



International Conference Air Transport, Airports, Air Navigation and Globalization of the Economics

Africa Aviation Growth Strategy vs. Tactics

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Africa and Middle East
Boeing Commercial Airplanes*

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BOEING COMMERCIAL AIRPLANES

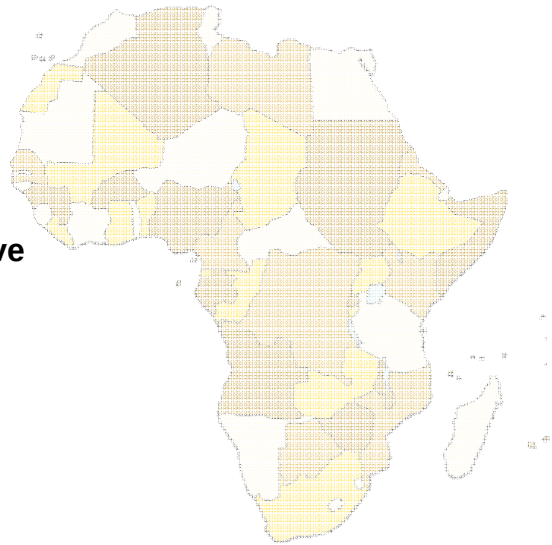
Agenda

■ Market Outlook

- Global Observations
- Regulatory Environment
- Product Strategies
- Africa Regional Perspective

■ Strategy vs. Tactics

■ Final Thoughts



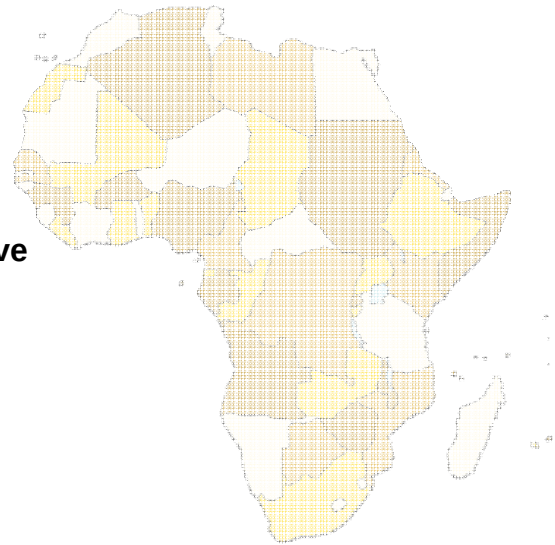
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Aviation is moving from being highly regulated to a more liberalized and competitive marketplace



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Aviation is moving from being highly regulated to a more liberalized and competitive marketplace. During the past 25 years, three main forces have radically changed the airline industry: the regulatory environment, airplane and aerospace capabilities, and airline strategies.

Government regulations have been critical in shaping the structure of the airline industry. Since the deregulation of the US market in 1978, we've seen a dramatic shift from regulated to deregulated domestic and international markets. We have also seen increased liberalization – even “open skies” – in international markets. This freer market access intensifies airline competition.

Airplane capability has also reshaped airline networks. Today, airlines have much greater selection of airplane capacity and range combinations to meet competitive market demands.

The combination of changing regulation and improved airplane capabilities has shaped airline strategies in recent years. The events of the recent down cycle have accelerated the effects of these factors.

These three main forces will continue to drive our industry's evolution.

Passengers drive airline strategies



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Passengers drive airline strategies

In today's competitive marketplace, passengers drive airline strategies. So, what do passengers want?

Safe, reliable service

Shortest trip times - nonstop, point-to-point flights with more frequency choices

Low fares in comfortable surroundings

The first desire is obvious. We all want to arrive at our destinations safely and on time because after all, we travel by air to save time. Passengers also want the convenience of more frequency choices, more choices to fly where they want to go and when they want to go. In addition, passengers prefer nonstop service, not circuitous routings through one or two connecting hubs. These two market conditions, nonstop flights with greater frequencies are what we call "fragmentation." Keep in mind that competitive airlines will focus on delivering as convenient a schedule as possible to the passenger. This means abundant frequency and nonstop service when economically feasible.

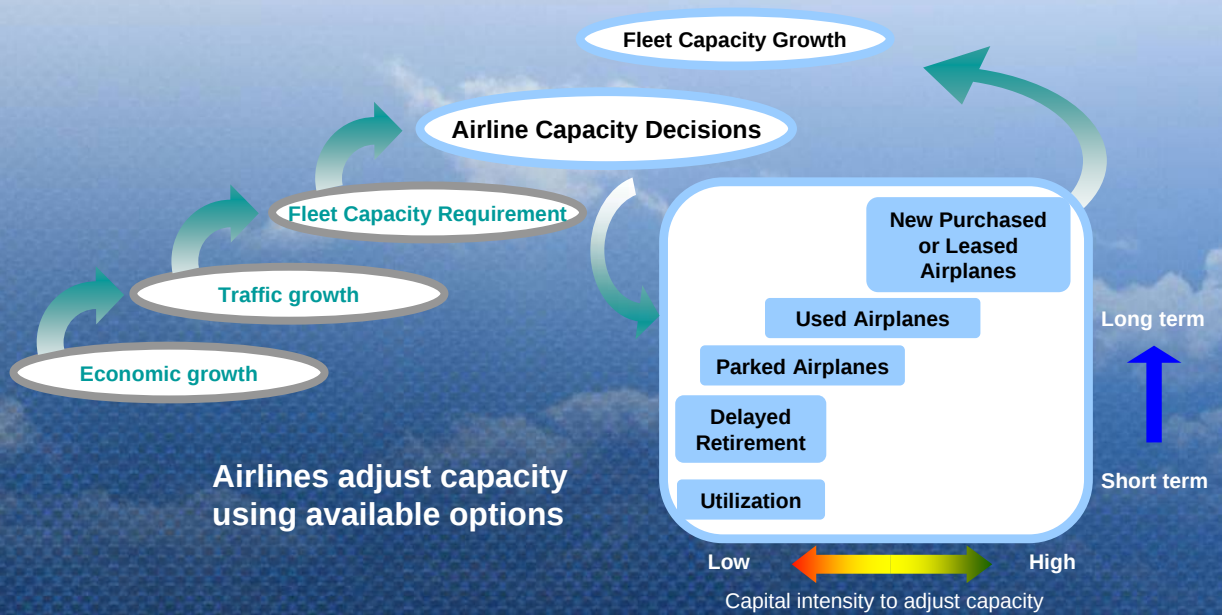
Passengers also want low fares. The recent down cycle has placed considerable emphasis on lowering airline operating costs. This, in addition to the competitive, more liberalized environment, has forced airlines to re-examine their business models. The result has been more efficient airline systems to meet the desires of passengers for lower fares. A good example of this is the significant growth in low cost carriers who base their networks on the more efficient point-to-point systems instead of the more expensive hub-and-spoke systems.

The reality is that the market demands more new nonstop flights and frequencies, not increased airplane capacity or size. Successful airlines focus on using multiple sizes of airplanes to find the balance between passenger desires, quality revenue generation and low network costs.

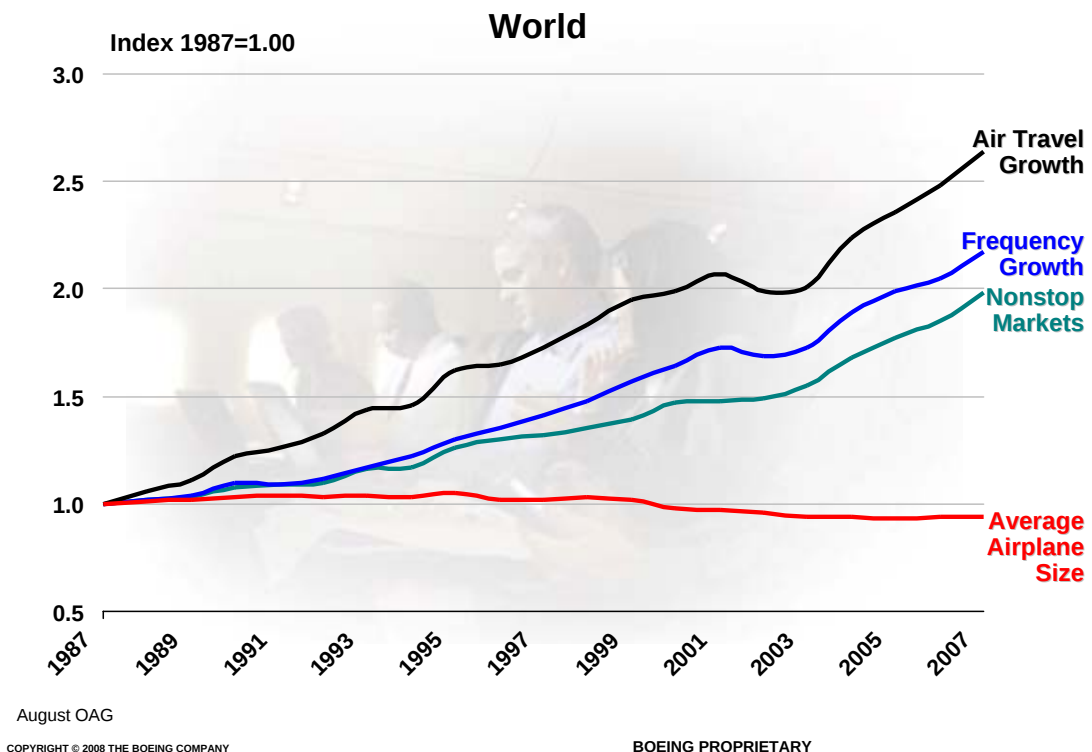
The Underlying Dynamics of Our Industry



The Underlying Dynamics of Our Industry



Air travel growth has been met by increased frequencies and nonstops



Air travel growth has been met by increased frequencies and nonstops

As air travel grows, airlines have a choice. Airlines can accommodate that growth with increases in airplane capacity/size with no changes to their networks. Or they can add more frequencies and nonstop markets. Passengers prefer more nonstops and frequency choices. When airlines add more frequencies and nonstop services they “fragment” their existing network.

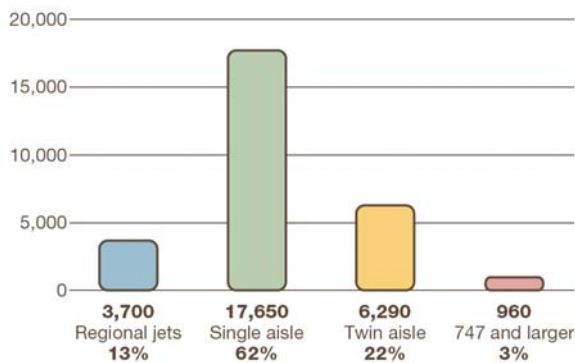
Industry data demonstrates the growth in air travel has been met by an increase in new nonstop markets (city/airport pairs) and by frequency growth—not by an increase in airplane capacity/size. In fact, average airplane size (average airplane size = total available seat kilometers divided by total aircraft kilometers) has remained constant with a slight decline since the mid-1990s.

Understandably, air travel dipped in 2001 and 2002, but now air travel growth has returned to the long-term growth trend. And, we see a continued emphasis on increased nonstop flights with greater frequency choices to meet traveler demands.

Airlines will need over 28,600 new airplanes valued at \$2.8 trillion

28,600 New Airplane Deliveries

2007 to 2026

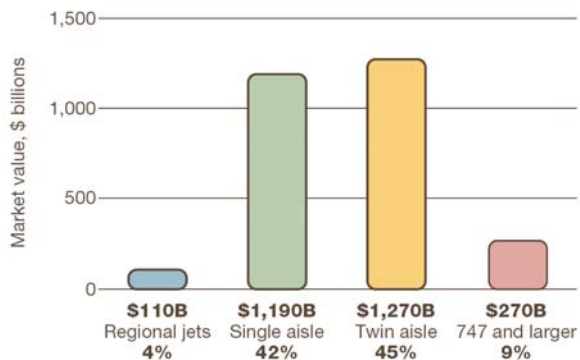


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\$2.8 Trillion Market Value

2007 to 2026



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Airlines will need over 28,600 new airplanes valued at \$2.8 trillion

During the next 20 years, single-aisle airplanes will make up the bulk of airplane deliveries at 17,650 units. Because regional jets extend the geographical reach of major airline hubs, augment larger jet operations during off-peak hours, and replace major airline larger jets on thin routes, regional jet deliveries will amount to about 3,700 units. In addition, U.S. regional airlines are growing at a faster rate than mainline airlines by offering smaller jets on new nonstop flights. Airlines will use single-aisle airplanes along with regional jets to offer more frequencies and increased nonstop service on domestic and short-haul international flights. The majority of Low Cost Carrier flights will continue to be on single-aisle airplanes.

Airlines will continue to augment their fleets with mid-size twin-aisle airplanes (6,300) as well. These airplanes will serve fragmenting long-haul markets such as the trans-Atlantic and trans-Pacific, as well as higher density shorter routes, such as those within Asia. The remaining segment, 747 and larger-size airplanes, accounts for 3 percent of unit deliveries, about 960 747-size and larger airplanes, including freighters, in the 2007-2026 time period.

For the first time, we have included the Commonwealth of Independent States (CIS) in our forecast. This region accounts for ~1,000 airplanes.

The total market is valued at \$2.8 trillion. The single-aisle and twin-aisle categories represent about 87 percent of that value.

