

CURRENT MARKET OUTLOOK

2015–2034



 **BOEING**



CURRENT MARKET OUTLOOK

2015–2034





OUTLOOK ON A **PAGE**

DELIVERIES BY AIRPLANE SIZE AND REGION

Region	Asia	North America	Europe	Middle East	Latin America	C.I.S.	Africa	World
World Economy (GDP %)	4.3%	2.5%	1.8%	3.8%	3.4%	2.4%	4.5%	3.1%
Airline Traffic (RPK %)	6.1%	3.1%	3.8%	6.2%	6.0%	3.7%	5.7%	4.9%
Cargo Traffic (RTK %)	5.7%	2.9%	3.1%	6.3%	5.5%	3.7%	6.9%	4.7%
Airplane Fleet (%)	5.2%	1.7%	2.7%	5.2%	4.6%	1.9%	4.5%	3.6%
Market Size								
Deliveries	14,330	7,890	7,310	3,180	3,020	1,150	1,170	38,050
Market Value (\$B)	2,200	940	1,050	730	350	140	160	5,570
Average Value (\$M)	150	120	140	230	120	120	140	150
Unit Share	38%	21%	19%	8%	8%	3%	3%	100%
Value Share	39%	17%	19%	13%	6%	3%	3%	100%
New Airplane Deliveries								
Large Widebody	140	20	40	300	-	40	-	540
Medium Widebody	1,530	490	510	880	30	40	40	3,520
Small Widebody	1,920	690	910	560	310	120	260	4,770
Single Aisle	10,370	5,070	5,770	1,410	2,520	760	830	26,730
Regional Jets	370	1,620	80	30	160	190	40	2,490
Total	14,330	7,890	7,310	3,180	3,020	1,150	1,170	38,050
Market Value (2014 \$B catalog prices)								
Large Widebody	60	10	20	130	-	10	-	230
Medium Widebody	520	170	180	310	10	20	10	1,220
Small Widebody	500	170	250	150	90	30	60	1,250
Single Aisle	1,110	520	600	140	240	70	90	2,770
Regional Jets	10	70	-	0	10	10	0	100
Total	2,200	940	1,050	730	350	140	160	5,570
2014 Fleet								
Large Widebody	280	100	180	110	-	60	10	740
Medium Widebody	530	320	350	300	30	30	60	1,620
Small Widebody	780	730	380	250	130	170	80	2,520
Single Aisle	4,130	3,850	3,240	540	1,220	730	430	14,140
Regional Jets	130	1,700	300	60	90	190	110	2,580
Total	5,850	6,700	4,450	1,260	1,470	1,180	690	21,600
2034 Fleet								
Large Wide-body	180	60	100	260	-	70	-	670
Medium Wide-body	1,620	530	550	900	40	90	70	3,800
Small Wide-body	2,270	910	1,070	660	380	210	300	5,800
Single Aisle	11,730	6,190	5,730	1,600	3,020	1,140	1,220	30,630
Regional Jets	380	1,660	110	60	180	210	60	2,660
Total	16,180	9,350	7,560	3,480	3,620	1,720	1,650	43,560

LONG-TERM OUTLOOK



LONG-TERM OUTLOOK

YEAR IN REVIEW

For the aviation industry, 2014 was an outstanding year—key metrics increased across the board, and we will continue to see this trend, with lower oil prices expected to save the industry tens of billions of dollars in 2015 alone.

Passenger traffic as measured by revenue passenger kilometers (RPK) was up nearly six percent in 2014, and capacity was up nearly 5.8 percent. The result was record load factors of almost 80 percent worldwide. Airlines continued using their airplanes more efficiently, as demonstrated by utilization rates that were 15 percent higher than those of a decade earlier.

Because of lower oil prices and various increased efficiencies, airlines had profits of US\$20 billion during 2014, which was also a record year for airplane manufacturers such as Boeing and Airbus. Over 1,490 jet airplanes were delivered, and airlines ordered approximately 3,680 new airplanes.

MARKET FORCES

Global economic expansion is expected to continue, and although the overall picture is good, there will be regional challenges. North America is leading the economic global acceleration, and the Eurozone is finally starting to gain economic momentum. In the past, emerging markets have driven economic growth, but we are now starting to see some regional divergence from this trend. Based on these and other market indicators, our near-term 2015 forecast is for RPK growth to exceed six percent, with cargo traffic growth accelerating above five percent. The bottom line is that with a favorable cost environment and strengthening demand, many airlines will see opportunities for record profits in 2015.

EFFECTS OF MARKET FORCES

Our long-term outlook incorporates the effects of market forces on the

growth of the aviation industry. Based on what has happened historically and what is expected to occur, world GDP is anticipated to grow at 3.1 percent annually over the next 20 years. During the same period, passenger traffic is forecast to grow by 4.9 percent and air cargo traffic by 4.7 percent.

SHAPE OF THE MARKET

Over the next 20 years, we are forecasting a need for 38,050 airplanes valued at more than \$5.6 trillion. Aviation is becoming more diverse, with approximately 40 percent of all new airplanes being delivered to airlines based in the Asia Pacific region. An additional 20 percent will be delivered to airlines in Europe and North America, with the remaining 20 percent to be delivered to the Middle East, Latin America, the Commonwealth of Independent States, and Africa.

Single-aisle airplanes command the largest share of new deliveries, with airlines needing approximately 26,730. These new airplanes will continue to stimulate growth for low-cost

Airline productivity measures at or near peaks

Growing, efficient and profitable utilization of fleets and capacity



TRAFFIC
+6% in 2014



PROFITS
~\$20 billion



LOAD FACTORS
~80% globally



PARKED FLEET
Post-recession low



UTILIZATION
+15% vs. 2003



VALUES & LEASE RATES
Stable



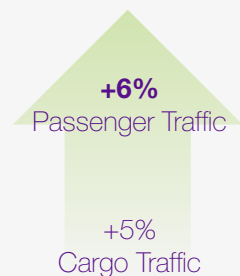
Drivers for near-term acceleration

LOWER OIL PRICES		
Year	Cost \$ (B)	Per Barrel
2013	\$208	~\$110
2014	\$195	~\$100
2015	\$125?	<\$60

\$10s of billions
expected 2015 savings

ECONOMIC EXPANSION	
World Economy	↗
United States	↗
Eurozone	↗
Japan	↗
India	↗
China	↗
Brazil	↗
Russia	↘
Other Emerging	↗

ABOVE-TREND GROWTH



carriers and will provide needed replacements for older, less-efficient airplanes. In addition, widebody fleets will need an additional 8,830 new airplanes, which will allow airlines to serve new markets more efficiently than in the past.

PURPOSE OF CURRENT MARKET OUTLOOK

Current Market Outlook is The Boeing Company's long-term forecast of passenger and cargo traffic and its estimate of the number of airplanes needed to support the forecast. The forecast is published annually to factor in changing market forces affecting the industry. The forecast is used to shape Boeing product strategy and guide long-term business planning. We share our outlook with the public to inform airlines, suppliers, and the financial community of trends we see in the industry.

Airplanes in service 2014 to 2034			Demand by size 2015 to 2034		
	2014	2034		New Airplanes	Value (\$B)*
Large widebody	740	670	Large widebody	540	230
Medium widebody	1,620	3,800	Medium widebody	3,520	1,220
Small widebody	2,520	5,800	Small widebody	4,770	1,250
Single aisle	14,140	30,630	Single aisle	26,730	2,770
Regional jets	2,580	2,660	Regional jets	2,490	100
Total	21,600	43,560	Total	38,050	5,570

* \$ values throughout the CMO are catalog prices.

Key indicators 2014 to 2034		Demand by region 2015 to 2034		
		Region	New Airplanes	Value (\$B)*
Growth measures (%)		Asia Pacific	14,330	2,200
World economy GDP	3.1	Europe	7,310	1,050
Airplane fleet	3.6	North America	7,890	940
Number of passengers	4.0	Middle East	3,180	730
Airline traffic RPK	4.9	Latin America	3,020	350
Cargo traffic RTK	4.7	CIS	1,150	140
		Africa	1,170	160
		Total	38,050	5,570

*\$ values throughout the CMO are catalog prices





BUSINESS & MARKET ENVIRONMENT

BUSINESS AND MARKET ENVIRONMENT

According to IHS Economics, the world economy shows potential to grow at or above average rates for the next several years. Low oil prices and increased consumer confidence will be key near-term drivers, while pent-up demand and available production capacity provide longer-term potential. However, economic and social reform toward sustainable growth in developing, emerging, and advanced economies alike will be needed to realize long-term economic growth.

In the nearer term, global economic growth continued accelerating in 2014, putting the world economy on an increasingly firm footing. Further moderate economic acceleration, helped by lower oil prices and monetary policy stimulus (most prominently in Europe and Japan), characterizes the medium-term forecast.

Although effects differ from country to country, lower oil prices represent a net gain for global economic growth as resources are shifted to more efficient economies on average, and consumer spending is stimulated in the world's largest oil-importing economies. As a net beneficiary of low oil prices, the United States will be a locomotive of global growth, with a steadily improving labor market likely bolstering domestic demand even after the effects of cyclical oil prices diminish.

Europe and Japan, meanwhile, show signs of a gradual recovery as decisive monetary stimulus in each region serves as a tailwind to economic growth, and structural reforms undertaken in several European economies will slowly pay off in higher growth rates. Revived economic activity in these key global markets will stimulate global trade to achieve growth rates near long-term averages.

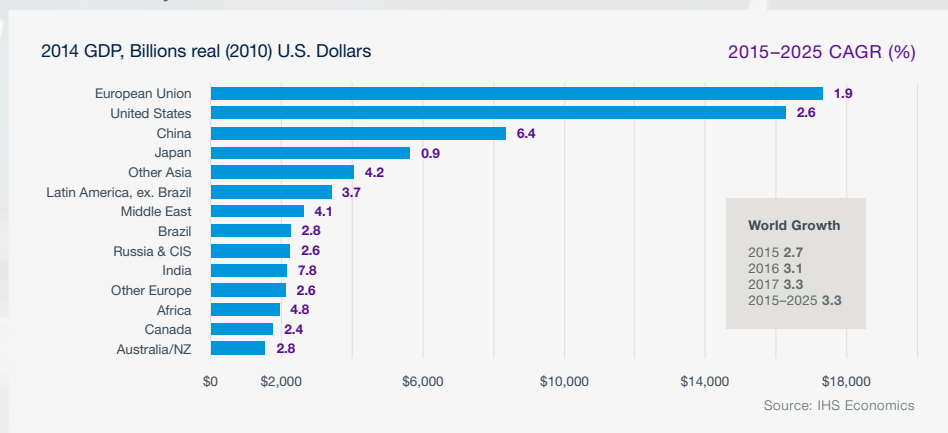
EMERGING MARKETS

Overall, the long-term outlook for many emerging markets remains bright given the ongoing structural transformation of economic systems. With income levels rising, consumer spending, particularly in Asia, is well positioned on an upward trajectory.

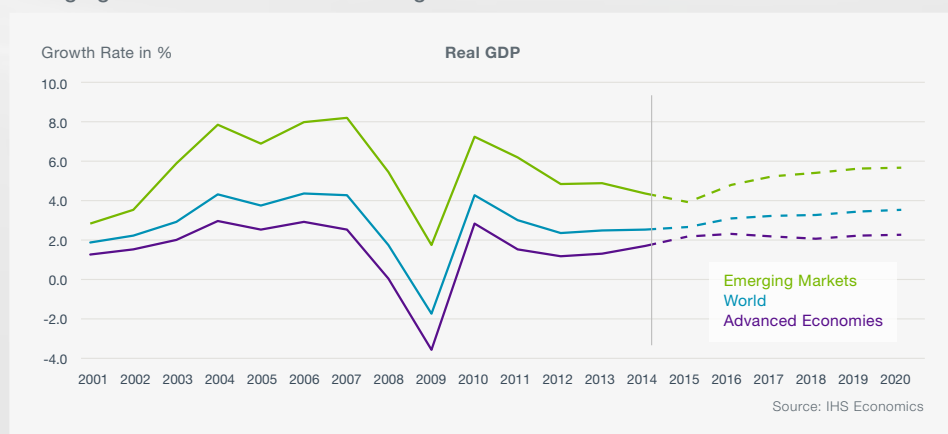
However, although a boon for many commodity-importing countries, low oil prices pose major revenue challenges for the world's large-commodity exporters. In combination with exchange-rate depreciation, this trend could grow into inflationary pressures and corresponding capital movements. For example, Brazil's economy has stalled in the face of falling energy revenue and a less-ambitious reform agenda. Russia, meanwhile, has fallen into a deep recession due in part to declining oil revenues and severe exchange rate depreciation.

Although a net beneficiary of low oil prices, China is experiencing slower growth, though at more sustainable levels as its economy matures. With a necessary reduction in excess capacity in

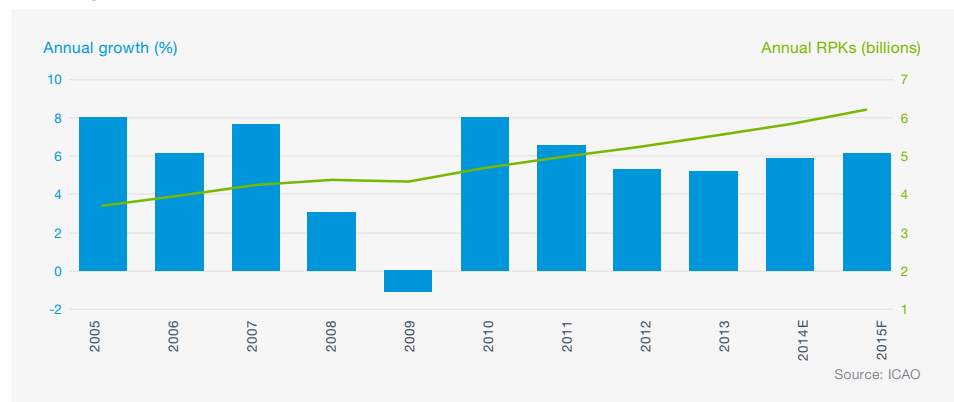
World economy continues acceleration



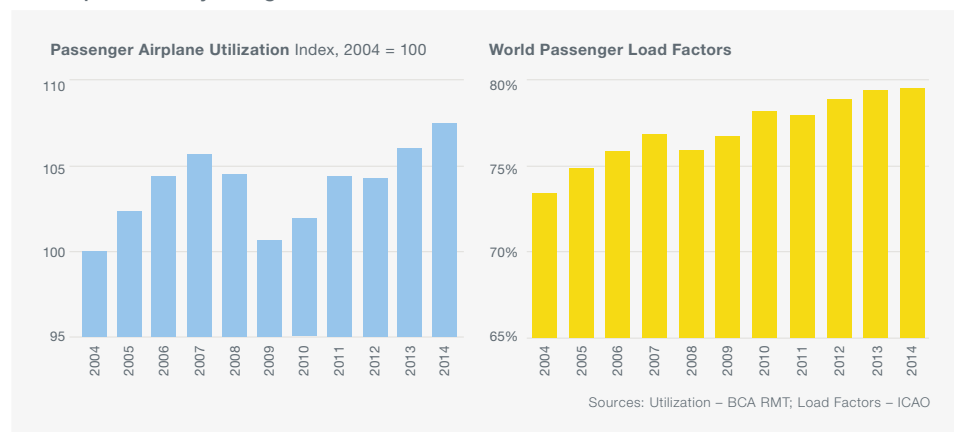
Emerging markets outlook remains bright



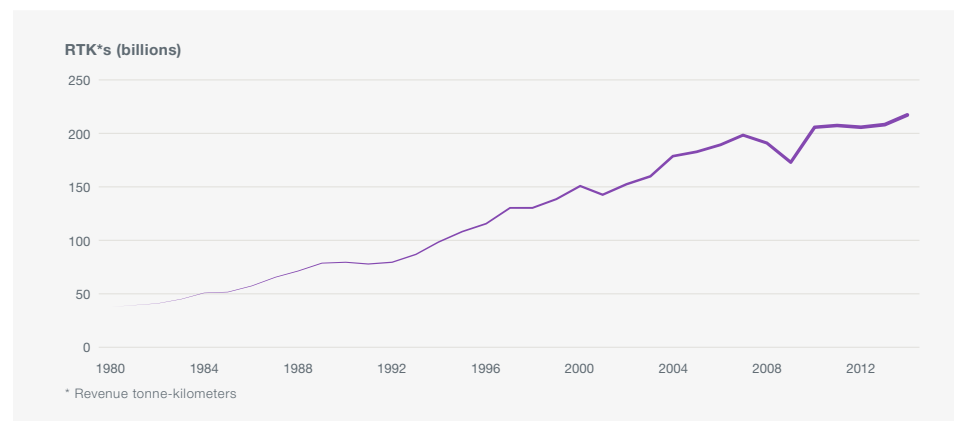
Passenger traffic resilient



Airline productivity rising



World air cargo traffic has grown 5.3% per year since 1980



real estate and parts of manufacturing, and with a challenging process of rebalancing the banking system, cyclical forces will represent a noticeable drag on short-term growth. Policy reform and solid fundamentals support medium-term growth.

India recently started unlocking its potential and is now on its way to becoming the fastest growing large emerging

market—an achievement widely credited to the new government's business-friendly policy reforms.

PASSENGER TRAFFIC

Airline passenger traffic grew nearly six percent in 2014 despite relatively weak global GDP growth. The global airline industry grew at or above the long-term growth rate for three consecutive years on sound fundamentals, while productivity continued to increase on historically high airplane utilization and passenger load factors. Specifically, load factors in 2014 improved slightly to 80 percent, showing that airlines are matching demand without oversupplying capacity.

China and the Middle East once again led all regions with double-digit traffic growth. Europe traffic grew at five percent in 2014, far outpacing economic growth, while North America traffic grew more than two percent. Carriers in the Asia Pacific region (excluding China) and Latin America saw slower growth in 2014 due to a softer economy than prior years. With lower fuel prices and an improving economic environment in 2015, passenger traffic is expected to once again grow at above the long-term trend.

AIR CARGO MARKETS BUILDING ON RECOVERY

In 2014, the air cargo market built on the recovery that began in the second quarter of 2013. Global traffic volume growth was close to the long-term average for the full year, and segment profitability

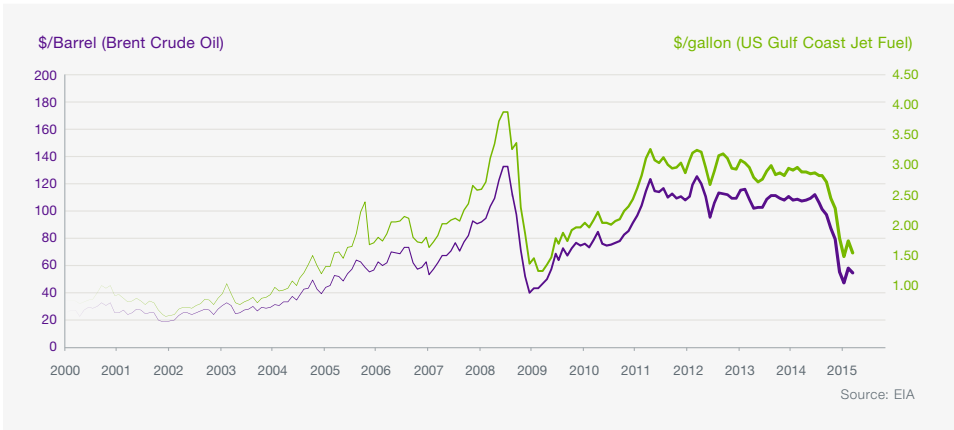
began to improve aided by lower oil prices. Capacity metrics also improved as utilization of large freighters returned to recent highs.

Many signals point to global air cargo continuing to sustain on-trend growth. Global trade forecasts indicate an improving market, with trade set to grow at rates of about five percent on average over the next several years. In

addition, the outlook for improving global economic growth supports stronger air cargo growth. Accelerating growth in economies with a higher proportion of consumer spending, such as the United States, also points to higher demand for air cargo. Core demand for air cargo in the longer term remains strong owing to continuing product innovation, global interdependence, and the imperative for reliability and speed.

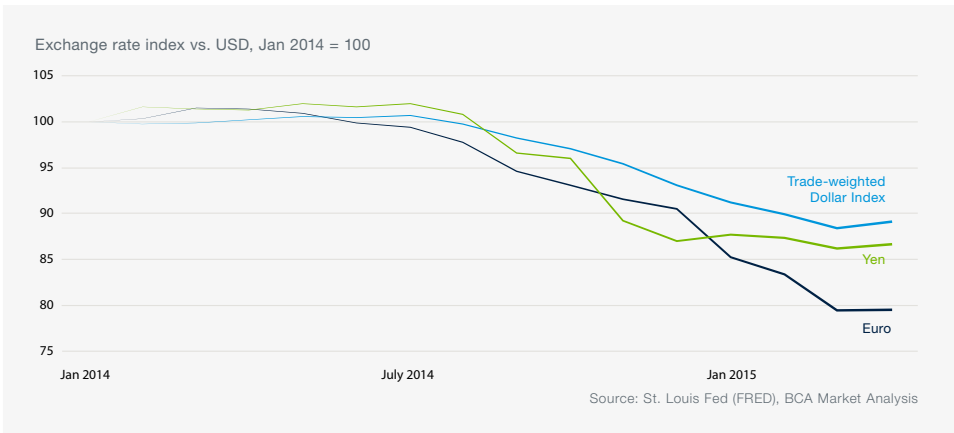
that of global economic growth. On the cost side, the sharp decline in oil prices is a significant near-term tailwind, with fuel averaging 25 percent of airline cost structures. In addition, lower oil prices provide a stimulant to consumer incomes, and thus create an opportunity to open additional routes and frequencies that might not have been profitable at higher oil price levels.

Oil price volatility returns



In addition to dealing with more volatile oil prices, airlines are also accounting for a recent significant strengthening of the US dollar due to the varying economic prospects previously discussed. In some regions, this currency volatility will temper the near-term benefit of lower fuel prices as fuel, airplane financing, and other costs are often paid in US dollars. Depending on an airline's network structure, large movements in foreign exchange rates can also affect international volumes and revenues owing to changes in traveler purchasing power. Although increased financial market volatility will be a headwind for some airlines, many have hedging tactics in place to smooth the effects, and the overall airline profit outlook remains strong owing to solid demand fundamentals and lower fuel prices.

