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AFRICA



AIRBUS

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For Africa & Levant**

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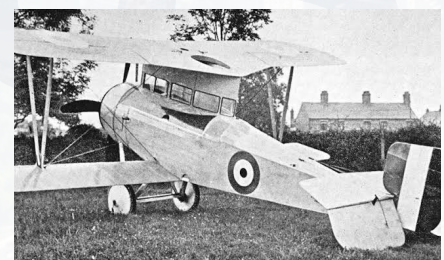
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UGANDA CIVIL AVIATION AND GUYANA CIVIL AVIATION STRENGTHEN CIVIL AVIATION COOPERATION



The Uganda Civil Aviation Authority (UCAA) and the Guyana Civil Aviation Authority (GCAA) signed a Memorandum of Understanding (MoU) to strengthen civil aviation cooperation.

The MoU was signed on 2 October 2026 in Georgetown, Guyana by Mrs. Olive Birungi Lumonya, Deputy Director General, UCAA and Lt. Col. (Ret'd) Egbert Field, Director General, GCAA. UCAA was also represented by Mr. Christopher Kasozi, Manager Economic Regulation.

The MoU creates a framework for technical collaboration, knowledge sharing, and adoption of best practices in managing, modernizing, and maintaining

civil aviation systems.

Key areas of cooperation:

- Safety Surveillance and Oversight
- State Safety Programme (SSP) and Safety Management Systems (SMS)
- Personnel Licensing and Training
- Airworthiness
- Institutional Strengthening and Human Resource Development
- Economic Oversight of Air Transport

How the Collaboration Will Work:

The partnership will involve:

Exchange of information.

- Deployment of experts and instructors for training and technical missions.

- Joint studies and other mutually beneficial activities.

The partnership aims to:

- Further enhance the safety, efficiency, and regulatory standards of air transport in both Uganda and Guyana.
- Lay a foundation for future commercial and economic ties between the two countries.

Future Action (Next Steps):

Uganda and Guyana have agreed to conclude and sign their Bilateral Air Services Agreement (BASA).

The signing is scheduled to take place during the upcoming ICAO Air Services Negotiation Event (ICAN) in Equatorial Guinea in December 2026.

IN THE NEWS



Participates in 3rd CEO Breakfast Meeting on Green Economy and Sustainability

The Uganda Civil Aviation Authority (UCAA) participated in the 3rd CEO Breakfast and High-Level Meeting on Green Economy, SDGs and Sustainability, held on October 14, 2026, at the UNICEF Conference Centre in Mbuya.

The meeting was officially opened by the Speaker of Parliament, Rt. Hon. Jacob Markons Oboth, under the theme "Accelerating Uganda's Green Economy

Transition through Digital Transformation." During a panel discussion, the Authority's Vianney Luggya highlighted UCAA's initiatives to promote environmental sustainability in the aviation sector.

These include the acquisition of five Kayoola electric vehicles, development of a State Action Plan to mitigate aviation carbon emissions, participation in the International Civil Aviation

Organization's (ICAO) Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), and a feasibility study on Sustainable Aviation Fuel (SAF).

He also highlighted UCAA's investment in modern air navigation technologies, including the establishment of a national Performance-Based Navigation (PBN) framework, implementation of Global Navigation Satellite System (GNSS)-based navigation procedures in line with ICAO requirements, and Uganda's participation in regional Free

Route Airspace initiatives.

These innovations enable more direct and efficient flight paths, contributing to enhanced aviation safety, increased airspace capacity, reduced flight distances and fuel consumption, and lower carbon emissions.

Through these initiatives, UCAA continues to support the integration of digital innovation and environmental sustainability in advancing a safer, more efficient and environmentally responsible aviation sector.



Uganda Airlines will commence direct flights between Entebbe, Uganda, and Accra, Ghana, from October 27, 2026, marking its entry into the Ghanaian market and deepening connections between West and East Africa.

Ahead of the inaugural service, the airline is undertaking commercial roadshows in Ghana, including a Travel Trade Workshop with Ghanaian travel agents and tour operators to showcase Destination Uganda and the airline's products and services.

The airline described Ghana as an important economic partner and said the route would create

opportunities for tourism, trade, investment, and people-to-people exchanges.

It expects the connection to strengthen links between West Africa and the wider East African region, while improving cargo movement for exporters and importers.

Uganda Airlines noted the route would facilitate easier access to markets and unlock opportunities under the African Continental Free Trade Area (AfCFTA). Ghanaian businesses could benefit from direct access to Uganda's market and the wider East African Community, which represents more than

Uganda Airlines 
Fly the Crane to the Pearl of Africa

Set to Launch Entebbe-Accra Direct Flights effective October 27

300 million consumers.

Uganda offers potential for Ghanaian importers seeking products including premium coffee, pharmaceuticals, tea, fresh fruits and vegetables, grains, dairy products, fish, edible oils, processed foods, natural honey, textiles, garments, and leather products.

To build on the route's opportunities, Uganda Airlines, in partnership with the Uganda Tourism Board, the Uganda

High Commission in Ghana, and other agencies, will host the Ghana-Uganda Trade and Business Forum on October 28, 2026, in Accra, under the theme "Leveraging Air Connectivity for Trade, Tourism, Investment and Economic Cooperation."

The airline said the new route positions Uganda as an attractive destination for Ghanaian travelers, highlighting attractions such as mountain gorilla trekking in Bwindi Impenetrable National Park.



Ethiopian Airlines Group has inaugurated the state of the art G+8 building at Ethiopian Aviation University Premises as a move to expand capacity for global talent, innovation and aviation excellence.

The state-of-the-art facility is designed as a modern, technology-enabled learning and training environment, bringing together conventional classrooms, smart-learning facilities, laboratories, examination facilities, specialized aviation training spaces, aircraft maintenance hangar, and more within one integrated complex.

This strategic investment highlights the airline's dedication to developing a highly skilled workforce capable of navigating the complexities of the modern aviation

landscape. By consolidating theoretical learning with hands-on technical training, the new complex aims to serve as a central hub for aviation innovation. It reflects the airline's proactive approach to meeting the growing demands of the global aviation sector.

The inauguration of the G+8 building marks a pivotal moment for Ethiopian Aviation University. It not only enhances the university's physical capacity but also solidifies its role as a premier institution for cultivating global aviation talent.

This facility will play a vital role in equipping the next generation of aviation professionals with the tools, knowledge, and practical skills they need to excel in the competitive aviation industry.

Ethiopian የኢትዮጵያ

Group Inaugurates New G+8 Building at Ethiopian Aviation University



airportshow 12 - 14 MAY 2026 | DWTC, DUBAI

Opens In Dubai



The 25th edition of Airport Show opened in Dubai on 12 October, as the Middle East, Africa and South Asia (MEASA) region continues to invest in airport capacity, operational technology and passenger infrastructure.

Running until 14 October, the

event brings together more than 150 exhibitors from over 30 countries, with organisers expecting more than 7,000 visitors.

The programme is designed to connect airport operators and government representatives with suppliers developing technologies for the

next generation of airport operations.

Held under the patronage of His Highness Sheikh Ahmed bin Saeed Al Maktoum, President of the Dubai Civil Aviation Authority and Chairman of Dubai Airports, this year's exhibition marks a quarter-century of industry engagement in Dubai. The milestone edition also reflects the city's position as a meeting point for airport investment, technology development and regional aviation planning. Technology and Infrastructure in Focus

The exhibition is co-located with the Global Airport Leaders' Forum, Airport Security Middle East, the Air Traffic Control Forum and the Women in Aviation Middle East Conference. Together, the events broaden the agenda beyond airport construction to include security, air traffic management, workforce development and passenger experience.

Biometrics, digital processing, automation and sustainability are among the technologies highlighted for this year's edition. For airport operators, the commercial question is how these systems can improve throughput and service reliability while managing costs, security requirements and rising passenger expectations.

The regional context gives those discussions added significance. Airport development programmes across the Gulf are placing greater emphasis on capacity, connectivity and integrated operations. Delivering these ambitions will require more than additional terminals and runways; airports must also coordinate technology, people and processes to make new infrastructure productive.

As the event marks its 25th edition, the focus is increasingly on translating innovation into measurable operational improvements across the airport ecosystem.



The inaugural Africa Destination Celebrations Conference & Expo (ADCCE) has officially opened today 12 October 2026 at Speke Resort Munyonyo.

The two-day event is organised by Africa Unveils Events in the Wild and features delegates from across Africa and around the world.

Africa Unveils Events in the Wild brings together the events, travel, tourism, and hospitality ecosystems to position Africa as the Celebration Capital of the World.

The event has attracted players from the

travel and tourism industry, airline operators, hospitality service providers, event organisers, and the media.

Notable speakers at this year's ADCCE include:

- Rahul Soman, CEO, Jumping Soulweddings, India (Destination wedding photography)
- Jackline Nanteza, CEO, Stressfree Planner & Wild Celebrations Africa Limited, Uganda; Founder, ADCCE
- Orunye Kingsley Chimezie, Event Host, Nigeria / London
- Farah Lodhi, Event Planner, Farah Weddings, London
- Vimbisio Carol Matibiri, Managing

Director, Classy African Weddings, Zimbabwe / Zambia

Notable exhibitors include Turkish Airlines, Kenya Airways, C&H African Village, Sarah Cakes, S-Pride, Parkview Safari Lodge, Gorilla Heights and Parkview, Entikko Safari Lodge, Fotogenix, Lodge Solutions, Evanah, Mayanja Candles, Asante Aviation, Photogenix Ltd, Sheraton Hotel, and the Uganda Tourism Board.

The Expo is organised with the mission to unite Africa through one powerful voice, positioning the continent as the Celebration Capital of the World, while showcasing its natural beauty, destinations, and private-sector capabilities.

The Uganda Civil Aviation Authority (UCAA) has welcomed the return of Jambojet to Uganda with a daily direct flight between Nairobi and Entebbe.

The inaugural flight touched down at Entebbe International Airport on October 1, 2026, at 1115 hours and was received by the Minister of Works and Transport, Hon. Fred Byamukama, with a water gun salute.

Speaking at the event, Hon. Byamukama underscored the wider significance of the renewed connection: "Aviation

is not simply about transporting passengers; it connects businesses to markets, tourists to destinations, investors to opportunities and families to one another."

The Minister noted that Uganda has to date concluded Bilateral Air Services Agreements with 64 countries, providing the legal framework for international air services, including the designation of airlines, traffic rights, and routes.

UCAA Director General Mr. Fred K. Bamwesigye described Jambojet's return as a clear vote of confidence in Uganda's

Jambojet.com

Relaunches Daily Direct Flights Between Nairobi and Entebbe

air transport system and the growth of the regional aviation industry. He commended Uganda's safety and security record and called on all operators at Entebbe to remain committed to strict safety protocols and efficient service delivery.

He also noted that Uganda regained a seat on the ICAO Council last year, giving the country a stronger voice in setting international civil aviation standards.

Jambojet, which first launched

the route in 2018, returns with a strengthened network and a clear proposition: affordable fares, direct connectivity, and reliable service for travelers between Uganda and Kenya. The airline launches with one daily flight, with frequencies potentially increasing as demand grows.

Jambojet's return makes it the 21st international air operator at Entebbe, further expanding passenger choice and contributing to the growth of Uganda's international air transport sector.



AVIATION AFRICA 2026

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Recap





The Aviation Africa Summit and Exhibition 2026 was held on 9–10 September at the Sarit Expo Centre in Nairobi. This marked the summit's 10th edition and its first time in Kenya.

Hosted by Kenya's State Department for Aviation, the KCAA, Kenya Airports Authority and Kenya Airways, the event drew roughly 2,500 delegates from over 100 countries, including representatives from 135 airlines and operator.

The theme, "Breaking the Mould: Finding Solutions to the Key Challenges Hindering Africa's Aviation Industry," framed two days of unusually candid debate.

The Policy Consensus: SAATM or Stagnation

The dominant message from the opening plenary was that Africa's aviation potential remains hostage to slow liberalization. Kenya's Prime Cabinet Secretary Musalia Mudavadi called for a unified airspace, arguing that "aviation is not just a means of transportation" but an enabler of trade, tourism and investment under the AfCFTA.

AFCAC Secretary General Adesewa

Adeyemi urged civil aviation authorities to fast-track regulatory harmonization and

mutual recognition of safety standards, while AFRAA's Abderahmane Berthe pointed to high fuel taxes, currency volatility and restrictive bilateral agreements as persistent drags on profitability. RwandAir CEO Yvonne Makolo pressed governments to move from commitments to practical implementation of open skies.

IATA's Reality Check

Kamil Alawadhi's keynote provided the summit's most concrete scorecard. He framed aviation improvement as "a choice," not an accident, and acknowledged genuine progress: blocked funds have fallen from a \$1.5 billion peak in July 2023 to \$624 million in July 2026, and 47 African airlines now hold IOSA registration.

But the gaps remain stark. Africa still records the world's highest accident rate; the ICAO SARPs effective implementation rate in Sub-Saharan Africa stands at 60.34% against a global average of 69.46%; and between 2020 and 2025, only 16% of African accident reports were completed and published in line with ICAO requirements.

Unit costs remain around double the global average, taxes and charges at least 15% above it, and African markets still account

for 70% of total blocked funds globally. Infrastructure, Drones and the Value Chain A dedicated infrastructure panel examined who pays for next-generation airports, whether PPP frameworks can deliver sustainable funding, and how charges can recover investment without pricing out airlines.

The African Drone Forum returned for its second year as the official uncrewed systems track, with Kenya, home to a live UTM procurement process and an operational BVLOS corridor as a fitting host. Sessions also addressed MRO capacity, with participants arguing that Africa must move from being merely a market to owning more of the maintenance, technology and skills value chain behind every flight. Aviation Africa 2026 succeeded as a forum for honest diagnosis.

The presence of global OEMs, MRO providers and 30-plus Directors General of Civil Aviation gave the conversations weight. Yet the summit also exposed the enduring gap between ambition and execution. SAATM progress remains "dangerously sluggish," and major aircraft lessors were conspicuously absent from the exhibition floor, a signal that financing confidence has not yet caught up with the rhetoric.





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DATE :
14-15 December 2026

LOCATION :
Dubai World Trade Centre

INTERVIEW: Mr. Hadi Akoum

AIRBUS

Airbus' Vice-President Sales for Africa and Levant

At the sidelines of the Aviation Africa Summit 2026, held at the prestigious Sarit Expo Centre in Nairobi, Kenya, Airbus Vice President of Aircraft Sales for Africa and Levant, Mr. Hadi Akoum, spoke with Aviator Africa's Vincent Mwesigye Mupenzi about Airbus' plans, priorities, and outlook for African aviation over the next decade, as well as other key developments shaping the continent's aviation industry.

Qn. How does Airbus view Africa's aviation growth potential over the next decade?

We believe that in the next 20 years, the number of aircraft in Africa will almost double. We believe in the market in Africa today: we have around 300 aircraft that are flying across approximately 40 operators and the same in orders.

The population is growing rapidly - expected to increase by 720 million (source: Airbus Global Market Forecast 2026) to well past 2 billion by 2044- and business between countries is growing as well so we believe that this is possible if things executed strategically, when governments support airlines, support the ecosystem to make it easier for Airlines to develop.

Right now, about 20% of intra-African travel is still forced to connect through non-African hubs like Europe or Middle-East; adding thousands of unnecessary kilometers and flight hours to trips across the continent; and we are here to fix that inefficiency.

We see Africa as a major engine for future aviation growth simply because of its size. Aviation is really the connective tissue here; it's the most





practical way to integrate markets and make the African Continental Free Trade Area (AfCFTA) a reality, especially where building extensive ground infrastructure would take too much time and capital.

On top of that, Africa has incredible potential to produce sustainable aviation fuels (SAF) locally. When you combine that energy potential with such a young, tech-savvy population, there is absolutely no reason Africa can't build a self-reliant, world-class aerospace industry of its own.

Qn. Which African markets or regions do you consider the most promising, and why?

I believe every country needs aviation to open up their domestic and regional routes and do business with neighbors. Every country needs this and I believe every country can afford this. If you have expertise in aviation, then the path to success becomes much more manageable.

A key challenge when establishing an airline is ensuring access to specialized local expertise. If broader strategic objectives are allowed to overshadow commercial fundamentals, it can lead to leadership structures that may not fully align with the industry's unique demands, ultimately impacting the airline's long-term financial sustainability and the return on public investment.

Take the example of Ethiopian Airlines, Ethiopian airlines was initially not the

leading airline in Africa but 20 years ago, the government decided to make changes and hired Ato Girma Wake who is currently acting CEO of Uganda Airlines, and thanks to his expertise, he was able to turn Ethiopian airlines into a major African airline and it is now the leading airline on the continent in terms of profitability, network and growth structure.

Today, Ethiopian Airlines operates the largest A350 fleet on the continent with 26 aircraft, being the first airline on the continent to operate the A350-1000, and 25% better fuel efficiency to connect Addis Ababa directly to 160 destinations.

Qn. Does Airbus have plans to tailor aircraft solutions specifically for African carriers?

Yes absolutely! Africa is a vast continent, you often spend about 4-5-6-7 hours to travel from one country to another, However, traffic today is not yet big enough to fill wide body aircraft. In fact, 80% of future demand will be for single-aisle aircraft, with the remaining 20% for widebodies.

