

COMAC



MARKET FORECAST



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Preface

In 2024, the global aviation industry has fully entered a new phase of post-pandemic growth, with transportation demand continuing to rise and industry operations basically returning to normal levels. According to data from the International Air Transport Association (IATA), global international passenger traffic in 2024 exceeded the 2019 peak by 0.50%, with all regions achieving growth. Among them, international passenger traffic of airlines in the Asia-Pacific region increased by 26% year-on-year, leading the growth rate among major global markets. According to statistics from the Civil Aviation Administration of China, China's civil aviation passenger transport volume reached 730 million in 2024, a record high, increasing by 17.74% compared with 2023 and 10.61% compared with 2019, demonstrating the strong endogenous development momentum of China's aviation market.

In terms of air cargo, the market continued to grow in 2024. Driven by factors such as the active cross-border e-commerce, strong demand for transportation of high-value-added goods (such as electronic products, medical supplies, and precision equipment), and the accelerated restructuring of the global supply chain, the time efficiency advantage of air cargo has become more prominent, and the demand has been continuously released. According to IATA data, calculated by cargo tonne-kilometers (CTK), global air cargo demand increased by 11.30% year-on-year in 2024, with international cargo growing by 12.20%.

Supported by strong market demand, the global aviation industry is accelerating into a profound transformation period driven by technological innovation and sustainable development. Digital technologies such as artificial intelligence, biometrics, and big data are being rapidly implemented in airlines and airports, continuously improving operational efficiency and passenger experience. The aviation manufacturing industry is also actively promoting the application of advanced technologies such as intelligent manufacturing, additive manufacturing, and digital twins to help improve aircraft development efficiency and optimize delivery schedules. At the same time, green and low-carbon technologies such as sustainable aviation fuel (SAF), hydrogen propulsion systems, and electric aircraft are constantly making new progress, and the aviation industry chain is steadily moving towards the goal of net-zero emissions.



While the global aviation industry continues to recover, it still faces many challenges: insufficient global economic growth momentum, rising geopolitical risks, high jet fuel prices, unresolved supply chain bottlenecks, rising infrastructure costs, and structural labor shortages will continue to affect the stable operation of the industry. The market differentiation between regions has intensified: airlines in North America, Europe, and the Middle East have maintained stable profitability; Asian-Pacific airlines as a whole achieved profitability in 2024; however, the profitability of markets in Latin America and Africa remains weak, and their growth momentum has yet to be further released.

Looking ahead to the next two decades, the global aviation market still has a solid growth foundation and broad expansion space. Commercial Aircraft Corporation of China, Ltd. (COMAC) has always paid close attention to the development trends of the global aviation industry, systematically promoted market forecast research and industry trend analysis, and released the flagship COMAC Market Forecast Annual Report (CMF) (2025-2044). The report predicts that by 2044, global air passenger turnover will achieve an average annual growth of 4.73%, with a total delivery of 45,172 jet aircraft, and the cumulative market value will be approximately 6.93 trillion US dollars; the cargo market will also continue to expand, with the total delivery of newly-built freighters and passenger-to-freighter converted aircraft expected to reach 3,167.

At a critical juncture in the reform and upgrading of the aviation industry, COMAC is willing to work hand in hand with global industry partners, with a forward-looking perspective, systematic thinking, and data insights, to jointly grasp the new cycle, new trends, and new opportunities in the aviation market, help the high-quality and sustainable development of the global civil aviation industry, and contribute China's solid strength to building a community with a shared future for mankind.

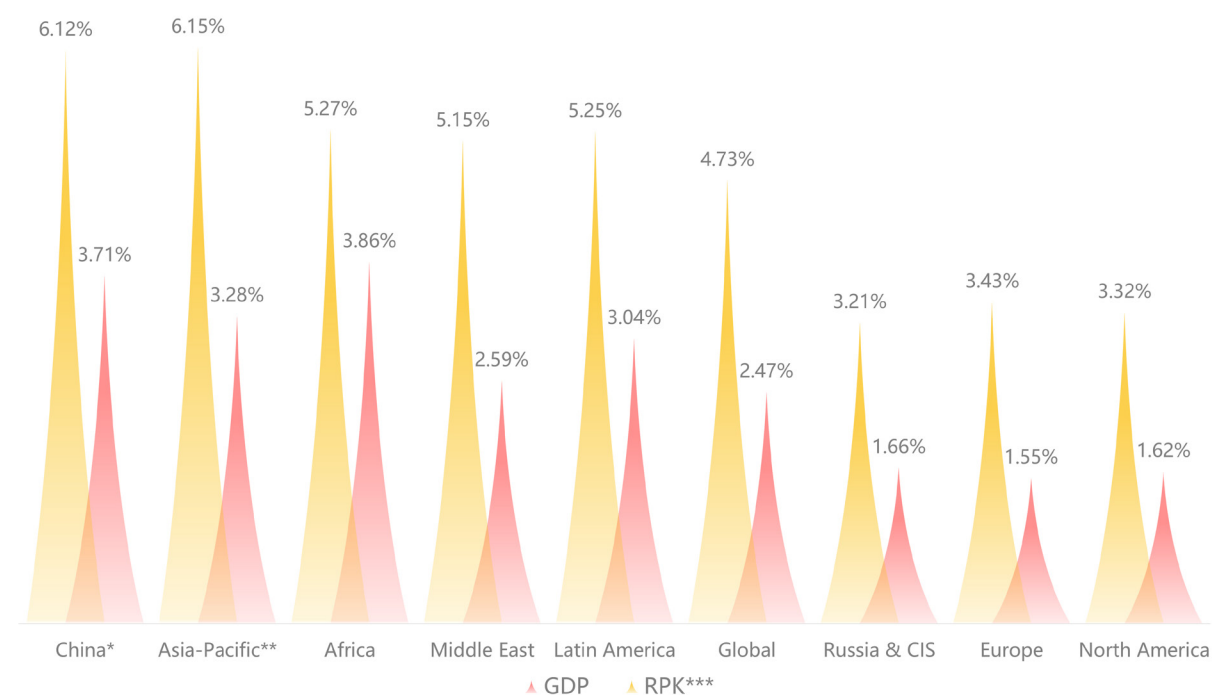
2025-2044 Overview of Forecast Data

| | China* | Asia-Pacific** | Europe | Latin America | Middle East | North America | Russia & CIS | Africa | Global |
|-------------------------|--------|----------------|--------|---------------|-------------|---------------|--------------|--------|--------|
| Average GDP Growth Rate | 3.71% | 3.28% | 1.55% | 3.04% | 2.59% | 1.62% | 1.66% | 3.86% | 2.47% |
| Average RPK Growth Rate | 6.12% | 6.15% | 3.43% | 5.25% | 5.15% | 3.32% | 3.21% | 5.27% | 4.73% |
| 2044 RPK (Trillion) | 4.47 | 4.69 | 3.89 | 1.33 | 2.30 | 3.96 | 0.46 | 0.59 | 21.69 |
| Deliveries | | | | | | | | | |
| Regional Jet | 783 | 545 | 330 | 167 | 76 | 1,294 | 271 | 233 | 3,699 |
| Single-Aisle | 7,250 | 7,175 | 7,145 | 2,113 | 1,804 | 6,679 | 717 | 810 | 33,693 |
| Twin-Aisle | 1,703 | 2,035 | 1,038 | 277 | 1,376 | 981 | 100 | 270 | 7,780 |
| Freighter | 120 | 129 | 127 | 14 | 46 | 593 | 16 | 15 | 1,060 |
| Total | 9,856 | 9,884 | 8,640 | 2,571 | 3,302 | 9,547 | 1,104 | 1,328 | 46,232 |
| Market Value B\$ | | | | | | | | | |
| Regional Jet | 40 | 28 | 17 | 9 | 4 | 64 | 15 | 12 | 189 |
| Single-Aisle | 877 | 897 | 878 | 259 | 218 | 825 | 79 | 92 | 4,125 |
| Twin-Aisle | 562 | 679 | 346 | 87 | 517 | 307 | 31 | 88 | 2,617 |
| Total | 1,479 | 1,604 | 1,241 | 355 | 739 | 1,196 | 125 | 192 | 6,931 |
| 2024 Fleet*** | | | | | | | | | |
| Regional Jet | 171 | 122 | 143 | 50 | 48 | 1,564 | 205 | 153 | 2,456 |
| Single-Aisle | 3,436 | 2,476 | 3,973 | 1,320 | 672 | 4,729 | 665 | 469 | 17,740 |
| Twin-Aisle | 706 | 951 | 948 | 135 | 680 | 679 | 98 | 143 | 4,340 |
| Freighter | 301 | 194 | 395 | 154 | 80 | 1,020 | 139 | 67 | 2,350 |
| Total | 4,614 | 3,743 | 5,459 | 1,659 | 1,480 | 7,992 | 1,107 | 832 | 26,886 |
| 2044 Fleet | | | | | | | | | |
| Regional Jet | 786 | 553 | 355 | 206 | 79 | 1,355 | 409 | 271 | 4,014 |
| Single-Aisle | 7,639 | 7,824 | 7,922 | 2,426 | 2,047 | 7,910 | 895 | 1,118 | 37,781 |
| Twin-Aisle | 1,750 | 2,246 | 1,140 | 406 | 1,481 | 1067 | 150 | 350 | 8,590 |
| Freighter | 450 | 351 | 643 | 271 | 159 | 1,499 | 117 | 119 | 3,609 |
| Total | 10,625 | 10,974 | 10,060 | 3,309 | 3,766 | 11,831 | 1,571 | 1,858 | 53,994 |

*China includes Hong Kong, Macau and Taiwan ** Asia-Pacific excludes China ***Excluding 'In Storage'

Source: COMAC, Cirium, IHS

Global Forecasts of RPK and GDP Growth Rates for the Next Two Decades



*China includes Hong Kong, Macau and Taiwan
 **Asia-Pacific excludes China
 ***RPK growth rate is based on 2024's standard

Source: COMAC, IHS

Executive Summary

In the next twenty years, global revenue passenger kilometers (RPK) are expected to grow at an average annual rate of 4.73%. This projection is primarily based on the assumption that the global economy will maintain an average annual growth rate of 2.47% through 2044. It is also anticipated that China's RPK will grow at an average annual rate of 6.12% over the next twenty years.