Volatile exchange rates, stronger US dollar



IMPROVING PROFITABILITY IN A DYNAMIC FINANCIAL ENVIRONMENT

Strong demand, efficiency initiatives, and falling oil prices in the fourth quarter helped airlines nearly double industry net profit to US\$20 billion in 2014 over 2013, while achieving the highest industry net margin in more than three decades. Airline financials are expected to continue on this trend as airlines continue to focus on reducing costs and boosting revenues. Over the past decade, the airline industry has achieved seven percent compound annual revenue growth, which is more than double



MARKET FRAGMENTATION

MARKET FRAGMENTATION

AIR TRAVEL IS INCREASINGLY RESILIENT

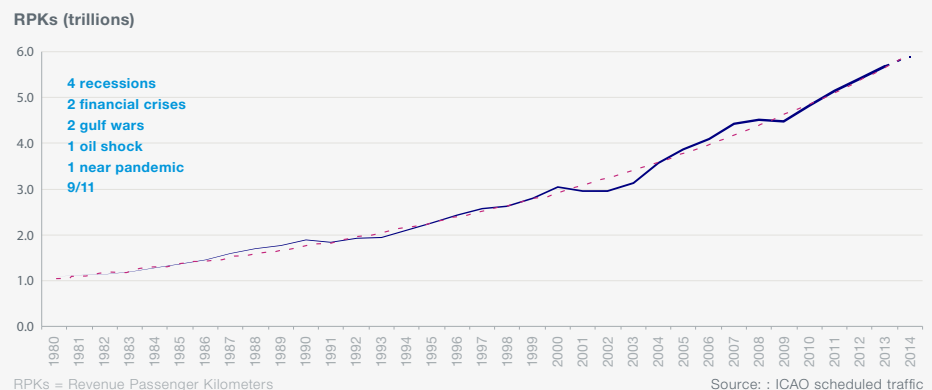
Since the 1980s, air travel has grown on average 5 percent annually, despite numerous shocks to the aviation system and the global economy. As air travel continues to grow, airlines have a choice about how they want to grow their business. Airlines can accommodate that growth with increases in airplane capacity and/or size or they can add more frequencies and nonstop markets to their networks. Passengers prefer the latter because of the increased flexibility and more efficient itineraries they offer. But when airlines add more frequencies and nonstop services, they fragment their existing networks. Industry data shows that the vast majority of growth in air travel has been met by an increase in new nonstop markets (airport pairs) and by frequency growth—not by an increase in airplane capacity and/or size. In fact, average airplane size (total available seat kilometers divided by total airplane kilometers) has declined slightly since the mid-1990s. Even so, we continue to see an emphasis on increased nonstop flights and greater frequency to meet traveler demands. According to Ascend Online Data, there were approximately 850 additional airplanes in commercial service in August 2014 compared with 2013, resulting in approximately 14 million additional seats for that month. The way this additional capacity was deployed illustrates that fragmentation continues to drive market growth:

- Add frequencies on existing routes: 70 percent.
- New routes (net of route cancellations): 17 percent.
- More seats and/or larger airplanes on existing routes: 13 percent.

Between August 2013 and August 2014, there were more than 1,600 new single-

aisle markets and more than 350 new widebody routes, which represents an annual churn of approximately 10 percent of the global route network as market conditions evolved. The average number of seats on single-aisle routes increased 0.5 percent year-over-year as the market continued to converge toward 160 seats. Meanwhile, average widebody seat capacity rose a bit faster—up 1.7 percent to 297 seats—as maturing markets replaced older airplanes with slightly larger and more efficient new products. Current schedules show that capacity has continued to grow. First quarter 2015 averaged about 6 percent higher capacity than first quarter 2014. And accelerating growth toward 7 percent is expected in the second quarter as much of the world approaches peak travel seasons. The diversity in growth between regions, business models, and airplane types continues to strengthen the fragmentation that is occurring in the market. Regionally, Chinese and Middle Eastern airlines have seen the greatest change, whereas other regions are increasing about 6 percent. Looking at the various business models and global alliances,

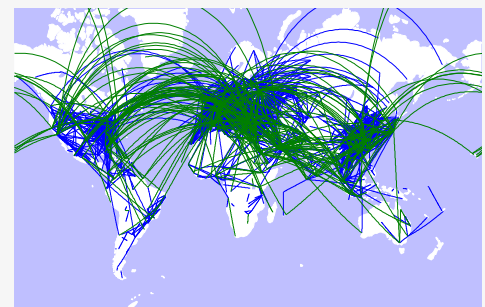
Air travel is resilient and growing



Versatility and efficiency are the foundation

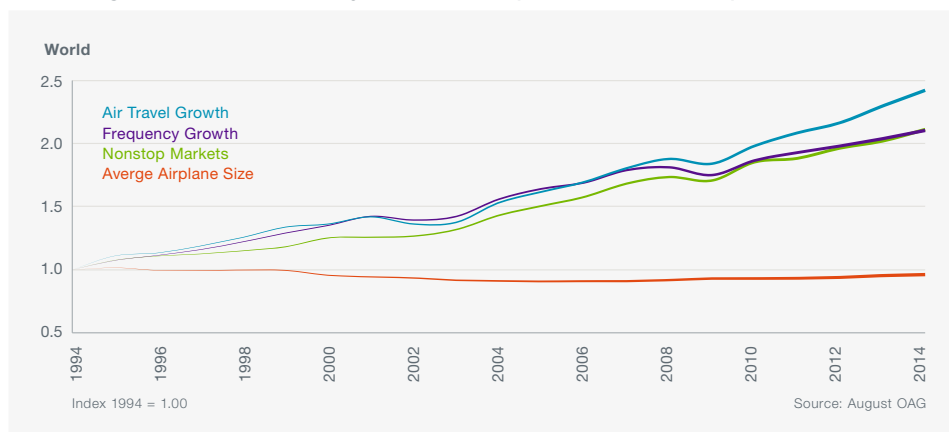
1600+
new single-aisle
markets

350+
new widebody markets
vs. last year



Source: Published schedules & BCA analysis

Air travel growth has been met by increased frequencies and nonstops



low-cost carriers (LCC) have had the greatest increase in capacity, growing at 10.3 percent. Global alliance carriers have grown at 6.5 percent and the rest of the carriers at 2 percent. Airlines have continued to grow capacity provided by single-aisle airplanes and widebodies, each growing between 5 and 7 percent; the regional jet capacity grew less than 1 percent.

History has proved that the aviation market grows by providing passengers with more efficient ways to travel where and when they want to go. Expanding nonstop route networks and growing frequency levels will continue to be the primary means of growth and development. Versatile and efficient products such as the 737 MAX, 777, and 787 will enable this growth across market segments. Market fragmentation occurs in different ways. The single-aisle market focuses on point-to-point flying—instead of going through a hub to a final destination, flights are nonstop. With the widebody market, a combination of point-to-point flying and new routes are being offered between large hubs and smaller cities.

SINGLE AISLE INCREASES POINT-TO-POINT FLYING

Over the past 20 years, the single-aisle airplane has become the mainstay of many airlines fleets, composing 65 percent of all commercial airplanes flying. These airplanes, such as today's Next-Generation 737 and the future

737 MAX, have provided and will continue to provide airlines with the much needed flexibility to open new routes and expand their networks. As the LCC business model continues to grow, more point-to-point flying is occurring. In 1994, LCCs provided less than 10 percent of all short-haul flights (less than 3,000 miles), the majority of which Southwest flew. Today, LCCs fly almost 30 percent of short-haul flights. There are regions of the world—such as Europe, Southeast Asia, and North America—where

this trend is more common. As the rest of Asia Pacific, Latin America, and the Middle East continue their rapid growth, more point-to-point flying in these regions is expected. In addition to this evolution in short-haul networks, there has been a notable shift from the use of widebody to single-aisle

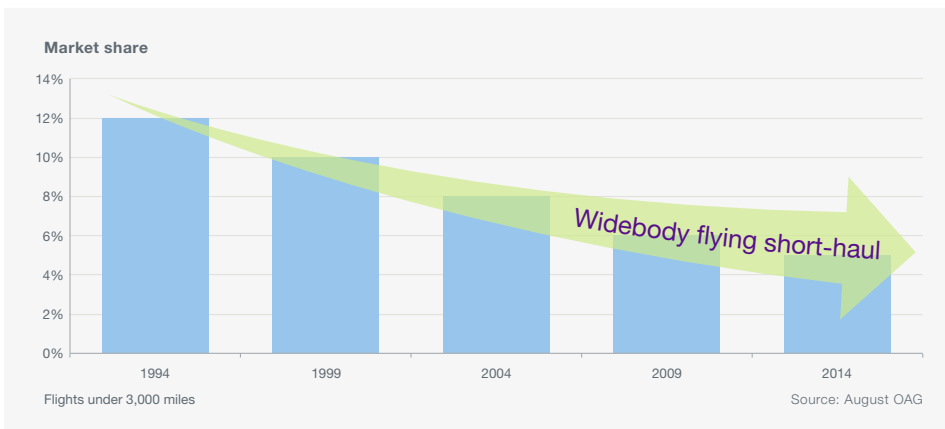
LCC business model has gone worldwide

Today LCC's driving an increase in point to point flying

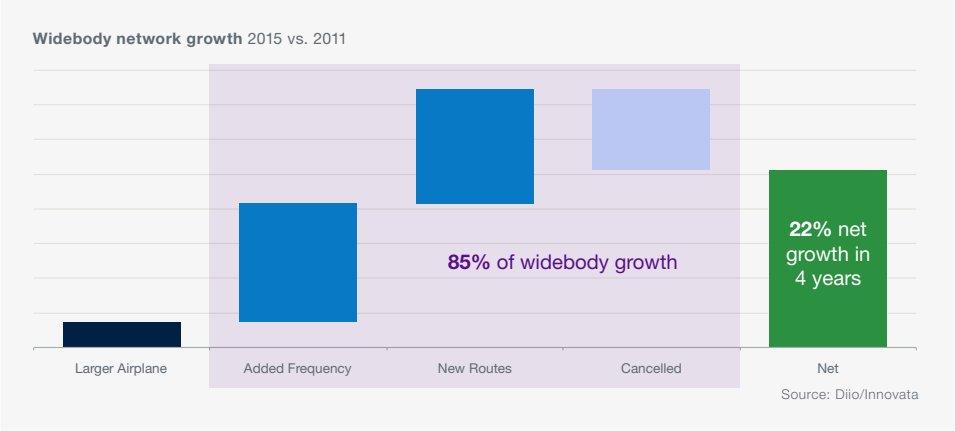


Source: 2014 Diio/Innovata

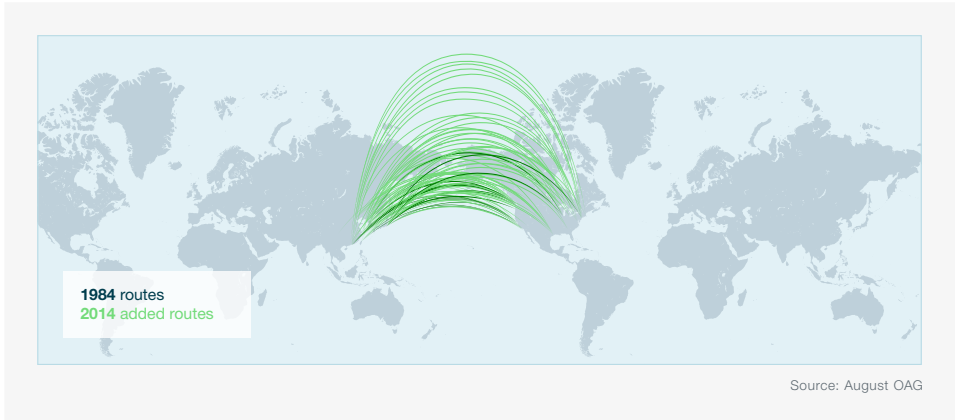
Changing dynamics in short-haul markets



Widebody fleet positioned for long-term market demand



New routes between North America and Northeast Asia



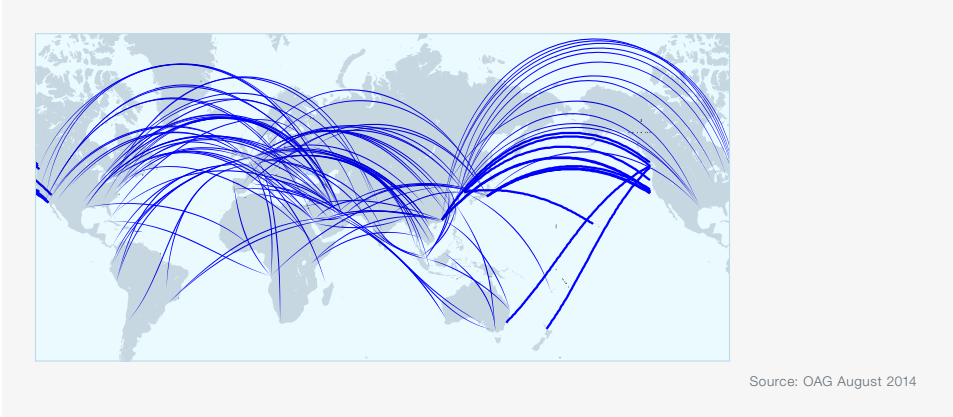
airplanes. Twenty years ago, 12 percent of all short-haul flights were on a widebody airplane; today, the share is about 5 percent. This change is due to the more efficient, economical, and longer-range single-aisle airplanes coming to market.

WIDEBODY MARKET FRAGMENTATION WILL CONTINUE

Over the past two decades, new and more efficient widebodies have entered the market and enabled airlines to efficiently open new routes. The 777 and 787 have made a drastic change in flights from North America to destinations in Northeast Asia, compared with 20 to 30 years ago. In the 1980s, the 747 was the airplane of choice for this market, but the majority of flights had to make a connection through the West Coast of North America, primarily through Anchorage. There were very few nonstops from the East Coast. In the late 1990s, after the launch of

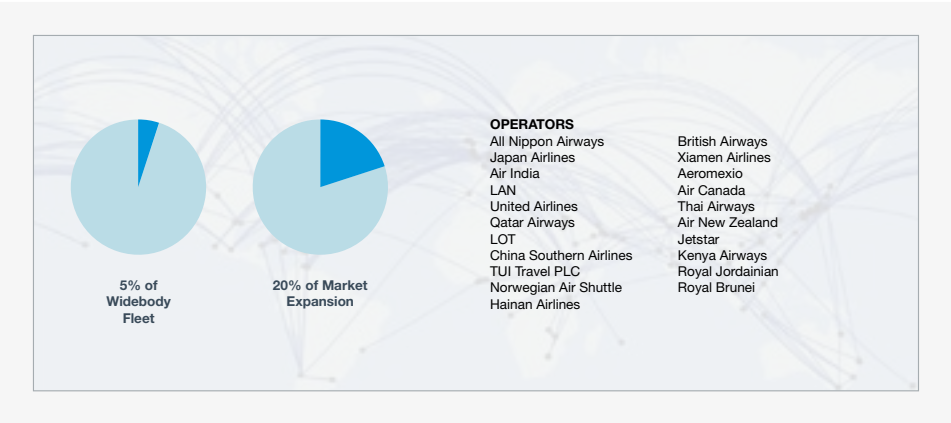
the 777, airlines had the ability to fly more nonstops from the East Coast to Northeast Asia and to mainland China. Now, 20 years later and with the addition of the 787, airlines have been able to open routes from smaller markets that may not have been profitable or reachable in the past. Many of these new routes connect hubs with secondary markets. In 1984, 93 percent of the airplanes flown on these routes were 747s. Today, that share has shrunk to 12 percent; now 777s and 787s make more than two-thirds of the flights. The number of long-haul city pairs (more than 4,000 miles) has increased by more than 450 routes over the past 10 years, and the number of flights has grown by 50 percent. In the meantime, the average number of seats on the routes served has remained flat but are expected to increase modestly as airplanes such as the 787-10 and 777X come to market. There is a strong focus on the small widebody fleet because the versatility of the airplanes in this seat size category. There also is flexibility with the medium-sized widebody fleet. Since 2000, 40 airlines around the globe have used the 777 to open more than 140 new routes, which span nearly every region in world. In addition, on about 10 percent of the approximately 820 routes that 777s fly today, they have replaced smaller airplanes that previously flew the routes. The versatility, efficiency, and reliability of the 777 have made it the backbone of many alliance carriers'

Over 140 new city-pairs opened with 777



long-haul fleets. Today, 35 to 45 percent of long-haul capacity is flown on a 777—the most on any one airplane type. The 787 has continued to build on the ability of the 777 to open new nonstop markets. The 787 fleet represents approximately 5 percent of the global widebody in-service fleet (approximately 250 of 5,000 airplanes). Despite this fact, fully 20 percent of new routes since 2011 have been launched with 787s—a remarkable testament to the airplane’s efficiency and capability. Currently, 49 new nonstop markets have been announced or started, with many more on the way. These new nonstop markets make up 16 percent of current and announced 787 routes.

787 re-shaping long-haul marketplace





TRAFFIC & MARKET OUTLOOK



TRAFFIC & MARKET OUTLOOK

METHODOLOGY

Current Market Outlook is a long-term, noncyclical forecast that looks beyond short-term shocks to address underlying trends in the aviation industry. Travel demand is forecast for 63 intraregional and interregional traffic flows. Key indicators include:

- GDP development.
- Worldwide commerce.
- Population.
- Labor-force composition.
- International trade as a share of GDP.
- Emerging technology (e.g., new airplanes with improved economics and capabilities).
- Business-model innovation.
- Quality of service (e.g., new nonstop city pairs, greater frequencies).
- Travel attractiveness.
- Industry competitiveness and infrastructure.
- Openness of air services and domestic airline regulation.

These factors are examined for each of the traffic flows. Different flows have different drivers and are therefore modeled differently. For example, flows touching emerging markets may emphasize GDP per capita, while mature markets may be driven more by trends over time. Forecasting requires more than data, however—it also requires judgment. The future of a market is not simply an extension of past performance. Some factors that drive demand, such as GDP, are easy to quantify, but other, more difficult to quantify factors, such as liberalization, may have an even greater effect on market performance. When such factors are present, forecasting air transport demand requires more judgment than when the same factors are absent.

SHORT-TERM EFFECTS ON AIR TRAVEL

Although the air transport industry is subject to occasional shocks, demand is resilient; services are often seen as essential, and discretionary trips such as vacations or family events are often high-priority items. Over the past 30 years, the aviation industry has experienced recessions, oil-price shocks, near pandemics, wars, and security threats, yet traffic has continued to grow on average at 5 percent annually. Changes in industrial structure can also result in short-term effects. For example, after a period of consolidation, U.S. airlines have been adjusting capacity to meet demand, and although traffic growth has been minimal, airline profitability has improved. Conversely, low-fare carriers in other markets stimulate air travel through their competitive responses to falling fares and broadening networks.

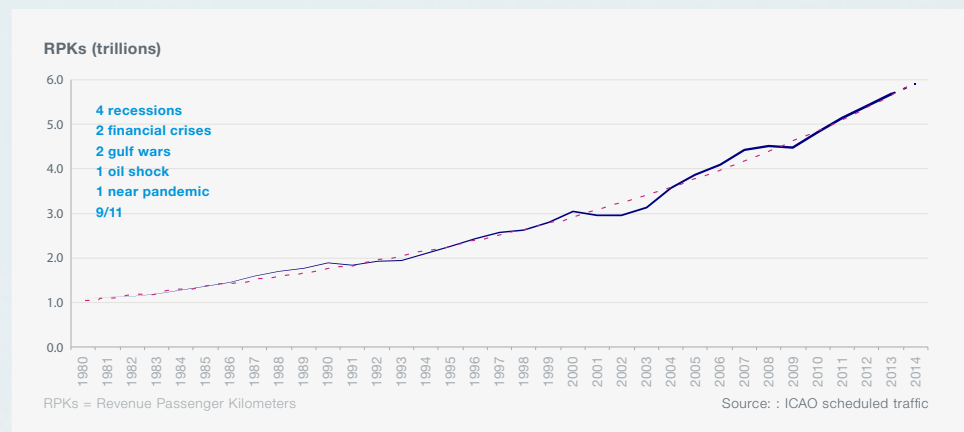
DEMAND FOR AIR TRAVEL IS EVOLVING

Demand dynamics differ for different levels of a country's economic development. Emerging markets throughout the world

Drivers of air travel demand



Air travel is resilient and growing



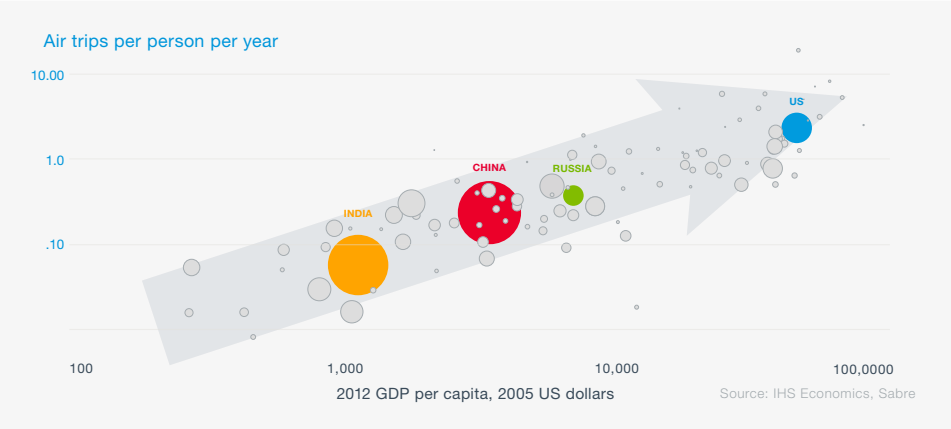
have shown that air travel is one of the first discretionary expenditures to be added as consumers join the global middle class. As emerging market demand begins to develop, it may take the form of nonscheduled services to leisure destinations. Later, the same demand may migrate to scheduled services of low-fare carriers or to network airlines. In developed markets, demand for essential travel has been met, so growth comes from discretionary travel. GDP per capita matters less in these market contexts. Factors such as the availability of vacation days earned and the funds needed to travel, consumer confidence, service pricing, and service quality (e.g., the availability of nonstop flights), tend to have a greater impact. Within a given region, propensity to travel as measured in trips or in revenue passenger kilometers (RPK) generally increases with per capita income. This increase varies considerably. Generally, markets that are more open are more responsive to changes in per capita income because airlines are freer to add routes, frequencies, and seats to capture demand. In a more regulated environment, demand may increase with GDP per capita, but lower service quality and higher pricing may restrain travel growth. Geography may also influence travel within a region, with island geographies or poorly connected land masses necessitating more air travel than might otherwise be the case.