So, for intra-continental and regional travel, the single aisle A320 and A220 are key. Both aircraft are truly tailored for the continent, with critical cockpit, metallic, and composite parts for both aircraft families manufactured right here in Africa by our employees across Morocco and Tunisia.

The A220 is an aircraft with between 110 to 150 seat capacity with a range mobility

that goes up to 7 hours flight so it can cover the whole of Africa very efficiently on a cost per seat basis. You don't need large aircraft to cover short distances, you can have single-aisle aircraft. We also have a full range of Services that can assist the airlines and governments, in running operations efficiently and in optimising the maintenance schedules.

Qn. What is Airbus doing to support Africa's transition to sustainable aviation?

All our aircraft are able to fly with up to 50% Sustainable Aviation Fuel (SAF) blends today. On SAF production, we are actively working with the relevant stakeholders, to help accelerate its availability and promote usage so 50% SAF in the tanks becomes a reality. Because it is a major investment, both the Airlines and the SAF producers need to have a certain number of aircraft to be able to work with. In Africa, we are currently working with Kenya, Ethiopia, Morocco as well as Algeria on these topics.

Qn. Does Airbus have partnerships with African aviation schools or governments to build local capacity?

Absolutely! We have various partnerships with several carriers such as Ethiopian airlines. Together with ENAC and ISAE-SUPAERO, we launched an Advanced Master programme in Aeronautical Management for 30 of their top management and operational talents. We also recently announced a partnership with

The Aviator Institute in Monastir, Tunisia, to train up to 80 ab initio cadets a year. These initiatives are critical because our Global Services Forecast shows Africa will need 20,000 new pilots, 30,000 new mechanics, and 21,000 cabin crew by 2044. We recently had a similar initiative with Air Côte d'Ivoire, and an aviation school in Yamoussoukro to train pilots and technicians. We have done the same thing as well in South Africa and in Algeria.

Qn. How can Airbus help address Africa's aviation skills gap?

We cooperate with Universities in Africa and Airlines to deliver specific courses and training. This helps to grow the knowledge at university level and prepare future engineers in aviation. Latest example is the signature with University of the Witwatersrand in South Africa on boosting capabilities in aerospace knowledge.

Furthermore, the Airbus Foundation has invested over \$6.5 million USD since 2011 to build community resilience and youth education across the continent. We are proud to foster a local ecosystem that today sustains 3,000 direct employees and 20,000 indirect jobs in Africa.

Qn. How can Airbus support airport and air navigation infrastructure development in Africa?

Through the Support and Services Department, we can advise on construction of Airports, Equipment at the airport or airline equipment. To ensure we remain physically close to our customers, we opened last year a new Customer Support Centre in Johannesburg, deploying local Field Service Representatives and experts.

Qn. What role can Airbus play in strengthening Africa's Maintenance, Repair, and Overhaul (MRO) capabilities?

Airbus can partner with airlines of all sizes to establish dedicated Maintenance, Repair, and Overhaul (MRO) facilities. Whether an operator manages a massive fleet or a smaller number of aircraft, we are committed to developing localized MRO infrastructure to help monetize investments and ensure profitability for everyone.

For operators, we provide end-to-end support to build indigenous MRO capabilities, guiding them through the certification process to maximize operational efficiency. We have successfully implemented this model with key regional partners, including Air Côte d'Ivoire and Ethiopian Airlines, the latter of which operates a comprehensive MRO and simulator training facility for the A350.

We have established similar MRO footprints in South Africa, Egypt, Tunisia, and Algeria, alongside an A220 MRO in Nigeria developed in partnership with Ibom Air. Furthermore, to support our expanding asset base of over 500 helicopters and 100 military aircraft across the continent, we recently announced a new Helicopter MRO facility in Morocco positioned to serve the broader West African region.

Qn. How important is digitalization (e.g., smart airports, data systems) in Africa's aviation growth?

It's all about efficiency. In aviation, both the capital cost of aircraft and the price of fuel are significant. To maximize profitability,

airlines need to utilize their aircraft for more than 10 hours a day, which requires a Swiss-watch level of organization across the board—from the airport and the airline to luggage handling and check-in. Everything must run seamlessly to unlock this level of operational efficiency.

This is where digitization and Artificial Intelligence come in. AI helps predict where operations can be improved and reorganized to drive greater optimization and aircraft utilization. A prime example is SKYWISE, our digital health monitoring and predictive maintenance platform, which enables operators to turn unscheduled maintenance into scheduled maintenance and significantly reduce operational disturbances.

Additionally, utilizing Optimised Descent Profiles on our Flight Management Systems can independently reduce fuel burn and CO2 emissions by 5% to 10%. These digital tools also provide better market intelligence, helping airlines understand passenger travel patterns for more precise route planning.

Today, all our aircraft are fully digitized and in constant communication with the ground. While an aircraft is still in the air, it transmits data directly to the local maintenance facility. By the time it lands, the maintenance team already knows exactly what needs attention and has the right equipment waiting.

We've also designed our aircraft to make troubleshooting incredibly straightforward; it is easy to pinpoint a faulty component, remove it, and replace it. Ultimately, this seamless integration is how airlines eliminate delays and maintain high fleet utilization.





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AFRICA'S AVIATION FUEL CHALLENGE:

Can Airlines Escape the High-Cost Trap?

Waithaka Edda - Kenya

Africa's aviation fuel challenge is less a single "high-cost trap" than a structural vulnerability layered onto a commodity shock. The continent's airlines are caught between global fuel prices they cannot control and domestic refining and distribution systems that are underdeveloped.

The result is a sector that can grow passenger traffic but struggles to convert that growth into profit: IATA projects African carriers will earn just \$0.40 per passenger in 2026, against a global average of \$4.50, with a net margin of only 0.2%.

Extreme exposure to global prices

Fuel represents 30% to 40% of operating costs for many African carriers, higher than the global average. When the Middle East conflict disrupted supply in 2026, the impact was immediate. Kenya Airways' fuel spending jumped 66–72% in the first half of the year, rising from \$131 million to \$223 million and consuming 32% of operating costs.

RwandAir reported a similar 70% increase, with fuel reaching roughly 40% of total costs. Even before the shock, African airlines were paying about 17% more for jet fuel than the global average.

The exposure is also physical. Up to 70% of the jet fuel used by African airlines has

historically relied on supply lines passing through the Strait of Hormuz. When the strait was effectively closed to commercial shipping in early 2026, carriers faced a double bind: absorb massive losses or raise fares and risk suppressing demand in price-sensitive markets. Most could not pass the full increase to passengers; some cut flight frequencies instead.

The risks of import dependence

The risks are threefold: price, security, and strategic vulnerability. Africa imports more than 70% of its refined fuel, meaning the continent pays for refining capacity, transport, and middlemen it does not control.

AFRAA negotiates fuel prices collectively for its members, but does so with suppliers



and middlemen rather than directly with refineries, a layered procurement structure that adds cost and reduces transparency. Supply-security risk is more dangerous. Many African countries hold only about 20 days of strategic oil stocks, leaving little buffer against extended disruptions.

When Gulf shipments became uncertain, importers like Ethiopia had to look in alternatives at much higher prices and, in some cases, restrain consumption. Supply disruptions raised concerns at critical hubs including Nairobi and Addis Ababa.

The strategic vulnerability is long-term. Africa's net refined-product imports are projected to rise from about 2 million barrels per day currently to 3.4 million b/d by 2050, while the continent could face a refined-fuel shortfall of 86 million tonnes by 2040 if refining capacity does not expand.

Oil-producing countries remain dependent on foreign refiners, exporting crude and importing finished product, a pattern that leaves them exposed to exactly the kind of geopolitical shock that hit in 2026.

Can regional refining and storage help?

Regional refining and storage can help but the effect is likely to be uneven and slower than the urgency suggests. Several large projects are moving forward.

The Dangote Refinery in Nigeria, at 650,000 b/d, is already operating and supplying jet fuel to West Africa and Europe; it has eased availability crises in Nigeria even if price relief has been limited.

A proposed Dangote Lamu Refinery in Kenya, at 700,000 b/d, would source crude

internationally and target East African supply, with groundbreaking which took place on September 30 2026. The Tanga Regional Energy Hub in Tanzania and Uganda, a \$20bn+ integrated project, would combine refining, storage, a marine terminal, and a product pipeline linked to EACOP.

Dangote offers the most concrete evidence of what regional refining can and cannot do. It has significantly addressed Nigeria's availability crisis, the scarcity that previously disrupted airline operations, but price pressures remain because the refinery still sources part of its crude from global markets, and West African carriers have not experienced significant cost relief.

Availability and affordability are not the same problem. The East African projects could improve security more directly if they materialize, but they face long lead times, financing risk, and competition from established global supply chains. Storage investment is also critical: 20 days of strategic reserves is far below what would buffer a prolonged disruption.

The long-term promise of SAF

Sustainable aviation fuel is Africa's most significant long-term opportunity, but it is not a near-term solution. The African Union adopted a Continental Strategy for SAF and Low Carbon Aviation Fuels in 2025, estimating that an African SAF industry could generate 11 to 20 million jobs and produce 70 to 261 million tonnes of SAF.

Yet IATA's assessment is that Africa and the Middle East currently have a SAF production pipeline of only about 0.2 million tonnes, against a feedstock-based potential of nearly 7 million tonnes.

The practical near-term pathway is HEFA and HEFA co-processing at existing refineries. Companies like Sasol and PetroSA in South Africa, and potentially Dangote, could begin co-processing lipid-based feedstocks within 12 to 24 months, producing SAF at relatively competitive costs.

This would allow Africa to start building a domestic supply chain without waiting for large-scale greenfield plants. But SAF remains significantly more expensive than conventional jet fuel, and African airlines are already among the world's most cost-burdened carriers. Without government incentives, capital subsidies for producers, adoption incentives for airlines, and investment in feedstock supply chains, SAF would worsen the cost trap before it alleviates it.

Bottom line

African airlines cannot escape the high-cost trap through any single lever. Joint purchasing through AFRAA and operational efficiencies like Free Route Airspace save money at the margin, the West and Central Africa FRA initiative alone is estimated to save over \$5.2 million annually in fuel and flight hours, but they do not change the underlying dependence on imported fuel.

Regional refining can improve availability security, but price relief will depend on crude sourcing, scale, and competition. SAF offers a transformative long-term path but requires policy and investment that do not yet exist at scale. In the meantime, African carriers will remain price-takers in a global fuel market, with thin margins that leave little room for the next shock.



AFRICA'S MILITARY AVIATION MODERNIZATION:

Sustainment Takes Centre Stage



Africa's military aviation landscape is undergoing a layered transformation rather than a uniform arms race. Verified announcements from airshows, conferences and summits in 2026 reveal a clear divide:

North African states are pursuing high-end, power-projection capabilities including fifth-

generation fighters and heavy-lift logistics, while Sub-Saharan air forces concentrate on counter-insurgency, surveillance and sustainable maintenance. Across events, a recurring theme emerges: sustainment, training and industrial partnerships are receiving as much attention as new airframes, reflecting a pragmatic shift from prestige purchases toward operational

readiness.

Procurement: Two Tiers of Modernization
North Africa: High-End Deterrence
Egypt marked a significant logistics upgrade at the El Alamein International Airshow in September 2026, receiving its first five Boeing CH-47F Chinook heavy-lift helicopters out of a 12-aircraft order.



These replace an aging CH-47D fleet and provide digital cockpit avionics and increased lift capacity for troop transport and equipment movement. Egypt has also reportedly been approved to join Türkiye's KAAN fifth-generation fighter programme, signaling ambitions for next-generation combat aviation. Algeria has begun integrating Su-57E stealth fighters, making it the first African nation to field a fifth-generation platform, alongside orders for Su-34 bombers and Su-35 fighters.

Morocco continues its F-16 Block 72 upgrades and Apache attack helicopter acquisitions.

Sub-Saharan Africa: Counter-Insurgency and Surveillance

Nigeria is executing a broad fleet expansion, with more than 46 aircraft in acquisition, including 24 Leonardo M-346 fighter-attack jets and 10 AW109 Trekker helicopters, three of which were delivered in September 2026.

Bell has begun producing AH-1Z Viper attack helicopters for Nigeria. Côte d'Ivoire confirmed the acquisition of two Wing Loong II medium-altitude, long-endurance UAVs from China for border surveillance and counter-terrorism, with the capability publicly acknowledged in August 2026. Maintenance and Sustainment: Building Self-Reliance

A notable shift at Africa Aerospace and Defence (AAD) 2026 in Pretoria was the focus on local sustainment. Airbus Helicopters and Denel Aerospace signed a strategic partnership to support the South African Air Force's helicopter fleet, aiming

to improve serviceability through local maintenance, repair and overhaul (MRO) and refurbishment capabilities for H215 and H225 platforms.

This responds directly to SAAF readiness challenges: the force flew only 52.8% of its planned hours in 2025/26 due to spare parts shortages and contract delays. Separately, Airbus and ALT Academy signed a memorandum of understanding at AAD 2026 to advance aircraft maintenance training across Africa. Nigeria is also discussing a Leonardo maintenance hub in-country as part of its M-346 sustainment package, which includes support for at least 25 years.

Training: Professionalization and Partnerships

Training will be a central theme at the 5th African Air Forces Forum, scheduled for December 2026 in Abidjan, where organizers projected \$2.6–3 billion in training-related procurement across the continent for 2026–2030, covering simulators, trainer aircraft and maintenance engineering facilities.

Concrete agreements include ITPS Canada signing a collaboration with the Ethiopian Air Force at the Black Lion Air Show in January 2026 for aircraft modernization and advanced training, alongside deepened ties with Nigeria involving flight-test courses and airworthiness seminars. Nigeria's M-346 programme explicitly bundles pilot and maintenance training with simulator and ground-based systems.

Surveillance and Aviation Technology

The procurement focus on intelligence, surveillance and reconnaissance (ISR) is evident in both UAV acquisitions and forum agendas. Côte d'Ivoire's Wing Loong II acquisition provides an endurance exceeding 20 hours and an altitude ceiling of 9,000 metres for border and maritime monitoring.

The Abidjan forum's theme "Building Interoperable Air Defence and UAV Capabilities" reflects a regional push toward integrating uncrewed systems into air defence architectures, with dedicated panels on UAV integration for border security and counter-terrorism. The Do228 NXT turboprop also made its African debut at El Alamein, targeting utility and surveillance roles.

Analytical Takeaway

The "race" is less about a single finish line than about tailored capability building. North African states are investing in qualitative superiority and strategic lift, while Sub-Saharan forces prioritize platforms suited to asymmetric threats light attack aircraft, armed UAVs and helicopters.

The most telling development, however, is the institutional focus on maintenance and training at 2026 events. The announcements from El Alamein, AAD and the African Air Forces Forum suggest that African air forces are increasingly internalizing this lesson, pairing new procurement with industrial partnerships and human-capital investment to ensure that modernized fleets remain operationally sustainable.

Aviation Insurance in Africa

Are Airlines and Airports Adequately Protected?

Waithaka Edda

Africa's aviation insurance market has the legal architecture and product range of a functioning system, compulsory insurance requirements, hull and liability policies, war risk cover, specialist brokers but the practical reality for most carriers and airports falls well short of adequate protection.

A small number of well-capitalized airlines and major international airports access global markets effectively. For everyone else, protection is selective, externally dependent, and legally fragile.

Hull and Liability: Rules on Paper, Gaps in Practice

African Union policy frameworks require air carriers to insure hull, passengers, crew, cargo and third-party liability, with limits referencing the Montreal Convention. Airports and air navigation service providers are likewise expected to carry third-party cover.

Specialized products exist: Lockton's Johannesburg aviation team writes hull all-risks (including war), aviation liability and airport liability across the continent, and Mauritius-based CG Re launched an aviation insurance and reinsurance division in 2026 covering airline hull and liability, airport liability and bodily injury. Yet the gap between "products exist" and

"protection is adequate" is wide.

In 2025, Nigeria's Federal Airports Authority was forced to publicly assert that all federal airports under its management were insured and up to date, after domestic airline executives accused airports of being uninsured and of shifting losses from dilapidated runways and weak bird-strike controls onto carriers.

War Risk: The Structural Vulnerability
War risk is where African aviation insurance is most exposed. The Russia-Ukraine conflict generated claims involving roughly 400 Western-leased aircraft stranded in Russia, and the 2025 UK High Court ruling in favor of lessors under hull war policies pushed war-risk pricing to record highs.

New capacity subsequently entered the market and rates began softening in late 2025 and early 2026, but that softening rests on the assumption that no major geopolitical shock occurs.

The core risk for African operators is contractual: war risk policies typically permit short-notice cancellation and withdrawal. European research documents show insurers can withdraw cover on as little as 48 hours' notice after a major terrorist event.

Some carriers have responded by outsourcing the problem entirely. Air Zimbabwe's planned resumption of

Harare-London flights depends on an ACMI wet-lease with Spain's Plus Ultra, with the lessor supplying hull, liability and war risk insurance, precisely because the national carrier cannot independently buy long-haul war and hull cover at reasonable cost.

Costs and Claims: Price Takers, Slow Justice

On cost, global aviation hull and liability rates hardened through 2025, with insurers pushing double-digit increases after several costly losses and rising repair costs.

African airlines, as price takers, have limited bargaining power, though softening war-risk rates may partially offset all-risks increases depending on fleet and route profile.



Claims management is the more substantive weakness.