Global RPK

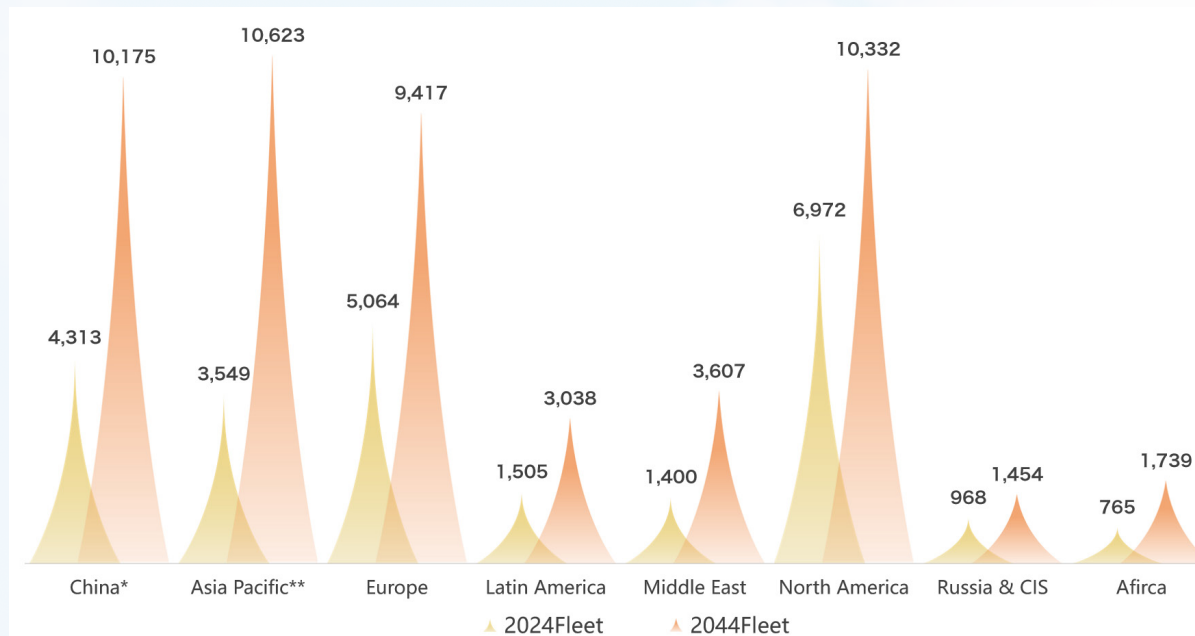
+4.73%



China RPK

+6.12%

Global Fleet Forecast



*China includes Hong Kong, Macau and Taiwan
 **Asia-Pacific excludes China

Source: COMAC, Cirium

Passenger Jet Fleet and Traffic Forecast Summary

| | Global Total | | China | | |
|----------------|--------------|----------------|--------|-------------------|----------------|
| | Fleet | RPK (Trillion) | Fleet | % of Global Total | RPK (Trillion) |
| 2024 | 24,536 | 8.60 | 4,313 | 17.58% | 1.36 |
| 2029F | 30,463 | 11.53 | 5,547 | 18.21% | 1.84 |
| 2034F | 35,725 | 14.24 | 6,633 | 18.57% | 2.49 |
| 2039F | 42,219 | 17.67 | 7,581 | 17.96% | 3.33 |
| 2044F | 50,385 | 21.68 | 10,175 | 20.19% | 4.47 |
| 2025-2044 CAGR | 3.66% | 4.73% | 4.38% | -- | 6.12% |

Source: COMAC, Cirium

It is expected that the total air passenger demand in 2044 will be 2.52 times that of 2024. It is forecast that the fleet size will reach 50,385 aircraft by 2044, which is more than 2.05 times of the current operating fleet of 24,536 aircraft.

It is expected that out of the current operating fleet, 19,323 aircraft (around 78.75%) will be retired from commercial passenger services in the next twenty years. They will be converted to business aircraft, freighters and other roles, or permanently scrapped and subsequently be replaced. Additionally, there is a need for 25,849 new aircraft in the global fleet market. Therefore, we expect that there will be a need for the delivery of over 45,172 new aircraft worth \$6.93 trillion over the next 2 decades for both replacement and growth, 74.58% of which will be single-aisle jets. It is estimated that China-based airlines will take 9,736 of the total delivery, worth around \$1.48 trillion.

2025-2044 Passenger Jet Delivery Forecast Summary

| | | Global Total | | China |
|---------------|--------|--------------|-----------------------------------|----------------|
| | | Deliveries | Market Value (Hundred Million \$) | New Deliveries |
| Regional Jets | Small | 10 | 3 | 0 |
| | Medium | 652 | 312 | 0 |
| | Large | 3,037 | 1,573 | 783 |
| Single-Aisle | Small | 3,601 | 3,382 | 260 |
| | Medium | 15,937 | 18,705 | 5,038 |
| | Large | 14,155 | 19,171 | 1,952 |
| Twin-Aisle | Small | 5,597 | 16,933 | 1,154 |
| | Medium | 1,388 | 5,388 | 477 |
| | Large | 795 | 3,854 | 72 |

Source: COMAC



Development Environment of Air Transportation

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1 Economy

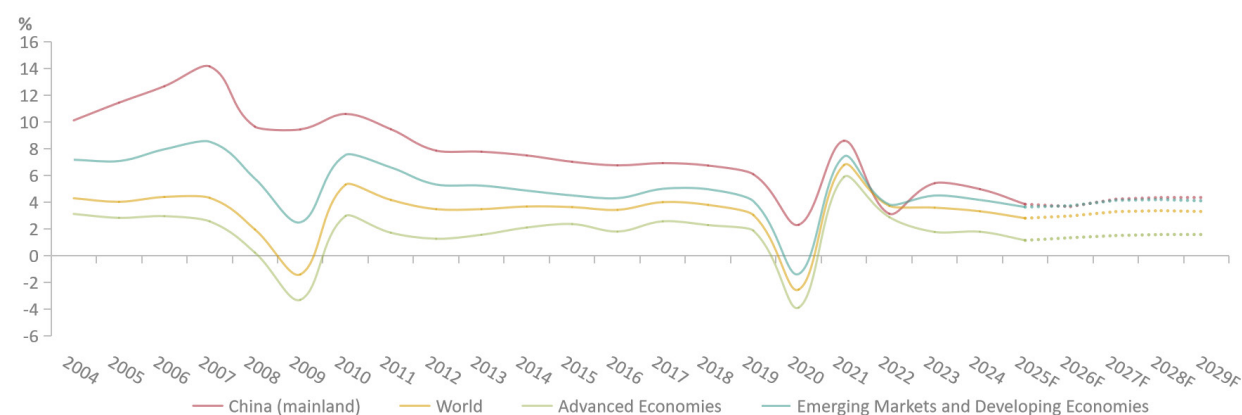
In 2024, the global economy continued to face multiple challenges and moved forward with difficulty, characterized by a weak recovery and growing divergence across regions. Compared with the post-pandemic rebound, stagflation, and slowdown from 2021 to 2023, global growth further decelerated to 3.32% in 2024. The global GDP growth rate was 6.78% in 2021, declined to 3.72% in 2022, and continued to fall to 3.59% in 2023. In 2025, global inflationary pressures eased, but core inflation remained above central bank targets. Monetary policy began to shift toward easing; however, the lagging effects of previously high interest rates continued to suppress demand in capital-intensive industries such as aviation. Geopolitical tensions along with ongoing supply chain restructuring, are reshaping the global economic landscape. IHS forecasts that global economic growth will decrease for the third consecutive year, declining from 3.32% in 2024 to 2.80% in 2025, with the global economy trending toward a “soft landing.”

Among the major economies, the U.S. economy remains generally stable in 2024, with annual gross domestic product (GDP) growth projected at approximately 2.8%. This growth is primarily driven by the sustained strength of the labor market and continued expansion in consumer spending. However, the U.S. economy is likely to face multiple headwinds in 2025. The potential implementation of a new round of tariff policies could further drive up price levels, increase the cost of imported aircraft components, and raise aviation maintenance expenses. In addition, considerable uncertainty remains regarding the timing and pace of the Federal Reserve's monetary policy adjustments. The rising level of government debt also places increasing pressure on fiscal sustainability. According to IHS forecasts, U.S. economic growth rate is expected to decrease to 1.35% in 2025 under the influence of these factors.

In 2024, the overall economic performance of the Eurozone remained sluggish, with the annual GDP growth rate reaching only 0.8%. Economic expansion in major member states—particularly Germany—was nearly stagnant. The European aviation sector continues to face structural challenges, as demand for traditional business travel routes has yet to return to pre-pandemic levels. In response, carriers such as Lufthansa and Air France have been compelled to adjust their business class configurations. While household consumption capacity has shown signs of a rebound, the overall recovery in domestic demand remains weak, limiting its effectiveness in driving economic growth. Looking ahead to 2025, the Eurozone economy is projected to experience a modest recovery, with GDP growth estimated at approximately 0.69%, according to current forecasts.

