

I am truly excited to share with you our exclusive Embraer market report on the future potential of the African aviation market. Titled "Connecting Africa", we shed our thoughts around how we can excel on the quest of creating more connectivity on the continent. Because this is what we feel aviation is all about – connecting people & cultures, markets, goods and more.

In discussion with our market experts at Embraer, who carefully crafted this report using the latest market industry data and deliberating with industry experts, we recognized that we do not celebrate and recognize sufficiently the many success stories the African aviation community has achieved, especially in recent history. Don't we all too often debate at conferences around "what's not working in Africa" and "here's what to learn from the rest of the world"?

Shouldn't we join in for a much-deserved dosage of positivity on the great achievements made, making Africa more connected, safer to fly than ever, and more accessible to the traveling public. African airlines have been on the forefront of bringing the latest technology to the continent, regardless of if Embraer or other manufacturers. If you are into flying vintage aircraft – try Europe or North America, but here in Africa the airlines embrace the latest and safest new technology. Or – look at the great strides made by the big African hub carriers, building robust

hub airports. Many reasons that give us great conviction to be excited for what is ahead for "our" region.

And what is ahead is an even more connected continent, more nonstop flights, more connectivity, more convenience to the travellers which will increase trade & tourism. This connectivity report will attempt, and hopefully convince you, of the great potential that is right there in front of us. Split into two chapters the report strives to give you an in-depth perspective on the vast opportunity to increase connectivity, with actual examples on markets worth taking a deeper look into, and secondly puts the magnifier on the great developments made by Africa's leading hub airlines and ways to optimizing connectivity.

We thank all the airline experts that have contributed in making this report a reality and look forward discussing how we can jointly build the best, safest, most accessible and sustainable future African aviation eco-system. Now – please sit back, and enjoy the reading

Yours sincerely,



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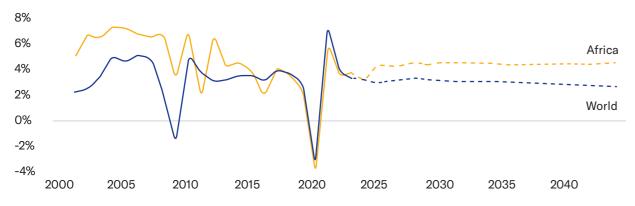


SETTING THE SCENE

Despite accounting for 18% of the global population, Africa contributes less than 3% to global GDP and 2.1% to global air passenger and cargo traffic, according to the International Air Transport Association (IATA). This disparity reflects, among other factors, the continent's limited intra-regional air connectivity which is a critical bottleneck in Africa's economic and aviation development.

A common metric to measure airline passenger traffic is the number of Revenue Passenger Kilometer (RPK). IATA research from 2019 shows that globally, RPK grows twice as much as GDP. Differences can be observed between regions, depending on economic factors but also the maturity of the air transport industry.

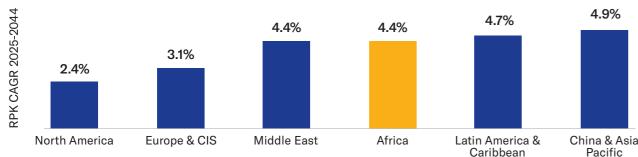
GDP Growth Rate and Forecast, %



Source: S&P Global Connect, IHS Markit

When looking at Africa over the next 20 years, S&P expects the continent's GDP to grow at 3.8% per year and Embraer analysis expects a RPK growth of 4.4% per year. This RPK growth is greater than the growth expected in other regions such as Europe or North America.

Wordwide Air Transport Demand Growth: 2025-2044

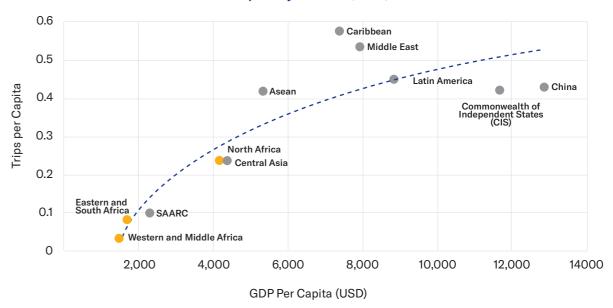


Source: Embraer

Improving air connectivity is not only essential for the growth of Africa's aviation industry, but also a catalyst for broader economic development. IATA research from 2007 indicates that a 10% increase in air connectivity, relative to GDP, leads to a 0.07% rise in GDP per hour worked, underlining the economic impact of improved air mobility.

