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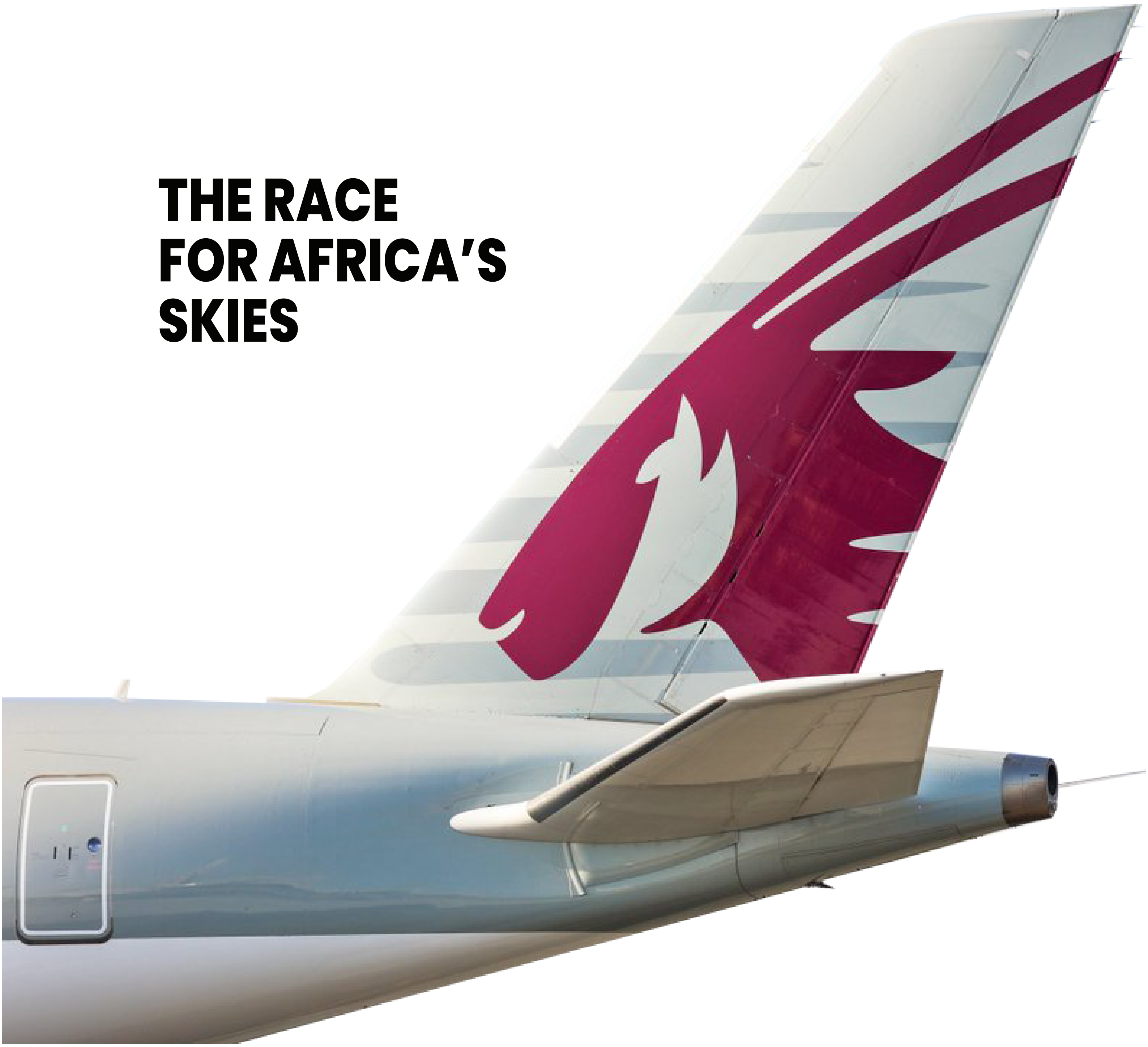

THE RACE FOR AFRICA'S SKIES

Published by:

THE Aviator AFRICA

CHIEF EXECUTIVE OFFICER
Ssemawere Oscar
Email: ceo@theaviator. co.ug

EDITOR-IN-CHIEF
Vincent Mwesigye Mupenzi
Email: v.mupenzi@theaviator.co.ug

EDITORIAL & PHOTOGRAPHIC CONSULTANTS
Ssemawere Oscar, Daniel Bakalangudde, Vincent Mwesigye Mupenzi, Ssembajjwe Robert

AFRICA CORRESPONDENTS
Wendy Cella Nyawede - East Africa
Eddah Waithaka - East Africa
Harriet James - East Africa

DESIGN & LAYOUT
Daniel Bakalangudde
b.daniel@theaviator.co.ug

CREDITS
- AFRAA
- Highwing Aviation
- AfCFTA
- B21 Raider Bomber
- ITAérea
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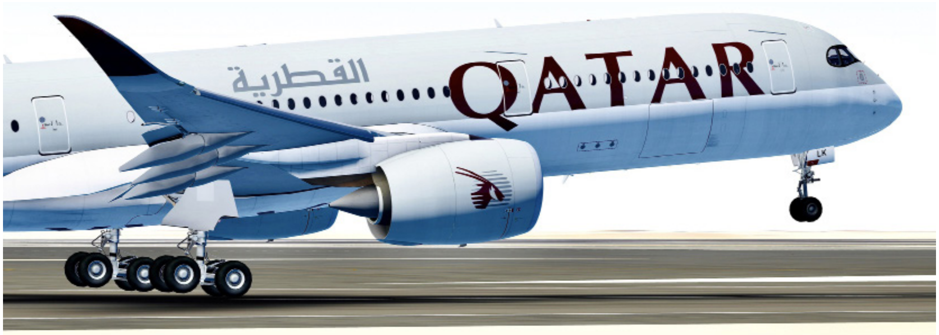
- Egypt Air



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www.theaviator.co.ug
+256 393 515 148
info@theaviator.co.ug
The Aviator Africa
The Aviator Africa
The Aviator Africa
@theaviatorafrica
theaviatorafrica

DRIVING THE FUTURE OF AFRICAN AVIATION:

ITAérea and AFCAC Launch the 2026 AWAYA Scholarship

ITAérea Aeronautical Business School, the world's leading aviation business school, in partnership with the African Civil Aviation Commission (AFCAC), officially launched the second edition of the AWAYA Scholarship in February 2026, reaffirming a shared commitment to strengthening capacity building and advancing women's leadership across African aviation.

Established under the strategic partnership between AFCAC and ITAérea, the AWAYA Scholarship has rapidly positioned itself as a flagship initiative supporting African aviation professionals, with a strong focus on empowering women and youth, who remain underrepresented in leadership roles across the sector.

2025 Impact Review: Strong Demand and Measurable Results
The 2025 edition of the AWAYA Scholarship recorded exceptional interest across the continent, with more than 1,050 applications received from 54 countries, confirming the strong and genuine engagement of African aviation professionals with the programme.

Following a rigorous selection process, 121 African aviation professionals ultimately benefited from academic and financial support through the AWAYA Scholarship, with women representing the majority of beneficiaries. Today, AWAYA scholars are contributing to civil aviation authorities, airports, airlines, and aviation institutions across Africa, reinforcing the programme's tangible impact on the sector.

These results confirm AWAYA's positioning as a credible and impactful capacity-building programme, responding directly to Africa's long-term aviation development needs.
Supporting a Sustainable and Inclusive African Aviation Sector
The AWAYA Scholarship directly supports AFCAC's vision of a more integrated, sustainable, and resilient African air transport system. It is underpinned by ITAérea's academic expertise, particularly through its Master's programmes in aeronautical management and sustainable air transport, developed in collaboration with the United Nations and aligned with the 2030 Agenda for Sustainable Development.

By facilitating access to these programmes, the scholarship contributes to closing both skills and gender gaps, while nurturing a new generation of African aviation leaders equipped to drive long-term transformation across the industry.
Launch of the 2026 Edition: Building on Momentum

Building on the strong results achieved in 2025, the AWAYA Scholarship 2026 edition officially launches on 9 February, with the ambition to expand its reach and further strengthen the participation of African women professionals in aviation leadership and decision-making roles.

Mr. José Ignacio Escudero Pérez, Chief Executive Officer of ITAérea Aeronautical Business School, stated: "The strong response to the AWAYA Scholarship confirms its strategic importance for the future of African aviation. Together with AFCAC, we are proud to continue investing in talent, leadership, and sustainable growth through the 2026 edition"

Ms. Adefunke Adeyemi, Secretary General of the African Civil Aviation Commission, added:
"The AWAYA Scholarship responds to a clear need within the African aviation ecosystem. Its growing reach and impact reflect our shared commitment to inclusion, capacity development, and long-term sector sustainability."

IN THE NEWS

Airlink Moves Luanda Flights to New Dr Agostinho Neto Airport

Southern African regional carrier Airlink will relocate all Johannesburg–Luanda services to the new Dr Antonio Agostinho Neto International Airport (NBJ) effective March 1, 2026.

The transfer from Luanda's current 4 de Fevereiro International Airport aligns with Angola's national strategy to consolidate all flight operations at the newly commissioned facility, located 45 kilometers east of the city center.

Airlink CEO de Villiers Englebrecht described the move as strategically important, noting that "Luanda has solidified its role as a critical gateway for business travel" as Angola executes its economic diversification strategy. The new facility, he said, is "a world-class airport designed to streamline passenger, baggage, and cargo processing."

Since launching the route in 2021, Airlink has maintained four weekly return flights connecting Johannesburg's O.R. Tambo International Airport with the Angolan capital using modern 98-seat Embraer E190 jets.

Key passenger information: All flights will use Gate B20 in the International Terminal. Check-in counters open two hours before departure. The Estrada de Catete dual-carriageway provides airport access, with approximately 45 minutes driving time—though travelers should account for potential congestion.

Airlink's Customer Service Desk is located at Counter D, with dedicated contact numbers for same-day and off-day travel assistance. All applicable airport charges are included in ticket prices.

A delegation from the Uganda Civil Aviation Authority (UCAA) Board of Directors and Management Team conducted a site visit to the under-construction Kabalega International Airport in Hoima on Thursday, February 12, 2026, to evaluate the ongoing works and project status.

Leading the assessment team, Board Chairperson Dr. Steven B. K. Kavuma (DCJ) Emeritus expressed strong satisfaction with the execution of the project. He applauded the contractor for the "tremendous work" evident on the ground, confirming that construction has now reached an impressive 97% level of completion.

The facility, designed as a Code 4F airport—making it capable of handling the largest classes of commercial aircraft—is taking shape as a major aviation hub for the region. According to the team's findings, several key components of the project have already been finalized. Completed works include the installation of a parallel runway, a state-of-the-art Cargo Terminal, a dedicated Fire station, and a meteorological facility.

Kabalega International Airport Nears Completion

To ensure operational readiness in the coming weeks, officials noted that a mobile control tower is scheduled to be installed shortly.

While the airside and terminal facilities are nearly finished, work continues on the ground access infrastructure. The airport access road is currently at 44% completion. The UCAA team confirmed that all outstanding works, including the access road, are on track to be fully completed by March 2026.

Once operational, Kabalega International Airport is expected to significantly boost trade, tourism, and connectivity in the Albertine Graben region and beyond.

The artistic impression of the airport under construction

Ethiopian
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Begins Construction of Bishoftu International Airport

Ethiopian Airlines officially commenced construction of the Bishoftu International Airport on January 10, 2026, in a groundbreaking ceremony attended by Prime Minister Dr. Abiy Ahmed and senior government officials.

Located 40 kilometers southeast of Addis Ababa, the new airport will complement Bole International Airport, creating a multi-airport system for the capital region. The state-of-the-art facility is designed to accommodate growing passenger and cargo traffic while supporting Ethiopian Airlines' continued expansion as Africa's largest carrier.

The project aligns with Ethiopia's economic development goals, promising thousands of jobs and enhanced global connectivity. Industry analysts view the move as strategic preparation for future demand, ensuring Ethiopian Airlines maintains its competitive edge as its network expands beyond 130 international destinations.

Bishoftu International represents a pivotal investment in Ethiopia's aviation infrastructure, symbolizing the nation's ambition to strengthen its position as Africa's premier aviation hub.

Proflight Zambia Earns IATA Membership Following Successful IOSA Audit

Proflight Zambia has officially become a member airline of the International Air Transport Association (IATA) by successfully completing the IATA Operational Safety Audit (IOSA) and being added to the IATA IOSA Registry.

This achievement means the airline meets globally recognised safety and operational standards and is now listed among IATA's certified carriers.

Since launching scheduled operations in June 2005, Proflight Zambia has established itself as a key player in Southern African aviation. Headquartered in Lusaka, the airline has built a robust network that serves vital domestic destinations while expanding its reach across the region.

Proflight's core mission is to connect Zambia both internally and with its neighbors. The airline links the capital, Lusaka, to other major Zambian centres, facilitating business and travel within the country. Beyond its borders, Proflight provides essential regional links to Botswana, Namibia, and South Africa, playing a crucial role in the economic and tourism integration of Southern Africa.

A significant factor in the airline's reliability and growth is its modern and well-maintained fleet. Proflight operates a mixed fleet of six Bombardier CRJ-200 regional jets and five Jetstream 41 turboprop aircraft.

This combination allows for efficient service on various route lengths—the CRJ-200 jets offer speed and comfort on longer regional sectors, while the turboprops are ideal for shorter domestic hops.

Looking to the future, Proflight Zambia continues to strategically expand its influence. By actively partnering with major global carriers, the airline not only extends its network through convenient connections but also strengthens the overall air transport framework within the region.

This commitment to partnership and growth ensures Proflight remains a vital conduit for travel and trade in Southern Africa, eighteen years after its first scheduled flight took to the skies.

Strike Ends at JKIA as Aviation Union Signs Return-to-Work Deal

Normal operations are gradually resuming at Jomo Kenyatta International Airport following the signing of a return-to-work formula between the Kenya Aviation Workers Union and airport management, ending a two-day strike by Air Traffic Control staff that paralyzed flights and stranded thousands.

The industrial action began Monday over unresolved grievances, forcing mass cancellations at East Africa's busiest hub. The stalemate broke Tuesday after Transport Cabinet Secretary Davis Chirchir convened high-level talks bringing together the Ministry of Labour, Kenya Airports Authority, union representatives, and the Kenya Civil Aviation Authority.

KAA Acting Managing Director Dr. Mohamud Gedi confirmed operations are normalizing, urging passengers to contact airlines for updated schedules.

The dispute highlighted longstanding concerns over working conditions, remuneration, and staffing levels at Kenya's main airport. Beyond passenger disruption, the strike threatened Kenya's horticulture sector, which relies on air freight for daily flower and vegetable exports to Europe.

KAA has reaffirmed its "commitment to safety and operational excellence" as attention shifts to implementing the mediated agreements to prevent future disruptions

Girma Wake Appointed to Lead Uganda Airlines Transition

In a decisive move to restructure the national carrier, President Yoweri Museveni has appointed Girma Wake, the former Chairman and CEO of Ethiopian Airlines, to oversee an executive transition at Uganda Airlines.

The appointment was confirmed following a meeting between President Museveni and Girma Wake at State House this Wednesday. During their talks, President Museveni directly tasked the renowned aviation expert with addressing the challenges at the airline, stating, "We have this big problem at Uganda Airlines and I have been convinced you are the right person to help us. Please go in and sort out the mess."

Girma Wake is a celebrated figure in African aviation, widely credited for transforming Ethiopian Airlines into a continental powerhouse during his tenure as CEO from 2004 to 2011. His expertise is now set to guide Uganda Airlines, which was revived by the Government of Uganda in 2019 amid high expectations for regional and international connectivity.
In his interim role, Wake will be responsible for steering the airline and leading a comprehensive recruitment process. His primary mandate is to identify and appoint a new substantive Chief Executive Officer and members of the top management team. He will also assemble a transitional team to support this critical executive overhaul.

This strategic hire signals a significant intervention by the Ugandan government to stabilize and professionalize the leadership of the national carrier, leveraging one of the continent's most experienced aviation minds to chart its future course.

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Airport Operations Before Liftoff

Taremwa Spencer Agabus

Aviation is more easily known with flying to everyone. The industry that started to take shape in the early 20th century has more than to flying as commonly known. As countries see a steady development in aviation infrastructure and air service providers across Africa and the globe. We take a peek at the ground operations of the industry.

A closer look at ground operations as technically known in the industry. Interested in having a career in the industry but not sure of flying. Ground operations can be the path for you.

From passenger handling, cargo handling, refueling, aircraft maintenance, airport security, in-flight catering and managing air traffic on the ground. No matter which part of the world, you will always find people doing similar services like these at major airports and aerodromes.

Passenger handling is where majorly worker assist passengers to check in for their flights and guide them during boarding. A passenger handler ensures the passengers are assisted while at the airport before and after boarding but not on the aircraft.

When it comes to cargo, the activity of ensuring passengers baggage or commercial cargo is safely put on the aircraft is done by cargo loaders. Most hand baggage is easily loaded by hands with light conveyors but more aviation equipment is used to load heavy cargo depending on the items. These people make sure flights are loaded and off loaded timely for departures and arrivals for passengers to find their baggage in baggage tracing areas at airports.

In- flight catering, usually these are aviation approved specialized food companies that facilitate loading food and catering items to be used by crew for passengers on the aircrafts. Every major airport has one or more of such companies. The work of loading is done by a trained person on how to always access and handle the work on different aircrafts types.

Air marshals. These people ensure aircrafts are assisted in directing the aircrafts as they taxi and when leaving their stations at aprons. Their communication is mainly between the pilots and ATC. Air marshals also ensure the safety of runway by constant monitoring or foreign object debris. Commonly abbreviated as (FOD).

Air Traffic control (ATC) play a crucial part in ensuring overall safety of airspace around airports and proper coordination of aircraft when taxing on runways during arrivals and departures. Constant communication is maintained during these phases of departing and landing to ensure the runways and taxiways are clear of any danger to aircraft operations.

In scenarios where radio communication is temporarily interrupted. The air traffic controllers are trained to use light signals using specific lighting devices to guide the aircrafts when landing and departing. Aviation Security generally covers safety and well-being of all people and facilities at airports. Everyone plays a responsibility on security at the airport or even during flights to identify concerns as a threat and report to an immediate authority. The major security player at airports are the country's authority security specifically assigned to handle aviation related security. Other companies that operate within the airport like airlines also have their own security personnel that work closely with country security to further ensure safety of passengers and facilities used by their companies.

Ground Handling Machine operators commonly known as support equipment operators (GSE) are the ground heroes who keep airports run on flight time schedules. From aircraft tugs, cargo loaders, ground power units, fuel and inflight catering trucks. Their core job is to ensure aircrafts are loaded, unloaded, fuelled to be on time for their scheduled use.

Bird hazard controllers. Most airports are located near active wildlife eco systems. These airports have teams of people to be no look out for bird activity. From aviation history, bird strikes can be serious risk to arriving and departing flights I collide with any parts of aircrafts.

A bird hazard controller use different methods to scare them away like noise devices. Most of these operations remain highly integral work with flight operations for smooth air transport services.

UGANDA

UGANDA CIVIL AVIATION AUTHORITY

Entebbe International Airport's modifed terminal building was opened to the public in 2024. The newly completed 20,000-square-metre Passenger Terminal Building, which is scheduled for commissioning in 2026 features three additional aerobridges—bringing the total to five. The facility also has 24 new check - in counters in addition to the existing 22, and 14 self check-in counters.

Once commissioned, the terminal's capacity will increase from the current 2 million passengers per year to at least 3.5 million passengers annually. These completed and ongoing upgrades are part of a 20-year National Aviation Masterplan aimed at accommodating growing traffic at Entebbe International Airport and enhancing the overall passenger experience.

www.caa.go.ug Uganda Civil Aviation Authority @UgandaCAA @ugandacaa +256 757 269 670

BATTLE FOR AFRICA'S SKIES

Turkish, Ethiopian and Qatar Airways Compared

Vincent M. Mupenzi
v.mupenzi@theaviator.co.ug

The competition to serve as Africa's premier intercontinental gateway has crystallized into a three-horse race between Turkish Airlines, Ethiopian Airlines, and Qatar Airways. Each employs a distinct strategic model, each commands unique advantages, and each reveals specific vulnerabilities.
This is no longer a contest of ambition. It is a contest of execution.

Turkish Airlines: The Relentless Network Extender

Turkish operates from its Istanbul hub with a singular doctrine: density before depth, volume before partnership. Its African strategy is not to dominate a single sub-region but to achieve ubiquity across the entire continent.

Current footprint: 63 African destinations—more than any non-African carrier. Recent additions include Port Sudan (September 2025) and Bissau, Guinea-Bissau (March 2026). This is high-risk, high-cost expansion. It is also defensible: once Turkish establishes brand recognition in secondary markets, displacing it becomes extraordinarily difficult.

Strategy: Turkish does not wait for African carriers to build feed. It builds its own feed by serving secondary and tertiary cities directly. Istanbul's global hub provides onward connectivity to Asia, Europe and the Americas.

Vulnerability: Istanbul is not in Africa. Turkish is a visitor, however committed. Its 2026 ultra-long-haul launches to Sydney and Melbourne suggest a diversifying focus that may, over time, dilute African attention.
Verdict: Wins on immediate reach. No carrier serves more African cities today.

