



Africa Aviation Challenges and Opportunities

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Boeing International

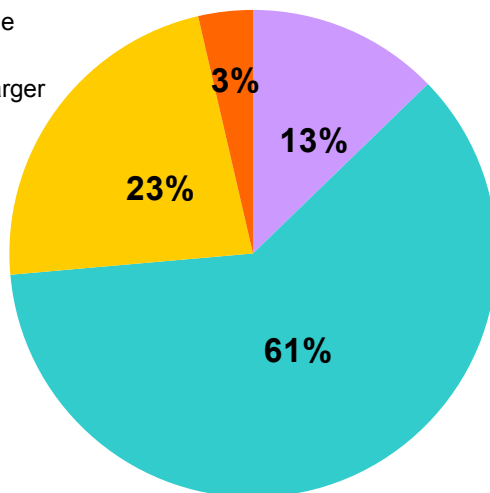
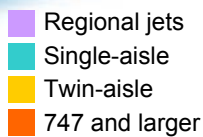
The Boeing Company
October 9, 2007

Agenda

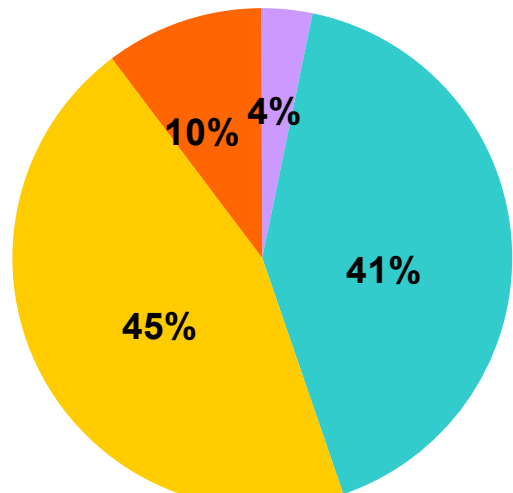
- **Market Outlook**
 - Global Observations
 - African Regional Perspective
 - Development of the African aviation market
- **Fundamentals for Growth**
 - Safety and a sound regulatory environment is essential for growth
 - Economic Fundamentals are essential to sustain the growth
- **Boeing in Africa**

B O E I N G C O M M E R C I A L A I R P L A N E S

Airlines will need over 27,000 new airplanes



**27,200
airplanes**



**2.6 trillion
delivery dollars***

*In year 2005 dollars

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Airlines will need over 27,000 new airplanes

During the next 20 years, single-aisle airplanes will make up the bulk of airplane deliveries at 16,500 units. Because regional jets extend the geographical reach of major airline hubs, augment larger jet operations during off-peak hours, replace major airline larger jets on thin routes and substitute for propeller flights, regional jet deliveries will increase by 3,500 airplanes. In addition, U.S. regional airlines are operating 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 of mid-size twin-aisle airplanes (6,200) as well. These airplanes will serve fragmenting long-haul markets such as the Atlantic and Pacific, as well as higher density shorter routes, such as those within Asia. The remaining segment, 747 and larger-size airplanes, account for over 3 percent of unit deliveries in the 2006-2025 time period, that is, about 990 747-size and larger airplanes, including freighters.

The total market is valued at \$2.6 trillion. The single-aisle and twin-aisle categories represent about 86 percent of that value.

Regional jets: 90 seats and below

Single-aisle: 100-240 seats, dual class

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

747 and larger: over 400 seats, tri-class

CMO 2007 Overview – Africa Region

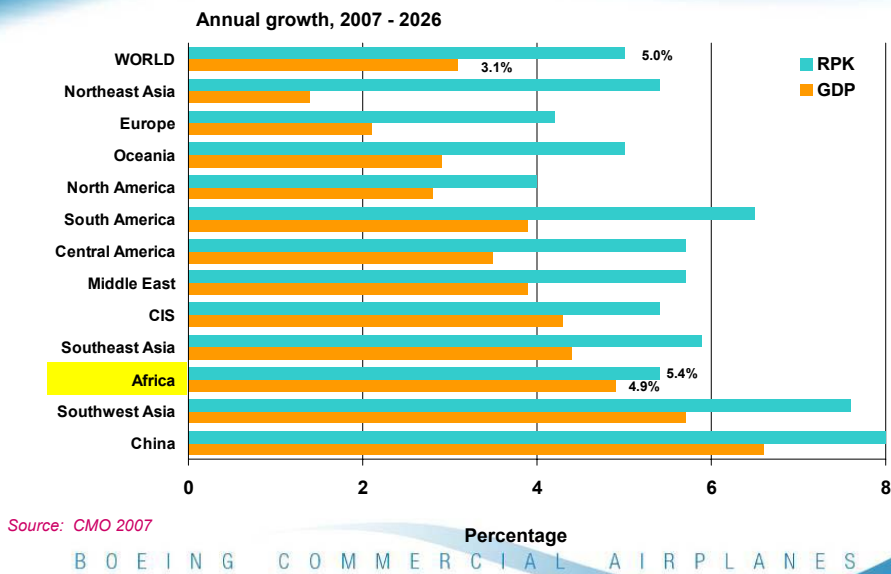


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Note: For purposes of the Current Market Outlook, The Africa region represents all countries on the African continent except Egypt (which is in the Mideast Region for CMO)

CMO 2007 GDP and RPK Growth

Africa to grow at above world average



Forecast is for strong GDP growth in Africa

According to Global Insight, 43 of the 53 countries in Africa will have GDP Growth above world average of 3.1% 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% per year.