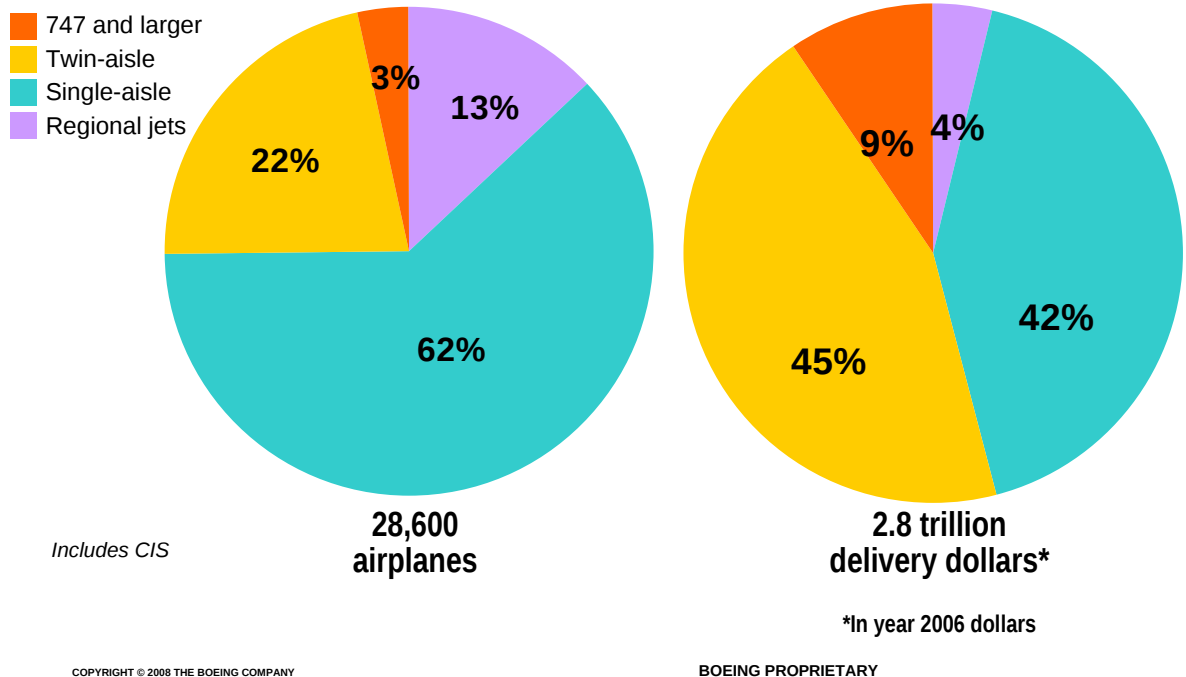
Regional jets: 90 seats and below

Single-aisle: 90-240 seats, dual class

Twin-aisle: 200-400 seats, tri-class

747 and larger: over 400 seats, tri-class

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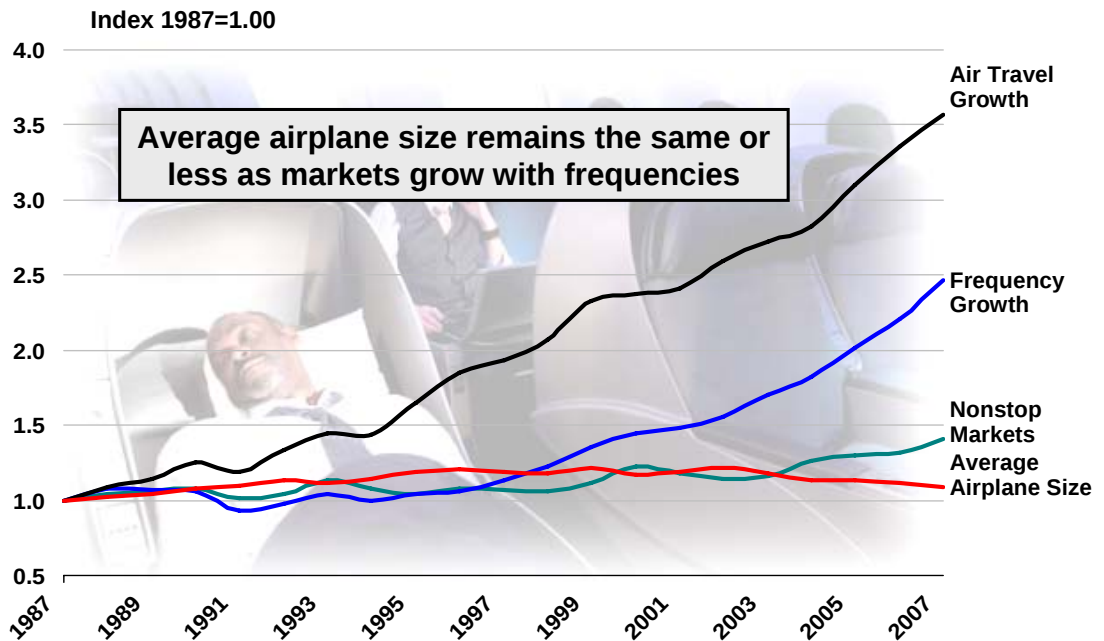
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Africa international air travel growth has been met by increased frequencies and nonstops



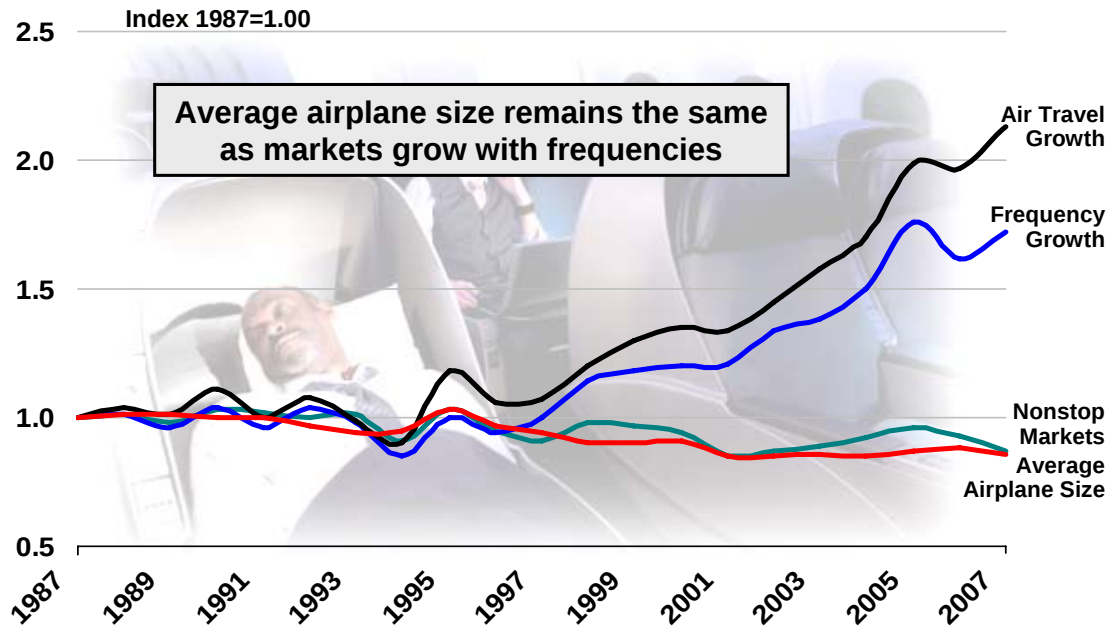
August OAG

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Africa international air travel growth has been met by increased frequencies and nonstops

Africa domestic air travel growth has been met by increased frequencies and nonstops



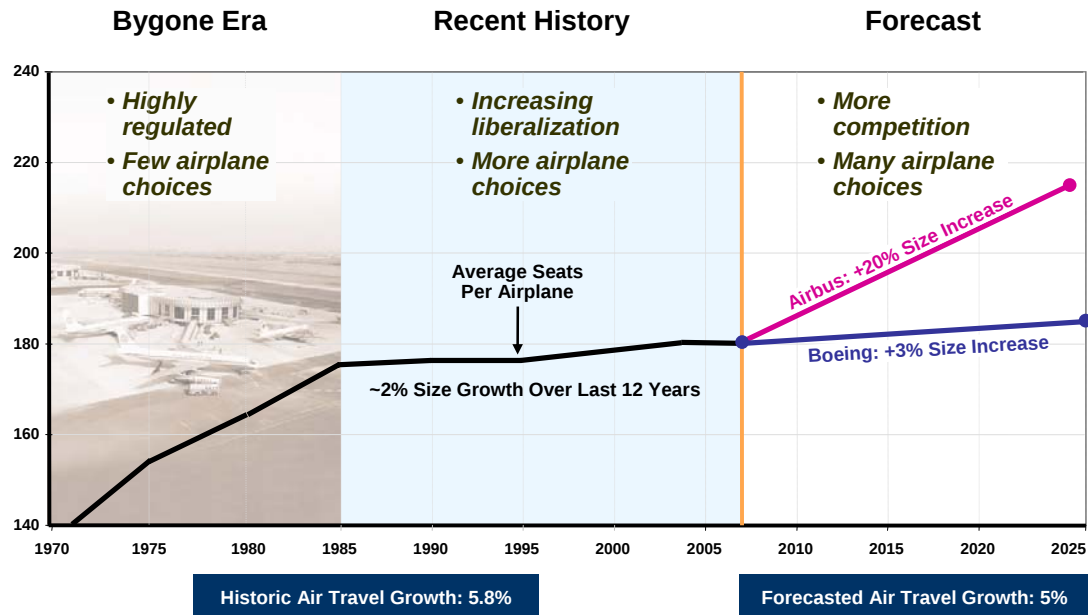
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Africa domestic air travel growth has been met by increased frequencies and nonstops

Boeing Does Not Predict A Significant Trend Shift In Airplane Size



NOTE: Excludes regional jets

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Airbus is predicting a significant trend shift in airplane size

Boeing and Airbus forecast similar air travel growth rates over the next 20 years. Our respective forecasts are differentiated, however, by how we think the airlines will accommodate this growth. A comparison of average seats per airplane in the Boeing and Airbus forecasts illustrates our differing views.

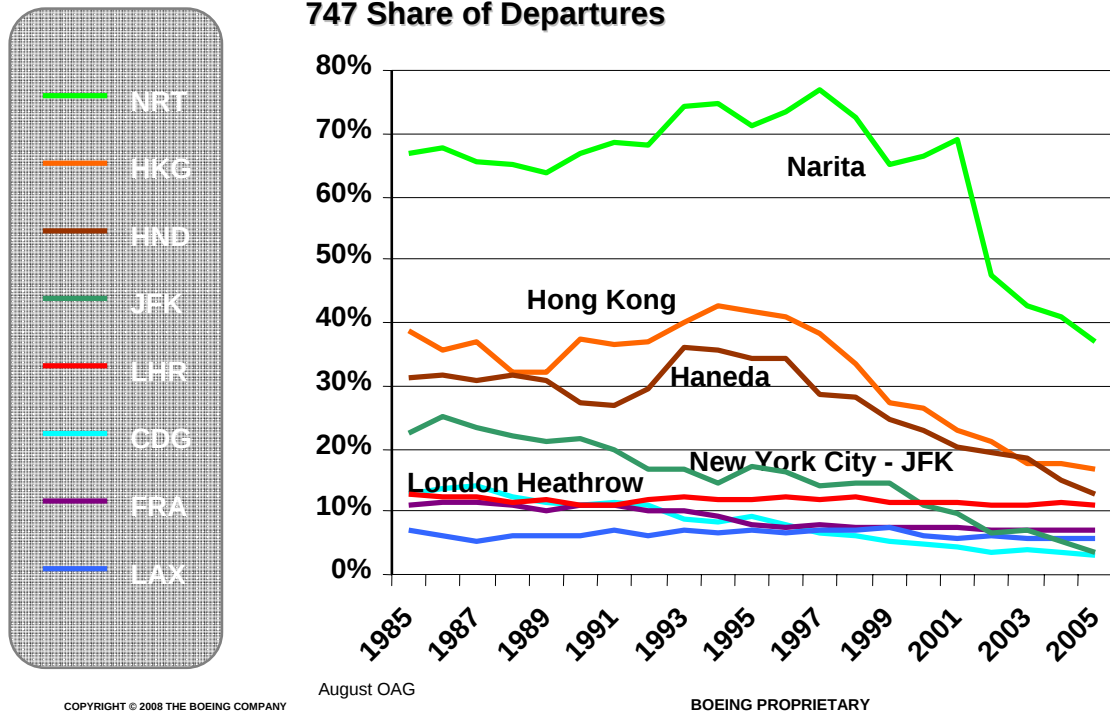
The average number of seats per airplane, as depicted here, is calculated using the Airbus methodology of average seats per airplane = total fleet seats ÷ number of airplanes, excluding regional jets. Their Global Market Forecast states that the average airplane size will increase from 180 to 215 seats. That's a 20 percent increase over the 20-year period, a significant trend shift to larger airplanes.

Airbus sees a future world where passengers will have to fly hub-to-hub using larger airplanes, connecting one or more times to complete their journey. This is the justification for the large forecast of A380-size airplanes. This rapid growth in airplane size that Airbus is predicting has not been seen since the period of 1970-1985, a bygone era of few airplane choices within a highly regulated system.

In contrast, the Boeing forecast is based on the assumption that airlines will continue to meet air travel growth with more frequencies and nonstop service using smaller, more efficient airplanes. In the Boeing view, passenger desires for better service will continue to drive airline strategies and their future passenger airplane fleet mix.

Clearly, even using Airbus' methodology, there has been little growth in average seats per airplane recently— average seats per airplane grew only 2 percent over the last 12 years. We believe this trend will not change much, if at all.

Congestion Is Not Driving Large Airplane Use Up



Congestion Is Not Driving Large Airplane Use Up

If large airplanes are needed to solve congestion, then departures of 747s, the largest airplane in service today, should have gone up significantly. Has that happened? The answer is “no”. In fact, at three of the major airports in Asia-- Narita, Hong Kong and Haneda-- the percent of departures for the 747 has fallen to about half of what it was in the mid-1990's. At Narita, as in many cases, this is due to the 366 seat 747-200 being replaced by 777s, mostly the 301 seat 777-200. At New York's JFK airport, the 747, which is the largest airplane in the airlines' fleets, has fallen from 25 percent of departures in the mid-1980's to just 3.5 percent of departures today.

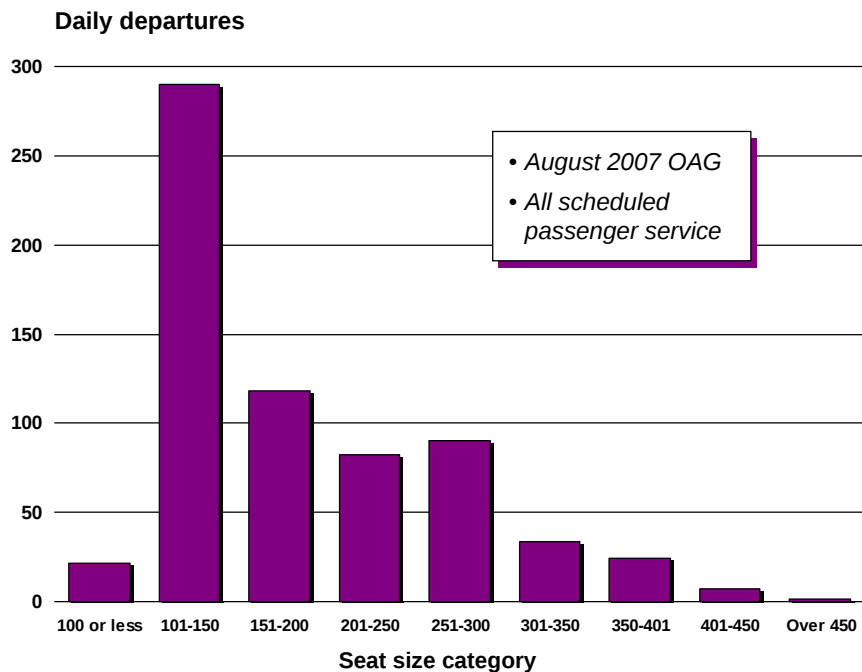
As you can see, the 747 share of departures at all of the other airports in this study has gone down or remained about the same. London Heathrow is one of those that has remained relatively constant. There, the 747 accounts for a little more than 10 percent of departures. Not one of the airports listed has more 747 departures today than they did 20 years ago.

Again, if large airplanes are the solution to congestion, departures of 747s should have gone up significantly. The reason it hasn't is because at almost all airports, most of the departures are airplanes with 200 seats or less. Clearly, it is in this segment, the 200 seat and less segment, where major congestion develops, not in the large airplane segment.