Compared to more mature aviation markets, Africa has a big potential to enhance its air transport system and therefore number of travelers in the continent. This can be observed when looking at the propensity to fly, which is defined as the number of air trips per capita. In Africa, the propensity to fly is amongst the lowest when compared to other regions of the World.

Propensity to travel (2024)



Source: Embraer Analysis (data from IHS Markit and Sabre). Note: SAARC includes Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka.

Although Africa has the world's lowest propensity to travel, its potential for growth is immense and developing intra-regional connectivity will be a key driver of this growth. Currently, 64% of intra-African markets are served with 7 weekly flights or less. This means that only 36% of intra-African markets have more than 1 daily flight.

While the potential is immense, Africa is also emerging as a leader in various aspects of aviation. Several airlines on the continent have been early

adopters of next-generation aircraft. For example, Kenya Airways and Ethiopian Airlines with the Boeing 787, or Air Peace with the Embraer E-Jets E2. Moreover, aviation is regarded as a strategic sector in many African countries. A notable example is Nigeria, which has established a dedicated Ministry of Aviation and Aerospace Development. Additionally, Africa is globally recognized as a pioneer in mobile payments and digital financial services, which have significantly boosted online ticket sales in recent years.

"The potential of intra-African connectivity is vast, and it is within our collective power to unlock new markets, build new regional hubs, and create a more integrated continent. By working together, we can foster economic growth, promote trade, and improve the lives of millions of Africans through better connectivity."

Festus Keyamo, SAN, CON, FCIArb (UK), Honourable Minister of Aviation and Aerospace Development, Nigeria

In this report, Embraer first presents potential new routes to be opened that would enhance intra-African connectivity and then explores how existing African hubs can further contribute to developing this very much needed connectivity on the continent. This report was released in June 2025, during the AviaDev conference in Zanzibar, Tanzania.



POTENTIAL NEW ROUTES TO ENHANCE INTRA-AFRICAN CONNECTIVITY

LIMITED AIR CONNECTIVITY ACROSS THE CONTINENT

While Africa is well connected to the rest of the world, primarily through major global hubs and largely operated by foreign carriers, the same cannot be said for connectivity within the continent. A significant number of intra-African origin-and-destination (O&D) markets remain underserved or entirely unserved by direct flights. As a result, many passengers traveling between African cities are forced to connect through hubs in Europe or the Middle East, adding time and cost to their journeys.

Domestic connectivity also remains limited in several African countries. This creates an opportunity to shift passengers from slower modes of transport, such as buses or ferries, to air travel, mirroring the transformation that has taken place in parts of Latin America such as Brazil. Enhancing domestic routes could help build feeder traffic into regional networks, strengthening the overall air transport network.

New intra-African routes can serve diverse travel purposes, from business to visiting friends and

relatives (VFR), as well as leisure tourism. For instance, tourism-driven demand is notable in countries such as Namibia, Botswana, Zimbabwe, and South Africa, where direct flights to key source markets could unlock further tourism.

In many cases, there are no direct flights between certain African capitals with strong economic, political or cultural ties. In cases like this, the introduction of a direct service often stimulates market demand, making air travel more accessible and increasing overall traffic between the cities.

However, route development is not only a matter of demand. Some O&D markets that could sustain a direct flight remain unserved due to regulatory barriers, such as the absence of bilateral air service agreements or restrictive traffic rights between countries. Addressing these policy issues is crucial to unlocking latent demand and enabling market growth.

STIMULATION EFFECT WHEN OPENING A NEW ROUTE

To better understand this potential, Embraer has first conducted an in-depth analysis of airline schedules and traffic patterns across the past decade in order to establish the expected stimulation factor resulting from the introduction of a direct flight on a given market.