In February 2026, Nigeria's Lagos High Court ruled in favor of IRS Airlines, holding that insurers had no justification for refusing to pay a claim involving a Fokker 100 and dismissing the insurer's counterclaim to void the policy. The case shows that even with valid cover, African policyholders may need years of litigation to be paid.

Expertise: Concentrated in the South Local specialist capacity is highly concentrated. Lockton's aviation team, around 40 professionals, sits in Johannesburg and draws on its London parent. South African industry bodies have

noted that as African aviation activity and leasing grow, demand for specialist aviation expertise will intensify.

This concentration means airlines and airports in West, East and Central Africa typically depend on brokers in London, Johannesburg or Nairobi for underwriting and claims support. Language barriers, time-zone-gaps and thin on-site risk survey capability amplify information asymmetry, and when disputes arise, policyholders' technical capacity to challenge insurers is limited.

The problem is not an absence of insurance products. It is that the depth, reliability and local technical support of protection do not

match the risk exposures African aviation actually carries.

The Nigerian airport insurance row, the Air Zimbabwe workaround and the IRS Airlines litigation all point the same way. Large carriers and hub airports are reasonably protected; smaller airlines, remote airports and unstable regions are not.

Closing that protection gap requires more than buying policies, it requires local underwriting depth, faster claims resolution and a credible war-risk backstop. Until then, "adequately protected" remains true for only part of African aviation.

AIRPORT CYBERSECURITY

Are Africa's Aviation Gateways Prepared for Digital Threats?

Africa's airport cybersecurity readiness is severely insufficient, and the threat landscape has shifted from theoretical risk to actual damage. In 2025–2026, multiple African countries experienced real cyberattacks:

Somalia's electronic visa system suffered a data breach affecting over 35,000 travelers; South Africa's Air Traffic and Navigation Services (ATNS) discovered ransomware precursor malware in its operational technology environment, with signs of data exfiltration to China; Côte d'Ivoire's

national airline was attacked with sensitive passenger data illegally extracted.

The common challenges facing African aviation cybersecurity are uneven maturity levels, lagging regulatory frameworks, shortage of professional talent, and lack of threat intelligence sharing mechanisms.

Passenger Data: Most Frequent Breach Point

Airport and airline passenger data systems are the most vulnerable link. Somalia's E-TAS electronic visa platform was

breached in November 2025, with leaked data including names, photos, birth dates, email addresses, marital status, and home addresses, with the number of affected individuals estimated at over 35,000.

The incident triggered diplomatic-level concerns, the UK embassy in Mogadishu issued a warning, and Somaliland publicly "celebrated" the attack, exposing the sensitivity of aviation data security in politically contested regions.

Côte d'Ivoire's Air Côte d'Ivoire suffered a cyberattack in February 2026, with

hackers conducting illegal extraction of files containing sensitive data. The company only disclosed the incident 12 days later, reflecting deficiencies in incident notification transparency.

Although flights were not disrupted, passenger identity, contact information, travel patterns, and even bank card data were at risk.

Air Traffic Management: Operational Technology Becomes New Battlefield
The ATNS incident in South Africa is the most alarming signal.

The agency is responsible for air traffic control and meteorological services covering approximately 10% of the world's airspace. In 2026, it detected malware in its operational technology environment supporting meteorological services at Port Elizabeth Airport, describing it as malware commonly associated with the early stages of ransomware attacks, with network monitoring further indicating possible data exfiltration to external IP addresses located in China.

ATNS claimed its technical team had contained and removed the malware, but still issued a request for quotation seeking forensic investigation experts to determine the root cause and extent of the breach. Meanwhile, ATNS launched a separate investigation into alleged insider data theft at Mahikeng Airport, with reports claiming employees may have unauthorizedly accessed and exfiltrated personal information.

This indicates that threats to African aviation systems are not solely external, internal controls are equally weak.
Connected Operational Infrastructure: IT/OT Convergence Amplifies Risk
The risk of African airports lies in the deep coupling of IT systems with operational technology.

The ATNS incident demonstrates that once malware enters the OT environment, it may affect meteorological services, thereby impacting flight safety. Global research indicates that airport systems' interconnectedness expands the attack surface, phishing, denial-of-service attacks, malware, and credential theft are primary threats, with supply chain and third-party risks being key vulnerabilities.

ACI surveys show that cyber is one of the top four threats facing airports, but among ICAO USAP audit results, cybersecurity remains one of the least compliant areas. Specific gaps include insufficient threat intelligence and risk assessment capabilities, unclear cybersecurity accountability structures, lack of cybersecurity plans and policies, shortage of experts, and weak security culture.

These problems are more pronounced in Africa.

Regional Response: Framework in Progress, Implementation Lags
Africa is building a coordinated response mechanism. ICAO's AFI-CYRES project is dedicated to enhancing the cyber resilience of communications, navigation, and surveillance/air traffic management systems, with experts from seven African countries participating in developing the AFI ANS Cyber Resilience Framework, aligned with the ICAO cybersecurity strategy and the NIST framework.

In terms of training, ICAO's West and Central Africa Regional Office held a regional cybersecurity seminar in Dakar in June 2026, with over 90 participants from 13 countries, including tabletop exercises. The East African region also conducted relevant training in Bujumbura, Burundi, in April 2026. Gabon, with support from CAFAC and EUROCONTROL, trained 31 personnel from multiple departments in February 2026, covering aviation

authorities, digital infrastructure agencies, airport security, immigration, and military departments.

However, these efforts remain at the stages of awareness raising and framework drafting. The core challenges identified at the WACAF seminar include uneven cybersecurity maturity levels, inadequate regional coordination, insufficient technical capabilities, weak threat intelligence sharing, and limited visibility into actual operational needs. In other words, the framework exists, but implementation capabilities have not kept pace.

Africa's airport cybersecurity is in a state of threats already realized, defenses still catching up. Somalia and Côte d'Ivoire demonstrate the real risks of passenger data breaches; the ATNS incident shows that air traffic management's OT environments are no longer isolated from cyber threats.

Africa's structural weaknesses are that most airport and navigation service providers lack dedicated cybersecurity teams, incident response relies on external forensic firms, and mandatory reporting mechanisms for cyber incidents are almost absent, South Africa's POPIA only mandates notification of personal information breaches, with no equivalent requirement for operational cyber incidents, creating major blind spots.

Regional cooperation frameworks have established foundational consensus, but translating framework documents into operational capabilities requires sustained investment, personnel training, and most critically political will to make cyber incident reporting mandatory rather than concealable.



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Airport Resilience:

Preparing African Aviation for Climate Change and Operational Disruptions

Barry Agaba - Uganda

Africa's airport resilience is shifting from disaster response to systematic pre-adaptation, but the core challenge lies in highly differentiated physical risks across regions. East Africa faces extreme rainfall, West Africa extreme heat, and coastal areas face sea level rise, while power systems, drainage facilities, and emergency coordination capabilities remain generally weak.

This makes resilience investment more dependent on accurate risk assessment and coordinated action beyond airport boundaries. ICAO and the African Union have issued early warnings for the strong

El Niño in 2026, and airports across the continent are incorporating climate risk into planning at varying levels, from Ethiopia's new airport climate risk action plan to Uganda's observed increase in extreme rainfall trends.

Flooding and Extreme Precipitation:

Drainage Capacity and Operational Interruption Risks

Extreme rainfall directly impacts runways and terminal infrastructure. ICAO identifies flooding, inadequate drainage, reduced surface friction, operational delays, and flight cancellations as primary consequences of climate change.

Research from Uganda's Entebbe International Airport shows that the frequency of heavy rainfall (>10mm) has

been on an upward trend since 2009, with maximum single-day rainfall of 69mm recorded in 2014, reaching the "very heavy" category, often accompanied by thunderstorms, lightning, and strong winds that interfere with communications and ground operations.

The airport's projected single-day maximum rainfall under the high-emission scenario (SSP5-8.5) will increase significantly at a rate of 3.6mm per decade.

At the planning level, Ethiopia's Bishoftu International Airport, Africa's largest airport by planned scale, has incorporated climate risk measures identified in existing assessments into action plans as part of its \$2.1 million MCDF grant, with drainage systems required to meet international



Jomo Kenyatta International Airport

ICAO guidance

notes that at airports already constrained by runway length or climb performance, the impact of high temperatures will be more pronounced

environmental and social standards.

At the global level, Porto Alegre airport in Brazil was closed for five months in 2024 due to extreme rainfall flooding, and the World Economic Forum estimates that global aviation climate disruption costs could reach \$500 billion by 2050. This serves as a warning for African airports: the cost of inaction may far exceed prevention and control investments.

Extreme Heat:

Aircraft Performance Constraints and Infrastructure Stress

Rising temperatures reduce air density, directly affecting aircraft lift and engine thrust, leading to increased takeoff distances, reduced climb performance, or mandatory payload restrictions.

ICAO guidance notes that at airports already constrained by runway length or climb performance, the impact of high temperatures will be more pronounced. Nigeria's projection study shows that under the high-emission scenario, density altitude at Kano and Abuja airports will increase by 500-700 feet by the end of the century, significantly degrading aircraft performance; coastal airports such as Lagos, while experiencing smaller variations, already face chronically high-density altitude conditions.

The adaptation pathways are relatively clear but require operational adjustments: shifting heavy aircraft departures to cooler morning or evening periods, re-evaluating runway length designs to incorporate future temperature projections, and increasing terminal cooling capacity and ground staff heat protection measures. At Entebbe Airport, the number of cool nights (minimum temperature below the 10th percentile) is decreasing, meaning terminal cooling demand and operational costs will continue to rise

Storms and Strong Winds:

Cascading Effects and Communication Interference

Storms and strong winds affect airports not only through direct structural damage but also through visibility degradation, communications interference, and ground operations interruption.

Entebbe research indicates that heavy precipitation events are often accompanied by thunderstorms, lightning, and strong winds,



potentially causing flight delays, diversions, and communications disruption. The African Union's 2026 El Niño warning explicitly lists infrastructure disruption as one of the potential consequences. ICAO's adaptation recommendations include reinforcing terminal and runway structures, improving drainage systems, and upgrading air traffic management with advanced weather forecasting and optimized routing. Power Failures and Critical Infrastructure:

Backup Capacity and External Dependencies

Power system resilience is a frequently underestimated but critical component of airport resilience in Africa. The Iberian Peninsula blackout in 2025 resulted in 344 flight cancellations in Spain, but airports relied on backup generators to maintain 93% of commercial flight operations.

For runway lighting, ICAO Category II/III precision approach requirements mandate that centerline lights and touchdown zone lights switch to backup power within one second, while other lighting allows 15 seconds. This means airports must be equipped with uninterruptible power supplies and fast-starting generators, with regular testing of switching procedures.

The Particularity of Africa and Pathways Forward

The climate risk characteristics facing

African airports are highly heterogeneous: East African airports such as Entebbe face increasing extreme rainfall, West African airports such as Kano and Abuja face severe heat and density altitude degradation, coastal airports face combined risks of sea level rise and storm surge, while the African Union warns that El Niño may trigger multiple concurrent disasters including drought, flooding, and heatwaves.

This means that a "one-size-fits-all" resilience upgrade plan is ineffective. A more feasible pathway is to embed climate risk assessment at the new airport planning stage as Bishoftu Airport has done while for existing airports, prioritize "no-regret" investments: upgrading drainage systems, expanding backup power redundancy, and establishing extreme weather early warning and response procedures.

At the same time, airport resilience cannot be confined within airport boundaries; coordination with power grids, road transport, and meteorological departments should be incorporated into national climate adaptation planning. ICAO's Climate Adaptation Synthesis Report and fact sheets provide reference frameworks for this purpose, but actual implementation still depends on each country's fiscal space and interdepartmental coordination capacity.

Drones and Autonomous Aviation:

Is africa ready for the next aviation revolution?



Africa is not uniformly ready for the autonomous aviation revolution, but it is operationally ready in pockets and structurally unprepared at scale. Rwanda, Kenya, Ghana, Mozambique, and Malawi have moved drones from pilot projects into routine medical delivery, disaster response, and agricultural trials. Yet the continent's broader readiness is constrained by fragmented airspace regulation, limited beyond-visual-line-of-sight approvals, thin maintenance and training ecosystems, and the persistent gap between a successful pilot and a sustainable commercial service. Agriculture: Proven Gains, Adoption Barriers

Precision agriculture is one of the clearest demonstrations of drone value. In northern Ghana, a study across 150 smallholder farms combined IoT soil sensors, machine-learning irrigation predictions, and drone-delivered water applications, producing a 50.6% increase in crop yields and a 30–40% reduction in water usage compared with traditional methods. In South Africa, Chinese-made agricultural spraying drones from DJI and XAG are already widely used in sugarcane plantations, cutting pesticide use and improving efficiency relative to manual spraying.

The barrier is not technical feasibility but farmer-level economics and skills. The Ghana study identified high equipment costs, limited digital literacy, and policy gaps as key obstacles, recommending subsidies, training, and regulatory reform. Breeding institutions in West and Central Africa are also adopting drone-based phenotyping using aerial imagery to assess crop traits, but this remains a research-capacity exercise rather than a farmer-facing service at scale.

Cargo Delivery: From Blood Runs to Commercial Freight

Rwanda pioneered national-scale drone delivery in 2016, using fixed-wing drones to move blood, vaccines, and medicines to remote clinics in roughly 30 minutes instead of hours or days. The model has since expanded to multiple distribution centers covering most of the country, and similar programs have taken root in Ghana, Kenya, and Malawi.

Kenya is now testing whether drone cargo can move beyond medical drops into heavier commercial freight.

The Good Drone Company, through its Kenyan partner ThatcherX, is deploying a hybrid-electric VTOL drone with a 25 kg

payload and 1,000 km range, targeting pharmaceuticals, humanitarian aid, and cash-in-transit.

The operation relies on Kenya's Konza National Drone Corridor, the country's first airspace cleared for BVLOS operations. This is a meaningful regulatory step: BVLOS is the difference between a pilot watching a drone overhead and a logistics network that can actually compete on cost and distance. Still, the Kenyan case illustrates the gap between announcement and operation.

ThatcherX's certification status has been questioned in reporting, and most African drone delivery remains concentrated in small, urgent health payloads rather than general cargo.

Infrastructure Inspection: Efficiency Gains Without Full Integration

Utilities and transport operators are beginning to use drones for asset inspection, but adoption is uneven.

Railways present a larger potential market. Industry experts argue that African rail operators building new lines could skip costly fixed inspection systems and integrate drones and AI from the start, collecting track geometry, ballast, vegetation, and defect data in a single flight.

But adoption is stuck: only about one in ten operator engagements progress beyond pilot or proof-of-concept stages, largely because railways lack workflows to absorb drone data into maintenance operations.

Emergency Response: Disaster Mapping Becomes Operational

Mozambique offers the strongest example of drones moving from donor-funded experiment to sovereign capability. After cyclones and floods repeatedly exposed the country's inability to see and reach affected populations, the African Development Bank, South Korea, and Mozambique's government built a program that trained 30 certified Mozambican drone pilots and 10 instructors.

When floods struck in February 2026, destroying 30,000 homes and affecting up to 800,000 people, the drone team was airborne within hours, mapping flood extent, monitoring water levels, and feeding real-time intelligence to authorities.

The program's design matters: equipment, trained pilots, and actual deployment

were treated as one package. With instructors now able to certify new cohorts, Mozambique projects it can grow from 30 to 300 pilots within three years using national personnel.

Border Surveillance: Security Demand Outpaces Governance

African governments are deploying drones for border monitoring largely because terrain and manpower gaps make traditional patrols impractical. Nigeria's National Boundary Commission is using drones and satellite imagery to monitor difficult border corridors, generating high-resolution imagery for planning and surveillance.

South Africa's Border Management Authority tested quadcopter drones with infrared cameras and laser range finders; a 10-day trial produced a 61% increase in apprehensions of people crossing illegally. Ethiopia, Kenya, Sudan, and Tunisia have also adopted AI and drone technologies for border security.

The enabling conditions for African drone adoption are real: international partnerships, development finance, and a willingness to leapfrog legacy infrastructure. Kenya's BVLOS corridor and Ghana's agricultural trials suggest the regulatory and technical foundation is widening.

But the continent is not ready for the "next aviation revolution" in any uniform sense. The binding constraints are regulatory fragmentation, the near-absence of harmonized BVLOS rules across borders, weak maintenance and training pipelines outside a few hubs, and the fact that most drone operations still depend on external donors or foreign technology providers.

The ICAO-affiliated African Drone Forum is working on exactly these gaps, regulator peer sessions, BVLOS authorization, UTM governance, and training pathways, but the work is at the stage of comparing notes rather than implementing common rules. In short: Africa is ready for more drones, in more places, doing more useful work. It is not yet ready for an integrated autonomous aviation system.

The countries that succeed will be those that treat drones as regulated public infrastructure, with trained local operators, maintenance capacity, and airspace rules that allow routine BVLOS flight, rather than as standalone technology demonstrations.

EL ALAMEIN INTERNATIONAL
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Egypt's Stage for Great Power Defense Diplomacy





The second edition of the El Alamein International Airshow (EIAS 2026), held September 8–10 at El Alamein International Airport on Egypt's Mediterranean coast, confirmed the event's arrival as one of North Africa and the Middle East's most consequential military and aerospace exhibitions.

With more than 250 exhibitors from 50 countries, over 100 aircraft on display, more than 50 flight demonstrations, and roughly 12,000 professional visitors, the show was both a trade platform and a public spectacle and, above all, a carefully calibrated exercise in Egyptian strategic messaging.