In 2024, the economic performance of the Asia-Pacific region (including China) remained generally stable, although growth divergence across the region became more pronounced. The region's overall gross domestic product (GDP) growth rate for the year was estimated at approximately 4.60%, with China (4.98%) and India (6.39%) continuing to serve as the primary drivers of regional growth. In contrast, Japan's economy was adversely affected by currency depreciation and subdued domestic demand, resulting in an annual GDP growth rate of just 0.99%. Looking ahead to 2025, the Asia-Pacific economy is expected to maintain its recovery trajectory, with annual growth projected at 4.04%. The region will remain a critical pillar of global economic expansion, underpinned by substantial potential in the aviation sector. However, efforts to stabilize growth and mitigate risks must be advanced in tandem.

Comparison of GDP Growth Rate Trends of Major Global Economic Entities



Overall, the global economy is expected to demonstrate continued resilience in 2025, although it remains subject to considerable uncertainty. Heightened trade tensions, rising protectionist pressures, and potential escalation of geopolitical conflicts may pose significant risks to the recovery process. According to IHS forecasts, the global economy is projected to grow at an average annual rate of 2.49% over the next 20 years. Growth in China (excluding Hong Kong, Macao, and Taiwan) is expected to reach 3.71%, while developed economies will expand at an average rate of 1.44%, and emerging and developing economies at 3.62%.

2 Oil Price

In 2024, international oil prices fluctuated at elevated levels, influenced by multiple factors including geopolitical tensions, strategic maneuvering among major oil-producing countries, and uneven global economic recovery. Jet fuel prices remained closely correlated with international crude oil prices, averaging around US\$100 per barrel for the year, a decrease of approximately 15% from 2023, yet still significantly above the pre-pandemic five-year average. OPEC+ continued to pursue deeper production cuts to maintain market supply-demand balance, while non-OPEC+ producers such as the United States, Canada, and Brazil steadily increased crude output, intensifying market competition. As a result, the global jet fuel supply landscape adjusted accordingly, with inventories in the Asia-Pacific region rising by 20% compared with 2023, effectively easing regional supply constraints.

The global oil and gas trade structure continued to evolve. Russian crude exports increasingly shifted toward Asian markets, particularly China and India. Energy flows among the United States, Europe, the Middle East, and the Asia-Pacific region became increasingly multipolar.

Throughout the year, Brent crude oil prices largely fluctuated within the US\$75–92 per barrel range, while WTI prices ranged from US\$70 to US\$87. Average annual prices stood at approximately US\$83 and US\$78 per barrel, respectively — broadly in line with or slightly below 2023 levels.

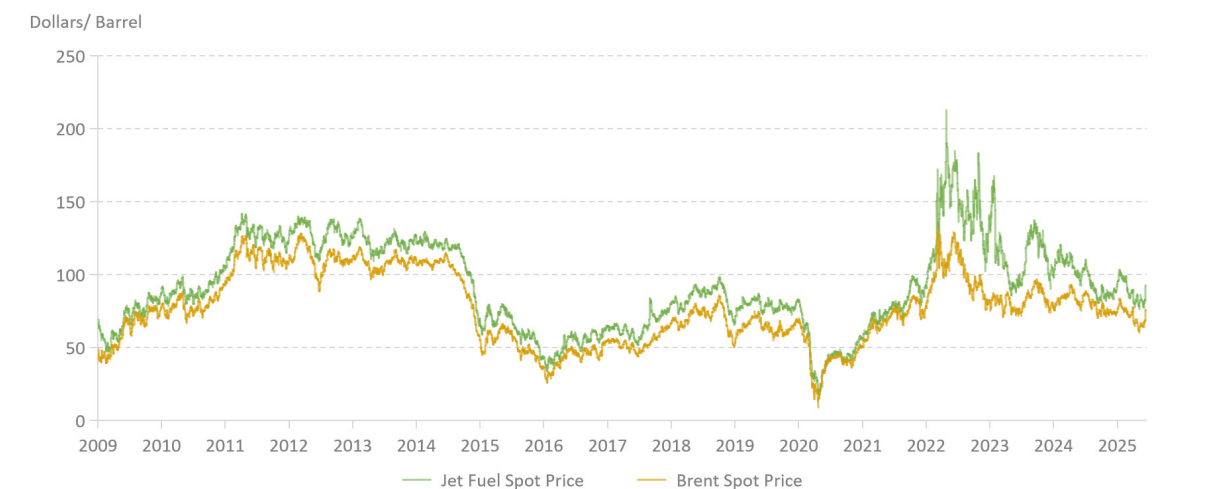
Looking ahead to 2025, global crude oil and jet fuel price trends will continue to face multiple uncertainties. On the one hand, prolonged geopolitical conflicts and sustained production curbs by OPEC+ may provide price support; on the other hand, a global economic slowdown, accelerated adoption of green energy, and high inventory levels could exert downward pressure on prices.

Brent crude oil is expected to average between US\$75 and US\$85 per barrel throughout the year, while WTI and jet fuel prices are projected to remain slightly below this range. International oil prices may exhibit a trend of being “higher at the beginning and stable toward the end” of the year.

Meanwhile, structural shifts in the global energy mix, the aviation sector's transition to low-carbon alternatives, and the evolving geopolitical energy landscape are expected to have a more profound impact on the medium- to long-term trajectory of crude oil and jet fuel prices.

Additionally, the International Air Transport Association (IATA) forecasts that by 2025, sustainable aviation fuel (SAF) will account for 0.5% to 1.0% of global jet fuel consumption. Although its short-term impact on traditional jet fuel prices remains limited, SAF holds significant long-term growth potential.

WTI International Crude Oil Futures Price (2009-2025)



3 Policies and Regulations

In 2024, global aviation policies and regulations focused on sustainable development, safety oversight, consumer right protection, and the regulation of emerging aviation technologies, showing a trend of multi-sectoral coordinated advancement. Drones and new types of aircraft have gradually been incorporated into international regulatory frameworks, the scope of Safety Management System (SMS) continues to expand, and overall system safety is steadily improving. The liberalization of air traffic rights has accelerated significantly. At the ICAN air services negotiation conference hosted by ICAO, a record-high 521 air services agreements were reached, involving 97 countries. The European Union and the United States achieved mutual access to fifth and seventh freedom rights on transatlantic routes. The United States and Nigeria, as well as Singapore and several countries, signed new bilateral agreements, providing greater flexibility and space for global air network development. On the sustainability front, ICAO released a global framework for Sustainable Aviation Fuel (SAF) development, aiming to achieve a 5% reduction in international aviation CO₂ emissions by 2030. The EU strengthened its ReFuelEU regulation and implemented a mandatory SAF blending policy. In the United States, the FAA expanded the scope of SMS oversight and reinforced cybersecurity and drone management.

In 2025, global aviation policies continue to push forward in green transformation, digitalization, and the flexibilization of air rights, accompanying the full recovery of international air travel and the rapid rebuilding of global route networks. Countries actively promote the liberalization of air rights, reduce restrictions on foreign airline operations, and stimulate market vitality. China signed new bilateral agreements with several Southeast Asian countries, and ASEAN launched the fifth round of air rights negotiations; further advancing regional air connectivity. Australia and ASEAN deepened Asia-Pacific air transport liberalization through multilateral mechanisms. Indonesia and Malaysia implemented a new Open Skies Agreement, boosting tourism and business exchanges between the two countries. The seventh freedom rights agreement signed in 2024 between Brunei and Saudi Arabia came into effect in 2025, reflecting Middle Eastern countries' increasing focus on regional connectivity.

Overall, global aviation policy is rapidly evolving toward institutionalization, sustainability, digitalization, and high transparency. The opening of air rights, environmental compliance, and digital facilitation have become key policy adjustment priorities. Airlines are actively responding to policy changes through strategic partnerships, capacity optimization, and network expansion, supporting the industry's high-quality recovery and sustainable development. In the coming years, the global aviation industry will continue to expand under a freer, more interconnected, and greener policy framework. Regional collaboration and cross-border coordination will become key drivers of market growth. At the same time, aviation enterprises will face the long-term challenge of balancing environmental pressures with cost control, as policies and markets interact to shape a new pattern for the aviation industry.

4 Sustainable Development

In 2021, the aviation industry made a historic commitment to achieve net-zero carbon dioxide (CO₂) emissions by 2050. This goal was formally adopted as a global consensus at the International Civil Aviation Organization (ICAO) Assembly the following year. However, according to International Air Transport Association (IATA) reports, aviation decarbonization faces two structural constraints: the 30-year operational lifespan of aircraft and the over-10-year R&D and certification cycle create technological iteration bottlenecks, while the fundamental physical law dictating that each flight consumes tens of times more energy than ground transport poses an inherent challenge. These characteristics make aviation the most difficult sector to decarbonize. Delayed action risks increasing its share of global carbon emissions.