MARKET GROWTH IS DRIVING DEMAND

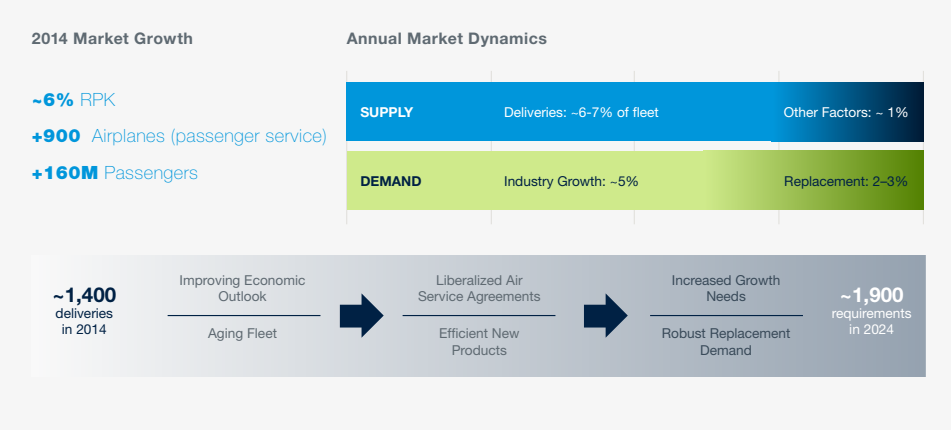
As the airline industry produces record operating results and continues to order and implement new airplanes, it's worthwhile to review the size and scope of commercial aviation today and the composition of future demand. Compared with 2013 levels, industry traffic (RPK) grew approximately 6 percent in 2014—the fourth consecutive year of growth at or above 5 percent.

- In passenger terms, this growth translated to an additional 150 million to 170 million passengers over the 2013 levels of more than 3.1 billion.

Propensity to travel increases with income



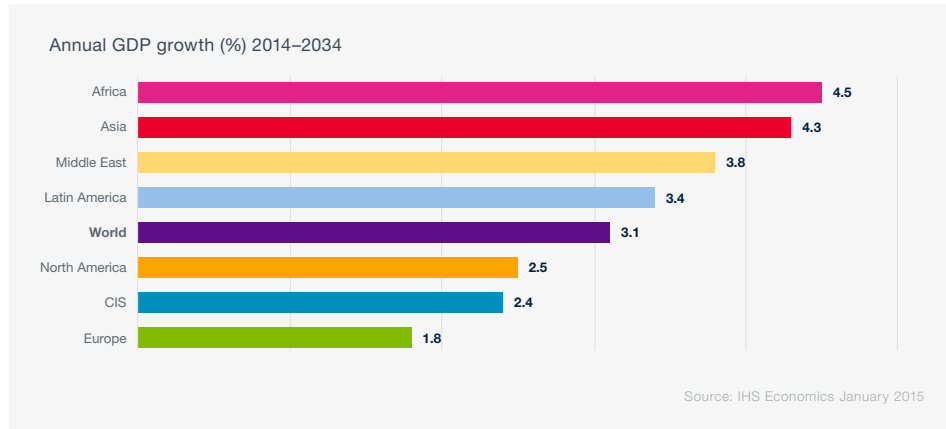
Market growth driving demand



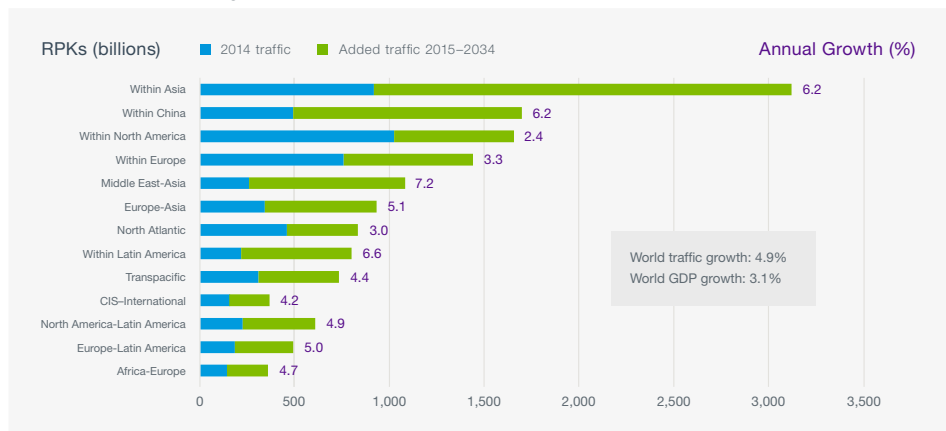
- To carry this additional traffic, approximately 900 additional airplanes, 4 to 4.5 percent of the installed fleet, were needed.
- In addition, annual industry replacement requirements in 2014 numbered approximately 2 to 3 percent of the installed fleet, or approximately 500 airplanes.
- This total of approximately 1,400 new airplanes represented 6.5 percent of the in-service jet fleet. A combination of other factors, including increased airplane utilization, increased load factors, and used-airplane transactions, covered excess demand.

Over the long term, these growth and replacement dynamics will continue balancing the growth and replacement needs of an ever-expanding fleet base. With a solid foundation of economic development, increased trade, and increasing efficiency, annual airplane demand is projected to increase 35 to 40 percent over the next decade.

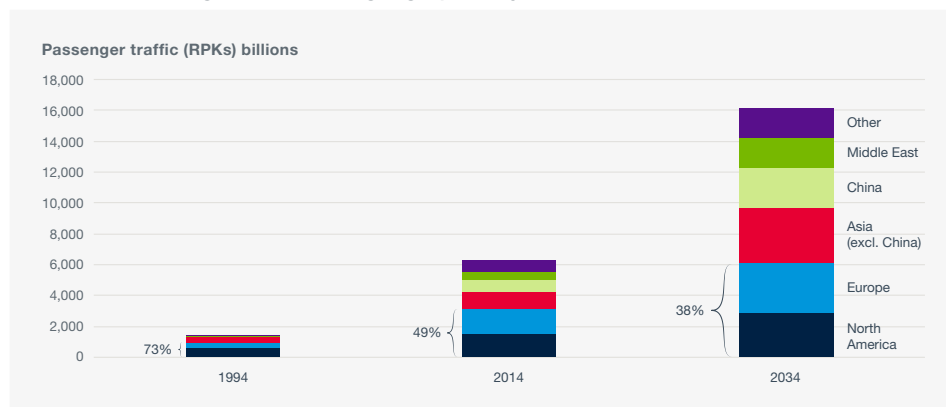
Emerging markets are driving the economic growth



World traffic varies by market



Air travel becoming more diverse geographically



KEY INDICATORS

As discussed in the “Methodology” section, GDP is a strong indicator for the Current Market Outlook. IHS Economics is forecasting GDP to grow at 3.1 percent over the next 20 years. Regional variations are prevalent, with emerging regions growing above world trend and more mature economies

growing below world trend.

Based on the expected growth in GDP, airline passenger traffic is projected to grow at 4.9 percent and air cargo traffic at 4.7 percent. As with the economy, world traffic varies by market. Over the next two decades, fast growth in China’s domestic market will make it the largest domestic market in the world, and traffic within Asia is set to become the largest travel market. The favorable location of the airlines in the Middle East allows them to link many parts of the world with one-stop flights, which will help drive higher-than-average growth on those routes. The strong economy in North America is strengthening domestic traffic. And diversification continues in the passenger market. Twenty years ago, the majority of passengers traveled on airlines based in Europe or North America, but today that number has shrunk to 49 percent, and by 2034, it will be 39 percent.

FLEET DEVELOPMENT

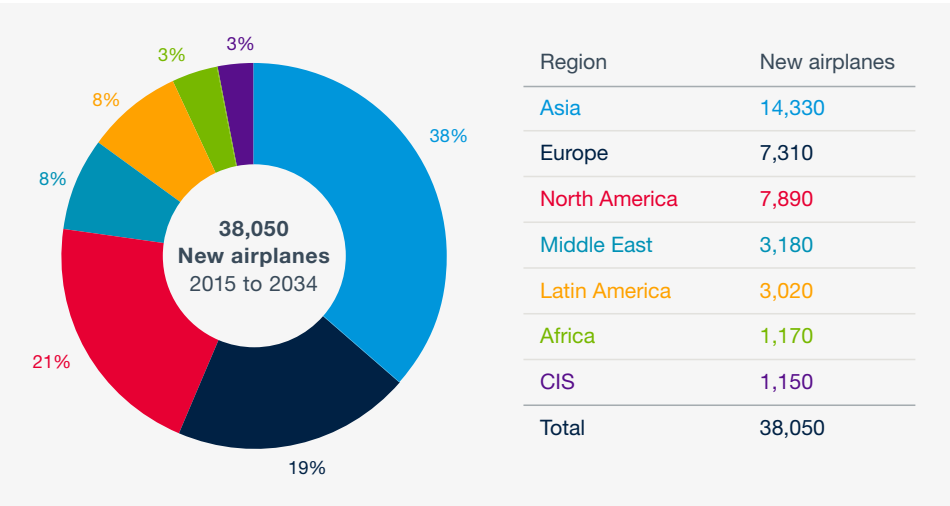
In 2014, there were approximately 21,600 airplanes in service, a number that is expected to double over the next 20 years to an in-service fleet of 43,560 airplanes. To achieve that number, 38,050 new airplanes will be needed, and 26,730 of them, or 70 percent, will be single-aisle airplanes. Additionally, 8,830 new widebody airplanes will be needed. Regionally, the need for new airplanes is well balanced—Asia will need approximately 40 percent; Europe and North America combined will need approximately 40 percent; and together, the Middle East, Latin America, Africa, and CIS will need the remaining 26 percent.

Because aviation has been a growth business strongly tied to economic expansion and development, much of the demand focuses on industry growth requirements. But how are replacement dynamics evolving? Historically, 2 to 4 percent of the in-service fleet is removed from service annually. In the past few years, that number has been 500

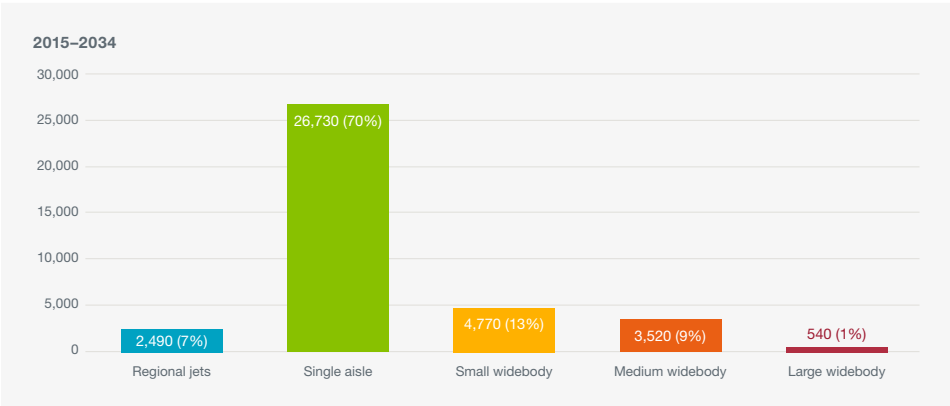
to 700 airplanes per year, of which 350 to 400 were single aisle, and 150 to 200 were widebody, plus regional jets. Many factors can drive the need for replacement. Age is the primary one, but others include relative airplane economics, maintenance requirements, and the overall market environment. In recent years, high fuel costs have played a larger role in influencing decisions to remove airplanes from service, especially in the single-aisle category. On the other hand, the lack of availability of widebody airplanes has challenged airlines' ability to remove certain types from service as rapidly as desired. So far in 2015, however, a more favorable environment has provided airlines with some near-term flexibility to manage aging fleets while growing capacity. In the next 10 years, the number of single-aisle and widebody airplanes entering the zone of replacement will double. The number of single-aisle airplanes reaching 25 years of age has traditionally averaged 250 to 275 annually, but that figure will double to more than 500 by the beginning of the next decade. Meanwhile, the number of widebody airplanes reaching 25 years of age currently averages approximately 100 annually but will increase to well over 200 during the same period. These numbers are in addition to the more than 1,400 single-aisle, widebody, and freighter airplanes still in service after more than 25 years. To continue growing globally at the expected annual rate of nearly 5 percent, the airline industry needs an approximate net annual increase in fleet size of 4 percent, with approximately 3 percent replacement. Since fleet replacement is largely less optional than fleet growth, it provides a solid, stable base for long-term demand for new airplanes. The two largest fleet domiciles, Europe and North America, are expected to need well over 50

percent of their new deliveries to replace older, less efficient airplanes, as are the mature Northeast Asia and Oceania regions, thereby balancing the growth across emerging and developing markets in Asia, Latin America, and Africa.

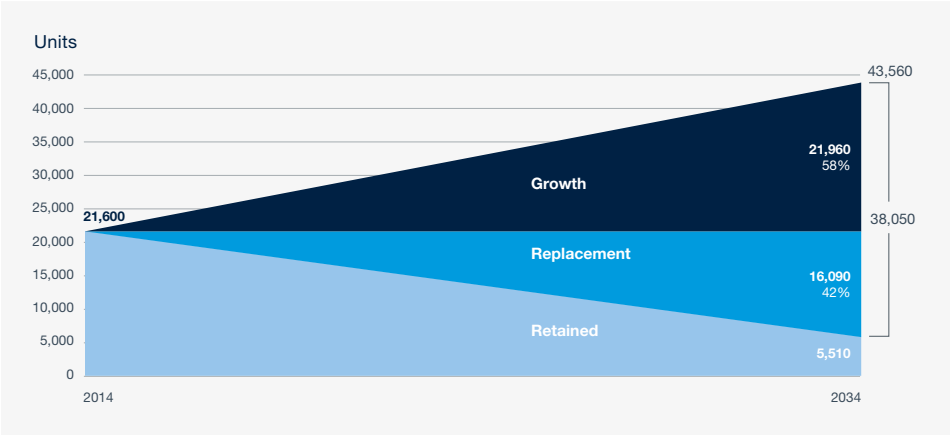
Delivery demand is diverse



Delivery demand is diverse



Older, less efficient airplanes replaced with more efficient, newer generation airplanes



Our long-term view of market demand is that airplane replacement will form 42 percent—a figure that has increased nearly every year as more fleets in emerging markets launch replacement cycles in the 20-year timeframe.

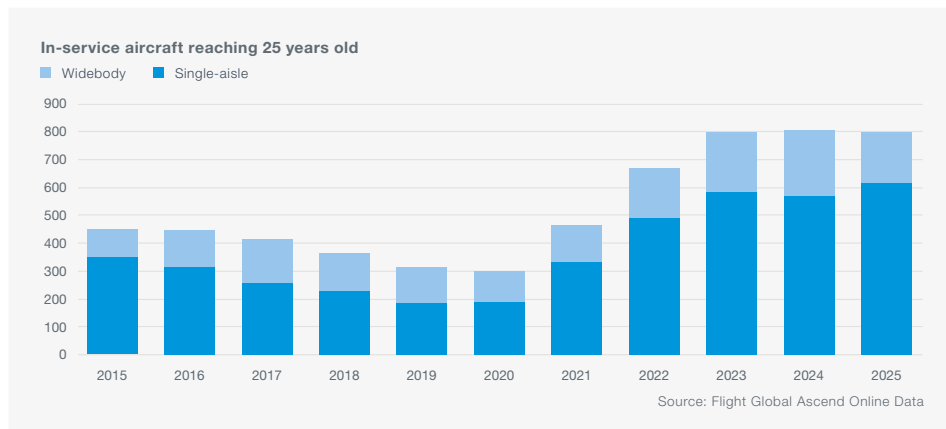
SINGLE AISLE GROWTH REMAINS STRONG

The current single-aisle fleet consists of approximately 14,100 airplanes. North America leads with more than 3,800 in service. Over the next 20 years, the single-aisle market will continue to enjoy robust demand—26,730 airplanes, valued at \$2.8 trillion. With that as the backdrop, the following paragraphs cover long-term demand for single-aisle airplanes and some facts about and projections for the 737 fleet. A simple average of single-aisle demand is more than 110 airplanes per month, excluding deliveries for noncommercial (private, military, government) uses. But current industry production levels are below 90. Over the past decade, the global single-aisle market has changed substantially owing to many key dynamics,

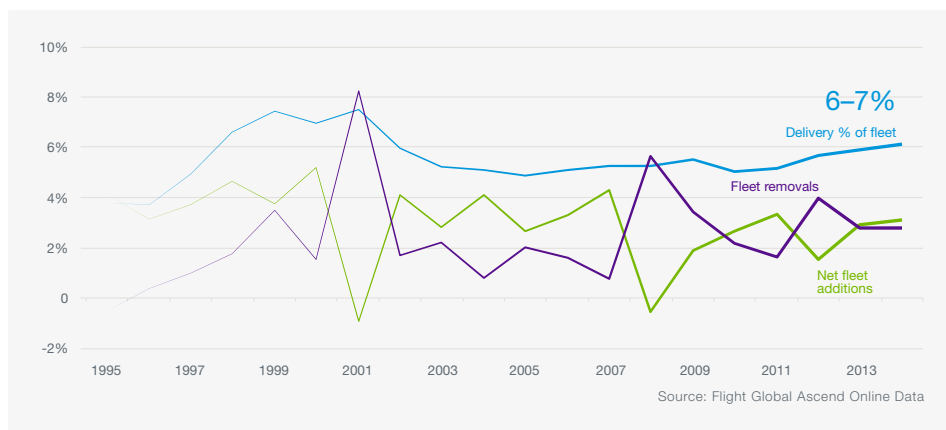
including the significant growth and development of low cost carriers (LCC), consolidation in European and North American markets, the impact of fuel prices, and continued market fragmentation. So how do these changes affect demand for single-aisle airplanes now and in the future? Looking at the composition of single-aisle deliveries over the past decade, the backlog for the future, and how the two relate to trends in seat size and airplane aging, we see the following:

- Early 2000s. Fuel prices were low, and deliveries split evenly between small (42 percent) and medium (48 percent) single-aisle airplanes, with the remaining 10 percent in the large (737-900, A321) model category.
- Mid to late 2000s. As fuel prices tripled and LCCs rapidly expanded, focusing on unit costs and new point-to-point services, total deliveries shifted substantially (60 percent) to the middle (737-800, A320) model category.
- 2010s. Approximately 80 percent of deliveries in the past five years were for the middle model category of the single-aisle families. Sustained high fuel prices and competition pushed seat densities higher and unit costs lower. Balancing these factors was the need to retain the versatility of right-sized fleets, for efficient expansion through increased frequencies and new direct routes.
- Near-term backlog. Approximately 75 percent of firm orders are in the middle-model category. Also, there was an uptick in orders for the large single-aisle airplanes, reflecting aging 757 (and early A321) models due for replacement in the next five to seven years.

Significant growth in replacement requirement



Substantial and growing portion of projected demand



- Single-aisle aging. Looking deeper, the market is entering a period between now and 2020 during which
- Large single-aisle airplanes are expected to briefly represent up to 30 percent of the aging (25 years old and older) single-aisle fleet. (Beyond 2020, the share will fall to approximately 10 to 20 percent.)
- Large single-aisle airplanes will represent 23

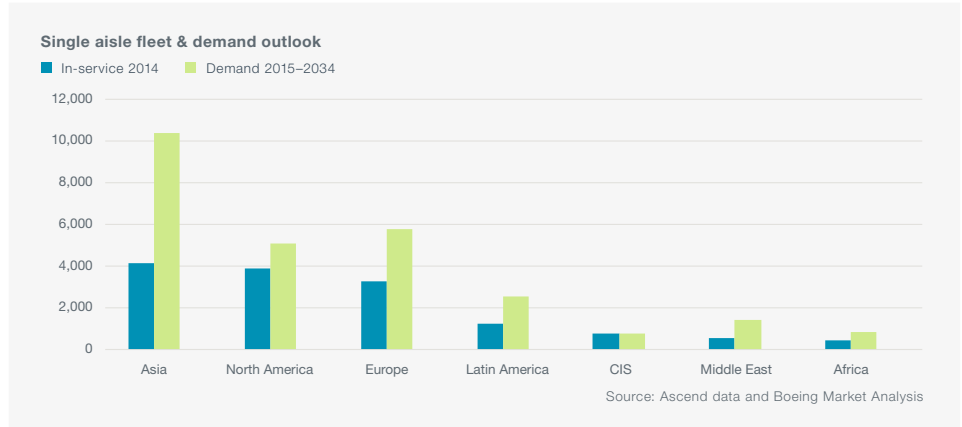
percent of the near-term backlog.

- **Densification and up-gauging.** Over the past decade, through seat densification and modest up-gauging, numbers of single-aisle seats have increased an average of approximately 1 to 1.5 seats per year—from 139 per flight in 2004 to 152 seats in 2014. We project that this slow trend will continue over the next decade as airlines continue to move to the heart of the market (737-800 and A320) airplanes.