Very Large Airplanes Will Not Reduce Airport Congestion – London Heathrow Airport

90% of the airplane departures are below 300 seats

64% of the airplane departures are below 200 seats



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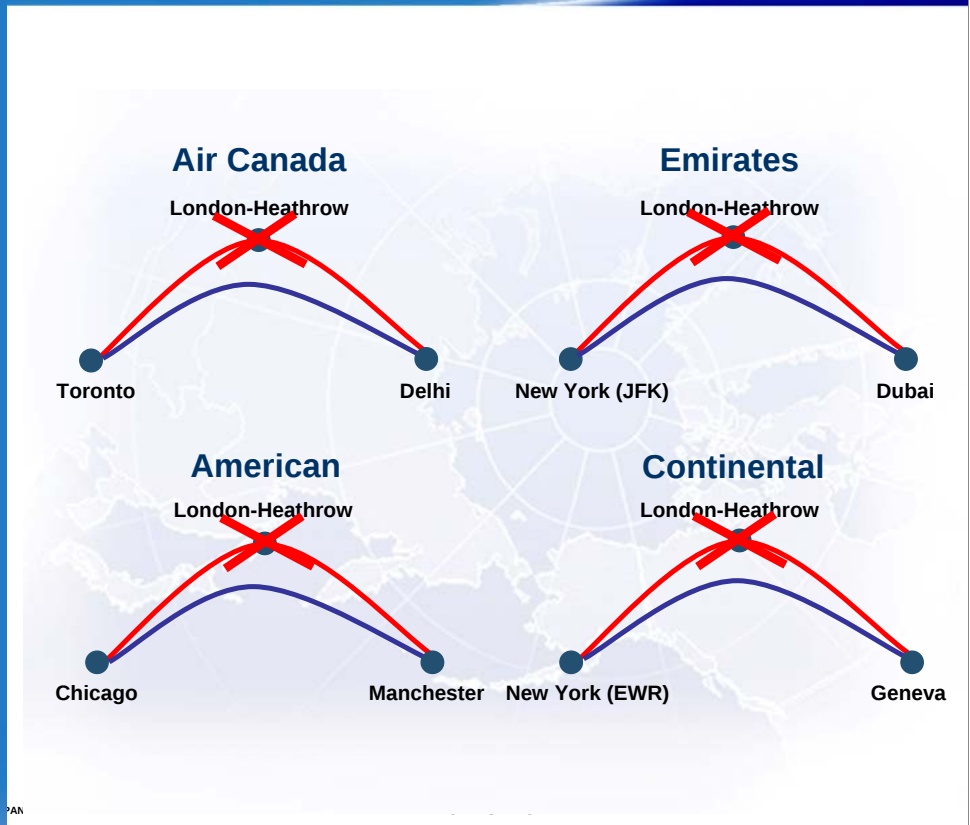
Very large airplanes will not reduce airport congestion – London Heathrow Airport

Congestion is a critical problem in commercial aviation. Some suggest that very large airplanes are the solution. But airlines that substitute very large airplanes for smaller ones can actually contribute to airport congestion. This is because connecting passengers can account for 40 to 70 percent of a large airplane's passenger load and to fill a larger airplane, airlines would have to increase the number of smaller, feeder airplanes to supply the additional connecting passengers. In most cases then, very large airplanes could end up causing, not relieving, congestion at hub airports.

Such airports support both short- and long-range flights that use all sizes of aircraft. The point of the hub strategy is to offer as many flights to as many destinations as possible. This allows the greatest choice of flights compared to competing hubs. Small airplanes bring "connecting" passengers to the hub to support either more flights or larger airplanes. In liberalizing markets, however, airlines have not elected to increase airplane size. Instead, airlines have chosen to add more frequencies to existing destinations and/or new nonstop flights to new destinations. Adding new destinations increases a hub's competitiveness with other hubs.

A look at London-Heathrow shows only 10 percent of departures are airplanes with more than 300 seats. Replacing this small percentage of airplanes with a 600-seat or larger airplane would improve air traffic by only 5 percent. The overwhelming number of flights – 90 percent – are airplanes smaller than 300 seats. Airlines can reduce congestion more effectively by migrating from their smaller airplanes to the next larger airplane size. For example, airlines could move from a 737-700 with 126 seats to a 737-800 with 162 seats, then eventually to a 737-900ER with 180 seats. Each 20 percent increase in airplane size, starting from the smallest airplane, results in a 14 percent reduction in overall potential departures. This makes a lot more sense if we're trying to alleviate congestion. While there is a market for very large airplanes, that market is small.

Nonstop Service Continues To Bypass Mega-Hubs, Not Consolidate



Nonstop Service Continues To Bypass Mega-Hubs, Not Consolidate

This chart illustrates how airlines are serving their passengers by avoiding crowded hubs and flying nonstop with more frequency choices. In each case, passengers are bypassing the London-Heathrow mega-hub, resulting in lower growth rates on London-related flights. This, in turn, results in a decreased need for very large airplanes. The Airbus forecast is counting on connecting and keeping the traditional trunk routes growing at the regional growth rates. But fragmentation is happening on these routes, not consolidation.

As a recent example, Continental Airlines announced they would begin daily nonstop flights from their New York hub at Newark Liberty International Airport to Bristol, England on May 19, 2005. This new service links New York with the largest city in southwest England, and is the first ever scheduled nonstop trans-Atlantic service to this region. Per Jim Summerford, Continental's vice president, Europe, Middle East and India, "It's great to add Bristol to our U.K. route network and offer a more convenient service to this region for our customers in the Americas. Travelers heading to southwest England and south Wales no longer have to face the extra time traveling to London. They can now fly nonstop to Bristol."

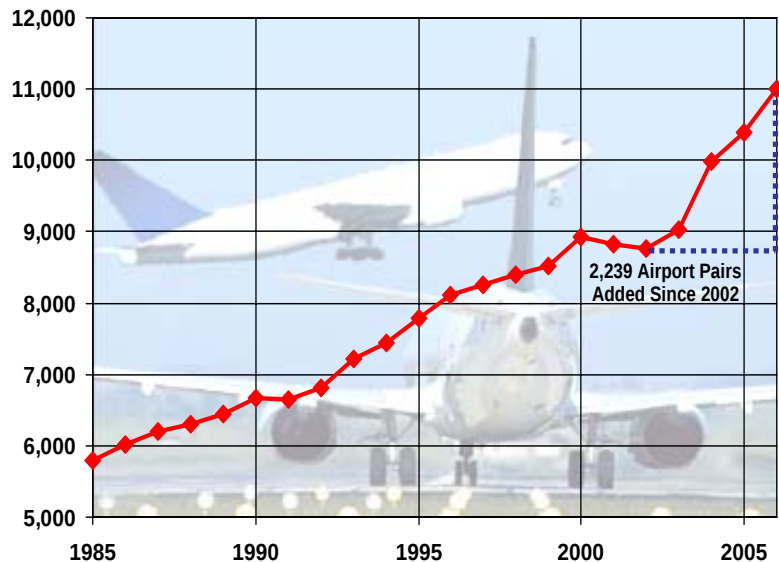
Fragmentation, not consolidation, is the key difference in assumptions behind the Boeing and Airbus forecasts. It is also why we predict that the world needs only a small number of very large airplanes--not the 1,250 passenger airplanes that Airbus predicts.

New Nonstop Flights Continue To Grow, Not Consolidate

Airbus claims the number of city pairs has stagnated since 1996

Airbus projects fewer airport pairs in 2022 than served today

Airport Pairs



Data from August Schedules
NOTE: Excludes regional jets

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New Nonstop Flights Continue To Grow, Not Consolidate

Airbus has several underlying assumptions in their 20-year Global Market Forecast (GMF) that significantly influence their forecast for 1,250 passenger A380s. One of the major assumptions is that very few new city or airport pairs can be added. Their 2003 GMF states, “almost all possible combinations of cities, the global route network seems to have reached saturation.” They demonstrate the validity of this assumption with a chart titled, “Number of city pairs served has stagnated” that shows no increase in the total number of routes since 1996. But how can this be? More than 2,200 airport pairs have been added to mainline jet service (excluding regional jets) from 1996 to 2005, according to the OAG (Official Airline Guide). Clearly, the Airbus assumption is invalid.

Closer examination of the 2003 Airbus GMF shows just how questionable this assumption is: The 2003 GMF calls for 1,511 airports and 9,125 airport pairs to be served by the “active mainline fleet” in 2022. This is the approximate level of the airports (1,476) and airport pairs (9,061) served by the combined mainline fleet in August of 2003. And, it is significantly less than the 10,425 airport pairs served in August, 2005. It is interesting to note that Airbus did not include this detail in the 2004 GMF.

Agenda

■ Market Outlook

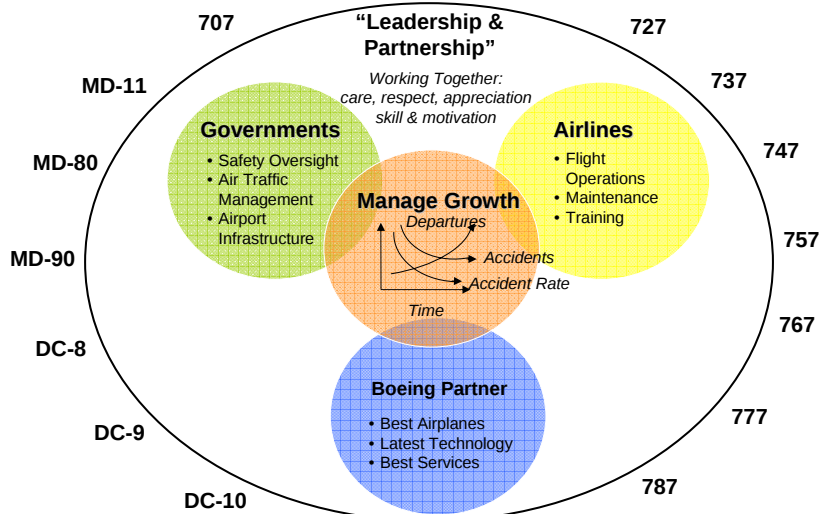
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Shared Responsibility for A Safe & Efficient Global Air Transportation System



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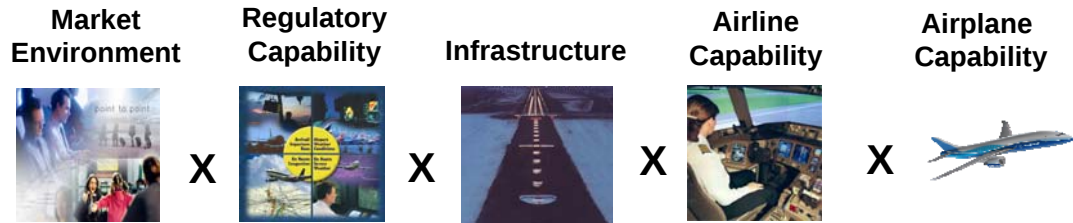
International aviation plays a prominent role in global economic development and represents a catalyst for regional and local economic vitality. The success of aviation is largely determined by the degree to which airlines can achieve their full potential in the marketplace. The ability of the global air transportation system to accommodate growth will be determined by our collective ability to remove constraints to the system.

The challenge we all face is at the heart of this chart: How do we grow (increase traffic) while we simultaneously drive down the accident rate. We all share a part in this challenge. Our mutual success will depend on our ability to be leaders in our areas of responsibility, as well as partners in enhancing both safety and efficiency in the air transportation system.

At Boeing we understand that our job is not over once our products leave our factories. We must have a strong partnership with Governments, and Airlines.

We understand that when it comes to the challenges of addressing safety and efficiency in periods of rapid growth in air traffic demands, we have a lot to learn from each other. What we seek is an opportunity to share knowledge, best practices and to provide industry leadership to assure a safe and efficient air transportation system.

All Five Elements Must be in Place to Ensure Growth



= A Safe, Reliable, and Profitable Air Transportation System

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There are five critical elements to a **safe and efficient air transportation system**. Each element must be in place and often must be worked in conjunction with the other four elements.

At Boeing, we have a responsibility to build the best products and offer the best services in the industry.

We are only one element in the equation, however.

Regulatory Capability: Rapid growth affects a regulator's ability to certify and oversee airlines, to update regulations, and to implement new technologies. Regulators must be able adapt to rapid growth to effectively oversee the air transportation system and to administer services, maintain facilities, and train personnel to ensure that the system is functioning properly.

Air Traffic Capability: Rapid growth can strain an air service provider's ability to run the system. The existence and integration of a roadmap into air traffic system planning and development is a cornerstone to addressing this challenge. The roadmap must take into account current ATC demands while positioning the country for the development of personnel and new technology need to address the increase in demand on the system. The plan must be integrated with the regulatory authority and with industry to assure the successful introduction of technology.

Airport Infrastructure: Rapid growth will put further strains on existing infrastructure and make it more critical to address areas that lack the infrastructure needed to address growth. Here again, these plans must be closely integrated with the regulatory authority and the air traffic service provider.

Airline Capability: Airlines must run an operation that focuses simultaneously on profitability and safety as a foundation to a healthy business. Rapid growth creates additional challenges by further strain airline resources. The industry is facing a global shortage of several critical skills

Responsibility for the integrity of the air transportation system resides within several organizations and entities. Achieving partnership among these parties is the key to enhancing both safety and efficiency in the air transportation system.

The US-India ACP is postured to provide insights to the Indian Government and the international community on India's needs across each element of the air transportation system, and work to overcome the many challenges we will face along the way.

All Five Elements Must be in Place to Ensure Growth

Market Environment



Regulatory Capability



Infrastructure



Airline Capability



Airplane Capability



- Strong demand exists to support increased non-stop routes
- Governments must increase political and financial support of their regulatory agencies
- FAA IASA Cat 1 status is the largest challenge in growing traffic to the US
- Airport and Air Traffic Infrastructure must first be in place to support continued growth.
- All airlines need to continue focus on safe, reliable, and profitable operations
- 777-200LR / -300ER and, in the future, 787 range, size, and operating economics will provide African carriers with ideal tools to open Africa – US and Africa - Asia direct routes

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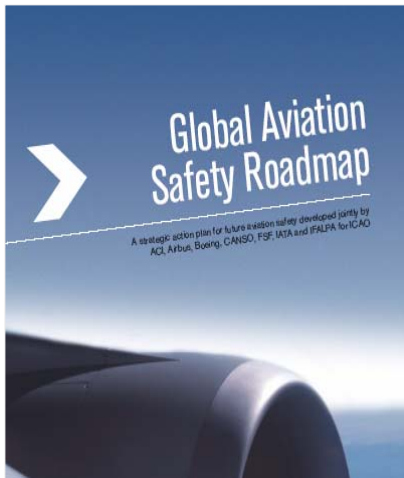
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Global Roadmap's 12 Focus Areas: "The Roads"

Enable, Implement, Confirm, Integrate and Share



Focus Areas

■ States

- Consistent implementation of int'l. standards
- Consistent regulatory oversight
- No impediments to reporting errors/ incidents
- Effective incident and accident investigation

■ Industry

- No impediments to reporting and analyzing errors/ incidents
- Consistent use of Safety Management Systems
- Consistent compliance with regulatory reqmts
- Consistent adoption of industry best practices
- Alignment of global industry safety strategies
- Sufficient number of qualified personnel
- No gaps in use of technology to enhance safety

■ Regions

- Consistent coordination of regional programs

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Goals and Objectives:

Provide a common frame of reference for all stakeholders

Coordinate and guide safety policies and initiatives worldwide to reduce the accident risk for commercial aviation

Avoid duplication of effort and uncoordinated strategies

Encourage close industry and government cooperation on common safety objectives

Timescale: Near (2006-10) and Medium Term (2010-14)

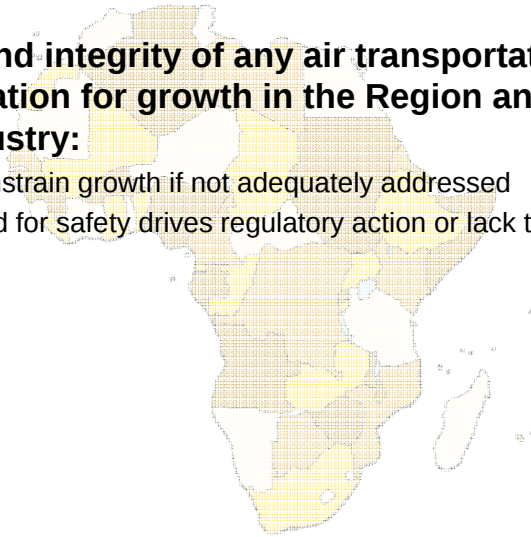
The 12 Focus Areas were grouped into 3 sets according to the primary sector of the aviation system most responsible for carrying out measures to achieve them.