To address this, the industry can employ the following measures: First, next-generation aircraft technology could improve fuel efficiency by 15-20% compared to current best-in-class, cumulatively reducing carbon emissions by 125-140 million tons and lowering flight energy consumption by 7-10% by 2050. If hydrogen and battery-electric aircraft overcome range and passenger capacity limitations, they could deliver an additional reduction of 35 to 125 million tons. Second, the current 99% reliance on conventional jet fuel must be phased out. Sustainable Aviation Fuel (SAF) is projected to need to supply 80-90% of aviation fuel consumption by 2050 to achieve 62% of the emission reduction target. This requires building 5,000 to 7,000 new biofuel refineries globally. Nearly one million metric tons of hydrogen will be primarily used for SAF production, with 40,000 to 140,000 metric tons of pure hydrogen directly powering zero-carbon aircraft, inevitably necessitating supporting airport hydrogen infrastructure networks. Third, even under the most optimistic SAF substitution scenario, residual emissions will require neutralizing by capturing over 700 million tons of atmospheric CO₂. This captured carbon can also serve as feedstock for SAF production. The foundation for all solutions lies in the large-scale deployment of renewable energy. The cost of aviation's transition is projected to surge from \$1.4 billion in 2025 to \$744 billion by 2050.

IATA's dynamic modeling indicates that success hinges critically on the precise alignment of policy support, capital deployment pace, and cross-industry collaboration speed – variables that will continually reshape the pathway. Only through synchronized, industry-wide advancement can this historic transformation to net-zero emissions be achieved.

5 Technological Innovations

Domestic: Innovation-driven development with fruitful results in many fields

In 2024, the Civil Aviation Administration of China (CAAC) maintained a solid and powerful pace of scientific research and innovation. It has achieved significant success in national scientific research projects. One national key research and development program project was successfully established, and 18 key projects of the Civil Aviation Joint Research Fund of the National Natural Science Foundation of China were successfully approved, injecting strong momentum energy into the industry's technological breakthroughs. Throughout the year, 65 civil aviation scientific and technological achievements were evaluated, of which 33 achievements won the Civil Aviation Science and Technology Award of the China Air Transport Association (CATA), highlighting the innovative strength of China's civil aviation.

The application of new navigation technologies continued to make breakthroughs and expand the boundaries of application. By the end of 2024, 18 airlines and 1,404 transport aircraft in the whole industry were equipped with the operation capability of Head-Up Display (HUD); at the airport end, 120 airports met the HUD special Class I standard, 17 airports met the special Class II standard, and 20 airports met the standard of preparation for the 150-meter take-off of HUD RVR. Meanwhile, 258 transport airports are equipped with performance-based navigation (PBN) flight procedures, 35 airports with complex terrain apply Required Navigation Performance Authorization Requirements (RNP AR) procedures, 4,350 transport aircraft are equipped with Automatic Dependent Surveillance Broadcast (ADS-B (OUT)) capability, and 64 airlines actively promote Electronic Flight Bags (EFBs), which has significantly improved flight operation efficiency and safety.

The construction of intelligent civil aviation has been accelerated, actively responding to the strategic deployment of Digital China. By improving the industry's data management mechanism, a comprehensive data resource system was constructed, and pilot work on airport full-process operation scenarios was initiated to promote the intelligent transformation of operational management. In addition, e-ticket itineraries were fully promoted across the industry, bringing passengers a more convenient travel experience.

The green transformation has achieved outstanding results, and the civil aviation industry is actively practicing the concept of sustainable development. In 2024 it launched a pilot project on the application of sustainable aviation fuels and vigorously pushed forward the process



of electrification of airport operations. Latest figures show that China's civil aviation fuel consumption per ton-kilometer has dropped to 0.271 kg, down 20.5% from 2005; average energy consumption per passenger and carbon dioxide emissions per passenger at airports have dropped by 42.5% and 64.8% respectively compared with the average value in 2013-2015, achieving remarkable results in energy conservation and emission reduction.

International: Collaborative innovation towards new heights of intelligence, green and safety.

In 2024, the international civil aviation industry delivered a series of highlights in the field of science and technology innovation. Countries worldwide scaled up their investment in cutting-edge areas such as intelligentization, greening, and digitalization, propelling the transformation of the civil aviation industry towards high-quality development. The International Air Transport Association (IATA) and the International Civil Aviation Organization (ICAO) joined forces to support several scientific research projects covering key areas such as new power systems, intelligent operations, and flight safety, pointing out the direction for the industry's development. The world's leading aviation manufacturers actively pursued and accelerated the integration and application of new materials, structures, and systems, powerfully propelling technological innovation across civil aviation.

In the field of intelligent operation, advanced technologies such as artificial intelligence, big data, and the Internet of Things have accelerated the in-depth integration with aviation operations. The introduction of AI-assisted air traffic control system at Heathrow Airport in the UK has significantly improved the accuracy and operational efficiency of flight scheduling; Japan Airlines has fully deployed an AI baggage tracking and prediction system to significantly optimise the ground service process; major US airlines have accelerated the construction of maintenance prediction platforms based on big data, which has effectively reduced the failure rate of planes and improved the flight regularity rate, and the intelligent technology is reshaping the mode of aviation operation.

Flight safety and security capacity have been continuously enhanced. According to ICAO data, the global commercial aviation fatality rate fell to 17 cases per billion passengers in 2023, marking an all-time low. Many countries have actively strengthened the construction of flight data monitoring systems, widely popularized electronic flight bag (EFB), enhanced flight monitoring tools, and further strengthened the ability of risk warning and prior intervention. The European Aviation Safety Agency (EASA) has vigorously promoted the application of RNP-AR procedures and low visibility operation technology at airports in complex terrain, to build a more solid defense for flight safety.

Green transformation has become an important trend in the development of the international civil aviation industry, with Europe and the United States at the forefront. United Airlines, Air France, and other airlines have taken the lead in realizing sustainable aviation fuel (SAF) blended operations on multiple routes. Airbus, Boeing, and other aviation manufacturing giants have accelerated the technical validation of hydrogen-powered aircraft and hybrid systems and are actively helping to achieve the net-zero emissions target of 2050. In addition, several international airports are vigorously promoting electric ferries, solar energy facilities, and paperless processes to enhance energy efficiency and environmental protection on all fronts.

Innovations in infrastructure and new material applications continue to emerge. Dallas-Fort Worth Airport piloted a holographic guide and face recognition security system, which greatly enhanced the efficiency and experience of travelers. The new generation of passenger aircraft widely adopted carbon fiber composites, titanium alloys, and other high-performance lightweight materials to achieve a weight reduction of more than 40%, which not only significantly reduced fuel consumption but also significantly improved the aircraft's endurance. In 2024, the global civil aviation science and technology innovation advanced steadily toward smarter, greener, and safer horizons.



02

Global Aviation Market

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1 Changes in Route Networks

In 2024, the global aviation industry continued its growth momentum by steadily building on the recovery of 2023. With the complete lifting of entry and exit restrictions and the expansion of visa-free policies in most countries around the world, as well as the overall pick-up in international tourism and business activities, demand for air travel continued to climb. To meet market demand, major airlines have accelerated the resumption of flight frequency and optimised route layouts, driving further expansion of the global aviation network and a significant increase in capacity.

Available seat kilometres (ASK) on global domestic routes will grow by 2.68% year-on-year in 2024, while international routes will grow by as much as 13.35%, reflecting a more rapid rebound in cross-border travel. Regionally, mainline routes such as intra-Europe, Europe to North America, and intra-Asia-Pacific (excluding China) continue to dominate, with their combined ASK volume accounting for 36.20 per cent of the global total, up 9.54, 7.20 per cent, and 13.48 per cent, respectively, from the previous year. China's (including Hong Kong, Macao, and Taiwan) route network showed strong growth momentum in key regions such as Asia-Pacific, North America, and Europe. It has shown a significant expansion trend on cross-regional routes such as Europe-North America, Asia-Pacific-Middle East and China-Asia-Pacific. International routes from China (including Hong Kong, Macao, and Taiwan) showed the most outstanding performance, with an overall average ASK growth of 56.62%. In terms of breakdown, routes to Russia and neighbouring countries increased by as much as 125.82%, while routes to Asia-Pacific, Europe, and North America also grew by 55.14%, 54.64% and 48.91% respectively, showing a significant increase in China's connectivity in the global aviation network.

At the same time, routes between Africa, Latin America, Asia-Pacific, and Russia and neighbouring countries also achieved faster growth, for example, routes from Africa to Latin America grew by 46.34 per cent, and routes from Asia-Pacific to Russia and neighbouring countries

grew by 38.91 per cent. In contrast, the growth momentum of routes between Europe, the Middle East, and North America, which have traditionally been closely traded, slowed down, with only the Europe to Russia and neighbouring countries route achieving 17.45% growth, the only region in the world to see an increase of more than 2023. Affected by geopolitical tensions, some markets experienced declines, with the most pronounced decline on the North America to Russia and neighbouring countries route, down 20.83 per cent year-on-year, and varying degrees of decline on the North America to Middle East and Middle East to Latin America routes.