A Presidential Opening

Egyptian President Abdel Fattah El-Sisi inaugurated the exhibition on September 8, accompanied by Cypriot President Nikos Christodoulides, a detail that underscored the event's regional political dimensions.

The opening ceremony featured a documentary screening, tours of the exhibition pavilions, and flight performances by aerobatic teams from Egypt, Russia, Spain, Turkey, Saudi Arabia, the United Arab Emirates, France, and India, among others.

Egypt's official framing was explicit: the exhibition demonstrated the country's capacity to host large-scale international

events and its commitment to fostering international cooperation in aviation and aerospace.

Russia's Comeback Platform

Russia emerged as the most conspicuous participant. Rosoboronexport displayed more than 500 military products, headlined by the Su-57E fifth-generation fighter, which performed flight demonstrations.

The Yak-130M combat trainer made its Middle East debut, and the state exporter announced the signing of its first export contract at the show. Russia also publicly unveiled new munitions, including the S-71M "Monokhrom" missile-drone.

Russian media portrayed the exhibition as evidence that Moscow's defense industry remains attractive to global buyers despite Western sanctions, a narrative the show's optics were clearly designed to support.

China's Long Game

China mounted one of the largest pavilions at the event, drawing defense delegations from across Africa and the Middle East. The Chinese Air Force extended its stay to participate in the exhibition following the "Eagles of Civilization 2026" joint military exercise with Egypt.

Egyptian officials were notably direct about their criteria: technology transfer and domestic production are key considerations in selecting international defense partners. The two countries are also deepening cooperation in space technology, suggesting that Beijing's pitch extends well beyond hardware sales.

Washington's Steady Presence

The United States maintained a robust profile, with the U.S. Air Force and Texas Air National Guard participating with aircraft including the C-130J, A-10, F-16, and F-15E.

The U.S. pavilion hosted more than 25 American companies, and the U.S. Chargé d'Affaires described the strong participation

as a reflection of the depth of the U.S.-Egypt partnership. Washington's presence served as a reminder that Egypt's defense relationships remain diversified rather than exclusive.

The Public Dimension

What distinguishes EIAS from purely transactional trade shows is its deliberate outreach to the general public. Visitors could inspect fighter jets at close range on the ground, interact with pilots, and watch flight performances. A Cairo student told interviewers, "I never imagined they would be this big," describing her first close-up view of military aircraft.

An aviation enthusiast said that although he had long followed the field through books, this was his first time seeing and touching such aircraft in person. A repeat visitor who had also attended the 2024 first edition praised this year's edition as "wonderful" and "truly honorable," citing its lively atmosphere and broad international participation.

The core significance of EIAS 2026 lies in Egypt's use of a geographically advantageous platform to convene defense industry leaders from Russia, China, the United States, and Europe simultaneously, forming a rare "great power defense marketplace" on the Mediterranean.

For Cairo, the exhibition not only enhances its regional influence in aviation and defense but also signals a strategy of balancing and extracting technology transfer between competing major powers. For ordinary visitors, the chance to view military aircraft up close and watch flight demonstrations gives the event a mass appeal unusual among exhibitions of its kind.

Caveats apply. Publicly available information derives primarily from official statements and media reports from the participating countries; no independent assessment of actual transaction outcomes or contract details has been located.

The show's commercial substance, in other words, remains harder to verify than its impressive optics.

Even so, the trajectory is clear. Having established itself over two editions, El Alamein now occupies a distinctive niche: part arms fair, part airshow, part diplomatic theater.

For a region where defense relationships are being actively renegotiated, that combination makes EIAS an event worth watching, and an increasingly important venue for anyone tracking the balance of power in North Africa and the Middle East.



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A Technical Gathering Pushes for Implementation Over Vision





The CANSO Africa Conference 2026 was held from 13–15 October 2026 at the Argyle Grand Hotel in Nairobi, Kenya, under the theme "Practical Implementation Pathways – ATM Transformation and the ANSP Changing Landscape." It was explicitly a CANSO Members-only event, with non-member registrations rejected. The conference convened air navigation service providers (ANSPs), regulators, airspace users, and industry partners from across the region. Its stated purpose was to help Africa "prioritize, sequence and scale the investments needed to modernize its airspace" as SAATM implementation advances.

The CANSO Africa Conference 2026 was a narrowly focused, members-only technical gathering centered on air traffic management modernization under the Single African Air Transport Market (SAATM), with a deliberate emphasis on moving from vision documents to prioritized, sequenced implementation, but its exclusion of non-members and limited public documentation constrain its broader influence.

Core Agenda and Themes

The program was structured around several concrete workstreams;

SAATM and the ICAO Minimum

Implementation Path. A central session focused on "shaping Africa's contribution to the ICAO Minimum Implementation Path" and translating regional priorities into implementation. The framing was notably pragmatic rather than aspirational.

Air Traffic Flow Management (ATFM) by 2030. Sessions examined "making ATFM a reality in Africa by 2030," building on the Mombasa ATFM Roadmap, a master plan developed by African ANSPs, CAAs, IATA, ICAO, and CANSO for regional ATFM and collaborative decision-making.

Unmanned Traffic Management (UTM). A workshop addressed "Unlocking Africa's Low-Level Economy Through UTM,"

reflecting the continent's distinctive leadership in drone delivery for medical logistics and agriculture.

Human Performance and Safety

Culture. Sessions covered safety culture benchmarking, leadership in mental health and wellbeing, and building a human performance culture in African ANSPs. Regional Operational Collaboration. A COMPASS workshop focused on the CANSO Operational Messaging Platform for ATFM Sharing and Synchronization, designed to enhance cross-border coordination during routine and disrupted operations.

Key Messages from Leadership

The conference messaging was consistently direct. Thabani Myeza, CANSO Director Africa Affairs, stated: "Africa doesn't need more vision documents, it needs clear priorities and a realistic path to deliver them." Andrea Sack, CANSO Senior Vice President Global Operations, added that "transformation only works when it is practical, collaborative and driven by the region itself."

Dr. Serah Waitiki of the East African School of Aviation emphasized that investment must extend beyond technology to workforce development: "we must strengthen training, develop the next generation of aviation professionals and equip our workforce with the competencies needed to deliver safe, efficient and resilient air navigation services."

Critical Assessment

Strengths. The conference's deliberate focus on sequencing and prioritization rather than broad strategy represents a maturation in African aviation governance discourse. The Mombasa ATFM Roadmap and COMPASS platform are tangible mechanisms, not aspirational statements.

The inclusion of UTM reflects recognition that Africa's drone ecosystem, Zipline alone has completed over 1.5 million flights delivering blood products and vaccines across Rwanda, Ghana, Nigeria, Kenya,

and Côte d'Ivoire, requires integration into manned ATM systems. The emphasis on human performance and mental health is a notable expansion beyond purely technical concerns.

Limitations.

The members-only restriction means the conference excluded broader civil society, academic, and media participation, limiting transparency and external scrutiny. Public documentation of outcomes is thin: while the agenda is detailed, there is no publicly available communiqué specifying agreed priorities, commitments, or measurable deliverables. The conference's scope is exclusively ATM-focused, it does not address airport infrastructure resilience, climate adaptation, or sustainable construction, which are governed by different institutional processes (ICAO, ACI Africa, and national authorities). Relevance to airport resilience. For the broader question of African aviation

resilience to climate change and operational disruptions, this conference offered indirect but meaningful value: ATFM modernization directly improves the ability to manage disruptions through collaborative decision-making, cross-border information sharing, and predictable traffic flows. The COMPASS platform and Mombasa Roadmap are resilience-enabling tools, even if the conference did not frame them explicitly in climate adaptation terms.

The CANSO Africa Conference 2026 was a technically substantive, narrowly scoped, and deliberately implementation-oriented gathering that addressed a critical but often invisible layer of aviation infrastructure. Its value lies in forcing prioritization and cross-border coordination among the stakeholders who actually operate African airspace.

Its weakness is the absence of public accountability mechanisms without published commitments or measurable targets, the risk remains that "practical implementation pathways" become another well-intentioned convening without follow-through.



BOEING

FAA Certifies Boeing 737 MAX 10, Clearing Path Towards Deliveries



The U.S. Federal Aviation Administration officially granted type certification to the Boeing 737 MAX 10 on October 20, 2026, marking a major milestone for the largest member of the 737 MAX family.

The approval follows a multi-year testing campaign that included 976 test flights and more than 2,060 flight hours.

Boeing's 737-10 also becomes the first commercial aircraft certified under the full requirements of the 2020 Aircraft Certification, Safety, and Accountability

Act, or ACSAA, which introduced stricter safety assessments, human factors evaluations, and enhanced documentation requirements.

The aircraft incorporates several design and safety updates, including an updated engine anti-ice system, semi-levered landing gear intended to prevent tail strikes on the stretched airframe, and an enhanced Angle-of-Attack monitoring system with updated sensor alerts.

In terms of capacity and performance, the 737-10 seats up to 230

passengers in a high-density layout and offers a range of roughly 3,100 nautical miles. Boeing positions the aircraft as a direct competitor to the Airbus A321neo.

With U.S. type certification secured, Boeing expects to begin customer deliveries in the coming months.

However, approvals from other regulators, including Transport Canada and the European Union Aviation Safety Agency, remain pending.

GENERAL CHARACTERISTICS



AFRICA'S AIRPORT INFRASTRUCTURE GAP



Who Will Finance the Next Generation of Airports?

Harriet James

Africa's airport infrastructure gap is fundamentally a financing and project-preparation problem, not merely a deficit of identified needs.

The continent requires an estimated US\$25–30 billion over the next decade to close critical aviation infrastructure gaps, with US\$10 billion specifically earmarked for airport and aerodrome infrastructure. Passenger traffic is projected to nearly triple from roughly 160 million in 2024 to between 469 and 500 million by 2050, making the urgency acute.

The Scale of Investment Required

The capital needs span several distinct categories. On terminal capacity, several flagship projects illustrate the scale. Ethiopia's Bishoftu International Airport, a US\$12.5 billion "mega airport city," is designed for 110 million annual passengers and 3.7 million tonnes of cargo, financed through Ethiopian Airlines equity (20%) and loans from the African Development Bank and other lenders (80%).

Rwanda's New Kigali International Airport has secured US\$578 million from Qatar Investment Authority for a 60% stake, plus a further US\$1.1 billion commitment, alongside US\$385 million already invested by the Rwandan government's ATL. Kenya's Jomo Kenyatta International Airport expansion, costing approximately US\$1.2 billion, aims to nearly triple capacity

from 7.5 million to 22 million passengers, with financing arranged by the Trade and Development Bank and Africa Finance Corporation.

Cargo and cold-chain infrastructure represent another critical need. Madagascar's Ravinala Airports has launched a Build-Operate-Transfer tender for new cargo terminals at Antananarivo (13,000 m², targeting 110,000 tonnes annually by 2044) and Nosy Be, requiring private partners to finance, build, and operate facilities including cold rooms and digital automation. Smaller-scale pilots, such as a US\$693,333 Japanese-funded project in Eswatini, demonstrate demand for cold-chain modernization even at secondary airports.

Advanced airport technologies are also essential. The AU's modernization plan integrates Airport Collaborative Decision-Making and System-Wide Information Management to enable seamless continental airspace.

Ethiopia's Bishoftu project incorporates AI-assisted digital control towers, biometric facial recognition, AI-powered baggage tracking, and a dedicated cybersecurity centre. Nigeria is deploying facial recognition e-gates under a Public-Private Partnership, while Kenya's JKIA e-gate project carries a total cost of Kes2.8 billion.

The Emerging Financing Architecture

No single source can close the gap. A layered financing architecture is taking shape. The African Union's strategy aims to mobilise US\$10 billion in catalytic public finance to attract an additional US\$20 billion in private and institutional investment.

The African Development Bank is directly supporting projects such as Uganda's Arua airport expansion with a €155.99 million loan, while the West African Development Bank provided approximately US\$61.1 million package for a cargo-focused MRO platform in Ivory Coast.

Sovereign wealth and strategic investors are playing a growing role. Qatar Investment Authority's acquisition of a 60% stake in New Kigali International Airport represents a model where a sovereign fund with airport expertise takes a controlling position alongside a host-government entity.

Private operators via concessions and BOT arrangements are also central. Madagascar's cargo terminal tender requires partners to finance, construct, operate, and maintain facilities before transfer, with selection criteria demanding ten years of infrastructure investment and air-cargo logistics experience.

Blended and green finance is increasingly important. The AU is explicitly designing projects to meet global green standards to attract climate-focused capital, incorporating renewable energy at airports and sustainable aviation fuel pathways.

The Eswatini pilot includes a 0.2 MW solar photovoltaic system with battery storage as a demonstration for scale-up to 5 MW, explicitly framed as an "investment-ready pathway."



Kenya's Jomo Kenyatta International Airport expansion

The Critical Bottleneck

The most persistent obstacle is not a lack of capital but the absence of project-preparation capacity. The African Civil Aviation Commission's 2023 gap analysis identified 60 specific deficits, but the AU's 2026 working paper states plainly that "the central issue is therefore no longer only the existence of infrastructure deficits.

It is the absence, in many cases, of the project-preparation capacity, institutional coordination and financing architecture needed to convert identified priorities into costed, bankable and implementable projects." Member states are being pushed to undertake feasibility studies, demand forecasting, environmental assessments, financial modelling, and risk analysis before projects can attract financing.

A parallel structural risk is airport financial sustainability. ACI Africa warns that airport charges are increasingly shaped by fiscal policy rather than cost-recovery principles, with government taxes and visa fees often exceeding the airport operator's own passenger service charge.

For an international passenger, the airport

operator may receive US\$100 while the state collects US\$414–667 in taxes and fees, leaving airports with "structurally fragile balance sheets" and reduced ability to invest in safety, compliance, and resilience.

Assessment

The next generation of African airports will not be financed by any single actor. The viable model is hybrid: development banks and sovereign funds provide anchor capital and de-risking; private operators bring efficiency and cargo expertise through concessions; and green finance instruments reward projects designed for energy resilience.

The countries moving fastest, Ethiopia, Rwanda, Kenya, share a common trait: they have moved beyond identifying gaps to structuring specific, costed projects with identifiable revenue streams and credible delivery partners.

The wider gap will close only when that project-preparation discipline spreads to the dozens of secondary airports and cargo gateways that remain stuck at the feasibility stage.

GREENER AIRPORTS, LOWER COSTS:



Building sustainable aviation infrastructure in Africa

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The cost-reduction logic for green airports in Africa holds in specific scenarios, yet scaling up depends on whether airports can transform "green" from project-level appendages into the foundational logic of infrastructure planning.

Africa's push for sustainable airport infrastructure has moved from aspiration to implementation, but the continent faces a defining tension: green investments solar power, energy-efficient terminals, electric ground equipment, and water conservation do reduce long-term operating costs, yet upfront capital, unstable grids, and fragmented operational responsibilities remain the primary barriers.

Projects across Uganda, Egypt, Ethiopia, Rwanda, and Nigeria are demonstrating viable pathways at varying scales, offering lessons for how the continent can build greener airports while lowering costs over time.

Solar Power: Proven Economics, Persistent Grid Constraints

Airports' vast land resources and high daytime load demands make solar power the most readily implementable entry point. A Makerere University study targeting Entebbe International Airport in Uganda found that a 2MW grid-tied photovoltaic system could meet 100% of the airport's daytime electricity demand, with an internal rate of return exceeding 15% and annual electricity cost savings of up to 42%, while reducing vulnerability to grid outages during daytime by over 80%.

The system is designed without battery storage, feeding excess power back to the national grid, and relies on Uganda's

10-year tax exemption and 20-year feed-in tariff policy.

Egypt's Borg El Arab Airport has already moved solar into actual terminal operations. Its new terminal generates electricity through solar panels, combined with energy-efficient VRV air conditioning systems, making it Africa's first green airport terminal, handling 4.8 million passengers annually.

At the planning level, Ethiopia's Bishoftu International Airport, Africa's largest airport by planned scale, explicitly incorporates photovoltaic arrays into its design while targeting LEED Gold certification through natural ventilation, solar shading, and other passive design strategies.

Energy-Efficient Terminals and Sustainable Construction

For newly built airports, green certifications are becoming embedded at the design stage rather than added post-hoc. Bishoftu International Airport's terminal, designed by Zaha Hadid Architects, uses natural ventilation and semi-enclosed spaces. The site sits approximately 400 meters lower in elevation than Addis Ababa's existing airport, and combined with longer runways, improves aircraft performance and fuel efficiency.

The airport has also received a \$2.1 million grant from the Multilateral Cooperation Center for Development Finance (MCDF) specifically to support green investment planning and climate finance access, including refinement of emissions reduction analyses and carbon management plan development.

Rwanda's New Kigali International Airport has obtained provisional green building

certification under Singapore's Green Mark scheme, with support from the Global Green Growth Institute (GGGI), covering resource efficiency and climate adaptation design, with final certification to be awarded upon project completion.

These cases indicate that African new airports are attempting to benchmark international green standards from the outset, rather than following a "build first, retrofit later" model.

Electric Ground Support Equipment: Clear Direction, Infrastructure Prerequisite
Uganda has taken the lead in implementation. In 2023, Menzies Aviation, an Entebbe Airport ground handling company, invested 3.6 billion Ugandan shillings to replace diesel equipment with electric ground support equipment—a move directly responding to the Uganda Civil Aviation Authority's carbon reduction directive. However, this case has limited scalability.