By organizing the Focus Areas in this manner the ISSG does not want to imply that States, Industry and Regions should address the Roadmap independently. Rather, as the text describes, this is intended to be a joint effort with all three groups working together at a regional level.

Safety is the Foundation for Growth

■ **The safety and integrity of any air transportation system is the foundation for growth in the Region and in Africa's aviation industry:**

- Safety will constrain growth if not adequately addressed
- Public demand for safety drives regulatory action or lack thereof



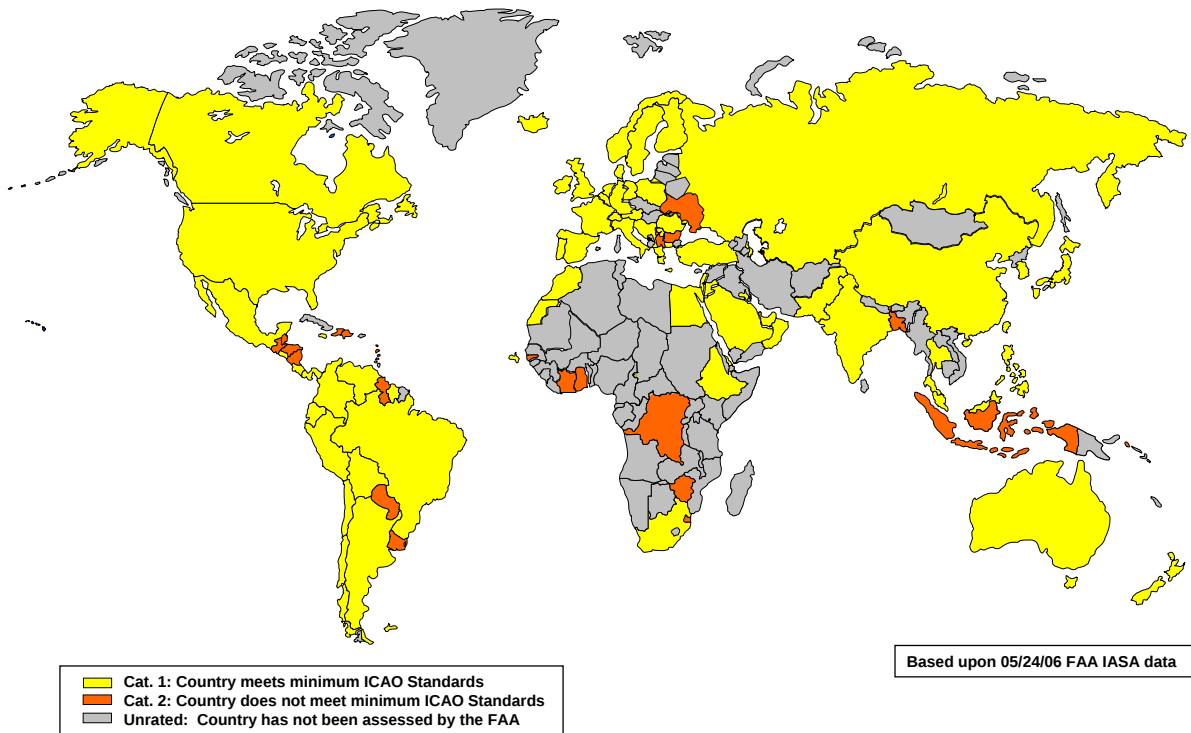
Safety is the Foundation for Growth

■ Inability to meet FAA / EASA Cat 1 status is one of main drivers stopping carriers from flying into US and Europe

- FAA International Aviation Safety Assessment is based on a Civil Aviation Authority's compliance to international (ICAO) standards
- Requires regulatory agency commitment to adhere to ICAO International Safety Standards, to hire qualified personnel, and to commit resources and training
- All elements must be continually monitored, updated and enforced

■ Strong, independent and well funded regulatory agencies are needed to create this environment

Global FAA IASA Status

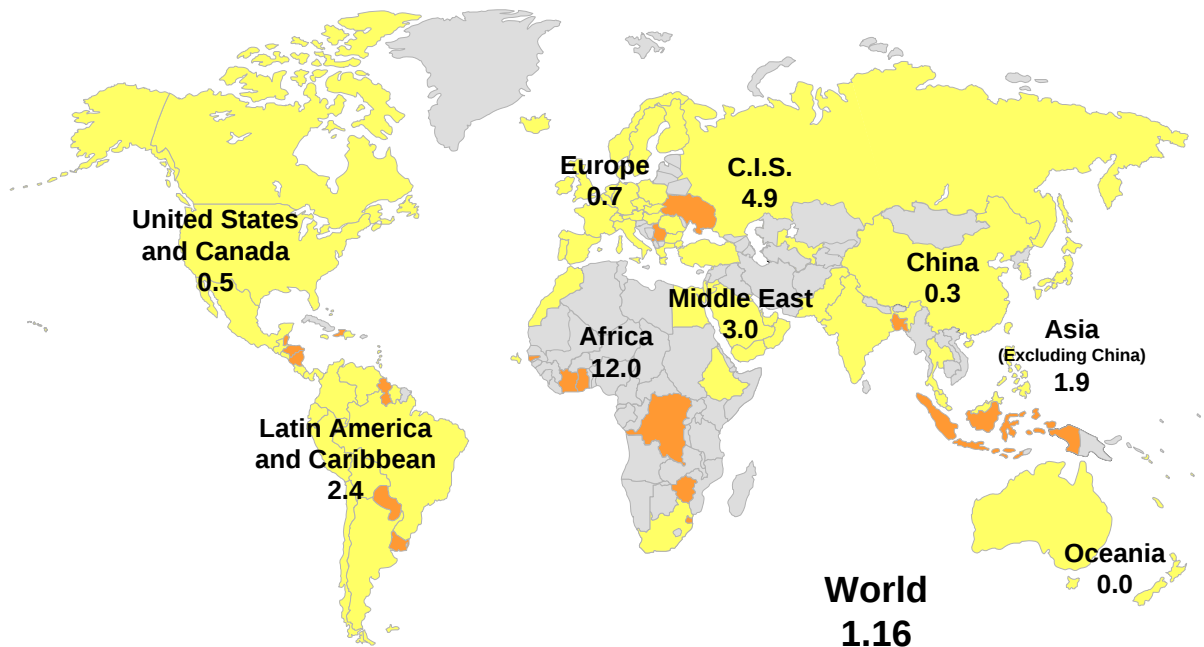


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1. **Category 1 Countries:** Cape Verde, Egypt, Ethiopia, Morocco, South Africa
2. **Category 2 Countries:** Cote de Ivoire, Democratic Republic of Congo, Gambia, Ghana, Swaziland, Zimbabwe

Regulatory Capability is Essential to Safety



* Scheduled air transport jets > 60,000 lbs MGW; source: Boeing

Accidents per
million departures

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- Accident rates and numbers of fatalities differ dramatically in different regions of the world
- Regulatory oversight is a fundamental element to addressing safety
- Efforts to improve safety have been most successful when industry and government have worked together
- We know how to prevent many of the types of accidents occurring today
- Better use and coordination of industry and government resources can dramatically reduce these kinds of accidents
- Current efforts are not efficient or well coordinated

Economic Fundamentals are Essential to Sustainable Growth

■ **Emphasis on profitability will create long term economic development**

- Profitable airlines invest in maintenance, training, and fleet renewal, and adopt best practices for safe and reliable operations

■ **Airlines' profitability challenged from numerous fronts:**

- Weak business plans and capitalization
- High operational costs
- Low revenue environment
- Lack of financial and human capital
- Low operational efficiencies
- Government interference
- Old fleets

■ **Key to successful government support lies in:**

- Strengthened regulatory capability
- Increased efficiency in regulatory oversight
- Reduced taxes and airport fees

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20-year forecast: Middle East and Southwest Asia economies to grow at above world average

World GDP is forecast to grow by 3.1 percent per year over the next 20 years. Mature economies rely on productivity gains, service industries, and consumer markets for much of their growth, whereas emerging economies, like Pakistan and India, are characterized by expanding labor forces, increased manufacturing, and entry into global capital and trade markets. Southwest Asia's rate of GDP growth is expected to be above the world average at 4.4 percent per year between now and 2025.

World air traffic as measured in RPKs will grow by 4.9 percent annually over the next 20 years. Africa is the second-largest and second-most populous continent, after Asia. The region accounts for more than 12 percent of the world's population distributed across its more than 50 nations. On average, air traffic for Africa's carriers is forecast to grow at 5.7 percent annually over the next 20 years. This also represents a stronger growth rate than the world average and is being driven by their 4.4 percent annual GDP growth rate for the region.

Europe will have the largest air traffic growth in excess of GDP, the result of continuing positive effects of liberalization. The Middle East is also expanding rapidly because of increasing wealth and its emerging status as a major world air traffic hub. China and Southwest Asia also continue to develop their economies and air travel industries faster than the world average. North America is a relatively mature air travel market and will have a correspondingly lower growth rate.

Smart business - Profitable airlines

■ Key to success lies in:

- Adopting Low Cost Carrier philosophies
- Developing pipeline of airline professionals
- Sound and continuous fleet renewal programs
- Benchmarking best practices from other world carriers
- Adopt commercial operating practices even if government owned



Agenda

■ Market Outlook

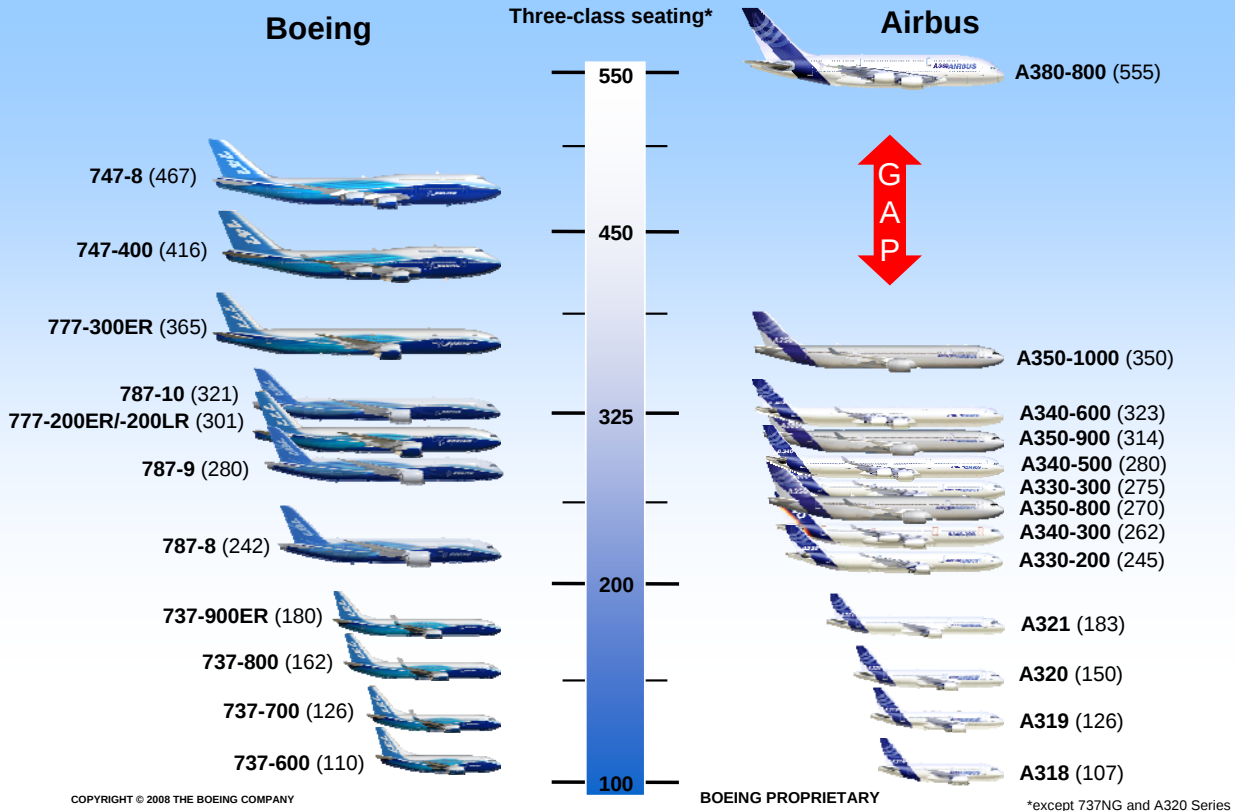
- Global Observations
- Regulatory Environment
- **Product Strategies**
- Africa Regional Perspective