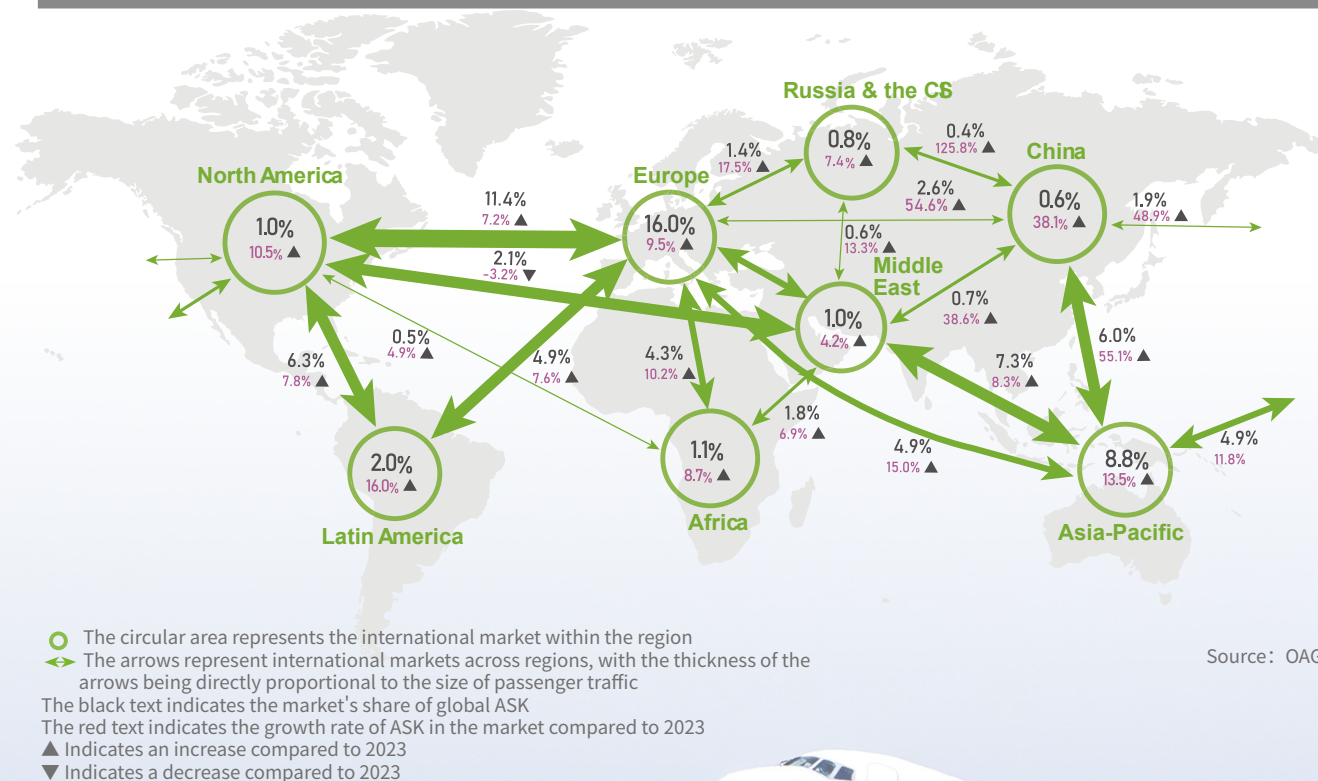
2 Changes in Airports

Based on the market segmentation of COMAC, the comparative analysis of the top five airports in terms of seating capacity in each region for 2015 and 2024, based on OAG data, is presented as follows:

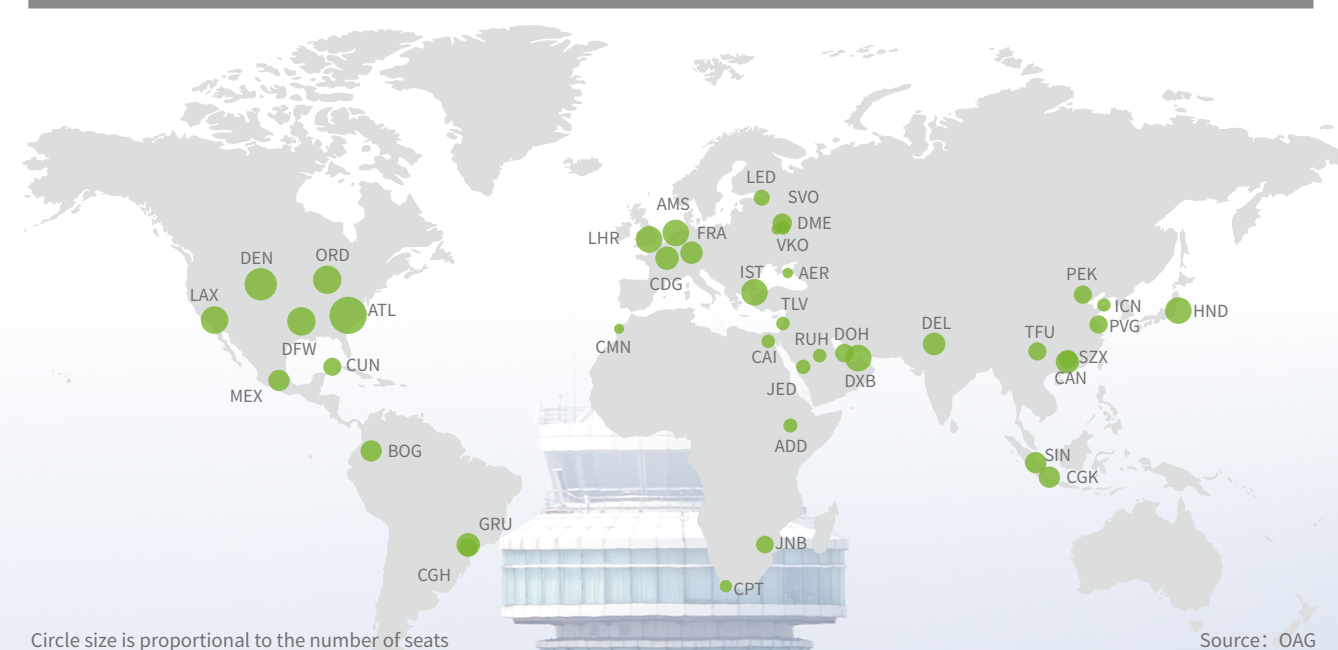
Compared with 2019, seat capacity in 2024 rose by 11.58% globally, with the strongest gains in South America and Africa, only the Asia-Pacific and the CIS regions posted declines. The top five airports in Africa, China, Europe and the Middle East remained unchanged, while the lists for Asia-Pacific, North America, South America and the CIS saw only minor adjustments. Soekarno-Hatta, Douglas, Cancun and Nursultan airports all advanced into their respective regional top-five rankings, underscoring their strengthened hub status.

In comparison with 2015, new hubs had emerged in some regions, such as New Delhi and Incheon in Asia-Pacific, Shanghai Pudong in China, Nursultan in the CIS, and Cancun and Santiago airports in South America. On the one hand, it showed the rapid growth of the market in India, South Korea, China, the CIS, and South America. On the other hand, it reflected the decline of market concentration. Except for the Middle East, Africa, and North America, the seat share of the top 5 airports in 2015 exceeded that of both 2019 and 2024, with the highest degree of decline in Russia & the CIS and China, by 8.63% and 8.07% respectively.

Changes in global route network in 2024



Top Five Airports in Terms of Global Seats Capacity by Region in 2024



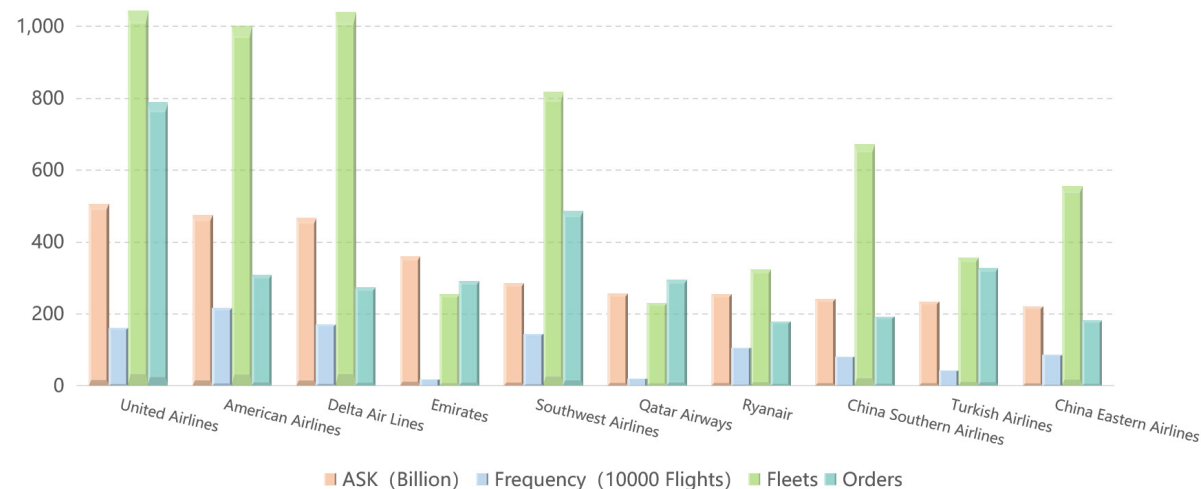
3 Airline Development

Over the past decade, the number of carriers for global departure flights showed an overall growth trend, with a 10-year increase of 194 carriers, a growth rate of 6.54%, and a five-year increase of 47 carriers, a growth rate of 1.58%. In terms of subregions, Africa was the most prominent region, with a ten-year increase of 72 airlines, a growth rate of 19.35%, and a five-year increase of 54 airlines, a growth rate of 14.52%; North America, with a ten-year decrease of 25 airlines and a growth rate of -8.36%, was the only region with negative growth in the past ten years, although it posted a modest 1.34% rebound in the latest five-year period. Asia-Pacific added 38 airlines over the decade with a growth rate of 7.66%, but recorded a slight decline in the last five years; Europe grew by 25 airlines over the decade, with a growth rate of 3.82%, accelerating to 3.97 % in the last five years; the Middle East expanded by 8 airlines over the decade, with a growth rate of 2.21%, rising to 2.76 % in the last five years; Latin America increased by 7 airlines over the decade, with a growth rate of 2.76%, but recorded a slight decline of 1.57% in the last five years; China, Russia and the CIS achieved an average growth of approximately 13% over the past decade, but in the last five years, these regions saw a downturn, with China's growth declining by 8.50% and Russia and the CIS contracting by 7.09%. Regional disparities in development remain pronounced.

