the next 20 years, outpacing developed economies, which will average 2 percent growth.

Emerging and developing economies will account for 72 percent of global growth between 2011 and 2031. Their share of real global GDP will increase from 30 percent to 44 percent over the same period. The fastest growing economies include Asia Pacific (projected 4.6 percent growth), the Middle East (projected 3.9 percent growth), and Latin America (projected 4.1 percent growth). Household income will grow and consumption patterns will change as educated labor forces expand, investment in physical and social infrastructure increases, urbanization progresses, and the relative importance of economic sectors shifts within the world's emerging economies. With urbanization, the labor force shifts toward the industrial and service sectors, which spurs median incomes to progress towards the income levels of developed economies. The emerging global middle class will expect to enjoy standards of living comparable to those in developed economies. As demand for international goods and services rises and leisure time increases, appetite for travel will grow.

## Business models and airline strategies

Airline strategies and business models help determine the types of airplanes that airlines purchase and, as a result, the types of airplanes that manufacturers produce. Low-cost carriers drive the strong demand for new single-aisle airplanes. Their share of the market is expected to grow from 14 percent to 19 percent by 2031. There is a need for 23,240 new single-aisle airplanes, 36 percent of which will replace older airplanes and 64 percent will expand the fleet. International expansion of network carriers is driving demand for 7,950 new twin-aisle airplanes, including 940 freighters, primarily large freighters such as the 747-8F and 777 Freighter.

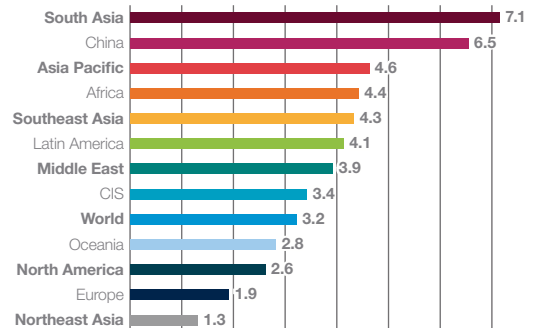
### Forecast indicators Growth rates



### Forecast indicators Emerging markets driving economic growth

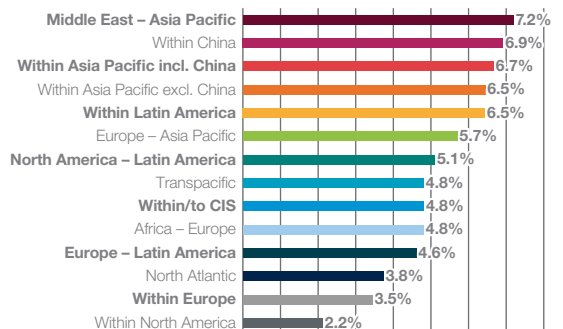
Source:  
IHS Global  
Insight

#### Annual GDP growth 2011 to 2031

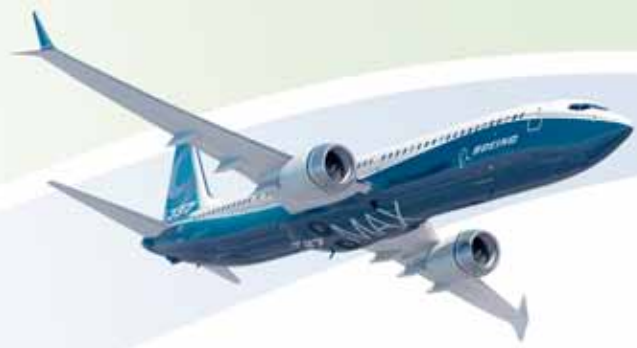


### Forecast indicators Annual traffic growth

#### Growth 2011 to 2031



# Fleet Development



## Fleet size will double

The in-service commercial fleet will grow an average 3.5 percent per year to double in size from 19,890 airplanes today to 39,780 by 2031. Over the next 20 years, the airline industry will need 34,000 new airplanes, of which 41 percent will replace older, less efficient airplanes; 59 percent of the new deliveries will reflect growth in emerging markets and evolving business models.

## Single-aisle airplanes to predominate

Single-aisle airplanes continue to dominate the world's fleet. In 2011, the single-aisle category comprised 63 percent of the world's fleet. By 2031, we estimate that share will rise to 69 percent. Of the forecast demand for 23,240 new airplanes, valued at \$2.0 trillion, 36 percent will replace older airplanes, while 64 percent will expand the fleet. Emerging markets are driving demand for single-aisle airplanes. The Asia Pacific region is expected to need 7,990 new airplanes to expand its single-aisle fleet from 3,170 to 9,230 airplanes by 2031. Latin America, which is expected to take delivery of 2,080 new single-aisle airplanes, and the Middle East, which is expected to take delivery of 1,060 new airplanes, also generate strong demand. Low-cost carriers, whose business models focus on fleet commonality, also drive demand for single-aisle airplanes.

## Expanding international markets increase demand

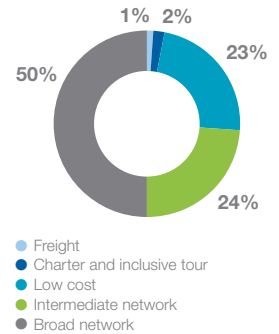
Traffic on long-haul routes is forecast to grow 5.2 percent annually over the next 20 years, creating demand for 7,950 new twin-aisle airplanes. The largest twin-aisle markets are Asia Pacific, Europe, North America, and the Middle East, which will take nearly 90 percent of all new deliveries.

## Efficiencies of the fleet

Increased airline costs, specifically increased fuel costs, are driving airlines to operate the most efficient aircraft available. Consequently, we foresee a modest increase in the average size of airplanes in operation. Airlines are replacing small regional jets with larger regional jets. This trend continues in the single-aisle category. Airlines that have ordered 737-700s are ordering 737-800s, and airlines that ordered 737-800s are ordering 737-900ERs. In the twin-aisle fleet, it is the medium twin-aisle category, represented by the 777, that is growing. In 2011, this size category made up 50 percent of the twin-aisle fleet. By 2031, it will make up 59 percent of the twin-aisle fleet. Current orders reflect this trend. In 2011, there were 202 orders placed for 777s, an increase of 165 percent compared to 2010.

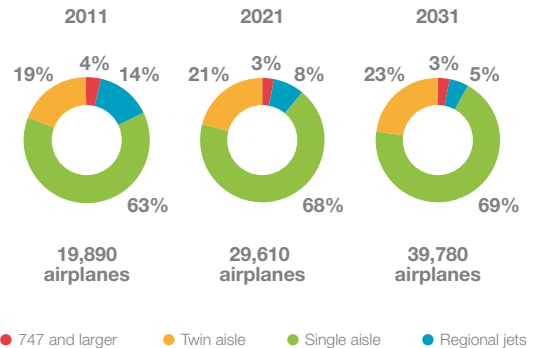
## Fleet developments

Market share by business models



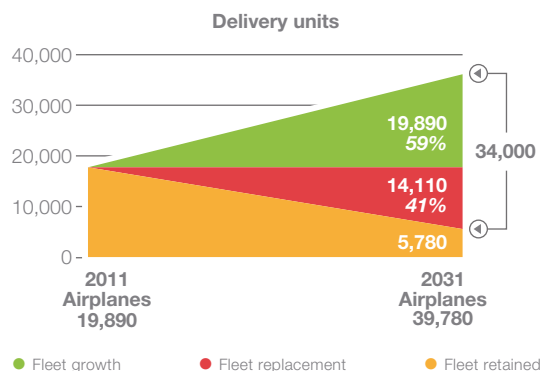
## Fleet developments

World fleet will double by 2031

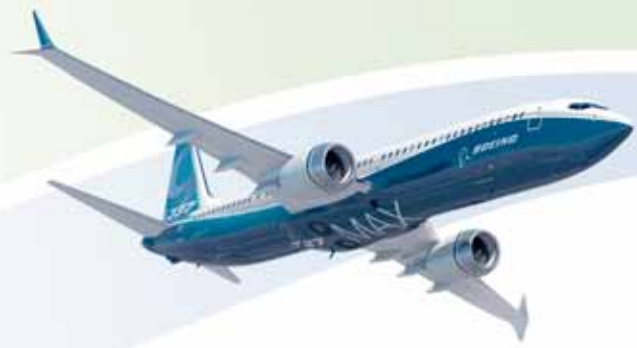


## Fleet developments

Over half of new deliveries are for growth



# New Airplanes



## Single-aisle aircraft remain pivotal

Over the next 20 years, we project that 23,240 single-aisle airplanes will be delivered, representing nearly 70 percent of commercial airplane deliveries and 45 percent of total delivery value. Most commonly used for shorter distance travel, single-aisle airplanes will find new applications in emerging markets as passenger demand continues to grow. Airlines will continue to rely on single-aisle airplanes to connect adjacent regions, such as North America to South America and Oceania to Southeast Asia. Asia Pacific will receive 34 percent of the new single-aisle aircraft, while Europe and North America will take 25 percent and 22 percent, respectively. In the mature markets, new single-aisle airplanes will replace aging airplanes, such as MD-80s, 737 Classics, and older A320s. As more new 737 MAX and A320neo airplanes enter service, overall fleet efficiency will improve and the more capable airplanes will be able to serve new markets.

## International traffic creates twin-aisle demand

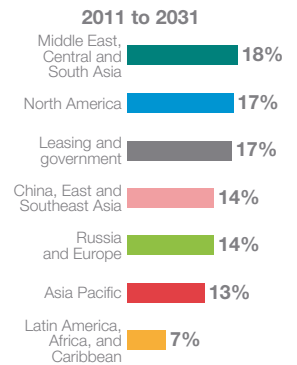
The twin-aisle airplane segment is the highest valued segment of the long-term forecast, valued at US\$2.1 trillion over the next 20 years. Entry into service of airplanes such as the Boeing 787 Dreamliner, and later, the Airbus A350 is allowing airlines to create new point-to-point international service. These new airplane families will help foster traffic growth between regions by allowing airlines to supplement current service provided by the Boeing 777 and the Airbus A330. Twin-aisle airplanes account for 24 percent of forecast deliveries, which is 47 percent of the projected delivery value. Over the next 20 years, the vast majority of twin-aisle airplanes currently flying will be retired. By 2031, new airplanes will account for 87 percent of the twin-aisle fleet.

## Demand for large airplanes focused in key regions

Asia Pacific, Europe, and the Middle East account for more than 90 percent of large-airplane demand in the 20-year forecast. These airplanes will serve as passenger jetliners on high-traffic trunk routes, as well as dedicated commercial freighters. The forecast 790 deliveries are valued at US\$280 billion, or 6 percent of the total delivery value. The Asia Pacific region will receive 41 percent of these deliveries, while Europe will take 25 percent and the Middle East will take 24 percent. While medium-size twin-aisle airplanes will take a growing share of long-haul traffic over the next 20 years, large airplanes will remain an important part of the commercial airline fleet.

### New airplanes

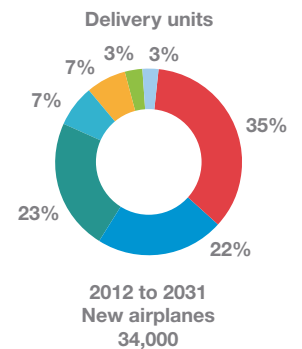
Boeing order backlog: \$308B



### New airplanes

Deliveries by region

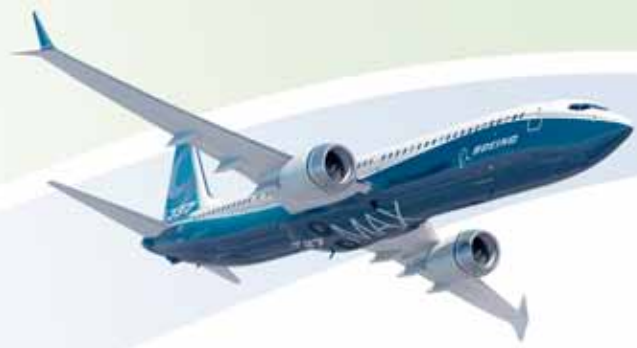
Region	New airplanes
Asia Pacific	12,030
North America	7,290
Europe	7,760
Middle East	2,370
Latin America	2,510
CIS	1,140
Africa	900
<b>Total</b>	<b>34,000</b>



### New airplanes

Market value: \$4.5 trillion





# Air Cargo Market

## Resilient demand for air cargo

While surface transport accounts for the majority of the world's freight traffic, air cargo remains indispensable for industries that transport perishables, such as seafood or flowers; high-value, low-weight goods, such as consumer electronics or pharmaceuticals; and time-critical goods such as just-in-time inventory items. Lately, with rising fuel prices, shippers have settled for slower modes of transport. But the speed advantage of air cargo ensures air freight's role in the global economy.