This strong economic growth will contribute to above average RPK growth. Africa RPK growth is expected to average 5.4% per year, above the world average of 5%.

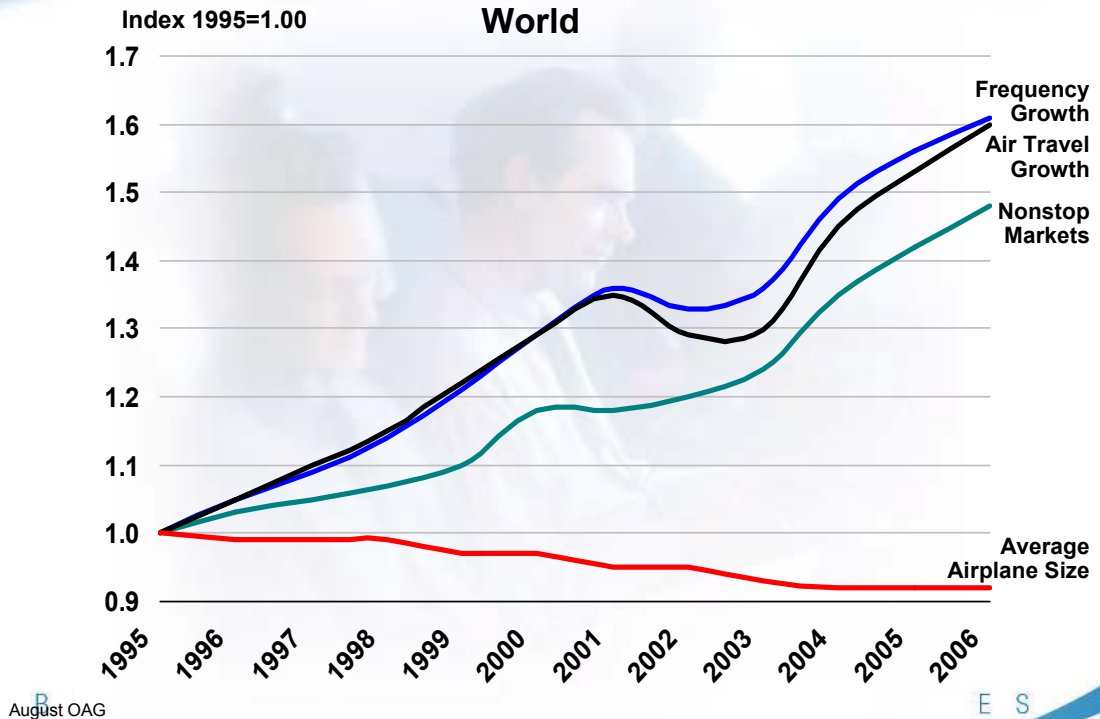
Economic fundamentals continue to show positive improvement

- **5% avg GDP growth rate in Africa over past six years driven by:**
 - Oil and gas revenues
 - Increased private sector investment
 - Increased tourism
 - Political stability
- **17% increase in US total trade with Sub-Saharan Africa.**
 - US remains largest trading partner with Africa
 - US – Africa trade concentrated in South Africa, Nigeria, Angola, Equatorial Guinea, and Kenya
- **Near / medium term GDP growth in Africa driven by increased trade with China.**

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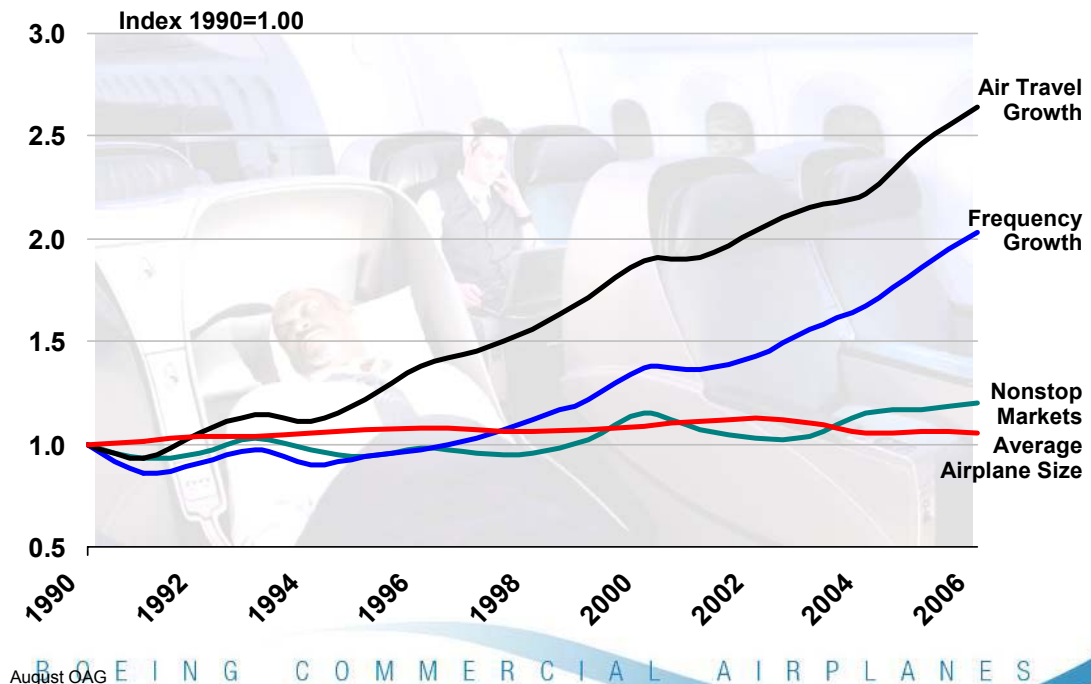
From an economic perspective the GDP growth that Africa is experiencing as a result of an improved economic environment sets the stage for increased point-to-point market demand. Continued growth of US trade with Sub-Saharan Africa further cements the need for increased direct routes between Africa – US. The economic situation is vastly different from years past. This is mostly driven by the growth in the oil and gas industry within Sub-Saharan African countries and percolation of oil revenues into their respective economies.

