

Despite a history of political and economic troubles, Africa is forecast to become a major growth region over the next 15 years. Fleets are old because of airlines' difficulty in financing new fleets. The region has a small number of strong airlines, and predictions are they will require up to 1,000 aircraft.

Can Africa become a fertile market for aircraft?

Africa is forecast to be one of the major growth regions over the next decade. Like parts of the Asia Pacific, Africa is an emergent market, and with increased stability in the region, aircraft lessors are more willing to offer modern aircraft to a larger number of airlines. Improved GDP performance and lower lease rates mean that more airlines are now able to meet their lease commitments, and modern aircraft are appearing in greater numbers. The large African population makes this region a fertile market for aircraft placement.

The reasons for this are varied. Political isolation, civil war, political unrest and financial crisis have made lessors wary of conducting business in Africa. African airlines have historically had to rely on older or eastern European aircraft to meet their needs. Low passenger volumes and weak balance sheets increase the risk of default, so lessors have been unwilling to place aircraft. This is now beginning to change, with many African airlines placing orders or evaluating options.

The market

Africa is classified into two general regions: Saharan Africa, covering Libya, Egypt, Algeria, Tunisia and Morocco; and sub-Saharan, including countries like Ethiopia, Nigeria and South Africa. Both regions will be examined.

There are 728 commercial aircraft registered in Africa with an average age of about 18 years. Some aircraft, like the DC-8 and DC-9, are over 30 years old. This is due to many factors, in particular the absence of noise emission rules that enforce obsolescence, and the inability of

airlines to afford new aircraft. The average fleet size in Africa is five aircraft. Only 15 airlines out of 144 have fleets of 10 aircraft or more (see table, this page).

Saharan countries generally have larger aircraft fleets, the average being 31. Air Algerie is the largest with 41 aircraft, while Libyan Arab Airways is the smallest with 21 aircraft. These carriers have a predominance of narrowbodies, with the 737-200 and A320 among the favourites. Egyptair is one of the few North African carriers that operates long-range aircraft, using a mixture of the 767, 777 and A330. The Algerian carrier Khalifa, now defunct, also operated long-haul routes with ex-Singapore Airlines A340s. Many North African carriers focus on the European market, which, due to its proximity, can be served using narrowbodies.

Sub-Saharan Africa, by comparison, is very different with three large carriers and many small carriers. Most aircraft are narrowbodies.

South African Airways (SAA) is the largest airline on the continent, operating 56 aircraft (this number grows to 81 when domestic subsidiaries are included).

The only other major sub-Saharan carriers are Kenya Airways, with 16 aircraft, and Ethiopian Airlines, with 13 aircraft. Kenyan currently operates a fleet of 737s and 767s, and will shortly take delivery of three 777-200s.

Ethiopian operates 737s, 757s and 767s, and has concluded a deal to purchase six 737-700s and six 767-300ERs.

SAA is carrying out a comprehensive fleet replacement, moving from Boeing to Airbus. SAA is replacing its 747s-200s/-300s/-400s with A340-300s/-600s, and its

MAJOR AFRICAN AIRLINE FLEETS

Airline	Fleet size	Average age
South African Airways	56	13.1
Air Algerie	41	17.8
Egyptair	35	13.7
Tunis Air	34	12.5
Royal Air Maroc	33	11.6
Nationwide Airlines	24	28.9
Comair (PTY)	23	24.3
Kabo Air	22	33.6
Libyan Arab Airlines	21	22.9
Okada Air	21	33.5
Kenya Airways	16	7.5
Airquarius Aviation	13	21.2
Ethiopian Airlines	13	12.9
Transafrik	11	36.2
Nouvelair Tunisie	10	10.1

SUMMARY OF AGE OF AFRICAN FLEET

Aircraft type	Average age	Number in service
ERJ-135	1.95	5
CRJ	5.82	6
BAE 146	14.87	2
BAC 1-11	33.11	60
F.28	24.64	34
Fokker 100	9.80	1
SE-210	36.16	2
707	34.94	38
727	32.17	114
737	19.64	228
747	21.23	39
757	12.24	8
767	11.21	32
777	4.32	7
A300	21.53	6
A300-600	15.29	14
A310	15.84	9
A319	4.11	6
A320	8.48	34
A321	6.19	4
A340	7.44	16
DC-8	38.05	8
DC-9	30.86	21
DC-10	27.83	6
MD-80	13.18	11
L-1011	22.38	1

737s-200s/-800s with A319/A320s.