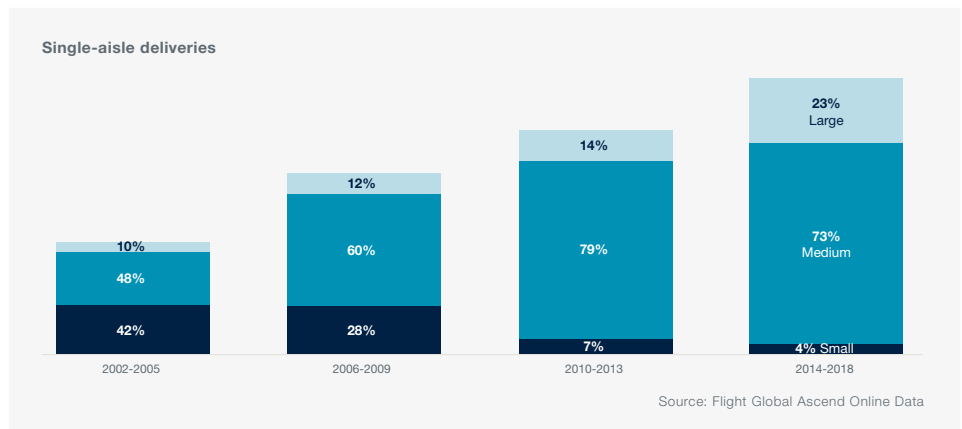
These facts are the basis for our confidence that the heart of the global market will continue to converge toward the 160-seat size. And as fuel-price volatility resumes in the near term, we expect this trend to strengthen as lower prices expand stimulation and fragmentation opportunities that are possible only with the risk-reward benefits of airplanes such as the 737-800. As the market continues to develop and expand, so do LCC business models. In fact, as airlines further innovate their product and network offerings, increasing differentiation is emerging within the broad LCC market. For example, some carriers are offering more amenities, others are capturing more ancillary fees, and still others are exploring longer mission distances. These innovations drive airline efforts to grow profitably—through a combination of cost efficiency and increased revenue—in the most optimal way for the competitive environments in which they operate. The 737 MAX 200, with its capacity to seat up to 200 passengers, offers a compelling market opportunity in an emerging segment of this LCC market by maximizing efficiency, revenue, and flexibility while minimizing overall risk. Over the past four years, more than 1,200 airplanes, or more than 40 percent of the approximately 3,000 single-aisle

airplanes produced for the market, have been delivered to LCCs worldwide. And approximately 40 percent of the 20-year single-aisle deliveries—400 to 500 airplanes every year—will be in this market segment.

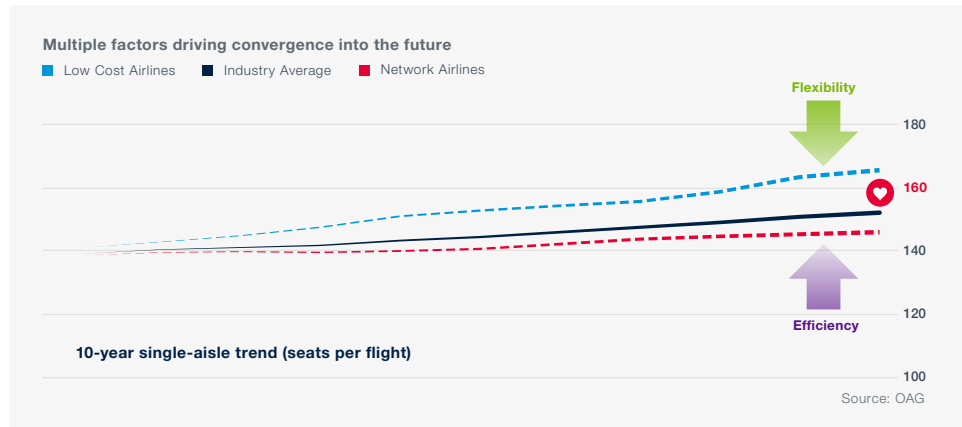
Regional variation in single aisle fleet



Multiple factors driving convergence into the future



Multiple factors driving convergence into the future



CAPABILITY, EFFICIENCY, AND FLEXIBILITY
DRIVE GROWTH IN THE WIDEBODY FLEET

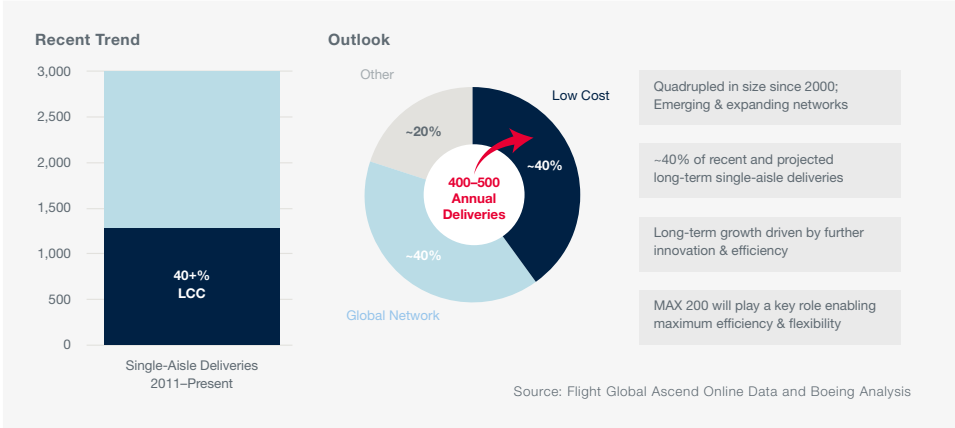
Airlines value the capabilities and flexibility that today's widebody airplanes, such as the 787, 777, and 747-8i, provide. These families of products allow airlines to perform profitably

on routes in their network by using the right-sized airplane and range capability. Airplanes of the future—such as the 777X—are being designed to fit well with these families. The widebody fleet continues to grow as airlines expand their international presence. Over the next 20 years, Boeing forecasts

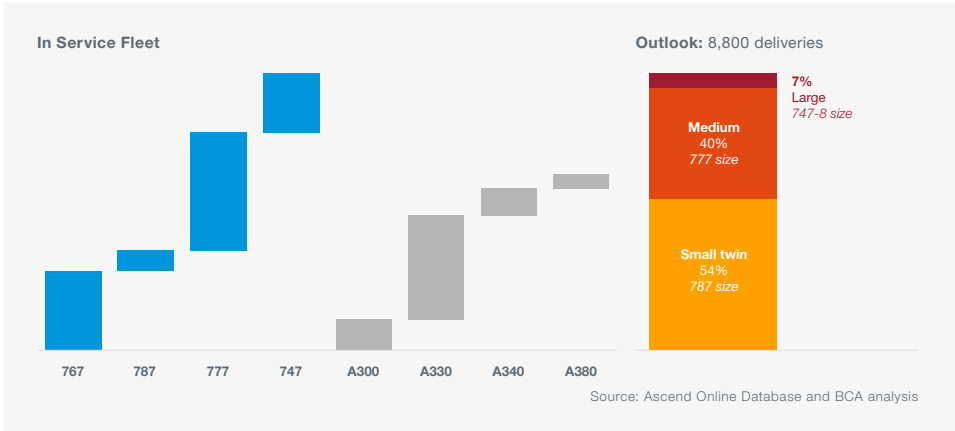
that long-haul international traffic will grow 5 percent annually. This growth is driving a need for 8,830 new airplanes, valued at \$2.7 trillion. As airlines continue to diversify their fleets, we see a need for 4,770 airplanes in the small category (i.e., 787-8, 787-9), 3,520 in the medium category (i.e., 787-10, 777, 777X), and 540 in large category (i.e., 747-8i). Over the past 20 years, airlines have moved away from the large widebody airplanes as they focus on flexibility and efficiency and seek an increased mix of all widebody airplane sizes. In 1994, the large-size airplane accounted for 24 percent of widebody airplanes. Today, that number has dropped to 15 percent, and by 2034, the large widebody airplane will account for only 5 percent of the widebody fleet. With this reduction in the number of large widebody airplanes, we have seen a slight decline in the average number of seats flown, but we expect this number to grow slightly as airlines increase the number of medium widebody airplanes they operate. Between 1994 and 2004, there was a .3 percent reduction in the average number of seats per airplane, but over the past 10 years, there has been an average annual increase of .5 percent. The characteristics of the market and the airlines in those markets also influence the size and types of airplanes needed:

- Asia, an emerging player in the long-haul international market as well as a burgeoning regional aviation market, will rely heavily on the small and medium widebody airplanes. These size categories provide not only the smaller airplanes such as the 787-8

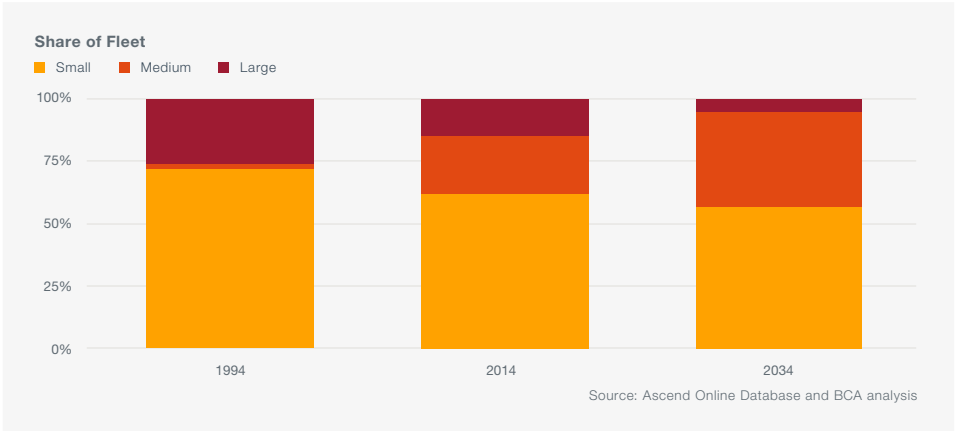
Low Cost Carrier expansion continues



Airlines focusing on efficiency and flexibility



Airlines focusing on efficiency and flexibility



and 787-9, which helps take risk out of new markets, but it also has the 777 and 777X, which will provide the size and range for markets such as North America.

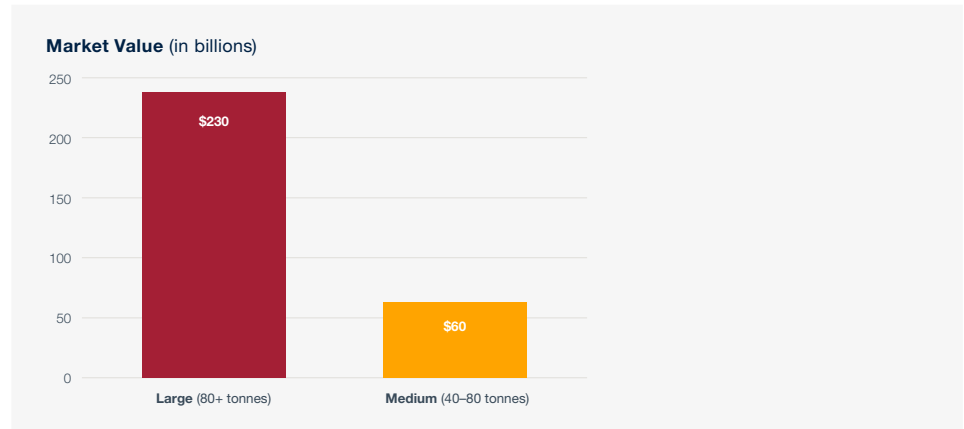
- Europe is ranked number two for new deliveries of small widebody airplanes. This size of airplane allows airlines to connect secondary markets to larger hubs as they explore ways to remain competitive.
- The Middle East will take delivery of the greatest number large widebody airplanes and the second greatest number medium widebody airplanes because of the number of people transiting through the region. The location of the Middle East makes it easy for passengers to fly to just about any place in the world with only one stop

offer shippers a combination of reliability, predictability, and control over timing and routing that is often superior to that of passenger operators. As a result, freighters are expected to continue carrying more than half of global air cargo traffic to satisfy the demanding requirements of that market.

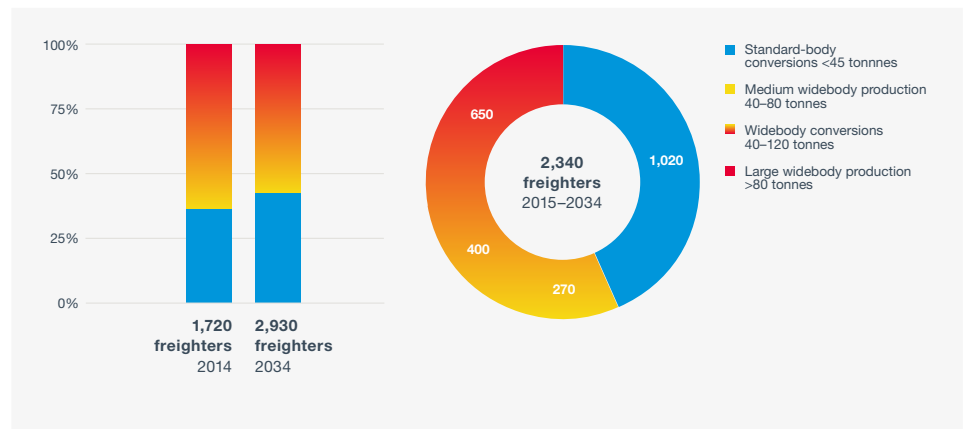
AIR CARGO TRAFFIC REBOUNDS TO HISTORIC GROWTH RATES

Air cargo market recovery continued in 2014, with traffic returning to historic growth rates. The two primary indicators of future traffic are the trends in world economies and international trade. Both are forecast to continue growing strongly and lead to a return to capacity balance and profitable yields. Industries that require transport of time-sensitive and high-value commodities such as perishables, consumer electronics, high-fashion apparel, pharmaceuticals, industrial machinery, and automobile parts recognize the unparalleled speed and reliability that air freight offers. These customers see the value of air freight, which will continue to play a significant role in their shipping decisions. Passenger airplanes and dedicated freighters both carry air cargo. Lower-hold cargo capacity on passenger flights has been expanding as airlines deploy new jetliners with excellent cargo capability, such as the 777-300ER. However, dedicated freight services

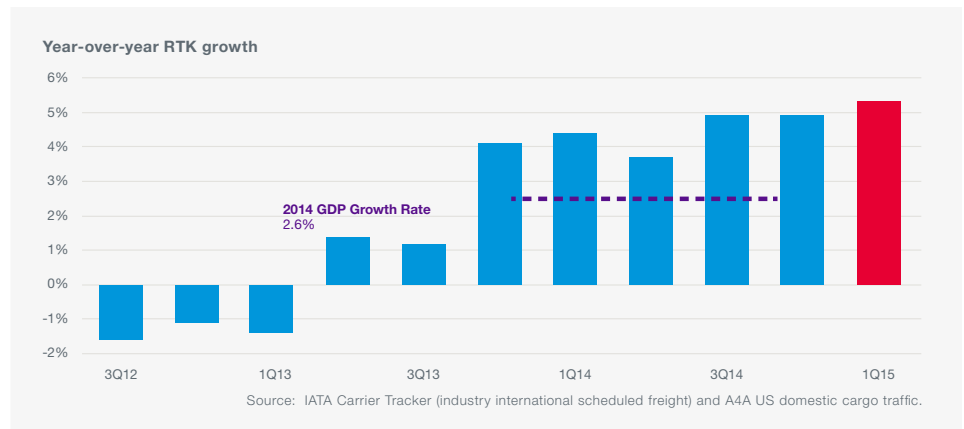
Point-to-point service* Freight market value: \$290 billion



920 new and 1,420 converted freighters



Air cargo traffic growth continues at longer-term rates



As global GDP and world trade growth accelerate, air cargo traffic, measured in revenue tonne-kilometers, is projected to grow an average 4.7 percent per year over the next 20 years. This rate, in spite of exogenous shocks arising from economic and political events and natural disasters, is only slightly below the 5 percent average annual rate of the past three decades. Replacement of aging airplanes, plus the industry's growth requirements, will create a demand for 2,340 freighter deliveries over the next 20 years. Of these, 1,420 will be passenger airplane conversions. The remaining 920 airplanes, valued at \$290 billion, will be new. The overall freighter fleet will increase by more than half—from 1,720 airplanes in 2014 to 2,930 by 2034.

Over the next 20 years, Boeing forecasts a requirement for 1,020 standard-body freighters from converted passenger airplanes because of the low capital cost. Emerging markets will continue to drive strong demand. The lower purchase price of converted freighters offers carriers opportunities when high utilization and market-dependent demand are more significant considerations than performance, efficiency, and reliability. Thus, nearly 400 widebody conversions will be needed over the forecast period. During the forecast period, 270 medium widebody purpose-built freighters will be delivered. Express carriers are the primary operators of medium widebody aircraft as they possess the higher-yielding small parcel and document traffic needed to operate them more profitably. However, competition from less-expensive surface transport and passenger airplane lower-hold capacity constrains the use of medium widebody freighters in regional markets. Nearly 650 new large freighters will be required where high cargo density, larger payloads, and extended range are crucial.

WORLD REGIONS



WORLD

GLOBALIZED DEMAND

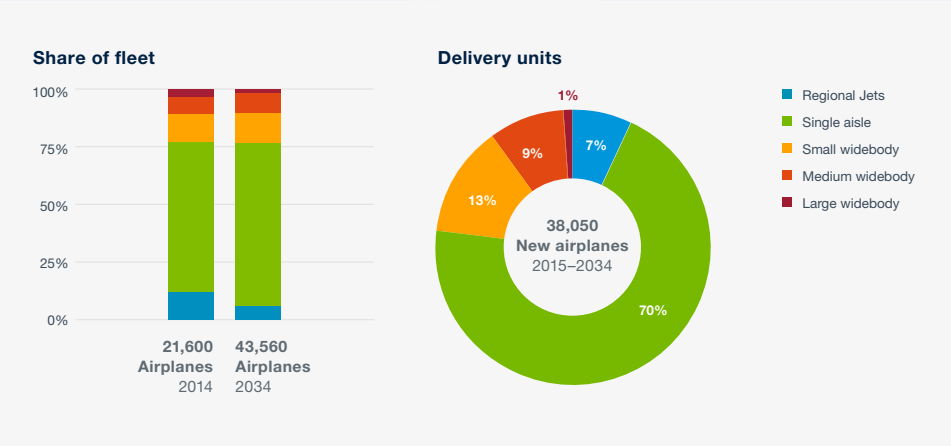
Aviation is an increasingly integral part of life, bringing people closer together. As the world's emerging markets continue to grow and new business models expand, airplane manufacturers are seeing greater diversity in their customer base. In 1994, airlines in Europe or North America carried more than 73 percent of all traffic. By 2034, that share will shrink to 38 percent, with Asia Pacific and Middle East airlines becoming prominent in global aviation. The low-cost business model continues to drive growth in the single-aisle market. Passengers have access to a wider range of destinations and the benefit of the speed and convenience that flying offers over traditional modes of transportation. Meanwhile, new, efficient widebody airplanes are enabling smaller operators in developing markets to compete on longer routes that large foreign network carriers have traditionally dominated. The range and economics of these airplanes are dramatically expanding the number of long-haul nonstop city pairs offered. Rapidly evolving aviation services in emerging regions are broadening the geographical balance of airplane demand, spurring a worldwide requirement for 38,050 new jet airplanes, valued at \$5.6 trillion.

REGIONAL FOCUS

Each region will respond to its unique situation and conditions with specialized requirements. Middle East airlines continue to favor widebody airplanes and premium passenger services to leverage the area's geographic advantages and prominence in business travel. Europe and North America airlines will respond to growing competition from low-cost carriers by replacing older, fuel-inefficient airplanes with more economical single-aisle models. The large installed airplane base in these areas generates a need for a considerable number of replacement airplanes, even though growth is slower than in other parts of the world. In Asia, rising demand will

require a mix of single-aisle and widebody airplanes. All regions will face similar challenges of fuel-price volatility, emission control regimes, and ever-increasing airport congestion as the growing world fleet works to keep pace with burgeoning international and local demand for air travel.

World market value: \$5.6 trillion



World key indicators and new airplanes

Growth Measures (%)		New airplanes		Share by size (%)	
Economy (GDP)	3.1	Large widebody	540	1	
Traffic (RPK)	4.9	Medium widebody	3,520	9	
Cargo (RTK)	4.7	Small widebody	4,770	13	
Airplane fleet	3.6	Single aisle	26,730	70	
		Regional jet	2,490	7	
		Total	38,050		
Market size		2014 fleet	2034 fleet		
Deliveries	38,050	Large widebody	740	670	
Market value	\$5,570B	Medium widebody	1,620	3,800	
Average value	\$150M	Small widebody	2,520	5,800	
		Single aisle	14,140	30,630	
		Regional jet	2,580	2,660	
		Total	21,600	43,560	

ASIA



TODAY'S MARKET

Asia has become one of the biggest aviation markets in the world—at last count, a billion passengers travel to, from, or within the region each year. And more than 100 million new passengers are projected to enter the market annually for the foreseeable future. As a result, the airlines and airports in this region are continually growing, with several ranked among the largest in the world. This evolution has been due largely to regional economic growth; liberalization and deregulation; new, efficient airplanes, and new business models. Over the past decade,

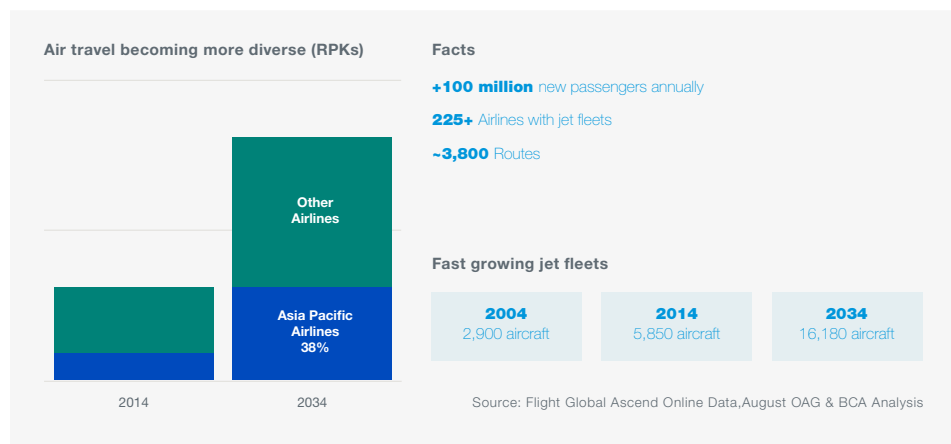
- Jet fleets of Asia airlines have nearly doubled, from 2,900 to 5,850.
- The number of Asia airlines with jet fleets has grown from 150 to 225.
- The capacity that these airlines provide has grown on average by 7 percent annually.
- Routes to, from, and within Asia have increased 57 percent, from 2,200 to 3,800.