Air cargo can be carried in the lower hold of passenger flights or on dedicated freighters. Capacity on passenger flights has been expanding, especially as greater numbers of highly cargo-capable airplanes, such as the 777-300ER, enter the fleet. Lower-hold cargo can generate extra profit for passenger airlines, taking advantage of dense passenger networks. But freighters, with larger payloads and routes and frequencies optimized for cargo, carry the majority of traffic—about 60 percent.

Air cargo traffic growth, measured in revenue tonne-kilometers (RTK), is projected to average 5.2 percent over the next 20 years. Global economic growth and the need to replace aging airplanes will create a requirement for 2,760 freighter deliveries over the same period. About 1,820 of these will be passenger airplane conversions. The remaining 940 airplanes, valued at \$250 billion, will be new. The freighter fleet will nearly double in size, from 1,740 airplanes in 2011 to 3,200 in 2031.

## Most standard-body freighters to be conversions

Boeing forecasts a requirement for 1,120 standard-body freighters, nearly all of which will be passenger conversions. The low capital cost of converted airplanes makes them attractive for the low-demand routes typically flown in standard-body operations.

## Express carriers drive medium widebody market

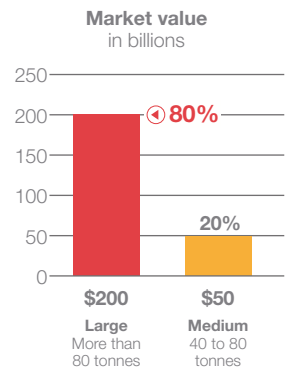
Of the 710 medium widebody freighters delivered during the forecast period, 260 will be new purpose-built freighters. This market segment is driven by express carriers, which value the balance between the lower cost per tonne achieved by larger airplanes and the schedule flexibility of smaller airplanes.

## Intercontinental operations favor new, large freighters

Although purchase prices for converted large freighters are attractive, the performance and reliability advantages of new, purpose-built freighters outweigh this consideration—particularly for intercontinental cargo operations, where larger payloads and extended ranges are crucial. Of the 930 large freighter deliveries, 680 will be new airplanes.

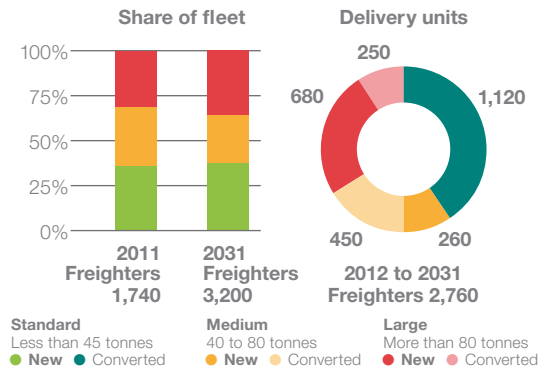
### Air cargo market

Market value: \$250 billion



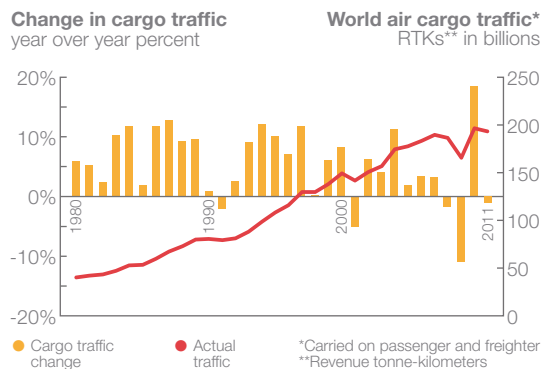
### Air cargo market

940 new and 1,820 converted



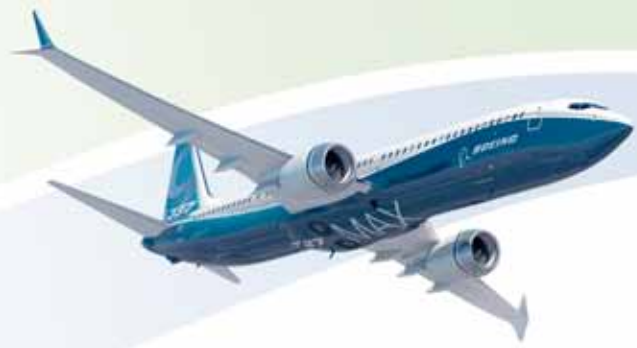
### Air cargo market

Annual growth: 5.5% since 1980



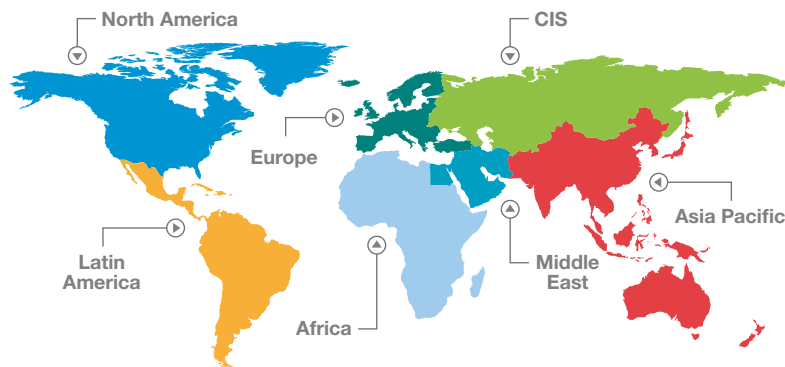


# World Regions



## World regions

New airplane market by region



## Globalized demand

The number of airplanes in the world fleet grows an average 3.5 percent each year as passenger traffic, measured in revenue passenger-kilometers, grows 5.0 percent per year. Cargo traffic, measured in revenue tonne-kilometers, grows 5.2 percent a year. Over the next 20 years, this will create a need for 33,060 passenger airplanes and 940 freighter airplanes. Increasing demand for new airplanes from airlines in emerging markets around the globe drives this expansion and significantly increases the industry's resilience to regional economic fluctuations.

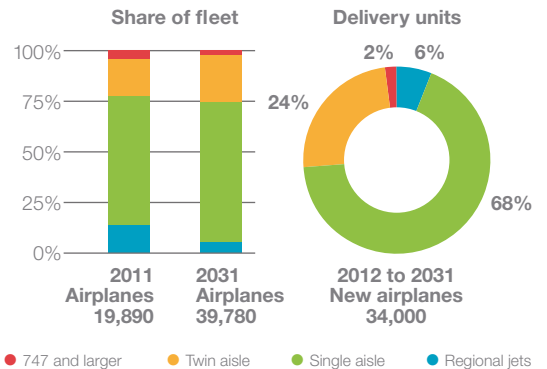
## Regional focus

Air transport markets and airline business models evolve at different rates from region to region. Airplane demand therefore varies across the globe. As new airlines emerge, established airlines seek to preserve and boost their share of the passenger market by increasing frequency of service, expanding the number of city pairs served, offering new products, and introducing new business and premium passenger services—all while staying true to the airline's brand image.

Each region's unique market characteristics affect its demand for airplanes. For example, the markets in North America and Europe are shaped by aggressive growth of low-cost carriers and the need to replace aging airplanes in the fleets of established network carriers. Demand is strongest for single-aisle airplanes in these markets. In the Middle East, on the other hand, airline business models concentrate on long-haul international services, which favor twin-aisle jetliners. The Asia Pacific region is seeing markets surge for both domestic and international services, creating demand for a more even mix of single- and twin-aisle airplanes.

## World regions

Market value: \$4,470 billion



## World regions

Key indicators and new airplane markets

Growth measures		
Economy (GDP)	3.2%	
Traffic (RPK)	5.0%	
Cargo (RTK)	5.2%	
Airplane fleet	3.5%	

	New airplanes	Share by size
Large	790	2%
Twin aisle	7,950	24%
Single aisle	23,240	68%
Regional jets	2,020	6%
<b>Total</b>	<b>34,000</b>	

Market size	2011 Fleet	2031 Fleet
Large	790	1,030
Twin aisle	3,710	9,110
Single aisle	12,610	27,430
Regional jets	2,780	2,210
<b>Total</b>	<b>19,890</b>	<b>39,780</b>

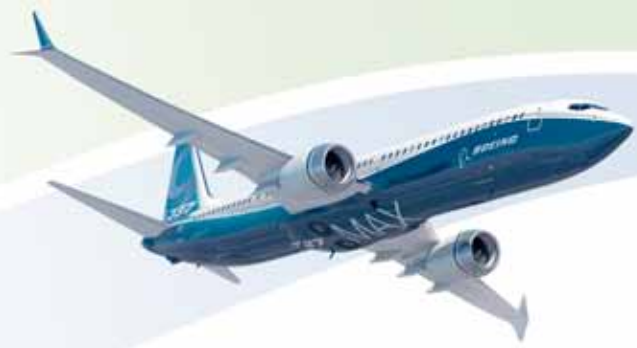
  

Deliveries	34,000
Market value	\$4,470B
Average value	\$130M



# World Regions

## Asia Pacific



### Growing markets

The vibrant economies in the Asia Pacific region continue to lead the world economic recovery. Intrinsic strength, progressive trade agreements among the region's countries, and recovering global demand helped most economies in the region maintain growth through the downturn. China and India will lead the region's economic growth with 4.6 percent growth per year for the next 20 years, significantly outpacing the world's average growth rate. The region's share of world GDP will expand from 28 percent today to 36 percent by 2031.

### Rising traffic levels

During the next 20 years, nearly half of the world's air traffic growth will be driven by travel to, from, or within the Asia Pacific region. Total traffic for the region will grow 6.4 percent per year. Fueled by national economic growth and the increasing accessibility of air transport services, traffic within the region will grow faster than traffic to and from other regions. Domestic and international travel within the region will grow 6.7 percent per year.

Air cargo plays a critical role in the region's economy, transporting goods over difficult terrain and vast stretches of ocean. Some of the world's largest and most efficient cargo operators are located in Asia. Air cargo will grow 5.9 percent per year during the next 20 years. Carriers within the region are expected to take 330 new freighters, with an additional 450 conversions.

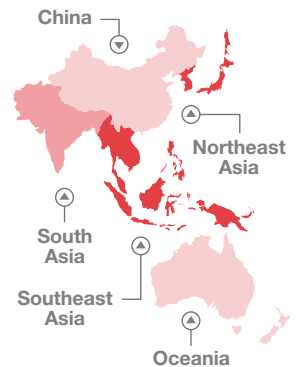
Asia Pacific airlines will need 12,030 new airplanes, valued at \$1.7 trillion, over the next 20 years. The number of airplanes in the Asia Pacific fleet will nearly triple, from 4,710 airplanes in 2011 to 13,670 airplanes in 2031. New low-cost carriers and demand for short-haul flying have spurred a substantial increase in single-aisle aircraft. In the past 8 years, single-aisle capacity has doubled and will likely double again in the coming decade.

### Liberalization expands markets

The structure of the Asia Pacific airline industry is changing as regulations are liberalized and carriers expand beyond national boundaries. The impact of liberalization is particularly dramatic in the case of low-cost carriers, which are increasing air travel by lowering fares and opening new markets. Established airlines are forming low-cost units to compete, often as joint ventures with high-profile, low-cost brands within the region. This competition is rapidly improving the affordability and accessibility of air travel, which will stimulate demand in established markets and meet the emergent travel needs of the rising middle class.

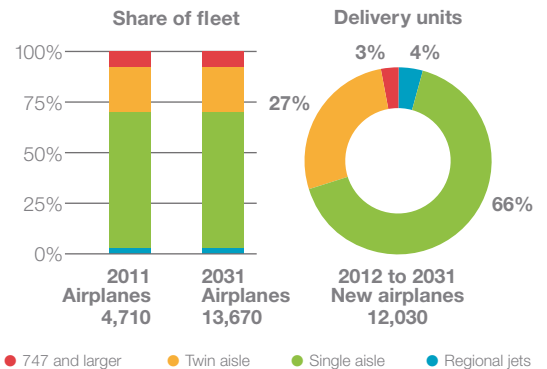
### Asia Pacific

New airplanes: 12,030



### Asia Pacific

Market value: \$1,700 billion



### Asia Pacific

Key indicators and new airplane markets

#### Growth measures

Economy (GDP)	4.6%
Traffic (RPK)	6.4%
Cargo (RTK)	5.9%
Airplane fleet	5.5%

#### Market size

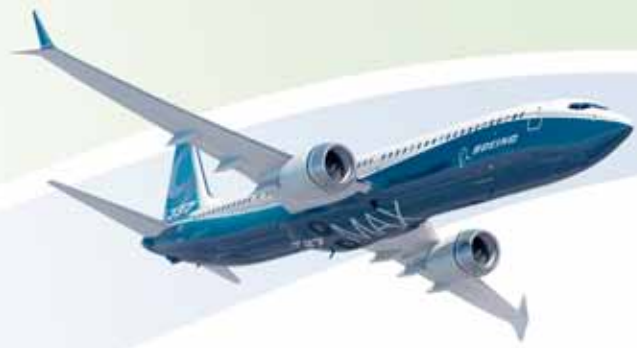
Deliveries	12,030
Market value	\$1,700B
Average value	\$140M

	New airplanes	Share by size
Large	320	3%
Twin aisle	3,230	27%
Single aisle	7,990	66%
Regional jets	490	4%
<b>Total</b>	<b>12,030</b>	

	2011 Fleet	2031 Fleet
Large	340	460
Twin aisle	1,080	3,490
Single aisle	3,170	9,230
Regional jets	120	490
<b>Total</b>	<b>4,710</b>	<b>13,670</b>

# World Regions

## China



### 40 years of working together

Boeing is celebrating 40 years of working together with China's aviation industry. In 1972 CAAC placed an order for China's first Boeing airplanes--ten 707s. Mainland Chinese airlines have since ordered more than 900 Boeing airplanes. More than 6,000 people currently work at Boeing-related businesses and tens of thousands more support Boeing suppliers. This partnering will continue.