These carriers are by far the largest in sub-Saharan Africa, with the remaining carriers averaging a fleet size of three aircraft. African carriers not only have smaller fleets, they have older fleets. Fleet age ranges from seven years for Kenya Airways to over 30 years for others. The majority of these carriers will need to replace aircraft in the next few years.

The number of outstanding orders for jets placed by African carriers, both firm and options, is 95. Boeing has 25% of these orders, while Airbus has 59%. Embraer has 16% of the market due to an order placed by South African Airways Link, a franchise partner of SAA. It is doubtful, however, that all these aircraft will be delivered. SAA's total order (including the 15 ERJs) accounts for 57 aircraft, 58% of the total aircraft order book for Africa. Egyptair, Ethiopian and Royal Air Maroc's orders account for the majority of the remainder.

While the volume and frequency of aircraft orders are small, orders are expected to rise. The majority of transactions occur on the used market, and are not included in the order data. The lack of new aircraft orders is not indicative of a flat market, because the

majority of airlines are unable to justify purchasing new aircraft. Most of the growth in aircraft demand will be driven by the leasing market, specifically the placement of middle-aged, depreciated aircraft that are not required by top-tier airlines in Europe or the US.

The southern African market is one of the more active areas, with several airlines expanding. Air Namibia has recently replaced its 747-400 Combi with an A330, while Air Tanzania has re-equipped with ex-SAA Dash-8s and 737-200s.

South Africa Nationwide, a domestic operator of 737s, has just acquired a 767 and intends to launch operations to Gatwick.

Kulula, a low-cost airline, has replaced its fleet of 727s with 737-400s. Kulula is owned by the same company that operates the British Airways franchise airline in South Africa, and it is speculated that Kulula's expansion will be at the expense of the BA franchise.

Growth forecasts

The growth of the African market is among the highest of any region, yet aircraft orders are not currently

supporting this view. Airbus predicts that intra-regional growth will average 4.1% per annum, with India, Asia and China averaging 4.4%.

Overall, Airbus forecasts that the African market will increase by 4.4% per annum for the next 20 years. Boeing believes traffic growth will be slightly higher, based on the GDP performance of African countries. Boeing predicts annual growth of 5.3% over 20 years. If maintained, traffic will treble over the period.

With so few aircraft ordered, a large spike in aircraft numbers, or at least the signing of new leases, must occur over the next few years to accommodate increased demand. "Generally traffic growth rates are higher than GDP growth rates," says Drew Magill, director of market analysis for Boeing. "Economic growth stimulates demand, which, in conjunction with market liberalisation, results in higher demand levels for travel. We believe there will be a demand for around 550 aircraft, worth \$40 billion, over the next 15-20 years. The growth will mostly occur in the narrowbody arena, as this meets the majority of market requirements. Mid- to long-range aircraft, like the 7E7 and 777 will also be required, but in small numbers. Markets for the 777 are limited, since few countries have the density of traffic to support large aircraft. South Africa, Kenya and Nigeria are among those countries that can support widebodies; while the majority of countries will require mid-size aircraft to fly their major city-pairs."

Africa's population density, combined with the emerging economies and long distances, ensures that traffic demand will be high for the foreseeable future. A major stumbling block to realising the market potential is the restrictive bi-laterals that most countries retain. An open skies agreement the Yamoussoukro accord, was signed several years ago, under which all signatories were to grant free access to the other signatories' airlines. This would be beneficial to hub carriers like SAA, Kenya or Ethiopian, but damaging to smaller carriers. Few countries have implemented its freedoms.