ACI World's 2026 guidance explicitly points out that African airports generally face high electricity costs, voltage instability, and constrained capital budgets, and electric fleets cannot scale up without first addressing power capacity, charging facility siting, and shared infrastructure governance.

The guidance recommends that airports prioritize electrification of equipment types with predictable routes, high utilization rates, and easy access to parking, conducting small-scale pilots to verify actual energy consumption and maintenance requirements before committing to large-scale grid upgrades.

Water Conservation: Systematic Frameworks, Implementation Gaps

Research on Murtala Muhammed International Airport in Lagos, Nigeria, proposes a phased framework: short-term (0-2 years) rainwater harvesting and recycling programs; medium-term (2-5 years) construction of wastewater treatment systems capable of reducing freshwater withdrawals by up to 40%; and long-term (5-10 years) incorporation of greywater recycling into circular economy principles.

Bishoftu Airport has incorporated stormwater management into its design at the planning stage, directing runway and roof runoff into wetlands and bioswales for storage and reuse.

The Scaling Challenge

The common challenge across these measures is that Africa's airport sustainability transformation cannot rely solely on individual technology introductions. The MCDF grant supporting Bishoftu explicitly includes prioritizing climate risk measures and integrating them into action plans, suggesting that financing parties are requiring recipient countries to demonstrate implementation capacity beyond equipment procurement.

At the operational level, ACI's five-step framework emphasizes that decisions on power, siting, safety, ownership, and financing must be advanced in tandem, a particular challenge for African hubs managing constrained grids and scarce capital.

The cost-reduction logic for green airports in Africa holds in specific scenarios, such as Uganda's solar internal rate of return and Lagos's water savings. Yet scaling up depends on whether airports can transform "green" from project-level appendages into the foundational logic of infrastructure planning.

For new airports, this window is currently open. For existing airports, the sequencing of power infrastructure and shared charging governance will determine whether electric ground fleets can move beyond symbolic implementation. The continent's airports stand at a pivotal moment: the technologies and economic cases are increasingly proven, but the institutional and infrastructural foundations required for scale remain the decisive variable.





Nyawedde Wendy Cella

ACI Africa Regional Conference & Exhibition 2026 was held from September 19 to 25, 2026, at the Abuja Continental Hotel, hosted by the Federal Airports Authority of Nigeria (FAAN), and was the 35th ACI Africa Annual General Assembly and Regional Conference.

Over 500 aviation stakeholders from across Africa and beyond attended, with more than 40 speakers participating. This was the third time Nigeria hosted this conference, having previously hosted it in Lagos in 2010 and 2017.

The conference ran under the core theme of "Next-Gen Airports: Driving Performance and Resilience." The conference revealed a core contradiction facing African aviation: while infrastructure modernization and digital transformation are advancing, approximately 80% of African airports lack financial self-sustainability, severely constraining investment capacity for the "next generation" transition.

Core Agenda: From Infrastructure to Comprehensive Transformation

The conference agenda extended beyond traditional



infrastructure and financing discussions to encompass digitalization, environmental sustainability, workforce development, and passenger experience.

Specific topics included smart airport technologies and automation, climate-resilient infrastructure, public-private partnerships, and post-pandemic operational resilience.

The Most Alarming Data Point

ACI Africa Secretary-General Ali Tounsi stated frankly at the conference that approximately 80% of African airports are financially inefficient.

This means most airport operators lack sufficient revenue to maintain infrastructure, technology, safety, and passenger services, let alone invest in the "next generation" transition.

Tounsi emphasized that the future of African airports "cannot be reduced to infrastructure or funding alone".

Nigeria's Position and Self-Assessment
FAAN Managing Director Olubunmi Kuku provided a set of comparative data at the conference: Africa accounts for only approximately 1% of global air traffic, despite having 18% of the world's population; Nigeria, with a population exceeding 220 million, has 28 airports handling only approximately 19.5 million passengers annually.

Kuku acknowledged that Nigeria is still "playing catch-up" in some areas but noted that infrastructure renewal is underway, including runway rehabilitation, airfield lighting, and terminal facility improvements.

Award-Winning Airports

The conference announced the ACI Africa Passenger Facilitation and Readiness Excellence Awards. Kilimanjaro International Airport in Tanzania won in the "Stakeholder Integration" category for airports handling fewer than 2 million passengers annually; Egypt's Sphinx International Airport won first place in the "Governance" category; Kenya's Moi International Airport received

second place in three categories.

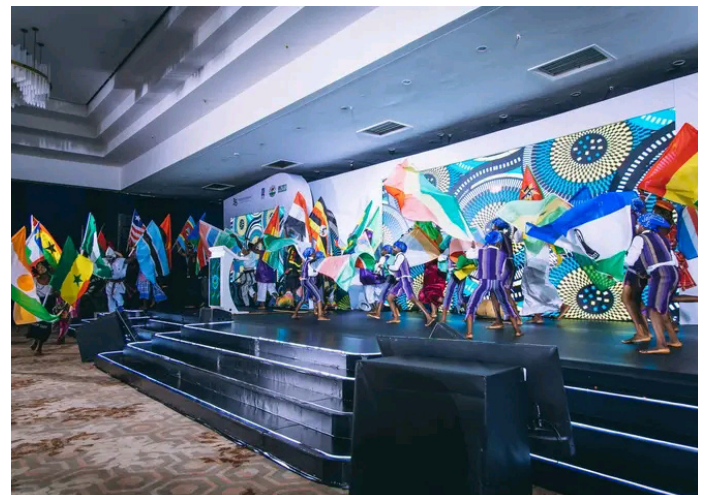
Assessment

The value of this conference lies not in ceremonial proclamations but in the stark data presented by the Secretary-General.

When 80% of airports lack financial sustainability, themes like "Next-Gen Airports" and "digital transformation" risk becoming empty talk. The direction of the conference is correct, emphasizing resilience, digitalization, and workforce development, but the binding constraint remains funding and governance capacity.

ACI Africa's role is more of a platform for exchanging experiences and peer learning; substantive change depends on each country's own reform progress and investment decisions.

For those monitoring the development of African aviation infrastructure, the financial sustainability data from this conference is more noteworthy than any technology showcase.



Kenya Eyes Bigger Share Of Africa's Multibillion-Dollar Aircraft Maintenance Market

Harriet James

Kenya is positioning itself to capture a larger share of Africa's multibillion-dollar aircraft maintenance market, with Kenya Airways' maintenance, repair and overhaul (MRO) operation at Jomo Kenyatta International Airport providing the foundation for a much more ambitious regional aviation hub.

The airline estimates that its existing MRO facility is operating at about 70–80 per cent of practical capacity, leaving room to take on more work from other African carriers while plans for a much larger "MRO City" take shape.

According to KQ, the facility already employs more than 700 technical specialists and carries out more than 16 heavy maintenance checks annually, alongside growing third-party business.

But the airline says the opportunity extends well beyond filling additional hangar slots.

"Utilization is not simply about how many aircraft are inside a hangar," said KQ General manager/ Director Technical Gilbert Bett. "It includes hangar slots, manpower, tooling, workshops, component capability and available maintenance windows."

KQ says it can currently accommodate additional third-party work on aircraft including the Boeing 787, Boeing 777, Embraer E190, Boeing 737 and Boeing 767, as well as components, line maintenance and specialized services.

The airline's MRO operation also holds EASA Part-145 approval covering B787, E190 and B737 base maintenance, line maintenance, components and non-destructive testing. The challenge, however, is scaling that capability.

A \$150 million to \$300 million first step

Turning Kenya into a major MRO centre for East Africa would require substantial investment. Bett estimates that an initial regional hub could require between \$150 million and \$300 million, with further investment following as demand grows. The first phase would involve expanding

hangar capacity, workshops and tooling while strengthening component capabilities, digital MRO systems and technical workforce development. The longer-term vision is considerably broader.

"Rather than simply constructing another hangar, KQ is looking at an integrated MRO City that could bring together maintenance facilities, component repair, specialized engineering, training and other aviation services," he said.

The opportunity is being driven by the size of the African market. Industry estimates cited by KQ put Africa's MRO market at about \$4.1 billion in 2025, with almost half of that expenditure associated with engine maintenance.

That engine market is one of the areas where Africa has a significant capability gap.

Bett argues that Kenya does not need to develop every capability independently. "Instead, it could establish specialized centers of excellence while partnering with aircraft and engine manufacturers and established global MRO companies for the most capital-intensive activities," he explains.



Boeing, Embraer and engines

Several aircraft categories offer immediate opportunities for Kenya's MRO industry, ranging from narrowbody jets to widebody aircraft and high-value component services.

The Boeing 737NG and 737 MAX families are one potential growth area, given their large installed base across Africa and the relatively manageable economics of ferrying aircraft to Kenya for maintenance.

KQ also sees an opportunity in Embraer E-Jets, particularly the E190, where the airline already has an established position through its Embraer-authorized service capabilities in Africa.

Widebody aircraft offer another potential growth market as African airlines expand their fleets. The Boeing 787 and 777, among others, could provide opportunities for heavy checks, structural work and specialized maintenance.

But Bett believes the bigger strategic opportunity could lie beyond the airframe itself.

"The biggest strategic opportunity is engine and component MRO," he said. "Engine maintenance represents a disproportionately large share of MRO expenditure, yet Africa has limited capability in this area."

He said Kenya should also develop specialized capabilities in areas such as avionics, wheels and brakes, non-destructive testing, interiors and composite repairs.

"Kenya does not need to replicate every capability," Bett said. "We should build centers of excellence and partner with OEMs and global MRO providers for the most capital-intensive capabilities." That approach would allow Kenya to target high-value segments of the maintenance market while avoiding the cost of attempting to reproduce the entire global MRO supply chain.

Keeping Africa's MRO dollars on the continent

The economic prize extends beyond Kenya Airways. Bett estimates that 80–90 per cent of African carriers' MRO budgets are currently spent overseas, with major work flowing to Europe, the Middle East, Turkey and increasingly Asia.

He does not expect all of that business to return to Africa. Some specialized engine and component work will continue to require

global facilities with deeper technical capabilities and supply chains. But he believes African MRO providers could eventually retain 30–40 per cent of expenditure currently outsourced, potentially creating more than \$1 billion a year in additional economic activity based on current market estimates.

For Kenya, the opportunity is twofold: retain spending by local operators while attracting aircraft from other African airlines. Bett estimates that a scaled Kenyan MRO platform capturing just 5–10 per cent of Africa's estimated \$4.1 billion MRO market could generate \$200 million to \$400 million annually.

The challenge is persuading airlines to shift work from established overseas providers.

Foreign MRO centers often offer a broader range of capabilities under one contract, greater capacity, faster access to specialized components and extensive OEM relationships. They also benefit from established certifications, technical records, engineering expertise and access to capital.

"There are several reasons" African airlines continue to send work overseas, he said, including "capability breadth, capacity and turnaround time" as well as certification, OEM relationships, financing and payment terms.

That means building more hangars alone will not be enough. "We need to create integrated aviation maintenance ecosystems," he added.

For Africa, that means combining physical infrastructure with skilled engineers and technicians, specialized tooling, component shops, regulatory recognition and reliable supply chains. Greater harmonization among African aviation authorities could reduce duplication and make it easier for airlines to use MRO facilities across the continent.

Partnerships with global manufacturers and MRO companies will also be important. Rather than developing every capability independently, African operators could establish specialized centers of excellence while working with companies such as Boeing, Airbus, Embraer, GE, Safran, Pratt & Whitney and established global MRO providers.

The supply chain is equally critical. An aircraft sitting in a hangar for weeks waiting for a component can quickly erase the cost advantage of a regional maintenance facility. Digital maintenance records, predictive maintenance, inventory optimization and AI-assisted planning could help improve turnaround times and productivity.

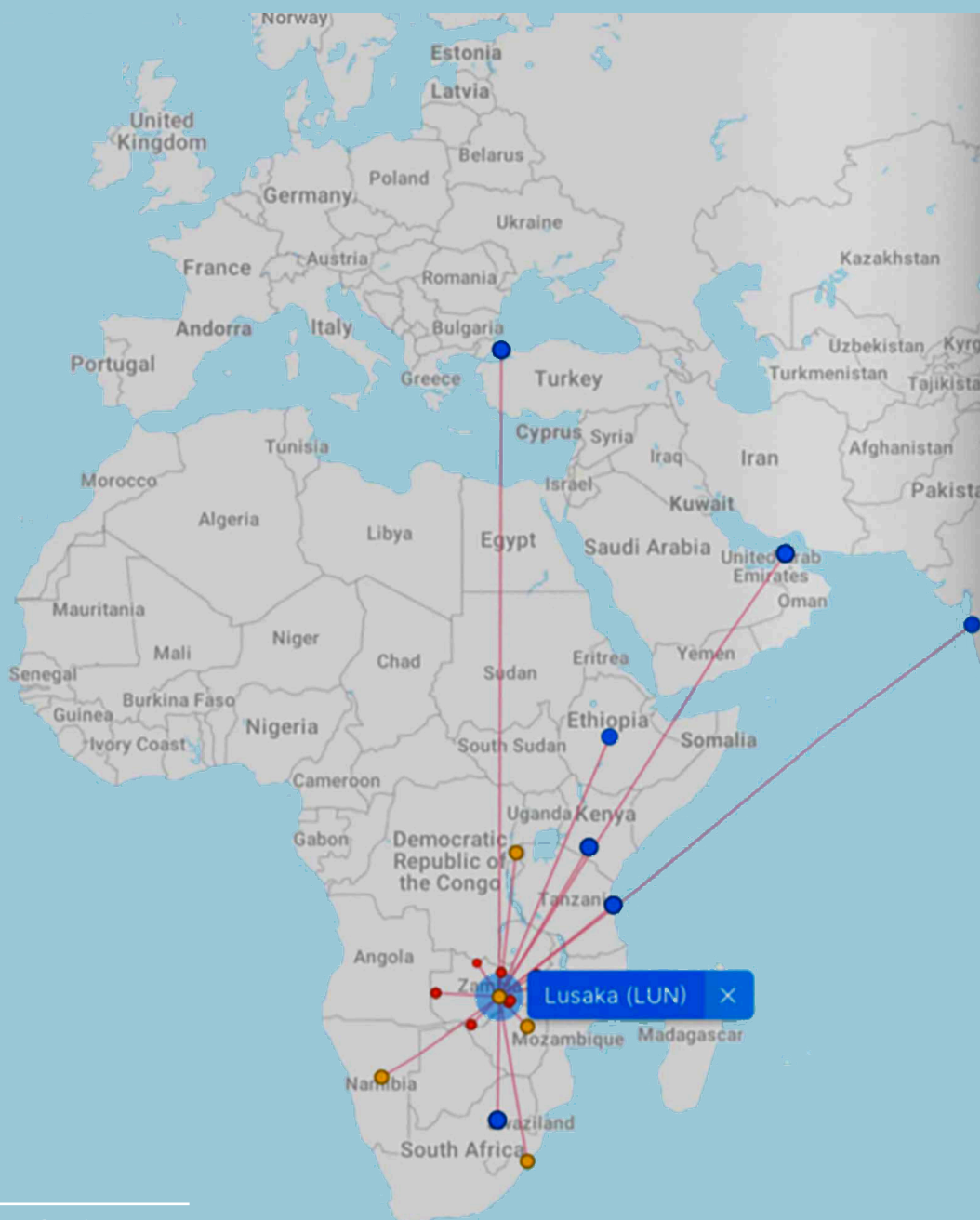
Financing remains another constraint. MRO is capital-intensive, and African facilities need access to affordable, long-term capital to compete with heavily invested overseas centers.

The aim, Bett argues, should not be to eliminate international MRO providers but to build a credible African alternative. Africa already has established MRO organizations, including Kenya Airways, Ethiopian Airlines, EgyptAir and SAA Technical. The next step is to connect those capabilities, develop specialized centers of excellence and build the workforce and supply chains around them.

One African Sky

Can Regional Airspace Integration Reduce Flight Costs?

Regional airspace integration could meaningfully lower African flight costs but only if the continent's governments move from signing commitments to actually opening their markets.



The Problem: A Fragmented Sky
Africa's high intra-continental airfares are not accidental. They are the product of structural fragmentation and weak competition.

Only about 19% of intra-African routes have direct flights, and 55 city pairs have been identified as viable for direct service but remain unserved. The consequences are stark: cargo from Nairobi to Kinshasa could reach its destination in three hours if flown directly, yet often travels via Europe, stretching the journey to 15 hours. This "fly out of Africa to fly back in" pattern doubles fuel consumption and time costs.

Operating costs compound the problem. African airlines face unit costs nearly twice the global average. Aviation fuel prices run roughly 17% above the world average and can account for about 40% of operating expenses, compared with a global average of around 25%. Passenger service charges and taxes are similarly steep, some intra-African international departures exceed \$50–100, and intra-African fares typically run 40–60% higher than comparable European routes.

Protectionism makes matters worse. Many states shield their flag carriers through restrictive bilateral air service agreements that cap frequencies and limit market access, suppressing competition. African airlines' share of intra-African routes has fallen from 45% in the 1980s to about 20%, with foreign carriers dominating high-yield routes.

The Promise: What Integration Could Deliver
The Single African Air Transport Market (SAATM) aims to implement the 1999 Yamoussoukro Decision, liberalizing market

access across the continent. Its cost-reduction logic runs through three channels: more direct routes, intensified competition, and economies of scale.