### Continued growth

With GDP forecast to rise 6.5 percent annually over the next 20 years, China will continue to serve as a growth engine for the global economy. China's share of world GDP will continue to increase over the next several decades. As Chinese incomes converge toward those in the historical industrialized nations, an expanding middle class will expect to enjoy a comparable standard of living and consumption patterns.

Traffic continues to be robust, rising 12.1 percent in 2011 compared to 2010. Growth will moderate toward 7.0 percent, which will nonetheless drive a need for 5,260 new airplanes valued at \$670 billion.

A projected 230 airports will be available for commercial use by 2015 as domestic travel continues to grow. Airlines will also look for opportunities to expand, particularly in regional and long-haul markets. The number of new international markets has doubled over the past 10 years. Over the next 20 years, intra-Asia and long-haul traffic are both expected to grow 7.2 percent, driving the future fleet mix. Single-aisle airplanes will be preferred for newly opening markets within China. Within Asia, a mix of single-aisle and twin-aisle airplanes will be needed, while long-haul flying will rely on airplanes like the 787, 777, and 747-8 Intercontinental.

### Cargo market

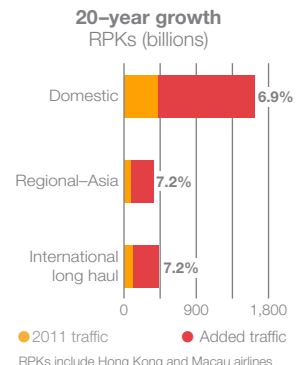
The Chinese cargo market is one of the world's largest and fastest growing. Domestically, it has grown 15.5 percent annually since 1990. China's airlines are forecast to grow 6.2 percent annually over the next 20 years, outpacing all other regions. This growth suggests a need for 120 new freighters and 230 freighter conversions. Chinese cargo airlines now number among the world's top cargo airlines, and we expect their market share will continue to increase.

### Adapting business models

Historically, the majority of airlines in Europe and North America were large network airlines. Today a mix of network carriers, low-cost carriers, charter airlines, and air cargo operators meets consumer needs. As aviation continues to grow in China, airlines will adapt and evolve their business models to meet the needs of their customers.

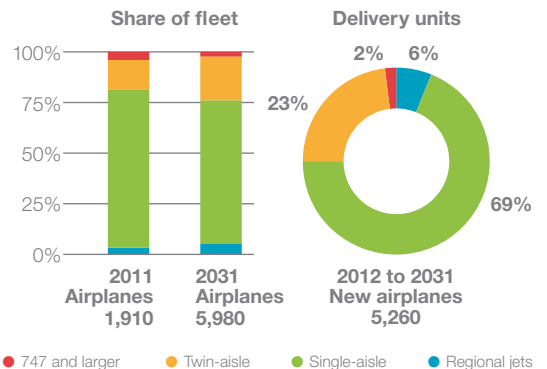
### China

Chinese airline expansion in Asia and long haul routes



### China

Market value: \$670 billion



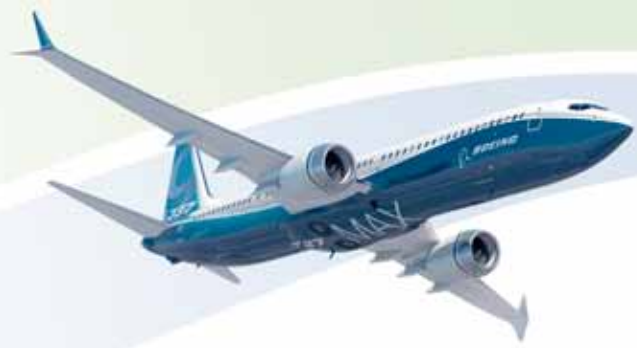
### China

Key indicators and new airplane markets

Growth measures	Value	New airplanes	Share by size
Economy (GDP)	6.5%	Large	110 / 2%
Traffic (RPK)	7.0%	Twin aisle	1,190 / 23%
Cargo (RTK)	6.2%	Single aisle	3,650 / 69%
Airplane fleet	5.9%	Regional jets	310 / 6%
		<b>Total</b>	<b>5,260</b>
		<b>2011 Fleet</b>	<b>2031 Fleet</b>
		Large	80 / 140
		Twin aisle	280 / 1,310
		Single aisle	1,490 / 4,220
		Regional jets	60 / 310
		<b>Total</b>	<b>1,910 / 5,980</b>

# World Regions

## Northeast Asia



### Modest economic growth

Northeast Asia's gross domestic product is forecast to grow 1.35 percent annually over the next 20 years. This modest growth projection reflects the slender growth of the dominant Japanese economy over the past decade. Although Japan's economy is forecast to grow as it recovers from the recent earthquakes and tsunami, low birth rates and a declining working-age population will moderate the long-term growth rate. South Korea's broadening industrial base is forecast to drive its economy to grow faster than Japan's.

Northeast Asia's air capacity grew more than 50 percent in the 1990s. Over the past decade, however, air travel growth slowed to 5 percent in the wake of a series of economic disruptions, including the Asian financial crisis, SARS epidemic, slumping global economy, natural disasters, and the restructuring of a major carrier. To keep pace with the economic growth and increasing air travel of neighboring nations, Japan and South Korea are executing new trade agreements, reducing traditional travel barriers, and potentially privatizing portions of infrastructure to spur domestic and inbound travel growth.

### Easing operating restrictions to promote growth

Northeast Asia's air travel is forecast to grow 3.7 percent annually over the next 20 years. Expanded operations agreements with the United States, Europe, China, the Middle East, and other Asia Pacific nations are encouraging global network carriers and low-cost airlines to expand services and open new markets. Liberalization and the rapid growth of economic ties with neighboring regions are driving brisk growth in passenger traffic with other Asia Pacific countries. Low-cost carriers spurred substantial growth in travel to South Korea from neighboring nations in 2012, and three new low-cost carriers in Japan are also expected to stimulate domestic and short-haul demand.

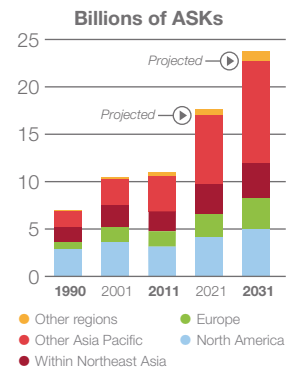
Airport capacity will continue to increase, particularly at Tokyo's Haneda and Narita airports. Improved market access, airport development, increased competition, and expanded low-cost service to, from, and within Northeast Asia will nurture continued air travel growth.

### Fleet modernization continues

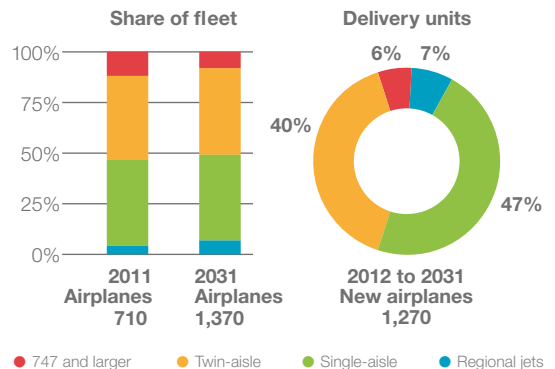
Network carriers in Northeast Asia are restructuring, renewing fleets, forming joint ventures, and introducing new products. Airlines in Japan and South Korea continue to modernize their fleets and grow their international networks, creating a need for 1,270 new airplanes over the next 20 years.

The number of regional jets, including the anticipated Mitsubishi Regional Jet (MRJ), is forecast to grow slightly. Single-aisle airplanes will account for 47 percent of new deliveries. New twin-aisle airplanes will account for 40 percent of new deliveries, while the number of large airplanes will remain relatively constant.

### Northeast Asia Capacity growth



### Northeast Asia Market value: \$220 billion



### Northeast Asia Key indicators and new airplane markets

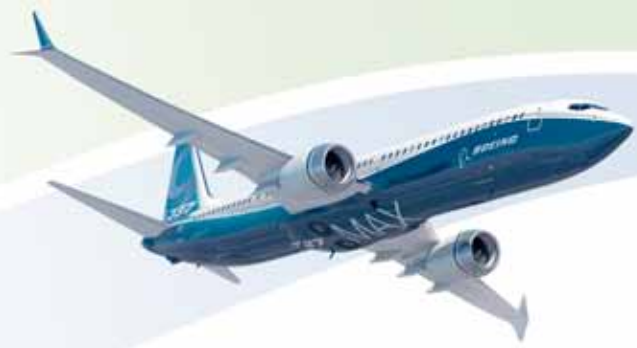
Growth measures	Value	New airplanes		Share by size
		2011 Fleet	2031 Fleet	
Economy (GDP)	1.3%	80	120	6%
Traffic (RPK)	3.7%	300	580	40%
Cargo (RTK)	5.8%	300	580	47%
Airplane fleet	3.3%	30	90	7%
<b>Total</b>		<b>710</b>	<b>1,370</b>	





# World Regions

## Southeast Asia



### Airlines expand operations

Airlines have grown strongly as Southeast Asia continues to develop economically. Low-cost carriers are expanding and gaining market share as their attractive fares and new routes stimulate demand. Legacy carriers have restructured their operations and finances to become more competitive and grow. Some have launched subsidiaries or partnered with low-cost airlines to expand product offerings in the quickly evolving market. Rapid market growth will continue as the Association of Southeast Asian Nations (ASEAN) strengthens business and leisure travel ties within ASEAN and with China and Taiwan. Travelers are increasingly likely to book multi-stop itineraries as low fares and network integration make this more attractive. New, efficient airplanes with improved capabilities and lower operating costs are key to airline business strategies. Orders for new airplanes have dramatically increased to meet growing demand and enable new, direct, long-range markets.

### Liberalization opens routes

Regulatory changes and infrastructure improvements are crucial to air travel expansion. Many traditional barriers to growth have fallen as ASEAN countries relax market regulation within Southeast Asia and across the strait with Taiwan and China. For example, more than 700 passenger flights per week are now scheduled between Taiwan and China, where service had been limited to charter flights. Increased service between ASEAN capital cities signals a transition toward a unified regional aviation market. Not waiting for liberalization, several carriers are aggressively expanding into new markets by acquiring or partnering with other Southeast Asian carriers to operate as a combined fleet on a single extended network. Governments and airport authorities are eager to expand their aviation infrastructures and capitalize on increased trade and tourism.

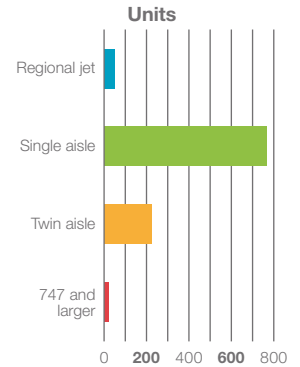
### Airlines bolster economic growth

Economic relationships and collaboration among Southeast Asian countries continue to strengthen. Air transportation is vital to the region's above-average GDP growth projection of 4.8 percent annually over the next 10 years. For example, more affordable air travel options have spurred growth throughout the services sector, including tourism and financial services. Air cargo operations enable the efficient shipment of manufactured goods. Overall, air travel to, from, and within Southeast Asia is projected to grow at an average annual rate of 6.5 percent over the next 20 years. Traffic within Southeast Asia is expected to grow at a rate of 7.6 percent per year. More than half of new airplane deliveries will be single-aisle airplanes, needed to serve Southeast Asian routes.