"The largest single issue restricting growth in Africa is the bi-lateral limitations that are imposed," says Daniel Dufner, executive manager of network planning at SAA. "We are frequency-restricted on many of our routes, and are unable to cater for the demand that is there. Kenya has launched open-skies, but is currently suffering from a weakened economy, so the benefit is very low. Regional stability, combined with economic development, will ensure steady growth. As the smaller airlines restore integrity to their balance sheet and are able to compete with larger carriers the governments should begin to enact open-



skies policies. While the very lucrative markets will continue to be difficult to access, the majority should become more liberal. Markets to India, Nigeria and other dense population areas will continually be restricted, but other areas, for example Angola, show significant potential; their economy is stable and passenger volume is expected to rise.”

Other countries in sub-Saharan Africa, emerging from political or economic difficulties, are beginning to experience burgeoning passenger demand. Stability is driving an increase in tourist volumes, with economic development providing further growth impetus. “Our recent fleet purchase reinforces our belief that Africa will continue to develop,” says Bisrat Nigatu, chief executive of Ethiopian Airlines. “We have ordered six 767-300ERs and six 737-700s, the largest capital investment in our history. The decision to increase our fleet was partly driven by the growth that we expect to realise from Africa. Our hub in Addis Ababa has geographic benefits that enable us to serve destinations in Europe, Asia, North America and the Middle East. We needed more aircraft to meet our growth demands. We expect this demand to continue and have expanded our fleet accordingly to cater for the growth.”

Fleet requirements

Africa’s fleet orders have often been influenced by a mixture of political and financial issues. SAA purchased the 747SP in the 1980s to serve Europe when it was banned from overflying other African countries. Other countries purchased Soviet aircraft because their

governments were more politically aligned to the USSR than to the USA.

With no noise emission issues, non-Stage 3 compliant aircraft were also operated in Africa. Aircraft like the 707, DC-9, DC-8, An 24 and Il-76 still operate in Africa. Many have fallen into disrepair and are scattered at airports having been cannibalised for parts.

The majority of future orders will be in the narrowbody area, as these aircraft satisfy most of the stage length requirements of north African airlines. The average stage length for African carriers is 1,831km, which is for regional operations and international flights to Europe, the Middle East and the Asia Pacific. It does not include SAA flights to the US, among the longest sectors in the world. The average intra-Africa stage length averages 917km, or about 1.5 flight hours (FH). International operations average 3,054km and about 4.6FH.

The majority of international destinations are to the Middle East (predominantly Dubai), Asia Pacific (predominantly India) and Europe.

European flights are biased in favour of colonial influence, with flights from east and north Africa to France, and from west and south Africa to the United Kingdom, Germany and the Netherlands.

If an airline were based in central Africa, its average mission length to reach these points would be 5,600km. This makes the A320 or 737 viable candidates to satisfy the majority of mission requirements.

“Narrowbody aircraft will be the most popular aircraft type in Africa,” says Magill. “It is driven by the numerous city-pairs that can be served and the

continual process of market fragmentation. The 7E7 will be a popular aircraft for the market. It is economic and enables carriers to reach primary markets. As market liberalisation occurs aircraft productivity will increase and airlines using older aircraft will begin to experience economic pressure as their efficiency will be significantly below their competitors’.”

Widebody aircraft

Boeing predicts the total number of aircraft in African airlines will increase to about 1,100 by 2020; an increase of 62% above the current fleet. With 76% of the current 728 aircraft already exceeding an average age of 15 years, the demand for aircraft is obvious.

Only 95 aircraft are younger than 10 years. These would probably remain in service until 2020. To satisfy retirements and growth forecasts, between 900 and 1,100 aircraft will have to be placed in Africa in the next 15 years, and more could be required if bi-lateral liberalisation results in higher-than-forecast growth rates.

Of the major carriers, Kenya, SAA and Royal Air Maroc have the youngest average fleet age, at 7.6, 13.1 and 11.6 years.