The analysis was conducted by collecting historical schedule and traffic data from Sabre Market Intelligence. The period analyzed is 2014-2024 and the data extracted consisted in flights schedules and demand on all O&Ds, modeled through passengers per day each way (PDEW). In this period, Embraer identified more than 70 O&Ds which, within the given period, went from being unserved with a direct flight to served with a direct flight. To mitigate the

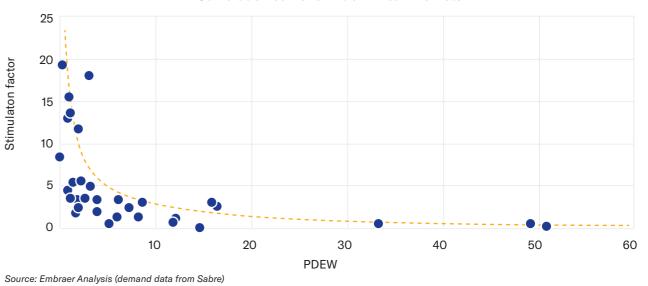
effect of seasonality, determining the new passenger demand after the introduction of a direct flight was done by considering the full year after the first year where a direct flight was operating.

Using this historical data, a correlation between direct flight introduction and subsequent change in passenger demand was found. This is modeled through the stimulation factor, determined as the ratio between the new PDEW and former PDEW, and can be visualized in the graph below. When introducing a direct flight, the PDEW increases as traffic is stimulated to the reduction of barriers for air travel such as layovers or long ground travel, fare reductions, new business and touristic opportunities or even the simple perception of proximity between two cities.

"It's important to prioritize economic development, latent demand and propensity to travel as opposed to just commencing routes based on non-existing industries, low GDP or political interests. At Kenya Airways, the most successful intra-African routes were those driven by sound economic fundamentals like Nairobi to Mauritius, Nairobi to Cape Town and growth into Accra with onward tags to Monrovia, Freetown and Dakar."

Martin Gitonga, General Manager, Digital, Brand & Marketing, Kenya Airways

Stimulation curve for intra-African markets



In general, for O&Ds where the current traffic is very low, the stimulation resulting from the introduction of a direct flight is very high, while for O&Ds where the current traffic is greater, the stimulation factor is lower. This can be explained by the fact that O&Ds with high PDEWs, are usually already served with a one-stop efficient connection while on the contrary O&Ds with lower PDEWs often require a one-stop long layover, with great circuity or sometimes more than one stop itinerary. This analysis supports data-driven decision-making and helps prioritize route launches with the highest potential return on investment.



SIGNIFICANT POTENTIAL FOR NEW ROUTES

Embraer has then identified the potential new intra-African routes to be opened and the expected PDEW once a direct flight is opened. Insights into the top 10 markets that currently don't have a direct flight are given in the next page.

"The African continent is three times larger than Europe in area, and its population is 2.5 times greater. Yet, air transport activity in Europe is 11 times higher than in Africa. Shockingly, up to 22% of Africans traveling between two African cities must transit through non-African hubs, often in Europe or the Middle East."

Abderahmane Berthé, Secretary General of the African Airlines Association (AFRAA)



#	ORIGIN	DESTINATION	DISTANCE (KM)	PDEW IN 2024	PDEW Stimulated	#	ORIGIN	DESTINATION	DISTANCE (KM)	PDEW IN 2024	PDEW STIMULATED
1	ABJ	DLA	1519	51	73	24	GBE	NBO	2842	13	26
2	LUN	CPT	2295	49	ROUTE OPERATED IN 2024	25	SLI	JNB	1566	13	26
3	DSS	LBV	3312	47	68	26	DAR	MPM	2231	12	26
4	CPT	LOS	4786	45	66	27	NBO	WDH	3156	12	25
5	C00	DSS	2317	30	49	28	ABV	DSS	2720	12	25
6	ВКО	BZV	3170	26	43	29	ВЈМ	DAR	1164	12	25
7	ABV	NBO	3481	24	41	30	TDV	RUN	1223	12	25
8	CPT	DAR	3681	20	36	31	ACC	СКҮ	1547	12	25
9	DLA	DSS	3164	20	35	32	INH	JNB	764	11	24
10	BZV	DSS	4138	19	35	33	ACC	DAR	4583	11	24
11	ACC	OUA	764	18	ROUTE OPERATED IN 2024	34	LOS	ROB	1513	11	24
12	НАН	TNR	925	17	32	35	BLZ	NBO	1611	11	23
13	MRU	DUR	2857	16	31	36	CPT	FIH	3306	10	23
14	ACC	EBB	3673	16	30	37	HRE	ZNZ	1572	10	23
15	CPT	EBB	4047	15	29	38	DAR	LOS	4252	10	22
16	DLA	JNB	3901	14	29	39	NBO	DUR	3206	10	22
17	C00	OUA	792	14	28	40	DLA	POG	536	10	22
18	ABV	JNB	4517	14	28	41	DSS	PNR	3858	9	21
19	DSS	NIM	2079	14	28	42	DSS	NSI	3364	9	21
20	LUN	MPM	1252	13	27	43	NIM	BOY	753	9	21
21	NKC	ABJ	1934	13	27	44	CPT	ZNZ	3745	9	21
22	ACC	ВКО	1151	13	26	45	LLW	CPT	2715	9	21
23	JNB	MBA	2741	13	26						