AIRLINES

The low-cost carrier (LCC) business model has proved successful throughout the world but particularly so in Asia Pacific. Typical LCC strategies include operating at secondary airports, flying a single airplane type, increasing airplane utilization, relying on direct sales, offering a single-class product, avoiding frequent-flyer programs, and keeping labor costs low. Over the past 10 years, the region's LCCs have generated an average annual growth rate of 24.5 percent. By comparison, Europe's LCCs grew 13.4 percent annually during the same period, and North America's grew a modest 2.2 percent annually.

The countries in Southeast Asia were some of the first in the region to employ the LCC business model, and today, LCCs are flying nearly 20,000 weekly flights. Northeast Asia, on the other hand, has been slower to see the growth of LCCs, owing in part to the large high-speed rail network in Japan and to an aging population. China is the latest region to embrace the LCC model, with a

Asia Aviation Trends



Low Cost Carriers gaining traction in region



large increase in the number of entrants in the past two years. To expand outside their home country, many airlines have created joint-venture subsidiaries to avoid restrictions on foreign ownership. These subsidiaries, which employ the LCC business model, are often cobranded with the parent airline and share its name and livery. Although the vast majority of this activity has been in short-haul markets using single-aisle airplanes, the region is beginning to see joint ventures flying widebody airplanes on medium-haul operations in response to strong traffic growth.

At the other end of the spectrum, Asia’s network carriers include some of the largest, oldest, and most well-regarded airlines in the world, such as Korean Air, Air China, and JAL. Network carriers tend to have major hub operations for domestic, regional, and international services and large, complex fleets; airline alliances; and a broad array of service offerings (such as airport lounges, onboard meals, and multiple cabin classes) to enhance passenger satisfaction.

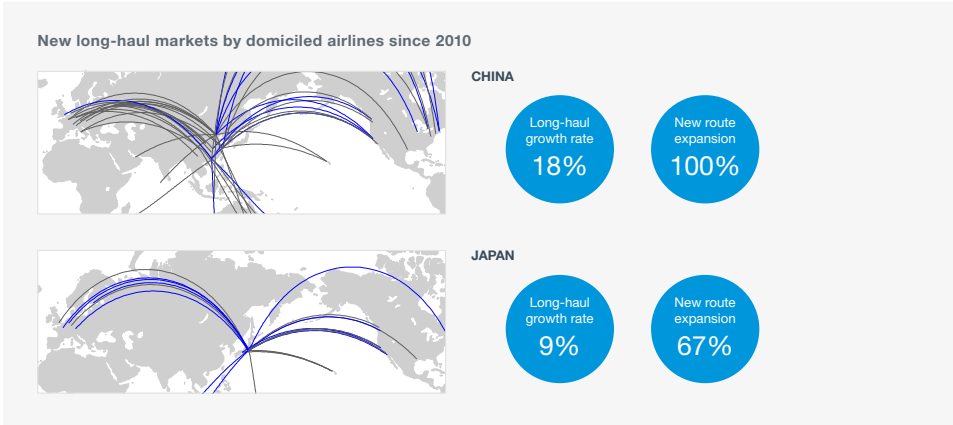
Hub operations significantly increase network reach and allow carriers to offer convenient, one-stop connections around the globe. Additionally, traditional Asia Pacific network carriers are evolving their businesses to satisfy passenger needs. They are continually upgrading their fleets for efficiency. Some—such as Qantas, Singapore Airlines, and Thai Airways—have also created their own LCCs to offer products that are similar to what other LCCs offer but without diluting their premium product offerings.

FUTURE DEMAND

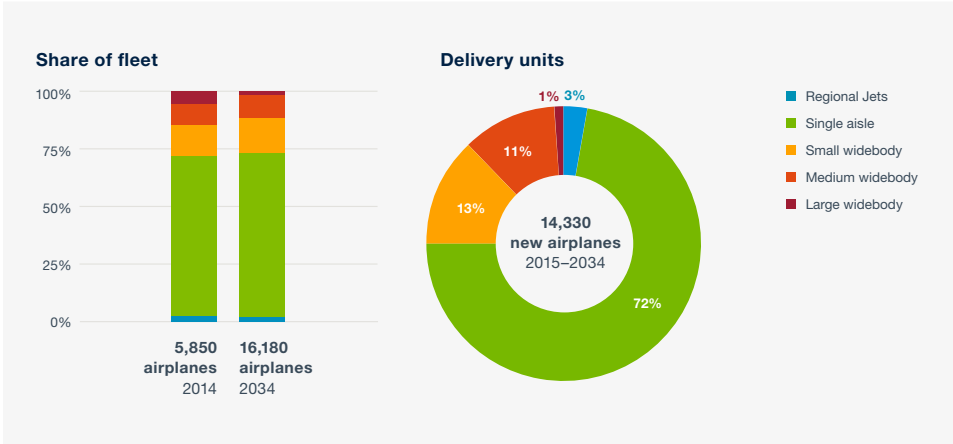
Asia is expected to be the largest travel market in the world, growing at 6.1 percent annually. One factor in this growth is the region’s GDP, which is expected to grow by 4.3 percent annually over the next 20

years. Although that growth will be mixed owing to the region’s current composition of mature, developing, and emerging markets, Asia GDP and passenger traffic will drive an estimated need for 14,330 new airplanes valued at \$2.2 trillion. The LCC market, for example, is helping grow the need for 10,370 new single-aisle

Long-haul expansion is accelerating with 787s



Asia market value: \$2.2 trillion



Asia key indicators and new airplanes

Growth Measures (%)		New airplanes		Share by size (%)	
Economy (GDP)	4.3	Large widebody	140	Large widebody	1
Traffic (RPK)	6.1	Medium widebody	1,530	Medium widebody	11
Cargo (RTK)	5.7	Small widebody	1,920	Small widebody	13
Airplane fleet	5.2	Single aisle	10,370	Single aisle	72
		Regional jet	370	Regional jet	3
		Total	14,330		

Market size		2014 fleet		2034 fleet	
Deliveries	14,330	Large widebody	280	Large widebody	180
Market value	\$2,200B	Medium widebody	530	Medium widebody	1,620
Average value	\$150M	Small widebody	780	Small widebody	2,270
		Single aisle	4,130	Single aisle	11,730
		Regional jet	130	Regional jet	380
		Total	5,850	Total	16,180

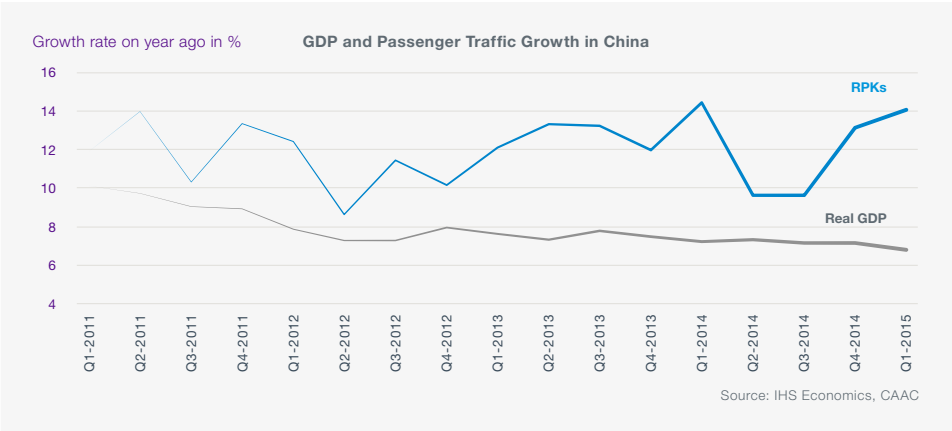
airplanes, with the majority in the size category of the 737 MAX 8. This size of airplane gives airlines the efficiencies needed to open new routes while continuing to operate profitably on current routes.

Meanwhile, widebody airplanes such as the 787 and 777 provide the needed range and economics to open markets that were inaccessible in the past. The 787 continues to open new markets to and from the region. Both Japan, a mature market, and China, a rapidly growing market, have employed the 787 to grow long-haul share. In China, the long-haul growth rate since 2010 has been 18 percent, with the 787 being used primarily to open new markets. In Japan, long-haul growth has been at 9 percent since 2010, with more than two-thirds of its new 787s being used to open new markets. These market dynamics will lead to regional need for 3,590 new widebody airplanes by 2034.

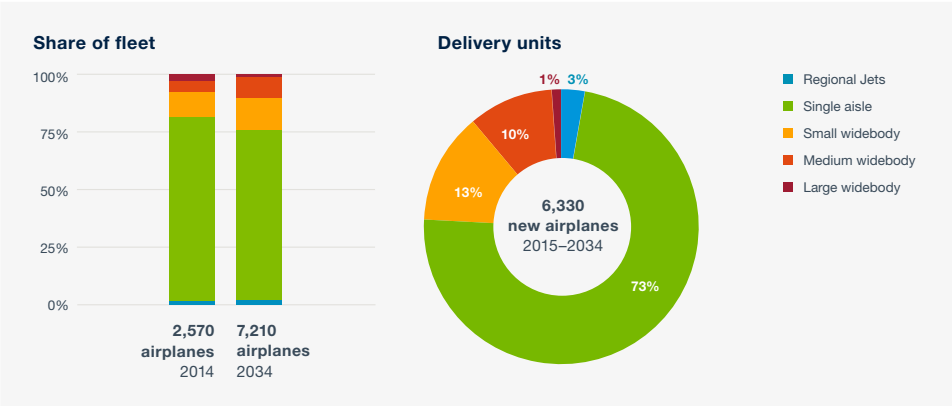
Air cargo also plays a crucial role in Asia. The region transports vast amounts of goods over difficult terrain and vast stretches of ocean. Many of the world's largest and most efficient cargo operators are located in the region, where the air cargo market is expected to grow by 5.7 percent per year. As a result, carriers in the region are expected to need 380 new production freighters and 570 converted freighters in the years ahead.

for airplanes. Investment will remain a pillar of the Chinese economy and will provide the necessary infrastructure for sustained growth in passenger traffic. Moreover, targeted efforts toward increased links with Africa and Central Asia will reactivate former trade routes and will further integrate China into world markets. Over the next 20 years, it is expected that

Passenger traffic continues to grow, despite slower economy



China market value: \$950 billion



China key indicators and new airplanes

Growth Measures (%)		New airplanes		Share by size (%)	
Economy (GDP)	5.6	Large widebody	50		1
Traffic (RPK)	6.6	Medium widebody	650		10
Cargo (RTK)	7.0	Small widebody	810		13
Airplane fleet	5.3	Single aisle	4,630		73
		Regional jet	190		3
		Total	6,330		

Market size		2014 fleet		2034 fleet	
Deliveries	6,330	Large widebody	60		70
Market value	\$950B	Medium widebody	140		670
Average value	\$150M	Small widebody	260		940
		Single aisle	2,060		5,340
		Regional jet	50		190
		Total	2,570		7,210

CHINA

AIR TRAVEL AND CONSUMPTION STRONG

China is gradually reducing its rate of growth as it rebalances toward a more consumption-oriented economy. Because travel and transport are key services in a consumer economy, this transition will strengthen demand

the Chinese economy will grow 5.6 percent and that passenger traffic will grow 6.6 percent and air cargo, 7 percent.

DOMESTIC AND REGIONAL GROWTH HELPING DRIVE SINGLE-AISLE DEMAND

Growth in China’s domestic and regional markets has stimulated the need for single-aisle airplanes. According to data of the Civil Aviation Administration of China (CAAC), domestic passenger traffic has grown 12 percent annually over the past decade. A variety of factors are driving this trend. Since 2013, new airlines have entered the market, among them new low-cost carriers. Today, these new airlines make up 11 percent of all domestic flights, and as in other regions, it is expected that these new entrants will continue to stimulate the market.

In addition, new carriers, and domestic initiatives, are stimulating point-to-point travel. Over the past five years, airline capacity has grown more than 20 percent annually. Capacity for flights between or into the golden triangle (Beijing, Shanghai, and Guangzhou) and between metro airports with traffic of at least 10 million passengers has increased nearly 8 percent annually. Also, established Chinese airlines continue to grow their share of flights to such destinations as Northeast Asia, Southeast Asia, South Asia, and Oceania. Chinese airlines are now providing 54 percent of total capacity. As the market continues to grow, airlines in China will need 4,630 new single-aisle airplanes, valued at \$490 billion.

LONG-HAUL EXPANSION ACCELERATING

Like the domestic market, international passenger traffic has increased at double-digit rates. Driving this expansion are more direct flight and flights from second-tier cities. Since 2013, 30 new routes of more than 3,500 miles have opened, and most fly a 777-300ER or a 787. Chinese airlines operate half of these new routes, increasing their market share to 46 percent.

At the same time, liberalization of visa policies along with new technologies, capabilities, and efficiencies will increase traffic. It is expected that by 2021, passenger travel between China and the United States will triple. This growth will drive a need for at least 1,500 new widebody

airplanes, valued at \$450 billion. Included in this number is a demand for 190 widebody freighters, valued at \$60 billion.

NORTHEAST ASIA

ECONOMIC FORECASTS PROJECT MODEST GROWTH

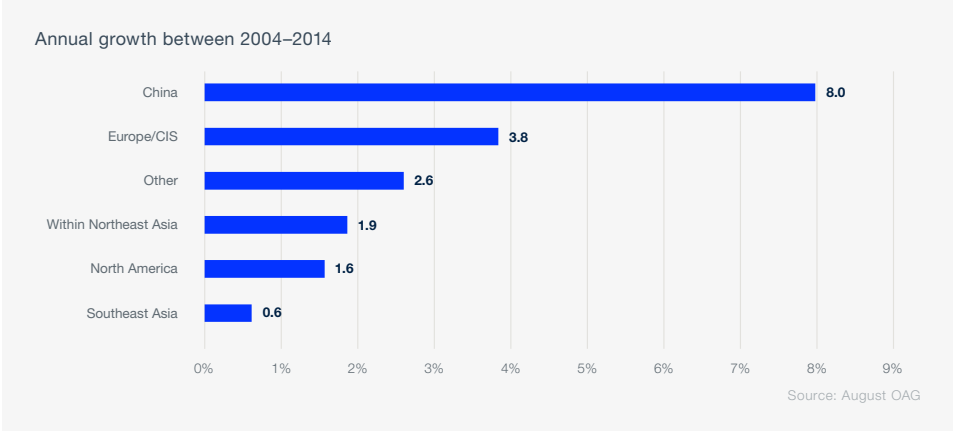
Northeast Asia, which includes Japan, North and South Korea, and Taiwan, accounts for 10 percent of world gross domestic product (GDP). Although the region’s GDP is growing more slowly than the world average, it is expected to maintain a sustaining rate of 1.3 percent over the next 20 years. It also is expected to help drive passenger traffic growth of 2.6 percent and cargo traffic growth of 4.6 percent through 2034. This growth will result in a need for 1,450 new airplanes, valued at \$310 billion. Approximately two-thirds of new airplanes will replace existing airplanes, and the remaining one-third will respond to airline growth in the region.

Even though Northeast Asia has a mature aviation market, there still are opportunities for growth. Over the past 10 years, the number of flights to destinations outside the region has increased an average of 2.3 percent annually, with China, the Middle East, and South Asia being popular destinations. Over the next 20 years, total Northeast Asia air traffic to, from and within the region is expected to grow at an annual rate of 3.2 percent. As in the past 10 years, China, the Middle East, and South Asia are expected to be increasingly frequent destinations.

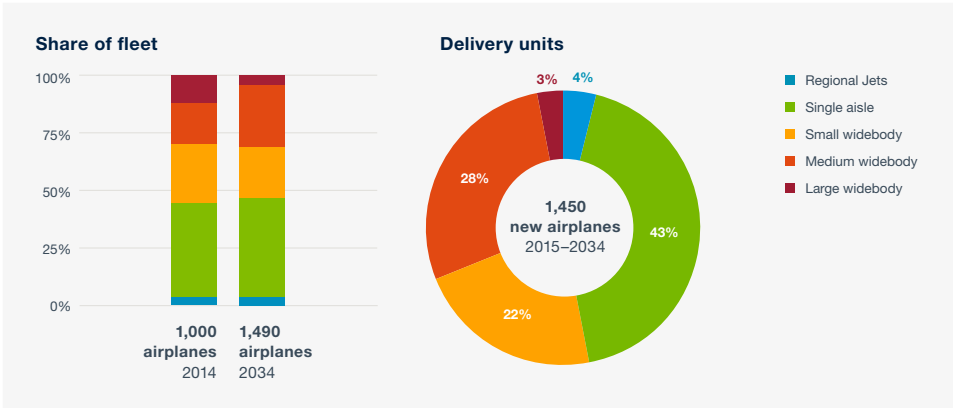
LOW-COST CARRIERS CONTINUE TO GROW

The growth of low-cost carriers in Northeast Asia has been

Frequencies have grown 2.3% annually over the last 10 years



Northeast Asia market value: \$310 billion



Northeast Asia key indicators and new airplanes

Growth Measures (%)		New airplanes		Share by size (%)	
Economy (GDP)	1.3	Large widebody	40		3
Traffic (RPK)	2.6	Medium widebody	400		28
Cargo (RTK)	4.6	Small widebody	320		22
Airplane fleet	2.0	Single aisle	630		43
		Regional jet	60		4
		Total	1,450		

Market size		2014 fleet		2034 fleet	
Deliveries	1,450	Large widebody	120		60
Market value	\$310B	Medium widebody	180		410
Average value	\$210M	Small widebody	250		320
		Single aisle	410		640
		Regional jet	40		60
		Total	1,000		1,490

extremely strong. Although they represent only 20 percent of the seats in the market, they have grown at an annual rate of 23 percent over the past 10 years. This rate of growth, along with the increasing numbers of flights to other regions (especially to China) is helping drive the need for 630 new single-aisle airplanes, valued at a total of \$70 billion.

LARGEST WIDEBODY SHARE IN THE WORLD

Airlines in Northeast Asia have a higher percentage of widebody airplanes than do airlines in any other region. Currently, 55 percent of all airplanes in service in Northeast Asia are widebody airplanes. By 2034, the region's share of widebody airplanes will decrease slightly to 53 percent, but it will still be the largest share of any region. To hold this share, airlines will need 760 new airplanes, valued at \$240 billion.

Specifically, airlines will need 310 small widebodies, 270 medium widebodies, and 20 large widebody airplanes. This inventory will give airlines the flexibility to continue to open new markets around the world. Over the past three years, Northeast

Asian airlines have launched 16 new routes, the majority of which opened flying small widebody airplanes.

Northeast Asia air cargo carriers, meanwhile, are well positioned to continue capturing the above-average growth in intercontinental and regional markets. This increase in cargo volume will drive a need for 160 new widebody freighters.

SOUTHEAST ASIA

ECONOMIC INDICATORS POINT TO CONTINUED GROWTH

Economic growth in Southeast Asia has averaged more than 5 percent annually for the past decade and is forecast to continue expanding at the slightly lower rate of 4.6 percent through 2034. Nine of the top 10 major industries in the region are of the type that tends to drive air travel. Urban

and expatriate populations are rapidly increasing, and both contribute to industry growth and travel demand.

The combined economic and population growth has resulted in an expanding middle class. Reasonable inflation and interest rates as well as relatively low unemployment have also contributed to the evolving middle class. Members of this class tend to have the financial wherewithal to fly rather than relying on slower transportation by sea. Per capita income is steadily rising as is personal disposable income—two common drivers of the air-trips-per-person metric. The upturn in this metric is particularly notable in Southeast Asia owing to the region's largely island geography, where ground transportation typically is not a viable option.

SOUTHEAST ASIA IS ONE OF COMMERCIAL AVIATION'S STRONGEST GROWTH REGIONS

Airline capacity has risen 80 percent since the 2009 recession, but passenger traffic has risen at an even higher rate, driving airplane load factors to nearly 80 percent. Multiple indicators—including

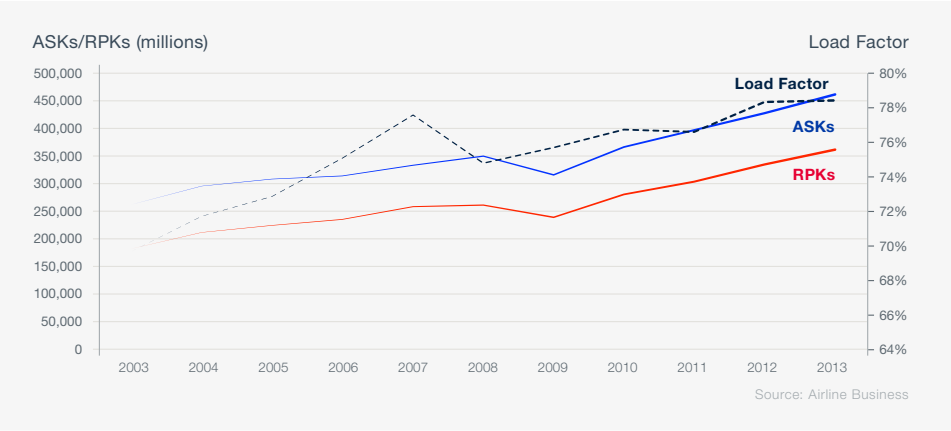
high passenger volume and steady increases in domestic and international hotel bookings—reflect the upturn in the region’s air travel. Thus, passenger traffic is expected to grow at 6.5 percent annually over the next 20 years.

This rate of growth will accentuate the need for regional investment to support and expand aviation infrastructure, including airport and airspace capacity. Even though plans include multiple new airports for the region—in countries such as Indonesia, the Philippines, and Vietnam—and the expansion of multiple existing airports, some key airports will still experience congestion. Government policies that support aviation, and continued investment in infrastructure, thus remain critical to growth of aviation in the region.