Ethiopian Airlines: The Fortress Builder

Ethiopian operates from its Addis Ababa hub with a fundamentally different doctrine: ownership of the African transfer point. It is not a visitor to Africa—it is Africa's carrier.

Current footprint: Unmatched depth within the continent, particularly in East and Central Africa. Bole International Airport is at its 25 million passenger capacity limit—by design.
The Bishoftu gambit: Construction is underway on a $12.7 billion greenfield airport at Bishoftu, 40km from Addis Ababa. First phase capacity: 60 million passengers. Ultimate master plan: 110 million passengers annually.

This includes a multi-lane motorway and 38km high-speed railway linking the airport to the capital.
Strategy: Ethiopian does not merely operate flights; it builds the infrastructure that makes its continued dominance inevitable.
Its equity stakes in ASKY, Malawi Airlines, Zambia Airways, and Guinea Airlines create captive feed into Addis Ababa. This is nation-state aviation strategy.

Vulnerability: Capital intensity. The Bishoftu project requires five years of construction, $12.7 billion in financing, and sustained political stability in a region facing active insurgencies.
Verdict: Wins on structural entrenchment. No competitor is investing in Africa's aviation future at Ethiopian's scale.

Qatar Airways: The Premium Connector

Qatar operates from its Doha hub with a third distinct doctrine: frequency and partnership over raw network size.
Current footprint: 29 cities across 21 countries—by design. Qatar focuses on primary markets where premium traffic justifies high-frequency, widebody service.

The South Africa surge: In February 2026, Qatar will increase South Africa frequencies from 35 to 42 weekly flights. Johannesburg rises to 21 weekly services (triple daily), Cape Town to 14 weekly (double daily), and Durban/Maputo to 7 weekly (daily). All deployed on Airbus A350-1000s and Boeing 787-9s.

Strategy: Own the premium segment. Qatar's deployment of flagship widebodies, regionally inspired catering, African music selections, and gate-to-gate Starlink Wi-Fi signals a focus on passenger experience, not just seat count. Its 25% equity stake in South Africa's Airlink provides regional feed without regional operation.

Vulnerability: Narrow network. Twenty-nine African cities is substantially fewer than Turkish or Ethiopian. Qatar is winning the battles it chooses—Johannesburg, Cape Town, Durban—but it is not fighting the continent-wide war.
Verdict: Wins on premium corridor density. On Africa's most profitable long-haul routes, Qatar sets the global standard.

Comparative Analysis

Dimension	Turkish Airlines	Ethiopian Airlines	Qatar Airways
African destinations	63	50+	29
Hub capacity (future)	200M	110M (Bishoftu)	120M
West Africa	High	High	Moderate
Southern Africa	Moderate	High	Very High
Central/East Africa	High	Dominant	Moderate
Partnership model	Star Alliance	Equity stakes	Equity + codeshare

The Loyalty Question

Loyalty in African aviation operates differently than in mature markets. Few African travelers are engaged in alliance-based mileage strategies.
Ethiopian benefits from diaspora trust—one of Africa's largest and most dispersed populations is structurally loyal to its national carrier. No marketing campaign can replicate this.
Qatar is investing heavily in experiential loyalty. Regionally inspired service differentiates through passenger experience, not points accumulation.

Turkish relies on Star Alliance utility and Istanbul's convenience. Its distinct loyalty infrastructure in Africa remains the weakest of the three.

Who Is Winning?

The question presumes a single definition of victory. These three carriers operate with different metrics, different time horizons, and different definitions of success.

Turkish Airlines wins the race for network breadth. No carrier connects more African cities to a global hub. For travelers from secondary cities, Turkish is often the only viable option.
Ethiopian Airlines wins the race for African infrastructure. No carrier is investing in the continent's aviation future at Ethiopian's scale. When Bishoftu opens, Ethiopian will have capacity headroom that every competitor will lack.

Qatar Airways wins the race for premium corridor density. On the routes that matter most to Africa's business elite, Qatar is deploying world-class frequency and product. Its Airlink partnership provides regional feed without regional operation.

The Ultimate Verdict

The battle for Africa's skies is not producing a single victor. It is producing three distinct winners serving three distinct markets. The ultimate victor will be determined not by strategy, but by execution. Turkish must prove it can sustain profitability on thin African routes while diversifying into ultra-long-haul markets.

Ethiopian must deliver the Bishoftu project on time, on budget, and amid regional instability. Qatar must decide whether its narrow, high-frequency model is sufficient for long-term relevance.
For now, the war for Africa's skies is being fought on three fronts simultaneously. No single carrier has yet achieved the combination of breadth, depth, and density required to claim continental supremacy.

EGYPTAIR

TOWARDS A FUTURE OF EXPANSION

EGYPTAIR Digital Platform: Driving Innovation and Enhancing Customer Experience

"As part of its continuous commitment to innovation and excellence, EGYPTAIR is undertaking a strategic initiative to establish an integrated digital platform that supports the company's digital transformation strategy and enhances the overall customer experience" said Captain Ahmed Adel, EGYPTAIR HOLDING Chairman & CEO.

Captain Adel added "This project aims to develop and enhance EGYPTAIR website "egyptair.com", making it more user-friendly, efficient, and capable of delivering a wide range of digital services. In addition, the initiative includes the implementation of a Customer Relationship Management (CRM) system, enabling EGYPTAIR to better understand customer needs, strengthen engagement, and deliver more personalized and responsive services."

Through this digital transformation initiative, EGYPTAIR reaffirms its vision to deliver innovative, reliable, and future-ready digital solutions, supporting its growth and competitiveness on both regional and international levels.

"Through a combination of strategic network expansion, fleet renewal, and trade partnerships, we will develop and grow our fleet," added Captain Ahmed Adel. "Egypt's unique geographic position—connecting Africa, the Middle East, and Europe—makes it a natural gateway for global travel."

Cairo's Terminal 3 offers efficient connections and a premium experience for both business and leisure travellers. As the only Star Alliance member airline in the MENA region, EGYPTAIR is optimizing connection times and transit facilities to make Cairo a seamless transfer point for travellers heading north, south, east, or west. This is in addition to the increased frequencies to strategic African capitals, Gulf cities, and European metropolises.
In addition, as the only MENA region member of Star Alliance, EGYPTAIR offers global connectivity through partner airlines.
Passengers choose EGYPTAIR for seamless travel to Egypt and beyond, with an extensive network of routes and a range of cabin classes from economy to business Class, each offering varying

levels of comfort and luxury.

FLEET EXPANSION AND UPGRADE

At the heart of the airline's growth strategy is a comprehensive fleet modernisation programme, to blend Egypt's rich heritage with modern onboard innovation with the first new aircraft entering service in February 2026.

EGYPTAIR is expanding its fleet from 70 to 92 aircraft by 2028, improving flight options and network connectivity. Additionally, by 2031 the fleet is expected to include 97 aircraft. The total number indicates the passenger and cargo aircraft fleet.
EGYPTAIR is introducing 16 Airbus A350-900s and 18 Boeing 737MAX8s within the next three years, as well as the Boeing Dreamliner B787-9, B777-300ER, B737-800, Airbus A330-300, A321

and A320Neos to enhance fuel efficiency and expand long-haul capabilities to key cities such as London, Toronto, Los Angeles, Tokyo, and Shanghai.
EGYPTAIR is enhancing its loyalty program EGYPTAIR Plus offering its members exclusive benefits whether on EGYPTAIR flights or on the Star Alliance Members. Join now through egyptairplus.com.

In recognition of the recent developments in the field of human resources, EGYPTAIR has recently received the "Best Airline Staff" award in Africa from the Sky Trax Awards 2025 and the company is implementing an enhanced plan for the continuous upgrade of the levels of service in 2026.

SUSTAINABILITY

A key aspect of upgrading the customer experience, modernising the airline's fleet and expanding its long-haul network is reducing its carbon footprint.
The Airbus A350 is recognized as one of the most sustainable wide body aircraft, achieving around 25% lower fuel consumption and CO_2 emissions compared to previous-generation aircraft, as confirmed by the manufacturer.
More than 50% of the aircraft's structure is made of lightweight composite materials, combined with advanced aerodynamics and efficient engines, enabling a significant reduction in carbon emissions and a 50% smaller noise footprint.

All Airbus aircraft, including the A350, are currently certified to operate with up to 50% SAF blends, with a roadmap in place to enable 100% SAF operations by 2030.

SAF can provide up to an 80% reduction in lifecycle emissions depending on the production pathway, and when combined with the A350's efficiency, it plays a central role in EGYPTAIR's decarbonisation strategy.

Africa's Fleet Renewal Race

Widebodies vs. Narrowbodies

Gatwiri Edna

The narrative of Africa's fleet renewal race as a simple contest between widebody and narrowbody aircraft is seductive—but misleading. Examine the evidence, and a more complex picture emerges: a stratified market where carrier size, balance sheet strength, and strategic ambition dictate fundamentally different approaches. Ethiopian Airlines is aggressively acquiring both.

ASKY is cautiously eyeing its first widebodies. South African Airways is leasing now and ordering later. EgyptAir is doubling down on narrowbodies. And the vast majority of African operators remain firmly anchored in the single-aisle segment.

This is not one race. It is several, run at different speeds, on different tracks.

The Ethiopian Exception

Ethiopian Airlines stands alone. In December 2025, Africa's largest carrier placed orders for nine Boeing 787-9s and eleven 737 MAX aircraft—a balanced, dual-stream commitment unmatched elsewhere on the continent. With delivery slots secured into the next decade and Africa's largest existing widebody fleet, Ethiopian is not choosing between aircraft types. It is building a fortress.

The strategy leverages genuine competitive advantages: financing credibility that enables profitable subleasing to partners like ASKY, fleet scale that allows 787s to serve both long-haul and dense regional routes, and cargo synergies that turn bellyhold capacity into revenue. For Ethiopian, widebodies and narrowbodies are not alternatives. They are complementary weapons in a campaign for pan-African dominance.

The Aspirant Tier: ASKY and SAA

ASKY Airlines represents the calculated ascent. The Lomé-

based carrier plans to introduce two 787-8s by end-2026 for a Paris CDG launch, while simultaneously expanding its 737 MAX fleet. CEO Esayas Woldemariam Hailu is candid about the constraint: "The higher cost of leasing widebodies has held ASKY back... we are working on our financial muscle." All ASKY aircraft are currently subleased from Ethiopian. This is sequential strategy: narrowbodies first to build network density and profitability, followed by measured widebody entry where traffic volumes genuinely justify it. ASKY's path is rational, but it is also contingent—on regulatory approvals, on partner support, on fragile balance sheet strength.

South African Airways presents a third model: the bridge strategy. Facing delivery delays, SAA is seeking additional leased A330s for 2026 deployment while preparing a major RFP for 16 widebodies and 12 narrowbodies, deliveries from 2032. CEO John Lamola characterizes leased aircraft explicitly as an "interim solution." Washington, New York, Bangkok, Mumbai, London, Frankfurt are on the map—but not yet within reach without leased metal.

EgyptAir offers a counterpoint. The Star Alliance carrier's 2023 commitment for 18 Boeing 737 MAX 8s reflects narrowbody-focused renewal. With existing widebody capability and a Cairo hub already serving Europe, Middle East, and Asia, EgyptAir's bet is on regional frequency, not intercontinental expansion.

The Profitability Paradox

These strategic variations unfold against a brutal financial backdrop. IATA's December 2025 Africa outlook reveals: $1.30 net profit per passenger — one-sixth the global average of $7.90 1.3% net profit margin — global carriers average 3.9% Unit costs nearly double global benchmarks Fuel, taxes, charges, navigation fees: all 10–17% higher.

Then there is the blocked funds crisis. 79% of all airline funds blocked globally—$954 million of $1.2 billion—is trapped in Africa. Algeria, Nigeria, Ethiopia, and Malawi are chronic problem markets. This is not merely a liquidity issue; it directly impairs carriers' ability to make advance payments for aircraft acquisitions.

The Nigerian domestic market, Africa's largest, illustrates the extremity. Carriers operate on N8 profit per kilometre—approximately half a US cent. Only 0.02% of Nigerians fly annually, precluding economies of scale.

The Strategic Calculus

These realities dictate a clear decision framework. Four distinct carrier profiles emerge:
Tier 1: The Pan-African Globalist (Ethiopian). Aggressive dual-stream investment. Narrowbodies for regional density and hub feeding; widebodies for intercontinental reach AND high-density intra-African trunk routes. Order now, deliver over a decade. Scale creates efficiency advantages that partially offset Africa's structural penalties.

Tier 2: The Regional Champion (ASKY). Sequential strategy. Build narrowbody fleet to critical mass; enter widebody segment via partnership or lease when specific route opportunities justify discrete investment. Do not attempt dual-stream simultaneously.

Tier 3: The Rebuilding Network Carrier (SAA). Two-stage strategy. Lease widebodies immediately to rebuild network credibility; order new aircraft for 2030s delivery when financial position stabilizes.

Tier 4: The Narrowbody Specialist (majority of African carriers). Domestic and regional focus only. Widebody entry not under consideration. The gap between African operating costs and achievable yields makes long-haul operations from most African countries commercially unsustainable.

Verdict: Not a Race, But a Stratification Africa's fleet renewal landscape is not a single contest. It is a stratified market where distinct carrier tiers pursue fundamentally different strategies based on capabilities and constraints.

The winner will not be determined by aircraft type, but by balance sheet strength. Ethiopian has already won the widebody race because it can pay for them. ASKY and SAA are racing to position themselves for the next decade. Most African carriers are not in the race at all.

The continent's aviation future will feature a small number of widebody-capable hub carriers connecting Africa to the world, supported by a broad base of narrowbody operators moving passengers within the continent. This is not a failure of ambition—it is rational adaptation to structural reality. Until African governments treat aviation as a strategic economic enabler rather than a revenue source, the fleet renewal race will remain a contest of the few, not the many.

2026 OUTLOOK
Profitability or Survival Mode

Wendy Cella Nyawede

African aviation is growing faster than any other region—but profitability remains elusive. Here's what the numbers really mean.

The African aviation industry enters 2026 with a paradoxical narrative: record-breaking passenger growth alongside persistent profitability challenges. The African Airlines Association (AFRAA) projects that African carriers will carry 137.3 million passengers in 2026, a substantial 21.5% increase over 2025 figures. Yet this impressive growth masks a deeper structural reality—African airlines are growing, but are they thriving?

The Growth Story: Africa Leads the World

Africa's aviation recovery has been remarkable. From 113 million passengers in 2025, the continent is poised to reach 137.3 million in 2026—cementing its position as the world's fastest-growing aviation region.

December 2025 capacity rankings revealed the continent's aviation hierarchy: Cairo International leads with 1.7 million seats, followed by Addis Ababa Bole (1.3 million), Casablanca's Mohammed V (657,000), Cape Town International (655,000), and Lagos Murtala Muhammed (551,000).

Regional capacity share shows Northern Africa dominating with 37.7%, followed by Eastern Africa at 23.5%, Southern Africa at 19.7%, and Central and West Africa combined at 19.1%.
Financial performance provided encouraging signals: passenger revenue for January–November 2025 rose 7.4% year-on-year, with November 2025 alone recording a robust 10.5% increase.

The Profitability Paradox: Growing but Not Earning

Despite impressive traffic gains, African airlines face a profitability gap that threatens long-term viability. IATA forecasts project African carriers will earn just $1.30 per passenger in 2026—far below the global average of $7.90.

This 83% profit deficit reflects several structural constraints: Outdated distribution systems limit airlines' ability to sell higher-margin ancillary products like extra baggage fees and seat upgrades. Without modern digital retailing, African carriers cannot tap into revenue streams that global competitors increasingly rely upon.

High operating costs continue to erode margins. While the ECOWAS bloc promised a 25% reduction in aviation charges effective January 1, 2026, implementation has been delayed—leaving airlines awaiting relief nearly two months after the scheduled date.

The blocked funds crisis remains acute. Africa accounts for 79% of the world's blocked airline revenues—approximately $954 million trapped in countries with restrictive foreign exchange policies, including Nigeria, Algeria, and Ethiopia. This financial isolation starves African carriers of working capital.
AFRAA Secretary General Abderahmane Berthé frames the challenge starkly: "When SAATM implementation is delayed, the cost is paid by airlines, passengers, and ultimately by African economies."

The Competitive Landscape: Foreign Dominance Persists

December 2025 data reveals a sobering reality for African carriers competing on international routes. In intercontinental markets, non-African airlines dominate with 67.1% share versus just 32.9% for African carriers.

This disparity extends to intra-African connectivity. Third and fourth freedom rights (flights between an airline's home country and another nation) account for 78% of intra-African capacity. Fifth freedom rights—which would allow more efficient networks—represent just 22%.
The result? Travelers often connect through European or Middle Eastern hubs even for intra-continental journeys—an inefficiency SAATM was designed to eliminate.

Fleet Expansion and Infrastructure: Building for the Future

Despite profitability challenges, African airlines and governments are investing heavily. TAAG Angola Airlines is consolidating operations at a new international airport while accelerating fleet renewal. Ethiopia's $12.5 billion Bishoftu International Airport—with groundbreaking in January 2026—will become Africa's largest aviation facility, designed to handle 110 million passengers annually.

Free Route Airspace (FRA) implementation across West and Central Africa, effective October 2025, allows airlines to fly User Preferred Routes rather than fixed airways. Six leading carriers are already realizing annual benefits: 1,393 hours flight time saved, 5,000 tonnes fuel reduction, and $15 million in cost savings. Implementation trials are now underway for Eastern and Southern Africa.

The Policy Battleground: Taxes, Charges, and Implementation
AFRAA's 2026 outlook hinges on whether promised policy reforms translate into tangible benefits. The ECOWAS charge reduction—announced with great fanfare in late 2025—promised to abolish air ticket taxes and reduce aviation charges by 25% across West Africa. However, by late January 2026, implementation information remained "sketchy," with airlines still awaiting guidance.

AFRAA has formally demanded detailed information on implementation strategy and timelines, while directing member airlines to immediately report any plans by their countries to increase taxes, charges, or fees.
Berthé emphasizes: "Excessive taxes and charges increase air fares, which in turn reduces demand. High taxes lead to higher fares, which reduce passenger numbers, forcing airlines to cut frequencies and spread costs over fewer passengers."

The SAATM Imperative: From Commitment to Delivery

SAATM implementation remains AFRAA's central advocacy priority. A February 2026 capacity-strengthening workshop in Nairobi focused on helping audited States finalize and monitor Corrective Action Plans based on SAATM KPI audits.
Berthé's message was unambiguous: "Signing the solemn commitment is progress, but implementation delivers: connectivity, lower fares, trade and tourism growth, jobs and skills, stronger African airlines."

The workshop facilitated knowledge sharing, including lessons from the Banjul Accord Group Multilateral Air Service Agreement, which demonstrates that regional liberalization can deliver tangible results when implementation is pragmatic, cooperative, and sustained.

Profitability or Survival?

The evidence from AFRAA's 2026 outlook points to an industry at a crossroads. Passenger traffic is growing at world-leading rates. Fleet expansion continues. Infrastructure investment accelerates. Free Route Airspace delivers tangible efficiency gains.

Yet the fundamentals remain fragile. Per-passenger profits are a fraction of global averages. Foreign carriers dominate intercontinental routes. Blocked funds starve airlines of working capital. Policy implementation lags behind policy.
Berthé's framing captures the stakes: "Without effective market access, Africa will continue to generate demand but lose value, including jobs, connectivity, and foreign exchange."

The 137.3 million passengers projected for 2026 will fly. The question is whether they will fly on African carriers—and whether those carriers will earn enough to reinvest, modernize, and compete. The difference between profitability and survival will be determined not by traffic growth, but by whether the industry's structural constraints are finally addressed—through effective SAATM implementation, timely tax relief, unblocked funds, and modernized distribution systems.

AFRAA 58TH AGM AND 3RD AASOS 2026

Beyond the Black Box

THE CONNECTED AIRCRAFT REVOLUTION

Real-time data streaming, satellite connectivity, and AI are transforming aviation—rendering the traditional flight recorder obsolete and ushering in an era of predictive operations.
The commercial aircraft has long been a data island—collecting vast quantities of information during flight but storing it locally, accessible only through physical retrieval of onboard recorders. That era is ending.

The emergence of the connected aircraft ecosystem—powered by high-bandwidth satellite connectivity, real-time telemetry streaming, and AI-driven analytics—is fundamentally reshaping how airlines operate, maintain, and recover aircraft. This is not incremental improvement. It is a paradigm shift: from reactive to predictive operations, from isolated to integrated systems, from post-incident investigation to real-time risk mitigation.

The Technology: From Black Box to Data Stream
The traditional "black box" is a marvel of resilience but a relic of analogue thinking. It captures hundreds of parameters but requires physical recovery for analysis. In accidents, this means underwater searches and months of investigation. In routine operations, it means data is downloaded manually during layovers and acted upon after the aircraft has already flown.

Three technological enablers have broken this model:

First, modern aircraft (Boeing 787, Airbus A350, and increasingly narrowbody fleets) are born connected—equipped with satellite communications, real-time monitoring systems, and integrated electronic flight bags.