In 2024, European and American carriers maintained their dominance. United Airlines, American Airlines, and Delta Air Lines ranked in the top three in terms of capacity, with ASK exceeding 450 billion. American Airlines ranked first with 2.18 million flight frequencies. Emirates and Qatar Airways in the Middle East, with higher ASK and fleet size, demonstrated the advantage of long-haul intercontinental transport. China Southern Airlines and China Eastern Airlines were on the list with ASK of 242 billion and 221 billion, respectively, reflecting the scale of capacity in the Chinese aviation market. Ryanair, as a representative of low-cost carriers, excelled in the segment with 256 billion ASK and 1.07 million flight frequencies.

Based on the data on the share of regional capacity of the top five carriers in the region, the concentration of leading carriers has remained relatively stable over the decade, experiencing a slight downturn followed by a slight upturn, indicating that the dominance of the leading carriers has not been fundamentally reversed overall. Highly concentrated markets such as the Middle East and North America, with their oligopolistic dominance, have continued to maintain concentration levels well above the global average, highlighting their market

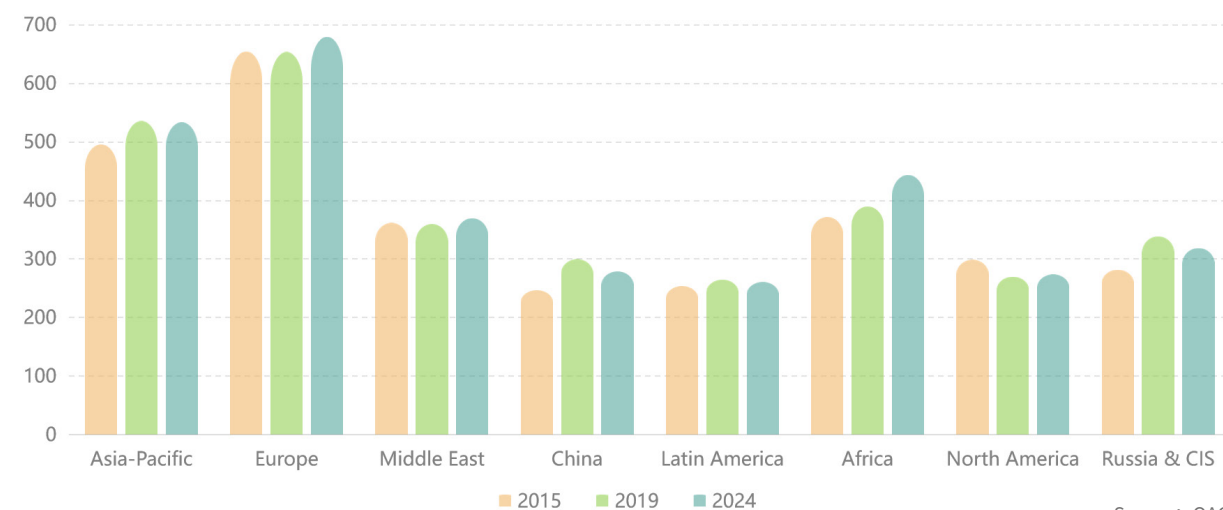
Fleet and Order Size of Top 10 Airlines ranked by ASK (2024)



Source: Cirium, OAG

barriers and scale advantages; the Middle East has slightly retreated, while North America has demonstrated strong structural stability. Regions subject to significant external shocks, have experienced deep declines in concentration, with geopolitical and other factors having a profound impact on the reshaping of the market structure, which, despite recent slight stabilisation, is still significantly lower than the historical peak. Mature and large markets such as Europe, Asia-Pacific, and some developing regions such as Africa and Latin America continue to have low or medium levels of global concentration, with moderate fluctuations, which confirms the characteristics of a large number of players, relatively full competition, relatively low barriers to new entrants or market fragmentation.

Number of Airlines by Global Regions in the Past Ten Years



Source: OAG

Capacity Share of Leading Carriers by Global Regions in the Past Ten Years

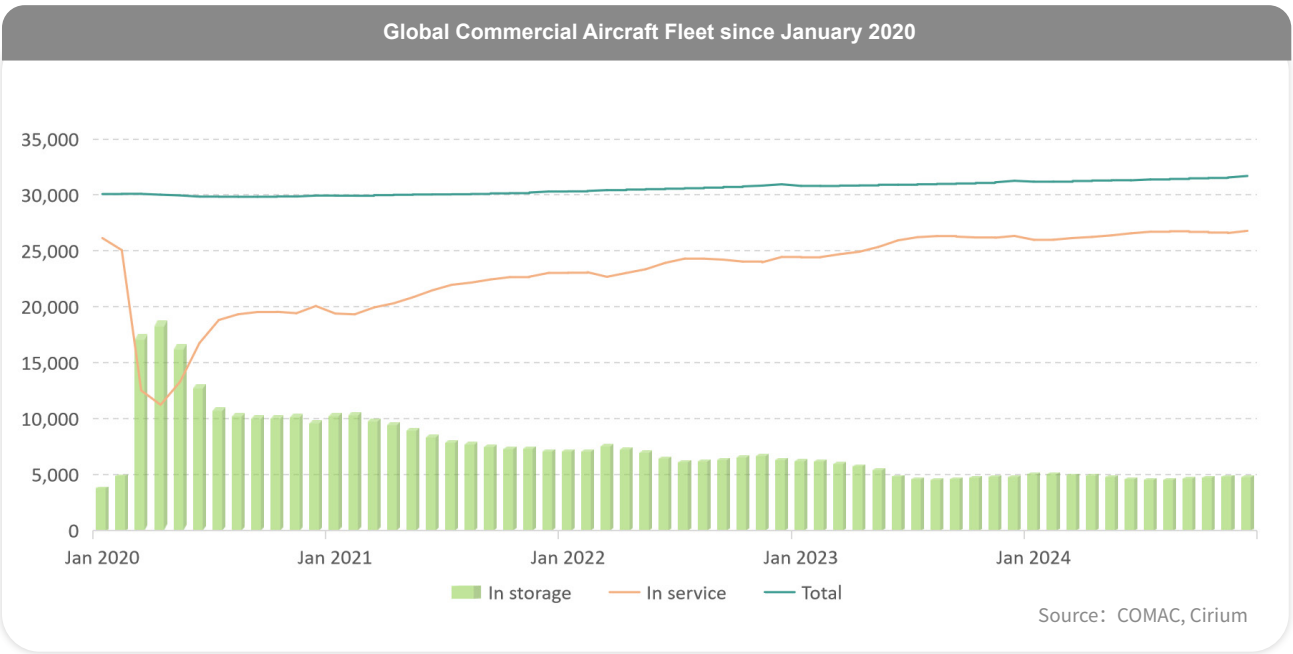
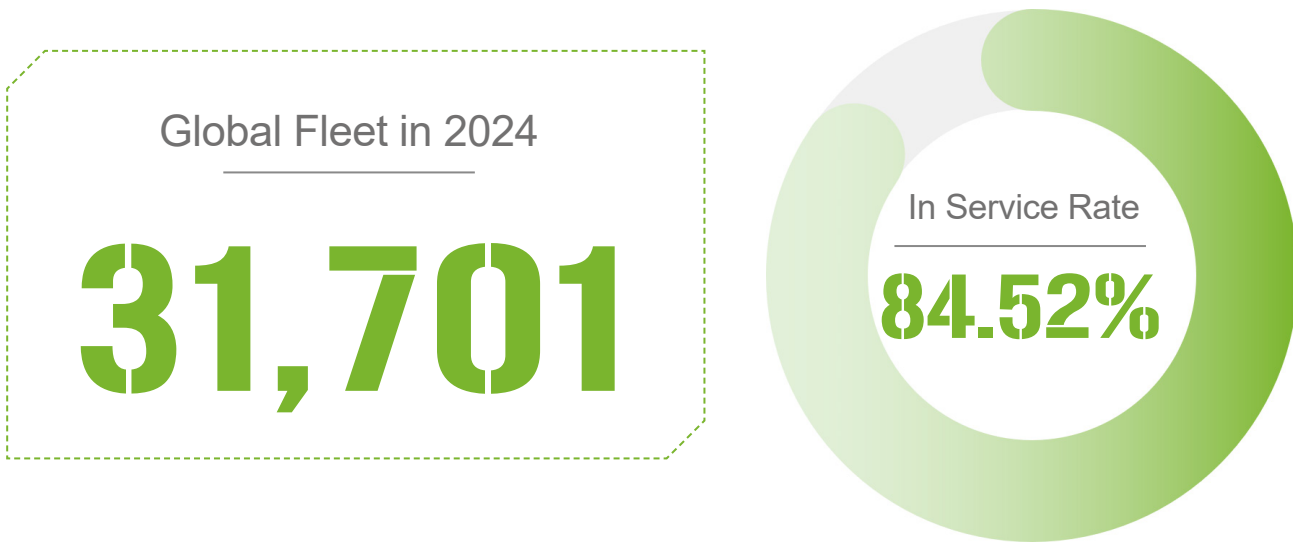