### Southeast Asia

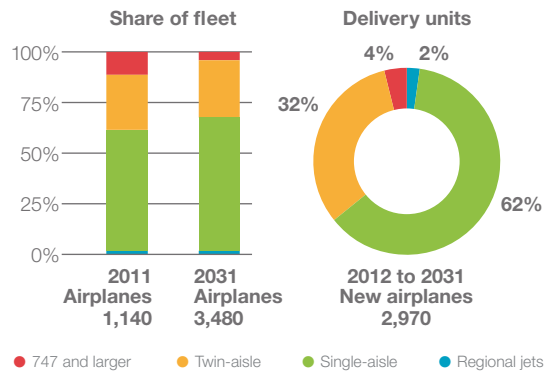
Backlog: 1,050 aircraft

Source:  
Ascend  
January 2012



### Southeast Asia

Market value: \$470 billion



### Southeast Asia

Key indicators and new airplane markets

Growth measures	Value	New airplanes	Share by size
Economy (GDP)	4.3%	Large	110 / 4%
Traffic (RPK)	6.5%	Twin aisle	950 / 32%
Cargo (RTK)	5.7%	Single aisle	1,840 / 62%
Airplane fleet	5.7%	Regional jets	70 / 2%
		<b>Total</b>	<b>2,970</b>

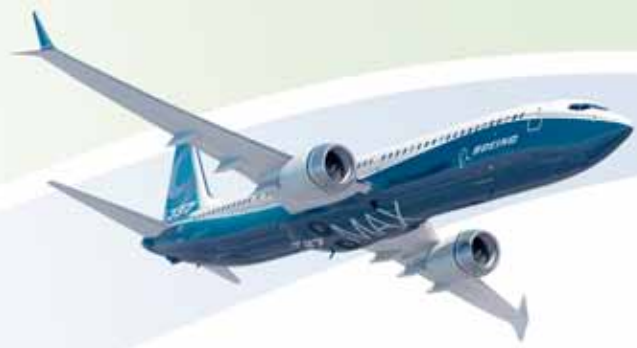
Market size	2011 Fleet	2031 Fleet
Large	130	150
Twin aisle	310	980
Single aisle	680	2,280
Regional jets	20	70
<b>Total</b>	<b>1,140</b>	<b>3,150</b>





# World Regions

## North America



### Growth moderating in third year of improvement

The North American commercial airline industry posted its third year of traffic and capacity growth amid sustained profitability. Capacity and traffic both grew 2 percent, year over year, with varying results for network and low-cost carriers. Network carriers reported a 1 percent rise in both capacity and traffic, contributing to an 83 percent passenger load factor. The low-cost carrier segment continues to grow at a faster rate, with capacity growing 6 percent and traffic growing 7 percent, contributing to a 1 percent boost in passenger load factor to 82 percent.

The two largest Canadian airlines are also growing faster than US network carriers. Combined available seat-miles and traffic increased at the same 5 percent rate, while passenger load factor remained flat at 81 percent.

### Fleet replacement accelerates

High fuel prices are intensifying the need for new fuel-efficient airplanes, prompting several airlines in the United States to accelerate their fleet renewal programs. At least 900 new fuel-efficient single-aisle airplanes were ordered in 2011, with deliveries beginning in the middle of this decade. American, Delta, and Southwest have announced plans to replace some of their older, less efficient airplanes with Next-Generation 737s or the new 737 MAX.

### Boeing 787-8 increasing market fragmentation

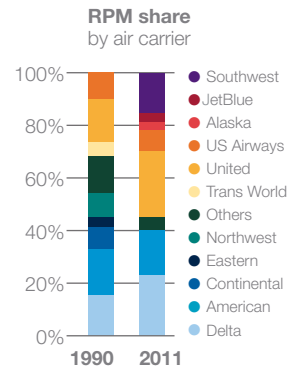
Several new routes have been announced since the Boeing 787-8 took to the sky. Boston and San Diego are the first cities to celebrate new routes (initially to Tokyo) enabled by the new airplane's state-of-the-art economics and capabilities. Additional routes to and from North America will be announced as 787 deliveries continue.

### Fleet outlook

The long-term outlook for the North American airline industry is for modest growth through the forecast period. Network carriers will maintain strict capacity discipline. Low-cost carriers will continue to outpace network carrier growth to accommodate increased demand and fill niches abandoned by network carriers. Financial stability also will be a key indicator of future growth. Several airlines have indicated growth planning to be executed when returns are sufficient to fund their strategic goals.

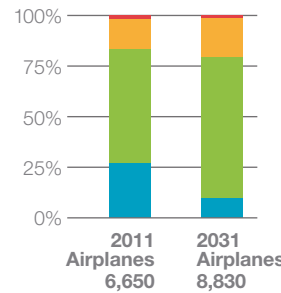
In consideration of these trends, we forecast the region's demand to be 7,300 new airplanes to accommodate an average 2 percent annual traffic growth. Single-aisle airplanes account for the bulk of demand, which is forecast to exceed 5,000 new airplanes.

### North America Changing market share 1990–2011

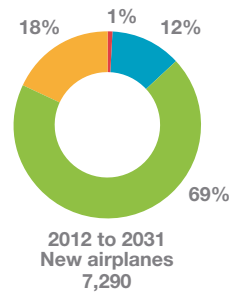


### North America Market value: \$820 billion

#### Share of fleet



#### Delivery units

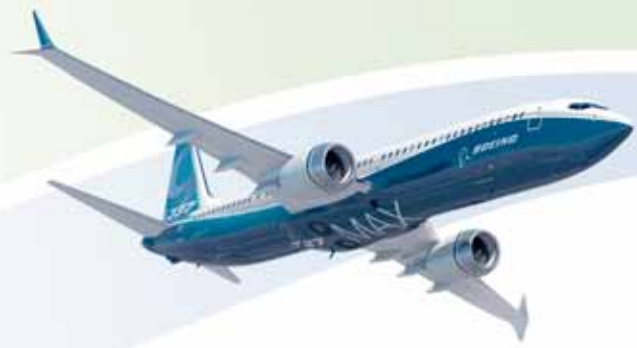


### North America Key indicators and new airplane markets

Growth measures	Value	New airplanes	Share by size	
Economy (GDP)	2.6%	Large	40	1%
Traffic (RPK)	2.8%	Twin aisle	1,320	18%
Cargo (RTK)	4.5%	Single aisle	5,040	69%
Airplane fleet	1.4%	Regional jets	890	12%
		<b>Total</b>	<b>7,290</b>	
		<b>2011 Fleet</b>	<b>2031 Fleet</b>	
		Large	120	110
		Twin aisle	1,030	1,740
		Single aisle	3,730	6,090
		Regional jets	1,770	890
		<b>Total</b>	<b>6,650</b>	<b>8,830</b>

# World Regions

## Europe



### Strength despite uncertainty

The European aviation market remained strong in 2011, despite uncertainties from the sovereign debt crisis and the lingering threat of recession. Europe's GDP increased by 1.8 percent in 2011 compared to 2010. The Association of European Airlines reports that member airlines carried 9.3 percent more passengers in 2011. Members of the European Low Fares Airline Association (ELFAA) reported a 6.1 percent increase in passengers. European airlines acquired more than 330 new airplanes that year, of which more than 80 percent were single aisle.

Aviation growth is expected to persist over the next 20 years, with European airlines forecast to acquire 7,760 new airplanes valued at \$970 billion. Single-aisle airplanes will account for the majority of deliveries, representing a 75 percent share.

Although aviation growth in Europe is not as rapid as in the world's emerging economies, the region's large installed base of airplanes (more than 4,400 units) sustains a substantial demand for replacement airplanes. This demand will account for 50 percent of Europe's new-airplane market.

Europe is economically diverse, with both mature economies and newer high-growth economies. Though uncertainties remain for some European economies, the region's GDP is expected to grow 1.9 percent annually during the forecast period, spurred by growth exceeding 3.6 percent in the rapidly developing economies. European Union transport liberalization efforts contribute to this growth, with negotiations taking place with Turkey, Brazil, India, Korea, and other countries.

### Leading strategic change

Airline operations continue to evolve with the launch of new ventures and new business models. The next 20 years are expected to bring additional mergers and acquisitions, along with increased collaboration with alliance partners around the world.

Large network airlines are tending to shift focus away from short-haul routes that are targeted by low-cost carriers (LCC) and toward longer haul routes. LCCs have continued to add service in short-haul markets, with ELFAA members providing 32 percent of capacity on intra-Europe flights in 2011. Smaller flag carriers and charter airlines will be challenged to adapt to a competitive environment where LCCs dominate short-haul, point-to-point service, and large network carriers and their alliance partners exploit the cost advantages of mega-hubs for long-haul traffic.

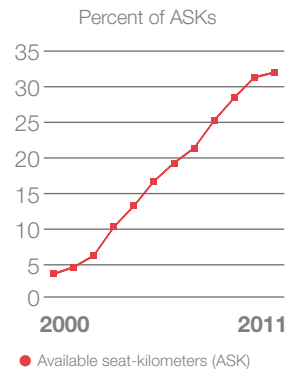
### Environment

European airlines continue to reduce their environmental impact by replacing older, less efficient airplanes with newer technology planes, like the 787. By 2031, more than 93 percent of planes operated by European airlines will have been delivered since 2011.

### Europe

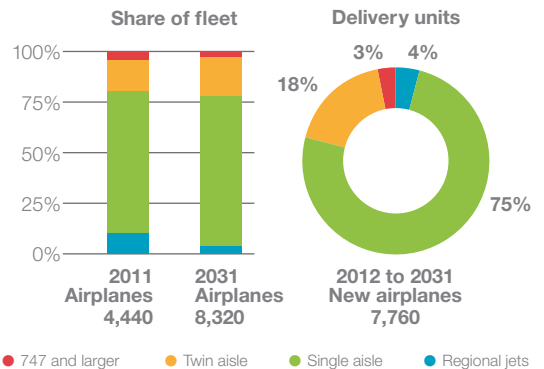
LCC share of Intra-Europe short-haul service

Source: OAG



### Europe

Market value: \$970 billion



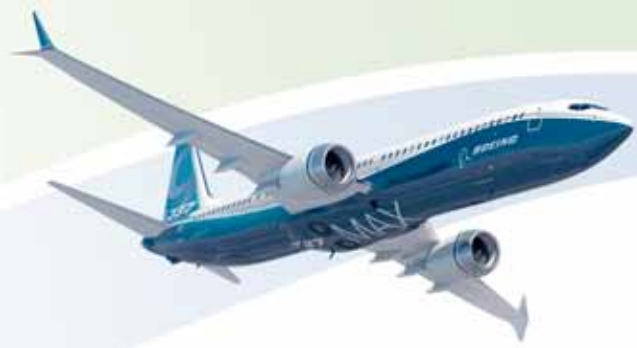
### Europe

Key indicators and new airplane markets

Growth measures		New airplanes		Share by size
		2011	2031	
Economy (GDP)	1.9%	Large	200	3%
Traffic (RPK)	4.1%	Twin aisle	1,440	18%
Cargo (RTK)	4.6%	Single aisle	5,800	75%
Airplane fleet	3.2%	Regional jets	320	4%
		<b>Total</b>	<b>7,760</b>	
			<b>2011</b>	<b>2031</b>
			<b>Fleet</b>	<b>Fleet</b>
		Large	190	230
		Twin aisle	680	1,630
		Single aisle	3,160	6,120
		Regional jets	410	340
		<b>Total</b>	<b>4,440</b>	<b>8,320</b>
<b>Market size</b>				
Deliveries	7,760			
Market value	\$970B			
Average value	\$130M			

# World Regions

## Middle East



### Long-haul, short-haul, and domestic markets grow

Middle East airline traffic is projected to grow 6.4 percent, compounded annually, during the next 20 years. Revenue passenger-kilometers will more than triple by 2031, supported by healthy development of long-haul, short-haul, and domestic travel.

The “Gulf 3”—Emirates, Qatar Airways, and Etihad Airways—provide the largest part of the region’s long-haul service, operating under “sixth freedom” agreements to connect two foreign countries via a stop in the carrier’s home country. Favorably placed to connect Asia, Africa, and Europe, the Middle East is relatively new to the sixth freedom business model, which has been proven by both European and Asian carriers.

The Middle East also generates its own long-haul origin and destination traffic, with business and leisure hubs in Dubai, historical and resort sites in Egypt, beaches and natural wonders in Oman, and growing Hajj pilgrim traffic to Saudi Arabia. Guest workers from South Asia and other regions also boost traffic to the region.

Low-cost carriers, with simplified networks and operations—often flying a single, narrowbody airplane type—are taking an increasing share of the region’s short-haul traffic. The single-aisle fleets of airlines like Air Arabia and flydubai can reach many destinations in South Asia, Europe, the CIS, and Africa.

### Fleet renewal a priority

Middle East carriers often prefer to renew their fleets on a 15-year cycle, a shorter cycle than the global average. Thus, of the 2,370 forecast airplane deliveries to the region, about 30 percent will replace older airplanes, leaving 70 percent for the region’s fleet growth.

### Policy and infrastructure crucial to growth

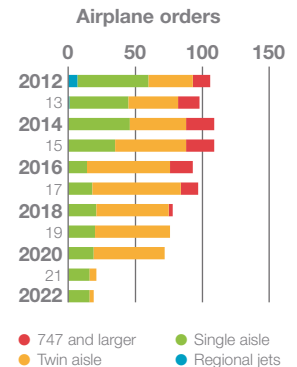
Infrastructure development is a long-term concern for the region’s carriers. Although the region’s airspace is not yet crowded, large areas of airspace remain under military control, limiting the airspace available for commercial traffic. At smaller airports, the capacity of immigration areas and check-in desks is not well aligned with services that airlines aim to provide.