First, eliminating detours. If airlines can operate fifth-freedom routes and even third and fourth freedoms without being constrained by restrictive bilateral agreements, they can design more direct routings. That cuts passenger journey times and airline fuel and crew costs alike. ICAO analysis suggests a unified African sky would significantly reduce overall air transport costs.

Second, competition lowering fares. When multiple carriers can enter the same city pair, ticket prices fall. One widely cited estimate suggests that opening the markets of 12 key African countries would create 155,000 additional jobs and \$1.3 billion in annual GDP dividends that flow from improved connectivity and lower costs stimulating demand.

Third, early evidence of progress. Since SAATM's launch, African airlines have introduced 108 new routes, including 19 fifth-freedom services, and intra-African connectivity has risen from 14.5% to 23%. The scale remains modest, but the direction is clear.

The Gap: Commitment Versus Reality
SAATM has been signed by 38 countries covering more than 80% of the market, yet passengers have seen little relief at the ticket counter. The gap between signature and implementation is the central obstacle.

The African Civil Aviation Commission, which oversees SAATM, lack enforcement power. It cannot sanction signatories that continue applying restrictive policies. Some countries

that never signed liberalize in practice, while some signatories remain protectionist, a mismatch the industry describes bluntly as leaders "lip-servicing" reform.

Politics reinforces the inertia. Many governments treat state-owned airlines as symbols of sovereignty and fear that liberalization will let more efficient foreign or private carriers crush inefficient flag carriers. That psychology stalls reform even where the economic case is clear.

Physical and administrative barriers matter too. Even with route rights secured, airport capacity, air traffic management systems, and maintenance capabilities vary widely across the continent. Visa restrictions remain severe: 51.1% of intra-African travel still requires an advance visa, up from the previous year.

If passengers cannot move easily, new routes cannot become profitable, and airlines lack incentive to launch them. Regional airspace integration is a necessary condition for reducing African flight costs but not a sufficient one. It can solve the "institutional detour" problem by removing the need to route through third countries, and the "institutional cost" problem by lowering taxes and fees and opening markets to competition.

But if African states cannot overcome protectionism, upgrade infrastructure, and deliver freedom of movement for people, the integration dividend will stay on paper. The 2026 Lomé Declaration's call to move "from political commitment to operational reality" sets the right test: whether a core group of high-traffic countries genuinely dismantles market-access barriers. Until then, the high price of flying within Africa is unlikely to change fundamentally.



Satellite Navigation & Performance-Based Navigation

What African Airlines Stand to Gain

Gatwiri Edna

Satellite navigation combined with Performance-Based Navigation (PBN) procedures offers African airlines one of the most concrete, quantifiable opportunities to cut fuel burn, improve airport access, and streamline operations.

The technology is mature and the economics are proven. What varies wildly across the continent is the speed of implementation and that, not the technology, is the decisive variable.

Where Africa Stands

ICAO data shows 85.2% of African states have published National PBN Implementation Plans, but actual

deployment lags well behind.

Only 69.6% of runways have Required Navigation Performance Approach (RNP APCH) procedures. Burundi, Eswatini, Tunisia, and Libya have implemented none; Algeria covers just 6.5% of its runways and Zimbabwe 40%.

Regional coordination is nonetheless advancing. The AFI PBN AORTA project team has reviewed 284 regional ATS routes, proposed deleting 62 upper-airspace and 11 lower-airspace conventional routes, and added 45 new RNAV routes.

Near-term targets for 2027–2028 include 100% national PBN plans, 75% RNAV routes, 75% continuous climb and descent operations, and 80% RNP APCH with Baro-VNAV. Africa, in other words, is moving from planning to route optimisation.

Routing Efficiency: Ending the Zigzag

Traditional ground-based navigation forces aircraft to fly beacon to beacon, producing indirect routes. PBN lets aircraft fly point-to-point using satellite signals, shortening distances directly.

Nigeria illustrates what is possible. The country achieved full Free Route Airspace in 2021, becoming only the second African state to do so, with roughly 39 en-route RNAV routes compared with about 20 in Kenya and very few in Ghana. Free Route Airspace allows airlines to plan optimal routings without being constrained by fixed airways, cutting fuel and time costs directly. Nigeria's experience shows that where procedure design and regulation are in place, PBN shifts from theoretical efficiency to actual savings.



At continental level, AFI PBN AORTA's rationalization, deleting obsolete conventional routes and adding RNAV alternatives, targets exactly this inefficiency. The 45 proposed RNAV routes cover key traffic flows including the Middle East–West/Central Africa–South America corridor and the Middle East–East Africa corridor, reflecting an attempt to optimize route structure around real demand rather than colonial-era legacy routes.

Airport Access: Precision Approaches Without the Ground Infrastructure

The most direct PBN benefit is giving airports without Instrument Landing Systems a precision approach capability. RNP APCH procedures, particularly with Baro-VNAV, provide vertical guidance without ground-based ILS equipment, dramatically lowering the threshold for remote or terrain-challenged airports.

Nigeria again provides the evidence. By 2016, more than 20 secondary airports had obtained PBN procedures, and all runways achieved Approach with Vertical Guidance or Lateral Navigation capability by 2018. Aircraft can now land safely in low visibility that previously forced diversion. One business jet pilot reported landing at Minna at night using an RNP approach instead of diverting to Abuja, a concrete case of accessibility gained.

ICAO statistics suggest roughly 30% of weather-related diversions in Africa occur at airports lacking precision approach capability, against less than 5% in regions with universal SBAS or ILS coverage. Each additional 10% of PBN-equipped airports is expected to cut weather-related diversions

by more than 25%. For airlines, that means fewer diversion costs, fewer compensation claims, and higher aircraft utilization.

Satellite-Based Augmentation will push this further. Africa's ANGA programme aims to deliver LPV-200 level precision approach services by 2030, with accuracy on the order of one metre, enabling approaches without ground infrastructure at more airports. Seychelles and Rwanda have already signed agreements to host ANGA reference stations and mission control centres.

Fuel and Economics: The Most Direct Dividend

Every kilometre of shortened route, every minute of holding avoided, every diversion prevented translates directly into fuel savings. Nigeria's PBN assessment explicitly identifies fuel and time savings as core efficiency gains, alongside reduced delays and improved capacity.

SBAS brings more quantifiable returns. An African Union Commission cost-benefit analysis finds, for airlines, a net present value of \$287 million by 2045, a 545% return on investment, and a six-year payback period. At continental socio-economic level, including environmental benefits, cumulative CO₂ savings reach 1.444 billion kilograms against roughly 20 million kilograms emitted by system operation, a highly favourable carbon balance.

Ghana's 2025 PBN review likewise targets reduced delays and improved fuel efficiency, noting that satellite-based navigation lets aircraft fly more precise routes. The logic holds for any African country: the more

complex the terrain, the longer the routes, and the higher the fuel price, and African aviation fuel runs about 17% above the global average – the greater the marginal benefit.

Technology Ready, Implementation Lagging
The benefits of satellite navigation and PBN for African airlines are no longer theoretical. Nigeria has shown that a single country can achieve Free Route Airspace and nationwide PBN coverage within roughly the same timeframe as its peers. ANGA is laying the infrastructure foundation for continent-wide SBAS services.

But the gap remains enormous. ICAO's 2026 report identifies the main challenges as a shortage of skilled personnel, PBN procedure design and validation require specialized expertise, along with funding constraints and data limitations. These are capacity and political-will problems, not technical ones.

The economics are favourable precisely because PBN demands no large-scale ground infrastructure investment. Its main costs lie in procedure design, flight validation, and regulatory approval. Once those "software" inputs exist, the marginal cost to airlines is tiny, they need only airborne equipment with RNP capability, which most modern aircraft already carry.

For African airlines, the greatest risk is not investing in the wrong technology but missing the window: as other regions reach full PBN and SBAS coverage, African airports and carriers will face mounting pressure on safety records, operating costs, and international competitiveness.





Harriet James

The 8th Marrakech Airshow, held 7–10 October 2026 at the Royal Moroccan Air Force Base, confirmed its status as Africa's largest airshow and, more importantly, as a platform for Morocco's industrial ambitions rather than a mere aviation display. Nearly 200 exhibitors from 27 countries, more than 60 official delegations and roughly 40,000 total visitors provided the scale. The substance, however, lay in 26 signed agreements and the question of whether they will materialize into factories, jobs and technology transfer.

Scale and Participation

Organizers reported nearly 200 exhibitors and more than 60 official delegations, including 27 African ones. Over 17,000 professional visitors attended across the first three days, with roughly 25,000 general-public visitors, bringing total attendance to approximately 40,000–42,000.

Major global players exhibited, including Lockheed Martin as platinum sponsor, alongside Airbus, Boeing, Safran, Thales, RTX, L3Harris, Embraer, IAI, Elbit Systems, Baykar and Tata Advanced Systems. The United Arab Emirates served as strategic partner of this edition, with large pavilions and a high-level delegation. Notably, Israel's defence ministry opened a national pavilion for the first time, leading a delegation of eight Israeli companies, a signal





of deepening defence-industrial ties. The Industrial Core: 26 Agreements The headline outcome was the signing of 26 strategic agreements spanning manufacturing, maintenance, defence production, drones and local sourcing.

The most consequential was the formalization of the Africa Center of Manufacturing Excellence consortium at the UM6P Nouaceur campus, bringing together the Moroccan state, OCP Group, Boeing, Airbus, Lockheed Martin and Safran Nacelles for advanced manufacturing research and training.

If it succeeds, it embeds research and development in Morocco rather than mere production. Safran Oil Systems committed to an engine-fluid systems operation targeting around 100 jobs. Royal Air Maroc signed a framework agreement with the Industry Ministry to increase local sourcing, with a long-term substitution target reported at up to 60% of relevant imports a potentially transformative commitment for the domestic supply chain.

Defence and technology deals featured prominently. Harmattan AI secured an integrated industrial and technology platform for autonomous defence and counter-drone systems, alongside a letter of intent for the IRIFI deep-strike system. Matis Aerospace expanded wiring

production with a \$16.46 million investment and 750 jobs; APS Coating committed €18 million and 120 jobs for surface treatment; Mecapole announced precision machining investment. Royal Air Maroc also signed with Boeing to refurbish cabins on its seven 787-8s.

Defence Dimension

The show was explicitly a defence exhibition as much as a civil aviation one. Lockheed Martin displayed an F-35 cockpit demonstrator and models of HIMARS, Javelin, PAC-3 MSE and ER GMLRS, while a US Air Force F-35A performed a flyover and a C-130J and KC-135R were on static display. Morocco's own capabilities were showcased through F-16 flyovers and Apache helicopter demonstrations.

This dual civil-defence character distinguishes Marrakech from purely commercial events and reflects Morocco's strategy of building sovereign capability in both domains simultaneously.

The show's success should be measured less by visitor numbers than by whether the 26 agreements materialize into factories, jobs and technology transfer. Morocco has clearly moved beyond attracting assembly lines toward engineering, design and sovereign technology integration.

The ACME consortium and the Harmattan AI platform are the most consequential

initiatives in this regard, precisely because they embed research and development rather than production.

Several caveats apply. A number of agreements remain memoranda or letters of intent without disclosed final investment figures, and published investment amounts for some projects differ between sources. The gap between announcement and implementation is where most industrial strategies fail.

For African aviation broadly, Marrakech 2026 offered a model of how an airshow can serve industrial policy using the event as a convening platform to attract investment, sign contracts and build capacity.

But the model's replicability elsewhere on the continent remains constrained by Morocco's specific advantages: proximity to Europe, relatively complete infrastructure, political stability and sustained top-level strategic commitment. Most other African states lack at least one of these conditions.

The true test will come at the 2028 edition, when the distance between what was signed in 2026 and what was actually built becomes visible. On current trajectory, Morocco has the momentum but the outcome remains unproven.

TOURISM & AVIATION:

Can East Africa Build a More Connected Destination Network?

East Africa has the potential to become a world-leading tourism network, combining wildlife, coastlines, business hubs, and cultural attractions within a few hours' flight. However, high airfares, limited flight frequencies, and fragmented travel arrangements make multi-country tourism difficult. The solution is to treat aviation as tourism infrastructure and coordinate airlines, airports, and tour operators around seamless travel experiences.

The Connectivity Gap

The East African Community recorded approximately 8.5 million international arrivals in 2024, exceeding pre-pandemic levels. However, sustaining this recovery and increasing visitor spending require affordable, reliable connections between destinations.

Tourists experience a complete journey rather than separate transport, accommodation, and attraction



services. Therefore, East Africa must shift from selling individual destinations to offering integrated itineraries, such as European arrivals through Mombasa for coastal holidays and Maasai Mara safaris, or combining Tanzania's Kilimanjaro, Serengeti, and Ngorongoro with Kenya's coast.

Building Regional Connections

Wildlife circuits and charter opportunities: East Africa's safari attractions, including Kenya's Maasai Mara, Tanzania's Serengeti and Ngorongoro, and Uganda's gorilla trekking, provide a strong foundation for regional tourism.

However, cross-border access remains challenging. Airlines such as Safarilink are improving connectivity through routes linking Nairobi, Arusha, and western Kenya with Entebbe. Upgrading smaller airstrips, including Migori, can improve access to safari destinations and cultural attractions. Charter operators can capitalize on these connections by serving high-value travelers seeking flexible, premium safari experiences.

Coastal tourism and charter flights:

Kenya's coast has historically depended on connections through Nairobi or international hubs. TUI's approved charter flights from Amsterdam to Mombasa, with extensions to Zanzibar, offer opportunities to attract European visitors and develop combined beach-and-safari packages.

Zanzibar's growing international arrivals and expanding airline connections also create opportunities to combine beach holidays with mainland safaris. However, reliable onward connections from Dar es Salaam

and Kilimanjaro remain essential.

Business hubs as network anchors: Nairobi and Entebbe are important regional business centers whose passenger traffic can support tourism routes. Jambojet's daily Nairobi–Entebbe services provide connectivity while feeding travelers into domestic destinations such as Mombasa, Diani, Malindi, and Lamu. Uganda Airlines' fleet expansion could strengthen Entebbe's regional hub role. Meanwhile, Nairobi's Jomo Kenyatta International Airport is pursuing a major expansion to increase capacity and compete with rival hubs, including Addis Ababa and Kigali.

Commercial Opportunities

Regional airlines can increase flight frequencies on busy corridors and connect international gateways with domestic destinations, although high charges and limited demand on secondary routes remain challenges.

Charter operators can serve coastal and safari destinations directly, creating premium beach-and-bush packages, but must manage seasonal demand and regulatory requirements.

Airports can attract more transit and tourism traffic through expanded capacity and improved passenger services, although financing and competition present risks. Tour operators can develop integrated itineraries covering Kenya, Tanzania, Uganda, and Zanzibar. Their success will depend on simpler licensing, coordinated transport, and digital platforms that allow travelers to book complete journeys conveniently.

What Needs to Change

Three priorities could unlock East Africa's tourism potential:

1. Liberalize regional air travel. Implement more open intra-East African air services and reduce passenger taxes and airport charges. Lower costs would make regional flights more affordable and encourage multi-country tourism.
2. Expand and digitize the East African Tourist Visa. Extend the existing Kenya–Rwanda–Uganda arrangement across all participating partner states and integrate it with regional tourism planning. Simplified entry requirements would reduce administrative barriers and encourage longer stays.
3. Coordinate schedules and market complete journeys. Airlines, airports, and tour operators should align flight schedules, improve connections at hubs such as Nairobi and Entebbe, jointly promote multi-country packages, and develop digital booking platforms for seamless itineraries.

East Africa's competitive advantage lies not only in its extraordinary attractions but also in its ability to connect them efficiently. Affordable regional flights, coordinated tourism services, simplified travel requirements, and integrated marketing can increase visitor numbers, extend stays, and boost tourism spending.

The greatest commercial opportunities will belong to businesses that connect destinations into convenient, accessible, and compelling travel experiences.



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A RETIRED JUMBO JET'S BOEING 747 RESTS UNDER WATER OFF BAHRAIN

Maureen Wanyana

In June 2019, a Boeing 747 made an unusual final journey in Bahrain. Instead of heading to an aircraft graveyard, the 70-metre-long jumbo jet was towed out to sea and lowered onto the seabed to become the centrepiece of Dive Bahrain, a 100,000-square-metre underwater park.

Bahrain turned a retired passenger aircraft into both a tourist attraction and an artificial marine structure. According to the Bahrain Ministry of Industry and Commerce, the underwater park was developed not only as a diving attraction but also as a site for marine research and environmental education.

The Boeing 747 formed the centrepiece of the initial 100,000-square-metre park, while later phases were planned to add artificial reefs, sculptures and a replica of a traditional Bahraini

pearl merchant's house.

These planned additions were intended to expand the site's marine habitat while also connecting the attraction with Bahrain's maritime heritage.

From airport aircraft to artificial reef

Getting a jumbo jet underwater was itself a considerable engineering exercise. The retired aircraft was prepared for submersion, transported to the purpose-built dive site and carefully lowered into the sea.

Bahrain's Ministry of Industry, Commerce and Tourism states that the Boeing 747, measuring 70 metres in length, was placed 20 to 22 metres below the surface north of Bahrain, becoming the first attraction in the 100,000-square-metre Dive Bahrain park.

The aircraft was not simply placed on the seabed as a spectacle.