Second, Low Earth Orbit (LEO) constellations—notably Starlink Aviation and OneWeb—have transformed connectivity economics. Where traditional systems offered 10–20 Mbps at premium prices, LEO now delivers up to 350 Mbps per aircraft at competitive rates. This enables continuous streaming of thousands of parameters, real-time video, and bulk data transfer after every landing.

The Application: What Connectivity Enables

Predictive maintenance is the killer application. Traditional scheduled maintenance removes components at fixed intervals regardless of actual condition. Predictive maintenance replaces parts when data indicates they are nearing failure.

Engines transmit real-time performance data—vibration, temperature, pressure. Algorithms compare actual performance against fleet-wide baselines. Anomalies trigger automated work orders and parts ordering. Maintenance is scheduled during normal operational turns.
The impact: Airlines report 35–45% reductions in unscheduled maintenance events, 20–30% lower maintenance costs, and significant reductions in Aircraft

on Ground (AOG) time. Delta TechOps' predictive platform monitors over 10,000 parameters per flight, achieving 99.7% diagnostic accuracy for specific engine faults.

Flight operations optimisation delivers fuel savings of 2–5% through real-time weather integration, performance monitoring, and dynamic route adjustments. Ground teams receive system health reports before landing, positioning equipment for rapid turns.

Safety and incident investigation is being transformed. Real-time cockpit data streaming eliminates underwater recovery delays. Automated anomaly detection identifies subtle deviations that may indicate systemic risks. A single incident triggers fleet-wide inspections within hours, not weeks. EASA and FAA are now developing frameworks that accept real-time data streaming as equivalent to traditional flight data recorder retention.

Air traffic management integration sees connected aircraft becoming active network nodes. Precise positional data, 4D trajectory management, and collaborative decision-making enable reduced separation minima, optimised arrival flows, and lower fuel burn.

The Landscape: Who Owns the Data?

Airbus Skywise connects over 10,000 aircraft, positioning itself as an "open ecosystem" with every Airbus delivered since 2019 including Skywise-enabled hardware. Boeing AnalytX has partnered with Microsoft Azure, though its approach has been more fragmented. Both manufacturers recognise that data ownership translates to customer lock-in.

Independent providers—GE Digital dominating engine health monitoring, Collins Aerospace and Honeywell leveraging avionics incumbency, satcom providers expanding from connectivity to applications—create a vibrant but fragmented ecosystem.

The Challenges: Barriers to Adoption

Data ownership remains legally unsettled. OEMs claim data generated by their aircraft is essential for product improvement. Airlines argue they paid for the aircraft and should control its data. Lessors occupy a middle position, concerned about residual value impacts. IATA's voluntary Aircraft Data Sharing Framework provides a template, but adoption is uneven.

Cyber security presents genuine vulnerability. Each datalink represents a potential attack surface. Industry response includes ARINC 834 and ED-244 standards, with EASA's 2023 rulemaking mandating cyber-security-by-design for all new type certificates.

Legacy fleet integration is the greatest challenge. Over 60% of the global fleet lacks factory-fitted connectivity. Retrofitting costs $500,000–$1.5 million per aircraft, and for older narrowbodies, the business case remains marginal. Starlink's entry promises lower hardware costs, but the retrofit market remains dominated by Viasat, Gogo, and Collins.

The Future: Where This Leads

The connected aircraft is a necessary precursor to the autonomous aircraft. Real-time data streaming, predictive health management, and ground-based supervisory control are foundational capabilities for reduced-crew and eventually pilotless operations. Industry consensus suggests single-pilot cargo operations by 2030, reduced-crew passenger operations by 2035, and fully autonomous regional aircraft by 2040.

Digital twin integration represents the ultimate expression of the connected ecosystem. Real-time virtual replicas of each physical aircraft enable what-if scenario testing without risking the actual aircraft, life extension modelling to optimise retirement timing, and accident reconstruction with complete parametric data.

Fleet-as-a-service business models emerge when aircraft are continuously connected and performance is perfectly predictable. Rolls-Royce's "TotalCare" has demonstrated this model; airframers are now exploring similar offerings where airlines transition from fleet owners to capacity purchasers, with OEMs retaining ownership and performance risk.

The black box is not disappearing—regulatory requirements remain. But its primacy is ending. The physical recorder, recovered from wreckage and decoded in laboratories, is being supplemented—and in some contexts supplanted—by continuous, real-time, globally accessible data streams.
For safety: Investigations that once took years may take days. More importantly, accidents may be prevented before they occur.

For efficiency: Airlines can extract maximum value from every asset, reducing waste and environmental impact.
For business models: Data becomes a core asset, and analytics a core competency.

For sovereignty: Regulators must develop new frameworks for certification and oversight.
The connected aircraft ecosystem is not a future state. It is present, accelerating, and irreversible. The black box will remain—but it will no longer be the sole, silent witness to every flight. The aircraft itself is becoming the witness, broadcasting its condition, performance, and health to anyone with the capability to listen.

The question is no longer whether airlines will adopt connected aircraft capabilities. It is which carriers will master them—and which will be mastered by their absence.


AVIATION
AFRICA
September, 2026
Nairobi, Kenya

Aircraft Leasing in Africa
Why Local Lessors Are Emerging

Jane Makena

▶ A convergence of regulatory reform, innovative financing, and fleet expansion is reshaping Africa's aircraft leasing landscape—and creating space for local players

For decades, African airlines seeking leased aircraft were almost entirely dependent on major international lessors who viewed the continent as a high-risk, peripheral market. That dynamic is shifting. A convergence of regulatory reform, innovative financing, and strategic partnerships is creating space for local and regional lessors to emerge.

The Regulatory Foundation: Cape Town Convention Gains Traction
The most significant regulatory development of early 2026 is Nigeria's accession to the Cape Town Convention, signed by President Bola Tinubu and executed by Aviation Minister Festus Keyamo.

The convention establishes a globally recognized legal framework protecting aircraft lessors' and financiers' interests—particularly in asset recovery and enforcement of rights. For lessors, this addresses the single greatest barrier to African engagement: the perceived risk that aircraft could be trapped in jurisdictions with unpredictable legal outcomes.
Dare Osamo, Managing Director of Impact Energy, describes the signing as "a strategic policy decision" that signals "a new phase of growth for Nigeria's aviation sector."

Access to leased aircraft has been "one of the most difficult hurdles for Nigerian operators, largely due to perceived legal and regulatory risks." The convention removes that hurdle, enabling airlines to lease aircraft "more easily, on better terms, and at lower costs."
Crucially, the convention's protections benefit not only international lessors but also create a stable legal environment for domestic leasing companies to emerge.
Innovative Financing: Absa and AELF Demonstrate the Model

A landmark transaction in late 2025 illustrates how local financing partnerships are enabling African leasing growth. Absa Corporate and Investment Bank structured a $72 million financing facility for Aircraft Engine Lease Finance Inc. (AELF), enabling the lessor to acquire an additional aircraft as part of its broader fleet diversification strategy.

With this acquisition, the number of aircraft placed with African carriers by AELF increases from four to five. While modest in absolute terms, the transaction's significance lies in its demonstration effect:

- Local banks can structure complex aviation finance. Absa's role shows that African financial institutions can lead transactions traditionally dominated by export credit agencies or international banks.
- Specialized lessors see African opportunity. AELF operates with an "increasingly strong presence in Africa's aviation sector."
- Operational capacity strengthens. The facility supports "the development of technical skills and employment opportunities across the region's aviation value chain."

Absa frames this as part of a broader strategy: "By structuring thoughtful, high-impact financing solutions in a complex and highly regulated sector, Absa continues to promote inclusive economic growth while enabling clients to pursue strategic ambitions that shape the future of African aviation."

The Market Context: Why Leasing Matters in Africa

Manufacturer backlogs are stretching into the 2030s, forcing operators worldwide to turn to the pre-owned market and lengthen lease terms. This global dynamic disproportionately affects African carriers, who often lack the balance sheet strength to place multi-year OEM orders. For many, leasing is not a preference—it is the only viable path to fleet expansion.

Rapid urbanization, rising disposable incomes, and a growing middle class are significantly boosting passenger traffic, encouraging airlines to lease rather than purchase to optimize capital expenditure. The rise of low-cost carriers and increasing regional connectivity initiatives contribute to a surge in fleet requirements, making "leasing an attractive option for operational flexibility and fleet modernization."
Recent Leasing Activity: A Snapshot of 2025–2026

The past twelve months have seen significant leasing transactions involving African operators:

- Royal Air Maroc secured 13 Boeing 737-8 aircraft from Dubai Aerospace Enterprise and six Boeing 737-8 MAX aircraft from Avolon.
- Airlink finalized an Embraer transaction, taking delivery of the first three of ten Embraer E195-E2 jets on lease from Azorra.
- Air Congo, the Ethiopian Airlines subsidiary, will receive two ATR72-600s on lease in February 2026.
- AFG Aviation Ireland expanded its African footprint with a CRJ1000 finance lease to Nigeria's Cally Air.
- Linhas Aéreas de Moçambique issued a tender for short-term wet lease of five aircraft.
- TrueNoord appointed Basil Gygax as Sales Director for Africa, the Middle East and CIS, signaling increased focus on the African market.

The ACMI (Aircraft, Crew, Maintenance, Insurance) model is also gaining traction. South African Airways exemplifies this strategy, wet-leasing one A330-300 from Hi Fly Malta and two B737-800s from SunExpress for peak season demand.

Challenges Remain

Despite progress, significant barriers persist. Economic volatility, currency fluctuations, and geopolitical uncertainties impact airline profitability and leasing demand. The availability of skilled workforce and technical expertise for aircraft maintenance plays a crucial role in shaping market trends. Access to affordable financing and interest rate fluctuations influence leasing costs. And regulatory environments vary widely across African jurisdictions, affecting lessors' willingness to place aircraft in specific markets.

The Path Forward: Why Local Lessors Will Grow

Several factors point toward continued emergence of local and regional lessors. Market knowledge advantage enables deeper understanding of individual markets, regulatory nuances, and operator creditworthiness. Relationship-based banking—as demonstrated by the Absa-AELF transaction—shows that African banks are willing to finance aircraft placed with African operators. Portfolio diversification creates opportunities for African lessors to act as originators and servicers while international partners provide capital. And fleet standardization around narrowbody families and regional types enables lessors to build portfolios with greater liquidity.

From Periphery to Partner

The emergence of local lessors in Africa represents a maturation of the continent's aviation finance ecosystem. Driven by regulatory reform, innovative financing, and growing demand from expanding airlines, African leasing is transitioning from a peripheral activity to a mainstream component of the global aircraft leasing market.
The next phase will see African lessors moving beyond facilitation to ownership—building portfolios, accessing capital markets, and ultimately competing with international players on their home turf. The foundation has been laid. The question is not whether local lessors will emerge, but how quickly they will scale.

ONE ON ONE WITH RUBIA MUNAI

Founder- Highwing Aviation School

QN: What inspired you to start an aviation school?
ANS: My inspiration came from a dream I carried for many years—a dream to own aircraft and aviation schools. When I enrolled in an aviation school myself, the journey was difficult. I struggled a lot, but the biggest gap was the absence of mentorship. I had no one to guide me through the industry. That experience shaped my purpose. I told myself, "I will become the mentor I never had." From that moment, the vision to start aviation schools that nurture, guide, and empower future aviation professionals was born.

QN: What gap did you see in the market?
ANS: There was a major gap in the Rift Valley region. There were no prominent aviation schools nearby, yet many young people had strong ambitions to join the aviation industry. Parents were hesitant to send their children to Nairobi because of the distance, costs, and the pressure of city life on young learners. I saw the need to bring aviation training closer to home—making it accessible, affordable, and family-friendly.

QN: How did the first school begin, and what challenges did you face?
ANS: Starting the first school was one of the most challenging seasons of my life. At the time, I had not even paid my house rent, but I had a strong belief in the vision. I met someone who believed in that vision and supported me until I was able to stand on my feet.
The school started in Nakuru with just one student. It was a humble and uncertain beginning, marked by financial strain and risk. But through persistence, faith, and consistency, the vision grew. Today, what began as a single student has expanded into a growing institution with campuses in Nakuru and Kericho.

QN: What courses did you prioritise at the beginning?
ANS: From the start, I focused on practical and foundational aviation skills that open real career pathways. We began with courses such as Airport Operations, Airline Cabin Crew, Flight Dispatch, and International Languages. The goal was to equip students with industry-relevant knowledge, confidence, and global readiness—not just certificates.

QN: What gave you the courage to expand to other regions?
ANS: We began receiving many inquiries from Kericho and Bomet. Students were travelling long distances to access training, and that became the motivation to expand. I realised the need was real, and instead of waiting, I chose to step out in faith and take aviation education closer to the students.

QN: What challenges come with setting up in new regions?
ANS: Entering a new community feels like starting life all over again. You have to find housing, build trust, establish infrastructure, and integrate into the local environment. It requires financial sacrifice, emotional resilience, and patience.

QN: How would you describe the current state of aviation schools in Kenya?
ANS: Aviation schools in Kenya are steadily growing. However, we need more active airstrips across counties to support training and regional air travel. This would significantly improve access and create more opportunities beyond major cities.

QN: Is Kenya producing enough aviation professionals?
ANS: Kenya is doing its best, but demand is growing faster than supply. The aviation sector is expanding both locally and internationally, and we need more trained pilots, engineers, and ground professionals to match that growth.

QN: What misconceptions exist about aviation training?
ANS: Many people assume aviation training is extremely expensive, yet that mainly applies to pilot training. Others believe it takes seven years, but in reality, many aviation courses—such as cabin crew, flight dispatch, or ground operations—can be completed within two years.

QN: What are the biggest challenges facing aviation schools today?
ANS: One major challenge is the shortage of training airstrips. Wilson Airport is heavily congested and primarily commercial, limiting training flexibility. If the government activated and maintained more airstrips nationwide, it would significantly support aviation education.

QN: How do you differentiate your school from others?
ANS: We focus on the student journey even after graduation. We support attachment placements, mentorship, and career guidance. We also incorporate public speaking, leadership training, and international languages to prepare students for global careers. Our foundation is built on Christian values and discipline, shaping both character and professionalism.

QN: How does training in Kenya compare to studying abroad?
ANS: Training locally is more affordable and practical. Students who train abroad often return and must convert their licences, which adds cost and time. Local training reduces duplication and financial strain.

QN: How does affordability affect diversity in aviation?
ANS: Affordability is key to inclusion. When training is accessible, students from rural areas and middle-income families can pursue aviation careers. This unlocks talent that would otherwise be excluded.

QN: How supportive is the regulatory environment?
ANS: The regulatory framework is supportive and ensures high standards. This helps produce competent graduates who meet safety and industry requirements.

QN: What policy changes would help aviation schools?
ANS: Activating more airstrips and training facilities across counties would be transformative. Government incentives and scholarships would also boost enrolment and talent development.

QN: How do you ensure training aligns with industry needs?
ANS: We work closely with industry professionals, offer practical exposure, mentorship, internships, and regularly update our curriculum to reflect current trends and technology.

QN: What skills will future aviation professionals need?
ANS: Technical competence, digital literacy, adaptability, and safety management will be critical. Communication, leadership, problem-solving, and global awareness will also be essential as automation and data systems expand.

QN: What has been your most challenging and proud moment?
ANS: The hardest moments come when parents bring their children seeking help, and you wish you could support every dream. The proudest moments are seeing students graduate, secure jobs, and succeed. That's when I know the dream that began in my heart is now changing lives.

The Future of Bilateral Air Service Agreements in Africa

As the Yamoussoukro Decision marks over two decades of unfulfilled promise, a new wave of pragmatic bilateralism—driven by commercial necessity and external partnerships—is quietly reshaping African air connectivity.

The grand vision of continent-wide aviation liberalization under the Yamoussoukro Decision (YD) and the Single African Air Transport Market (SAATM) remains largely aspirational. Only 38 of 55 African nations have signed the SAATM commitment, and just 26 have progressed to full implementation. Twenty-six years after Yamoussoukro's adoption, progress remains "slow, uneven and incomplete."
Yet beneath this stalled multilateral process, a more pragmatic and dynamic transformation is underway.

The Yamoussoukro Paradox

The economic case for liberalization is overwhelming. Full implementation of SAATM could increase intra-African traffic by 51 percent and reduce fares by 26 percent. A 2014 IATA study estimated that liberalizing just 12 key African markets could unlock $1.3 billion in annual GDP and generate 155,000 jobs.

Yet protectionism persists. Captain Ado Sanusi of Aero Contractors offers a blunt assessment: "Many states still maintain restrictive practices contrary to YD provisions." East Africa exemplifies the conundrum—Kenya, Tanzania, Uganda, Rwanda, and Burundi are all signatories, yet all remain reluctant to comply "for fear of crippling local airlines."
The result? Intra-African air passengers account for just 2 percent of global air traffic, and airfares remain 40 to 60 percent higher than comparable European routes.

The Digital Turn: Monitoring Moves Online

A significant 2026 development is the push to digitize SAATM monitoring. The UN Economic Commission for Africa (ECA) is collaborating with the African Civil Aviation Commission (AFCAC) to create an online, accessible monitoring system for all member states.

Robert Lisinge, ECA Director for Technology and Infrastructure, emphasizes: "Effective monitoring of the Yamoussoukro Decision is the cornerstone of a transparent and unified aviation market. Realizing SAATM is not just an aviation goal, but a vital catalyst for the African Continental Free Trade Area."

In parallel, aviation experts from 19 countries across five African regional blocs have endorsed a model bilateral air services agreement, backed by €8 million in European Union funding. The model agreement aims to harmonize fragmented air service rules across COMESA, the East African Community, IGAD, the Indian Ocean Commission, and SADC.

Eswatini has emerged as an unexpected champion, hosting a high-level regional capacity-building workshop in late 2025 focused on accelerating SAATM operationalization.

Strategic Bilateralism: Commercial Reality Outruns Policy
While multilateral liberalization stalls, individual airlines and governments are forging their own paths through strategic partnerships.

In January 2026, Oman and Rwanda signed agreements to launch direct Oman Air flights between Muscat and Kigali. The twice-weekly service, beginning June 2026, is designed to "facilitate travel, support trade and tourism and strengthen connectivity between Oman and the African continent." The broader agreement extends to logistics, dry ports, data centers, and artificial intelligence—a model of integrated bilateral cooperation.

More significantly, Emirates and Air Peace expanded their bilateral interline agreement in January 2026. The deal allows Emirates passengers to connect to additional West African cities—Banjul, Dakar, Freetown, and Monrovia—via Air Peace's network. Air Peace gains access to Emirates' global network, including London Heathrow.

Adnan Kazim, Emirates' Deputy President, framed the partnership strategically: "Enhancing our interline partnership with Air Peace allows us to expand our footprint across more of Africa."
This is not a government-to-government air service agreement, but a commercial arrangement that achieves liberalization outcomes through partnership rather than policy—a pragmatic bypass of stalled multilateral processes.

The Cost of Inaction
The costs of continued fragmentation are increasingly clear. Dr Augusta Evans notes that many African airports operate at just 50 percent capacity despite high fares. SAATM implementation would require states to align airport charges, access, and ground handling to support liberalized markets.
For cargo operators, challenges are acute. Jade da Costa of Aero Africa observes that West Africa faces "high cargo handling fees—often exceeding US$100 per shipment versus US$30 in Europe—inadequate infrastructure even at key airports, and geopolitical instability."

Aero Africa's response—a neutral wholesale model with strategic hubs across the continent—demonstrates how logistics providers are building workarounds rather than waiting for policy reform.
The Path Forward: Three Scenarios

Three possible futures emerge:
Accelerated Multilateralism: If the digital monitoring system proves effective and the model BASA gains traction, a coalition of willing states could move forward with SAATM implementation, creating demonstration effects that pressure holdouts.
Strategic Bilateralism Dominates: Commercial partnerships like Emirates-Air Peace and bilateral state agreements like Oman-Rwanda continue to expand, achieving liberalization outcomes incrementally without awaiting continent-wide consensus. This path is already delivering results.

The Stalemate Persists: Protectionism continues, with individual states maintaining restrictive practices while paying lip service to liberalization. African aviation remains fragmented, uncompetitive, and dependent on non-African carriers.

Pragmatism Over Purity
The future of bilateral air service agreements in Africa will likely be shaped not by a single grand bargain, but by parallel tracks of varying ambition.

The Yamoussoukro Decision remains the normative framework, and progress on digital monitoring and model agreements provides reason for cautious optimism. But the most dynamic developments are happening at the commercial level—airlines and logistics providers building partnerships that achieve liberalization outcomes without waiting for governments to act.

Amos Akpan of Flight & Logistics Solutions offers a pointed observation: "The governments of member states will soon realise operators from other regions will keep taking advantage of their inability to grow their aviation."

The lesson is unambiguous: African aviation will integrate—through policy reform if possible, through commercial pragmatism if necessary. The carriers, airports, and logistics providers that recognize this reality will shape the continent's aviation future. Those that wait for perfect multilateral solutions will be left behind.

AVIATION AND AfCFTA

Is Air Transport Supporting Continental Trade?

The logic is straightforward: the African Continental Free Trade Area (AfCFTA), connecting 1.3 billion people across 55 countries with a combined GDP of $3.4 trillion, cannot succeed without efficient movement of goods and people. Yet air transport—the critical enabler for high-value, time-sensitive trade—remains fragmented, costly, and constrained.