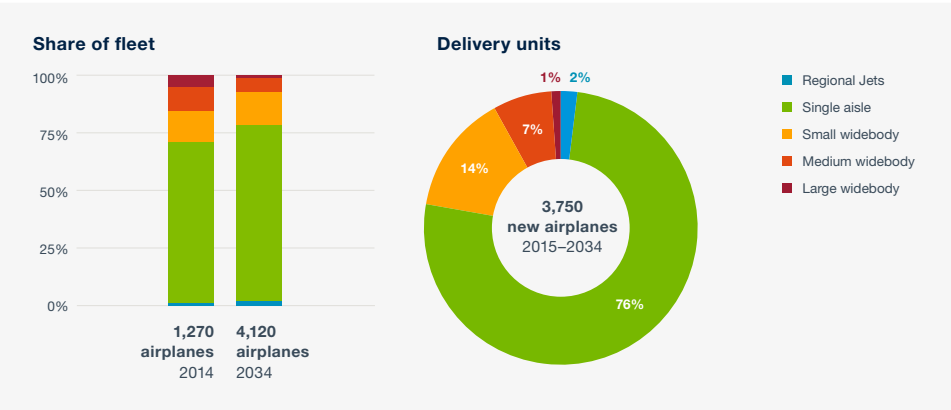
Adoption of the ASEAN Single Aviation Market will strongly support efficiencies and industry growth. Progress continues, but true “open skies” for the region will remain elusive for some time. The more liberalized the region’s air services become, the more that passengers and airlines will benefit. Presently, no plans exist to allow foreign majority ownership of airlines in the region, thus the trend of airline-cobranding subsidiaries will continue to rise.

All told, Boeing forecasts that the region will need 3,750 new airplanes, valued at \$550 billion, with more than three-quarters of new deliveries being single-aisle airplanes. The expansion of the low-cost carrier business model has been robust and will continue to stimulate regional growth. Southeast Asia is the world’s most active region for medium-haul low-cost carriers, which is a business model with strong growth potential. This expected trend as well as demand from established long-haul carriers will drive the need for 800 widebody airplanes over the next two decades.

Traffic has grown over 8% annually since 2009



Southeast Asia market value: \$550 billion



Southeast Asia key indicators and new airplanes

Growth Measures (%)		New airplanes		Share by size (%)	
Economy (GDP)	4.6	Large widebody	40		1
Traffic (RPK)	6.5	Medium widebody	250		7
Cargo (RTK)	4.6	Small widebody	510		14
Airplane fleet	6.1	Single aisle	2,860		76
		Regional jet	90		2
		Total	3,750		
Market size		2014 fleet		2034 fleet	
Deliveries	3,750	Large widebody	60		40
Market value	\$550B	Medium widebody	140		270
Average value	\$150M	Small widebody	160		560
		Single aisle	900		3,150
		Regional jet	10		100
		Total	1,270		4,120

SOUTH ASIA

TRAFFIC GROWTH FORECAST IS STRONG

Travel to, from, and within South Asia is expected to grow 8.3 percent over the next 20 years. Domestic, regional, and

interregional travel to the Middle East and to Southeast Asia will be the biggest drivers. Traffic within South Asia alone is expected to grow 9.9 percent annually—the highest growth rate among the traffic flows published in this forecast.

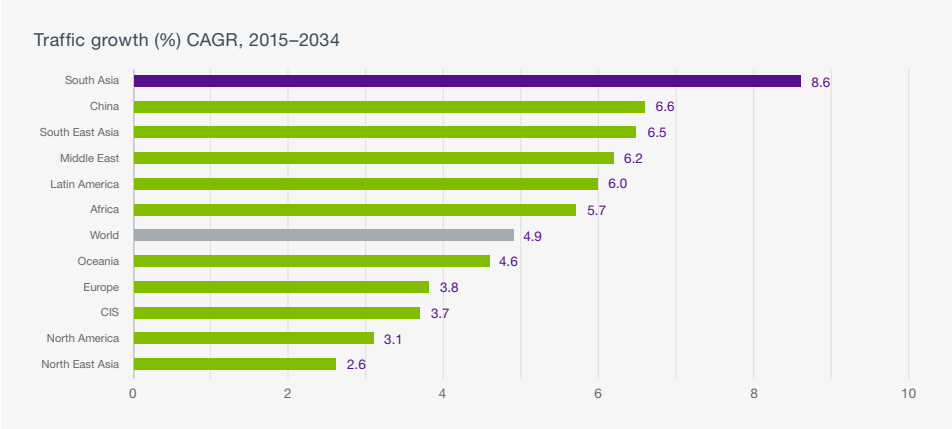
Air transportation growth is driven largely by the region’s economic development and population demographics. South Asia GDP is forecast to grow at an average rate of 6.4 percent annually through 2034. India dominates the South Asian economies, contributing more than 80 percent of the region’s GDP. Economic liberalization measures are stimulating the country’s growth. Among these measures are industrial deregulation, privatization of state-owned enterprises, and reduced controls on foreign trade and investment that began in the early 1990s. India’s GDP is forecast to grow 6.6 percent annually over the 20 years. The region’s population totaled nearly 1.7 billion in 2014, and a growing share is entering the workforce. Economic growth leading to rising incomes underpins the forecast for strong air travel demand.

A significant development in the Indian domestic market is the growing dominance of the low-cost carrier model. Pure LCCs now account for 60 percent of domestic capacity in India, and full-service carriers are shifting additional capacity to their low-cost operations. LCCs further stimulate growth in aviation and tourism through lower fares and additional services on regional routes.

MARKET REFORMS SUPPORT FURTHER GROWTH

The Directorate General of Civil Aviation recently eased regulation of the Indian aviation market. Foreign direct investment rules have been reformed to allow foreign airlines to acquire up to 49 percent of an Indian airline. Also helpful is the expansion of the e-Tourist Visa program, which dramatically streamlines and

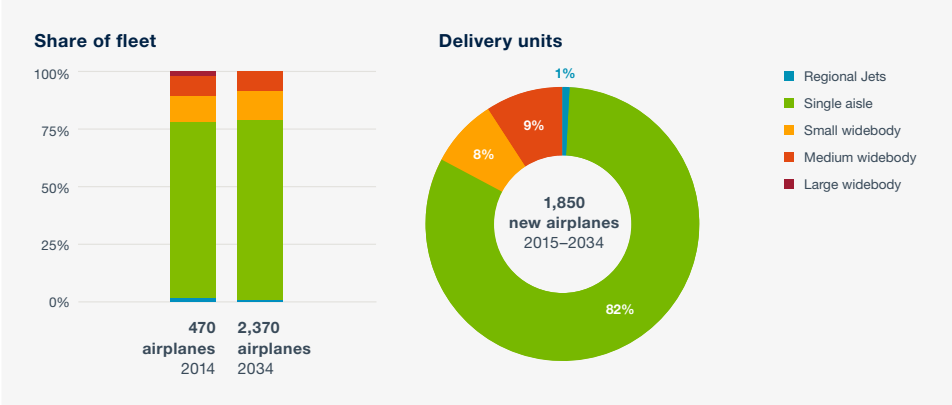
Airlines are forecast to have world-leading growth



South Asia market value: \$250 billion

Growth Measures (%)		New airplanes		Share by size (%)	
Economy (GDP)	6.4	Large widebody	--		
Traffic (RPK)	8.6	Medium widebody	170	9	
Cargo (RTK)	8.8	Small widebody	140	8	
Airplane fleet	8.4	Single aisle	1,520	82	
		Regional jet	20	1	
		Total	1,850		
Market size		2014 fleet		2034 fleet	
Deliveries	1,850	Large widebody	10	--	
Market value	\$250B	Medium widebody	40	210	
Average value	\$140B	Small widebody	50	290	
		Single aisle	360	1,850	
		Regional jet	10	20	
		Total	470	2,370	

South Asia key indicators and new airplanes



simplifies a visa acquisition process that previously deterred tourism. Under consideration are taxation reforms, including rationalization of aviation fuel taxes, which can currently reach 35 percent; reduction of taxes on maintenance, repair, and overhaul, which encourage Indian airlines to outsource MRO to neighboring regions; and reduction of duties on engine spare parts.

FLEET MODERNIZATION UNDER WAY

The commercial jet fleet in South Asia has nearly doubled in the past decade, and a large number of older airplanes have been retired from service, resulting in a significantly more efficient fleet. Average fleet age has dropped from nearly 14 years in 2004 to approximately 8 years in 2014. South Asia’s fleet count is approaching 500 airplanes, of which nearly 80 percent are single-aisle airplanes in service with low-cost and full-service airlines. As traffic increases, the region will require 1,850 new airplanes, including more than 1,500 single-aisle and 310 widebody jets, to satisfy demand for growth and replacement.

OCEANIA

NEW TECHNOLOGY PROVIDES EFFICIENCIES AND FLEXIBILITY

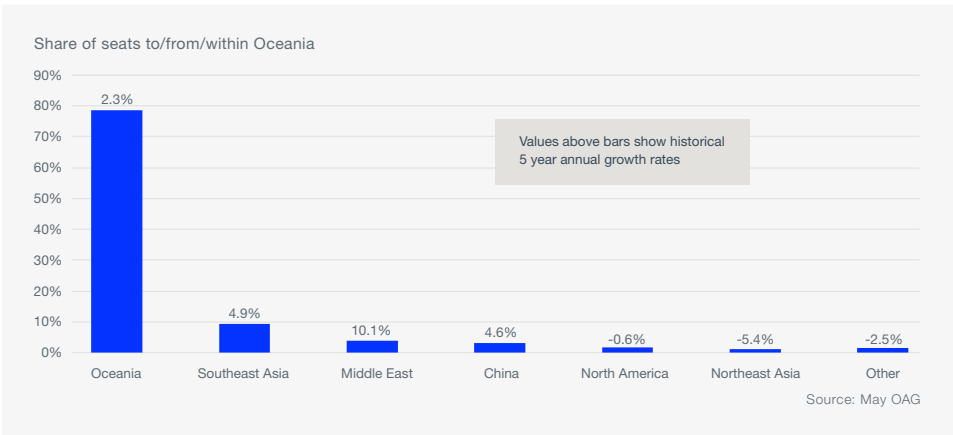
Airlines in Oceania have long been at the forefront of acquiring airplanes with the newest technology. Qantas was the first international customer for the 707, and Air New Zealand was the first airline to operate the 787-9. Because of their location, the region’s airlines have invested highly in technology that will give their flights the greatest efficiency and flexibility. Extended-range, twin-engine performance standards (ETOPS) have been crucial in enabling Oceania’s airlines to fly more direct flights, thereby saving fuel. To continue operating at the peak of efficiency and technology over the next 20 years, these airlines will need 950 new airplanes, more than half of them replacing older airplanes.

MARKETS IN OCEANIA ARE DYNAMIC

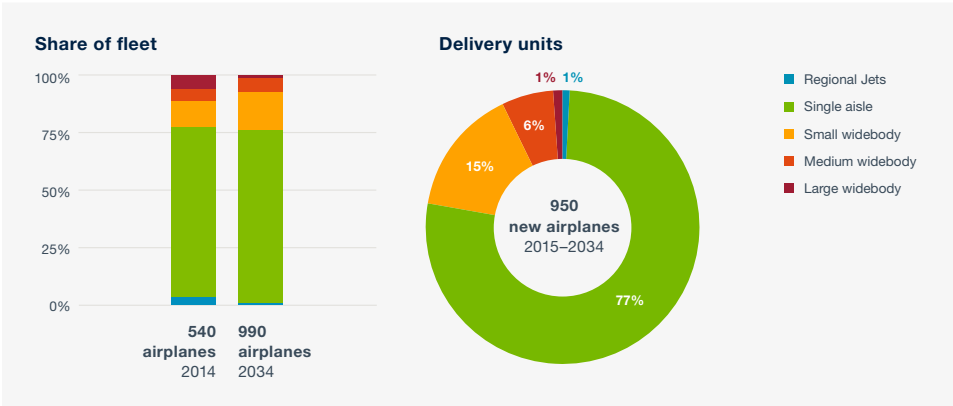
Not only does Oceania have a mature aviation industry, its overall economy is also mature. Since 2004, the region’s economy has grown 2.7 percent

annually, and it is expected to continue growing at that rate through 2034. This is slightly below the world trend of 3.1 percent. Australia and New Zealand account for 98 percent of the region’s GDP and are expected to hold that share over time. This is helping driving passenger traffic growth of 2.6 percent and air cargo traffic growth of 4.1 percent.

Majority of seats to/from/within Oceania, provided by airlines domiciled in the region



Oceania market value: \$140 billion



Oceania key indicators and new airplanes

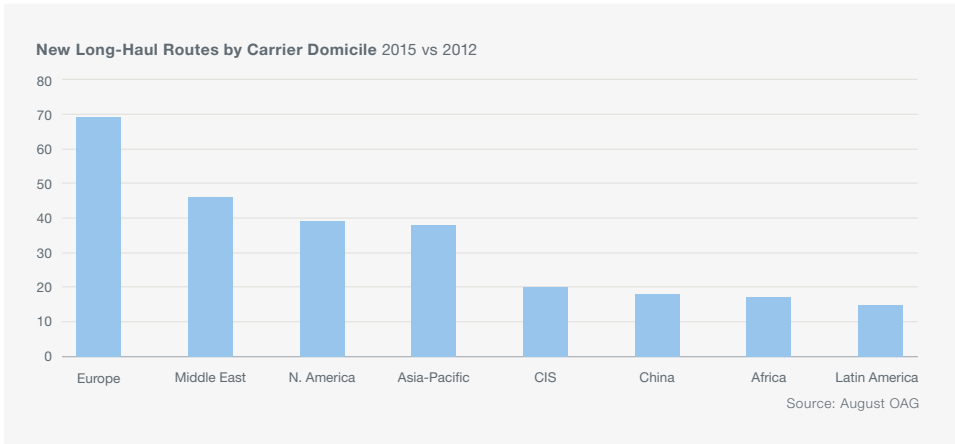
Growth Measures (%)		New airplanes		Share by size (%)	
Economy (GDP)	2.6	Large widebody	10		1
Traffic (RPK)	4.6	Medium widebody	60		6
Cargo (RTK)	4.1	Small widebody	140		15
Airplane fleet	3.1	Single aisle	730		77
		Regional jet	10		1
		Total	950		

Market size		2014 fleet		2034 fleet	
Deliveries	950	Large widebody	30		10
Market value	\$140B	Medium widebody	30		60
Average value	\$150M	Small widebody	60		160
		Single aisle	400		750
		Regional jet	20		10
		Total	540		990

Airlines are continuing to assess their strategies for the markets they serve, weighing whether to serve the market on their own or to partner with other airlines and serve it jointly., Oceania airlines currently provide the most capacity in the region. Middle

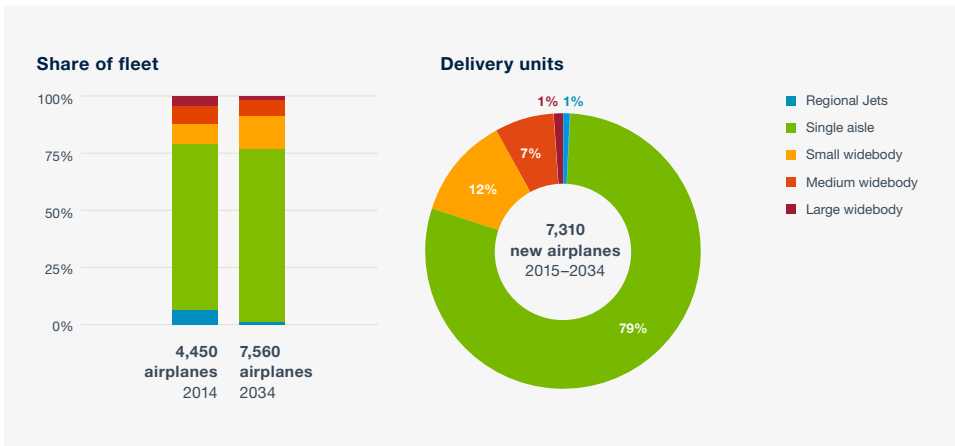
Eastern airlines, which represent only 4 percent of airline seats in the market, have been growing more than 10 percent annually—the fastest in the region. Currently, seats of Southeast Asian and Chinese airlines account for approximately 15 percent of regional capacity, and the airlines continue to grow 4.5 percent annually.

Europe: Leader in new long-haul routes



Low-cost carriers in Oceania are evolving—both with local airlines and with airlines that serve the market from other regions. Just 10 years ago, these carriers flew approximately 9 percent of flights in Oceania; now, their share is more than 20 percent. This trend, coupled with 4.5 percent growth in passenger traffic within Oceania, will drive the need for 730 new single-aisle airplanes, valued at \$400 billion.

Europe market value \$1.1 trillion



In long-haul markets, 12 new routes have opened in the past three years, and passenger traffic is estimated to grow 5.3 percent in the next 20 years. This growth, along with replacement demand for more than half of the widebody fleet, will drive the need for 210 new widebody airplanes, valued at \$60 billion.

EUROPE

STRONG GROWTH DESPITE UNCERTAINTY

Europe key indicators and new airplane markets

Growth Measures (%)		New airplanes		Share by size (%)	
Economy (GDP)	1.8	Large widebody	40	Large widebody	1
Traffic (RPK)	3.8	Medium widebody	510	Medium widebody	7
Cargo (RTK)	3.1	Small widebody	910	Small widebody	12
Airplane fleet	2.7	Single aisle	5,770	Single aisle	79
		Regional jet	80	Regional jet	1
		Total	7,310		
Market size		2014 fleet		2034 fleet	
Deliveries	7,310	Large widebody	180	Large widebody	100
Market value	\$1,050B	Medium widebody	350	Medium widebody	550
Average value	\$140M	Small widebody	380	Small widebody	1,070
		Single aisle	3,240	Single aisle	5,730
		Regional jet	300	Regional jet	110
		Total	4,450	Total	7,560

Europe’s aviation market remained strong in 2014 despite significant economic uncertainties. Europe’s GDP grew by 1.4 percent in 2014 and is forecast to grow by 1.8 percent annually through 2034. The Association of European Airlines reports that member airlines carried 4.1 percent more passenger traffic in 2014 than in 2013. Members of the European Low Fares Airline Association reported a 9.4 percent increase in passengers over 2013. European airlines acquired more than

180 new airplanes in 2014, of which 70 percent were single aisle. The European aviation market is expected to grow over the next 20 years, with airlines forecast to acquire more than 7,300 new airplanes valued at over \$1 trillion. Single-aisle airplanes will comprise the majority of deliveries, representing a 79 percent share of total deliveries. While European aviation growth is slower than aviation growth in emerging economies, the region's large installed base of more than 4,400 airplanes supports substantial demand for replacement airplanes. Replacement demand will account for 57 percent of Europe's total new airplane market.

CONTINUED STRATEGIC EVOLUTION

Airline operations in Europe continue to evolve with the launch of new ventures, routes, and business models. The introduction of the 787 has allowed operators to economically serve long-haul, nonstop markets that have not been served before. European operators have been on the forefront of this trend, with 69 long-haul routes introduced since 2012—the most of any region.

Low-cost carriers (LCCs) continue to grow short-haul markets, providing 42 percent of intra-Europe capacity in 2014. Network airlines are shifting away from short-haul point-to-point traffic, which is targeted by LCCs, to flowing passengers through their hubs on longer itineraries. Smaller flag carriers and charter airlines will be challenged to compete in an 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.

Large Middle East airlines have captured significant long-haul share from Europe's network carriers by providing one-stop service from Europe to destinations such as India, Australia, and Southeast Asia, where the geographic advantage of Middle East carriers is greatest. In response, Europe's network carriers have shifted long-haul capacity to more profitable markets—notably the North Atlantic, where their capacity has grown over 16 percent since 2009.

NORTH AMERICA

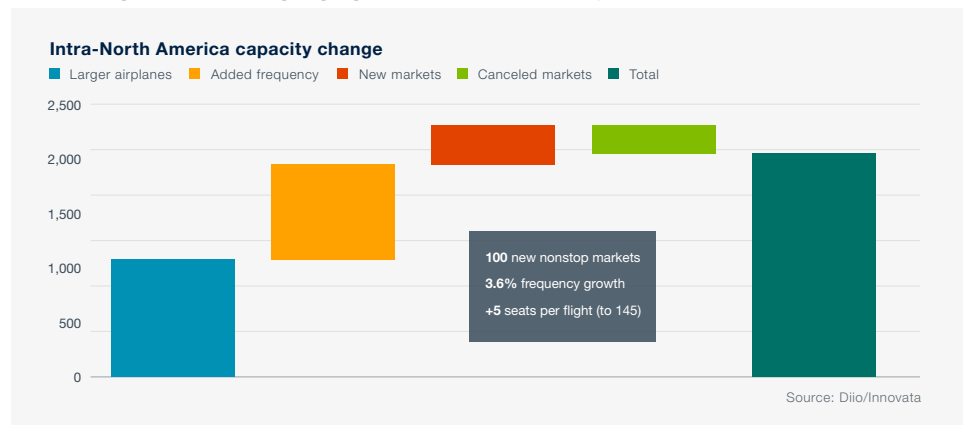
NORTH AMERICA LEADS GLOBAL PROFITABILITY

All the more striking by the fact that it comes after a decade of massive losses, the US airline industry is riding a five-year wave of profitability.

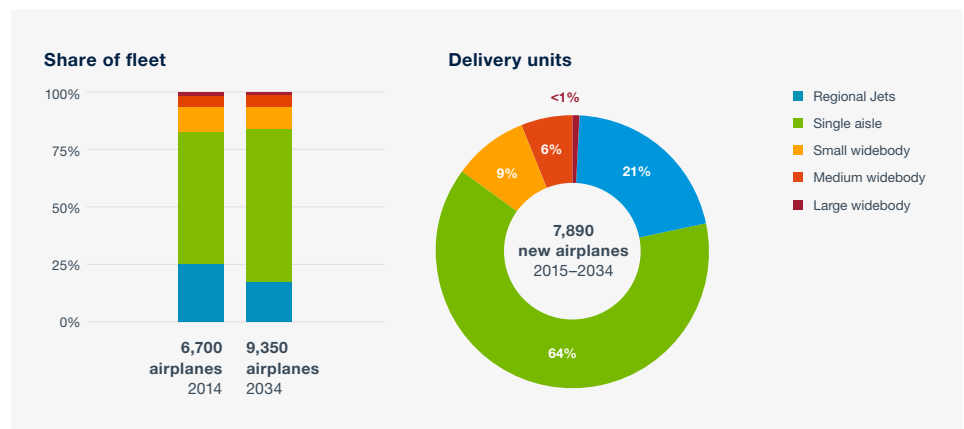
IATA calculates 2014 net income of North America airlines, fueled largely by US airline performance, at more than \$12 billion—fully two-thirds of the projected net income for the entire global airline industry. And the region's airline profitability is expected to increase an additional \$1 billion in 2015 as lower fuel expenses provide a further boost in earnings.