■ Strategy vs. Tactics

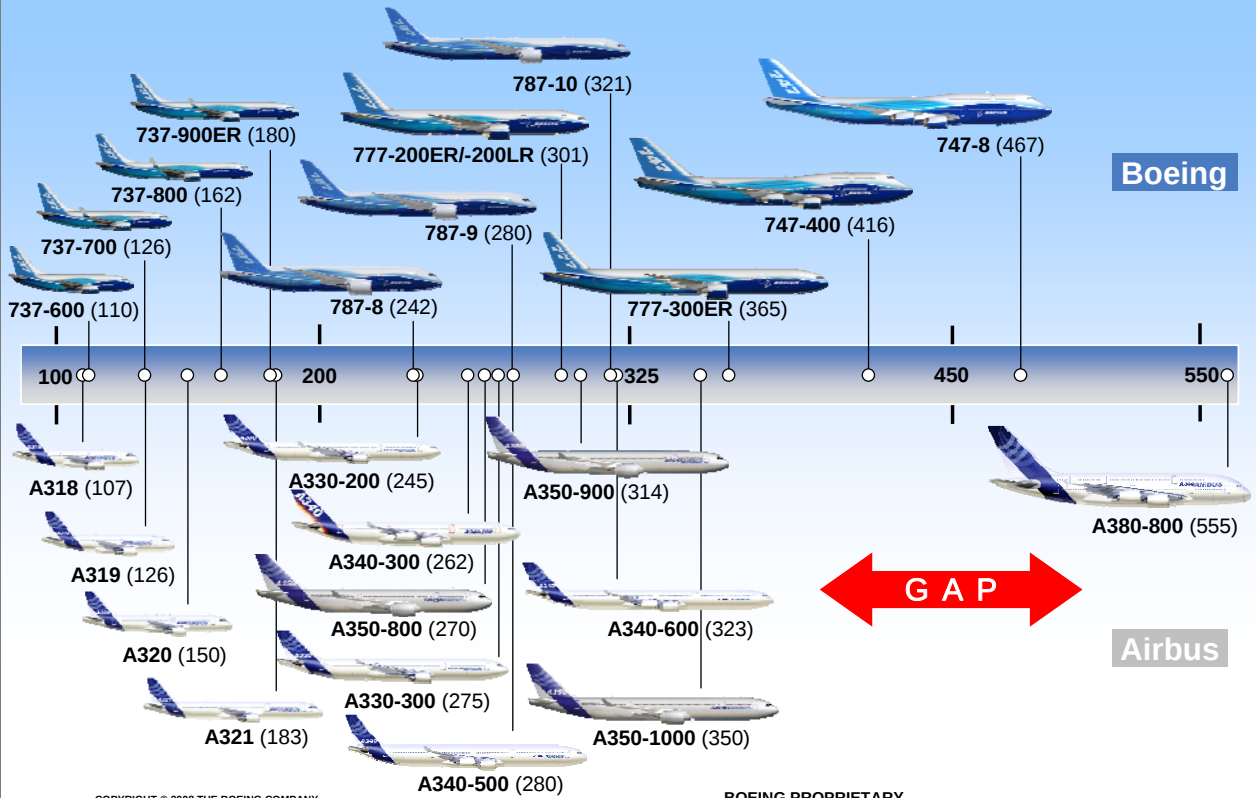
■ Final Thoughts



Both Manufacturers strive to meet better market coverage with a more efficient fleet



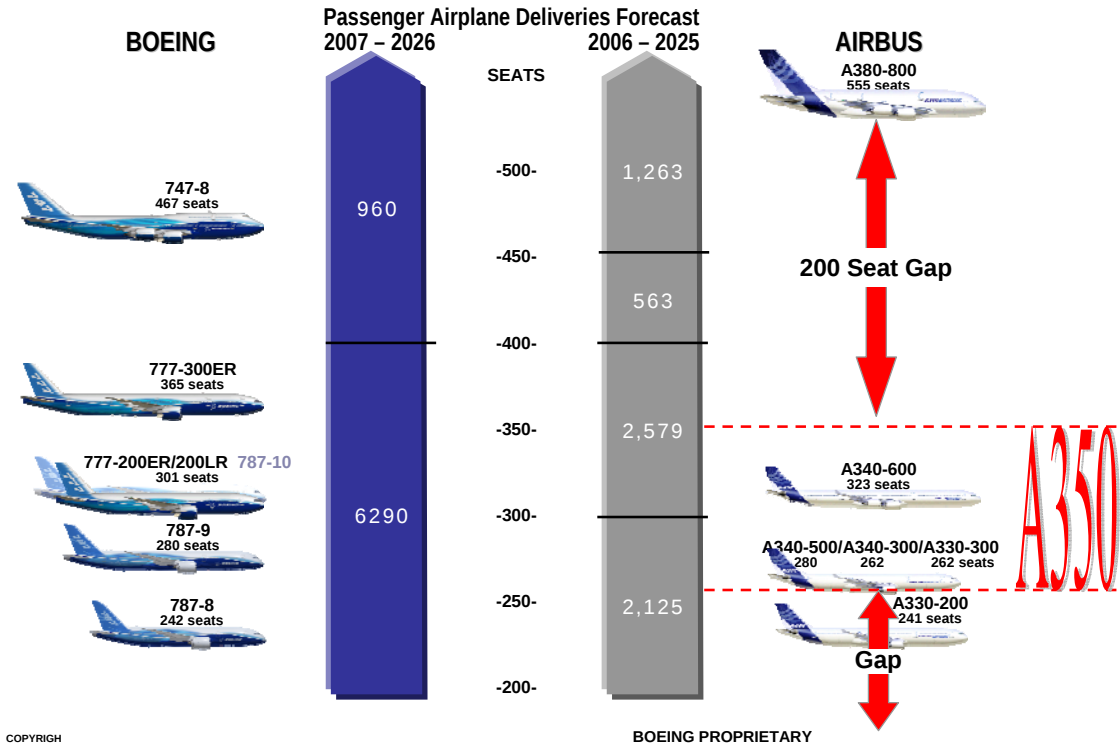
Both Manufacturers strive to meet better market coverage with a more efficient fleet



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BOEING PROPRIETARY *Three-class seating except 737NG and A320 Series

The goal is to provide the right sized aircraft to meet future market requirements



Boeing twin-aisle airplanes provide the right sizes to meet future market requirements

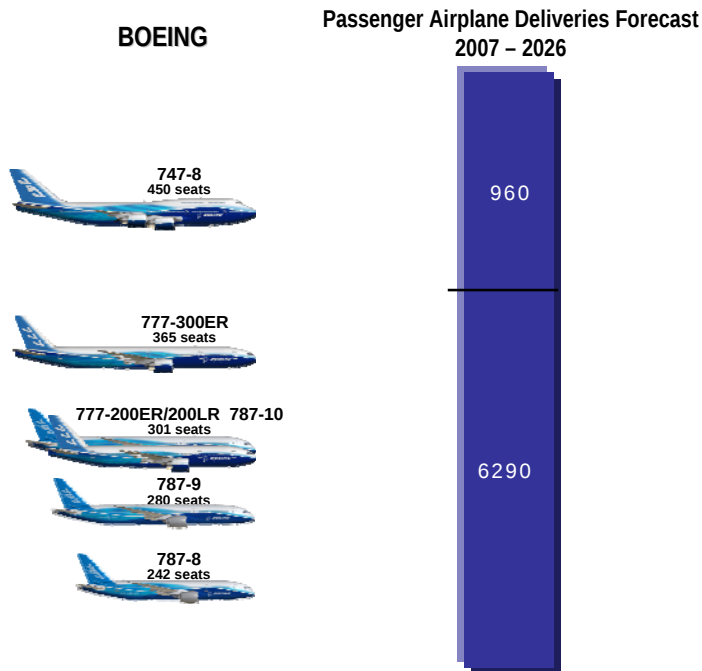
The Boeing 20-year forecast calls for a total of 6,450 passenger twin-aisle airplanes to be delivered by 2025. This number can be broken down further by airplane size: 3,030 'small' (200-300 seats), 2,770 'medium' (300-400 seats) and 650 'large' (400 seats and above) twin-aisles airplanes will be delivered. In the latter category, half will be 747-size (400-500 seats) and the other 325, A380-size (over 500 seats). The latest Airbus forecast calls for a total of 6,530 passenger twin-aisle airplanes to be delivered by 2025. While this total number looks very similar to the Boeing forecast, the fleet mixes are actually quite different.

Specifically, Airbus is projecting 28 percent of their twin-aisle deliveries will fall in the '400 seat' and 'very large aircraft' categories as defined by them (747s and A380s), while Boeing projects only 10 percent in these segments. As a result of their significantly higher forecast, Airbus has been putting all of their resources into the 550-seat A380, leaving a 200-seat gap between 350 and 550 seats. This happens to be an important part of both of our forecasted twin-aisle markets. Boeing is well-positioned to serve customers in this segment with the 747-8 Intercontinental and 777-300ER airplanes.

The other significant difference between the two forecasts is in the 'small' segment where Boeing is projecting 47 percent of our twin-aisle deliveries, while Airbus projects only 33 percent of theirs. Boeing's forecast is based on the conviction that passengers want to fly where they want to go, when they want to go. That is, people want to fly nonstop with more frequency choices. Accordingly, this segment is where we are putting most of our product development resources. The 787 Dreamliner comes in three models, -3, -8 and -9, to give airlines the strategic tools they need to meet passengers' desires in this crucial and demanding market. In addition, our customers continue to express interest in a larger 787, the 787-10.

Airbus now has recognized the importance of the 'small' twin-aisle segment and that they must respond to the very successful 787. They also know today's A330s and A340s cannot compete with the Dreamliner or the 777. As a result of this and the poor market response to their previous A350 offerings, Airbus has revised their offering— yet again— which will now be at least 5 years late into service to challenge the 787. Their largest A350 family member, the -1000, is planned to challenge the 777-300ER, but it won't be available for service until 8 years from today.

Boeing twin-aisle airplane strategy provide the right sizes to meet future market requirements



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Boeing twin-aisle airplanes provide the right sizes to meet future market requirements

The Boeing and Airbus forecasts have their biggest disparity in the larger than 747 seat segment. Boeing is projecting only about 325 A380-size passenger airplanes while Airbus is projecting 1,250. As a result, Airbus has been putting all of their resources into the A380, leaving a 200-seat gap between the much larger 350 and 550 seat market segments. This happens to be a sizeable portion of the forecasted market in both the Airbus and Boeing twin-aisle forecasts. Boeing is well-positioned to serve customers in this crucial market with the 777 and 747 families—especially with the launch of the 747-8 Intercontinental, the next evolution of the world's most recognized airplane. The market for 747-size passenger airplanes is forecast to be about 325 over the next 20 years. In addition to the passenger market, 747 and larger freighters are projected to number about 340.

Another forecast disparity exists in the 200 to under 300 seat category. Boeing forecasts significantly more airplanes than our competitor to serve this market. This is based on our conviction that passengers want to fly where they want to go, when they want to go. That is, people want to fly nonstop with more frequency choices. Accordingly, this segment is where we are putting most of our product development resources. The 787 Dreamliner comes in three models, -3, -8 and -9, to give airlines the strategic tools they need to meet passengers' desires in this crucial and demanding market. The -8 carries 242 tri-class passengers about 14,600 km (7,900 nmi) and the -9 carries 280 passengers in a tri-class configuration about 15,700 km (8,500 nmi). The -3 is the same size as the -8, however, it improves efficiencies for shorter range 5,500 km (3,000 nmi) routes while carrying 317 dual-class passengers. Our customers continue to express interest in a larger 787, the 787-10.

Airbus has recognized they can no longer ignore the 787. They also know today's A330s and A340s cannot compete with the Dreamliner or the 777. As a result of this and the poor market response to their previous A350s, Airbus is in the middle of revising their offering which will be at least 4 years late to challenge the 787. And, if they intend to challenge the new 777-300ER with a larger version of the A350, it appears that would be introduced as many as eight years from today.

It is interesting to note that Steven Udvar-Hazy, founder, chairman and chief executive of airplane-leasing company, International Lease Finance Corp (ILFC) views the A380 market as limited. In a March 29, 2006 interview with the Seattle Times, he said sales of the superjumbo A380 — at best "300 or 400 airplanes," he estimated — cannot compensate for missing out in the much larger mid-size widebody market. His view is not far off of our assessment of about 325 very large passenger airplanes.

787 And 777 – The Perfect Combination

Twenty customers and operators

Customers / Operators	787	777*	Customers / Operators	787	777*
 ANA	50	47	 AIR CANADA	37	17
 AIR NEW ZEALAND	8	12	 KLM	74	79
 BRITISH AIRWAYS	24	49	 Kenya Airways The East of Africa	9	4
 JAL	35	46	 Aeromexico	5	3
 Continental	25	20	 SINGAPORE AIRLINES	20	77
 Vietnam Airlines	8	10	 JET AIRWAYS	10	13
 Garuda	15	10	 Ark	7	5
 KOREAN AIR	10	16	 LAN	32	4
 AIR INDIA	10	37	 Qatar Airways	15	10
 Emirat	27	27	Unannounced	TBA	TBA
 Bangkok Airways	4	4			

* Existing fleet & firm orders

As of April 24, 2008

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787 and 777 – the perfect combination

It's no wonder more than thirty five percent of our 787 Dreamliner customers either already have 777s in their fleet or have ordered the two airplanes together. Sized for profitable growth, the 787 and 777 enable airlines to develop new routes and increase frequencies on existing routes. This formula has proved time and again to attract new passengers and encourage existing passengers to fly more often. The new long-distance point-to-point airplane combination of the 787 and 777 promises to usher in a new era of global air travel and commerce.

Let's hear what customers of our "Perfect Combination" have to say...

"These aircraft will allow us to develop new routes and increase frequency on existing routes, as well as an overall increase in both passenger and cargo capacity." "The [787 Dreamliner and 777] order is a clear signal of where Air New Zealand is positioning itself – innovative, efficient and delivering the best products to customers." - Air New Zealand

"Our decision to modernize our fleet with the 777 and 787 Dreamliner will move Air Canada into a clear leadership position among North American international carriers with the world's two newest and most efficient twin-engine, long-haul airplanes. The superior customer comfort and operating economics of these aircraft will put us in the company of the leading European, Middle East and Asia Pacific carriers." - Robert Milton, president and chief executive officer of ACE Aviation Holdings, Inc., parent company of Air Canada

Two complete families of point-to-point high frequency twinjets. Opportunities abound!

Agenda

■ Market Outlook

- Global Observations
- Regulatory Environment
- Product Strategies
- **Africa Regional Perspective**

■ Strategy vs. Tactics

■ Final Thoughts

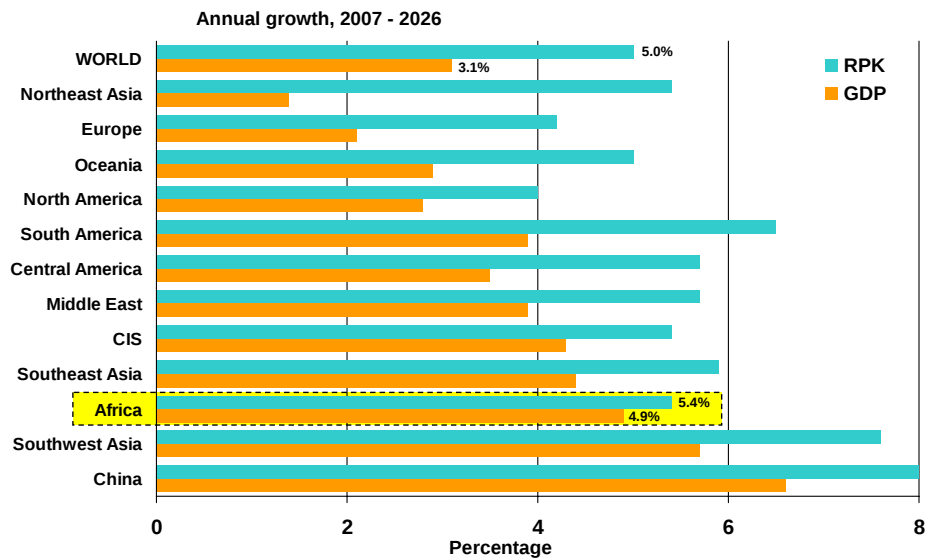


What are the market trends for Africa and the Region?