Intra-African trade currently languishes at just 15 percent of total continental trade. Unlike Africa's extra-continental exports (80 percent raw materials), trade between African countries is 45 percent manufactured goods—precisely the type of cargo that benefits most from air transport.

Full AfCFTA implementation could add more than $450 billion to Africa's GDP by 2035. Intra-African trade reached $208 billion in 2024, a 7.7 percent year-on-year increase. But these gains depend on logistics infrastructure that keeps pace with ambition.

The SAATM Stalemate

At the heart of aviation's underperformance is the stalled implementation of the Single African Air Transport Market (SAATM). Launched in 2018, SAATM aims to liberalise air services, allowing airlines to operate freely across the continent.

Almost 40 African states have signed, representing over 80 percent of the aviation market.
Yet implementation remains "slow, uneven and incomplete." Protectionism persists—fear that open skies will undermine national carriers leads states to maintain restrictive bilateral agreements despite SAATM commitments.

The consequences are measurable: Intra-African air passengers account for just 2 percent of global air traffic. Airfares remain 40–60 percent higher than comparable European routes. IATA forecasts that without liberalisation, Africa's share of global aviation will remain at 2 percent for the next decade.
IATA estimates that liberalising just 12 key African countries could create 155,000 jobs and $1.3 billion in annual GDP. The cost of inaction accumulates daily.

Air Cargo: Critical Infrastructure or Revenue Source?

Nowhere is the tension between policy and practice more evident than in air cargo. A February 2026 policy brief argued that "air cargo is increasingly recognised as critical trade infrastructure, not a

subsidiary aviation function." Countries that succeed under AfCFTA will be those that "minimise logistics costs, ensure predictability and operate trusted, secure supply chains."

Yet Nigeria's recent experience illustrates the gap between vision and reality. When the Federal Airports Authority announced plans to increase air cargo handling charges, freight forwarders mounted strong opposition before a compromise was reached. The dispute revealed deeper systemic challenges: fragmented governance without a structured cargo economic framework, reactive stakeholder engagement, and cost increases without efficiency gains.

Under AfCFTA, excessive airport charges "effectively function as non-tariff barriers, discouraging trade flows and eroding price competitiveness." The risk is that Nigerian exports become uncompetitive against cargo routed through Addis Ababa, Nairobi, Kigali, or Johannesburg.

Innovative Partnerships: Blueprint for Progress

Despite these challenges, 2025–2026 has seen promising developments demonstrating what is possible when policy, partnership, and pragmatism align.

In May 2025, Nigeria launched its first intra-African air cargo corridor to East and Southern Africa in partnership with Uganda Airlines, facilitated by the United Nations Development Programme. The results are striking: freight rates reduced by up to 75 percent in some instances, scheduled flights offering guaranteed delivery timelines, dedicated logistics support for Nigerian exporters, and direct access to Nairobi, Entebbe, and Johannesburg.

The first shipment included exports from five MSMEs in cosmetics, agro-processing, and fashion. The UNDP described it as a "blueprint for rethinking trade logistics across Africa," demonstrating how public-private partnerships can "accelerate regional integration and drive real benefits for small businesses."

Alongside the air corridor, Nigeria launched the Nigeria-East/Southern Africa Market Intelligence Tool, equipping MSMEs with data on tariffs, trade flows, market trends, and entry requirements across 13 African countries. This dual approach—physical connectivity paired with digital intelligence—addresses both logistics and information barriers that have long constrained intra-African trade.

The Path Forward

Several actions are needed to align aviation with AfCFTA objectives:
Policy alignment: Elevate air cargo to a national trade policy priority; institutionalise permanent cargo policy frameworks with stakeholder representation; align aviation charges with trade objectives.

Regulatory harmonisation: Divergent legal systems across member states complicate SAATM implementation. One solution: distribute "ready-to-adopt model regulatory texts" to fast-track domestic changes. Harmonise regulations first at regional economic community level, with common punitive measures for non-compliance.

Digital integration: Customs authorities must be able to share information, clear goods efficiently and reduce non-tariff barriers. Customs systems must "talk to each other"—without that, cross-border movement remains slow, unpredictable and costly.
Political will: Ultimately, SAATM's future is "more a political than a legal question." African Union states must "co-ordinate and lobby each other to see that SAATM is fully implemented." The world "is not going to wait for Africa to catch up."

President Bola Tinubu captured the urgency: "The global economy will not wait for West Africa to get its act together."
Mixed Verdict, Clear Direction
Is air transport supporting AfCFTA? The evidence points to a mixed verdict. The SAATM stalemate persists, cargo tariffs remain contentious, and African travellers still transit through Europe to reach neighbouring capitals.

Yet innovative partnerships are delivering results. The Nigeria-Uganda Airlines corridor demonstrates that practical solutions can bypass policy paralysis, reducing costs by up to 75 percent and connecting businesses to new markets. Digital trade tools are empowering MSMEs with market intelligence previously available only to large corporations.

The path forward requires simultaneous action: implementing SAATM with renewed political commitment, aligning aviation policy with trade objectives, harmonising regulations, and scaling the partnerships that work. Decisions taken today will determine whether Africa emerges as a leading air cargo hub—or cedes that advantage to competing economies.

The potential is undeniable. Realising it requires moving from declarations to delivery—and treating air transport not as a revenue source, but as the strategic infrastructure AfCFTA demands.

eVTOL Certification Countdown

Where Do We Stand?

Gatwiri Edna

The regulatory architecture is complete, the first certificates are issued, and revenue flights are scheduled. The era of speculation is over. Welcome to the execution phase.
For half a decade, the eVTOL industry has operated on "certification countdown" logic—the assumption that commercialization would begin when regulators finally completed their frameworks and issued the first certificates.

This is no longer a speculative race of PowerPoint concepts and venture capital hype. It is a certification shootout defined by regulatory completion, production readiness, and the widening gulf between a handful of legitimate contenders and a trailing pack facing consolidation or extinction.

The Regulatory Architecture: Complete
The most significant development of the past eighteen months is not any single aircraft milestone—it is the completion of the regulatory skeleton across all major markets.

United States: The FAA's Special Federal Aviation Regulation No. 120 for powered-lift aircraft is now in force, providing the definitive certification basis for commercial eVTOL air taxis. Concurrently, the MOSAIC ruling has created a separate, faster pathway for personal eVTOLs under light sport rules. The eVTOL Integration Pilot Program (eIPP), mandated by executive order, will finalize participant selection in March 2026, permitting revenue operations using pre-certified aircraft in controlled environments.

Europe: EASA has moved ahead with complete certainty. Its SC-VTOL framework is now in its third iteration, with all associated Means of Compliance finalized. European manufacturers operate with full regulatory clarity.

China: The CAAC has already issued full type, production, and airworthiness certificates to EHang and AutoFlight. EHang has commenced commercial passenger flights. China has moved from certification to revenue operations while Western regulators still deliberate final approval timelines.

Regulatory verdict: The rulebooks are written. The question is no longer "how will

this be regulated?" but "who can demonstrate compliance first?"

The Certification Race: Tiered and Decisive

Joby Aviation maintains the strongest position among FAA applicants. Its S4 aircraft has completed airworthiness criteria review with no design changes required. The company is now producing conforming aircraft for Type Inspection Authorization—the final certification phase where FAA pilots execute for-credit flight evaluations. Five S4 aircraft are allocated to TIA testing during 2026, with production capacity expanding to 24 aircraft annually at its Marina, California facility.

Archer Aviation follows closely. Its Midnight aircraft has received airworthiness criteria and is progressing through certification. Archer's differentiation strategy is city-first: it has submitted multiple eIPP applications with municipalities across California, Texas, Florida, Georgia, and New York. Its partnership with United Airlines provides credible launch routes and pre-order validation.

Beta Technologies has accumulated more real-world flight experience than either competitor, surpassing 100,000 nautical miles across its Alia CTOL fleet, including operations into JFK and Atlanta Hartsfield. Its strategy is sequential: cargo operations beginning 2026, passenger VTOL operations approximately one year later.

Lilium holds dual FAA and EASA certification bases, conferring genuine multi-market optionality. Eve Air Mobility has publicly deferred commercial launch from 2026 to 2028—a realistic recalibration backed by Embraer's aerospace discipline.

The Personal eVTOL Market: MOSAIC's First Beneficiaries
The MOSAIC ruling has created an entirely new market category. Personal eVTOLs certified under LSA rules bypass the multi-year, multi-million-dollar type certification process required for commercial air taxis.

AIR (Israel) has secured its FAA experimental certificate; the Air One two-seater targets first LSA certification. Pivotal (USA) is delivering Helix aircraft under Part 103 ultralight rules—no pilot license required. Jetson (Sweden/Poland/Italy) delivered its first Jetson One in October 2025 and is sold out through 2028. Zero Gravity's RX1E series, already certified as electric light sport aircraft, has accumulated thousands of firm orders across 16 Chinese provinces and international markets including Brazil, Africa, and Southeast Asia.

Market significance: This tier generates immediate revenue and real-world operating data while commercial air taxi contenders remain in certification limbo.

Infrastructure: The New Competitive Battleground

The critical insight for 2026 is that aircraft certification is no longer the binding constraint. Vertiport access and airspace integration now constitute the true competitive chokepoint.

Dubai has completed vertiport construction at Dubai International Airport and key business districts, with Q1 2026 commissioning scheduled for Joby's launch network. São Paulo is advancing comparable infrastructure for Eve's 2027 target.

Strategic reality: The companies controlling vertiport real estate—particularly in core urban locations and major airport corridors—will possess durable competitive advantages regardless of which aircraft OEMs ultimately succeed.

Market Stratification: The Divergence Accelerates

The most significant structural development of 2025–2026 is the visible stratification of the eVTOL industry into distinct tiers.
Tier 1: Joby, Archer, Beta, Lilium, EHang, AutoFlight. Demonstrated TIA readiness, conforming aircraft production, major partnerships, adequate capital. Commercial operations 2026–2028.
Tier 2: AIR, Pivotal, Jetson, Zero Gravity. Immediate revenue, simplified certification, recreational focus. Profitability within 2–3 years.

Tier 3: Eve, Wisk, numerous unlisted startups. Credible technology, incomplete certification, capital dependent. 2028–2030 commercial entry, consolidation candidates.
Tier 4: The walking dead. Depleted capital, no clear certification pathway, no differentiated technology. Insolvency or fire-sale acquisitions imminent.
Industry consolidation is not coming—it is already underway.

The Countdown Is Over

The defining question for 2026 is no longer "when will this happen?" It is "who will actually deliver?"
Joby Aviation holds the strongest hand in the U.S. commercial market—superior manufacturing readiness, deepest strategic partnerships, and the most advanced certification position.

AIR, Pivotal, Jetson, and Zero Gravity are demonstrating that immediate, profitable eVTOL commerce is possible today—not in 2028 or 2030—when pursued through appropriate regulatory pathways.

The industry narrative must now shift from certification to execution. The next twelve months will determine not merely which companies are first to market, but which ones possess the operational discipline, manufacturing capability, and capital endurance to survive the transition from pioneering demonstration to sustainable commerce.
The starting gun has fired. The race is now run on real runways, against real schedules, for real revenue. There is no further room for delay—and no remaining excuses for those who fail to deliver.

Five Technologies to Watch in 2026

Concise Profiles of Near-Term Innovations Reshaping Aviation

Nyawade Wendy Cella

The aviation industry's technology landscape in 2026 is defined not by distant futures, but by near-term deployable solutions. These five technologies have moved beyond laboratory concepts and pilot programs—they are entering operational service, attracting serious investment, and delivering measurable impact. Here is where they stand today.

1. Biomimetic Winglets: Nature's Efficiency Edge

Morphing, adaptive wingtip devices inspired by eagle feathers that automatically adjust to flight conditions—deploying during takeoff and landing for maximum lift, retracting at cruise to reduce drag, and continuously micro-adjusting to dissipate wingtip vortices in real time.

2026 Status:
Airbus has flight-tested biomimetic "feather" technology on its eXtra Performance Wing demonstrator, achieving 6.5% fuel burn reduction beyond conventional winglets. Multiple retrofit solutions are now certified for regional aircraft.

Impact:
Immediate, certifiable efficiency gains with payback periods under three years. Effectively extends economic life of current fleets while reducing carbon intensity.
Outlook: Widespread retrofit by 2027–2028; standard on next-generation narrowbodies by 2030.

2. AI-Powered Air Traffic Flow Management

Machine learning algorithms that ingest real-time weather, aircraft performance data, airspace restrictions, and airline scheduling priorities to predict congestion hours in advance and proactively re-route traffic. Replaces deterministic, sector-based logic with probabilistic, trajectory-based optimization.

2026 Status:
FAA's Collaborative Trajectory Options Program enhanced with AI decision-support tools operational at multiple Air Route Traffic Control Centers. Eurocontrol's AI for ATFM initiative demonstrating 12-15% reductions in airborne holding during peak periods.
Impact:

No capital expenditure required from airlines—only regulatory adoption. Delivers reduced fuel burn, lower emissions, and improved schedule reliability where deployed.
Outlook: Incremental expansion across North America and Europe 2026–2028; emerging markets constrained by radar infrastructure and ATC modernization budgets.

3. Direct Air Capture Partnerships for SAF

Rather than sourcing carbon from biomass, Direct Air Capture extracts CO_2 directly from ambient air, combining it with green hydrogen to produce synthetic e-fuels chemically identical to Jet A-1. Addresses the irreducible constraint of feedstock availability facing traditional SAF pathways.

2026 Status:
First commercial offtake agreements linking airlines directly with DAC developers.

United, Air Canada, and IAG have signed long-term purchase agreements at $600–$1,000 per tonne—approximately 3–5 times current conventional fuel costs.

Impact:
Not yet a scalable solution—global DAC capacity remains negligible. However, these partnerships provide capital certainty for DAC developers and establish price discovery for the 2035–2050 compliance market.

Outlook: Negligible volumetric contribution through 2030; essential enabling infrastructure for post-2035 net-zero compliance. First commercial e-fuel plants expected online 2028–2030.

4. Next-Generation Pilot Heads-Up Displays

Native-integrated, augmented reality platforms—not isolated projection units. Current systems overlay synthetic vision, taxi guidance, approach path graphics, traffic alerts, and terrain warnings directly onto the pilot's forward field of view, with eye-tracking ensuring correct symbology alignment.

2026 Status:
Collins Aerospace's MOSAIC selected for multiple upcoming narrowbody programs. Elbit Systems' ClearVision has accumulated over 10,000 operational hours with launch carriers. Per-aircraft pricing now below $500,000 for forward-fit installations—a critical threshold for narrowbody economic viability.

Impact:
Safety: enhanced situational awareness reduces approach and landing accidents. Efficiency: lower landing minima reduce diversion rates, each costing $50,000–$150,000 per event. Payback measured in months for carriers operating into fog-prone or infrastructure-constrained airports.

Outlook: Standard equipment on all new narrowbody deliveries by 2028–2030; retrofit market constrained by installation downtime and legacy cockpit integration complexity.

5. Biometric Seamless Travel: Curb to Gate

A single facial scan at airport entry creates a secure token propagated through check-in, baggage drop, security, lounge access, and boarding. The passenger never stops walking. Eliminates the paper document checkpoint entirely.
2026 Status:

Delta's parallel boarding at Atlanta and Detroit processes over 30% of domestic passengers through biometric gates. British Airways implemented biometric boarding on all US-originating flights. Emirates extended biometric pathfinding from Dubai to its global network. IATA's One ID standard provides the interoperability framework.

Impact:
Boarding time reduced by 25–35%, directly improving aircraft utilization. Reduced dwell time translates to smaller terminal footprints or increased effective capacity without expansion. Passenger experience dramatically improved; privacy concerns remain regarding centralized biometric databases.
Outlook: Standard at major global hubs by 2028; secondary airports and developing regions lag due to infrastructure investment requirements. The technology is proven; constraint is now political and financial, not technical.

The Near Future Is Already Here

The defining characteristic of these five technologies is that none require fundamental scientific breakthrough. Every one of them is technically mature, operationally validated, and commercially available. Their collective impact on aviation by 2030 will be profound:

- 2–4% fuel efficiency gains from biomimetics and optimized trajectories
- 25–35% faster aircraft turns through biometric processing
- Reduced diversion rates from enhanced landing capability
- Established infrastructure for post-2035 synthetic fuel compliance

The gap between technical capability and operational implementation varies by technology, but the direction of travel is unambiguous. Airlines that wait for perfect solutions will compete against carriers already deploying imperfect ones. In 2026 aviation technology, done is better than perfect.
The future is not arriving in 2030 or 2035. It is boarding now, through biometric gates, beneath morphing winglets, into cockpits where augmented reality overlays the runway, guided by algorithms predicting congestion before it forms, powered by fuel whose carbon was pulled from yesterday's air.

Summary: The 2026 Technology Landscape

Technology	Maturity	Adoption Driver	Primary Constraint
Biomimetic Winglets	Flight-provenF	uel cost, emissions	Retrofit slots
AI-Powered ATFM	Deployed regionally	Regulatory adoption	Institutional resistance
DAC-SAF Partnerships	Early commercial	Long-term compliance	Cost, infrastructure
Next-Gen HUDs	Forward-fit readyS	afety, diversion reduction	Retrofit economics
Biometric Travel	Proven, scaling	Operational efficiency	Data sovereignty

The New Normal:

Managing Extreme Weather Dispatch

Waithaka Eddah

The aviation industry faces a fundamental shift in how it approaches weather. Climate change is no longer a future concern—it is an operational reality. Clear-air turbulence over the North Atlantic has increased by 55% in the past four decades. Winter storms now paralyze major hubs with catastrophic ice accumulation.

Extreme heat, flooding, and unpredictable weather patterns are forcing a complete rethinking of dispatch procedures, cockpit tools, and operational protocols.
The Growing Threat

A landmark 2023 study confirmed that severe clear-air turbulence has increased by 55% over the North Atlantic since satellite observations began. The FAA reports that turbulence accounts for more than a third of all major airline accidents, costing the industry hundreds of millions annually in injury claims, delays, and aircraft repairs.

Clear-air turbulence presents a unique danger because it is invisible. It occurs in cloudless skies, far from jet streams or storms, and gives flight crews no time to react. Traditional turbulence management relies on delayed, subjective pilot reports—but by the time a report is relayed, conditions may have already changed.

The threat is not confined to cruising altitudes. January 2026 saw a massive winter storm paralyze the US aviation network, with over 10,000 flights cancelled and 213 million people under winter weather warnings. IATA's 2026 risk assessment identifies climate disruption as one of the five forces of change reshaping aviation: extreme heat, snowstorms, flooding, and turbulence are no longer exceptions—they are operational variables.

New Tools for Dispatch and Flight Operations

NASA's Transported Turbulence Product addresses a specific gap: clear-air turbulence events that occur far from jet streams or storms. The system allows dispatchers to warn pilots hours before entering high-probability areas, and is designed for integration with Electronic Flight Bag equipment now permitted by FAA regulations.

The UK Met Office's MAVIS platform consolidates diverse weather services into a single, user-friendly interface. Now in public beta, MAVIS provides essential meteorological data including METARs, TAFs, and interactive weather charts, processed through cloud-based supercomputing infrastructure. It was developed through extensive collaboration with the aviation community—from offshore helicopter operators to major international airports.

For airport operators, DTN's MetConsole integrates with Automated Weather Observing Systems, Digital ATIS, Runway Visual Range monitoring, and wind shear detection systems, ensuring ground operators share the same real-time intelligence as dispatchers and pilots.

Cockpit Solutions and Real-Time Alerting

The Weather Company has developed Maverick WXAlert, a system designed to shift turbulence management from reactive reporting to proactive avoidance. It delivers real-time moderate-or-higher turbulence updates directly to the cockpit via ACARS—even when in-flight connectivity is limited.

A critical innovation is the shift from subjective turbulence reports to objective Eddy Dissipation Rate (EDR) data. EDR provides a standardized, aircraft-independent measure of turbulence intensity. As Ravi Vanmali of The Weather Company explains: "It's not what a pilot felt—it's what the atmosphere is doing right now."

The system shares alerts to both dispatchers and pilots the moment a flight is forecast to encounter an enroute weather hazard, enabling tactical enroute decision-making and guidance on optimal diversion alternates.

Enhanced Training and Regulatory Frameworks

The regulatory foundation for extreme weather dispatch is codified in 14 CFR 121.422, specifying initial and transition

ground training requirements for aircraft dispatchers. Key elements include meteorology interpretation, weather information sources, Dispatcher Resource Management training emphasizing joint dispatcher-pilot responsibilities, and emergency procedures.

For specialized operations, 49 USC 44730 establishes enhanced requirements for helicopter air ambulance operations, including performance-based flight dispatch procedures, flight risk evaluation programs with formal checklists for pilots, and safety-enhancing technology requirements.

University aviation programs are adapting to the new reality. Southern Utah University's PILT 3850 course introduces students to "the effects of weather, air traffic control, aircraft scheduling, crew scheduling, and aircraft maintenance on fleet logistics," with assignments focusing on "effective and ethical decision making."

Building a Connected Weather Ecosystem

The most significant development is not any single technology—it is the integration of these tools into a seamless operational ecosystem. Real-time, crowdsourced turbulence data becomes exponentially more powerful when integrated across the entire workflow.