The reemergence of US airlines from the so-called “lost decade” required significant restructuring. Airlines undertook several tactics, including mergers and acquisitions, fleet and network rationalization, capacity discipline, and a

Market growth thru re-gauging and new markets/frequencies



North America market value: \$940 billion



North America key indicators and new airplane markets

Growth Measures (%)		New airplanes		Share by size (%)
Economy (GDP)	2.5	Large widebody	20	<1
Traffic (RPK)	3.1	Medium widebody	490	6
Cargo (RTK)	2.9	Small widebody	690	9
Airplane fleet	1.7	Single aisle	5,070	64
		Regional jet	1,620	21
		Total	7,890	

Market size		2014 fleet		2034 fleet
Deliveries	7,890	Large widebody	100	60
Market value	\$940B	Medium widebody	320	530
Average value	\$120M	Small widebody	730	910
		Single aisle	3,850	6,190
		Regional jet	1,700	1,660
		Total	6,700	9,350

strict focus on financial performance. Since 2008, four major airline mergers have occurred in the United States, resulting in the market dominance of those carriers, which now hold at least 85 percent of all available seat miles.

LOW-COST CARRIERS TAKING OFF

Low-cost carriers (LCC) are the fast-growing business segment of the domestic US market; they take advantage of the flight reductions of rationalized network carriers and backfill on those routes. In 2014, network carriers grew capacity year over year by 2.5 percent; LCCs grew capacity by 3.6 percent.

Post the 2008 downturn, the introduction of the ultra-low-cost carrier (ULCC) business model in the United States is literally taking off. Spirit Airlines is the fastest growing domestic airline, recording double-digit growth. Frontier Airlines, which is undergoing a change in strategy, is expected to challenge Spirit in the quest to become the preeminent ULCC in the United States. The expectation is that over time, the industry will further consolidate, with the LCC and smaller network carriers becoming potential consolidation targets.

Owing to network carrier capacity discipline, we think that the domestic US market is ripe for even higher growth than previously forecast. Our revised domestic forecast has traffic growth in the range of 2.5 to 3.0 percent over the next five years. With a load factor of 83 percent for 2014 (and average load factors in excess of 80 percent over the past few years), network carriers may be prompted to further ease their capacity discipline in the face of competitive pressures and continued economic recovery.

We forecast a need over the next 20 years for 7,890 new airplanes in North America. We forecast that the greatest need will be for

single-aisle airplanes, with an estimated 5,070 units, or 64 percent of demand. Owing to a large installed fleet that is nearing economic retirement and the offering of new fuel-efficient airplanes, 66 percent of all new airplanes, slightly more than 5,200, will be for replacement needs.

MIDDLE EAST

SUPPORT FOR AVIATION'S GROWTH

Located at the crossroads between Asia, Africa, and Europe, airlines in the Middle East are well positioned to compete for traffic connecting these regions. About 80 percent of the world's population lives within an eight-hour flight of the Gulf, allowing carriers in the Middle East to aggregate traffic at their hubs and offer one-stop service between many city pairs that would not otherwise enjoy such direct itineraries.

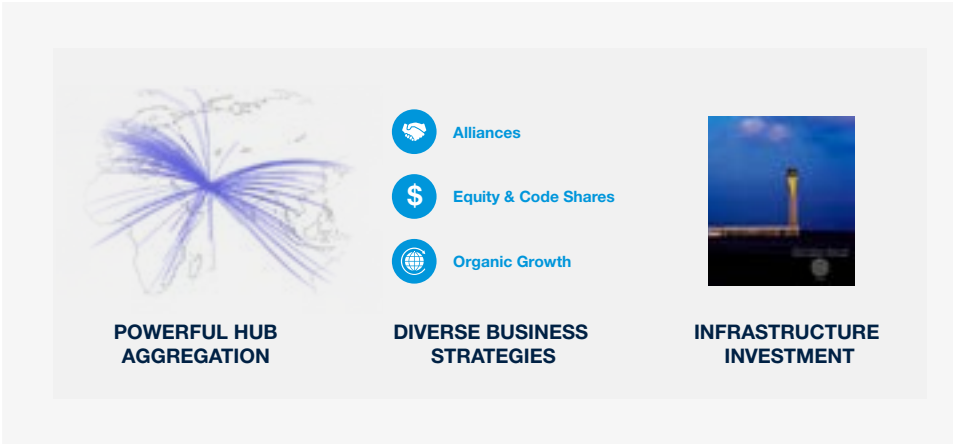
Partnerships of various kinds also feed Middle East hubs, and between organic growth with selective code sharing, equity stakes in a range of out-of-region carriers, and traditional alliance membership, no single strategy has emerged as dominant. Each of these strategies creates opportunities to coordinate schedules across national boundaries, further enhancing the appeal of services connecting the Middle East.

The region's low-cost carriers have also been innovative, reducing short-haul fares, setting up cross-border subsidiaries, and developing mobile booking portals to improve access to air services. The business model is evolving as carriers broaden offerings to include business-class seating and as they expand networks into previously underserved areas, such as the Commonwealth of Independent States.

INFRASTRUCTURE AND AIRSPACE DEVELOPMENT

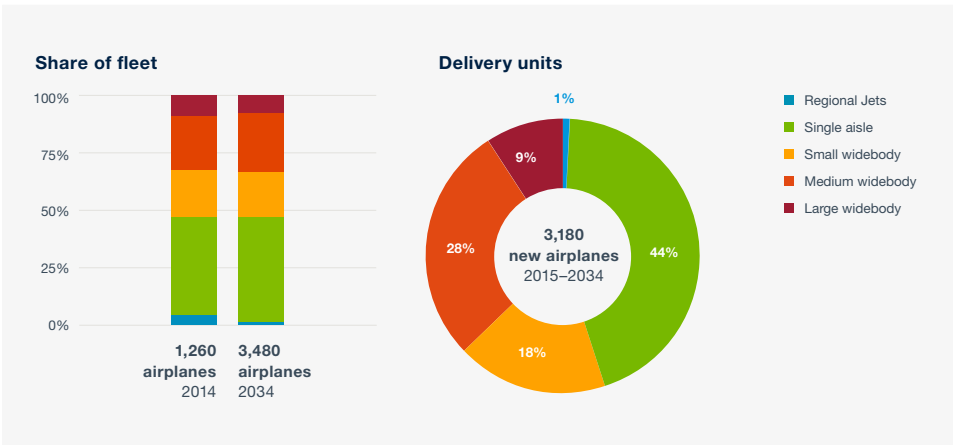
As the region's governments have increasingly come to view air transportation as integral to economic development and diversification, investment in airport facilities has followed. Although much of this activity focuses on the region's main hubs, smaller airports are significantly upgrading, from building new terminals to expanding into international airports. Significant projects are scheduled or are under way at airports in Manama, Bahrain; Cairo, Egypt; Tehran, Iran; Kuwait City, Kuwait; Muscat

Middle East Aviation growth factors



reducing the airspace available for commercial traffic. Meanwhile, the region's air traffic control (ATC) systems are not centralized, leaving operators to contend with a patchwork of rules, agencies, and processes. Regional authorities are working to address these needs, and recent discussions of ATC coordination between the countries of the Gulf Cooperation Council and their neighbors show signs of progress.

Middle East market value: \$730 billion



Middle East key indicators and new airplanes

Growth Measures (%)		New airplanes		Share by size (%)	
Economy (GDP)	3.8	Large widebody	300		9
Traffic (RPK)	6.2	Medium widebody	880		28
Cargo (RTK)	6.3	Small widebody	560		18
Airplane fleet	5.2	Single aisle	1,410		44
		Regional jet	30		1
		Total	3,180		

Market size		2014 fleet		2034 fleet	
Deliveries	3,180	Large widebody	110		260
Market value	\$730B	Medium widebody	300		900
Average value	\$230M	Small widebody	250		660
		Single aisle	540		1,600
		Regional jet	60		60
		Total	1,260		3,480

and Salalah, Oman; Doha, Qatar; Riyadh and Jeddah, Saudi Arabia; Abu Dhabi, Dubai, and Sharjah, United Arab Emirates.

Despite progress and growth in the region, challenges remain. Large sections of airspace remain under military control,

LATIN AMERICA

LONG-TERM GROWTH FUELS ECONOMIC OUTLOOK

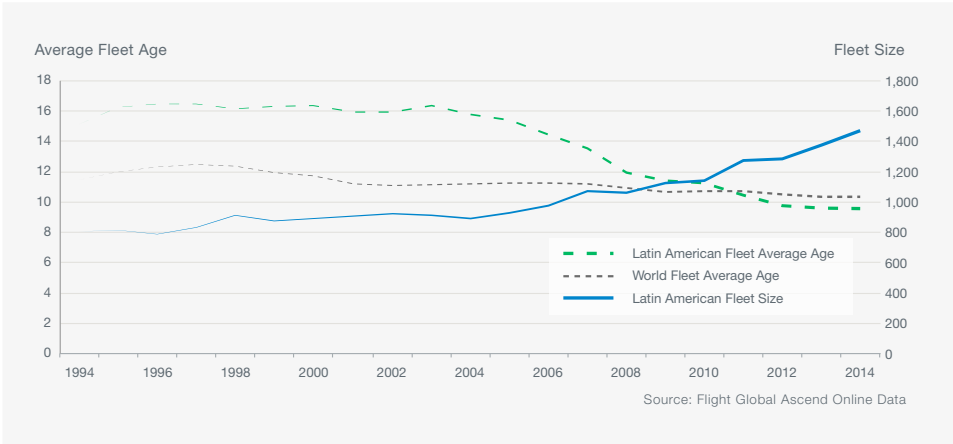
Long-term economic projections for Latin America and the Caribbean remain positive, with IHS Global Insight predicting growth in the region to improve steadily over the near term and, by 2017, to outpace world GDP growth.

Economic growth in Central America remains strong, led by Panama with growth averaging 5.6 percent over the next five years. Meanwhile, five-year average growth rates for Brazil and Mexico—the region's two largest economies—are 3.8 percent and 2.3 percent, respectively. Aviation is a key component of this growth dynamic because it facilitates trade, travel, and tourism, while promoting globalization and technology development. We continue to project strong demand for air travel over the long term for Latin America and the Caribbean.

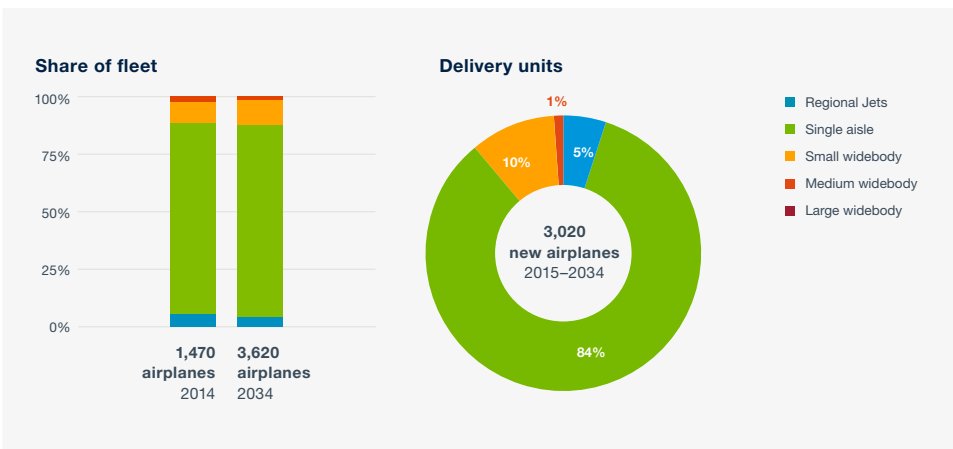
AIRLINE INDUSTRY CONTINUES TO EVOLVE

The past several years have seen significant consolidation, including the mergers of LAN with TAM, Avianca with TACA Airlines, GOL with Webjet, and Azul with TRIP, resulting in larger, more stable, and more competitive airlines. Low-cost carriers are a

Latin America: Fleet renewal is underway



Latin America market value: \$350 billion



Latin America key indicators and new airplane markets

Growth Measures (%)		New airplanes		Share by size (%)	
Economy (GDP)	3.4	Large widebody	-	Large widebody	-
Traffic (RPK)	6.0	Medium widebody	30	Medium widebody	1
Cargo (RTK)	5.5	Small widebody	310	Small widebody	10
Airplane fleet	4.6	Single aisle	2,520	Single aisle	84
		Regional jet	160	Regional jet	5
		Total	3,020	Total	

Market size		2014 fleet		2034 fleet	
Deliveries	3,020	Large widebody	-	Large widebody	-
Market value	\$350B	Medium widebody	30	Medium widebody	40
Average value	\$120M	Small widebody	130	Small widebody	380
		Single aisle	1,220	Single aisle	3,020
		Regional jet	90	Regional jet	180
		Total	1,470	Total	3,620

growing presence in the region, expanding services and bringing affordable air travel to more people and more communities. Further liberalization of air service agreements is providing opportunities to expand networks and stimulate traffic. Implementation of the US-Brazil open-skies

agreement will begin during the latter part of 2015. And agreement has been reached to further relax the US-Mexico bilateral arrangement. These developments produce new opportunities for cooperation through partnerships and alliances.

TRAFFIC AND FLEETS
FORECAST TO GROW

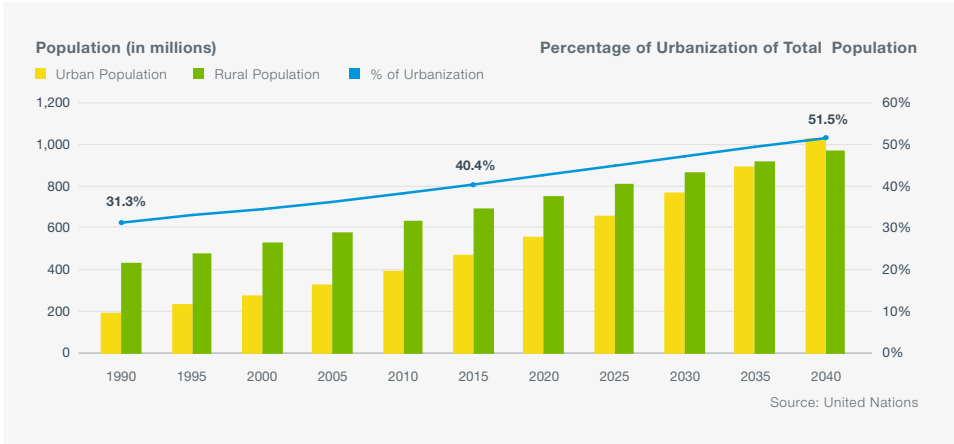
Passenger traffic growth for Latin America and the Caribbean is forecast to average 6.0 percent per year over the next 20 years. The fastest growth is expected within intraregional flows, particularly in the near term as the economic outlook improves. Traffic within Latin America is forecast to average 6.6 percent per year through 2034.

Historically, Latin America has been viewed as having older, less technologically advanced airplanes and less productive fleets. But since the mid-2000s, significant fleet renewal has been under way. The average fleet age in Latin America has been dropping since 2004 and is now below world average. The current backlog of airplanes on order for the region now represents 50 percent of the in-service fleet.

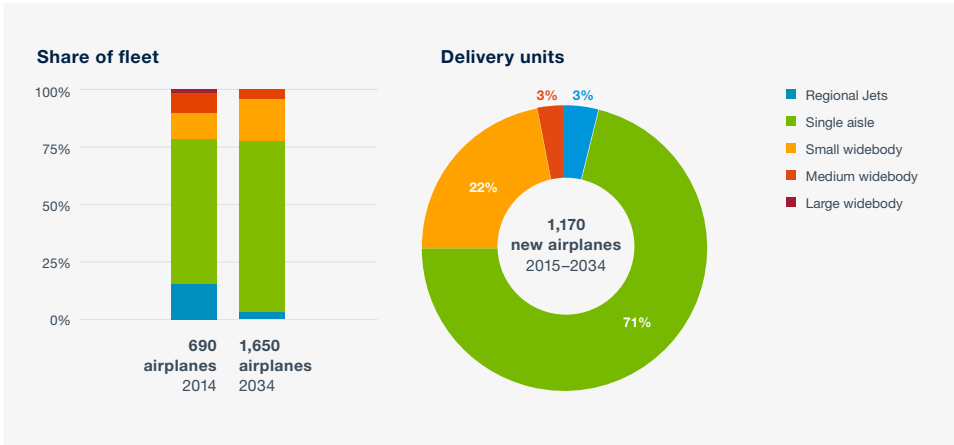
The region's commercial fleet is projected to more than double between now and 2034—from nearly 1,500 airplanes today to more than 3,600. Latin America will need 3,020 new deliveries over the next 20 years to meet the combined demands of growth and replacement. The majority of these deliveries are expected to be in the single-aisle segment, reflecting

continued growth of low-cost carriers and further expansion of networks within Latin America and the Caribbean.

Africa: Continued growth in urban population



Africa market value: \$160 billion



Africa key indicators and new airplane markets

Growth Measures (%)		New airplanes		Share by size (%)	
Economy (GDP)	4.5	Large widebody	–	Large widebody	–
Traffic (RPK)	5.7	Medium widebody	40	Medium widebody	3
Cargo (RTK)	6.9	Small widebody	260	Small widebody	22
Airplane fleet	4.5	Single aisle	830	Single aisle	71
		Regional jet	40	Regional jet	3
		Total	1,170		

Market size		2014 fleet		2034 fleet	
Deliveries	1,170	Large widebody	10	Large widebody	–
Market value	\$160B	Medium widebody	60	Medium widebody	70
Average value	\$140M	Small widebody	80	Small widebody	300
		Single aisle	430	Single aisle	1,220
		Regional jet	110	Regional jet	60
		Total	690	Total	1,650

lowest in the world despite its average increase over the past 25 years being the highest of any region in the world—3.5 percent annually. Projections show that this trend will continue at a slightly more modest rate of 3.1 percent annually over the next 25 years, with urban growth outpacing the growth of the rural population. The result will be an increase to 50 percent urbanization, with African cities adding more than 500 million people—twice as many as rural areas over the same period.

Urbanization and economic growth are intricately related as agrarian-based regional economies transition to urban economies centered on industry and services. Successful conversion requires a shift in spending to projects that focus on integrated urban planning to improve infrastructure, spur productivity, and foster income growth. The increase in urbanization and economic growth, meanwhile, is expected to stimulate demand for air travel to, from, and within the continent.

RESILIENT ECONOMIC GROWTH CONTINUES

Africa’s economy has grown at a rate of more than 4.5 percent per year over the past 10 years despite the global recession. As a result, two-thirds of the countries in Africa are now classified as middle income or higher, according to the World Bank. In addition, many of the low-income countries are in eastern Africa, which now has the highest rate of urbanization. Indicators show that GDP will continue to grow

by almost 5 percent annually over the next decade.

Africa has the youngest population of any continent and will be adding 11 million people to the job market per year for the next 10 years. High unemployment is already a challenge in many

AFRICA

AFRICA HAS THE WORLD’S FASTEST URBANIZATION RATE

At 40 percent, Africa’s percentage of urban population is the

countries, further emphasizing the need for proper skills and training. The biggest risks for the region include lower commodity prices and increased volatility in the international financial markets. Even so, the expanding middle class will positively affect aviation in the region.

POSITIVE TRENDS DRIVE INCREASED DEMAND FOR AIRPLANES

Flights between Africa and Europe account for almost 50 percent of the region’s air travel but is projected to compose a smaller share over the next 20 years as flights between Africa and the Middle East and intra-Africa traffic both gain market share. Overall air traffic to and from Africa is expected to grow by about six percent annually over the next 20 years as new airplane technology increases efficiency and opens new international routes from high-altitude hot airports in Africa. This growth combined with the need to replace the region’s aging fleet will result in a demand for 1,170 new airplanes. The majority will be for 830 single-aisle airplanes, but the need for new widebody airplanes will also increase.

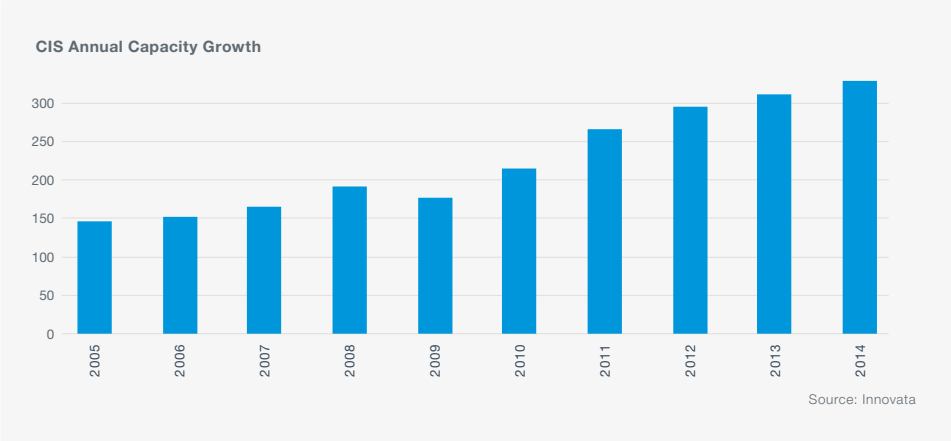
CIS

SUSTAINED LONG-TERM GROWTH DESPITE SHORT-TERM CHALLENGES

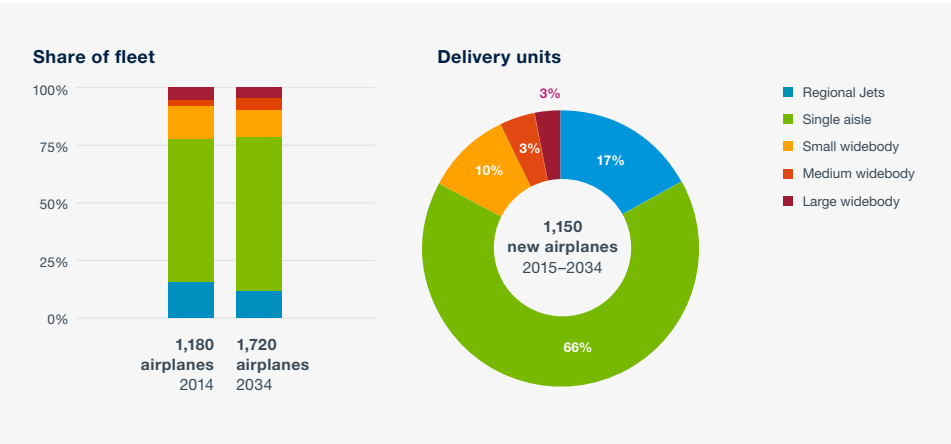
Russia’s economy continues to be the region’s largest, accounting in 2014 for nearly 74 percent of GDP in the Commonwealth of Independent States (CIS). The economies of Ukraine and Kazakhstan are next in size.