Since 1995, all air travel growth has been met by frequency growth and new nonstops



Since 1995, all air travel growth has been met by frequency growth and new nonstop. In fact, during the recent down turn, airlines held frequencies by reducing airplane size as travel declined.

Africa international air travel growth has been met by increased frequencies



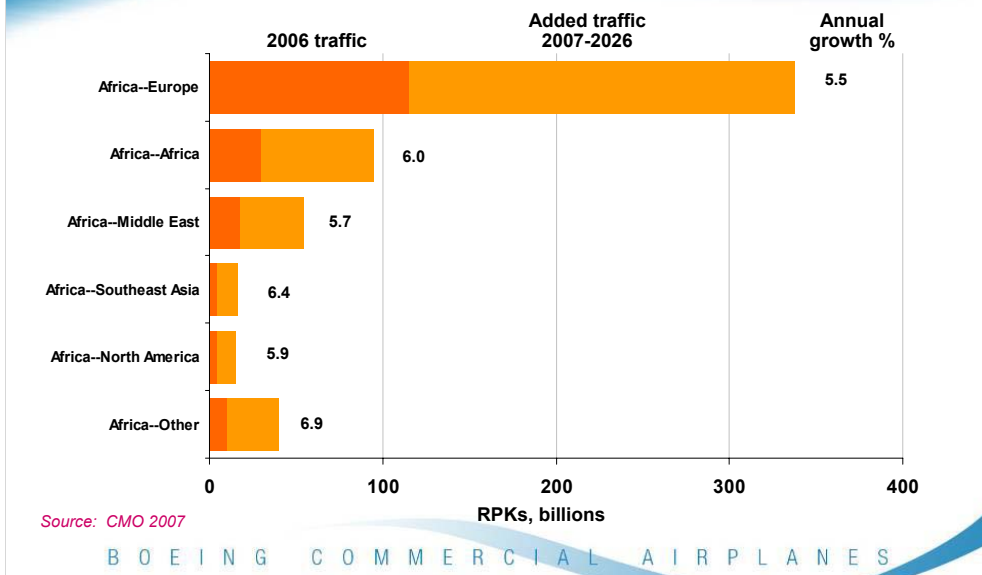
Africa international air travel growth has been met by increased frequencies

International (Africa to the world) service represents about 80 percent of total Africa air travel. The restructuring and commercialization of airlines in Africa that started in 1992 has yielded positive results including increased air travel growth. That year, African airlines began veering away from the flag carrier notion and governmental control seeking self reliance and privatization. The privatization of Kenya Airways is a positive example of Africa's progressive air transport industry.

International air travel growth in Africa is also a result of an increase in tourism. Africa has a spectrum of tourist opportunities, including beach resorts, wildlife and natural wonders, and cultural heritage that will continue to grow demand for air travel. North Africa, especially, is increasing in popularity as a European holiday destination. As a matter of fact, 72 percent of Africa's international service is to and from Europe. This is followed by service to and from the Middle East at 14 percent.

Airlines can accommodate air travel growth either with increases in airplane capacity/size and no changes to their networks or they can add more frequencies and nonstop markets. Because very few new airports have been built in Africa recently, most of the growth in air travel has been accommodated by a larger increase in frequencies as opposed to nonstop markets. About 80 percent of Africa's international capacity is via twin-aisle airplanes. Like other parts of the world, smaller and intermediate twin-aisle airplanes such as the 767 and 777 -- not very large airplanes -- have become more significant in serving the region.