Its large surfaces, openings and sheltered spaces also created hard surfaces that marine organisms could colonise, while fish and other species could use the structure for shelter.

According to *Frontiers in Marine Science*, a global meta-analysis of 39 studies found that artificial reefs can support fish communities with levels of density, biomass, species richness and diversity comparable to those found on natural reefs.

The researchers also stressed that their effectiveness depends on factors such as location and construction material. In Bahrain, this provides a useful context for the decision to combine the aircraft with other artificial structures across the dive park. Together, these features give the site a broader ecological role.

A park built around more than a plane
On 8 September 2019, Dive Bahrain officially opened its 100,000-square-metre underwater site, with the submerged Boeing 747 serving as its first major attraction.

The government said later phases would add a replica of a traditional Bahraini pearl merchant's house, artificial coral reefs and other sculptures. These structures were intended to create new surfaces for marine organisms to colonise while giving divers more features to explore.

The underwater park therefore combined an important part of the country's heritage with a modern marine tourism attraction. The presence of artificial structures, however, does not by itself guarantee the development of a healthy coral ecosystem.

Their location, materials, design and surrounding environmental conditions can all influence which organisms settle on them and how those communities develop.

A review published in *PLOS One* found that artificial reefs can provide surfaces for coral recruitment and habitat for marine organisms, but their ecological outcomes vary considerably.

The researchers also noted that many projects are either too small or monitored for too short a period to establish whether they deliver broader conservation benefits. For Dive Bahrain, this means the value of the park will depend not simply on what was placed on the seabed, but on how these structures function as habitat over time.

From spectacle to long-term experiment
Bahrain's environmental authorities said Dive Bahrain could support marine ecology and biology research while raising public awareness about conservation.

By allowing divers to see how marine organisms colonised submerged structures,

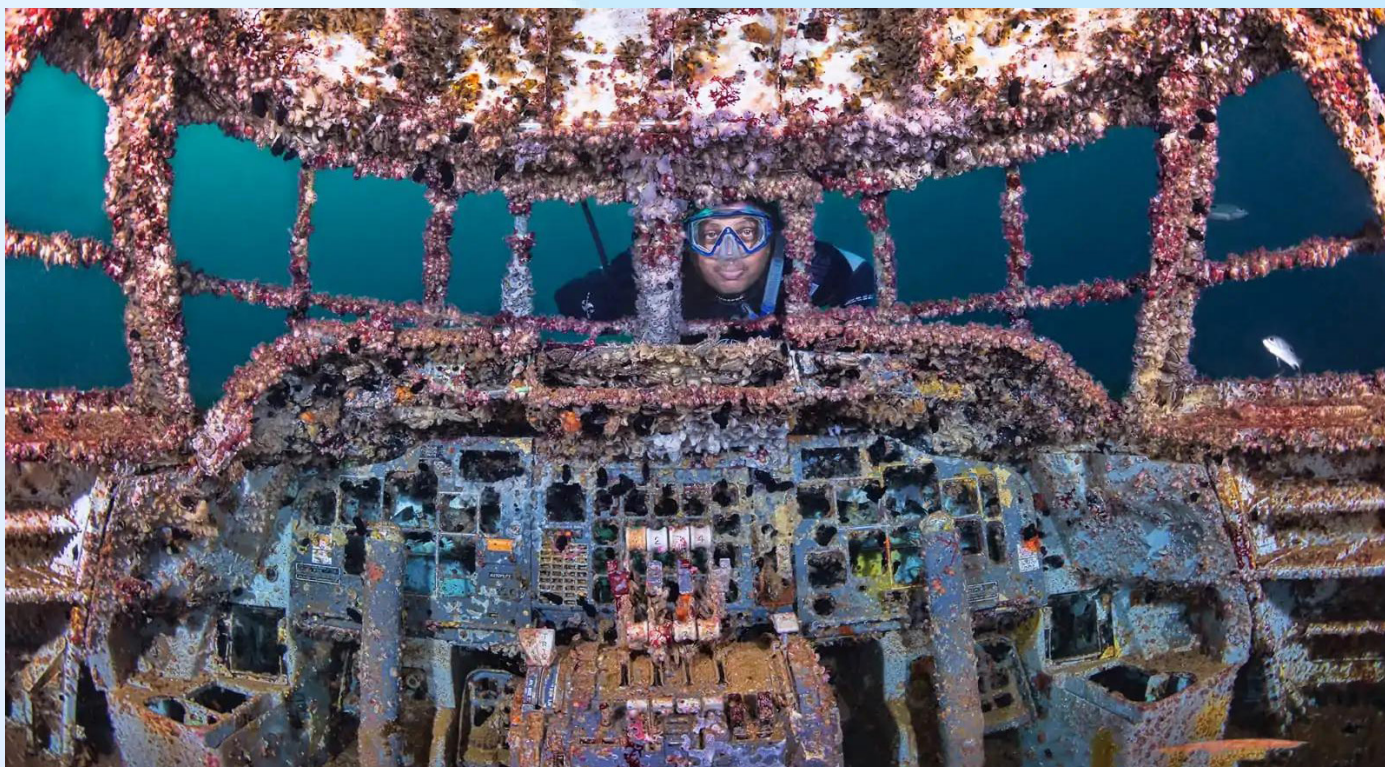
the site was also intended to provide an accessible way to engage visitors with marine ecosystems. At the same time, the government viewed the project as a means of expanding diving tourism in Bahrain.

The 747 therefore became more than a sunken aircraft. It formed the first part of a wider project intended to bring together tourism, environmental education and the development of artificial marine habitat.

After spending its working life carrying passengers around the world, the aircraft was given a second purpose beneath the sea. It became the centrepiece of an underwater attraction where recreation and marine-focused development were brought together.

The park also provided an unusual setting for observing how artificial structures changed after being placed underwater. As algae, corals, sponges and other organisms settled on exposed surfaces, the appearance of the aircraft and surrounding installations could change over time.

This gradual transformation made the site different from a conventional diving attraction, because the underwater landscape was expected to develop as marine life interacted with the structures.

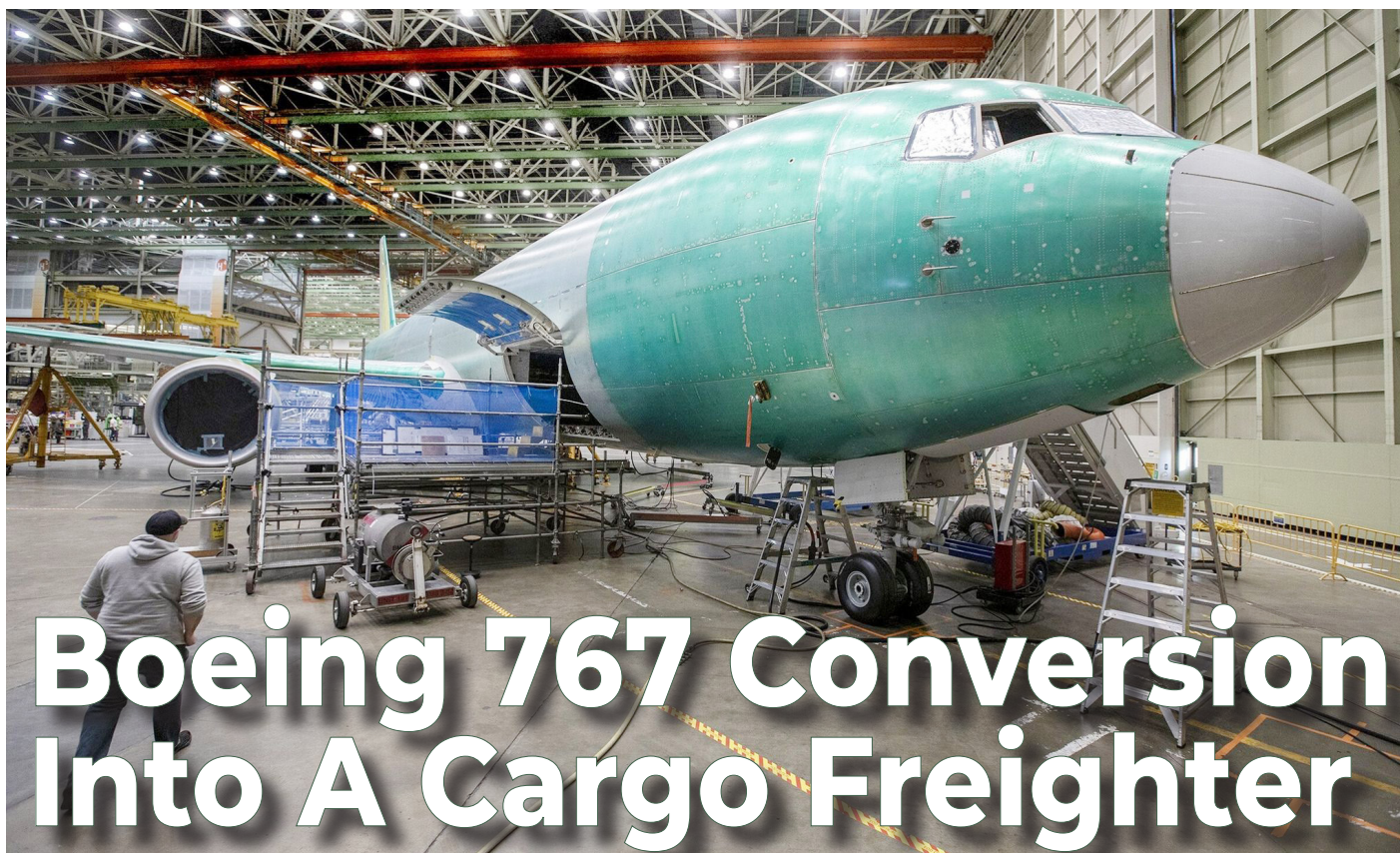


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Boeing 767 Conversion Into A Cargo Freighter

Fredrick Wabwire

Tearing down a twenty-year-old passenger airliner, stripping away hundreds of seats, ripping out overhead bins, and slicing a massive structural opening directly into the aluminum fuselage seems like an absurdly expensive way to handle an aging asset.

Every year, dozens of retired widebody passenger jets enter modification hangars rather than the scrap heap. In global air cargo, turning a retired passenger transport into a main-deck freighter is often the single most lucrative fleet decision an aircraft owner can make.

What remains far less obvious is the true financial motivation behind this engineering resurrection. With express logistics giants expanding their fleet footprints, conversion providers are maintaining constant modification lines worldwide.

At its most basic level, the direct cost to undergo a passenger-to-freighter modification on a Boeing 767-300ER comes from the Supplemental Type Certificate licensing and modification labor.

Historical aviation analysis from valuation firm IBA established a baseline benchmark for a direct 767-300ER conversion at roughly \$14 million in 2018, with later IBA estimates placing the direct modification bill at approximately \$14.7 million.

That direct modification fee covers only the engineering package that transforms the fuselage into a main-deck cargo carrier.

Conversion crews slice a 134 inch x 108 inch (3.40 meter x 2.74 meter) hydraulically operated main-deck cargo door into the forward left fuselage, reinforce the passenger floor grid with heavy-duty structural cross-members, plug every cabin window, and install a rigid 9g crash barrier wall behind the flight deck.

Paying for this kit simply covers the labor to alter the airframe and assumes the donor aircraft itself is mechanically pristine, which in many cases is not. In reality, no midlife passenger jet exits commercial service in factory-fresh condition. Paying the conversion shop for

the Supplemental Type Certificate package answers only what it costs to alter the aluminum shell, leaving prospective operators with many financial unknowns.

Turning the raw aluminum shell into a flight-ready commercial asset can double or even triple the baseline conversion invoice. The direct engineering work is merely one line item on a comprehensive capital budget that begins with acquiring the donor aircraft itself.

Midlife passenger 767-300ER airframes typically fetch between \$5 million and \$12 million on the secondary market, depending on total flight cycles, airframe hours, and remaining engine life. Once an operator finds the passenger jet it wants, the financial clock starts ticking long before the aircraft ever rolls into a modification bay.

During peak air cargo demand following global supply chain shifts from the COVID-19 pandemic, historical valuation data from IBA indicated that the direct conversion price tag alone climbed to an average of \$15.8 million for a 767-300ER, still noticeably more cost-effective than the \$18.4 million required for a competing Airbus A330-300 passenger-to-freighter modification.

However, when operators align the conversion work with mandatory heavy maintenance checks, comprehensive overhauls for General Electric CF6-80C2 or Pratt & Whitney PW4000 powerplants, landing gear replacements, and flight deck avionics modernizations, maintenance debt quickly adds another \$3 million to \$7 million.

Combined with three to four months of unearned revenue while the jet sits grounded in a hangar, the total all-in financial commitment routinely settles between \$25 million and \$32 million per finished freighter.

The roughly \$30 million capital commitment makes financial sense only if the underlying airframe possesses enough structural integrity to generate reliable cargo revenue for another decade or two. That reality shifts the focus from pure accounting to engineering selection, making buyers scrutinize every potential donor airframe down to its original assembly rivets.

How do cargo operators and conversion specialists determine whether an individual passenger aircraft is truly sound enough to justify such a massive investment?



Cycles Are What Matters

An airframe manufactured 22 years ago that completed one long-haul transatlantic flight per day accumulates far fewer cabin pressurization cycles and structural fuselage stresses than a 15-year-old jet operated on five short regional legs daily.

Every pressurization cycle expands and contracts the aluminum skin, creating metal fatigue over time. Conversion specialists and Boeing engineers evaluate donor suitability by auditing total flight cycles, structural repair history, corrosion records, and maintenance logs rather than the manufacture date.

Once modified, the Boeing 767-300BCF (Boeing Converted Freighter) delivers operational specifications nearly identical to factory-built cargo aircraft. The twin-engine freighter provides a maximum structural payload capacity of 115,700 lb (52,480 kg) alongside a total cargo volume of 15,469 cu ft (438 cu m), comprising 11,884 cu ft (336.5 cu m) on the main deck and 3,585 cu ft (101.5 cu m) in lower belly holds.

Operating at a maximum takeoff weight of 412,000 lb (186,880 kg), the 767-300BCF achieves a full-payload range of 3,250 nautical miles (6,019 km), making it a highly capable asset for express logistics networks.

Achieving those payload and range figures does not come only from removing passenger seats, overhead bins, and galleys. Turning an airliner

into a heavy-lift freighter involves much deeper structural modifications to handle concentrated payload weight and severe loading stresses.

From Powering Screens To Cargo Doors

The problem with conversions is that cutting an open section into the forward fuselage disrupts the pressurized vessel's continuous hoop stress ring.

To restore structural integrity, engineers tie heavy longitudinal intercostals into four main fuselage frames surrounding the doorway, transferring shear loads away from the opening and down into the lower crown splices.

Another hurdle is the rerouting of miles of passenger service cabling to feed dedicated freight infrastructure. Auxiliary power channels previously dedicated to in-flight entertainment and cabin galleys are rewired into primary power distribution units that feed motorized cargo rollers on the main deck.

Hydraulic power for the heavy upper-hinged main cargo door is tapped directly from the primary flight-control hydraulic circuits, with mechanical lock valves to prevent accidental pressure drops during ground operations.

Furthermore, removing cabin interior mass shifts the empty aircraft center of gravity forward, so flight test engineers must recalculate zero-fuel weight limits and re-index the operational trim limits for flight crews.

5 Reasons Private Jets Fly Higher Than Commercial Airlines



Commercial airliners cruise between 30,000 and 41,000 feet (9,144 - 12,500 meters) while Private jets routinely operate between 41,000 and 45,000 feet (12,500 - 13,700 meters).

A Gulfstream G650 at 99,600 lb (45,178 kg) can sustain cruise at altitudes that a Boeing 737 MAX 8 at 182,000 lb (82,554 kg) cannot reach at its normal operating weight.

The reasons trace back to five engineering and operational factors that separate private jet operations from the commercial airline environment.

The altitude an aircraft can sustain in cruise is determined by the relationship between its weight, its engine thrust, and its wing's ability to generate lift in thin air.

As altitude increases, air density decreases. Less dense air means the engines produce less thrust and the wings generate less lift at the same indicated airspeed.

At some altitude, the aircraft reaches a point where the engines cannot produce enough thrust to maintain speed and the wing cannot generate enough lift to sustain level flight



without approaching the stall. That altitude is the aircraft's service ceiling, and it varies directly with how much the aircraft weighs relative to the thrust and lift available.

Commercial aircraft routinely depart at weights close to their maximum, loaded with 150-400 passengers, their baggage, cargo, and the fuel required for the route.

A private jet carrying 8-16 passengers on the same route departs at a fraction of its maximum takeoff weight, which pushes its achievable cruise altitude even higher above its published service ceiling in some cases.

Commercial air traffic in the United States operates predominantly within Class A airspace between FL180 and



FL600, but the vast majority of airline flights cruise between FL300 and FL410.

Above FL410, the traffic density drops substantially. Few commercial airliners can operate above that altitude at typical operating weights, which means the airspace from FL430 to FL510 is occupied primarily by business jets, military aircraft, and the occasional light commercial aircraft at lower weight.

A private jet at FL450 on a transcontinental flight from Teterboro to Van Nuys may receive a routing that is close to a straight line between the two airports, while a commercial airliner at FL370 on the same general path is following a published airway or receiving vectors to maintain spacing with the traffic around it.

The routing advantage translates to time savings. A direct routing at FL450 covers fewer ground miles than a route at FL370 that follows airways, navigates around restricted airspace at lower altitudes, or deviates for traffic separation.