Middle East governments are moving toward coordinated aviation policy and market liberalization. The UAE, for example, makes funding and political support available for infrastructure and airport development; aviation is not heavily taxed, and visas are easy to obtain. Saudi Arabia is moving toward market liberalization, with plans to privatize Saudi Arabian Airlines. In 2011, the Kingdom’s General Authority of Civil Aviation (GACA) began soliciting bids from foreign carriers to operate domestic services. Additional opportunities include relaxing the price controls on domestic airfares.

### Middle East

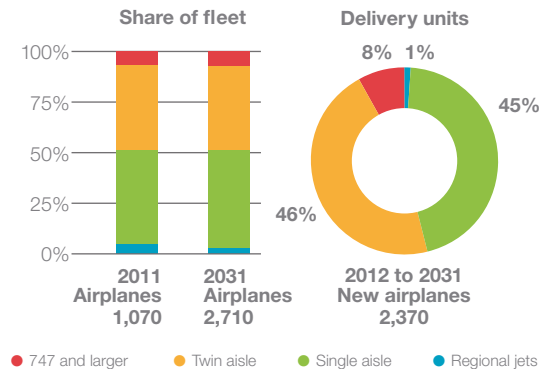
Large backlog, spread over the decade

Source:  
Ascend



### Middle East

Market value: \$470 billion



### Middle East

Key indicators and new airplane markets

Growth measures		
Economy (GDP)	3.9%	
Traffic (RPK)	6.4%	
Cargo (RTK)	5.7%	
Airplane fleet	4.8%	

	New airplanes	Share by size
Large	190	8%
Twin aisle	1,100	46%
Single aisle	1,060	45%
Regional jets	20	1%
<b>Total</b>	<b>2,370</b>	

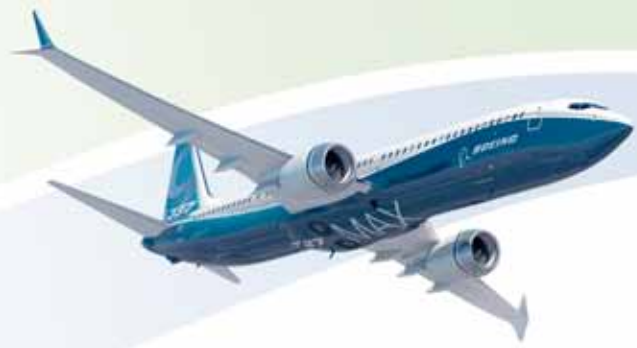
  

Market size	2011 Fleet	2031 Fleet
Large	70	170
Twin aisle	470	1,170
Single aisle	470	1,320
Regional jets	60	50
<b>Total</b>	<b>1,070</b>	<b>2,710</b>



# World Regions

## Latin America



### Stability fosters economic growth

The Latin America region's increasing political stability creates a favorable context for economic growth. Regional economies have weathered the 2008-09 financial crises well. Their recovery has been faster than in other regions of the world, including Organisation for Economic Co-operation and Development (OECD) economies. Within the region, South America has outperformed Central America, Mexico, and the Caribbean. The global economy continues to be the main source of uncertainty for Latin America and the Caribbean. Although inflation remains a concern, the region is forecast to enjoy a growth rate of 3.6 percent, well above the world average of 2.6 percent.

### International and domestic aviation on the upswing

The natural barriers of the Andes Mountains and the Amazon rainforests present formidable obstacles to rail and road development. The region therefore relies heavily on aviation for domestic transport. Airspace, airport, and ground infrastructure are all struggling to keep pace with growing aviation demand. The anticipated increase in international traffic from the 2014 World Cup and the 2016 Olympics in Brazil highlight the need for investment. The greatest opportunity for growth is within the region. For example, air travel is beginning to overtake bus travel in Mexico and Brazil. In 2011, the number of domestic air travelers in Brazil rose above the number of bus passengers for the first time, as 8.7 million passengers took their first commercial airplane flight. Regional growth has spurred the rise of low-cost carriers (LCC) such as Viva, Interjet, Azul, and Volaris. As LCCs drive growth and stimulate demand, they are entering partnerships to extend their reach globally.

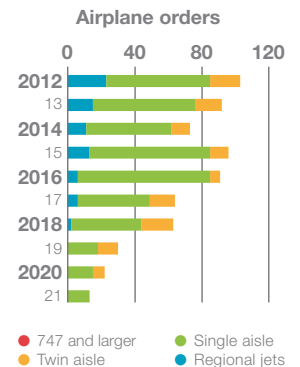
The dynamic nature of Latin American aviation has produced a healthier, more competitive marketplace and encouraged new airline business models. The region's largest airlines have led the way with mergers, including Avianca/TACA, TRIP/Azul, and LAN/TAM, that streamline networks and introduce new efficiencies. Well run and profitable, with access to capital, the top carriers in the region can compete with any airline in the world.

### Regional fleet expanding strongly

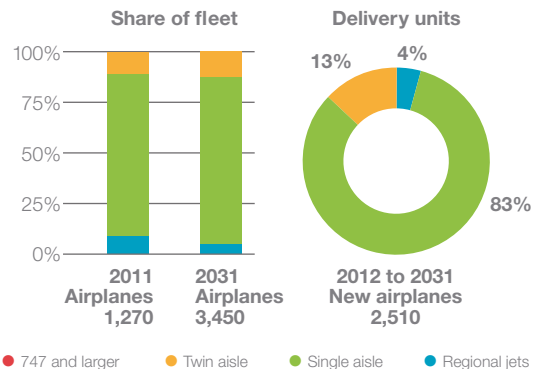
The installed fleet is expected to grow 5.1 percent annually to comprise 3,450 airplanes, including 2,510 new deliveries valued at \$260 billion. Most of these will be single-aisle airplanes, spurred by intense regional traffic growth. The twin-aisle fleet will expand to 340 airplanes as regional carriers compete more strongly on routes traditionally dominated by foreign operators.

### Latin America Incredible growth in airplane orders

Source:  
Ascend



### Latin America Market value: \$260 billion

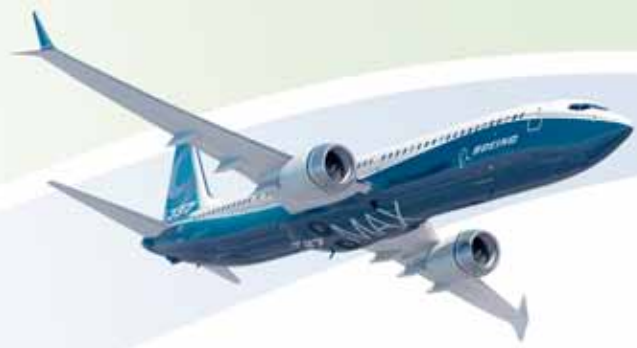


### Latin America Key indicators and new airplane markets

Growth measures	New airplanes		Share by size
	2011 Fleet	2031 Fleet	
Economy (GDP)	4.1%	-	-
Traffic (RPK)	6.6%	340	13%
Cargo (RTK)	5.9%	2,080	83%
Airplane fleet	5.1%	90	4%
		<b>Total</b>	<b>2,510</b>
Market size			
Deliveries	2,510	-	-
Market value	\$260B	140	440
Average value	\$100M	1,020	2,850
		110	160
		<b>Total</b>	<b>1,270</b>
			<b>3,450</b>

# World Regions

## CIS



### Younger, more efficient fleet

The outlook for aviation demand in the Commonwealth of Independent States (CIS) continues to grow. The region is forecast to take delivery of a total of 1,140 new airplanes over the next 20 years, valued at \$130 billion. CIS airplane orders were strong in 2011, both for models from western manufacturers and for new Russian models, such as the Sukhoi Superjet 100 that entered service in 2011 and the developmental Irkut MS-21. The current CIS order backlog accounts for 41 percent of forecast deliveries.

### Economy recovering

The economies of the CIS region grew moderately in 2011. GDP expanded at a rate of 4.3 percent in 2011, in line with GDP growth of 4.5 percent in 2010. Overall, regional growth is expected to continue, with GDP growing 3.4 percent annually over the next 20 years. Russia's economy continues to be the region's largest, accounting for more than 70 percent of the region's GDP in 2011. The economies of Ukraine and Kazakhstan follow Russia in size.

The Russian Transport Ministry's Federal Air Transport Agency reported that Russian airports serviced 112.4 million passengers in 2011, an increase of 12.9 percent compared to 2010. Over the next 20 years, Boeing forecasts that air traffic to and from the CIS region will grow at a rate of 4.7 percent annually.

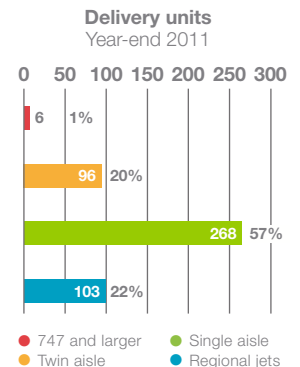
### Strong demand for twin-aisle airplanes

Long-haul international traffic is expected to grow at an annual rate of 4.8 percent through 2031. The Russian Transport Ministry's Federal Air Transport Agency reported nearly 47 million passengers on international routes in 2011, a 14.9 percent increase compared to 2010. Driven by increasing international traffic, twin-aisle service will remain an important component of the region's market, creating demand for 250 new fuel-efficient twin-aisle airplanes and 30 large twin-aisle aircraft. The region's geographical size and diverse terrain make airline travel an attractive transportation option. Air travel will increase over the coming 20 years as personal incomes rise and liberalization of air transport regulations makes aviation services more available and affordable.

### CIS

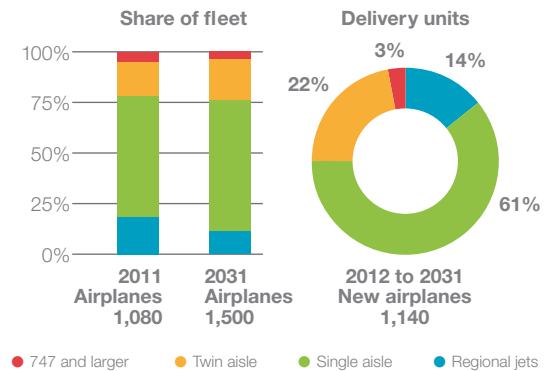
Strong backlog of 473 airplanes

Source:  
Ascend



### CIS

Market value: \$130 billion



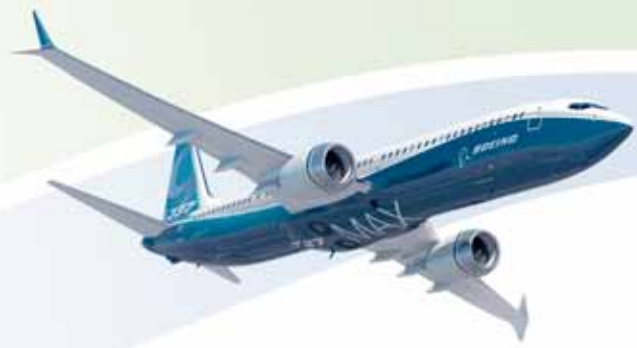
### CIS

Key indicators and new airplane markets

Growth measures		New airplanes		Share by size
		2011	2031	
Economy (GDP)	3.4%	Large	30	3%
Traffic (RPK)	4.7%	Twin aisle	250	22%
Cargo (RTK)	5.0%	Single aisle	700	61%
Airplane fleet	1.7%	Regional jets	160	14%
		<b>Total</b>	<b>1,140</b>	
			<b>2011</b>	<b>2031</b>
			<b>Fleet</b>	<b>Fleet</b>
		Large	60	50
		Twin aisle	170	310
		Single aisle	650	970
		Regional jets	200	170
		<b>Total</b>	<b>1,080</b>	<b>1,500</b>

# World Regions

## Africa



### Economic development supports air travel growth

Political unrest in the north slowed African economic growth to 1 percent in 2011--well below the long-term average. Yet, as the second largest and most populous continent after Asia, Africa's long-term economic potential is strong. Over the next two decades, Africa's economy is forecast to grow faster than the world average, driven largely by demand for natural resources, including oil and metals, from both emerging and mature economies. These connections will foster demand for long-haul travel.

A growing middle class and increased urbanization also contribute to the continent's commercial aviation potential. The African Development Bank projects that Africa's middle class will grow by more than 700 million people over the next several decades. United Nations data shows that urban dwellers were about 15 percent of Africa's population in 1950 and are expected to be 50 percent by 2030--a trajectory similar to that of Asia.