The connected ecosystem ensures that dispatchers, pilots, and operations centers share the same real-time intelligence. Dispatchers use integrated platforms to monitor developing weather and proactively reroute flights. Pilots receive real-time alerts via ACARS, even over oceanic areas with limited connectivity. Operations centers have synchronized views of fleet status, enabling coordinated decision-making.

This shared awareness enables what IATA identifies as essential for 2026 survival: "situational awareness, scenario planning, resilient systems, and disciplined execution."

The Path Forward

The aviation industry has entered a new operational reality. Climate change has made extreme weather and severe turbulence more frequent, more intense, and less predictable. The response is not to retreat but to adapt—through better tools, enhanced training, and integrated systems.

NASA's Transported Turbulence Product addresses the invisible threat of clear-air turbulence with hours of warning time. The Met Office's MAVIS platform consolidates weather intelligence into a single, accessible interface. The Weather Company's Maverick WXAlert delivers real-time turbulence data directly to cockpits via ACARS. And regulatory frameworks ensure that dispatchers and pilots have the training and protocols to use these tools effectively.

The winners of 2026, as IATA predicts, "won't be the biggest airlines. They'll be the ones with situational awareness, scenario planning, resilient systems, and disciplined execution."

In the new normal of extreme weather dispatch, resilience is not a competitive advantage—it is a condition for survival.

THE "PHANTOM PILOT" CRISIS:

How AI is Filling the Simulator Gap

The global aviation industry faces a paradoxical crisis: record fleet expansion alongside acute workforce shortages. The Middle East alone requires 10,300 new pilots by 2030, yet a catastrophic lack of instructors and training organisations has forced regulators to embrace AI-driven solutions. Western militaries face 17–20% personnel shortfalls, accelerating the adoption of virtual tutors and immersive digital environments.

This is the "phantom pilot" crisis—and its solution is not more humans, but the artificial intelligence now embedded in every phase of pilot training.

The Adaptive Simulator: When the Trainer Reads Your Mind
The Royal Netherlands Air Force is testing AI-powered simulators that adapt training in real time by monitoring pilots' cognitive workload through brain-computer interfaces. Electrodes on the scalp measure electrical brain signals as trainee pilots fly virtual reality missions.

An AI model analyzes brain activity to estimate mental workload. If the pilot is overwhelmed, the next mission becomes easier. If workload is low, difficulty increases by manipulating visibility, fog, and horizon cues. Pilots are unaware the system is adjusting—missions simply feel different.

Early results reveal a critical paradox: ten of fifteen trainee pilots preferred the adaptive system, describing it as more realistic. However, the system did not improve actual flying performance. The AI struggled to interpret brain signals accurately for six pilots, and workload categorization may not capture subtle differences between visual strain, decision-making pressure, and spatial disorientation.

The promise remains compelling: training that responds to cognitive state could optimise learning curves. But translating brain activity into effective pedagogical intervention remains technically immature.

The AI Copilot Instructor: Synthetic Teachers in Every Headset
The most commercially mature AI tools have emerged from civilian flight training. Sporty's Pilot Shop's 2026 Learn to Fly Course introduces an Aviation Intelligence$_2$ suite built on a vetted, aviation-specific AI engine developed by flight instructors.

ChatCFI provides a 24/7 virtual Certified Flight Instructor assistant, delivering instant, accurate answers with direct links to learning materials and FAA handbooks. ChatDPE simulates a Designated Pilot Examiner oral exam, enabling interactive checkride preparation. ChatFAR interprets Federal Aviation Regulations in plain English through real-world scenarios.

Students can upload FAA Knowledge Test results to generate custom study guides. Every missed code is decoded, revealing which topics need review and linking directly to lessons and references.

CAE is integrating AI-powered virtual tutors into military training programs, leveraging vast simulator data to enable self-paced instruction that adapts to individual learning curves. Quantum3D demonstrated an AI-powered adaptive learning platform at I/ITSEC 2025, integrated with high-fidelity simulators.

Why this matters: Unlike generic chatbots, these engines are "tested, vetted, and trusted by professional flight instructors." They don't just answer questions—they "teach you how to think like a pilot."

Synthetic Training Environments: Learning Without Aircraft

The Middle East has become the world's leading test bed for immersive training, driven by the region's 9.3% net profit margins and urgent workforce requirements. Emirates has deployed VR for training 23,000 cabin crew members. AR tools have achieved a 30% reduction in aircraft gate downtime through digital sign-off and maintenance efficiency gains.

The results are striking: 76% improvement in learning outcomes and 38% reduction in maintenance task completion times through immersive AI, VR, and AR tools.
Western militaries facing personnel shortfalls are outsourcing to industry for high-fidelity simulations. Devices like Apple Vision Pro may soon enable fully immersive standalone training, democratising access beyond expensive dedicated simulators.

The Data-Centric Pilot: From Licences to Digital Profiles

GCC government regulators have digitised aviation through platforms like Saudi Arabia's Ajwaa and the UAE's GCAA E-Licensing System. The commercial value of professional development has moved from the physical licence to the "data-profile" —a pilot's digital training metadata is now more valuable than the certificate itself. The IATA Training Passport is increasingly utilised by Gulf carriers to provide portable, verified records of technical expertise recognised by hundreds of airlines worldwide.

Free resources are democratising access: Embry-Riddle MOOCs, FAA Safety Team webinars, King Schools free courses, and Saudi's FutureX sovereign portal all offer professional-level skills at no cost.
The Synthetic Data Frontier

A parallel development is the emergence of the World Model Trainer—a new profession building synthetic training data for AI systems. These specialists generate data using Unreal Engine 5 and Unity to simulate scenarios, correcting "physical hallucinations" where AI-generated content violates physical laws.

As AI systems increasingly support pilot training, they must understand aerodynamics, weather effects, and emergency dynamics. The quality of training AI depends directly on the quality of synthetic data used to train it.

Challenges and Constraints

The Dutch research reveals a critical challenge: trainee preference does not equal improved performance. The AI's inability to accurately interpret brain signals for all subjects highlights the gap between technological capability and pedagogical effectiveness.

The catastrophic lack of instructors that drove AI adoption remains unaddressed. AI tools supplement human instructors but cannot yet replace them—particularly for nuanced, judgment-based instruction. While GCC regulators have embraced digital credentialing, global interoperability requires harmonised standards. And a critical translation gap remains: there is a lack of AI-driven technical translation tools to support nationalisation goals in non-native English-speaking markets.

The 2026 Outlook

What's here now: AI copilot instructors are commercially available and improving efficiency. Digital credentialing platforms are mandatory in the GCC. VR/AR training delivers measurable gains—30% reduced gate downtime, 38% faster maintenance.
What's coming: Neuroergonomic monitoring (EEG, heart rate variability, eye-tracking) will move from labs to operational training. Headset-based immersive training may democratise access. IATA Training Passport adoption will expand.

What's still distant: Brain-reading cockpits that detect pilot stress remain experimental. Fully autonomous training without human oversight is not imminent.

The "Phantom" Pilot

The "phantom pilot" crisis has a paradoxical solution: the phantom is not a missing human, but the artificial intelligence now embedded in every phase of training. AI is not replacing instructors—it is scaling them. ChatCFI provides 24/7 guidance that supplements human expertise. CAE's virtual tutors handle routine instruction, freeing humans for advanced mentoring.

Data is the new licence. A pilot's training metadata—simulator performance, knowledge test results, adaptive learning paths—is now their primary career asset. The carriers, militaries, and training organisations that master AI-driven instruction will produce better pilots faster. Those that wait for perfect solutions will compete against institutions already deploying imperfect ones.
In the new normal of aviation training, the phantom pilot is not missing—it is artificial, adaptive, and always learning.

After Mega-Orders:

Who Orders Next in Asia?

Vietnam, the Philippines, and Central Asia emerge as the next battlegrounds in the Airbus-Boeing duopoly—with COMAC now a credible third force.

The 2023–2025 period witnessed an unprecedented avalanche of aircraft orders from Indian and Southeast Asian carriers. IndiGo's 500 Airbus A320 family aircraft, Air India's 470-plane dual-manufacturer mega-deal, and Akasa Air's Boeing 737 MAX commitments fundamentally reshaped the region's capacity landscape.

But the question now is not who has ordered. It is who orders next.

Vietnam, the Philippines, and Central Asia represent the next wave of fleet renewal—with profound implications for Airbus, Boeing, and emerging Chinese competitor COMAC.

Vietnam: The $3.7 Billion Decision

Vietnam Airlines has received government approval to acquire 50 narrow-body aircraft at an estimated cost of $3.7 billion. The airline is open to both Airbus A320neo and Boeing 737 MAX, with deliveries timed to phase out older A321 CEO planes.

The Boeing advantage: Vietnam Airlines signed a preliminary agreement with Boeing in 2023 for 50 737 MAX aircraft, with deliveries expected between 2027 and 2030. This incumbency position gives Boeing a clear edge.

The Airbus counter: The airline has left the door open to Airbus, pending delivery slot availability. Given Airbus's sold-out position through the rest of the decade, this is a significant constraint.

The COMAC wildcard: Vietnam Airlines CEO Le Hong Ha has confirmed the bidding process requires openness to all manufacturers, including COMAC. While COMAC has not yet secured a major airline customer outside China, its C919 presents

a credible alternative if delivery slots with Western manufacturers remain constrained.

Outlook: Vietnam Airlines' order is likely to split—with Boeing securing a significant portion of the 50-aircraft requirement, and Airbus potentially capturing follow-on orders for post-2030 delivery.

The Philippines: Two-Track Renewal

Philippine Airlines: Widebody Decision Made
Philippine Airlines took delivery of its first Airbus A350-1000 in January 2026, becoming the first Southeast Asian carrier to operate the long-range variant. The order for eight aircraft—with five delivered in 2026 and three in 2027—will serve transpacific routes to the US mainland and Canada.

Strategic significance: PAL's choice of the A350-1000 over the Boeing 777X represents a significant Airbus victory. The aircraft's 25% fuel consumption reduction and SAF compatibility aligned with the carrier's sustainability objectives. With widebody needs addressed through 2027, Boeing's opportunity in the Philippines now rests with Cebu Pacific.

Cebu Pacific: The Ongoing Narrowbody Pipeline

The Philippines' largest low-cost carrier has budgeted approximately $520 million for 2026 fleet modernisation, expecting seven new aircraft—two wide-body and five narrow-body.
The COMAC factor: Cebu Pacific has explicitly expressed openness to COMAC. CEO Mike Szucs told the BBC that "by the 2030s, we see that [COMAC] will be an attractive offering for us and other airlines." This positions Cebu Pacific as a potential launch customer for COMAC in the Philippines if certification and support infrastructure mature.

Outlook: Near-term narrowbody requirements will be met through Cebu Pacific's existing Airbus backlog. However, future orders beyond the current delivery pipeline could see manufacturer diversification—particularly if COMAC achieves European certification (expected 2028–2031).

Central Asia: The Emerging Frontier

Central Asia represents one of the fastest-growing aviation regions globally, and fleet renewal is now underway.
Asman Airlines, Kyrgyzstan's national carrier, has announced plans to introduce Airbus A321 aircraft by the end of 2026. The aircraft will serve longer regional routes to Russia, Kazakhstan, Uzbekistan, and Turkey, supporting tourism development and moving beyond aging Soviet-era equipment.

Why Airbus won: The A321's fuel efficiency and range capabilities make it ideal for Central Asian geography. Airbus's incumbency in neighbouring markets—Air Astana operates an all-Airbus fleet—creates support network advantages.

Outlook: Asman's A321 acquisition is likely the first phase of broader Central Asian fleet renewal. Kazakhstan's Air Astana has signalled interest in further expansion, and Uzbekistan Airways operates a mixed fleet requiring eventual replacement.

The COMAC Factor: Disruption Delayed but Inevitable
COMAC has emerged as a credible third force. Over 200 C909 and C919 jets have been delivered, with approximately one quarter operated by airlines in Laos, Vietnam, Brunei, and Cambodia. Transnusa in Indonesia operates ARJ21-700 aircraft on domestic and international routes.

The value proposition: Industry leaders increasingly welcome COMAC's entry. Subhas Menon of AAPA noted: "We have been waiting for this for a long time. COMAC is a welcome new entrant. We need more suppliers in the Asia Pacific region."

The constraints: COMAC faces significant hurdles—mature support infrastructure lags Boeing and Airbus; decades of Western training systems create switching costs; and component integration presents technical challenges. Of the claimed 1,000+ C919 orders, only a dozen have been delivered to date. European certification may take until 2028–2031; US certification has no active timeline.

The Competitive Implications

IATA Director General Willie Walsh captured the industry's frustration: "The gap between ordering and receiving aircraft is around seven years." This delivery bottleneck fundamentally shapes the next wave of orders.
For Boeing: Success in Vietnam and continued partnership with Cebu Pacific are essential to counterbalancing Airbus's dominance in India and its widebody victory with Philippine Airlines.

THE UNSUNG HUBS: Three Gateways Reshaping Global Connectivity

The world's great aviation hubs are not merely infrastructure projects—they are national strategies rendered in concrete and steel. While London Heathrow and Dubai International dominate headlines, a trio of critical gateways is quietly reshaping the global network. Each represents a different model of aviation ambition: Qatar's precision-engineered luxury hub, Nigeria's essential gateway rebuilding for the future, and Turkey's geographic juggernaut closing in on European supremacy.

Hamad International Airport: The Precision Hub When Hamad International Airport unveiled its final expansion phase in early 2025, it marked the culmination of a transformational journey. With the opening of Concourses D and E, Doha now operates five concourses spanning 845,000 square meters—a 14% increase in terminal space—boosting annual passenger capacity to 65 million.

The expansion delivers tangible operational metrics: 17 new contact gates (a 40% increase), 102,000 square meters of additional concourse space, and 350,000 bus journeys avoided annually as passengers now walk directly to aircraft.

But the numbers tell only part of the story. Qatar's aviation strategy rests on a distinctive premise: the airport itself must be a destination. The centerpiece is the ORCHARD, a 6,000-square-meter indoor tropical garden that redefines the transit experience with serene ambiance and natural light.

Remarkably, the expansion was delivered ahead of schedule while many global airport expansions faced delays. This execution discipline reflects Qatar's broader

> *Beyond the headline-grabbing mega-hubs, a new class of airports is redefining what it means to be a global connector. From Doha's completed expansion to Lagos's essential rebuild and Istanbul's meteoric rise, these gateways tell the story of aviation's shifting center of gravity.*

approach: precision over speed, quality over volume.

Strategic role: Hamad is not merely a transfer point—it is the physical manifestation of Qatar's "small country, global reach" doctrine, where every passenger interaction reinforces the brand's premium positioning.

Istanbul Airport: The Geographic Juggernaut
If Hamad represents precision engineering, Istanbul Airport embodies geographic destiny. Opened in 2018, it has surged from new entrant to near the top of European rankings with breathtaking speed.

ACI Europe's 2025 traffic report reveals a photo finish: Istanbul Airport recorded 84.44 million passengers (+5.5% growth) against London Heathrow's 84.48 million (+0.7%). The difference was just 40,000 passengers—a statistical tie. Istanbul's growth rate dramatically outpaces Heathrow's, and industry observers expect the overtaking to be permanent within months.

Istanbul's rise is not accidental. Turkey has positioned itself as the essential bridge between Europe and Asia, but its advantage runs deeper. As Western sanctions limit Russian aviation connectivity, Istanbul has become the primary hub for flights between Russia and the rest of the world.

Istanbul Airport is not resting on geographic laurels. The 2026 passenger target is nearly 90 million. The airport surpassed 2 million cargo tons in 2025, claiming Europe's top cargo position from Frankfurt. A fourth main runway is scheduled for completion by August 2026, with terminal expansion plans for 120 million annual passengers.

Strategic role: Istanbul is the convergence point—where Europe meets Asia, where geopolitics meets geography. Its cargo dominance adds a logistics dimension that pure passenger hubs cannot match.

Murtala Muhammed International Airport: The Essential Gateway
While Doha and Istanbul compete for global transit passengers, Lagos plays a different but equally vital role: Africa's most important single-country gateway. Terminal One has operated for over 48 years with no comprehensive rehabilitation—not neglect, but the reality of critical national infrastructure in a challenging environment.

Rather than shutting down international operations, FAAN has developed an 8,000-square-meter temporary departure terminal now over 90% complete. It will handle 1,500 departing passengers during peak periods, serving five to six airlines with full check-in counters, security screening, and three boarding gates.

The rehabilitation follows a phased approach: full reconstruction of Terminal One, followed by expansion of Terminal Two to increase passenger handling capacity.

While physical infrastructure progresses, FAAN has achieved something arguably more significant: ISO 9001:2015 and ISO 14001:2015 certifications, confirming that operational and environmental management systems meet globally recognized standards. Lagos is not competing for transit passengers.

Its role is more fundamental: it is Nigeria's primary interface with the global aviation system. With Africa's largest population and biggest economy, Nigeria generates traffic that cannot be ignored. Every airline serving West Africa needs Lagos access.

Strategic role: Lagos is the essential gateway—not optional, not replaceable. Its rehabilitation is not about competing with Dubai or Doha; it is about maintaining Nigeria's connection to the world.

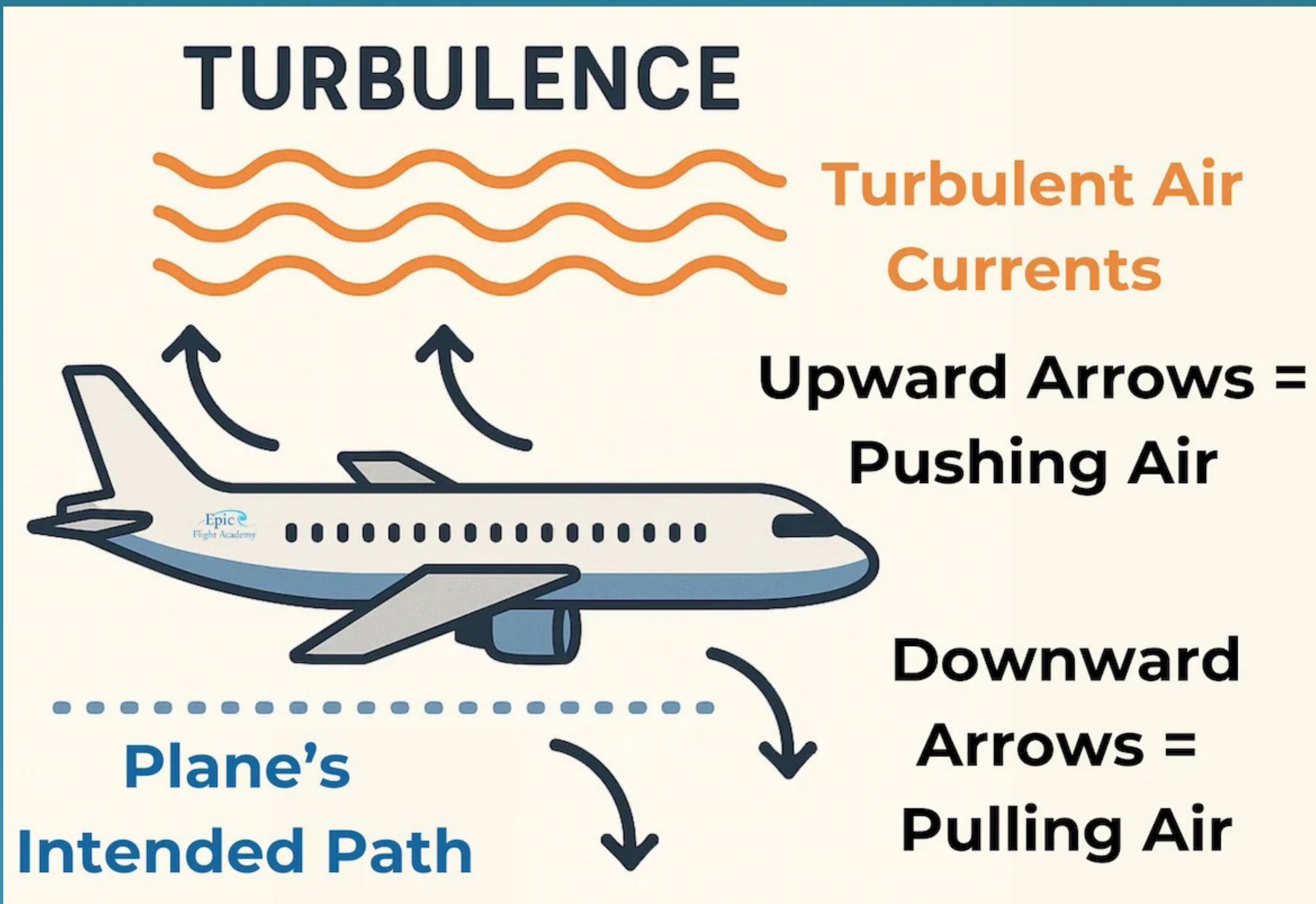
The Unsung Truth
These three airports are "unsung" for different reasons. Hamad's precision is overshadowed by Dubai's scale. Istanbul's meteoric rise is still digested as "catching up" rather than "arriving." Lagos's essential work happens out of sight of global transit passengers.