KEY TAKEAWAYS

Limited intra-African air connectivity: Many African O&Ds lack direct flights, increasing travel time and in some cases forcing travelers to route through non-African hubs.

Stimulation effect: Based on historical data, Embraer has established an intra-Africa stimulation factor curve to estimate expected passengers when opening a direct flight.

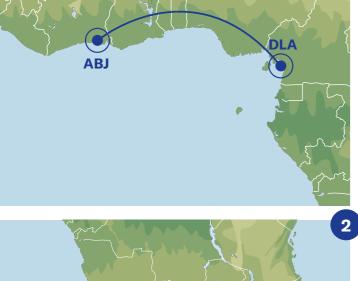
Opportunities for new routes: Embraer has identified numerous O&Ds which have the potential to sustain multiple weekly direct flights, supporting regional economic growth.





Abidjan (ABJ) - Douala (DLA)

Connecting two of West and Central Africa's largest Francophone cities, this route serves over 10 million combined urban residents. Côte d'Ivoire and Cameroon are both members of CEMAC and ECOWAS. Strong trade in cocoa, palm oil, and industrial goods stimulated business travel. Growing tourism links exist, especially for regional festivals and cultural ties. High potential for VFR (visiting friends & relatives) and SME travel demand. Currently served by Air Côte d'Ivoire with a stop in Abuja which captures about 85% of the market. The remaining passengers transit mostly through Lomé (LFW). Based on the forecasted PDEW, this market could sustain 5 weekly flights on a 120-seater.



Lusaka (LUN) - Cape Town (CPT) 2295 km

With Lusaka's population over 3 million and Cape Town's at 4.8 million, this is a vital Southern African link. Zambia and South Africa maintain bilateral air services agreements. Mining and agricultural trade flows support business travel. Cape Town is a key tourist destination for Zambians; outbound leisure travel is rising. Academic and medical travel also contributes to air travel demand. Currently, no direct flights and travelers are mostly routed via Johannesburg. Based on the forecasted PDEW, this market could sustain 4 weekly flights on a 120-seater.



Dakar (DSS) - Libreville (LBV) 3312 km

Dakar and Libreville link Francophone West and Central Africa with a combined population of over 5 million. Trade in oil services, construction, and regional banking drives business interest. Demand driven by tourism appeal and diaspora links; growing outbound from Senegal. Increasing presence of multinational and international organizations boosts premium cabin potential. No nonstop service currently, with travelers relying on other regional hubs such as Abidian. Bamako or Cotonou, Based on the forecasted PDEW, this market could sustain 4 weekly flights on a 120-seater.



Cape Town (CPT) - Lagos (LOS) - 4786 km

This corridor links South Africa's leisure capital with Nigeria's business hub, over 20 million people combined. Trade in tech, FMCG, oil services, and fashion makes this a strong business route. Lagos residents travel to Cape Town for tourism and shopping; reverse traffic includes business travel. Student and medical segments are growing. Currently limited direct options; heavy reliance on Johannesburg or Addis Abeba as connection points. Based on the forecasted PDEW, this market could sustain 4 weekly flights on a 120-seater.



Cotonou (COO) - Dakar (DSS) - 2317 km

Two strategic Francophone hubs, with a combined population over 6 million and strong diplomatic ties. Benin and Senegal have existing bilateral agreements. Trade in cotton, transport services, and digital entrepreneurship is rising. Dakar's growing fintech and Benin's port economy fuel professional mobility. Moderate VFR and student travel also adds seasonal demand. No current direct service, travelers often use Lomé or Abidjan as transit points. Based on the forecasted PDEW, this market could sustain 4 weekly flights on a 120-seater.