- Africa's economy continues to grow and is fueling domestic and regional air travel, as well as additional international travel
- Competition remains very strong to/from the region
- Political challenges for Africa remain
- Economic growth in the Africa remains high and can provide opportunities to capture more regional traffic



Africa GDP and RPK to grow above world average



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Forecast is for strong GDP growth in Africa

According to Global Insight, over the next 20 years 43 of the 53 countries in Africa will have GDP Growth above world average of 3.1 percent per year.

High growth nations include oil-producing countries such as Nigeria, Libya, Algeria and Angola, as well as countries where growth is also tied to commerce and tourism. South Africa remains the dominant country economically, with a 20-year GDP growth rate forecasted at 5.7 percent per year.

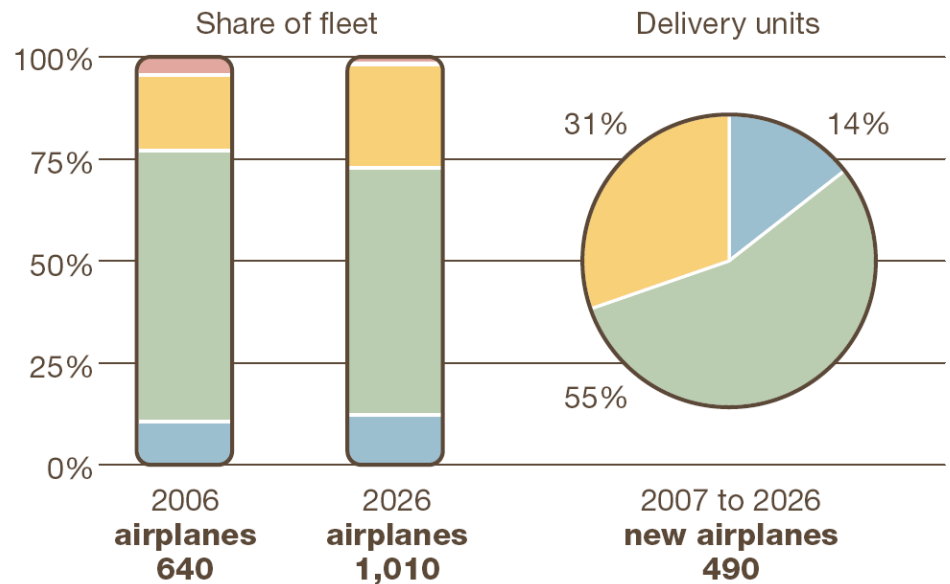
This strong economic growth will contribute to above average RPK growth. Africa RPK growth is expected to average 5.4 percent per year, above the world average of 5.0 percent.

African airlines will need 500 new airplanes

Value: \$50 billion

2007-2026

- 747 and larger
- Twin-aisle
- Single-aisle
- Regional jets



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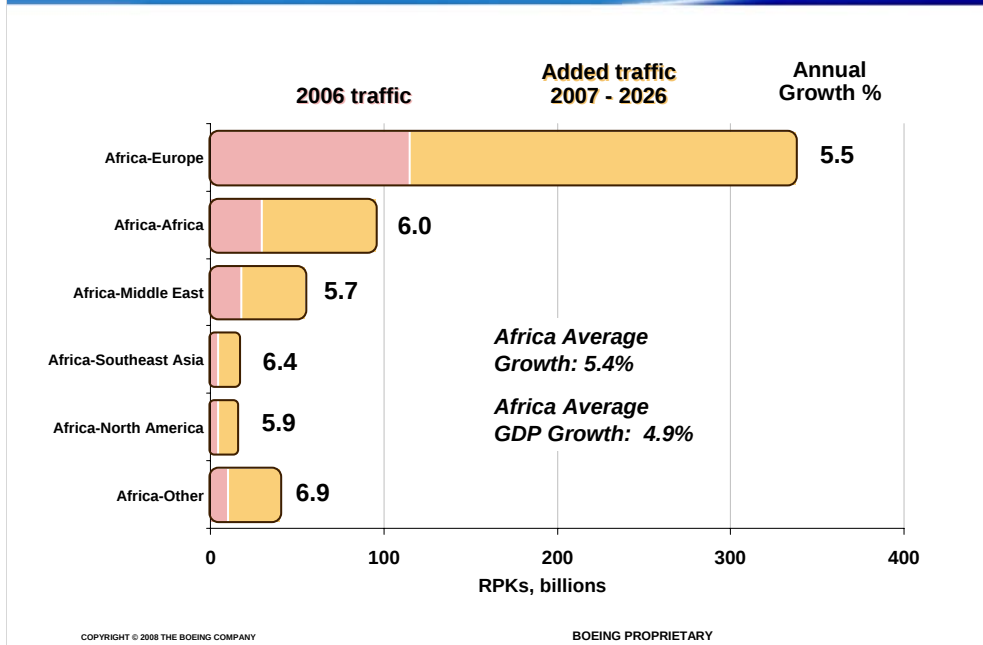
African airlines will need 500 new airplanes

With 490 new airplane deliveries, the African fleet will nearly double in size during the forecast period. The region's number of airplane orders—worth an estimated \$50 billion in investment opportunities—reflects confidence in continued economic growth in the region.

Although more than half of the deliveries, some 270, will be single-aisle airplanes, the percentage of the fleet in the larger category will decrease from 66 to 60 percent as airlines switch to more efficient mid-size twins. 150 twin-aisle airplanes will be delivered to African airlines shifting the fleet distribution from 20 percent today to 27 percent in 2026. Regional jet deliveries will total 70. No new 747 and larger airplanes will be needed in the region over the next 20 years.

In dollar terms, 58 percent of the \$50 billion in new airplanes will be in the twin-aisle segment, 38 percent in the single-aisle segment, and 4 percent in RJs.

Africa to and from Europe will continue to be the largest market



Africa to and from Europe will continue to be the largest market

The distances and geographic challenges of travel within the continent, compounded by the lack of good roads and railways, foster strong growth in regional air transport, as increased trade and commerce and a growing middle class boost demand. The anticipated annual traffic growth of 5.4 percent will be above the world average.

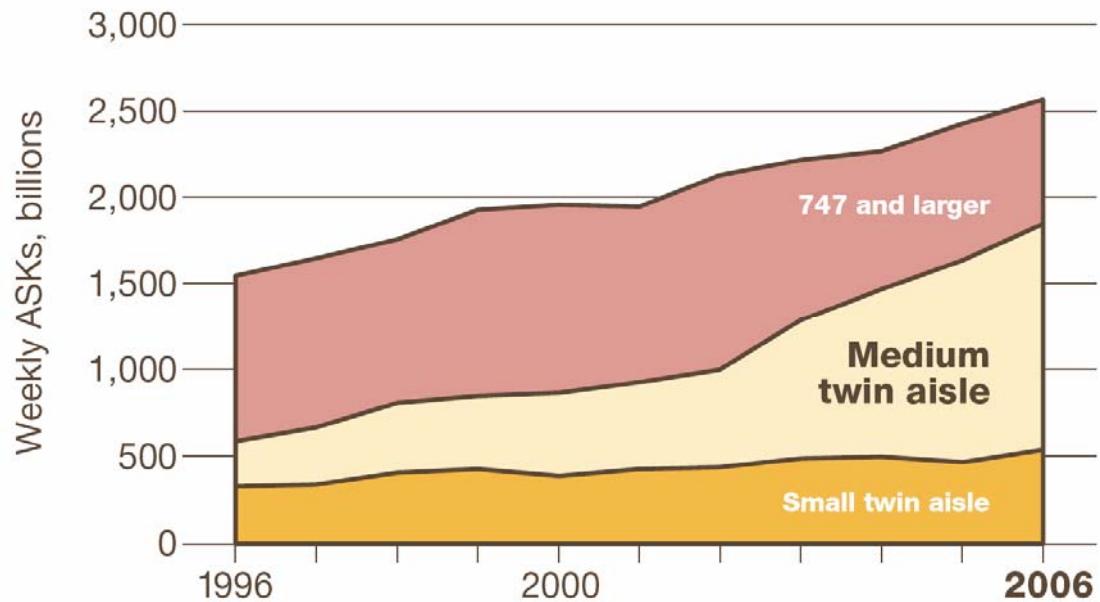
The Intra-Africa market will experience 6.0 percent average growth of annually for the next 20 years. Single-aisle airplanes will dominate air travel within the continent, accounting for about three-fourths of the available seat-kilometers flown within the region. Low-cost airlines are now offering service in many markets.

Intercontinental travel will nonetheless remain the mainstay of air transport, constituting about 80 percent of Africa's total air commerce. Travel between Africa and Europe will continue to be the largest international market (average growth of 5.5 percent annually for the next 20 years), although African carriers are extending their operations to destinations in North and South America, the Asia-Pacific region, and China. This Africa-Other market includes Southwest Asia, China, South America and Oceania, which are relatively small today but are emerging markets with a combined RPK growth rate averaging 6.9 percent per year. The Africa-Middle East market is also important, with 5.7 percent growth. As in other parts of the world, small and intermediate twin-aisle airplanes have become more significant in serving these international markets. Finally,

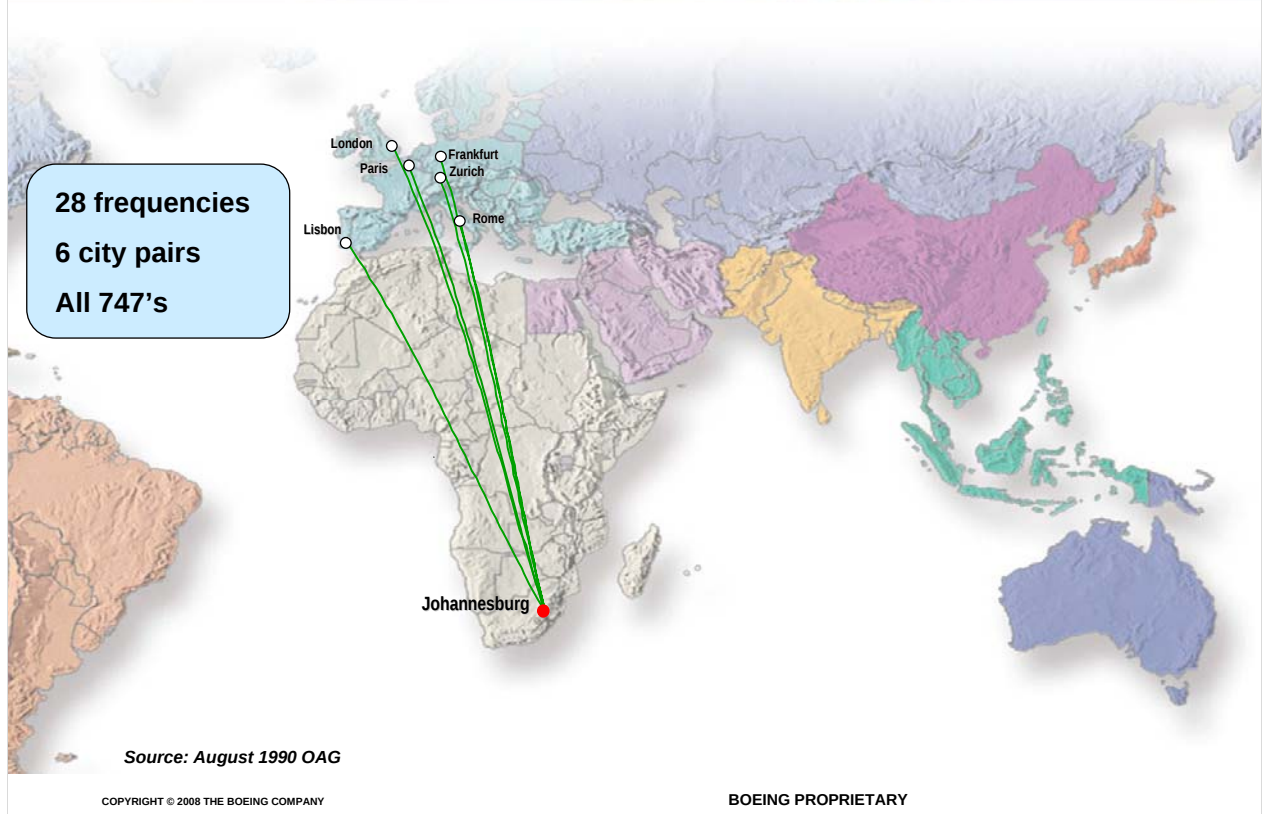
Air cargo is also an important component of African air service, with Europe the major trade partner, followed by the Middle East and North America. Air cargo traffic is also growing rapidly between Africa and China.

Positive developments in the aviation industry within Africa are also contributing to growth. Countries within Africa continue to promote progress on aviation policies and to harmonize civil aviation legislation, licensing, and technical standards across the African continent.

Africa's long-haul service is growing with small and intermediate twin-aisle aircraft



In 1990, nonstop long-haul service from South Africa was being serviced by one carrier only to Europe



In 1990, only a few cities had nonstop long-haul service from Johannesburg

In 1990, all nonstop, long-haul service out of Johannesburg was to Europe with 28 frequencies to just 6 cities per week. All of the departures from Johannesburg Airport were on 747s.