Yet each plays a critical role in the global network. Hamad demonstrates that quality can compete with quantity. Istanbul reveals that geography still matters—and its cargo leadership adds a dimension pure passenger hubs cannot replicate. Lagos proves that essential infrastructure requires different metrics: success measured not in transit passengers or retail revenue, but in whether Nigeria remains connected to the world while its primary gateway rebuilds.

The unsung hubs are not overlooked because they are unimportant. They are overlooked because their importance is so fundamental it is taken for granted—until something goes wrong. As 2026 unfolds, all three deserve attention not as also-rans, but as critical nodes in the complex network that keeps the world flying.

WHY PLANE TURBULENCE IS BECOMING MORE FREQUENT AND SEVERE

Taremwa Spencer Agabus



Passengers and crew are experiencing more frequent and severe turbulence than ever before. The science points squarely to global warming as the driving force behind a growing aviation safety and operational challenge.

For frequent flyers, the occasional jolt of turbulence has always been part of the journey. But data now reveals a troubling trend: those bumps are becoming more common, more powerful, and more dangerous. Mounting scientific evidence indicates that human-induced climate change is the primary catalyst, fundamentally altering the atmospheric conditions that aircraft navigate and posing new risks for the global aviation industry.

The Data: A Clear Signal in a Chaotic Sky

The statistics paint a stark picture of accelerating atmospheric instability. Research analyzing four decades of atmospheric data over the North Atlantic—one of the world's busiest flight corridors—reveals a 55% increase in severe turbulence since satellite observations began.

This rise encompasses two distinct but increasingly problematic types:

- Convective Turbulence: Fueled by stronger, more moisture-laden thunderstorms.
- Clear-Air Turbulence (CAT): The invisible, radar-invisible kind occurring

in cloudless skies, which is particularly hazardous due to its sudden onset.

The Human Cost: A Rising Toll at Cruising Altitude

While modern airframes are engineered to withstand extreme forces, the human body is not. The rising incidence of severe turbulence is translating directly into more injuries.

- In the United States alone, 207 serious turbulence-related injuries have been recorded since 2009.
- Flight attendants, who are up and moving most often, account for nearly 80% of these injuries, highlighting a significant occupational safety concern.
- These figures likely represent an undercount, as many minor to moderate injuries go unreported.

The Climate Mechanism: How Warming Creates Wilder Skies

Climate change is exacerbating turbulence through two primary, interconnected atmospheric shifts:

1. Supercharged Storms: Warmer air holds exponentially more moisture. This simple thermodynamic principle is fueling more frequent, more intense, and vertically taller thunderstorms. These "convective cells" generate violent updrafts and downdrafts—the classic, bumpy storm-related turbulence that pilots traditionally navigate around.

2. The Jet Stream Effect: The most scientifically significant driver for increased clear-air turbulence is the changing behavior of the jet stream. Global warming is increasing the temperature difference between the warming Arctic and the slower-warming equatorial regions at high altitudes. This gradient strengthens and destabilizes jet streams, creating more chaotic wind shear zones—the perfect breeding ground for unpredictable and severe CAT.

The Economic and Operational Turbulence

Beyond safety, increased turbulence carries a heavy financial and environmental burden for airlines:

- Direct Costs: Millions are spent annually on post-turbulence aircraft inspections, unscheduled maintenance, passenger compensation, and handling medical emergencies.

- Operational Disruption: Avoiding turbulent patches leads to longer, less fuel-efficient flight paths, causing delays, increased fuel burn, and higher carbon emissions—ironically exacerbating the root cause.
- Crew Scheduling & Fatigue: The physical and mental strain on flight crews operating in more turbulent conditions can impact well-being and scheduling reliability.

Navigating a Bumpier Future: Industry Adaptation

Airlines and aviation regulators are not standing still. The industry is deploying a multi-pronged strategy to mitigate risks:

- Advanced Forecasting: Investing in next-generation weather modeling and data-sharing platforms (like SATAVIA and Turbulence Aware) that use AI to provide more precise, real-time turbulence maps.
- Strategic Flight Planning: Dispatchers and pilots are increasingly adjusting routes in real-time to avoid predicted areas of severe turbulence, even if it means longer flight times.

- Enhanced Cabin Safety Protocols: Reinforcing the critical importance of the "fasten seatbelt" sign, revising service procedures to keep crew seated during predicted bumpy periods, and exploring improved restraint systems.

The Horizon: Innovation for Smoother Skies

Looking further ahead, researchers are pioneering technological solutions that could redefine our relationship with turbulent air:

- AI & LiDAR Prediction: Systems using laser-based LiDAR technology are being tested to detect clear-air turbulence ahead of the aircraft, providing crucial seconds of warning.
- Biomimetic & Active Wing Design: Inspired by birds' ability to dampen gusts, engineers are studying wings with flexible, adaptive surfaces that could passively reduce buffeting.
- Turbulence Cancellation: Conceptual "ride smoothing" systems use advanced sensors and flight control surfaces to automatically counteract turbulence forces, much like noise-cancelling headphones.

The evidence is conclusive: the skies are becoming statistically rougher due to climate change. This presents the aviation industry with a dual mandate—to urgently decarbonize its operations to mitigate long-term warming while simultaneously adapting to the more turbulent atmosphere that past emissions have already locked in.

The path forward requires a combination of sharper forecasting, smarter operations, steadfast safety protocols, and bold innovation to ensure that the journey toward a greener future for aviation isn't an unnervingly bumpy one.

The Restoration of Avro Lancaster FM21

Maureen Wanyana, Canada

Built in Canada at the end of World War II, Avro Lancaster FM212 went on to play a key role in postwar photographic reconnaissance, Arctic patrols, and search and rescue operations.

Today, a dedicated team of volunteers is undertaking an extensive restoration to preserve one of the most historically significant surviving Lancasters.

The Avro Lancaster originated from the unsuccessful twin-engine Avro Manchester bomber, which first flew in 1939. In late 1940, a decision was taken to replace the Manchester's two Rolls-Royce Vulture engines with four more reliable Rolls-Royce Merlin engines—built in Canada under license by Packard—which had already proven themselves in aircraft such as the Hurricane and Spitfire.

The redesigned aircraft was immediately successful and went on to carry some of the heaviest individual bomb loads of the Second World War.

In Canada, the Lancaster was produced by Victory Aircraft Ltd. at Malton, Ontario, where 430 Lancaster Mk X aircraft were

built. Following the war, approximately 230 Canadian-built Lancasters remained in service, adapted for a variety of roles.

These included photographic reconnaissance for aerial mapping and charting, as well as maritime patrol duties, allowing the type to remain operational well into the early Cold War period. The Canadian Aviation Museum restoration of Avro Lancaster FM212 is under the supervision of Project Director Don Christopher

An Avro Lancaster Mk X variant as employed in the post-war period by 407 Squadron in Comox, British Columbia. Photo via Royal Canadian Air Force

Avro Lancaster FM212 left the Victory Aircraft production line in the third week of July 1945. After a series of initial test flights, the aircraft remained inactive until early 1946, when it entered service with the Royal Canadian Air Force.

It was reconfigured as a Lancaster Mk 10P (Photographic) and eventually assigned to No. 408 Squadron, based at Rockcliffe, Ontario. Over the following years, FM212 played a leading role in photographic mapping of Canada's northern territories, as well as search and rescue missions and Arctic patrols. By the time of its retirement, the aircraft had accumulated 8,039.5 flying hours—more than any other of the 17 surviving Lancasters.

FM212 with new paint

When the RCAF retired its Lancaster fleet in 1964, FM212 was placed into storage at Dunnville, Ontario. Later that year, a delegation from the City of Windsor acquired the aircraft for use as a war memorial. Following a challenging barge journey across Lake Ontario and up the Detroit River, FM212 arrived in Windsor in August 1964. I

n January 1965, it was installed at Jackson Park, mounted on a 20-foot plinth beneath its center section. There, it served as a memorial to more than 400 men from the Windsor–Essex area who lost their lives during air operations over Europe in the Second World War.

Exposure to the elements over several decades took a significant toll on the aircraft. An engineering assessment eventually revealed structural deterioration severe enough to threaten its long-term survival.

In May 2005, FM212 was removed from its pedestal, and in 2006 it was transported through the streets of Windsor to the hangar of the Canadian Historical Aircraft Association—now the Canadian Aviation Museum—where restoration work began. A team of dedicated volunteers, many of whom had previously assisted with maintenance while the aircraft was on display, undertook the complex task of reversing years of environmental damage.

As with similar memorial installations in Calgary and Toronto, much of the structure between FM212's two main spars had been removed when the aircraft was mounted on its pedestal. This alteration ultimately contributed to the aircraft's structural weakening. Correcting the damage required the complete disassembly of the airframe and the fabrication of new structural components.

As is often the case with major restorations, additional issues emerged as work progressed, extending what was initially envisioned as a 10-year project to nearly twice that duration. Despite these challenges, the volunteer team successfully completed repairs to the center section last summer.

FM212 in 2005

The aircraft's interior has since been stripped of old paint and primer and fully repainted, with either refurbished original equipment or newly manufactured components installed to restore it to near factory-fresh condition.

As a Canadian-built Mk X, FM212 has been refitted with Bendix radio equipment in the wireless operator's position, making it the only surviving Lancaster to retain this original configuration. The restoration also includes a Martin 250CE mid-upper turret and four Packard Merlin 224 engines.

Why Do Pilots Spool Up Jet Engines Before Takeoff?

Fredrick Wabwire, UK

If you've ever watched or been on an aircraft sitting on the runway, you might notice the engines begin to hum and spin just before the plane moves. This process is called spooling up, and it's a moment often overlooked by passengers but is a key part of the takeoff routine. It's the quiet buildup before the engines roar to life, the subtle pause that signals the aircraft is preparing to accelerate down the runway.

There's a purposeful rhythm to it, a controlled, deliberate increase in activity that sets the stage for the takeoff. From the outside, it may look like a simple engine warm-up, but it's one of those moments that shows how precise and coordinated every part of flight really is. Spooling up is the calm before the power, the first step in a carefully orchestrated process that makes every takeoff feel smooth and controlled.

How Does A Jet Engine (Turbojet) Work?

Before exploring what exactly 'spooling up' is, and why pilots do it. First, it is important to understand the basic principles of a jet engine, specifically a turbojet. The key reason behind a turbine engine's operation is based on Newton's Third Law: Air is forced rearward, causing the aircraft to move forward.

The basic principle of a jet engine is in four stages: pulling air in, compression, ignition/combustion, and pushing air out through the exhaust.

First, air enters the front intake of the jet engine, where it is slowed and straightened so it flows smoothly. This air then passes through the compressor, which uses rows of spinning and stationary blades to squeeze the air to a much higher pressure and temperature.

Fuel is sprayed into this compressed air in the combustion chamber and ignited; the burning is continuous, not explosive, and it adds a large amount of energy to the airflow, causing it to expand rapidly.
Next, the hot, expanding gases flow through the turbine, whose blades extract energy to keep the compressor spinning. After the turbine, the gases still have very high speed and pressure, so they are forced through a narrowing exhaust nozzle, which further accelerates them even more. When this high-speed jet of gas shoots out the back of the engine, it pushes the aircraft forward, producing thrust.

Turbojet Vs Turbofan

Most modern commercial aircraft utilize turbofan engines, which vary slightly from the turbojet engine we just explored. So, what is the difference? The easiest way to think of a turbofan engine is a turbojet engine (which essentially becomes the turbofan engine core) with a large fan attached to the front.

Air enters the inlet and immediately meets the large fan. The fan splits the airflow into two streams: most of the air bypasses the engine core and flows around it, while a smaller portion enters the core. The bypass air is accelerated rearward by the fan and already produces a significant amount of thrust without being heated or burned. Turbofan efficiency is measured using 'bypass ratio' (mass of air bypassing the core: to the mass of air passing through the core).

From this point, the turbofan works on a similar principle as a turbojet, whereby the core airflow is compressed, mixed with fuel, and burned. The hot gases spin the turbines, which power both the compressor and the large front fan via a shaft. After passing through the turbine, the remaining exhaust exits the nozzle, adding more thrust. In a turbofan, most thrust comes from the fan (bypass air), not the hot exhaust, which is why modern airliners use turbofans instead of turbojets.

In essence, spooling up refers to the process of increasing an engine's rotational speed, specifically the fan, compressor, and turbine, in preparation for higher thrust. Jet engines don't produce full power instantly; the massive rotating components need time to accelerate, and the airflow, fuel flow, and temperatures must stabilize. When a pilot moves the throttle forward, the engine gradually "spools up" to the desired speed rather than jumping to maximum power immediately. You can think of it a little bit like pedaling a bicycle; it is impossible to pedal as fast as you can straight away.

Pilots often spool engines in stages, especially before takeoff. They may first advance the throttles to a moderate power setting and hold briefly, allowing both engines to reach the same rotational speed. Spooling up also gives pilots a final opportunity to monitor engine performance before committing to full thrust.

Pilots can check parameters like temperature, pressure, and vibration to ensure everything is operating normally. Once the engines are stable, the throttles are advanced for takeoff or climb power, and the aircraft accelerates. In short, spooling up is the engine "warming up and synchronizing" to provide smooth, safe, and efficient thrust.

Thrust asymmetry occurs when the engines on a multi-engine aircraft produce different amounts of thrust, which can cause the aircraft to yaw toward the lower-thrust side. During the initial phase of the takeoff roll, the aircraft is moving at low speed, so the aerodynamic control surfaces, particularly the rudder, have limited effectiveness.

The mechanical and thermodynamic properties of jet engines make perfect instant synchronization impossible. Differences in compressor inertia, airflow dynamics, ambient temperature, and fuel system response can cause engines to spool at slightly different rates.

Spooling up also prevents sudden thrust differences that can occur if one engine overshoots its target rotational speed while the other lags. Such thrust spikes are especially hazardous during the first seconds of the takeoff roll, when the aircraft has minimal lateral stability. By carefully controlling spool-up and monitoring engine parameters like EGT, fuel flow, vibration, and RPM, pilots ensure both engines develop thrust uniformly.

Have you ever seen flames shooting out the back of an aircraft's engine on takeoff, or maybe heard 'popping' noises? Although alarming and discomforting, especially for non-regular or nervous flyers, chances are this isn't an engine fire or failure, but a compressor stall or surge.

A compressor stall occurs when the airflow through a jet engine's compressor blades becomes disrupted, reducing the compressor's ability to pressurize air. In axial compressors, air must flow smoothly at a precise angle over each stage of rotating blades.

A compressor surge is a more extreme event in which airflow actually reverses direction through the compressor, often because the downstream pressure exceeds what the blades can push forward. Surges produce violent pressure fluctuations, loud bangs, and sometimes flames or smoke from the intake.

THE NEW RULES OF DRESSING UP FOR THE PLANE

Wanyana Maureen - Canada

As world officials urge passengers to dress with respect to 'bring civility back' to flying, the Aviator Africa unpacks the new travel dress code – and asks experts if we'll ever return to the Golden Age

An elasticated waistband, fleece lining, a roomy silhouette, once you're in a pair of tracksuit bottoms, it can be quite difficult to get out. It starts with wearing them around the house. Then you've got them on in the supermarket.

Suddenly, you can't remember the last time you wore something with actual buttons. Notably, during the pandemic, our heels, handbags and blazers were all firmly furloughed in favour of pyjamas, tracksuits and leggings. Since lockdown lifted, office wear is still yet to return to its pre-Covid heights. The same can be said for airport fashion, where terminal outfits range from stylish athleisure to thinly disguised pyjamas.

"Whether it's a pair of jeans and a decent shirt," Duffy continued, "I would encourage people to maybe dress a little better, which maybe encourages us to maybe behave a little better. Let's try not to wear slippers and pyjamas as we come to the airport."

Where the US goes, the rest of the world often follows, meaning that airport civility may soon be suggested in the

UK too. While America's Federal Aviation Administration has reported almost 14,000 "unruly passenger incidents" over the past four years, the UK's Civil Aviation Authority shared that it receives a "number of harrowing letters" every 12 months from passengers who witness "drunk and disruptive behaviour in-flight" – also known as "air rage".

"People are not valuing air travel or seeing it as an occasion," says fashion psychologist Dr Dion Terrelonge. "It's become so accessible that it's lost the thing that makes it special. In the same way that if someone brought you diamonds every single day, it wouldn't be so special any more, the novelty wears off.

"As human beings, we respond massively to novelty," she adds. "The fact you can now travel to mainland Europe for less than the price of a new pair of boots tells you a lot. Your weekly shop could cost you more than it does to get to the Costa del Sol." At the time of writing, there's a flight to Malaga for £23 – there and back.

Ryanair operated 3,044 flights a day on average, making it the most active airline, followed by EasyJet, according to the Eurocontrol performance review. During the Golden age era of air travel, before the introduction of budget airlines in 1970, there were fewer than half a million flights operated in an entire year, with only 195,000 operated in the whole of 1950.

Perhaps somebody needs to remind the politicians that if they want their air travel rarefied, it must crucially first be rare – an argument that could aid both politeness and the planet.

"We dress up for special occasions – birthdays, parties, even the work Christmas party only happens once a year," Terrelonge explains. "Rarity, we know, increases the perceived value of something. Because of the accessibility of flying and the price, which is the outing's perceived value, it's less of an occasion. People see a flight as a flying coach." Truly, there's nothing chic about being blinded by a neon orange EasyJet Airbus A320.

Since the 50s and 60s, plane leg room has decreased, food has become less fancy, there's no proper drinks service – and the interiors are awful. You wouldn't put on your black tie to go to a Burger King. Similarly, nobody is going to wear a suit (or even jeans) to board a Ryanair flight. As humans, if we're treated like cattle, we're more inclined to act like them – cue bellowing, bare feet, and stinky snacks.

Although up in first class, things aren't much better. It's common now to see an influencer wrapped in overnight curl rods (for a tarmac-ready blow dry), with a hydrating sheet mask atop their face, and their feet out. Modern culture encourages this, with thousands of videos across the internet detailing "anti-airplane nighttime beauty routines", which seem to suggest passengers have forgotten that the plane is not, in fact, their bedroom. The private shower in Emirates first class is, of course, the exception.

But personal stylist Manisha Sabharwal, in charge of dressing high-net-worth businesswomen who fly two to three times a week, says the entire flight clothing debate has fundamentally missed the point of what makes a so-called refined airline passenger in 2025. "There's a huge psychological impact when we've made an effort. It changes the mood. But a suit, heels, it's a bit try-hard. It's like being the most overdressed person at the party. Why are you making so much effort?"

Instead, she says that travel chic has changed. It still doesn't involve wearing pyjamas, but you don't need to dress like you would for the office. "There's a new travel dress code where people are prioritising comfort," Sabharwal explains. "It's elevated casual. For young people, it might be a cashmere set with a full face of makeup and a pair of Uggs. Women in their 40s, they're wearing slightly more structured, close to the body, matching sets – and they might pair this with their favourite earrings and a gorgeous handbag from The Row. But people will always prioritise comfort. They're not giving up on that."

Her words are a reminder to never take fashion advice from politicians. Duffy might think it's more appropriate for passengers to fly in jeans and a shirt instead of pyjamas and slippers – but what if they're silk Victoria Beckham daywear pyjamas and slip-on mules from The Row?
In 2025, airport chic no longer requires a single button, and leaves Golden Age travel attire firmly in the past.

7 Tips to Make Better Radio Calls on Your Next Flight

Mupenzi Vincent

Clear communication saves lives. Here's how to sound like a pro on the frequency.

For student pilots and seasoned aviators alike, the radio can be one of the most intimidating instruments in the cockpit. Yet effective communication with Air Traffic Control is not just about confidence—it's about safety. A misunderstood instruction or a garbled transmission can have consequences that ripple through an entire airspace sector.
These seven practical tips will help you transmit with clarity, receive with accuracy, and earn the quiet respect of controllers who appreciate pilots who know what they're doing.

1. Avoid Long Explanations

Before you key the microphone, pause. Ask yourself: what is the single most important piece of information the controller needs?
ATC does not require your life story. They don't need to know why you want to deviate—they need to know what you want to do. "Requesting 6,000 feet due to turbulence" is sufficient. "November 123AB would like to request a climb to 6,000 feet because we're encountering moderate chop at our current altitude and the ride should be smoother higher up" is not.
The principle: Think before you transmit. Strip your request to its essentials. Controllers manage dozens of aircraft simultaneously; brevity is a form of courtesy.

2. Avoid Stepping on Other Pilots and Controllers

When you switch to a new frequency, resist the urge to announce your presence immediately. Take one second—literally count it out—and listen.

Someone may be in the middle of copying an instruction. Another pilot may be halfway through a position report. If you transmit over them, both transmissions are lost, and the controller must repeat instructions to both parties.
The technique: After frequency change, listen for a full cycle before keying the mic. If the frequency is silent, proceed. If you hear conversation, wait for a natural break.

3. Write It Down

Memory is fallible, especially in the busy environment of an approach or departure. Complex clearances—route changes, altitude assignments, frequency changes—should be committed to paper or tablet before you acknowledge.

Keep a pen and kneeboard within easy reach, or use the scratchpad function on your Electronic Flight Bag. Read back the clearance from your notes, not from memory. If you get it right the first time, ATC avoids a follow-up call with corrections.
The reality: Controllers notice which pilots require repeated instructions and which execute correctly on the first try. Your reputation precedes you.