Bamako (BKO) - Brazzaville (BZV) - 3170 km

A West-Central Africa link with a combined population of 6 million and shared Francophone heritage, Humanitarian, NGO, and diplomatic travel form a key part of the passenger base. Tourism is limited but may grow with better regional access. VFR heavy traffic due to numerous Malians working in Congo. No current nonstop service, high circuity routing is often required. Based on the forecasted PDEW, this market could sustain 3 weekly flights on a 100-seater.



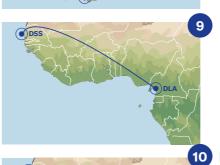
Abuja (ABV) - Nairobi (NBO) - 3481 km

Nigeria's political capital to East Africa's major hub. Two influential cities with combined populations near 10 million. Diplomatic, trade, and pan-African organizational ties are strong demand drivers. Nairobi is key for conferences. tech, and development work, Abuja for energy and government affairs. Some tourism and student movement, particularly outbound from Nigeria. No direct flight currently; Addis Abeba or Kigali serve as intermediate hubs. Based on the forecasted PDEW, this market could sustain 3 weekly flights on a 100-seater.



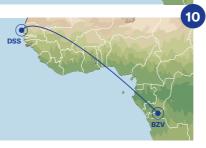
Cape Town (CPT) - Dar-Es-Salaam (DAR) - 3681 km

South-East Africa leisure corridor with strong tourism synergy and a growing middle-class market. Trade in wine, textiles, and tourism services. High leisure demand: Tanzanians travel to Cape Town for holidays, and South Africans to Zanzibar and Serengeti. Rising backpacker and medical tourism segments. Currently no direct flights. Routing via Johannesburg or Nairobi adds cost and time. Based on the forecasted PDEW, this market could sustain 3 weekly flights on a 100-seater.



Douala (DLA) - Dakar (DSS) - 3164 km

Major ports and commercial hubs, serving over 6 million people combined in West-Central Africa. Growing trade in logistics, infrastructure, and consumer goods. Strong VFR travel, especially among business diaspora and regional professionals. No direct service currently; Abidjan often used for connections. Based on the forecasted PDEW, this market could sustain 3 weekly flights on a 100-seater



Brazzaville (BZV) - Dakar (DSS) - 4138 km

A strategic West-Central Africa link, with a focus on government, diplomatic, and NGO travel. Trade in timber, oil-related services, and infrastructure projects. Tourism limited but diplomatic and education sectors provide year-round demand. Currently no nonstop flights, meaning that travel is multi-stop and expensive. Based on the forecasted PDEW, this market could sustain 3 weekly flights on a 100-seater.



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HUB CONNECTIVITY AND POWER OF FREQUENCIES

LIMITED AIR CONNECTIVITY ACROSS THE CONTINENT

A hub is an airport where the dominant carrier has a schedule built with flights arriving and departing in an organized way, minimizing connecting times for passengers. Typically, a hub airline will have at least 30% of its passengers connecting through its hub. The geographical position of a hub will determine the type of flows it can optimally connect. For example, hubs in East Africa are best suited to connect Asia and Africa while hubs in North Africa are best suited to connect North America or Europe and Africa.

Efficient hub operations are the core of an efficient and well-connected air transport network. A functional hub relies on robust two-way connectivity, meaning that arriving and departing flights must be strategically timed to enable seamless transfers. This is typically achieved through a wave structure, where flights are grouped into coordinated arrival and departure banks. Such structure maximizes connection opportunities and minimizes layover times for passengers.

The strategic advantage of hubs lies in their multiplier effect: adding a single new route to a hub can unlock dozens of new connection possibilities via that hub, significantly expanding the network's reach without requiring a direct flight between every city pair. This network effect enhances the value of the hub not only for the airline, but for passengers and regional economies alike.

"A hub and spoke airline is really a manufacturing company and it is about manufacturing connections. The more connections you can drive at a hub, the higher profits you drive at that hub, the more options you have for customers to flow through that hub. And it's exponential. You add one flight into a hub that has 80 connections, you don't just add one market like a point-to-point carrier would be doing, you add 80 new markets that strengthens the whole network."

Scott Kirby, CEO of United Airlines

THE IMPORTANCE OF ADDING FREQUENCIES

Frequency is another critical driver of connectivity quality. Higher frequencies offer passengers more flexibility, convenience, and shorter wait times. This is especially important for business travelers, who often prioritize schedule over price and contribute disproportionately to airline revenues through higher-yield fares. Increasing frequencies can therefore directly improve a hub's competitiveness and commercial profitability. The competitive advantage of a hub-and-spoke airline is the number of itineraries offered to its customers.