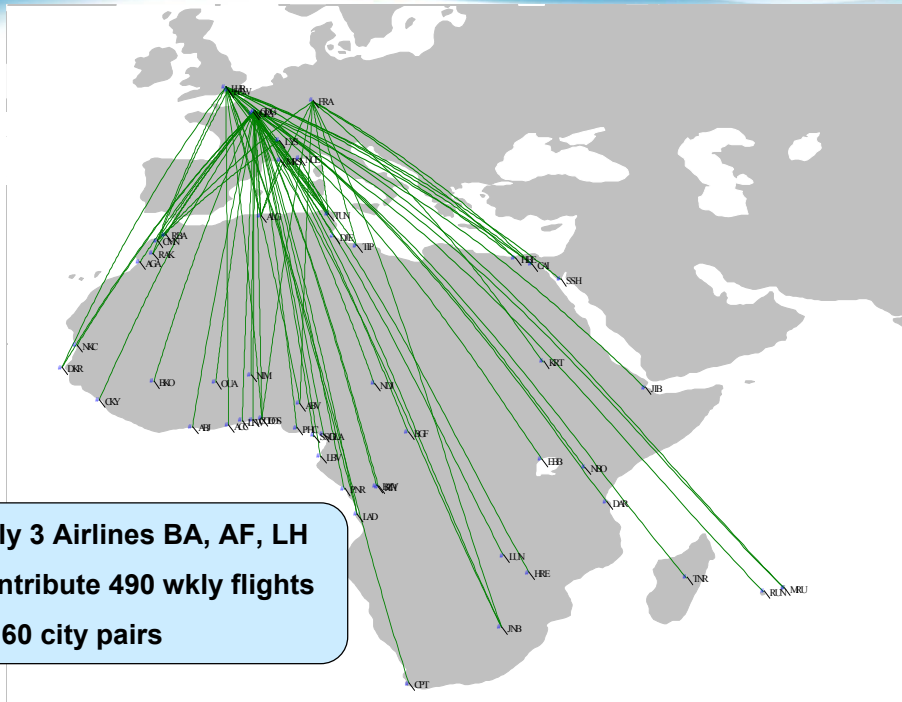
Africa – Europe Most Significant Growth Market



Travel between Africa and Europe continues to be the most significant market for this region. Africa-Europe RPKs are forecast to grow at an average of 5.5% annually for the next 20 years, first and foremost due to significant economic growth. The second is the value created as airlines reduce prices and increase service offerings and as intra-regional trade grows. The intra-Africa and Africa-Middle East markets are also important, with 6.0% and 5.7% growth respectively. Other times, these second effects cause the share of GDP that a country devotes to air travel to increase. The share of GDP spent on air travel by countries with high initial trade shares has tended to grow more slowly than the world average. These countries have matured air travel markets. In contrast, GDP share spent on air travel by countries with low historical trade shares has tended to rise faster than the world average. The RPK forecast, thus, shows a considerable variation among regional flows.

Because of its maturity, the intra-North America market share of world traffic will decline from 24% to 18%, as less developed markets grow faster. For example, the market share of all intra-Asia-Pacific markets, including China, will increase from 17% to nearly 23%. The North Atlantic market will fall slightly from 10% market share to 9%, and the South Atlantic (Europe-Latin America) will remain constant at 4% share. Intra-Europe will decline from 14% to 10% market share. Intra-Latin America will increase market share from 2% to about 3.5% over the 20-year forecast period because a high 6.9% traffic growth rate fuels liberalization and increased world trade. One of the fastest growing regions is Middle East to Asia-Pacific, which will increase world market share from 2% to almost 2.5% as its traffic grows at 6% over the next two decades.

Africa - Europe air travel growth has experienced mostly frequency growth



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Source: May 2007 OAG

Currently the African - Europe international market is relatively well served. It is an example of where point-to-point service has flourished over the last couple of years driven by economic growth. In some areas of Africa, such as Nigeria, a lack of national carriers combined with restrictive bi-lateral agreements has created an underserved market.