4. Study Local Landmarks and Procedures

Every airport has its own geography, its own reporting points, its own preferred arrival and departure procedures. Study them before you fly.
When a controller says "report the stadium," you should know exactly which stadium and where to look. When cleared for the "River Visual" approach, you should have studied the chart and know what to expect.

The payoff: Pilots who know the local area require fewer explanatory transmissions. Controllers can issue concise instructions because they trust you to understand them. This mutual efficiency reduces frequency congestion for everyone.

5. Add a Personal Touch

Controllers are professionals, but they are also human. A simple "good morning" or "good afternoon" when initiating contact costs nothing and establishes a cooperative tone.

This is not about being overly familiar—it's about acknowledging the person on the other end of the frequency. A brief greeting, a clear readback, and a genuine "thank you" at the end of the flight leave a positive impression.
The nuance: Professional warmth, not chatty informality. The goal is mutual respect, not friendship.

6. Talking Too Fast Slows Everyone Down

Nervous pilots often speak too quickly, compressing words and numbers into an unintelligible blur. The controller must then ask for clarification—wasting time and adding to everyone's workload. Worse, other aircraft nearby may need to hear your transmission for traffic separation.
Speak at a moderate, deliberate pace. Enunciate numbers clearly: "tree" for three, "fife" for five, "niner" for nine. If you think you're speaking slowly enough, you're probably speaking at the right speed.
The test: Record yourself reading a sample clearance. Play it back. If you can understand every word at first listen, so will ATC.

7. Get Weather Information Early

Before you contact tower, approach, or center, obtain the local weather information—ATIS, ASOS, or AWOS. The controller's first question will be whether you have it.
By preemptively including "with information Bravo" in your initial call, you demonstrate preparedness and reduce the controller's workload. You also ensure you have the essential weather data before entering busy airspace.
The sequence: Weather first, then call. It's simple, professional, and expected.

The Bottom Line

Radio communication is a skill, not a talent. It improves with practice, preparation, and attention to the fundamentals. These seven tips won't make you a seasoned airline captain overnight. But they will help you sound like a pilot who knows what they're doing—and more importantly, they will help you become one.

Remember: Every transmission is an opportunity to build trust with the person on the other end of the frequency. Make each one count.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TODAY IN Aviation HISTORY

Impact of Commercial Aviation In Africa 100 years back

Commercial aviation in Africa has been around for over 100 years, with passengers starting to fly around the continent in the 1920s. Initially, passenger operations were run by European carriers like Air France, Deutsche Lufthansa, and Imperial Airways.

The 1960s were a defining period for African aviation, with many countries gaining independence and more airlines emerging. While the African aviation landscape has drastically changed since then, it is important to revisit this time in history to understand its impact on African air transport.

Independence of African countries

Before African nations started gaining independence from their colonizers, the aviation industry on the continent was ruled by European and US airlines as well as colonial governments.

As countries gained independence, national carriers were soon created to access underserved regions that could not be reached by road or rail. After gaining freedom from their colonizers, new African governments established national carriers within their first year of independence or shortly after.

Formation of multinational airlines

Establishment of Air Afrique

Today, African aviation is typically characterized by four distinct regions: North, East, West, and South. It is not rare for regional governments to come together to form an airline.

Air Afrique was a new approach to African-owned airlines, with the following newly independent countries coming together to form a cooperative African airline:
Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Congo (the Republic), Côte d'Ivoire, Gabon, Mauritania, Niger, Senegal
These countries signed the Treaty of Yaoundé in March 1961, setting up the new carrier.

Africanization of operations

Employment opportunities for Africans

From the early 1960s, annual reports started including a section with updates on efforts towards Africanization. In December 1964, Tanzania's Chief Abdullah Said Fundikira became the airline's first African chairman since its founding in 1946. Members of the airline's executive management had been pictured in the 1964 annual report.

Isolation of South African Airways

Sanctions on the government

South African Airways was founded in 1934, making it one of Africa and the world's oldest airlines still in operation. The carrier recently celebrated 90 years since it commenced operations. In its first few years of existence, it expanded its network and fleet, increasing its presence on the global stage.

Since the establishment of Apartheid in 1948, various attempts had been made to isolate South Africa from the rest of the world.
The airline was forced to reroute flights over the ocean and refuel in places like Cape Verde to maintain its European routes.

Fleet growth and route network expansion

New intra-Africa routes

The 1960s were also a time of massive airline expansion across the continent. Timetables and route maps analyzed by Northwestern illustrated expanding networks in Africa. During the 60s, Air Congo served over 30 domestic destinations with a fleet of the following aircraft:

By the end of the 1960s, over 70 African airlines were in operation, highlighting the scale of the continent's growth. Some notable airlines founded after the 1960s were Air Zimbabwe, Air Tanzania, Kenya Airways, and Uganda Airlines.

However, political instability, financial constraints, and other unpredictable factors led to the demise of many African airlines.

Today, over 400 airlines operate in Africa. Many experts have argued that this is unsustainable, given that Africa only contributes 2.1% of the global traffic. However, passenger traffic on the continent is expected to grow by 4.1% over the next 20 years, requiring over 1,000 new aircraft.

Turbulence to Truce:

The Airbus-Qatar Airways Legal Battle

A dispute over paint on A350s escalated into a bitter legal war threatening billions—until diplomacy and pragmatism prevailed.
The legal battle between Airbus and Qatar Airways was one of the most acrimonious disputes in aviation history.

What began as a disagreement over surface degradation on A350 aircraft escalated into contract terminations, multi-billion-dollar claims, and diplomatic intervention before a settlement was reached in early 2023.

The Origins: Paint, Lightning Strikes, and Divergent Truths
The conflict emerged in 2021 when Qatar Airways, launch customer for the Airbus A350, raised concerns about "accelerated surface degradation" on the aircraft's fuselage.

The issues involved paint flaking and, more critically, damage to the underlying composite structure, including exposed copper mesh forming part of the lightning strike protection system.
Qatar Airways grounded up to 29 A350s, citing safety risks. The airline's position was backed by the Qatar Civil Aviation Authority, which revoked the airworthiness certificates of affected planes.

Airbus rejected any fundamental safety issue. Supported by the European Union Aviation Safety Agency, the manufacturer maintained the problem was cosmetic and did not compromise structural integrity. This fundamental disagreement on the severity of the issue became the dispute's core.

Escalation: From Courtroom to Cancellation

The situation exploded in late 2021. Qatar Airways filed a lawsuit against Airbus in the High Court in London, seeking damages for the grounded fleet.

In a retaliatory and highly unusual move, Airbus unilaterally terminated a separate, multibillion-dollar contract for 50 A321neo narrowbody jets, claiming Qatar Airways had breached contractual obligations related to the A350 dispute.

The dispute widened further. Qatar Airways' claim grew to an estimated $2 billion, covering losses from grounded aircraft and pre-delivery payments.

What began as a technical disagreement had become an all-out commercial war threatening one of aviation's most important manufacturer-customer relationships.

The Settlement: Pragmatism Prevails

After over a year of bitter legal battles, the two parties announced a surprise settlement in February 2023. The terms were clear: both companies dropped all legal claims and counterclaims. Airbus reinstated the cancelled orders, including the 50 A321neo aircraft and 23 undelivered A350s, with deliveries resuming on a new schedule.

The parties agreed on a technical repair project for the grounded A350s, aimed at safely returning them to service. The settlement was reached without any admission of liability by either party.

The resolution was reportedly facilitated by high-level discussions, including the intervention of French President Emmanuel Macron and meetings between French ministers and Qatari leadership. Diplomacy achieved what litigation could not.

Aftermath: Rebuilding Trust (2026)

In the years since the settlement, the focus has shifted to rebuilding the partnership. The first batch of A321LRs is anticipated for delivery in the fourth quarter of 2026.

The appointment of new Qatar Airways CEO Hamad Al-Khater has been key to mending ties. His first overseas trip was to Airbus headquarters in Toulouse—a deliberate move to prioritize and "deepen the relationship" with the manufacturer.

Crucially, while mending fences with Airbus, Qatar Airways has also placed a record order for 210 Boeing widebody jets, including the 777X. The airline aims to grow its fleet to nearly 400 jets by 2040.

Lessons Learned

The Airbus-Qatar Airways dispute offers several insights for the aviation industry. Technical disagreements between manufacturers and customers require transparent, early engagement before they escalate into legal warfare.

Contractual relationships, no matter how long-standing, cannot be taken for granted—both parties must continuously invest in trust. And perhaps most importantly, when commercial relationships fracture, diplomatic intervention can achieve what litigation cannot.

The dramatic chapter tested the relationship between a major manufacturer and one of its key customers to its breaking point. Its resolution, through pragmatic settlement and subsequent strategic efforts, has allowed both companies to reset and look toward a future defined by significant fleet expansion and a more diversified procurement strategy.

The battle is over. The truce holds. And both parties are moving forward—wiser, more cautious, and with a renewed appreciation for the value of partnership.

THE B-21 RAIDER

The 1st Bomber Built For Fully Digital Warfare

When the Northrop Grumman B-21 Raider was unveiled to the public in December 2022, much of the initial attention focused on its familiar silhouette. The flying-wing design immediately invited comparisons with the B-2 Spirit Bomber, reinforcing the idea that the Raider was a direct successor to America's existing Stealth Bomber fleet.

Its external appearance, the B-21 represents a far deeper break from previous bomber programs.

Unlike earlier bombers, which were designed in largely analog environments and later adapted to the digital age, the B-21 was engineered to operate, survive, and evolve in an environment where software, networking, cyber resilience,

and rapid capability updates are as decisive as physical performance. Understanding the B-21's digital foundations helps explain why it is often described as the first bomber built specifically for fully digital warfare.

Designed In A Digital Environment From The Start

The B-21 Raider program departed from traditional bomber development models at a very early stage. Instead of progressing through physical mock-ups and sequential design stages, Northrop Grumman and the United States Air Force built the aircraft around a continuously evolving digital model that served as a shared reference point for engineers, manufacturers, and operators, allowing design changes to be evaluated and implemented in near real time.

According to National Defense Magazine, this approach allowed engineers to simulate aerodynamic performance, stealth characteristics, structural loads, and systems integration long before physical components entered production. Design changes that once required costly rework could be evaluated and validated virtually, often in a matter of hours rather than months.

As stated in the Northrop Grumman newsroom: Before the B-21 ever took to the sky, the flying test bed completed more than 200 test sorties totaling more than 1,000 flight hours, testing production hardware, software and sensors in a dynamic environment and enabling teams to tackle discovery well in advance.

The result is an aircraft that rolled out with far fewer unknowns than previous platforms. While the Air Force has released limited performance data, officials have consistently pointed to the B-21's unusually smooth transition from design to early testing as evidence that the digital-engineering approach is delivering tangible results.

Software-Defined Mission Systems And Open Architecture

At the heart of the Raider's relevance to digital warfare is its software-defined mission systems architecture. In legacy bombers, avionics functions were tightly coupled to specific hardware components, meaning that adding new capabilities often required physical modifications, extensive re-certification, and prolonged depot time.

For the Air Force, this represents a deliberate break from the upgrade cycles associated with earlier bombers like the B-2 Spirit. On the B-2, even relatively modest system changes often required lengthy depot periods and extensive re-certification. With the B-21, the goal is to introduce new capabilities incrementally, reducing downtime and allowing the aircraft to evolve alongside emerging threats, without fundamentally altering the airframe.

Integration of emerging technologies, including new sensors and autonomous functions, without redesigning the aircraft's core systems. Once in service, each B-21 will be supported by a digital twin that mirrors the aircraft's condition. Maintenance crews can track component wear, anticipate failures, and plan interventions more precisely than was possible with earlier bombers. This predictive approach is intended to reduce unscheduled downtime and improve fleet availability.

To appreciate how different the B-21 is, it helps to examine how earlier strategic US bombers were designed and employed. The BoeingB-52 Stratofortress, which entered service in the 1950s, was originally built around analog navigation, mechanical systems, and manually plotted missions, aimed to optimize pre-planned nuclear strike missions.

Digital avionics and satellite connectivity were neither available nor operationally relevant at the time: these updates were added decades later, layered onto a structure never intended for rapid software evolution.

The Rockwell B-1B Lancer introduced more advanced avionics and early digital elements when it entered service in the 1980s, including early digital flight controls and terrain-following radar.

Even so, its architecture reflected Cold War assumptions about low-level penetration and relatively predictable threat environments. While the aircraft has received numerous upgrades, its core systems remain constrained by hardware-locked design decisions, following extensive testing and physical modification.

When the B-2 Spirit entered service in the 1990s, it represented a major leap in low-observable technology. Its ability to penetrate heavily defended airspace reshaped strategic strike doctrine and remains relevant today.

Digitally, however, the B-2 reflects the constraints of its era. The aircraft was developed before open architecture standards became widespread, resulting in tightly integrated, proprietary mission systems. As a consequence, incorporating new sensors, weapons, or communications capabilities has often required long maintenance periods and specialized facilities. The contrast highlights a key distinction: if earlier bombers accumulated digital capabilities over time, the B-21 was defined by them from inception.

Operating In A Data-Denied And Cyber-Contested Environment

Modern conflict planning increasingly assumes that GPS, satellite communications, and data links may be disrupted or degraded. The B-21's mission systems were designed with these conditions in mind, emphasizing onboard processing and sensor fusion to maintain effectiveness in such conditions.

Data from multiple sources can be analyzed locally, allowing the crew to maintain situational awareness even when links to off-board systems are limited. This capability reflects lessons drawn from recent conflicts, in which electronic warfare and cyber operations have played an increasingly important role.

BEST AIRCRAFT CARRIERS IN THE WORLD FOR 2026, RANKED


The Gerald R. Ford-Class (USA)


The Nimitz-Class (USA)


The Type 003 Fujian (China)

With 2026 here, it is time to reflect on the state of naval power worldwide. Despite its detractors, the aircraft carrier remains the centerpiece of maritime strategy and will remain strategically viable for many years to come.

These are the five most advanced aircraft carriers heading into 2026.

THE GERALD R. FORD-CLASS (USA)

The Gerald R. Ford Class is the newest class of supercarriers developed by the United States. Measuring around 1,092 ft in length and with a displacement of about 100,000 tons, these warships are the largest military vessels ever constructed.

The Ford Class is also the most advanced carrier the U.S. Navy has built to date, being the first in the world to incorporate technologies like Electro-Magnetic Aircraft Launch Systems (EMALS), Advanced Arresting Gear (AAG), an AN/SPY-3 X-Band multifunction radar, an AN/SPY-4 S-Band volume search radar, and much more.

The carrier is built to house up to 90 aircraft and accommodate high sortie rates of up to 160 sorties per day, with surge capability of 270 sorties per day. It is powered by two A1B nuclear reactors, which enable the carrier to remain at sea almost indefinitely, as long as the crew has enough provisions. Speaking of crew, despite being bigger than the Nimitz Class, the Ford Class requires a significantly smaller crew (only 2,600 compared to 5,000 on the Nimitz Class) thanks to its autonomous


Charles De Gaulle (France)


The Queen Elizabeth-Class (UK)

onboard systems.

THE NIMITZ-CLASS (USA)
Despite their age and slated retirement, the Nimitz Class is still one of the most advanced carriers in the world. First accepted in the 1970s, these carriers have been in service for around 40 years and are now reaching retirement age.
The Nimitz Class measures about 1,092 ft and displaces around 100,000 tons. It uses a CATOBAR arrangement with steam-powered catapults to launch aircraft and arrestor wires for recovery.

The Nimitz Class is powered by two A4W nuclear reactors, giving it near-unlimited range. Its air wing typically consists of around 64 aircraft, but it can carry about 85–90 aircraft of various types.

The carriers can sustain a sortie rate of around 120 sorties per day, with a surge capacity of 240 per day. Currently, the U.S. operates 10 of these carriers, although the USS Nimitz (CVN-68) is expected to retire soon.

THE TYPE 003 FUJIAN (CHINA)
Next up is China's Type 003 Fujian-class aircraft carrier. This carrier entered service in 2025 and represents China's first domestically designed aircraft carrier.

Fujian is a significant step up from China's Soviet-designed carriers, more closely resembling an American-made supercarrier. The ship measures around 1,036 ft in length and has a displacement of about 80,000 tons.

The Type 003 is not nuclear-powered, instead relying on steam turbines and diesel generators, which limit its overall range, but this fits within China's strategy of creating a navy that can control and protect its claimed territory around the first island chain.

First launched in 2022, the Fujian is considered by many to be one of the most advanced aircraft carriers built outside the U.S. It is a testament to China's growing naval industrial base and its ambitions to project power within its regional zone of influence.

CHARLES DE GAULLE (FRANCE)
Next up is the French aircraft carrier Charles de Gaulle (R91). Charles de Gaulle is the first and last of her class and is currently the flagship of the French Navy.

Accepted into service in 2001, Charles de Gaulle is significantly smaller than her American counterparts, measuring 857 ft in length and displacing 42,500 tons (less than half that of the Nimitz or Ford Class carriers).

She is fitted with numerous search-and-track radars, electronic warfare suites, and decoy and countermeasure systems. For air defense, Charles de Gaulle is armed with several VLS cells for surface-to-air missiles, along with eleven 20 mm autocannons.

Charles de Gaulle has a small air wing compared with the other entries on this list, with only 30–40 aircraft, most of which are Dassault Rafale-M multirole fighters. Two Areva K15 nuclear reactors power the carrier.

THE QUEEN ELIZABETH-CLASS (UK)
Last up is the UK's Queen Elizabeth-class aircraft carriers. Comprised of only two ships, HMS Queen Elizabeth and HMS Prince of Wales are currently the only aircraft carriers in service with the British Royal Navy.

They measure around 932 ft in length and displace about 80,600 tons. Queen Elizabeth was launched in 2017, while her sister ship was launched in 2019.
The Queen Elizabeth Class would rank higher on the list were it not for the repeated mechanical failures that both ships have experienced during their lifetime.

The Prince of Wales, in particular, suffered so many technical difficulties that the Royal Navy briefly considered mothballing the carrier until its issues could be resolved. Despite these issues, both carriers remain vital to the UK's global naval strategy.

UGANDA AVIATION Contacts

UGANDA CIVIL AVIATION AUTHORITY

UCAA Direct Contacts

Managing Director/ CEO
Tel: +256 (312) 352-002
Fax: +256 41 4321401

Corporation Secretary
Tel: +256 (312) 352-011
Fax: +256 41 4321401

Director Safety, Security and Economic Regulation
Tel: +256 (312) 352-101
Fax: +256 41 4320375

Director Finance
Tel: +256 (312) 352-401
Fax: +256 41 4321401

General Manager
Tel: +256 (312) 353-357
Fax: +256 41 4 320571

Deputy Managing Director
Tel: +256 (312) 352-005
Fax: +256 41 4321401

Director Airports & Aviation Security
Tel: +256 (312) 353-048
Fax: +256 414 320571

Director Air Navigation Services
Tel: +256 (312) 352-501
Fax: +256 41 4320964

Director Human Resource & Administration
Tel: +256 (312) 352-031
Fax: +256 41 4322989

Manager Public Affairs
Tel: +256 (312) 352-021
Fax: +256 41 4321401

Entebbe International Airport
P.O Box 5536 Kampala
Head Office
Tel: +256 (312) 352-000

Air Navigation Services
Tel: +256 (414) 320-486, 4320384,
Tel: +256 (414) 320-680
Tel: +256 (414) 320-906/7, 4320375
Fax: +256 41 4320964

Entebbe International Airport
Tel: +256 (312) 353-000
Tel: +256 (414) 321-401, 4320571
aviation@caa.co.ug
www.caa.go.ug

Briefing Office
Tel: +256 (414) 320-926

Aircraft Clearance Office
Tel: +256 (414) 321-016
Tel: +256 (312) 352-101
Fax: +256 41 4321452

Entebbe Rescue Co-Ordination Centre (RCC)
Tel: +256 414 323428 / +256 312 352532
EXT: 2532

Area Control Centre (ACC)
Tel: +256 414 320907 / +256 312 352541
EXT: 2541

PASSENGER & BAGGAGE HANDLING

DAS Handling
Tel: +256 (0) 392 789011
Mobile: + 256 (0) 773 505848

Entebbe Handling Services (ENHAS)
Tel: +256 (0) 41 4321675

Uganda Airlines
Uganda National Airlines Company Limited dba Uganda Airlines
EagleAir Hangar Complex,
Entebbe International Airport - Old Airport
P.O. Box 431, Entebbe, Uganda
Tel: +(256)200 406 400
Email: info@ugandairlines.com

INTERNATIONAL AIRLINES

Brussels Airlines
Rwenzori House Plot 1, Lumumba Avenue
P.O Box 3966, Kampala Uganda
Tel: +256 (414) 234-201/4232455
Tel: +256 (752) 734-200
Tel: +256 41 4342790

Egypt Air
Grand Imperial Arcade, Shop 11
P.O Box 7207 Kampala Tel: +256 (414) 341-276
Tel: +256 41 4236567

Emirates
Acacia Place - Plot 6 (Kololo), Ist Floor
P. O Box 33124
Tel: +256 (414) 349-941/2/3/4
Tel: +256 (752) 535-087 Tel: +256 41

Ethiopian Airlines
Kimathi Avenue
P.O Box 3591, Kampala
Tel: +256 (414) 254-796/7, 4345577/8
Tel: +256 (752) 535-087
Tel: +256 41 4231455

Flydubai
Jubilee Insurance Building
Plot 14 Parliament Avenue Kampala
Tel: +256 (414) 359-392

Kenya Airways
Jubilee Insurance Building 14 Parliament Avenue
P.O Box 6969 Kampala
Tel: +256 (414) 233-068/344304,
Tel: +256 (312) 360-000
Tel: +256 41 4259472

KLM Royal Dutch Airlines
Jubilee Insurance Building 3rd Floor, 14 Parliament Avenue
P.O Box 21025 Kampala
Tel: +256 (414) 338-000/1/2, 4233068
Tel:+256 41 4259472, 4338029

Qatar Airways
Rwenzori Towers Nakasero, Kampala,
P.O box 6710, Uganda. Tel: +256(0)41-780090
Fax: +256(0)41-4255299.