In addition to reducing circuity, from a sustainability standpoint, enhancing connectivity via African hubs and direct intra-continental flights can also help reduce the environmental footprint of air travel. Routing African passengers through African hubs instead of long-haul detours

via Europe or the Middle East, can significantly lower emissions per passenger while also improving the overall travel experience.

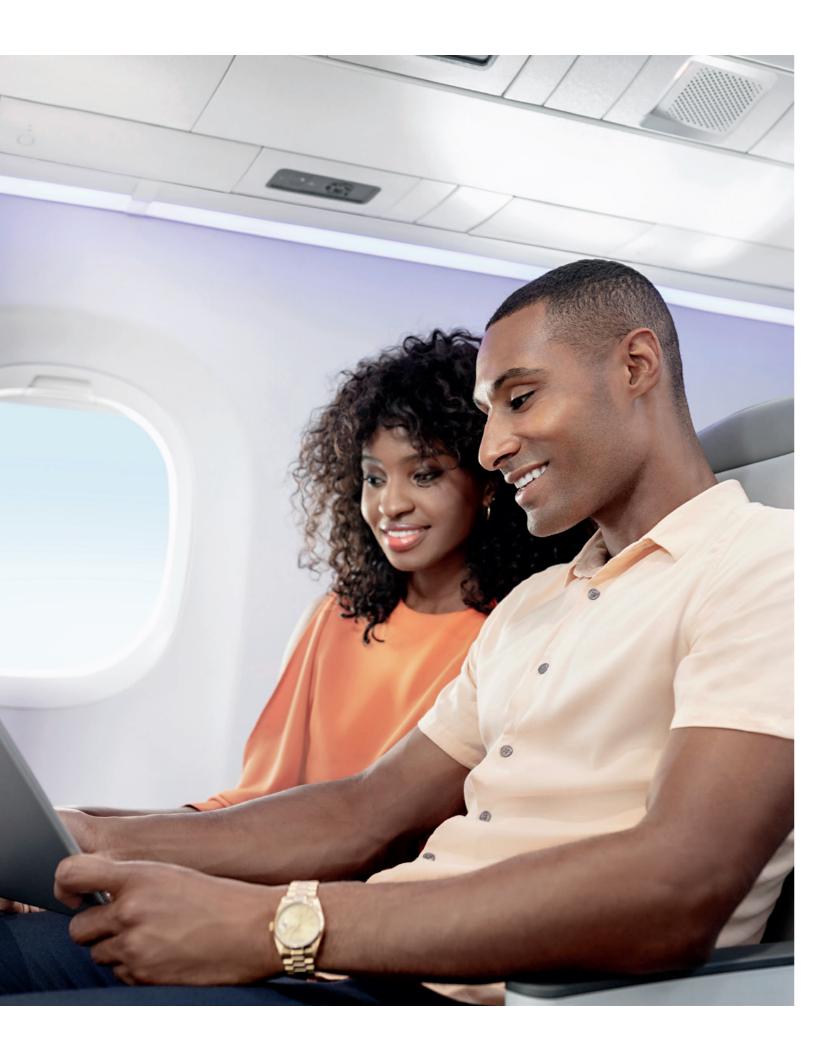
Beyond the traditional hub-and-spoke model, there is untapped potential to increase frequencies on domestic routes, especially in mid-sized countries such as Ghana, Angola, and Tanzania. Strengthening domestic services not only improves internal mobility but also helps feed traffic into regional and international networks.

A common metric to measure hub efficiency is the number of daily frequencies per destination. The chart below shows a selected list of hubs around the World in different regions and the main African hubs of airlines with more than 1 million passengers in 2024.



Source: Embraer own analysis, based in OAG schedules (APR 2025); Feeding routes up to 4,000km considered

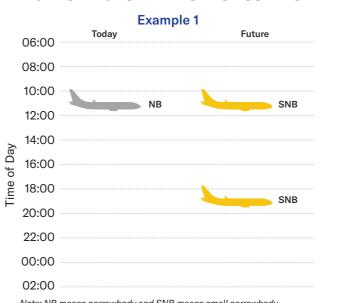


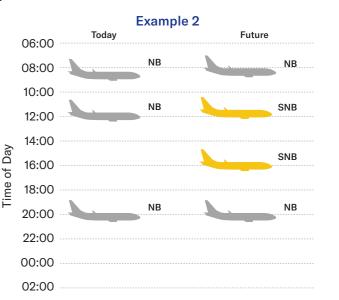


A hub should have at least one bank, comprising of one arrival wave and one departure wave. Ideally, a hub should have at least two banks as this maximizes the number of connections and increases aircraft utilization. A typical two bank set-up is to have a morning bank with long-hauls arriving and regionals departing, and then an evening hub with regionals arriving and long-hauls departing. As an airline develops, it can add a third bank in the afternoon, between the morning and evening hub.