### Air transport expanding and increasingly competitive

North Africa's political upheaval has dampened air travel demand, particularly to and from Europe, where capacity remains below 2010 levels. Capacity to other emerging markets and North America, however, has risen 5 percent since 2010, indicating potential directions for growth. Rapid growth of traffic within Africa and with other emerging markets is overtaking Europe traffic, which constituted a 60 percent share of Africa's total traffic 20 years ago, but will fall to around 40 percent by the end of the forecast period.

Economic links with other emerging markets also bring increased competition. Africa presents growth opportunities to airlines from other regions where demand growth is slower. Airlines in other emerging markets may take advantage of their network connections to serve African destinations. Within Africa, national airlines are expanding service to other African countries. Yet ample service opportunities remain, as relatively few airlines compete for intra-regional markets.

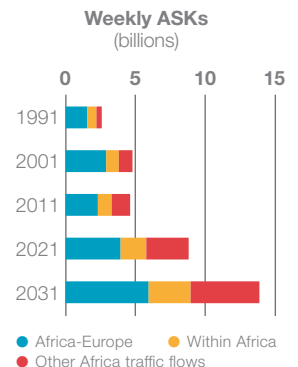
Aviation and economic development projections depend on government policy support for transport infrastructure. The flexibility of aviation networks and the relatively low cost per network kilometer make aviation infrastructure investment very attractive compared to investment in other modes.

### Fleet development

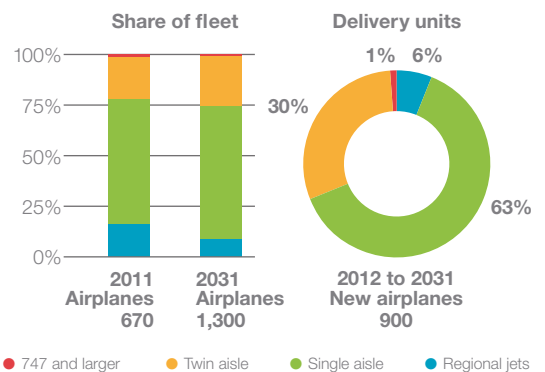
Africa is forecast to require 900 new airplanes over the next 20 years, doubling its fleet. Approximately 70 percent of forecast deliveries will support growth. Single-aisle airplanes will account for the largest share of deliveries, while twin-aisle airplanes will account for half of the value of deliveries to Africa.

### Africa Capacity to become more diverse

Source:  
OAG

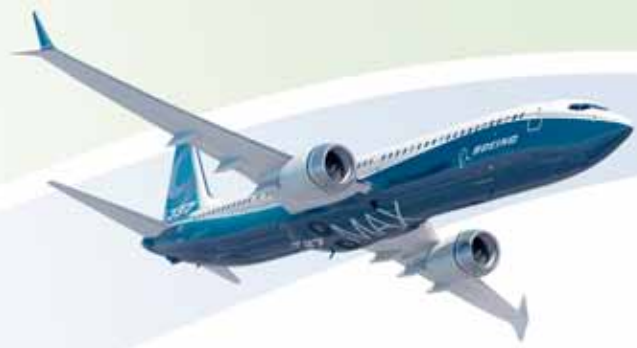


### Africa Market value: \$120 billion



### Africa Key indicators and new airplane markets

Growth measures	Value	New airplanes	Share by size	
Economy (GDP)	4.4%	Large	10	1%
Traffic (RPK)	5.6%	Twin aisle	270	30%
Cargo (RTK)	5.8%	Single aisle	570	63%
Airplane fleet	3.4%	Regional jets	50	6%
		<b>Total</b>	<b>900</b>	
<b>Market size</b>		<b>2011 Fleet</b>	<b>2031 Fleet</b>	
Deliveries	900	Large	10	10
Market value	\$120B	Twin aisle	140	330
Average value	\$130M	Single aisle	410	850
		Regional jets	110	110
		<b>Total</b>	<b>670</b>	<b>1,300</b>



# Pilot & Technician Outlook

## Burgeoning demand for highly trained personnel

As global economies expand and airlines take delivery of tens of thousands of new commercial jetliners over the next 20 years, the demand for personnel to fly and maintain those airplanes will be unprecedented.

The 2012 Boeing Pilot & Technician Outlook projects a need for approximately one million new commercial airline pilots and maintenance technicians by 2031, including 460,000 new commercial airline pilots and 601,000 maintenance technicians.

Meeting this demand will require airplane manufacturers and the commercial aviation industry to rely more heavily on new digital technology, including online and mobile computing, to meet the learning requirements of a new generation. The growing diversity of aviation personnel also demands highly qualified, motivated, and knowledgeable instructors with cross-cultural and cross-generational skills. Training programs will need to focus on enabling airplane operators to gain optimum advantage of the innovative features of the latest generation of airplanes, such as the 787 Dreamliner.

### Pilot outlook

A pilot shortage has already arisen in many regions of the world. Airlines across the globe are expanding their fleets and flight schedules to meet surging demand in emerging markets. Asia in particular is experiencing delays and operational interruptions due to pilot scheduling constraints.

The Asia Pacific region continues to present the largest projected growth in pilot demand, with a requirement for 185,600 new pilots. China has the largest demand within the region, with a need for 71,300 pilots. Europe will require 100,900 pilots, North America 69,000, Latin America 42,000, the Middle East 36,100, Africa 14,500, and the CIS 11,900.

### Technician outlook

As new-generation airplanes come to dominate the fleet over the next 20 years, airplane reliability will improve and maintenance check intervals will lengthen. Although this trend will moderate demand growth, the requirement for maintenance personnel will continue to expand with the size of the global fleet. Emerging markets that currently recruit maintenance technicians from outside the region will have to develop a foundation for training qualified technical personnel from within the local workforce.

The need for maintenance personnel is expected to grow most rapidly in the Asia Pacific region, which will require 243,500 new technical personnel. China's requirement will be the largest, with an expected need for 99,400 technicians. Airlines in Europe will require 129,700, North America 92,500, the Middle East 53,700, Latin America 47,300, the CIS 18,100, and Africa 16,200.

## Pilot & Technician Outlook

20-year demand for aviation personnel

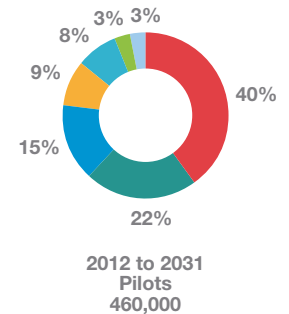


**NEW!**  
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## Pilot & Technician Outlook

New pilots by region 2012–2031

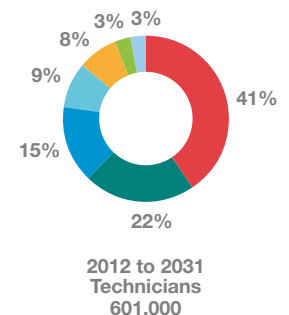
Region	Pilots
● Asia Pacific	185,600
● Europe	100,900
● North America	69,000
● Latin America	42,000
● Middle East	36,100
● CIS	11,900
● Africa	14,500
<b>Total</b>	<b>460,000</b>



## Pilot & Technician Outlook

New technicians by region 2012–2031

Region	Technicians
● Asia Pacific	243,500
● Europe	129,700
● North America	92,500
● Middle East	53,700
● Latin America	47,300
● CIS	18,100
● Africa	16,200
<b>Total</b>	<b>601,000</b>





# Passenger Traffic



## Airline passenger traffic Growth by regional flow

Regions	RPKs in billions	2003	2004	2005	2006	2007	2008	2009	2010	2011	2031	Average growth 2011 to 2031
Africa – Africa		26.67	29.48	35.97	35.56	37.31	41.58	43.88	48.66	51.06	169.58	6.2%
<b>Africa – Europe</b>		<b>96.43</b>	<b>101.73</b>	<b>106.37</b>	<b>121.95</b>	<b>125.32</b>	<b>125.60</b>	<b>128.17</b>	<b>135.45</b>	<b>134.13</b>	<b>345.53</b>	<b>4.8%</b>
Africa – Middle East		13.03	12.37	16.79	20.87	23.09	24.90	32.86	36.41	39.45	149.69	6.9%
<b>Africa – N. America</b>		<b>4.38</b>	<b>3.76</b>	<b>3.33</b>	<b>4.33</b>	<b>4.89</b>	<b>6.28</b>	<b>8.77</b>	<b>11.31</b>	<b>11.40</b>	<b>36.78</b>	<b>6.0%</b>
Africa – S.E. Asia		2.91	3.31	4.07	4.12	4.50	5.24	4.19	5.60	5.85	21.85	6.8%
<b>C. America – C. America</b>		<b>25.66</b>	<b>26.87</b>	<b>26.65</b>	<b>28.18</b>	<b>29.68</b>	<b>32.29</b>	<b>29.80</b>	<b>31.29</b>	<b>32.23</b>	<b>82.93</b>	<b>4.8%</b>
C. America – Europe		57.44	63.71	67.05	74.15	80.71	83.29	77.08	73.82	73.67	188.12	4.8%
<b>C. America – N. America</b>		<b>79.93</b>	<b>92.89</b>	<b>100.59</b>	<b>104.99</b>	<b>106.83</b>	<b>115.77</b>	<b>104.67</b>	<b>112.65</b>	<b>114.51</b>	<b>271.97</b>	<b>4.4%</b>
C. America – S. America		7.10	9.38	10.22	10.33	11.01	13.08	13.97	18.31	19.19	59.98	5.9%
<b>China – China</b>		<b>105.11</b>	<b>142.45</b>	<b>164.21</b>	<b>189.79</b>	<b>223.12</b>	<b>236.53</b>	<b>287.36</b>	<b>335.44</b>	<b>380.11</b>	<b>1,448.40</b>	<b>6.9%</b>
China – Europe		36.18	55.22	63.10	75.27	91.03	82.52	77.33	82.12	94.19	325.88	6.4%
<b>China – N. America</b>		<b>24.66</b>	<b>38.51</b>	<b>48.14</b>	<b>51.44</b>	<b>54.52</b>	<b>62.70</b>	<b>60.88</b>	<b>71.37</b>	<b>85.43</b>	<b>293.51</b>	<b>6.4%</b>
China – N.E. Asia		22.46	29.01	31.79	34.05	34.65	40.49	34.75	39.91	39.14	116.43	5.6%
<b>China – Oceania</b>		<b>10.28</b>	<b>15.36</b>	<b>17.55</b>	<b>19.26</b>	<b>19.40</b>	<b>21.37</b>	<b>22.79</b>	<b>27.43</b>	<b>31.35</b>	<b>100.10</b>	<b>6.0%</b>
China – S.E. Asia		36.18	49.24	55.87	52.94	57.47	58.74	53.95	66.81	76.00	332.80	7.7%
<b>CIS – CIS</b>		<b>50.23</b>	<b>54.75</b>	<b>55.95</b>	<b>57.35</b>	<b>57.72</b>	<b>61.23</b>	<b>48.98</b>	<b>53.90</b>	<b>62.52</b>	<b>160.67</b>	<b>4.8%</b>
CIS – International		43.82	53.86	58.07	63.66	81.24	76.17	83.72	101.56	123.75	316.83	4.8%
<b>Europe – Europe</b>		<b>474.70</b>	<b>521.22</b>	<b>561.88</b>	<b>593.32</b>	<b>634.21</b>	<b>660.55</b>	<b>624.92</b>	<b>640.17</b>	<b>659.48</b>	<b>1,305.30</b>	<b>3.5%</b>
Europe – Middle East		72.39	79.85	87.28	99.18	106.59	115.15	131.16	143.81	153.27	417.24	5.1%
<b>Europe – N. America</b>		<b>349.47</b>	<b>375.68</b>	<b>390.71</b>	<b>403.37</b>	<b>420.61</b>	<b>432.38</b>	<b>405.40</b>	<b>418.58</b>	<b>430.20</b>	<b>901.20</b>	<b>3.8%</b>
Europe – N.E. Asia		53.86	58.49	58.18	58.78	64.73	66.16	56.91	61.54	61.77	123.79	3.5%
<b>Europe – S. America</b>		<b>48.09</b>	<b>54.97</b>	<b>63.89</b>	<b>67.36</b>	<b>70.75</b>	<b>75.17</b>	<b>79.34</b>	<b>82.95</b>	<b>89.82</b>	<b>216.29</b>	<b>4.5%</b>
Europe – S.E. Asia		92.44	100.69	100.35	97.58	92.42	99.98	98.46	99.94	104.15	277.65	5.0%
<b>Europe – S. Asia</b>		<b>33.21</b>	<b>37.67</b>	<b>43.42</b>	<b>53.26</b>	<b>58.51</b>	<b>55.48</b>	<b>51.29</b>	<b>53.80</b>	<b>54.05</b>	<b>227.29</b>	<b>7.4%</b>
Middle East – Middle East		34.95	40.83	48.72	53.68	60.27	63.37	68.59	77.91	82.38	222.07	5.1%
<b>Middle East – N. America</b>		<b>12.95</b>	<b>17.23</b>	<b>16.08</b>	<b>20.65</b>	<b>23.44</b>	<b>29.54</b>	<b>41.56</b>	<b>45.70</b>	<b>50.32</b>	<b>174.30</b>	<b>6.4%</b>
Middle East – S.E. Asia		22.58	26.38	29.46	33.79	38.74	43.14	46.66	56.12	60.40	210.46	6.4%
<b>Middle East – S. Asia</b>		<b>32.80</b>	<b>34.34</b>	<b>36.06</b>	<b>41.97</b>	<b>46.49</b>	<b>49.46</b>	<b>64.81</b>	<b>75.11</b>	<b>83.05</b>	<b>336.95</b>	<b>7.3%</b>
N. America – N. America		828.27	927.73	972.26	977.36	1,022.41	974.07	898.06	926.50	952.94	1,459.61	2.2%
<b>N. America – N.E. Asia</b>		<b>104.99</b>	<b>113.90</b>	<b>122.99</b>	<b>116.55</b>	<b>126.47</b>	<b>118.81</b>	<b>100.85</b>	<b>107.69</b>	<b>115.27</b>	<b>178.80</b>	<b>2.2%</b>
N. America – Oceania		25.40	27.93	29.06	30.58	32.11	32.26	34.81	34.85	38.30	88.15	4.3%
<b>N. America – S. America</b>		<b>38.88</b>	<b>42.13</b>	<b>46.23</b>	<b>50.68</b>	<b>52.06</b>	<b>52.68</b>	<b>56.87</b>	<b>60.96</b>	<b>66.67</b>	<b>214.61</b>	<b>6.0%</b>
N. America – S.E. Asia		24.66	29.68	35.27	34.13	38.31	38.59	30.08	30.83	31.67	97.45	5.8%
<b>N.E. Asia – N.E. Asia</b>		<b>78.83</b>	<b>72.66</b>	<b>70.10</b>	<b>72.80</b>	<b>74.92</b>	<b>77.24</b>	<b>71.79</b>	<b>73.46</b>	<b>71.51</b>	<b>129.06</b>	<b>3.0%</b>
N.E. Asia – Oceania		17.85	20.26	19.00	19.59	20.81	19.54	12.89	16.50	15.26	28.99	3.3%
<b>N.E. Asia – S.E. Asia</b>		<b>55.99</b>	<b>66.20</b>	<b>70.95</b>	<b>77.03</b>	<b>85.71</b>	<b>84.05</b>	<b>70.21</b>	<b>75.29</b>	<b>86.75</b>	<b>246.70</b>	<b>5.4%</b>
Oceania – Oceania		52.09	65.23	65.25	70.84	74.35	72.01	73.29	78.37	83.82	199.82	4.4%
<b>Oceania – S.E. Asia</b>		<b>43.90</b>	<b>50.98</b>	<b>56.66</b>	<b>53.76</b>	<b>58.07</b>	<b>54.88</b>	<b>56.45</b>	<b>62.44</b>	<b>68.07</b>	<b>183.63</b>	<b>5.1%</b>
S. America – S. America		51.92	58.79	64.07	74.25	83.08	81.60	86.93	115.85	134.39	509.35	6.9%
<b>S.E. Asia – S.E. Asia</b>		<b>66.34</b>	<b>86.71</b>	<b>95.61</b>	<b>96.04</b>	<b>109.18</b>	<b>113.61</b>	<b>109.67</b>	<b>128.98</b>	<b>145.03</b>	<b>629.17</b>	<b>7.6%</b>
S.E. Asia – S. Asia		12.12	15.38	20.69	19.73	22.59	21.49	22.27	29.05	29.90	154.91	8.6%
<b>S. Asia – S. Asia</b>		<b>17.79</b>	<b>21.13</b>	<b>25.16</b>	<b>31.31</b>	<b>36.29</b>	<b>40.08</b>	<b>43.81</b>	<b>49.50</b>	<b>58.57</b>	<b>362.18</b>	<b>9.5%</b>
Rest of world		15.24	26.38	31.23	37.77	43.22	52.40	69.01	87.39	97.19	448.13	7.9%
<b>World total</b>		<b>3,304.18</b>	<b>3,754.33</b>	<b>4,026.27</b>	<b>4,233.62</b>	<b>4,538.85</b>	<b>4,611.48</b>	<b>4,519.25</b>	<b>4,885.30</b>	<b>5,198.21</b>	<b>13,764.16</b>	<b>5.0%</b>