Market demand increasing



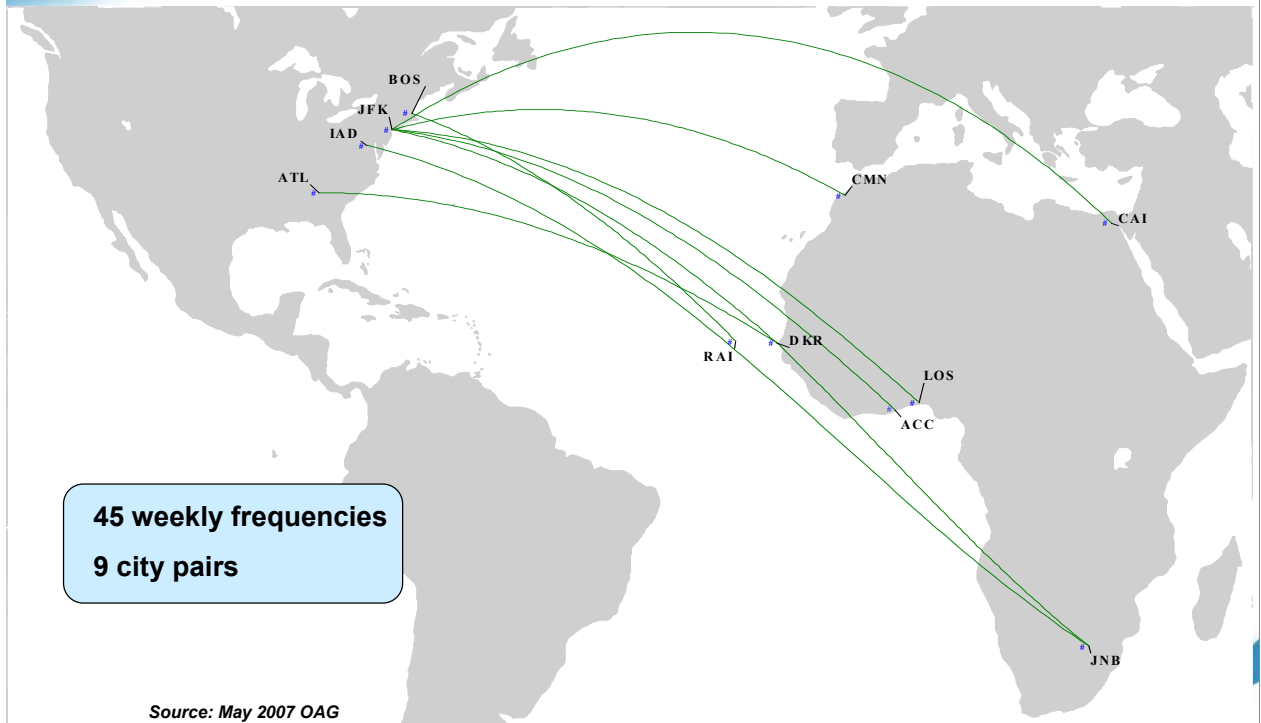
- **Vast majority of US – Africa traffic currently flows via major European hubs**
- **Point-to-point solutions demanded by passengers to alleviate:**
 - Travel costs
 - Trip time
 - Visa issues
 - Delays (ie., weather, congestion)
- **Growth demand driven mostly by oil and gas industry followed by friends and family traffic**
 - 1.25M estimated African diaspora population living in US*

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**Source: U.S. Census Bureau, 2005 American Community Survey*

Market demand for direct Africa – US routes currently exists and it is growing. A great deal of the current passenger flows must travel via Europe incurring increased costs and challenges. Premium corporate passengers from oil and gas industry combined with African immigrants living in North America wishing to visit family and friends will be the engine of growth behind increased Africa – US air service.

Africa - US international air travel growth has been met by challenges



The situation for Africa – US direct routes is quite different. Due to the lack of airplanes with adequate range for non-stop routes and more importantly lack of Cat 1 African countries non-stop Africa – US routes have not developed in line with world traffic growth. Over the next 5 – 8 years this will significantly change as more countries in Africa achieve Cat 1 and their local carriers begin to receive planes such as the 787 that allow them to fly direct to the US. This will further be supported by the increasing traffic flows needed to support the growth of the oil and gas producing countries in Sub-Saharan Africa.

Safety is the Foundation for Growth

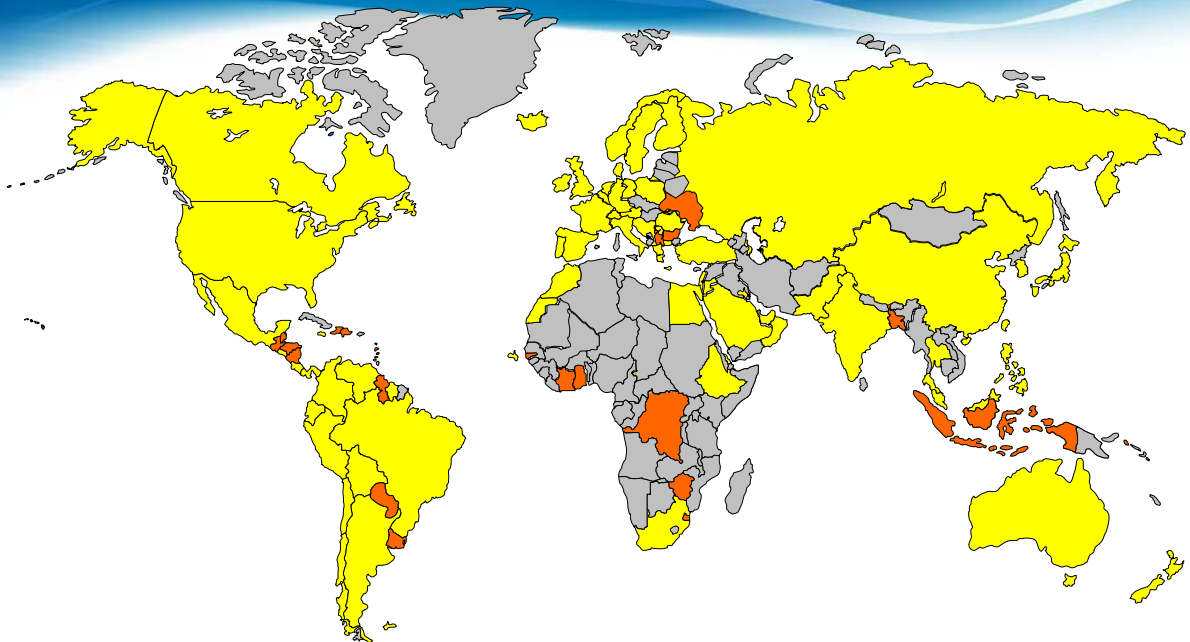
- **The safety and integrity of Africa's air transportation system is the foundation for growth in the African aviation industry:**
 - **Safety will constrain growth if not adequately addressed**
 - **Public demand for safety drives regulatory action or lack thereof**