The more banks an airline's hub has, the greater number of itineraries will be possible and will reduce the connection time. The latter is very important as it allows the airline to be better positioned in the Global Distribution Systems who presents the flight options sorted by total trip time. As the connection time reduces, airlines must work closely with the airport to ensure that there are no operational constraints and that quick connections can be made.

RIGHT SIZING TO ENHANCE HUB CONNECTIVITY





Note: NB means narrowbody and SNB means small narrowbody

Small narrowbodies can be used to replace larger narrowbodies in a hub to increase the number of frequencies per destinations and strengthening the banks. They allow to increase frequencies without creating over capacity. New generation small narrowbodies enable this at a lower trip cost and with a similar seat cost as narrowbodies.

KEY TAKEAWAYS

Efficient hub operations drive network connectivity: Well-timed banks at hub airports enable seamless passenger transfers and create a multiplier itineraries effect.

The importance of frequencies: Higher frequencies improve convenience, especially for business travelers who drive yields up, and strengthen a hub's competitiveness.

Optimizing hub structure boosts efficiency: By operating small narrowbodies, airlines can increase daily banks, boosting hub attractivity and increasing aircraft utilization.

DEPLOYING THE RIGHT AIRCRAFT TO SEIZE THE UNTAPPED POTENTIAL

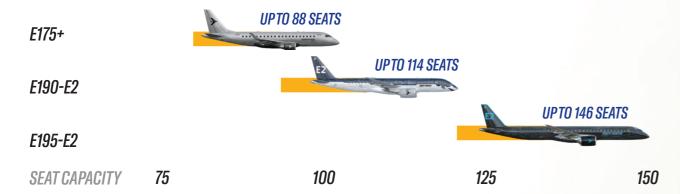
This study shows that there is a big potential to enhance intra-African connectivity, both point to point routes but also by developing African hubs. The aircraft deployed on each route will play a big role in determining the profitability that will be achieved. Indeed, while demand, and by extension revenues, may be uncertain, costs are certain. By operating the right-sized aircraft airlines can de-risk the operation by minimizing operating costs.

"You can fly a smaller plane twice, but you can't only fly just half of a larger one. Right-sized aircraft with regional jet capacity are key to unlocking sustainable growth in Africa's fragmented markets."

Sean Mendis. Former Airline Executive

Small narrowbodies, up to 150 seats, such as the E-Jets family with the E175+ (76 seats), the E190-E2 (96 seats) and the E195-E2 (120 seats) are the right aircraft to develop connectivity in most of the markets. The seating capacities mentioned previously correspond to typical dual class configurations.

THE E-JETS FAMILY COVERS THE WHOLE 70-150 SEAT SEGMENT



Compared to larger narrowbodies, the E2 has a smaller capacity but a much lower trip cost, meaning that the operation is less risky as the airline will need to sell less seats to reach profitability. With up to 6 hours flying range, the E2 family provides airlines with full flexibility to deploy the aircraft on both shorter routes and longer routes.

E2, ENGINEERED TO DELIVER BEST IN CLASS ECONOMICS



Optimized Wings For Each Family Member



Fourth Generation Fly-By-Wire



Lighter Structure And Improved Aerodynamics



Longer Maintenance Intervals

E2, A GAME CHANGER FOR AIRLINES Compared to larger narrowbodies, the E2 offers:

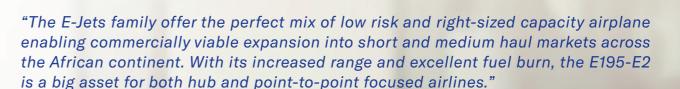


Lower Cost Per Trip



Similar Cost Per Seat

The E2 family offers unmatched cost efficiency as well as the opportunity to improve load factors and yield through usage of right-sized aircraft.



Behramjee Ghadially, Senior Manager Fleet & Network Planning





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