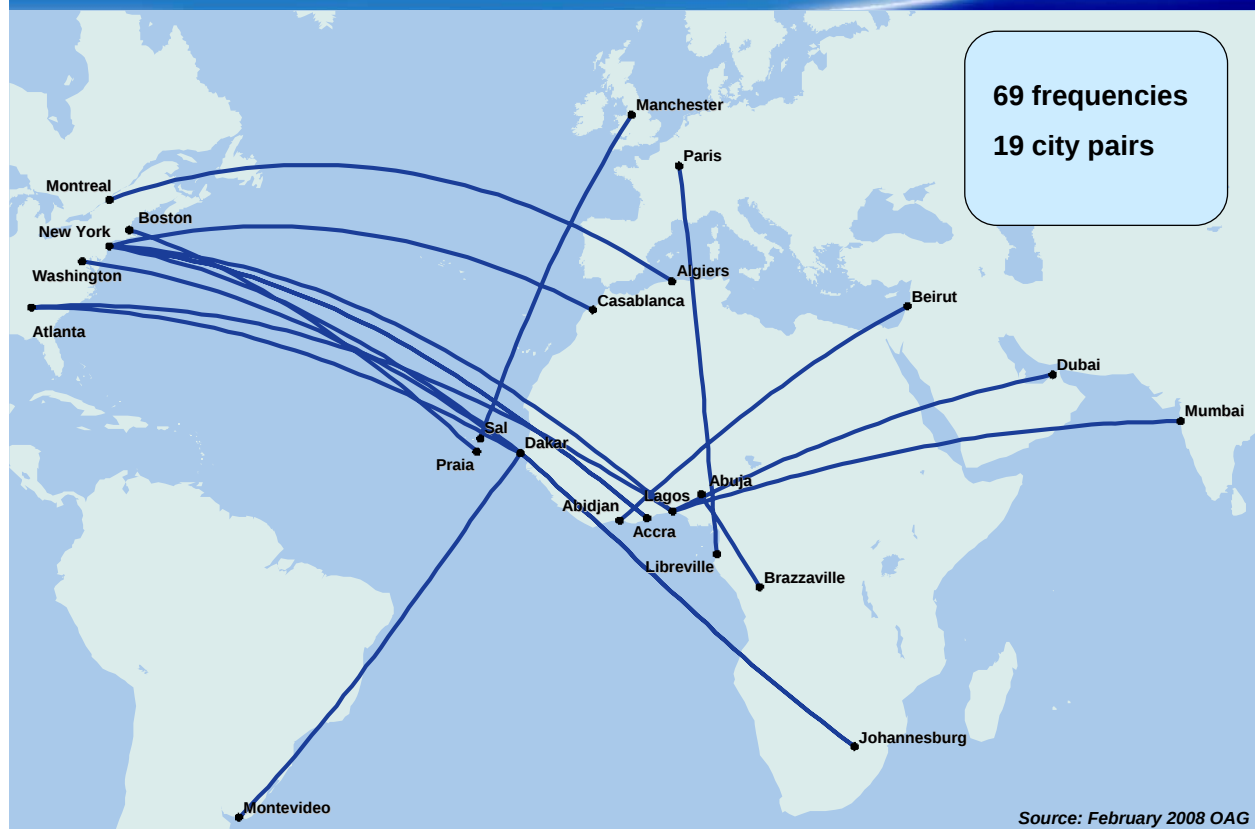
By February 2008, long-haul served had extended
in all directions from Southern Africa

328 frequencies

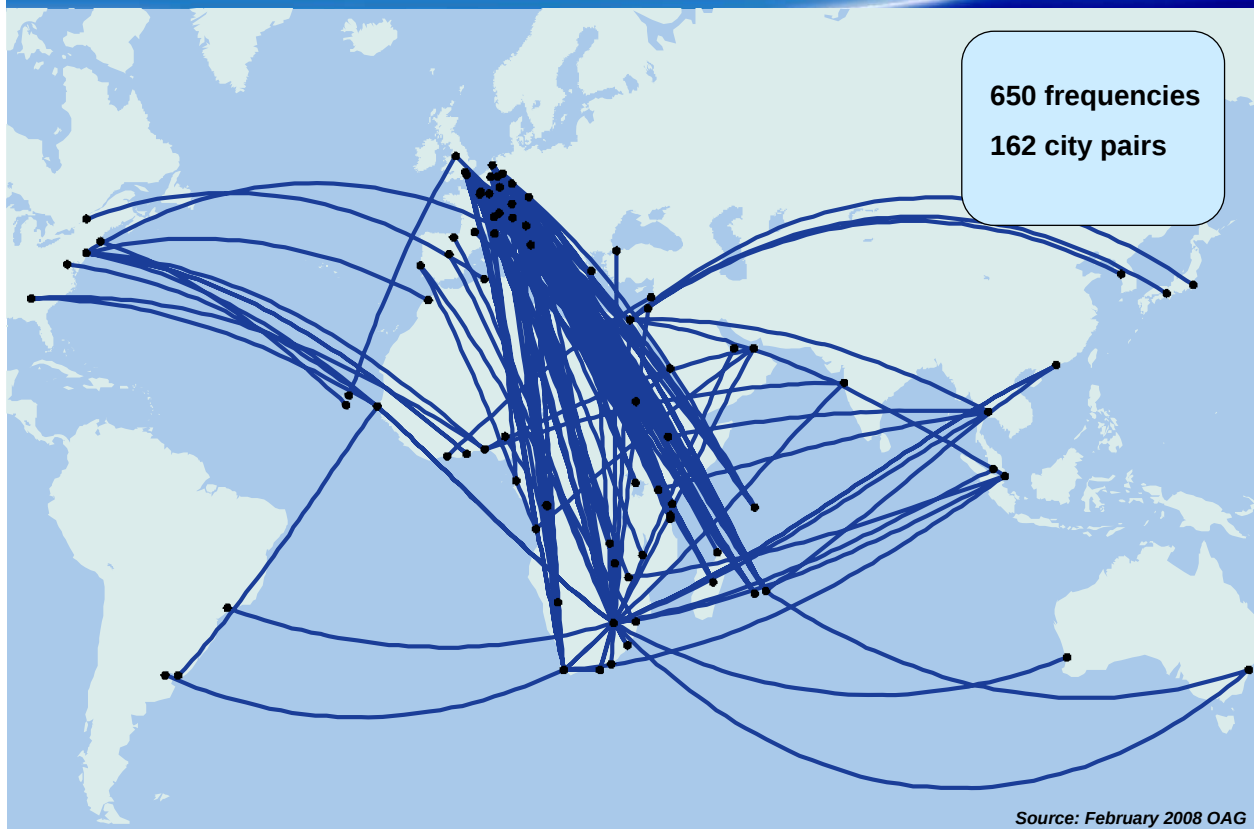
62 city pairs



By February 2008, long-haul served had extended
in all directions from Western Africa



By February 2008, long-haul served had
extended in all directions from Africa



How will Africa Capture World Market Growth?

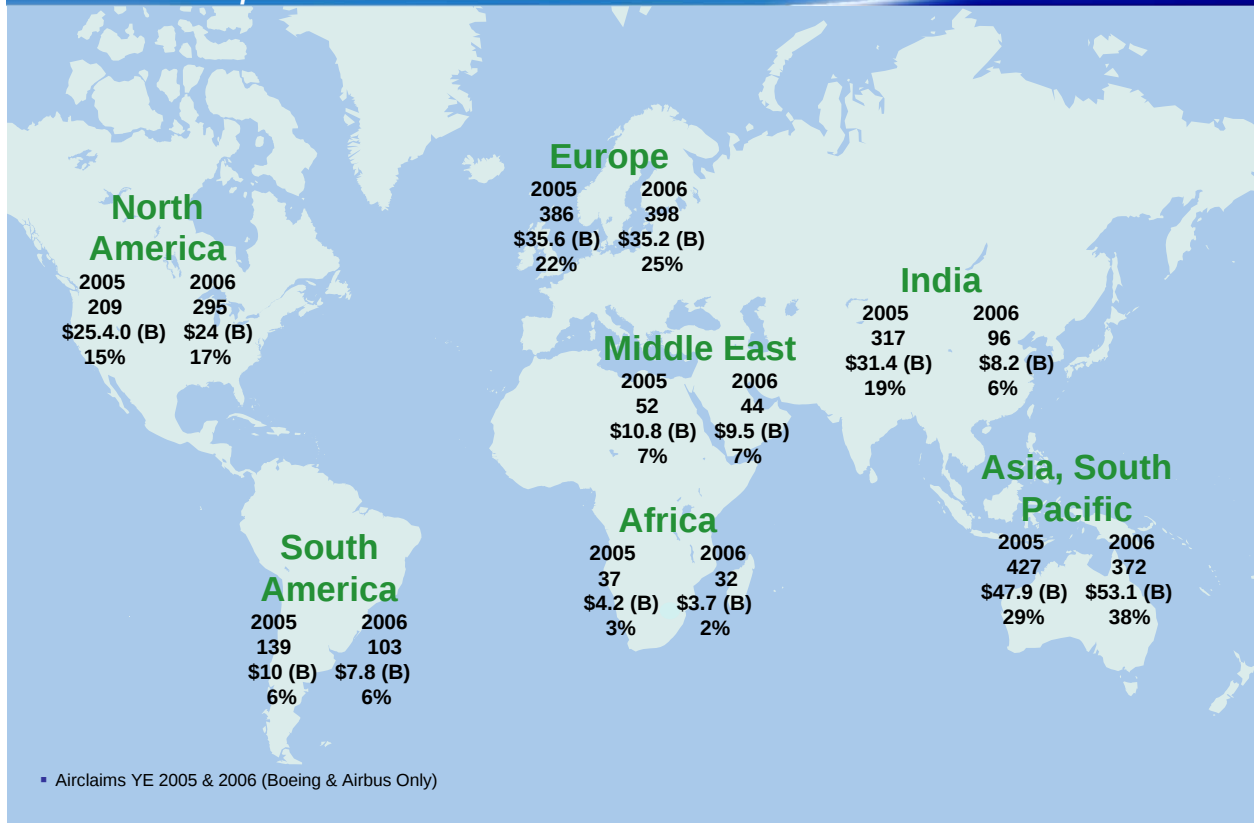


- **Africa and the world markets are evolving**
 - Liberalization continues to create a more competitive environment
 - Airline strategies need to respond to passengers' desires to save time
 - Airlines need to accommodate air travel growth by adding more frequencies and nonstops
- **Boeing expects these trends to continue**
- **The middle of the market is the biggest and most demanding**

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Worldwide airplane purchases by region

2005 compared with 2006



African airplane purchases 2006 compared with 2007

Africa

2006	2007
32	34
\$3.7 (B)	\$5.3 (B)



EGYPT AIR



Ethiopian
የኢትዮጵያ አየር



الخطوط الملكية المغربية
royal air maroc



BURAQ AIR



الخطوط الجوية الجزائرية
AIR ALGERIE



الخطوط التونسية
TUNISAIR



Kenya Airways



SOUTH AFRICAN
AIRWAYS

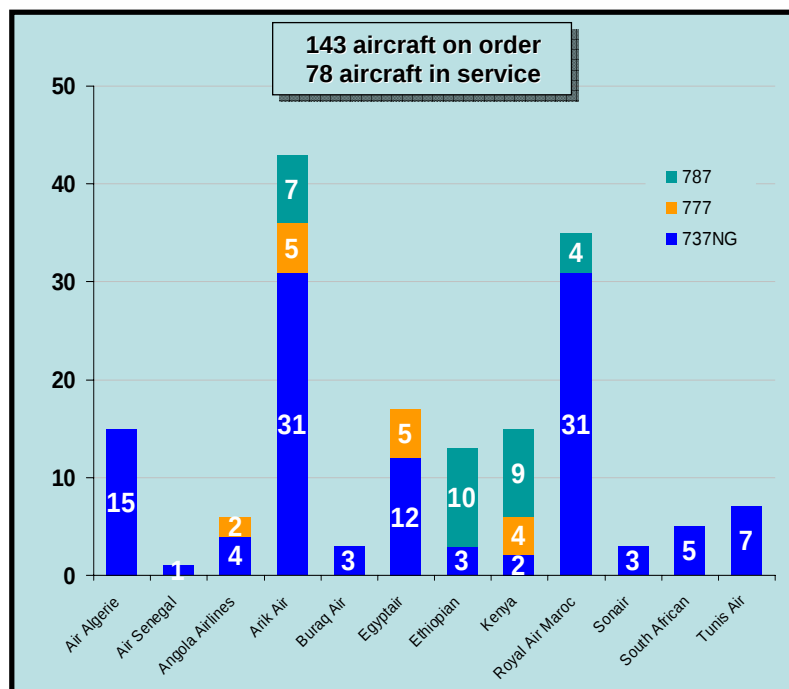


air sénégal international
GROUPE ROYAL AIR MAROC



Arik

The Boeing fleet in Africa



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The Boeing fleet in the Middle East: aircraft on order, recently delivered

As of March 07, Middle Eastern airlines have 114 Boeing airplanes on order and 120 in service.

Some of our recent deliveries are included above.

Agenda

■ Market Outlook

- Global Observations
- Regulatory Environment
- Product Strategies
- Africa Regional Perspective

■ Strategy vs. Tactics

■ Final Thoughts



Protecting Africa's Future in the Commercial Aviation industry

Strategy:

a plan, method, or series of maneuvers, for obtaining a specific goal or result

Tactic:

the maneuver themselves



Africa – Strategic or Tactical?

- **Strategic Planning – 10 year minimum**

- Six-month rolling review

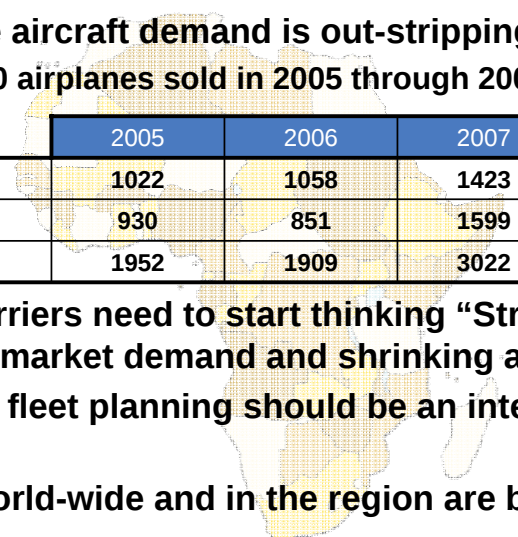
- **Tactical Planning - 2-3 years**

- Monthly rolling review
- Or do we continue with stop-gap tactics?
Buying / leasing cheap old airplanes is not
a strategy for growth neither to establish a
strong competitive position



Concerns for Africa Commercial Aviation

- **Worldwide aircraft demand is out-stripping supply**
 - Over 6800 airplanes sold in 2005 through 2007; 3503 sold by Boeing



	2005	2006	2007	Total
Boeing	1022	1058	1423	3503
Airbus	930	851	1599	3380
Total	1952	1909	3022	6883

- **African carriers need to start thinking “Strategically” relative to market demand and shrinking airplane supply**
- **Long-term fleet planning should be an integral part of the business**
- **Airlines world-wide and in the region are becoming healthy**
- **Some major large carriers have yet to renew their fleets**

6883 total airplanes were sold in 2005 through 2007. Boeing sold 3503.