RwandAir
Entebbe International Airport
Tel: +256 (772) 614-077, Tel: +256 (414) 353-000
Tel: +256 41 4322268

Turkish Airlines
Ruth Towers, Headquarters Kampala
P. O Box 6710 Kampala Tel: +256 (414) 32-260, Tel: +256 (792) 444-849
Tel: +256 414 322261

SCHEDULED DOMESTIC

Aerolink
2nd Floor Passenger Terminal Building
Entebbe International Airport
P.O. Box 689 Entebbe
Tel: +256 (317) 333-000, Tel: +256 (776) 882-205

Eagle Air
Plot 11, Portal Avenue
P. O BOX 7392, Kampala
Tel: +256 (414) 344-292, Tel: +256 (312) 263-777 Tel: +256 41 4344501, +256 41 43206

Air Serv
Hangar one Entebbe Old Airport

Tel: +256 (414) 321-251/2,
Tel: +256 (312) 263-897
Tel: +256 414 263898

Entabbe Airways
Plot 24B, Lugard Avenue, Entebbe, Uganda
Passenger Terminal Buidling
P. O. Box 178, Entebbe, Uganda
Tel: +256 763 001 284

Mission Aviation Fellowship
Plot 260/445, Kizungu Lane Makindye
P.O. Box 1, Kampala
Tel: +256 (414) 268-388, Tel: +256 (414) 267-433

Uganda Air Cargo
Entebbe International Airport Passenger Terminal Building
P.O. Box 343 Entebbe
Tel: +256 (312) 263-329

TRANSPORTATION

Airport taxi services cooperate services
Tel: +256 752635145
Tel: +256 775242733

KENYA AVIATION Contacts

KENYA CIVIL AVIATION AUTHORITY
Jomo Kenyatta International Airport,
P.O. Box 30163 – 00100 Nairobi, Kenya
Tel: +254 020 827 470
Fax: +254 020 822 300

AIR OPERATORS ASSOCIATION
Kenya Association of Air Operators, Wilson Airport, Langata Road, P.O. Box 15013, Nairobi, Kenya Tel: +254 020 606 914
Air Cargo Operations Contacts

AIR OPERATORS

748 Air Services Ltd.
Head Office, Wilson Airport, 748 Plaza, Langata Road, P.O Box 53012 – 00200, Nairobi, Kenya Contact: Samir Abdo Tel: +254 020 606 532 Cell: +254 722 410 257 Email: sabdo@748airservices.com or admin@748airservices.com Web: www.748airservices.com

748 Air Services Ltd.
Jomo Kenyatta International Airport Office, 1st Floor, Room 213, Central Business Building, Jomo Kenyatta International Airport Arrivals, Nairobi, Kenya Tel: +254 020 827 499 Fax: +254 020 827 499

748 Air Services Ltd
Lokichoggio Airport (Main Aircraft Base) P.O. Box 74, Lokichoggio, Kenya Email: loki@748airservices.com Tel: +254 054 32048

A-D Aviation Ltd
Wilson Airport, Langata Road, P.O. Box 47906 – 000100, Nairobi, Kenya Contact: Julie McCann Tel: +254 020 603 041 Cell: +254 722 516 135 Email: adaviation@swiftkenya.com

Airworks Ltd
KRA Hanger, Wilson Airport, Langata Road, Nairobi, Kenya Contact: Larry Roberts Tel: +254 020 604 470 Cell: +254 724 316 047 Email: lroberts@iconnect.co.ke Fleet: Beech 1900, King Air 200, Cessna Caravan

ALS Ltd
Wilson Airport, Langata Road, Nairobi, Kenya Contact: Shakeel Khan Tel: +254 020 608 362 Cell: +254 722 523 876 Email: ops@als.co.ke or aslam@als.co.ke Web: www.als.co.ke Fleet: 2x Dash-8, Buffalo DHC-5, 8x Beech 1900, 2x King Air 200, Cessna Caravan

Astral Aviation Ltd
Wilson Airport, Langata Road, Nairobi, Kenya Contact: Sanjeev Gadhia Tel: +254 020 444 1085 Cell: +254 733 513 120 Email: sg@astral-aviation.com Web: www.astral-aviation.com

Blue Sky Aviation Ltd
Wilson Airport, Langata Road, Nairobi, Kenya Tel: +254 020 607 238 Email: blueskyavi@nbi.ispkenya.com Fleet: LET 410, Cessna 402.

Bluebird Aviation Services Wilson Airport,
Langata Road, Nairobi, Kenya Contact: Capt H. Mohammed Tel: +254 020 602 338 Email: bbal@bluebirdaviation.com Fleet: Fokker 50, King Air 200

Boskovic Air Charters Ltd Wilson Airport,
Langata Road, Nairobi, Kenya Contact: John Tel: +254 0 20 606 364 Cell: +254 0 722 203 852 Fax: +254 0 20 609 619 Email: boskyops@swiftkenya.com Web: www.boskovicaircharters.com

Capital Airlines Ltd
Wilson Airport, Langata Road, P.O. Box 49232 – 00100, Nairobi, Kenya Contact: Capt Himat Vaghela Tel: +254 0 20 602 984 Cell: +254 0 722 823 954 Email: cal@africaonline.co.ke Web: www.capitalairlines.biz

Phoenix Aviation
Wilson Airport, Langata Road, Nairobi, Kenya Contact: Florence Tel: +254 020 605 836 Email: flightops@phoenixaviation.co.ke Fleet: 2x King Air 200, Citation Bravo.

Trackmark Ltd
Wilson Airport, Langata Road, Nairobi, Kenya Contact: Susie Tel: +254 020 603 582 Email: opsdirector@trackmark.org Fleet: HS748, Cessna 208, King Air 200.

Tradewings Ltd
JKIA, P.O. Box 42474 – 00100, Nairobi, Kenya Contact: Adrian Wilcox Tel: +254 0 20 602 721 Cell: +254 0 722 520 561 Email: nbo.ops@acariza.co.ke Fleet: Embrarer 110

United Airlines Ltd
Wilson Airport, Langata Road, P.O. Box 53521 – 00200, Nairobi, Kenya Contact: Capt Elly Aluvale Tel: +254 020 600 773 Cell: +254 733 512 074 Email: united@todays.co.ke Fleet: 2x LET 410, Cessna 310

OTHER OPERATORS

Air Kenya
Tel: +254-20-563636, 557478 (Nairobi) +254-20-605728/30, 602951 (Wilson Airport) +254-720-054940, 736-522404 (Mombasa) Email: enquries@airkenya.com Website: http://www.airkenya.com

ALS Limited
Tel: +254-20-605510, 607185, 609864, 727666222, 733666262 Mobile: +254727666222, 733666262 Website: http://www.als.co.ke Email: res@als.co.ke, kisumu@als.co.ke Website: http://www.als.co.ke

African Sky Charters
Tel: +254-20-601467/ 8, 602899 Email: africansky@africanonline.co.ke

Air Works
Tel: +254-20-608745, 607905 Email: lroberts@iconnect.co.ke

Bluebird Aviation
Tel: +254-20-603062, 602337 Email: bluebird @Kenya online Website: http://www.bluebird.com

Commuter Air Services
Tel: +254-20-604224, 602604 Email: flight@commairserv.com

East African Air Charters
Tel: +254-20-603858, 605862 Email: admin@eaaircharters.co.ke

Everett Aviation
Tel: +254-20-601638,608785 Email: operations@everettaaviation.com Website: http://www.everettaviation.com

Executive Turbine
Tel: +254-20-604318 Email: info@xturbine.co.ke

Kenya School of Flying
Tel: +254-42-30370,722264835 Email: Aeronav@swiftmalindi.com

Knight Aviation
Tel: +254-20-608101, 607894 Email: knight@todays.co.ke

Phoenix Aviation
Tel: +254-20-601643,604048 Email: phoenix@aviation.co.ke

AIRPORT CONTACT DETAILS

Wilson Airport
Nairobi
Pilot line: +254 020 6003 925 or 6009 870
Fax: +254 020 6004 692

Jomo Kenyatta International Airport Nairobi
Pilot line: +254 020 827 100
Fax: +254 020 827 102

Moi International Airport - Mombasa
Pilot line: +254 041 3433416 or 3433024 or
3433020 or 34330251
Fax: +254 041 3432 069

Malindi Airport - Malindi
Pilot line: +254 042 30463
Fax: +254 042 30428

Kisumu airport - Kisumu
Pilot line: +254 057 202 4499 or 202 5658
Fax: +254 057 202 1035

Eldoret International Airport - Eldoret
Pilot line: +254 053-2062966, 0722403444
Fax: +254 053-2062965

Wajir Airport - Wajir
Pilot line: +254 046 421 024
Fax: +254 046 421 024
Lokichogio Airport
Lokichogio
Pilot line: +254 054 32292, 0723 560 981, 0734 594 038

Mua Hills Radar Station - Mua Hills
Tel: +254 354 245 620
Central Transmitting Station & Workshops
Pilot line: +254 354 273 520

RWANDA AVIATION Contacts

RWANDA CIVIL AVIATION AUTHORITY

General inquiries
info@caa.gov.rw
Fax: (+250)252582609,
Tel: (+250)252585845

Operations
operations@caa.gov.rw
Tel: (+250)788534909
(+250)783020497, (+250)252583441

Clearance
clearance@caa.gov.rw
(+250)783327896

RWANDA AIR CONTACTS

Kigali Airport Office
Kigali International Airport
TEL: +250 732 154 018
Email: reservations@rwandair.com

Abidjan
Boulevard de la République,
Rez de Chaussée, Immeuble JECEDA
Tel : (+225) 20 21 82 50 / (+225) 20 21 82 80, Cel : (+225) 67 01 65 04 / (+225) 08 43 71 78

Abuja - Silverbird Galleria,
Plot 1161, Memorial Drive, Central Business District, F.C.T, Abuja
Tel: 09077778620 / 09077770712
Email: sales.abuja@rwandair.com

Accra - The Elizabeth Building,
Tel.(+233) 302 797 486 | (+233) 540 101 543
Email: sales.accra@rwandair.com
Australia & New Zealand

Bamako
TEL: (+223) 20 23 14 84 / (+223) 20 23 14 85, MOB: (+223) 70 95 4433
Email: Sales.bamako@rwandair.com

Brazzaville - Avanue Amical Cabral.
Centre ville Immeuble city center
TEL: (+242) 066 662 910 / (+242) 053 209 212
Email: sales.brazzaville@rwandair.com

Brussels - Avenue Louise 231, 1050 Brussels
TEL: (+32) 2 669 82 68
Email: sales.brussels@rwandair.com

Bujumbura
14 Chaussee Prince Louis Rwagasore
Jubilee Center
TEL: (+257) 222 51850 / (+257) 222 51849, FAX: (+257) 222 54266 /
Email: sales.bujumbura@rwandair.com

Cape Town
Cape Town International Airport
Main Terminal Building, Departures Level
TEL: +27 21 202 1193
Email: sales.capetown@rwandair.com

Cotonou
Cadjehoun Immeuble Val's Plaza
TEL: (+229) 95 202 623 / (+229) 62 274 177, CELL: (+225) 52 01 01 16
Email: sales.cotonou@rwandair.com

Dakar
67 Avenue Andre Peytavin
TEL: (+221) 338 224 959
Email: sales.dakar@rwandair.com

Dar es salaam
Ali Hassan Mwinyi Rd
VIVA TOWERS, 2nd Floor, Room 19
TEL: (+255) 22 2103435 / +255 782 039152
Email: sales.dar@rwandair.com

Dubai
Al Rais Shopping Centre, Al Mankhool St, Burdubai
TEL: (+971) 43 555 013
FAX: (+971) 43 555 014
Email: sales.dubai@rwandair.com

Frankfurt
D-60313 Frankfurt am Main, Germany
Tel: +49 69 20977640
Fax: +49 69 29801792
Email: rwandair@friends-world.com

Guangzhou
RM1513 Guangdong International Building, Guangzhou, China
Tel: 8620 - 83701079/8620-83701083
Email: china@rwandair.com.cn

Cargo
Tel: 8620-86692290/8620-86692293
Email: booking@rwandair.asia

Harare
143 King George Road
Reservations: +273 8677401401
Airport: +263 8677 501501
Email: sales.harare@rwandair.com

Johannesburg
Holiday House, 156 Bram Fischer Drive
Randburg, Johannesburg
TEL: +27 11 289 8050 / 8080
Email: sales.johannesburg@rwandair.com

Juba
Crown Hotel, Ground Floor,
Along Airport Drive Juba-South Sudan
TEL: (+211) 952 327 777 / (+211) 952 318 888 / (+211) 922 225 932 / (+211) 922 225 933
Email: sales.juba@rwandair.com

Kamembe
Kamembe International Airport
TEL: (+250) 738751695 / (+250) 738668397 / (+250) 735297701
Email: sales.kamembe@rwandair.com

Kampala
Rumee House, Lumumba Avenue, Plot 19, Kampala, Uganda
TEL: +256 414 344 851/2
Airport (Entebbe): +256 772 614 077 / +256 414 322 268
Email (Reservation): sales.kampala@rwandair.com

Kilimanjaro - Plot 15A-area F,Swahili st. Tropicana Building (1st floor)
TEL: (+255) 732 978 558 / (+255) 272 546 190 / (+255) 732 978 501
Email: sales.jro@rwandair.com

Kinshasa
Avenue du 30 Juin, numéro 22 Immeuble PAK2. en face de la poste Commune Gombe à Kinshasa
Tel: +243971135280 / +243826168467
Email: sales.kinshasa@rwandair.com

Lagos
Waterfront Plaza, 270 Ozumba Mbadiwe Street, Victorie Island
TEL: (+234) 01 2799018
(+234) 07010001530 / 31 / 32
Email: sales.lagos@rwandair.com

London
Peeks Brook Lane, Horley, Surrey, RH6 9ST
TEL: +44 (0)1293 874 922
FAX: +44 (0) 1293 874096
Email: sales.london@rwandair.com

Lusaka - Town Office
Thabo Mbeki Road
TEL: (+260) 968 34 5259 / (+260) 950 131 061 / (+260) 211 254 308
Email : sales.lusaka@rwandair.com

AIRPORT OFFICE

Kenneth Kaunda International Airport,
Ground floor,
P.O.BOX 50314, Lusaka Zambia,
TEL: +260 963 015 130 / +260 978 358 643
Email: sales.lusaka@rwandair.com

Mombasa
Nkrumah Road T.S.S Tower - Ground Floor
TEL: (+254) 41 2220095 / (+254) 712 9999 31 / (+254) 736 9999 31
Email: sales.mombasa@rwandair.com

Mumbai
Mumbai 400099, India.
TEL: +91 22 4203 4203 / +91 22 4203 4204
Email: sales.mumbai@rwandair.com

Nairobi - Town office
Mama Ngina street
TEL: +254 20 222 0918 / +254 718 402 599 / +254 733 151 386 / +254 790 926 722
Email: sales.nairobi@rwandair.com

Airport Office
Sales: +254 725 706 807 / +254 731 300 251

Netherlands
GSA APG (Airagencies)
Flamingoweg 9 (room 130)
1118 EE Schiphol
The Netherlands
TEL: +31 (0)20 3161 904
Email: sales@apg-airagencies.com

Tel Aviv
6 Hanatziv St. Tel Aviv 6701033 Israel
Phone: +97235269654 /+97235269802
Email: sales.telaviv@rwandair.com

TANZANIA AVIATION Contacts

TANZANIA CIVIL AVIATION AUTHORITY

Aviation House, Nyerere/Kitunda
Road junction
P.O. Box 2819, Dar es Salaam, Tanzania
Tel: +255 22 2198100
Fax: +255 2844304
Emial: dg@tcaa.go.tz/tcaa@tcaa.go.tz/
baruatcaa.go.tz

TCAA DIRECT CONTACTS

Director General - Hamza S. Johari
+255 222198100
tcaa@tcaa.go.tz

Director Safety Regulation Redemption
Bugomola
+255 222198100
redemptus.bugomola@tcaa.go.tz

Director Economic Regulation
Daniel Malaga
+255 222198100
daniel.malaga@tcaa.go.tz

Director Legal Services
Valley Chamlungu
+255222198100
valleychamlungu@taa.go.tz

Director Corporate Services
theophory A. Mbilinyi
+255222198100
theophory.mbilinyi@tcaa.go.tz

Director Air Navigation Services
John Chambo
+255222198100
john.chmbo@tcaa.go.tz

Principal CATC, Julius Nyerere International Airport
Aristid Kanje
+25522284443
Aristid.kanje@tcaa.go.tz

Civil Aviation Manager, Julius Nyerere International airport
Mwanajumaa Kombo
+255222110223
camjnia@tcaa.go.tz

Civil Aviation Manager, Abeid Amani Karume International Airport
Mbarouk Hamad
+255 242230794
camznz@tcaa.go.tz

Civil Aviation Manager, Kirimanjaro International Airport
limis B. Makolowela
+255272554230
camkia@tcaa.go.tz

Civil Aviation Manager, Dodoma Airport
ludovic Josephart Ndumbaro
+255262354418
camdom@tcaa.go.tz

Civil Aviation Manager, Iringa Airport
Rosalia Makwaya
+255262968101
camera@tcaa.go.tz

Civil Aviation Manager, Kigoma Airport
Maotola Miti
+255282988100
camakgm@tcaa.go.tz

Civil Aviation Manager, Songwe International Airport
Godlove Longole
+255252957256
camsgw@tcaa.go.tz

Civil Aviation Manager, Mtwara airport
Christopher Thadei
+255713348552
cammtw@tcaa.go.tz

Civil Aviation Manager, Mwanza Airport
Sumai H. Mgweno
+255282505323
cammwz@tcaa.go.tz

Civil Aviation Manager, Pemba Airport
Said Abbas Kasita
+25524242238
campba@tcaa.go.tz

Civil Aviation Manager, Songes Airport
Betas Julius Nguvumali
+25525951003
camsga@tcaa.go.tz

Civil Aviation Manager, Tabora Airport
Daniel Nyembo
+255262966103
camtbr@tcaa.go.tz

Civil Aviation Manager, Arusha
Shani Msebgwa
+255222110252
camars@tcaa.go.tz

Civil Aviation Manager, Tanga
Moses H. Mwalyoga
+255272977106
camtng@tcaa.go.tz

TANZANIA AIR OPERATORS

Adventure Aloft (T) Ltd
P. O. Box 17019, Arusha, Tanzania
+25527 2543300
+255 686 250153
+255 686 779557
Fax: +255 27 2543300
Email: tarangire@madahotels.com

Air Africa International
P. O. Box 7736, Dar es Salaam
Tanzania
+255 22 21 28780
+255788429686 – Paul Chizi
+255655078820/786078820
Email: airafricaint@gmail.com

Air Eclipse Limited
P. O. B OX 3222, Dar es Salaam
+255 2139250
Email: gm@holidayinn.co.tz

Air Excel Ltd
Fax +255 27 2548429
+255 27 2501595
+255 27 25001597
Email: administration@excelonline.com

Air Tanzania Company Ltd
P. O. Box 543, Dar es Salaam, Tanzania
+255 22 2118411
+255 22 2844239 JNIA
+255 782 737732
Fax: +255 22 2113114
info@airtanzania.com

Airworks (K) Ltd
P. O. Box 27508-00506, Nairobi, Kenya
+254 20 6008745/6
Email: erick.kivindu@airworks.co.ke

Arusha Medivac Limited
P.O. Box 10906, Arusha
+255784349219
Email: jaceker@yahoo.com

Assalaam Air (Z) Company Ltd
P. O. Box 1557, Zanzibar, Tanzania
+255 772771770
Email: info@assalaamair.com

UGANDA

UGANDA CIVIL AVIATION AUTHORITY

UPGRADING ENTEBBE INTERNATIONAL AIRPORT FOR A BETTER PASSENGER EXPERIENCE

Entebbe International Airport's modified terminal building was opened to the public in January 2024 and all facilities are operational and running smoothly.

The imminent commission of a new 20,000 sqm terminal connecting to the current terminal will enhance terminal capacity to at least 3.5 million passengers per year.

The existing and ongoing upgrades being implemented are part of a 20-year National Aviation Master Plan aimed at catering to the growing traffic at Entebbe Airport and enhancing the passenger experience.

www.caa.go.ug Uganda Civil Aviation Authority @UgandaCAA @ugandacaa +256 757 269 670