Greater fuel advantage

Air density at FL450 is approximately 16% of the value at sea level, meaning the atmosphere is roughly 84% less dense than at ground level and approximately 50% less dense than at FL350, where most commercial airliners cruise.

The lowest layer of the Earth's atmosphere, contains virtually all of the weather that affects aircraft operations. Thunderstorms, convective turbulence, icing conditions,

frontal systems, and the jet stream all occur within this layer.

This will force a commercial aircraft to deviate laterally around the cell because the airliner cannot climb above it at operating weight.

A private jet cruising at FL450 or FL470 is above the storm top in most cases and can continue on its direct routing without deviating. The jet stream, which produces clear air turbulence at altitudes between FL300 and FL400 with wind speeds of 100-200 knots, is also below the private jet's cruise altitude.

The private jet passengers experience a smoother ride on average than passengers on commercial flights at lower altitudes. Turbulence encounters are less frequent at FL430-FL510 because the atmosphere at those altitudes is more stable.

Pilots of private jets still monitor weather and turbulence forecasts, and they still encounter rough air occasionally, but the frequency and severity of turbulence events at FL450 is lower than at FL370 by a measurable margin.

Private jet manufacturers design their aircraft for sustained high-altitude cruise in ways that commercial airliners are not optimized for. The differences span the pressurization system, the wing design, the engine selection, and the structural engineering of the fuselage.

Cabin pressurization illustrates the

difference clearly. A Boeing 787, one of the best-pressurized commercial aircraft in service, maintains a cabin altitude of approximately 6,000 feet (1,829 meters) at its maximum cruising altitude of FL430. A Gulfstream G700 maintains a cabin altitude of 4,850 feet (1,478 meters) at FL510, which means passengers at 51,000 feet (15,500 meters) in a G700 experience lower cabin altitude and higher effective oxygen levels than passengers at 43,000 feet (13,100 meters) in a 787.

The wings and engines follow the same pattern. Private jet wings are designed with supercritical airfoil profiles optimized for efficient cruise at Mach 0.85-0.925 at altitudes above FL400. The Bombardier Global 7500's wing was designed from the outset for FL430-FL510 cruise, with a combination of sweep, thickness, and twist that produces low drag at those altitudes and speeds.

The Rolls-Royce Pearl 700 engines powering the G700 and the GE Passport engines on the Global 7500 are designed to maintain rated performance in the thin air above FL400, where a larger commercial turbofan optimized for the FL300-FL410 band would lose efficiency.

Commercial aircraft manufacturers could engineer their aircraft for higher cruise altitudes, but the weight penalty of the stronger fuselage, the larger wing modifications, and the engine redesign would not be justified by the operating economics of carrying 200-400 passengers.

BLACK HAWK



UH-60 Black Hawk

The Difference Between The Two Military Helicopters

One of the most ubiquitous helicopters in service is the UH-60 Black Hawk, which is the USA's workhorse chopper. It's used for all manner of missions and is flown all over the world to support military operations, as it's utilized by multiple countries.

The UH-60 was introduced in 1979, and there are tons of variants with unique characteristics. One variant is the U.S. Navy's (USN) MH-60 Seahawk, which entered service in 1985 and has been flying ever since.

The most notable differences center around which organizations operate the two aircraft. The UH-60 is flown by numerous USA units, including Special Forces (SF) and Special Operations Forces (SOF).

Conversely, the MH-60 is flown by the USN, with different variants produced over time that carry out a diverse mission set.

The UH-60 Black Hawk replaced the Bell UH-1 Iroquois, better known as the "Huey," and has been the USA's most-used helicopter since. Because

the UH-60 was introduced nearly 50 years ago, the modern aircraft is significantly more advanced than the UH-60A models first flown in '79.

As of this writing, the most recent addition is the UH-60V, which is a digital variant featuring numerous software upgrades over its predecessors, though the "V" upgrade wasn't used across the entire UH-60 fleet.

The UH-60 is most often employed as a utility helicopter, hence the "UH" designation. It can transport up to 12

VS. SEAHAWK



MH-60 Seahawk

fully kitted-out troops into and out of hostile areas. It's used for Air Assault missions, but UH-60s have also aided in firefighting, as well as search and rescue missions and combat assault operations.

Most are outfitted with twin door gunner positions to protect helicopter ingress/egress and during flight.

They're used by SOF as well as regular Army troops, so the USA puts its large fleet of helicopters, including the UH-60, to work.

Perhaps the most important aspect of the UH-60's design is its versatility, as it's employed in as many mission types as possible.

The MH-60 Seahawk helicopter While the MH-60 Seahawk looks similar to the heavily utilized UH-60 Black Hawk, it has several notable differences that make it unique to the

USN.

These include folding rotor blades and a folding tail boom, which aids in reducing storage space on ships. They're operated from any ship with a helipad or flat-top surface, so most vessels can and do use the MH-60 for naval operations.

These include performing anti-surface warfare, search and rescue, combat search and rescue, anti-submarine warfare, medical evacuation, and much more.

There are also numerous variants, including the MH-60R/S Seahawks, which are replacing older Seahawk models. The primary differences between the MH-60 and UH-60 stem from the numerous configurations of the former over the latter.

The MH-60 is heavily modified to enable maritime operations, so it's

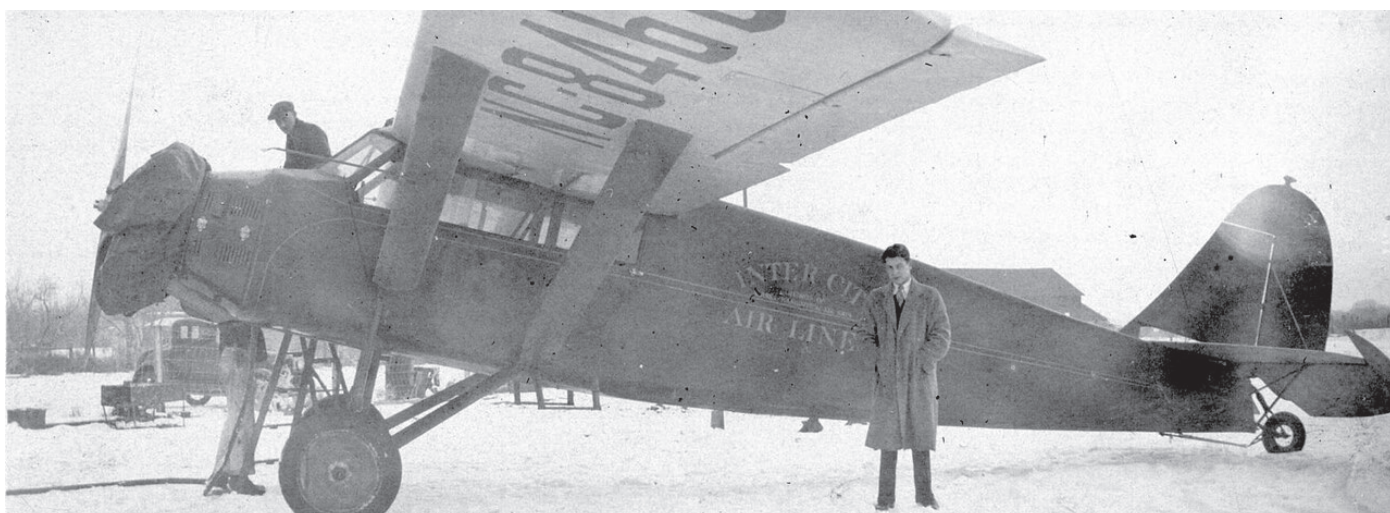
better suited to flying around saltwater than the Army's helicopter. The multi-mission chopper is also used more by SOF for various tactical missions, as well as maritime search and rescue. Additionally, the MH-60 often carries different weapons due to its operating environment.

These include torpedoes and other ordnance used in anti-submarine warfare operations that serve no benefit to a UH-60 operated by the USA. The MH-60 is also outfitted with the AN/AQS-22 Airborne Low Frequency Sonar system used to locate submerged targets.

While the UH-60 primarily supports transport operations, the MH-60 is more specialized for its environment, taking part in operations the UH-60 isn't suited for due to its configuration and reduced ability to function properly in marine environments due to a lack of corrosion protection.

TODAY IN *Aviation* HISTORY

FIRST FLIGHT OF A DIESEL POWERED AIRCRAFT



Ninety-eight years ago, aviation entered a new era when a specially modified Stinson SM-1DX Detroitier completed the first flight of a heavier-than-air aircraft powered by a diesel engine.

Equipped with the experimental Packard DR-980 radial diesel, the aircraft demonstrated the potential of compression-ignition technology in aviation and paved the way for further experimentation with alternative aircraft powerplants during the early years of flight.

A Stinson SM-1DX Detroitier made the first flight of a heavier-than-air aircraft powered by a diesel engine. Piloted by L. M. Woolson and Packard chief test pilot Walter E. Lees, the modified Stinson demonstrated the potential of compression-

ignition power for aviation.

The SM-1DX was a specially modified version of the Stinson SM-1 Detroitier, a six-seat high-wing cabin monoplane originally developed in 1927.

Instead of the Detroitier's conventional gasoline-fueled radial engine, the SM-1DX was fitted with the experimental Packard DR-980, an air-cooled nine-cylinder radial diesel developed under the direction of Woolson with assistance from German engineer Hermann I. A. Dörner.

The historic flight took place at the Packard proving grounds in Utica, Michigan. Although diesel aircraft engines never displaced gasoline engines in widespread aviation use, Packard continued developing

the DR-980 and achieved several notable accomplishments. In 1931, a production version installed in a Bellanca established an unrefueled endurance record of 84 hours and 33 minutes.

The SM-1DX's Packard DR-980 produced 225 horsepower at 1,950 rpm. For comparison, the closely related SM-1F Detroitier measured 32 feet 8 inches in length with a wingspan of 46 feet 8 inches.

The SM-1F could reach 132 mph, cruise at 113 mph, had a range of 680 miles, and a service ceiling of 16,000 feet. The SM-1DX itself was a one-off conversion, making its significance less about production success than its pioneering demonstration of diesel power in flight.

First Flight of the Sage Type 2

On August 10, 1916, the Sage Type 2 took to the skies for the first time, showcasing an unconventional British fighter design with an enclosed cockpit and a unique over-wing gun position.

Despite promising flight performance, the sole prototype was lost in an accident, bringing the aircraft's development to an early end as more advanced WWI fighters emerged.

110 years ago (August 10, 1916), the first flight of the Sage Type 2 took place. A prototype two-seat fighter of British design, the Sage was intended to be a solution to the need for more advanced combat aeroplanes.

Frederick Sage & Co, a

successful woodworking company at the time, established their own aircraft division in 1915.

Noted pilot and aircraft designer Eric Gordon England was hired by Sage to provide guidance, along with Clifford Tinson, formerly of the Bristol Aeroplane Company.

Tinson began his work at Sage with sights set on a two-seat fighter design. Although capable of seating two, the Type 2 was smaller than most single-engine fighters of the period.

Both the pilot and his gunner sat in an enclosed canopy, protected from the harsh elements of the dogfighting atmosphere.

This canopy sat sandwiched between the upper and lower wings, atop the forward fuselage. An effective gun synchronising gear had not yet been refined or readily made available, so a hole was cut in the upper wing, over the gunner's seat.

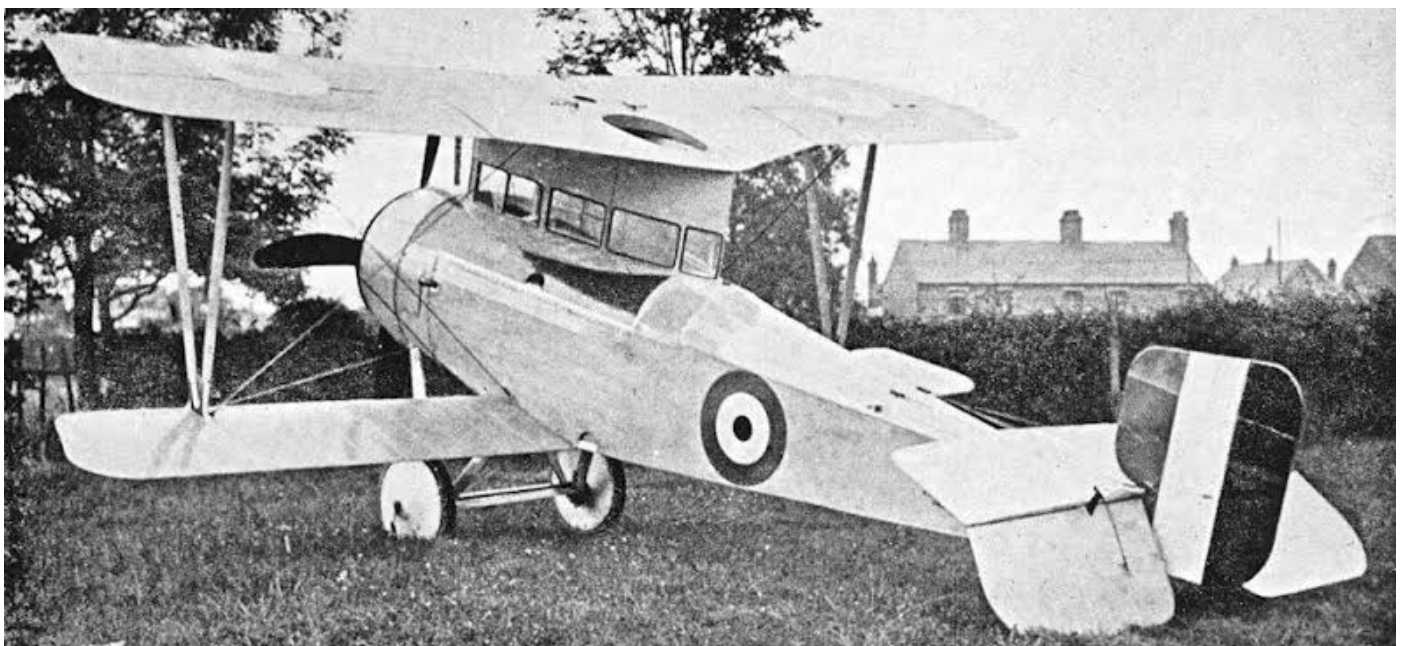
From here, the gunner could stand, exposed above the wing, to shoot the .303 in Lewis gun. The gunner had full range of motion from this vantage point, and could even fire forward of the propeller.

The Sage Type 2 was powered by a 100-horsepower Gnome Monosoupape rotary engine, which allowed the unconventional fighter to attain a maximum airspeed of 112 mph.

The Type 2 had an endurance of 2 hours and 30 minutes, equating to a range of 268 nautical miles. Service ceiling for the Type 2 was 16,000 feet, while the aircraft could reach 10,000 feet of altitude in nearly 15 minutes.

Flight testing allowed the Sage to prove solid performance and maneuverability. The fighter was noted as being relatively simple to fly. An unfortunate accident occurred on September 20, 1916, due to a failure of the rudder post.

The sole-built Sage Type 2 was damaged beyond repair. No further development of the fighter took place, as the introduction of the interrupter gear and Sopwith 1½ Strutter filled Britain's combat aircraft needs for WWI.



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410 257 Email: sabdo@748airservices.
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swiftkenya.com

Airworks Ltd

KRA Hanger, Wilson Airport, Langata Road,
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+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
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Blue Sky Aviation Ltd

Wilson Airport, Langata Road, Nairobi, Kenya
Tel: +254 020 607 238 Email: blueskyavi@
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Bluebird Aviation Services Wilson Airport,

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Boskovic Air Charters Ltd Wilson Airport,

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203 852 Fax: +254 0 20 609 619 Email:
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Capital Airlines Ltd

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co.ke Web: www.capitalairlines.biz

Phoenix Aviation

Wilson Airport, Langata Road, Nairobi, Kenya
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Email: flightops@phoenixaviation.co.ke Fleet:
2x King Air 200, Citation Bravo.

Trackmark Ltd

Wilson Airport, Langata Road, Nairobi, Kenya
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Tradewings Ltd

JKIA, P.O. Box 42474 – 00100, Nairobi,
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0 20 602 721 Cell: +254 0 722 520 561
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110

United Airlines Ltd

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ALS Limited

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http://www.als.co.ke Email: res@als.co.ke,
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African Sky Charters

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Commuter Air Services

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MODERN INFRASTRUCTURE UPGRADES TO DELIVER A BETTER PASSENGER EXPERIENCE

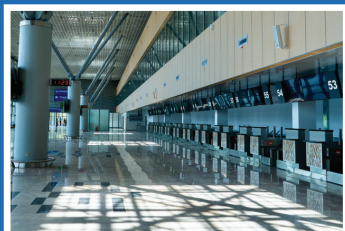
Uganda Civil Aviation Authority is upgrading aeronautical infrastructure for a better passenger experience.



The newly completed 20,000-square-metre Passenger Terminal Building at Entebbe International Airport has three additional aerobridges to make a total of five, 26 more check-in counters, and 14 self-check-in service facilities, increasing capacity from 2 million to at least 3.5 million passengers annually upon phased opening. The completed and ongoing infrastructure upgrades form part of the 20-year National Aviation Master Plan.



Comfortable & Modern
Business Class Lounge.



World Class Terminal
Infrastructure.



One of the
new aerobridges.



Spacious ambient environment
for seamless passenger facilitation.