Options to Consider

■ Survival of the Fittest

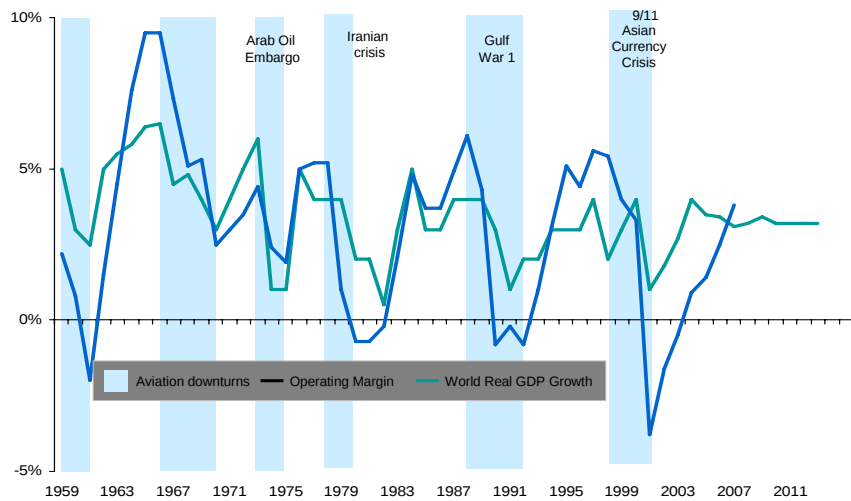
- Go at it on your own
 - State owned
 - Privatized
- Code Share
- Alliances
- 5th Freedom
- Bilateral or open skies can be an opportunity



Considerations

- How do we manage the cyclical trends
 - Co-operation/Competition
 - “Co-Opetition”
 - Alliances can be an asset
 - Flexible Fleet planning
 - Constantly review the planning timeline
 - Leasing and/or buying of used airplanes
 - Is the industry now stable?
- 

Historically Cyclical Nature of Aviation



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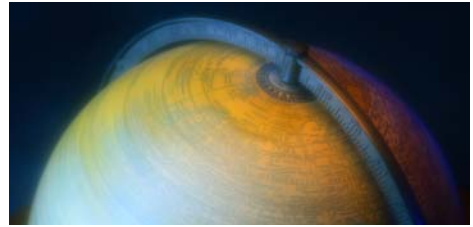
“There are three new market drivers that are helping to shape current and future aviation cycles,

- balanced geographical aircraft demand**
- innovative airline business models**
- growing requirement for replacement airplanes worldwide**

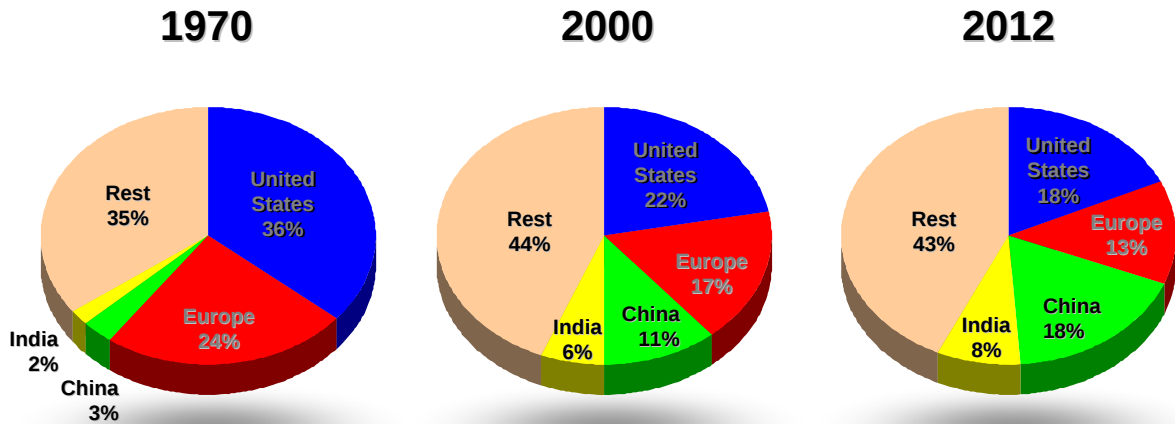
These factors might prolong the current strong market cycle and help financiers reduce investment risk since they also reduce the risk of an industry wide downturn, stabilize the airplane market and sustain demand for new, more efficient airplanes”

Repeating History or are the Drivers Changing?

- Geographic Balance
- Airline Business Model Balance
- Replacement Requirements



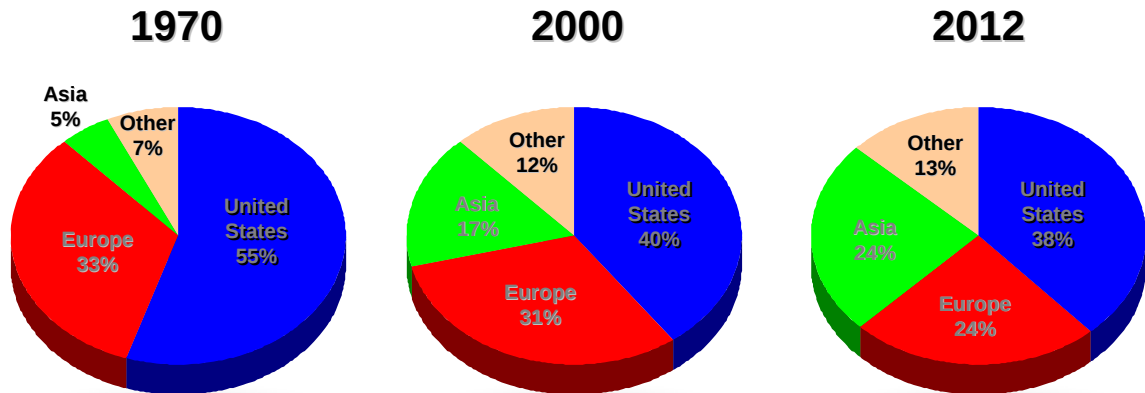
Balancing the Global GDP



Globalization mitigates impact of regional economic cycles

Sources: IMF, EIU

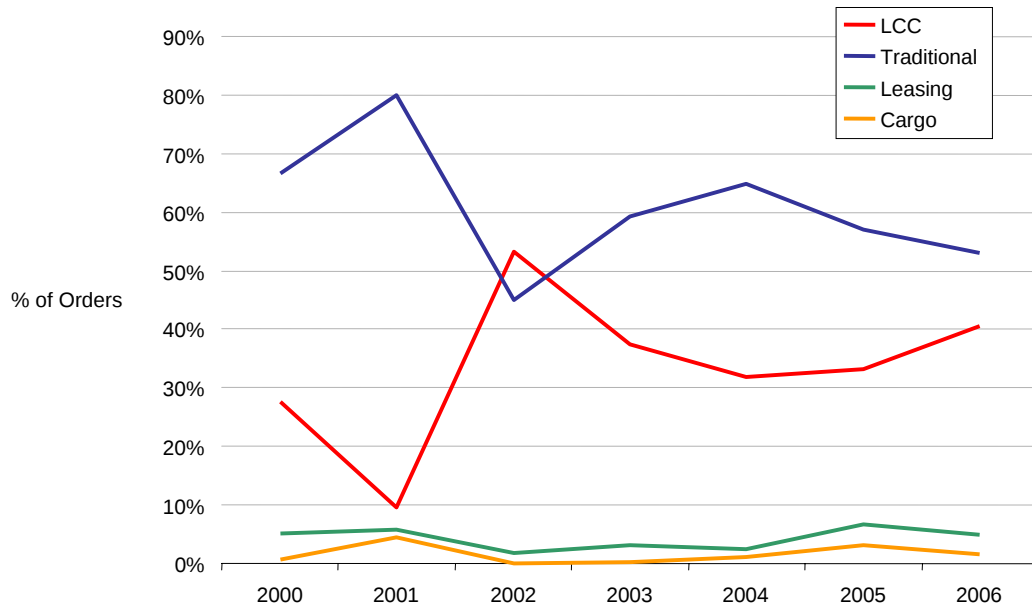
Increasing Geographic Diversity of the World's Fleet



Geographic fleet balance should mitigate aviation cycles

Note: 2012 fleet composition based on forecast 2025 airplane fleet from Boeing 2006 CMO
Source: Airclaims

Orders by Business Model



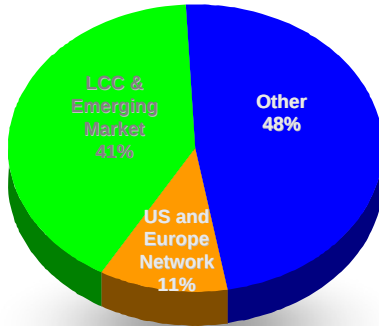
Liberalization and increased competition are driving airline business strategies

Airclaims 2006

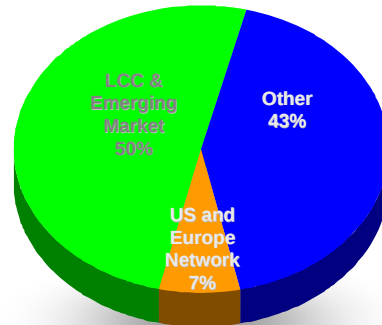
Backlog at YE 2006 Shows Strength of LCC and Emerging Markets

US and Euro majors represent nearly half of the global aircraft requirement

Boeing



Airbus



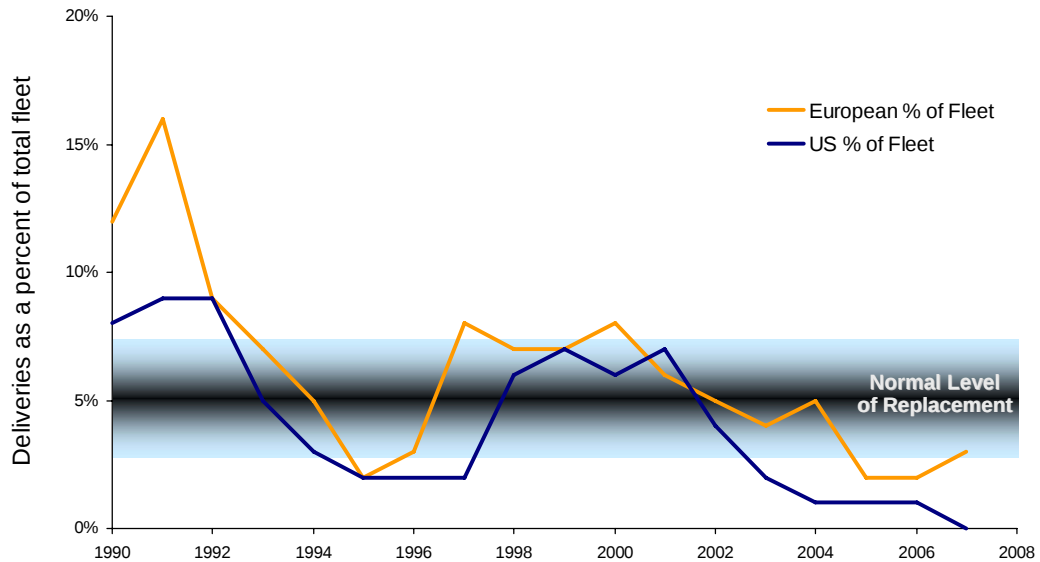
Reduced exposure to a cyclical decline driven by US and European network carriers

Source: Airclaims, excludes military
Freighter and VIP airplanes

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US and European Network Carriers Looming Replacement Requirement



US Carriers: AA, DL, CO, NW, UA
European Carriers: BA, AF, LH
Source: Airclaims

Delayed replacement and no growth capacity

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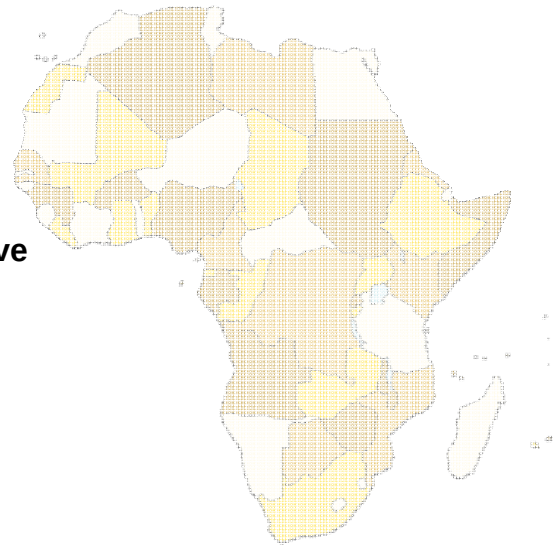
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Boeing's Growing Supplier Base in Africa

MATIS Aerospace (Morocco Aero-Technical Interconnect Systems)

- Joint Venture between Boeing, Royal Air Maroc and Labinal located on the outskirts of Casablanca.
- Manufactures wiring harnesses for 737 & 777 model Airplanes
- MATIS has become a world-class supplier in our global network

Aerosud (South Africa)

- Manufactures interior linings and vacuum formed flight deck and cabin assemblies across a range of Boeing airplane models
- Boeing has assisted Aerosud to develop Thermoplastics manufacturing capability
- The Boeing work statement expanded significantly since the beginning of our cooperation in 2001
- Aerosud is a leader of South African aviation industry and helps Boeing to develop its supply chain in other parts of Africa

Denel Aviation - (South Africa)

- Manufactures machined parts across all Boeing Commercial airplane models
- Boeing assisted Denel to establish a machining center
- Work statement expanded significantly since initial contract placed
- Denel Aviation has become an important supplier on Boeing sustaining programs

Ethiopian Airlines – (Ethiopia)

- Boeing assists Ethiopian to develop Wire harness manufacturing capability and composite repair capability
- Certified Ethiopian to do Maintenance & Modifications work for Boeing

Boeing is interested in long-term reliability, quality and delivery schedule... we are very pleased with the quality of products made at our African suppliers

Things to remember ...

- Long-term fleet planning needs to be part of an airline's strategy, not just an exercise
- Look for synergies, partnerships, ways to grow the Regional market "collectively"
- Look for ways to grow the lucrative international business traffic
- Look for ways to capture international new markets

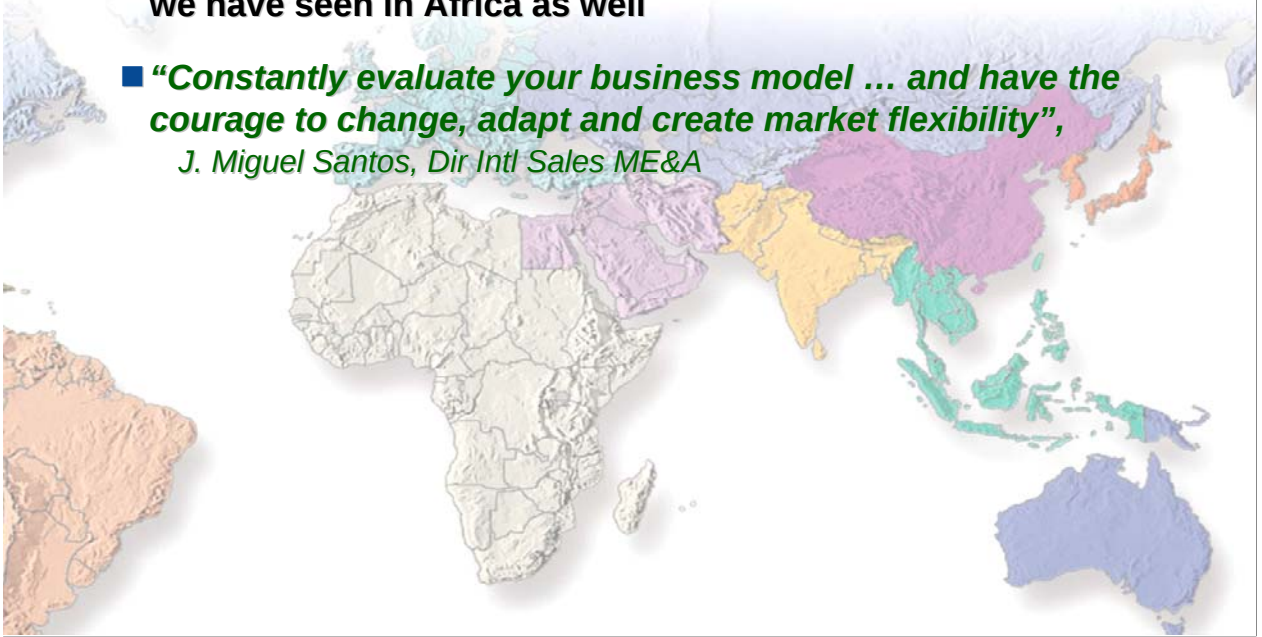


... and a few more things to remember

- Airlines have accommodated air travel growth by adding more frequencies and nonstops throughout the world ... as we have seen in Africa as well

- ***“Constantly evaluate your business model ... and have the courage to change, adapt and create market flexibility”,***

J. Miguel Santos, Dir Intl Sales ME&A



... and still ... a few more things to remember

- Africa needs to be mindful of falling behind the rest of the world in long-term fleet planning and fleet renewal
- Remain focused on “your” plan, but never lose sight of your competitors
- Protect Africa’s commercial aviation future within the airline industry



Thank You!