Nationwide and Air Algerie have ageing aircraft, mostly due to their large 737-200 fleets. These airlines will be prime candidates for fleet replacement in the near term, with a requirement for several different types. The geographical mix of Africa, and its major trading routes, means airlines will require mixed fleets.

Boeing predicts total demand in



Africa to be evenly split between narrowbodies and widebodies. This demand level has so far not been borne out in current sales volumes. Boeing's narrowbody sales equate to 75% of its total sales, or 18 units. Airbus has a similar bias toward narrowbodies with 66% of sales, or 37 units sold.

Boeing predicts narrowbody aircraft will account for 49% of total aircraft numbers, with widebody aircraft accounting for 51% of total demand; 3% of which comes from 747 size aircraft.

"There are seven daily 747 flights between South Africa and London," says Dufner. "London will always be a capacity-driven market. Although we have looked at the A380 there is no way we can justify it given the utilisation levels we achieve. The A340 came out as the best widebody option for our other markets, since our geographic position excludes most twin-engined aircraft. Routes to south America and west Australia were at the edge of the allowable ETOPs range, and the elevation of Johannesburg made summer operations marginal when planning for flight operations."

Developing markets

One market that is an obvious candidate for development is Nigeria. Nigerian Airways stopped flying last year, and its last aircraft is grounded. Five years ago Nigerian Airways had 25 aircraft and operated services to the US and Europe. Nigeria, the most populous African country now has no national airline, with European carriers operating major routes under commercial agreements. SAA has displayed an

interest in starting a new Nigerian carrier, as have several other investor groups.

"Nigeria could support about 30 aircraft immediately, which would increase as the economy strengthens," says Craig Papayanis, managing director of BCI Aircraft Leasing. "Many airlines and lessors are beginning to see Africa, especially sub-Saharan, as having significant potential. Operating leases are a good solution for the carriers, especially if their balance sheet is currently weak. With the departure of Air Afrique, west Africa has been under-served by local carriers, and European operators have dominated traffic. SN Brussels Airline ensured that west-Africa was retained by the Sabena network, since it is a lucrative market. Over the short- to medium-term African carriers will struggle to justify purchasing new aircraft, especially with so many options for leasing aircraft that are 5-10 years old.

"Initially Africa will receive the second-tier aircraft, such as 737-300s, that are retired by European and US airlines, since they are more attractive than the DC-8s, 727s and other older types that were previously available. There are no regulations governing flightdeck instrumentation commonality, as often occurs when moving a US aircraft to Europe. This means that pre-delivery checks are all that is required to deliver an economic and relatively modern aircraft. You will see more carriers and lessors exploring this option in the short term, since it is beneficial to both parties and enables the airlines to plan for growth."

"We see growth occurring in two major areas, west Africa and Asia," says Dufner. "West Africa because of the

Africa's largest and most financially stable airlines are in the Sahara region. Air Algérie has the largest fleet of Saharan airlines. Saharan account for about half of African airline capacity, and have . Fleets of many carriers are old, and the whole of Africa may require up to 1,000 aircraft over the next 15 years which will present a challenge to finance.

mineral deposits, while Asia is another major attraction for African carriers. We believe that the traffic potential between the Asia Pacific and Africa is significant. If we are able to enact our primary strategy of developing hubs in west, south and east Africa we estimate that we could double our fleet size. Some of that increase would come from integrated operations with our partner carriers, while consolidation would also account for another part, but the market potential is definitely there."

"North Africa accounts for nearly half of Africa's total GDP. These countries have significant traffic flows to the Middle East, the Asia Pacific, Europe and the US," says Magill. "Many of these routes can be served by narrowbodies, with the denser routes by medium-sized widebodies. Traffic density is rarely high enough to support 747-size aircraft. The majority of carriers flying to north Africa rely on smaller sized aircraft to secure superior economics while deploying sufficient capacity to meet growing demand." North African carriers are already expanding to meet this market potential. Egyptair's 777 and A330/A340 fleet allows it to operate more non-stop routes to the Asia Pacific, as well as developing points in the US. Royal Air Maroc and Air Algérie are also evaluating replacement candidates for their 767s to operate European and Asia Pacific routes.