RPK: Revenue passenger-kilometers. The number of fare-paying passengers multiplied by the number of kilometers they fly (i.e., airline traffic).

# Airplanes Required



## Passenger and freighter airplanes Market value and demand by region

### Demand and value by region

Region	\$B	Airplanes
Asia Pacific	1,700	12,030
Europe	970	7,760
North America	820	7,290
Latin America	260	2,510
Middle East	470	2,370
CIS	130	1,140
Africa	120	900
<b>World</b>	<b>4,470</b>	<b>34,000</b>

### Deliveries by airplane size and region

Region	Regional jets	Single aisle	Twin aisle	Large	Total deliveries
Asia Pacific	490	7,990	3,230	320	12,030
Europe	320	5,800	1,440	200	7,760
North America	890	5,040	1,320	40	7,290
Latin America	90	2,080	340	0	2,510
Middle East	20	1,060	1,100	190	2,370
CIS	160	700	250	30	1,140
Africa	50	570	270	10	900
<b>World</b>	<b>2,020</b>	<b>23,240</b>	<b>7,950</b>	<b>790</b>	<b>34,000</b>

### Market value by airplane size and region\*

Region	Regional jets	Single aisle	Twin aisle	Large	Total deliveries
Asia Pacific	10	720	860	110	1,700
Europe	10	520	370	70	970
North America	30	440	340	10	820
Latin America	10	170	80	–	260
Middle East	10	80	310	70	470
CIS	10	50	50	20	130
Africa	2	50	70	2	120
<b>World</b>	<b>\$80</b>	<b>\$2,030</b>	<b>\$2,080</b>	<b>\$280</b>	<b>\$4,470</b>

\*2011 \$B, catalog prices. Values above 10 have been rounded to the nearest 10.

## Passenger and freighter airplanes In service and future fleet

### Total airplanes in service

Size	2011	2031
747 and larger	790	1,030
Twin aisle	3,710	9,110
Single aisle	12,610	27,430
Regional jets	2,780	2,210
<b>Total</b>	<b>19,890</b>	<b>39,780</b>

### Passenger airplanes in service

Size	2011	2031
747 and larger	470	590
Twin aisle	2,910	7,560
Single aisle	12,030	26,220
Regional jets	2,740	2,210
<b>Total</b>	<b>18,150</b>	<b>36,580</b>

### Freighter airplanes in service

Size	2011	2031
Large*	540	1,140
Medium widebody	580	850
Standard	620	1,210
<b>Total</b>	<b>1,740</b>	<b>3,200</b>

### Airplane demand

Size	\$B	Airplanes
747 and larger	280	790
Twin aisle	2,080	7,950
Single aisle	2,030	23,240
Regional jets	80	2,020
<b>Total</b>	<b>4,470</b>	<b>34,000</b>

### Passenger airplane demand

Size	\$B	Airplanes
747 and larger	220	590
Twin aisle	1,890	7,210
Single aisle	2,030	23,240
Regional jets	80	2,020
<b>Total</b>	<b>4,220</b>	<b>33,060</b>

### Freighter airplane demand

Size	\$B	Airplanes
Large*	200	680
Medium widebody	50	260
Standard body	–	–
<b>Total</b>	<b>250</b>	<b>940</b>

\*Large passenger and large freighter categories differ.

# Fleet Development



## Passenger and freighter airplanes Market value and fleet development

### Market by airplane size

Size	Market value 2011 \$B	Market share value	New airplane deliveries	Market share units
Large*	280	6%	790	2%
Medium	1,440	32%	4,970	15%
Small	640	15%	2,980	9%
<b>Total twin aisle</b>	<b>2,360</b>	<b>53%</b>	<b>8,740</b>	<b>26%</b>
More than 175 seats	480	11%	4,660	14%
90 to 175 seats	1,550	34%	18,580	54%
<b>Total single aisle</b>	<b>2,030</b>	<b>45%</b>	<b>23,240</b>	<b>68%</b>
<b>Total regional jets</b>	<b>80</b>	<b>2%</b>	<b>2,020</b>	<b>6%</b>
<b>Total fleet</b>	<b>4,470</b>	<b>100%</b>	<b>34,000</b>	<b>100%</b>

### Passenger fleet development

Size	End of year 2011	Removed from service	Converted to freighter	New deliveries 2012 to 2031	End of year 2031
Large*	470	470	–	590	590
Medium	1,630	1,450	–	4,490	4,670
Small	1,280	1,110	–	2,720	2,890
<b>Total twin aisle</b>	<b>3,380</b>	<b>3,030</b>	<b>700</b>	<b>7,800</b>	<b>8,150</b>
More than 175 seats	1,540	1,140	–	4,660	5,060
90 to 175 seats	10,490	7,910	–	18,580	21,160
<b>Total single aisle</b>	<b>12,030</b>	<b>9,050</b>	<b>1,120</b>	<b>23,240</b>	<b>26,220</b>
<b>Total regional jets</b>	<b>2,740</b>	<b>2,550</b>	<b>0</b>	<b>2,020</b>	<b>2,210</b>
<b>Total passenger fleet</b>	<b>18,150</b>	<b>14,630</b>	<b>1,820</b>	<b>33,060</b>	<b>36,580</b>

### Freighter fleet development

Size	End of year 2011	Removed from service	Converted to freighter	New deliveries 2012 to 2031	End of year 2031
Large*	540	330	250	690	1,140
Medium widebody	580	440	450	260	850
Standard body	620	530	1,120	0	1,210
<b>Total freighter fleet</b>	<b>1,740</b>	<b>1,300</b>	<b>1,820</b>	<b>940</b>	<b>3,200</b>

### Total fleet

Size	End of year 2011	Removed from service	Converted to freighter	New deliveries 2012 to 2031	End of year 2031
Passenger fleet	18,150	14,630	1,820	33,060	36,580
Freighter fleet	1,740	1,300	1,820	940	3,200
<b>Total fleet</b>	<b>19,890</b>	<b>15,930</b>	<b>1,820</b>	<b>34,000</b>	<b>39,780</b>

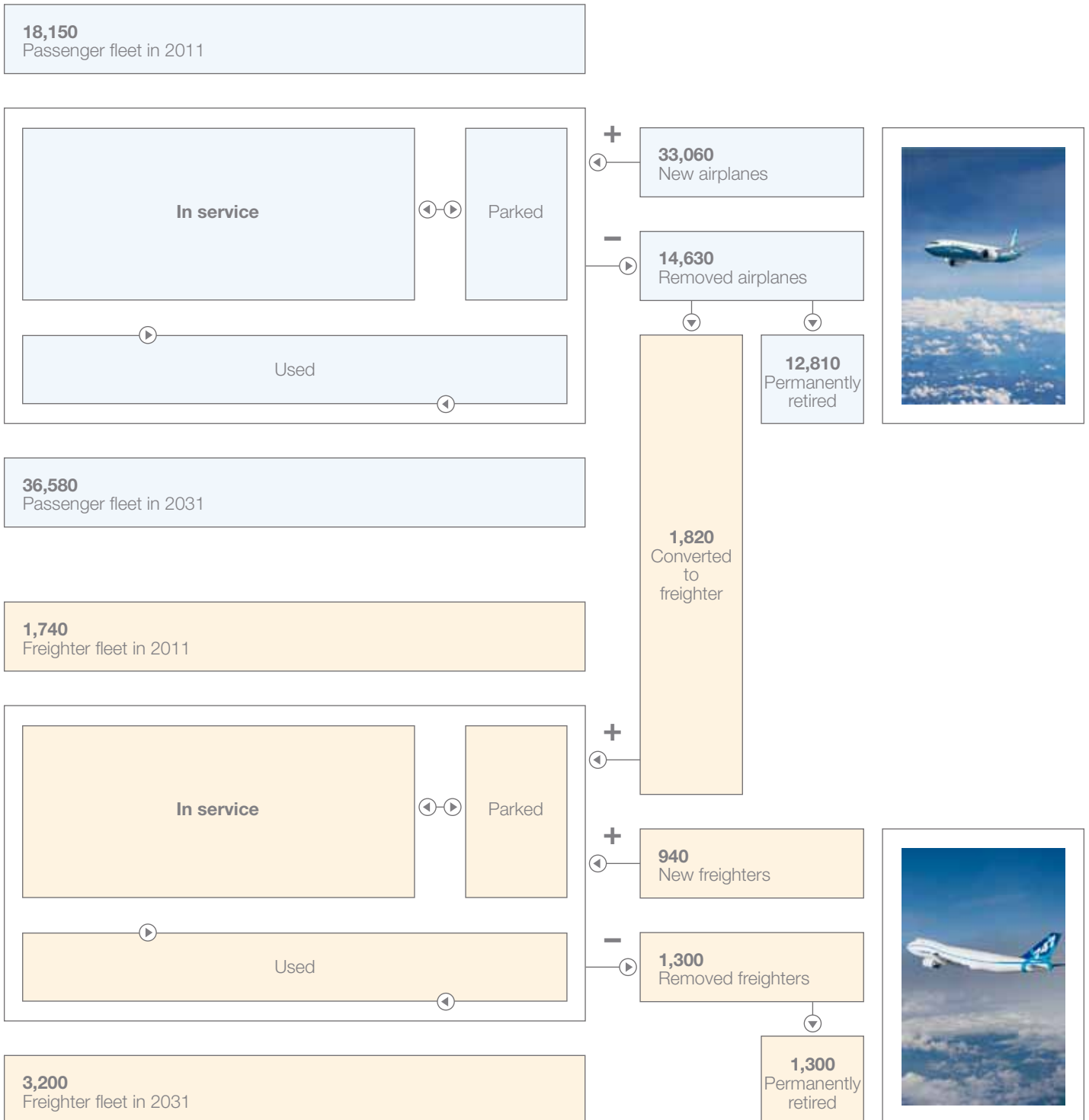
\*Large passenger and large freighter categories differ.