Source: OAG

4 Development of the Global Fleet

Changes in Global Fleet

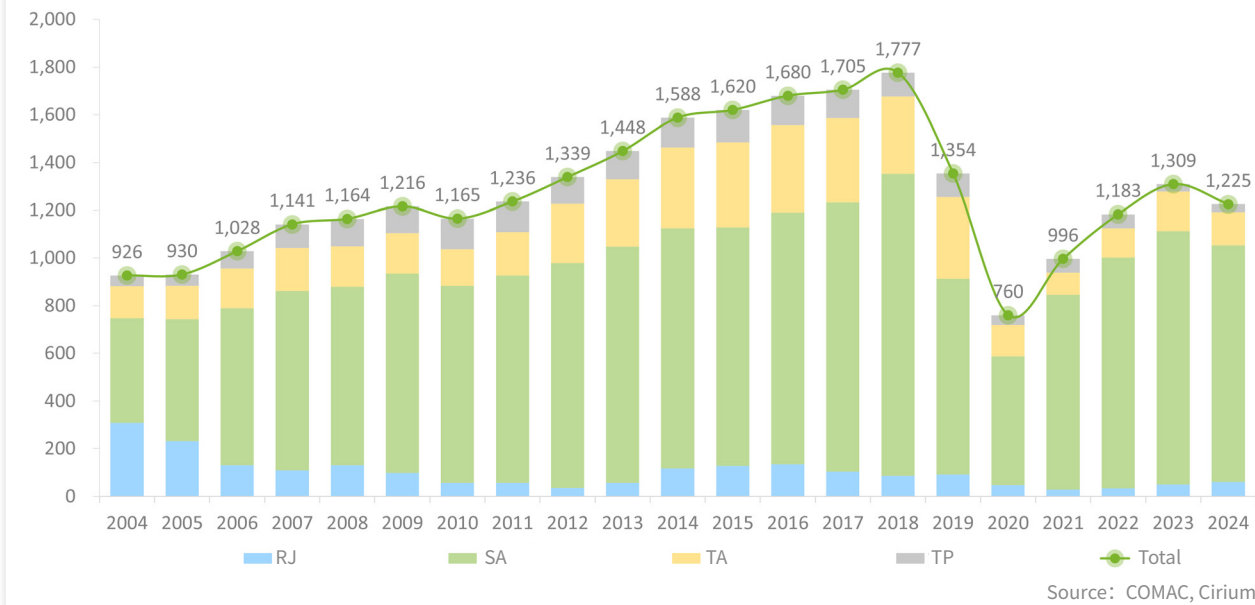
Since 2020, the global commercial passenger fleet has grown steadily. In 2024, fleet size reached 31,701, with in-service commercial aircraft accounting for 84.52%. During the pandemic, the in-service rate hit a low of 37.40%, but most aircraft have now resumed operations.



Delivery

Global commercial passenger aircraft deliveries showed an upward trend, peaking at 1,777 in 2018. However, affected by the pandemic, deliveries dropped sharply to 996 in 2020. In 2024, global aircraft deliveries stood at 1,225, a decrease of 84 compared to 2023. Among these, 61 were turboprop aircraft, 992 were single-aisle aircraft, 139 were wide-body aircraft, and 33 were regional aircraft. There are many factors behind the decline in deliveries, including supply chain shortages, strengthened industry regulations, and tense political environments. Nevertheless, as the aviation market continues to grow, the number of commercial aircraft deliveries is expected to rise.

Historical Passenger Fleets Delivery Trends (2004-2024)



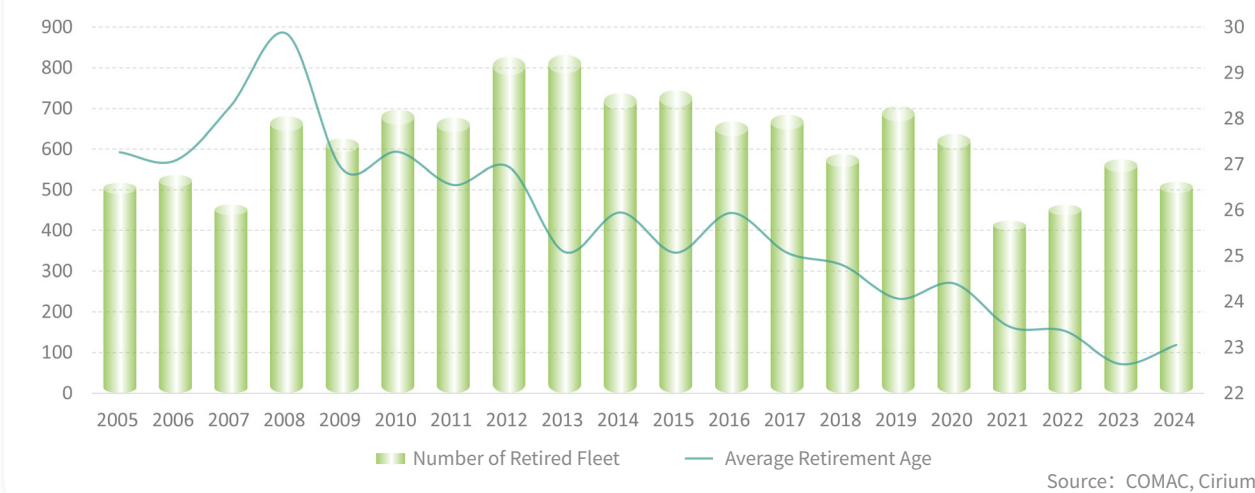
Retirement

In 2024, a total of 520 commercial aircraft were permanently retired worldwide. The number of retirements showed a trend of first increasing and then decreasing, peaking at 832 in 2013. In 2024, single-aisle jet aircraft had the highest number of retirements at 306, accounting for 58.84%. There were 93 retirements of wide-body jets, 51 of regional jets, and 70 of turboprop aircraft.

The average retirement age of commercial aircraft in 2024 increased slightly compared to 2023, reaching 23.05 years. The increase was mainly due to delays in aircraft deliveries. To maintain sufficient capacity, airlines extended the retirement age of aircraft, but the overall trend of a declining average retirement age remained unchanged.

As new aircraft models enter the market, older models are being replaced more frequently. International oil prices and airfares are undoubtedly significant factors affecting airlines' fleet decisions, both forcing airlines to replace older aircraft with new-generation ones that have higher fuel efficiency and lower costs.

Historical Passenger Fleets Retirement Trends (2005-2024)





China's Aviation Market

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1 Overview of China's Air Transport Market

Review of China's Aviation Market

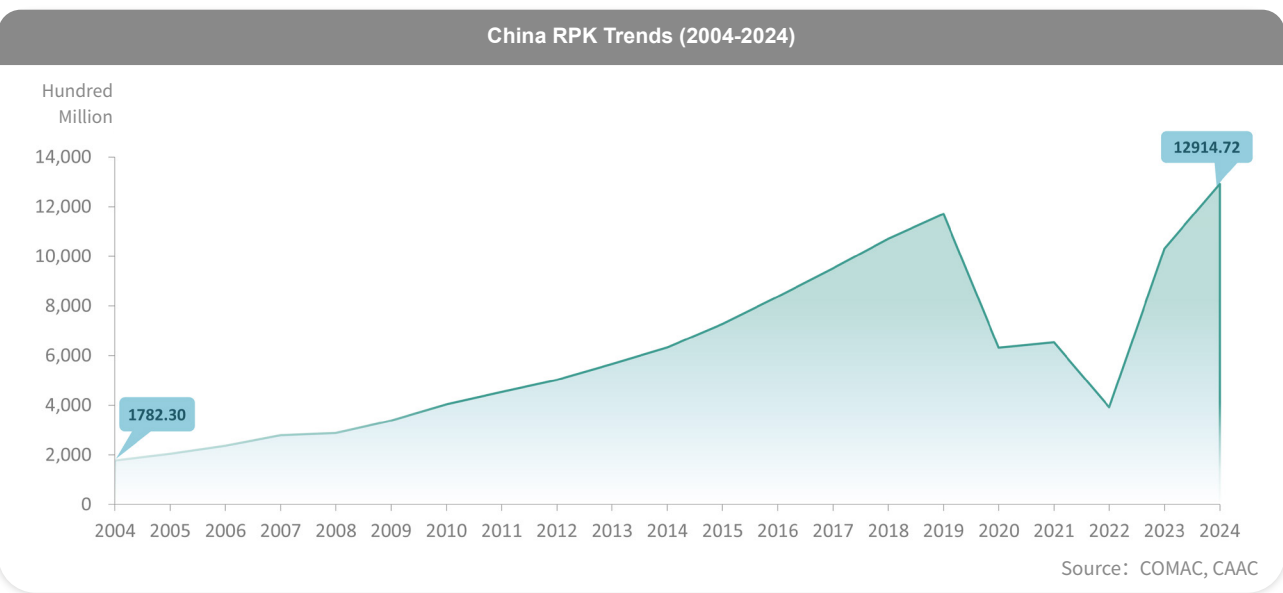
China's economy maintained stable operation with steady progress. The annual gross domestic product (GDP) reached 134.91 trillion yuan, up 5.0% year on year. The per capita GDP stood at 95,749 yuan, an increase of 5.1% from the previous year. The national per capita disposable income was 41,314 yuan, rising by 5.3% year on year, or a real growth of 5.1% after deducting price factors. Stable economic environment has laid a solid foundation for the further development of the aviation market.

In 2024, the production scale of civil aviation transportation reached a new high, with further improvements in quality and efficiency. Throughout the year, the civil aviation industry completed a total transport turnover of 148.52 billion ton-kilometers, carried 730 million passengers, and transported 8.98 million tons of cargo and mail, representing year-on-year growth of 24.98%, 17.74%, and 22.14% respectively, and increases of 14.84%, 10.61%, and 19.26% compared with 2019. Since 2024, civil aviation authorities have continued to optimize the post-certification airworthiness validation of the C919 and C909 aircraft to ensure the safe operation of domestic aircraft. The C909 has achieved safe operation exceeding 500,000 hours, and the C919 has transported over 1 million passengers, marking that domestic aircraft have entered a new stage of large-scale development and multi-user operation.