Aircraft operating costs

Airlines need to balance the expected demand for travel with restricted operating conditions that favour cheap aircraft. One major factor influencing operating economics is the relatively low

aircraft utilisation levels. "Our 747 operation to London has very low utilization," says Dufner. "The aircraft fly overnight from both London and South Africa arriving in the morning and are grounded during the day. The aircraft average 10.5FH per day. The flight returning from London can be used to operate African routes, but this does not increase utilisation all that much. Low aircraft utilisation is also a problem on our short-haul sectors. The market is not receptive to long operating days, and this makes it harder for us to achieve an economic utilization level. On our domestic network, which is a mature market, the peak demand is between 5pm and 7pm, with a very pronounced tail-off after that period."

Low aircraft utilisation is driven by many factors: the overnight north-south routes from south Africa to Europe; airport security concerns which make airlines reluctant to overnight aircraft and crew; and lower infrastructure to support 24-hour operations. These issues combine to make aircraft with high capital costs inefficient to operate. The majority of airlines are therefore unable to justify new generation aircraft, but they need to upgrade their fleets. "We are seeing more carriers approach lessors for mid-age aircraft, like the 737-300, to meet their requirements," says Papayanis. "They are mainly seeking an aircraft that has very good operating economics and is also relatively inexpensive to lease, since many airlines cannot sustain significant lease exposure. The low levels of seat-mile productivity that typify many African carriers mean they are unable to distribute their ownership costs across as many sectors as can be done by airlines in

Europe. Ownership costs therefore become a larger component of total operating costs, penalising new aircraft."

"The 737-300 is a good aircraft for a lot of smaller operators, because it allows them to fly 4.0-hour sectors, which, dependent on geographical position, covers most requirements," says Dufner. "The lease rates on the -300 are low, so they do not overly extend an airline's financial capabilities and also allow them to secure a modern fleet. One major hurdle for any carrier is the relatively low utilisation rates that African airlines generate. This hurts their profitability and makes it hard for them to justify new aircraft. Lower value, younger generation aircraft are the obvious solution." The reduced lease rates currently available enable carriers like Air Malawi, which operate a 737-400, to secure younger aircraft than would previously have been possible. A new narrowbody aircraft lease would be in the range of \$300,000-350,000 per month, compared to \$80,000-120,000 per month for a 737-300, and even less for an MD-80. Without high utilisation to offset the greater cost, new aircraft will continue to be disadvantaged.

Summary

The African aviation market is small and the impact Africa has on global available seat-mile (ASM) production is low. Africa accounts for only 5% of global ASMs, of which SAA alone contributes 24%.

Splitting the ASMs into regions shows that north African carriers produce 2.2% of global ASMs and 48% of African ASMs. Sub-Saharan carriers produce

2.8% of global ASMs and the other 52% of African ASMs. Despite having more countries and a larger population, sub-Saharan Africa is lagging in ASM production.

With ASMs forecast to increase by 4-5% per annum and an average fleet age of nearly 18 years, African carriers will need to replace and increase their fleets. Industry analysts expect to see 150-200 aircraft retired by African airlines over the next four years as age catches up with the aircraft. Overall, Africa is predicted to require more than 1,000 aircraft over the next 15 years to cater for retirements and to accommodate growth. The major source of this growth will be with used aircraft.

Africa has one of the highest regional growth forecasts for passenger demand, and is receiving more attention from aircraft lessors. Sub-Saharan Africa has often been type-cast as the dumping ground for old aircraft, driven by a combination of no noise level minima, and the poor credit rating of many operators. This is changing, with airlines now looking to invest in modern equipment.

The two regions have disparate histories, but very similar futures. Improving regional stability and economic prosperity have seen demand for air travel constantly rising. The majority of carriers do not have sufficient capacity to meet forecast demand. The volume of aircraft required to meet the forecast growth levels is significant. Those carriers able to accommodate this demand through capacity increases will benefit considerably, especially if they are able to merge capacity with geographic advantage. **AC**

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