Safety is the Foundation for Growth

- **Inability to meet FAA / EASA Cat 1 status is one of main drivers stopping African 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**

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Global FAA IASA Status



■ Cat. 1: Country meets minimum ICAO Standards
■ Cat. 2: Country does not meet minimum ICAO Standards
■ Unrated: Country has not been assessed by the FAA

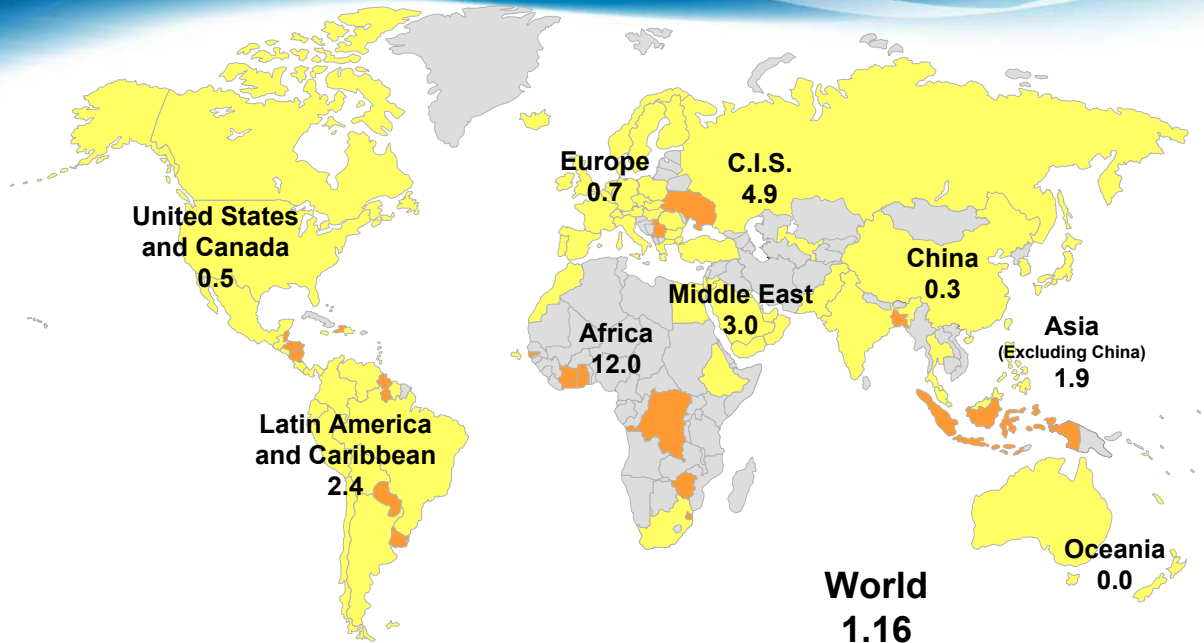
Based upon 05/24/06 FAA IASA data

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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

Western-built transport hull loss accidents, by airline domicile, 1997 through 2006*



* 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

- **Key to success:**
 - **Map out a strategic plan for long term profitability**
 - **Adopting Low Cost Carrier philosophies**
 - **Developing pipeline of African airline professionals**
 - **Sound fleet renewal programs**
 - **Benchmarking best practices from other world carriers**
 - **Adopt commercial operating practices even if government owned**

Boeing is Committed to African Aviation

- Boeing is here to help
- 40 Years of Involvement in Africa
- 640 Boeing Airplanes in the African market
- Johannesburg Office opened March 2001
- Accra Office opened in April 2001
- 20 Full-Time Employees Reside in Africa