Russia’s economic situation challenges short-term aviation growth in the CIS. Russia faces a recession due in part to a global drop in oil prices and severe exchange-rate depreciation. The crisis is expected to last for the next few years before the economy returns to its pre-2014 growth trend.

CIS: Strong growth, historically



CIS market value: \$140 billion



CIS key indicators and new airplane markets

Growth Measures (%)		New airplanes		Share by size (%)	
Economy (GDP)	2.4	Large widebody	40	Large widebody	3
Traffic (RPK)	3.7	Medium widebody	40	Medium widebody	3
Cargo (RTK)	3.7	Small widebody	120	Small widebody	10
Airplane fleet	1.9	Single aisle	760	Single aisle	66
		Regional jet	190	Regional jet	17
		Total	1,150		

Market size		2014 fleet		2034 fleet	
Deliveries	1,150	Large widebody	60	Large widebody	70
Market value	\$140B	Medium widebody	30	Medium widebody	90
Average value	\$120M	Small widebody	170	Small widebody	210
		Single aisle	730	Single aisle	1,140
		Regional jet	190	Regional jet	210
		Total	1,180	Total	1,720

Following the anticipated recovery, the economies of the CIS are expected to expand, with GDP growing 3.1 percent annually over the next 20 years. Despite current challenges, the commercial aviation outlook for the CIS is one of sustained

growth in the long term. The region's size and diverse terrain make airline travel an attractive transportation option that is expected to increase as personal incomes rise. The CIS has grown airline capacity by more than 9 percent annually over the past 10 years, and Russia's Federal Air Transport Agency reports that the number of passengers that Russia's five largest airlines carry rose to just over 93 million in 2014—an increase of 10.2 percent compared with 2013. Over the next 20 years, CIS airlines are projected to need 1,150 airplanes, valued at \$140 billion.

DEVELOPING FLEET

The economic crisis in Russia has affected international traffic, with CIS and foreign carriers experiencing a notable reduction in international demand. Russia's charter airlines and foreign carriers have seen the largest declines. Foreign carriers are, therefore, reassigning capacity to other international markets. Russian carriers are, however, seeing increased domestic demand, lessening the net impact of the economic challenges. According to the Federal Air Transport Agency, for example, Aeroflot's new low-cost carrier subsidiary picked up a healthy demand of 44,000 passengers in its first month of operation. And domestic Russian and intra-CIS traffic is expected to grow at an annual rate of 3.3 percent, with expansion of low-cost carrier service over the near term driving up demand for single-aisle airplanes. As the economic situation improves, we expect a return to increased international travel and a requirement in the region for more widebodies. International traffic is expected to grow at an annual rate of 4.2 percent over the next 20 years. CIS airlines will need 760 single-aisle and 200 widebody airplanes to handle the increased traffic. New airplanes will help the region's airlines grow their domestic routes while regaining and increasing their international footprint. Although the region's fleet continues to grow, 53 percent of new airplane deliveries will replace older airplanes. And because they are more efficient, new airplanes, such as the 737 MAX and the 787 Dreamliner, will improve fleet efficiency.

DATA



PASSENGER TRAFFIC

AIRLINE PASSENGER TRAFFIC, GROWTH BY REGIONAL FLOW

RPKS in billions	2007	2008	2009	2010	2011	2012	2013	2014	2034	2014 - 2034
Africa–Africa	37.3	41.6	43.9	48.7	51.1	54.5	53.7	56.6	206.4	6.7%
Africa–Europe	125.3	125.6	128.2	135.5	134.1	140.4	140.4	146.5	365.7	4.7%
Africa–Middle East	23.1	24.9	32.9	36.4	39.4	48.6	50.8	53.7	221.6	7.3%
Africa–North America	4.9	6.3	8.8	11.3	11.4	12.6	12.2	12.5	41.5	6.2%
Africa–Southeast Asia	5.2	5.4	4.1	5.6	5.9	4.6	4.2	3.7	15.6	7.4%
Central America–Central America	29.7	32.3	29.8	31.3	32.2	33.8	36.5	38.7	93.6	4.5%
Central America–Europe	80.7	83.3	77.1	73.8	73.7	78.3	82.1	87.4	207.5	4.4%
Central America–North America	106.8	115.8	104.7	112.7	114.5	132.0	138.3	153.0	347.0	4.2%
Central America–South America	11.0	13.1	14.0	18.3	19.2	23.2	28.5	30.8	96.5	5.9%
China–China	223.1	236.5	287.4	335.4	380.1	411.3	460.8	509.2	1704.2	6.2%
China–Europe	91.0	82.5	77.3	82.1	94.2	96.7	96.9	105.2	333.7	5.9%
China–North America	54.5	62.7	60.9	71.4	85.4	87.1	89.5	98.1	346.2	6.5%
China–Northeast Asia	49.3	48.4	43.2	51.8	51.5	60.9	60.7	66.2	171.6	4.9%
China–Oceania	19.4	21.4	22.8	27.4	31.4	34.1	35.0	37.7	127.0	6.3%
China–Southeast Asia	49.3	50.6	45.3	54.7	63.0	73.8	82.5	89.4	375.3	7.4%
CIS Region–CIS Region	80.8	88.9	76.9	87.6	103.1	107.1	118.3	125.3	240.7	3.3%
CIS Region–International	81.6	77.7	83.6	101.6	124.1	139.4	157.9	164.9	377.4	4.2%
Europe–Europe	634.2	660.5	624.9	640.2	659.5	676.6	714.0	760.3	1444.7	3.3%
Europe–Middle East	106.6	115.2	131.2	143.8	153.3	178.0	196.8	210.9	605.1	5.4%
Europe–North America	420.6	432.4	405.4	418.6	430.2	432.9	441.8	462.7	840.2	3.0%
Europe–Northeast Asia	67.9	69.0	59.4	64.3	63.8	75.9	74.3	77.8	137.5	2.9%
Europe–South America	70.7	75.2	79.3	82.9	89.8	99.6	102.4	102.1	292.6	5.4%
Europe–South Asia	58.5	55.5	51.3	53.8	54.1	53.9	56.4	57.2	202.0	6.5%
Europe–Southeast Asia	96.8	101.5	95.9	97.1	100.4	106.6	105.3	108.0	265.6	4.6%
Middle East–Middle East	60.3	63.4	68.6	77.9	82.4	76.5	86.3	91.7	243.6	5.0%
Middle East–North America	23.4	29.5	41.6	45.7	50.3	57.1	63.2	73.7	242.0	6.1%
Middle East–South Asia	46.5	49.5	64.8	75.1	83.0	87.3	95.1	100.5	464.6	8.0%
Middle East–Southeast Asia	41.1	45.4	46.7	56.3	61.3	66.4	79.0	89.4	266.7	5.6%
North America–North America	1022.4	974.1	915.1	946.3	976.3	984.7	998.4	1029.9	1655.2	2.4%
North America–Northeast Asia	143.7	139.4	120.2	128.4	135.4	149.0	150.4	154.0	220.8	1.8%
North America–Oceania	32.1	32.3	34.8	34.9	38.3	40.3	43.1	43.3	86.3	3.5%
North America–South America	52.1	52.7	56.9	60.9	66.7	72.0	79.2	82.7	265.3	6.0%
North America–Southeast Asia	11.3	9.3	10.3	10.3	11.3	10.7	9.8	9.6	30.2	5.9%
Northeast Asia–Northeast Asia	88.8	84.9	81.9	84.6	81.9	92.6	103.9	107.6	144.1	1.5%
Northeast Asia–Oceania	21.0	20.8	15.1	18.1	16.6	17.1	15.9	15.9	35.6	4.1%
Northeast Asia–Southeast Asia	86.3	87.7	74.3	79.6	92.3	104.9	113.3	124.2	286.0	4.3%
Oceania–Oceania	74.4	72.0	73.3	78.4	83.8	92.0	99.0	100.0	241.4	4.5%
Oceania–Southeast Asia	52.4	57.4	54.7	61.1	66.9	71.5	77.8	83.2	206.2	4.6%
South America–South America	83.1	81.6	86.9	115.8	134.4	141.9	147.4	155.7	616.3	7.1%
South Asia–South Asia	36.3	40.1	43.8	49.5	58.6	63.8	68.1	71.4	469.1	9.9%
Southeast Asia–South Asia	20.6	24.3	21.9	28.5	29.2	34.0	36.2	38.4	211.4	8.9%
Southeast Asia–Southeast Asia	93.4	93.2	96.0	113.1	130.7	145.1	166.6	176.9	785.4	7.7%
Rest of World	44.3	55.5	69.3	87.9	97.4	116.0	126.1	140.0	624.0	7.8%
Grand Total	4561.9	4639.2	4564.2	4938.7	5262.2	5585.0	5898.0	6246.0	16153.2	4.9%

AIRPLANES REQUIRED

PASSENGER AND FREIGHTER AIRPLANES

Market value and demand by region

DEMAND AND VALUE BY REGION

Region	\$B	Airplanes
Asia	\$2,200	14,330
Europe	\$1,050	7,310
North America	\$940	7,890
Latin America	\$350	3,020
Middle East	\$730	3,180
C.I.S.	\$140	1,150
Africa	\$160	1,170
Grand Total	\$5,570	38,050

DELIVERIES BY AIRPLANE SIZE AND REGION

Region	Regional jets	Single aisle	Small widebody	Medium widebody	Large widebody	Total deliveries
Asia	370	10,370	1,920	1,530	140	14,330
Europe	80	5,770	910	510	40	7,310
North America	1,620	5,070	690	490	20	7,890
Latin America	160	2,520	310	30	-	3,020
Middle East	30	1,410	560	880	300	3,180
C.I.S.	190	760	120	40	40	1,150
Africa	40	830	260	40	-	1,170
Grand Total	2,490	26,730	4,770	3,520	540	38,050

MARKET VALUE BY AIRPLANE SIZE AND REGION*

Region	Regional jets	Single aisle	Small widebody	Medium widebody	Large widebody	Total deliveries
Asia	\$10	\$1,110	\$500	\$520	\$60	\$2,200
Europe	\$-	\$600	\$250	\$180	\$20	\$1,050
North America	\$70	\$520	\$170	\$170	\$10	\$940
Latin America	\$10	\$240	\$90	\$10	\$-	\$350
Middle East	\$-	\$140	\$150	\$310	\$130	\$730
C.I.S.	\$10	\$70	\$30	\$20	\$10	\$140
Africa	\$-	\$90	\$60	\$10	\$-	\$160
Grand Total	\$100	\$2,770	\$1,250	\$1,220	\$230	\$5,570

* 2014 \$B catalog prices. Values above 10 have been rounded to nearest 10.

PASSENGER AND FREIGHTER AIRPLANES

In service and future fleet

TOTAL AIRPLANES IN SERVICE

Size	2014	2034
Regional jet	2,580	2,660
Single aisle	14,140	30,630
Small widebody	2,520	5,800
Medium widebody	1,620	3,800
Large widebody	740	670
Total	21,600	43,560

PASSENGER AIRPLANES IN SERVICE

Size	2014	2034
Regional jet	2,530	2,640
Single aisle	13,570	29,420
Small widebody	1,940	4,980
Medium widebody	1,380	3,160
Large widebody	460	430
Total	19,880	40,630

FREIGHTER AIRPLANES IN SERVICE

Size	2014	2034
Widebody	1,100	1,700
Standard	620	1,230
Total	1,720	2,930

AIRPLANE DEMAND

Size	\$B	Airplanes
Regional jet	\$100	2,490
Single aisle	\$2,770	26,730
Small widebody	\$1,250	4,770
Medium widebody	\$1,220	3,520
Large widebody	\$230	540
Grand total	\$5,570	38,050

PASSENGER AIRPLANE DEMAND

Size	\$B	Airplanes
Regional jet	\$100	2,490
Single aisle	\$2,770	26,730
Small widebody	\$1,190	4,500
Medium widebody	\$1,050	2,990
Large widebody	\$170	420
Grand total	\$5,280	37,130

FREIGHTER AIRPLANE DEMAND

Size	\$B	Airplanes
Large*	\$230	650
Medium widebody	\$60	270
Standard	\$—	0
Grand total	\$290	920

* 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 2014 \$B	Market share value	New airplane deliveries	Market share units
Large*	\$230	4%	540	1%
Medium	\$1,220	22%	3,520	9%
Small	\$1,250	22%	4,770	13%
Total widebody	\$2,700	48%	8,830	24%
Total single aisle	\$2,770	50%	26,730	70%
Total regional jets	\$100	2%	2,490	7%
Total fleet	\$5,570	100%	38,050	100%

PASSENGER FLEET DEVELOPMENT

Size	End of year 2014	Removed from service	Converted to freighter	New deliveries 2015 to 2034	End of year 2034
Large*	460	450		420	430
Medium	1,380	1,210		2,990	3,160
Small	1,940	1,460		4,500	4,980
Total widebody	3,780	3,120		7,910	8,570
Total single aisle	13,570	10,880		26,730	29,420
Total regional jets	2,530	2,380		2,490	2,640
Total fleet	19,880	16,380	1,420	37,130	40,630

FREIGHTER FLEET DEVELOPMENT

Size	End of year 2014	Removed from service	Converted to freighter	New deliveries 2015 to 2034	End of year 2034
Widebody	1,100	720		920	1,700
Standard body	620	410		-	1,230
Total freighter fleet	1,720	1,130	1,420	920	2,930

TOTAL FLEET

Size	End of year 2014	Removed from service	Converted to freighter	New deliveries 2015 to 2034	End of year 2034
Passenger fleet	19,880	16,380	1,420	37,130	40,630
Freighter fleet	1,720	1,130	1,420	920	2,930
Total fleet	21,600	17,510	1,420	38,050	43,560

* Large passenger and larger freighter categories differ

FLEET BY REGION

FLEET GROWTH by size and region

FLEET BY AIRPLANE SIZE

Size	Airplanes in service 2014	Fleet share 2014	Airplanes in service 2034	Fleet share 2034
Large	740	3%	670	2%
Medium	1,620	8%	3,800	9%
Small	2,520	12%	5,800	13%
Total widebody	4,880	23%	10,270	24%
Total single aisle	14,140	65%	30,630	70%
Total regional jets	2,580	12%	2,660	6%
Total fleet	21,600	100%	43,560	100%

FLEET BY REGION IN 2014

Region	Regional jets	Single aisle	Small widebody	Medium widebody	Large widebody	Total fleet
Asia	130	4,130	780	530	280	5,850
North America	1,700	3,850	730	320	100	6,700
Europe	300	3,240	380	350	180	4,450
Latin America	90	1,220	130	30	-	1,470
Middle East	60	540	250	300	110	1,260
C.I.S.	190	730	170	30	60	1,180
Africa	110	430	80	60	10	690
World	2,580	14,140	2,520	1,620	740	21,600

FLEET BY REGION IN 2034

Region	Regional jets	Single aisle	Small widebody	Medium widebody	Large widebody	Total fleet
Asia	380	11,730	2,270	1,620	180	16,180
North America	1,660	6,190	910	530	60	9,350
Europe	110	5,730	1,070	550	100	7,560
Latin America	180	3,020	380	40	-	3,620
Middle East	60	1,600	660	900	260	3,480
C.I.S.	210	1,140	210	90	70	1,720
Africa	60	1,220	300	70	-	1,650
World	2,660	30,630	5,800	3,800	670	43,560

MAJOR TRAFFIC FLOWS

AIRLINE TRAFFIC FLOWS by region

TRAFFIC IN 2014

RPKs	Asia	North America	Europe	Middle East	Latin America	Africa
Asia	59%	15%	16%	37%		7%
North America	13%	48%	21%	10%	36%	4%
Europe	14%	22%	35%	29%	29%	50%
Middle East	11%	3%	10%	13%	-	18%
Latin America		11%	9%	-	34%	1%
Africa	1%	1%	7%	7%	1%	19%
Total traffic to and from region	100%	100%	100%	100%	100%	100%

TRAFFIC IN 2034

RPKs	Asia	North America	Europe	Middle East	Latin America	Africa
Asia	62%	18%	19%	44%	1%	9%
North America	10%	40%	17%	10%	31%	4%
Europe	12%	20%	30%	25%	26%	39%
Middle East	14%	6%	13%	10%	-	24%
Latin America		15%	10%	-	41%	2%
Africa	1%	1%	8%	9%	1%	22%
Total traffic to and from region	100%	100%	100%	100%	100%	100%

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 2014, traffic within North America accounted for 49% of all the total traffic to, from and within North America.

In 2034, traffic within North America will account for 40% of all the total traffic to, from and within North America.

MAJOR TRAFFIC FLOWS

AIRLINE TRAFFIC FLOWS by region

AIRLINE PASSENGER GROWTH RATES 2014–2034

RPKs	Africa	Latin America	Middle East	Europe	North America	Asia
Asia	7.1%	7.2%	7.2%	5.1%	4.4%	6.2%
North America	6.2%	4.9%	6.1%	3.0%	2.4%	
Europe	4.7%	5.0%	5.4%	3.3%		
Middle East	7.3%	-	5.0%			
Latin America	8.1%	6.6%				
Africa	6.7%					

AIRLINE PASSENGER TRAFFIC IN 2014

RPKs in billions	Africa	Latin America	Middle East	Europe	North America	Asia
Asia	21.7	2.2	268.0	348.2	315.8	1438.3
North America	12.5	235.7	73.7	462.7	1029.9	
Europe	146.5	189.5	210.9	760.3		
Middle East	53.7	-	91.7			
Latin America	3.2	225.3				
Africa	56.6					

AIRLINE PASSENGER TRAFFIC IN 2034

RPKs in billions	Africa	Latin America	Middle East	Europe	North America	Asia
Asia	86.1	9.0	1083.2	938.7	742.1	4826.6
North America	41.5	612.3	242.0	840.2	1655.2	
Europe	365.7	500.1	605.1	1444.7		
Middle East	221.6	-	243.6			
Latin America	15.3	806.5				
Africa	206.4					

AIRPLANE MARKET SECTOR DEFINITIONS

Bold: Airplanes in production or launched.

SINGLE AISLE PASSENGER AIRPLANES

	Single Aisle	Regional Jets
Boeing 707, 757	AVIC ARJ-900	Antonov An-148, -158
Boeing 717, 727	BAe 146-300, Avro RJ100	AVIC ARJ-700
Boeing 737-100 through -500	Bombardier CRJ-1000	Avro RJ70, RJ85
Boeing 737-600, -700, -800, -900ER	Bombardier CS100, CS300	BAe 146-100, -200
Boeing 737-MAX7, MAX8, MAX9	Embraer 190, 195	Bombardier CRJ
Airbus A318, A319, A320, A321	Comac C919	Dornier 328JET
Airbus A319neo, A320neo, A321neo	Fokker 100	Embraer 170, 175
Boeing/MDC DC-9, MD-80, -90	UAC MS 21-200/300	Embraer ERJ-135/140/145
	Illyushin IL-62	Fokker 70, F28
	Tupolev TU-154, TU-204, TU-214	Mitsubishi MRJ
	Yakovlev Yak-42	Sukhoi Superjet 100

WIDEBODY PASSENGER AIRPLANES

LARGE <i>Three class: more than 400 seats</i>	MEDIUM <i>Two class: 340 to 450 seats Three class: 300 to 400 seats</i>	SMALL <i>Two class: 230 to 340 seats Three class: 200 to 300 seats</i>
Boeing 747-8	Boeing 777, 777X	Boeing 767, 787-8, -9
Boeing 747-100 through -400	Boeing 787-10	Boeing/MDC DC-10
Airbus A380	Boeing/MDC MD-11	Airbus A300, A310
	Airbus A340	Airbus A330-200, -300, -800, -900
	Airbus A350-1000	Airbus A350-800, -900
	Illyushin IL-86	Lockheed L-1011
		Illyushin IL-96

FREIGHTER AIRPLANES

LARGE FREIGHTER <i>More than 80 tonnes</i>	MEDIUM FREIGHTER <i>40 to 80 tonnes</i>	SMALL FREIGHTER <i>Less than 45 tonnes</i>
Boeing/ MDC MD-11	Boeing 767	BAe 146
Boeing 747-100 through -400	Lockheed L-1011SF	Boeing/MDC DC-8/9
Boeing 777	Boeing /MDC DC-10	Boeing 737
Airbus A350	Boeing 787	Boeing 727
Illyushin IL-96T	Airbus A300	Tupolev Tu-204
Antonov An-124	Airbus A330	Boeing 707
747-8F	Illyushin IL-76TD	Boeing/MDC MD-80
		Boeing 757-200

Production and conversion (SF) models assumed for each type unless otherwise specified

Airbus A320, A321



WEBSITE

www.boeing.com/cmo

E-MAIL

BoeingCurrentMarketOutlook@Boeing.com

ADDRESS

Boeing Commercial Airplanes

Market Analysis

P.O. Box 3707, MC 21-28

Seattle, WA 98124-2207