# Flow of Airplanes



## Airplane fleet

How the fleet develops as airplanes are added and removed





## Fleet by Region



### Fleet growth By size and region

#### Fleet by airplane size

Size	Airplanes in service 2011	Fleet share 2011	Airplanes in service 2031	Fleet share 2031
Large*	790	4%	1,030	3%
Medium	1,850	9%	5,370	13%
Small	1,860	10%	3,740	9%
<b>Total twin aisle</b>	<b>4,500</b>	<b>23%</b>	<b>10,140</b>	<b>25%</b>
More than 175 seats	1,770	9%	5,550	14%
90 to 175 seats	10,840	54%	21,880	55%
<b>Total single aisle</b>	<b>12,610</b>	<b>63%</b>	<b>27,430</b>	<b>69%</b>
<b>Total regional jets</b>	<b>2,780</b>	<b>14%</b>	<b>2,210</b>	<b>6%</b>
<b>Total fleet</b>	<b>19,890</b>	<b>100%</b>	<b>39,780</b>	<b>100%</b>

#### Fleet by region in 2011

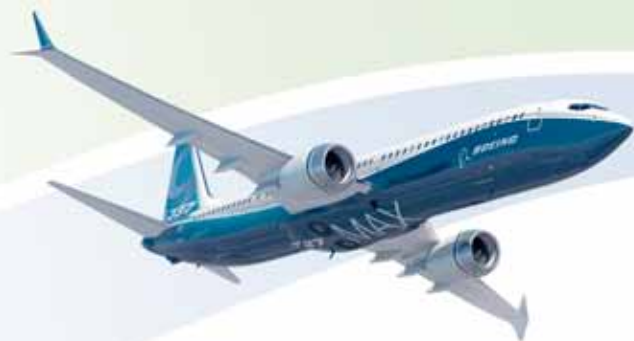
Region	Regional jets	Single aisle	Twin aisle	Large	Total fleet
Asia Pacific	120	3,170	1,080	340	4,710
North America	1,770	3,730	1,030	120	6,650
Europe	410	3,160	680	190	4,440
Latin America	110	1,020	140	0	1,270
Middle East	60	470	470	70	1,070
CIS	200	650	170	60	1,080
Africa	110	410	140	10	670
<b>World</b>	<b>2,780</b>	<b>12,610</b>	<b>3,710</b>	<b>790</b>	<b>19,890</b>

#### Fleet by region in 2031

Region	Regional jets	Single aisle	Twin aisle	Large	Total fleet
Asia Pacific	490	9,230	3,490	460	13,670
North America	890	6,090	1,740	110	8,830
Europe	340	6,120	1,630	230	8,320
Latin America	160	2,850	440	0	3,450
Middle East	50	1,320	1,170	170	2,710
CIS	170	970	310	50	1,500
Africa	110	850	330	10	1,310
<b>World</b>	<b>2,210</b>	<b>27,430</b>	<b>9,110</b>	<b>1,030</b>	<b>39,780</b>

\*Large passenger and large freighter categories differ.

## Fleet by Region – Asia Pacific



### Asia Pacific fleet growth

By size and region

#### Fleet by airplane size

Size	Airplanes in service 2011	Fleet share 2011	Airplanes in service 2031	Fleet share 2031
Large*	340	7%	460	3%
Medium	700	15%	2,290	17%
Small	380	8%	1,200	9%
<b>Total twin aisle</b>	<b>1,420</b>	<b>30%</b>	<b>3,950</b>	<b>29%</b>
More than 175 seats	390	8%	2,220	16%
90 to 175 seats	2,780	59%	7,010	51%
<b>Total single aisle</b>	<b>3,170</b>	<b>67%</b>	<b>9,230</b>	<b>68%</b>
<b>Total regional jets</b>	<b>120</b>	<b>3%</b>	<b>490</b>	<b>4%</b>
<b>Total fleet</b>	<b>4,710</b>	<b>100%</b>	<b>13,670</b>	<b>100%</b>

#### Fleet by region in 2011

Region	Regional jets	Single aisle	Twin aisle	Large	Total fleet
China	60	1,490	280	80	1,910
Northeast Asia	30	300	300	80	710
Oceania	10	340	90	40	480
Southeast Asia	20	680	310	130	1,140
South Asia	–	360	100	10	470
<b>Asia Pacific</b>	<b>120</b>	<b>3,170</b>	<b>1,080</b>	<b>340</b>	<b>4,710</b>

#### Fleet by region in 2031

Region	Regional jets	Single aisle	Twin aisle	Large	Total fleet
China	310	4,220	1,310	140	5,980
Northeast Asia	90	580	580	120	1,370
Oceania	–	650	250	50	950
Southeast Asia	70	2,280	980	150	3,480
South Asia	20	1,500	370	–	1,890
<b>Asia Pacific</b>	<b>490</b>	<b>9,230</b>	<b>3,490</b>	<b>460</b>	<b>13,670</b>

\*Large passenger and large freighter categories differ.

# Major Traffic Flows



## Airline traffic flows By region

### Airline passenger growth rates 2011 to 2031

RPKs	Africa	Latin America	Middle East	Europe	North America	Asia Pacific
Asia Pacific	7.4%	5.4%	7.2%	5.7%	4.8%	<b>6.7%</b>
North America	6.0%	5.1%	6.4%	3.8%	<b>2.2%</b>	
Europe	4.8%	4.6%	5.1%	<b>3.5%</b>		
Middle East	6.9%	—	<b>5.1%</b>			
Latin America	8.3%	<b>6.5%</b>				
Africa	<b>6.2%</b>					

### Airline passenger traffic in 2011

RPKs in billions	Africa	Latin America	Middle East	Europe	North America	Asia Pacific
Asia Pacific	18.8	3.4	190.9	314.2	283.8	<b>1,096.1</b>
North America	11.4	181.2	50.3	430.2	<b>952.9</b>	
Europe	134.1	163.5	153.3	<b>659.5</b>		
Middle East	39.4	—	<b>82.4</b>			
Latin America	3.2	<b>185.8</b>				
Africa	<b>51.1</b>					

### Airline passenger traffic in 2031

RPKs in billions	Africa	Latin America	Middle East	Europe	North America	Asia Pacific
Asia Pacific	78.1	9.9	766.2	954.6	717.9	<b>3,990.0</b>
North America	36.8	486.6	174.3	901.2	<b>1,459.6</b>	
Europe	345.5	404.4	417.2	<b>1,305.3</b>		
Middle East	149.7	—	<b>222.1</b>			
Latin America	15.7	<b>652.3</b>				
Africa	<b>169.6</b>					

**Bold:** Share within region.

# Traffic by Region



## Airline traffic distribution By region

### Traffic in 2011

RPKs	Asia Pacific	North America	Europe	Middle East	Latin America	Africa
Asia Pacific	<b>58%</b>	15%	17%	37%	1%	7%
North America	15%	<b>50%</b>	23%	10%	34%	5%
Europe	16%	23%	<b>36%</b>	30%	30%	52%
Middle East	10%	3%	8%	<b>16%</b>	—	15%
Latin America	—	8%	9%	—	<b>34%</b>	1%
Africa	1%	1%	7%	7%	1%	<b>20%</b>
<b>Total traffic to and from region</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

### Traffic in 2031

RPKs	Asia Pacific	North America	Europe	Middle East	Latin America	Africa
Asia Pacific	<b>61%</b>	19%	22%	44%	1%	10%
North America	11%	<b>39%</b>	21%	10%	31%	5%
Europe	15%	24%	<b>30%</b>	24%	26%	43%
Middle East	12%	4%	10%	<b>13%</b>	—	19%
Latin America	—	13%	9%	—	<b>41%</b>	2%
Africa	1%	1%	8%	9%	1%	<b>21%</b>
<b>Total traffic to and from region</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**Bold:** Share within region. Sum data down the table only. Excludes other small flows that are not included in the summary table (less than 1% of each region).

## How to read the tables

Read down the selected column; for example:

- In 2011, traffic within North America accounted for 50% of all the total traffic to, from, within North America.
- In 2031, traffic within North America accounted for 39% of all the total traffic to, from, within North America.



# Airplane Categories



## Passenger and freighter

Airplane market sector definitions

### Single-aisle passenger airplanes

#### Regional jets

##### **Antonov An-148**

##### **AVIC ARJ-700**

Avro RJ70, RJ85  
BAe 146-100, -200

##### **Bombardier CRJ**

Dornier 328JET

##### **Embraer 170, 175**

Embraer ERJ-135, -140, -145  
Fokker 70, F28

##### **Mitsubishi MRJ**

##### **Sukhoi Superjet 100**

Yakovlev Yak-40

#### 90 to 175 seats

Boeing 717, 727

Boeing 737-100 through -500

##### **Boeing 737-600, -700, -800**

##### **Boeing 737 MAX 7, MAX 8**

##### **Airbus A318, A319, A320**

##### **Airbus A319neo, A320neo**

Boeing-MDC DC-9, MD-80, -90

##### **AVIC ARJ-900**

BAe 146-300, Avro RJ100

##### **Bombardier CRJ-1000**

##### **Bombardier CS100, CS300**

##### **COMAC C919**

##### **Embraer 190, 195**

Fokker 100

Ilyushin IL-62

Tupolev TU-154

Yakovlev Yak-42

##### **UAC MS 21-200 -300**

#### More than 175 seats

Boeing 707, 757

##### **Boeing 737-900ER**

##### **Boeing 737 MAX 9**

##### **Airbus A321**

##### **Airbus A321neo**

##### **Tupolev TU-204, TU-214**

##### **UAC MS 21-400**

### Twin-aisle passenger airplanes

#### Small

Two class: 230 to 340 seats  
Three class: 180 to 260 seats

##### **Boeing 767, 787**

Boeing-MDC DC-10  
Airbus A300, A310

##### **Airbus A330-200**

##### **Airbus A350-800**

Lockheed L-1011

##### **Ilyushin IL-96**

#### Medium

Two class: 340 to 450 seats  
Three class: 260 to 400 seats

##### **Boeing 777**

Boeing-MDC MD-11

##### **Airbus A330-300, A340**

##### **Airbus A350-900, -1000**

Ilyushin IL-86

#### Large\*

Three class: more than 400 seats

##### **Boeing 747-8**

##### **Airbus A380**

Boeing 747-100 through -400

### Freighter airplanes

#### Standard body

Less than 45 tonnes

BAe 146

Boeing-MDC DC-8, -9

Boeing 737

Boeing 727

Tupolev TU-204

Boeing 707

Boeing-MDC MD-80

Boeing 757-200

Airbus A318, A319, A320, A321

#### Medium widebody

40 to 80 tonnes

Boeing 767

Lockheed L-1011SF

Boeing-MDC DC-10

Boeing 787

Airbus A300, A310

Airbus A330

Ilyushin IL-76TD

#### Large\*

More than 80 tonnes

Boeing-MDC MD-11

Boeing 747-100 through -400

Boeing 777

Airbus A350

Ilyushin IL-96T

Antonov An-124

**Bold:** Airplanes in production or launched. Production and conversion (SF) models assumed for each type unless otherwise specified. \*Large passenger and large freighter categories differ.

# Opinion/Feedback



**We value your opinion**

Please provide your name, position, company, and address below, or attach your business card.

**Feedback**

What do you think?

**Your perspective**

- What will be the main factors to affect future air transport markets?
- What will be the likely impact of these factors?

**Your feedback**

- What do you think of web-only access to forecast information (with a PDF for you to print locally)?
- If you have used the interactive forecast database on our website, tell us what you think of it.
- What areas would you like to see covered in more detail in the *Current Market Outlook*?
- What additional data would you like us to make available?
- What did you find most valuable?
- Was there anything you disliked?

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