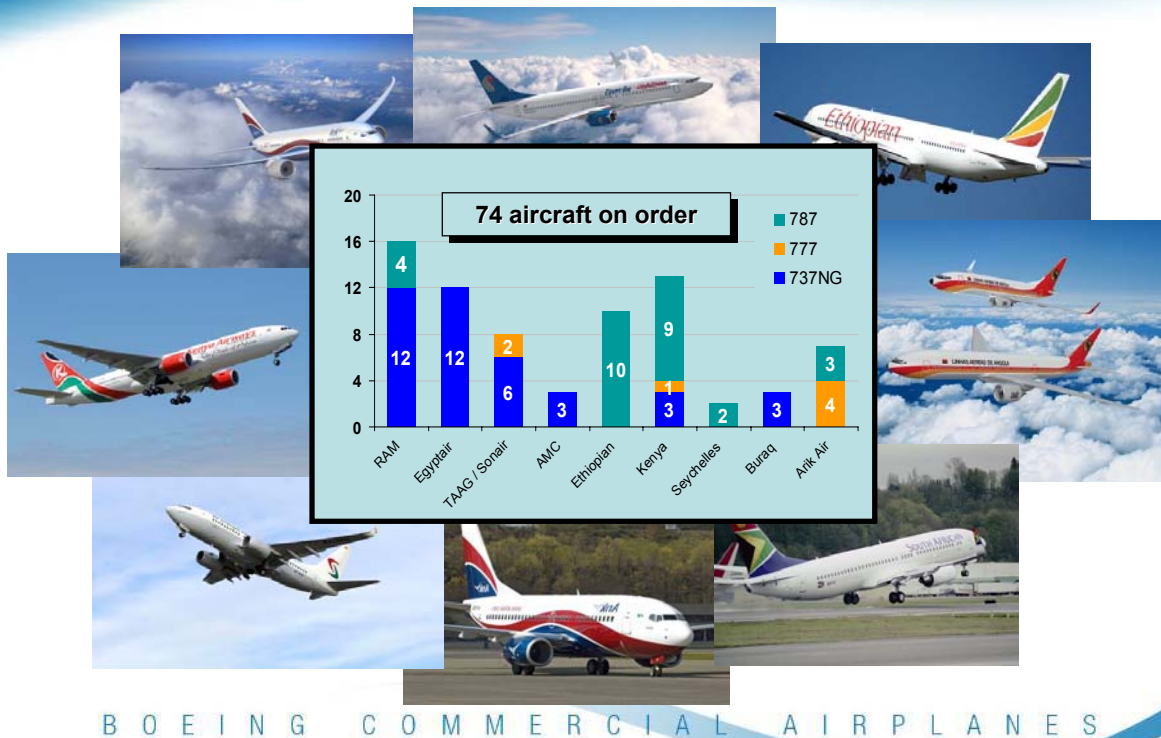
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Increasing frequencies will influence African airline fleet mix

Already one of the fastest growing tourist destinations for Europeans, expansion from other regions will continue to drive leisure travel to Africa upwards. Its beach resorts, wildlife, natural wonders, and cultural heritage appeal strongly to travelers seeking to broaden their holiday experience.

The growing demand for more frequent flights combined with the increased capabilities of new twin-aisle airplanes that are particularly suited to the long distances and traffic volumes of growing markets will give Africa the biggest shift in fleet mix of any region except Oceania (Australia / New Zealand), with an 11 percent increase in share of the twin-aisle fleet from 2005 to 2025. In spite of this dramatic growth, single-aisle airplanes will continue to make up the majority of the African fleet.

The Boeing fleet in Africa: Aircraft on Order



The Boeing fleet in Africa: aircraft on order, recently delivered

As of September 6, 2007, African airlines have 58 Boeing airplanes on order and 476 in service. This compares to just 31 Airbus airplanes on order and 122 in service.

The Boeing 747 has been in use by African carriers for more than 27 years, with South African Airways taking delivery of its first 747 in October 1971. South African Airways was the first in Africa to purchase the Boeing 747-400.

The 757 medium-range twinjet and the long-range 767 twinjet have also enjoyed popularity in Africa. Ethiopian Airlines introduced the 767 to Africa first, taking delivery of a 767-200ER in May 1984. Royal Air Maroc introduced the 757 to Africa in July 1986.

In March 2000, South African Airways placed an order for 21 737-800s and Kenya Airways purchased two 737-700s. The first Next-Generation 737 airplane was delivered in 1997.

In 2002, Ethiopian Airlines launched an aggressive expansion by ordering three new 737s and three 767s. The airline currently has six 767s in operation as well as four 757s and three 737-700s with blended winglets. Ethiopian Airlines also became the first carrier on the African continent to order the new 787 Dreamliner. It has ordered 10 787s.

In 2004, Kenya Airways ordered three 777-200s and, in 2006, announced firm orders for six 787 DreamLiner. The airline also operates 737s and 767s. Its entire jet fleet is made up of Boeing airplanes.

In December 2005, Sonair of Angola signed orders for two 737s.

The latest African carrier to renew its fleet with Boeing airplanes is TAAG, Angola's national carrier, with orders for two 777 and four 737 airplanes with options for more. Angola has ratified the Cape Town Treaty, which facilitates international financing and leasing of large airplanes and engines. They were the fourth African country to do so, the others being Ethiopia, Nigeria and Senegal.

Some of our recent deliveries are included above.

Thank You!



Concerns for African Commercial Aviation

Worldwide aircraft demand is out-stripping supply

- Over 3800 airplanes sold in 2006; 2046 sold by Boeing

**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**

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Concerns for African Commercial Aviation

- **Strategic Planning – 10 year minimum**
 - **Six-month rolling review**
- **Tactical Planning - 2-3 years**
 - **Monthly rolling review**
- **Or does Africa continue with stop-gap tactics?
Buying / leasing cheap old airplanes is not
a strategy for growth neither to establish a
strong and stable competitive position**

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
- **African 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

B O E I N G C O M M E R C I A L A I R P L A N E S

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.

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 several airplane platforms
- 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
- Aerosud has become an established leader in the So. African aviation industry and helps Boeing with partnerships in other African Countries

Denel Aviation - (South Africa)

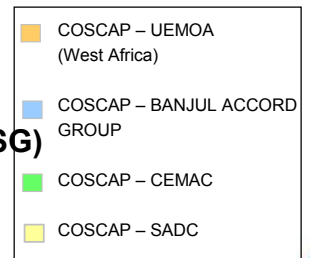
- Manufactures machined parts across various Boeing airplane programs
- Work statement expanded significantly since initial contract placed
- Denel Aviation has become an important supplier on Boeing sustaining programs

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

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Boeing Supports Improved Safety and Aviation Growth in Africa

- **African Union Efforts**
- **Training and Information:**
 - Improved maintenance practices
 - Operations best practices
 - Flight Operations Support Program (FOSP)
 - Access to My Boeing Fleet for Civil Aviation Authorities
- **Safety Seminars**
 - Nigeria
 - South Africa
- **Airline Planning Seminars**
 - Morocco
 - Libya
 - Mauritius
 - South Africa
- **Supporting IATA Partnership for Safety**
- **Supporting Coscap projects in Africa**
- **Working with Industry Safety Strategy Group (ISSG) and ICAO to implement Global Safety Roadmap**



B O E I N G C O M M E R C I A L A I R P L A N E S

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Things to remember

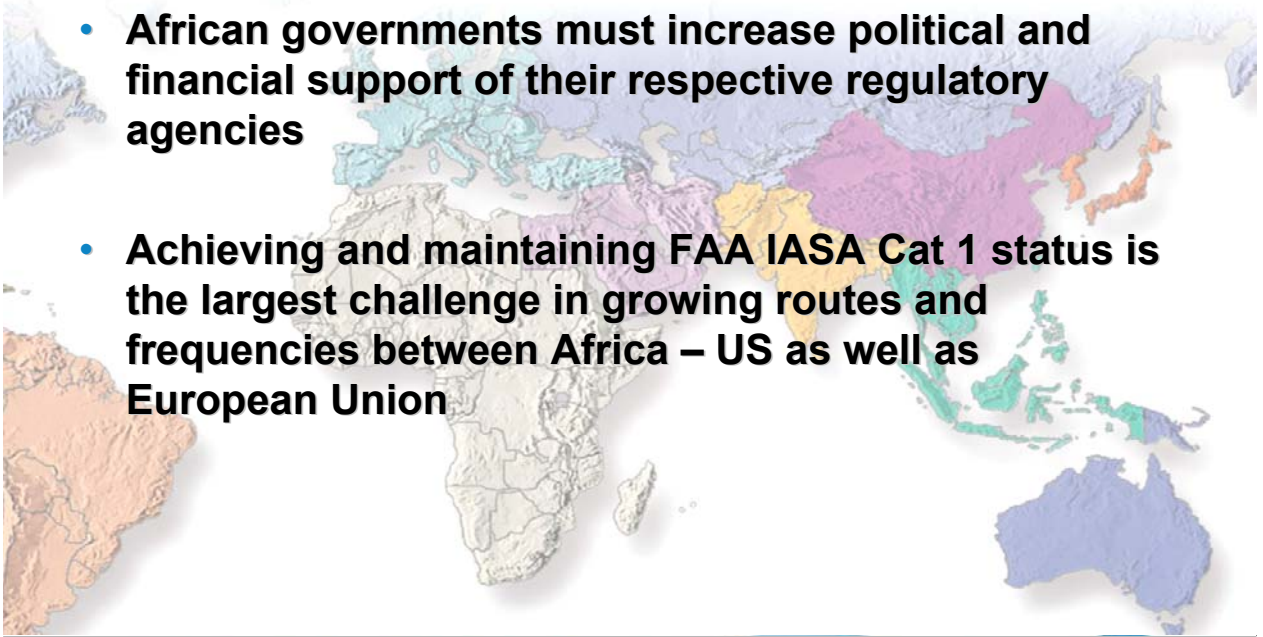
- **Airlines have accommodated air travel growth by adding more frequencies and non-stops throughout the world ... as we have seen this in Africa as well**
 - **Long-term fleet planning needs to be part of all airline's strategy, not just an exercise**
 - **Look for synergies, partnerships, ways to grow the Regional market "collectively"**
 - **Look for ways to grow the lucrative international business traffic**
 - **Look for ways to capture international new markets**
- 

Things to Remember

- **Strong demand exists to support increased non-stop routes between Africa and Europe, the US and Middle East**
 - **African airlines need to continue to focus on safe, reliable, and profitable operations**
 - **New technology aircraft such as Boeing's 787 have longer range, the correct size, and better operating economics to provide African carriers with the ideal tool to open Africa to the "Rest of the World" on direct routes**
- 

Things to remember

- **African governments must increase political and financial support of their respective regulatory agencies**
- **Achieving and maintaining FAA IASA Cat 1 status is the largest challenge in growing routes and frequencies between Africa – US as well as European Union**



... and Finally

- *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 loose sight of your competitors*
 - *“Constantly evaluate your business model ... and have the courage to change, adapt and create market flexibility”,*
 - *Protect Africa’s future within the global airline industry!*
- 