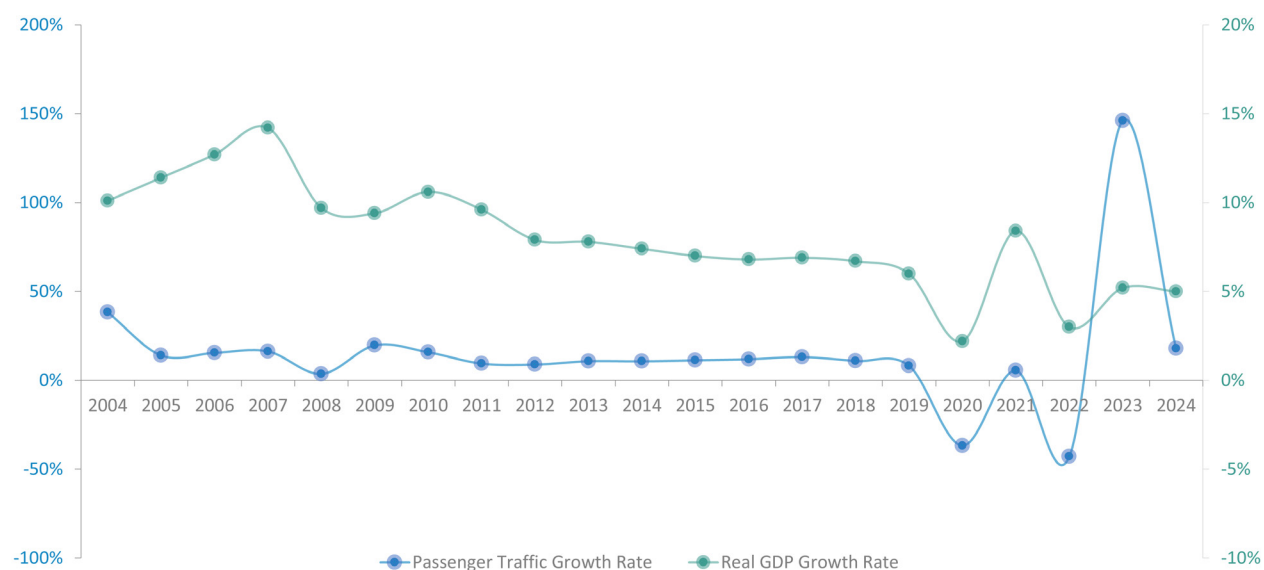
The Civil Aviation Administration of China (CAAC) plans to actively expand the market and enhance operational quality in the next phase. It will optimize the quality of domestic routes, and further advance the air transport network system. Efforts will be made to accelerate the recovery of international flights, striving to restore the number of international flights to over 90% of the pre-pandemic level. The opportunity of the comprehensive optimization of the visa-free transit policy shall be fully explored to build an international transit market. Steady progress will be made in air-rail intermodal transport to effectively increase the demand of the aviation market. Exploration and advancement of basic aviation services will be carried out to better meet the travel needs of people in remote areas. By 2025, it is expected to have a total transportation turnover of 161 billion tonne-kilometers, a passenger traffic of 780 million people, and a cargo and mail traffic of 9.5 million tons.

China's Civil Aviation Industry in 2024

| Total Transport Turnover | Passenger Volume | Cargo and Mail Volume |
|--------------------------|------------------------|-----------------------|
| 1,485.17 | 7.3 | 898.16 |
| Hundred Million Ton-Km | 100 Million Passengers | 10 Thousand Tonnes |



China Real GDP and Passenger Traffic Trends (2004-2024)

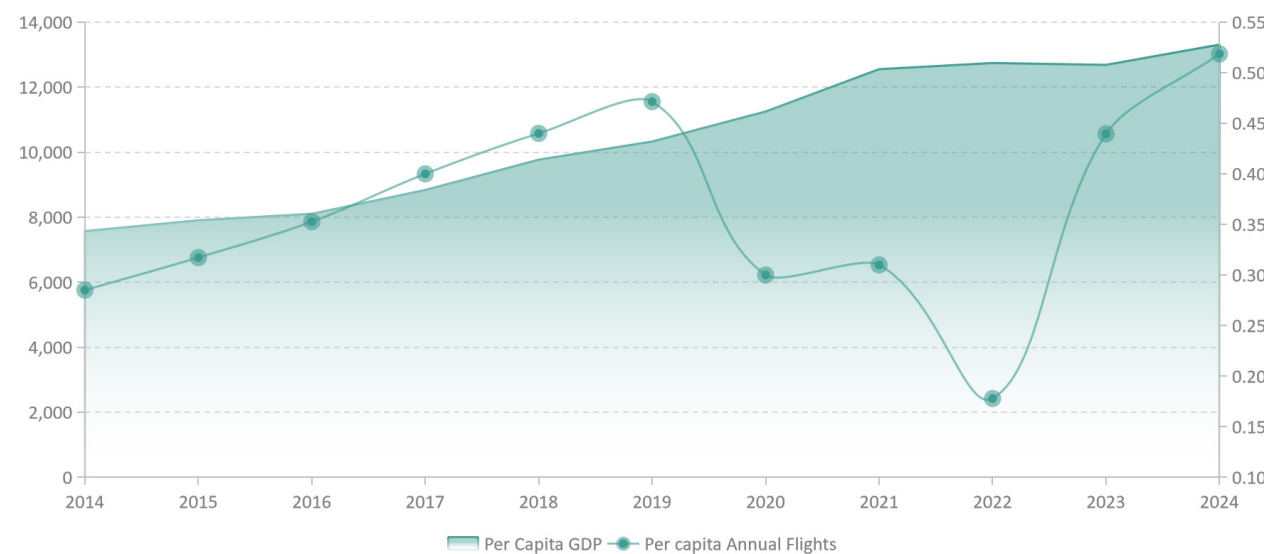


Source: COMAC, CAAC

Per Capita GDP and Per Capita Annual Flights

The number of flights per Capita reflects the frequency of air travel by residents. Over the past decade, per capita GDP has continued to grow, reaching \$13,300 in 2024. Impacted by the COVID-19 pandemic, the number of flights per capita bottomed out at 0.18 times per year in 2022, and exceeded the pre-epidemic level to reach 0.52 times per year in 2024. In the United States, the per capita annual flights declined to 1.11 in 2020 but rebounded to 2.41 by 2024.

China Per Capita GDP and Per Capita Annual Flights Trends (2014-2024)



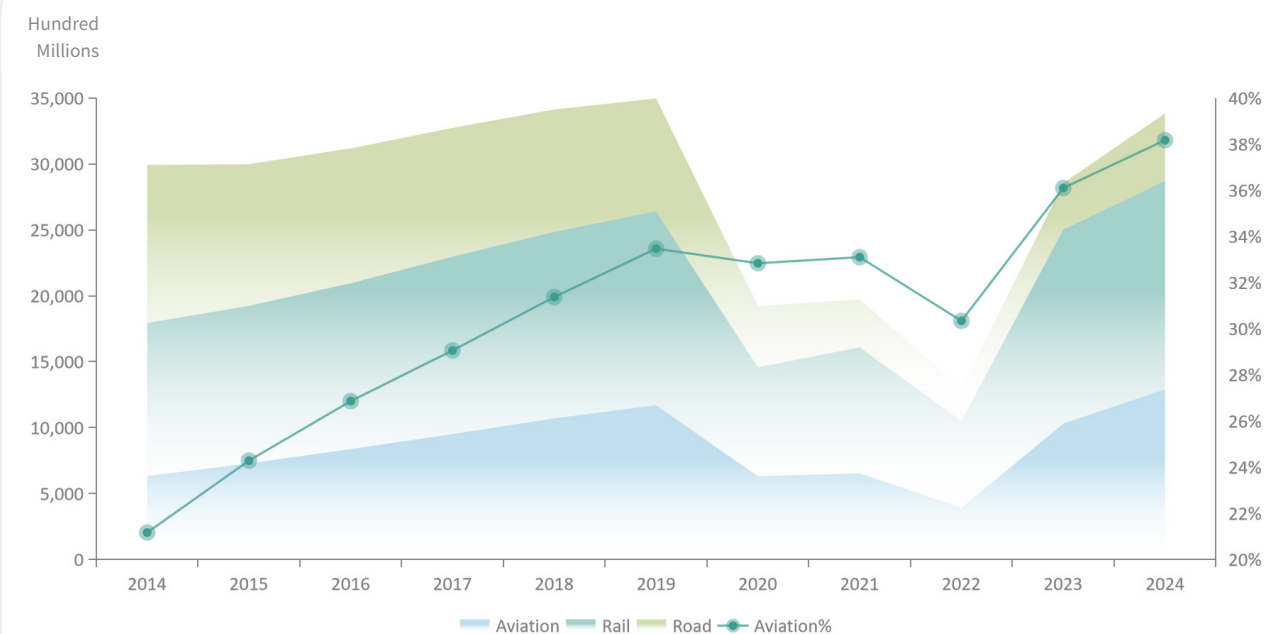
Source: COMAC, CAAC, NBSC

Comparison of Major Transportation Modes

In 2024, China's transportation industry has basically recovered. Except that the highway passenger turnover volume remained lower than the pre-pandemic level, both aviation and railway have exceeded the levels in 2019. In 2024, the railway passenger turnover volume achieved the fastest growth rate of 45.47%, the aviation passenger turnover volume increased by 25.28%, and the railway passenger turnover volume grew by 7.26%. The proportion of aviation passenger turnover volume further rose to 38.17%.

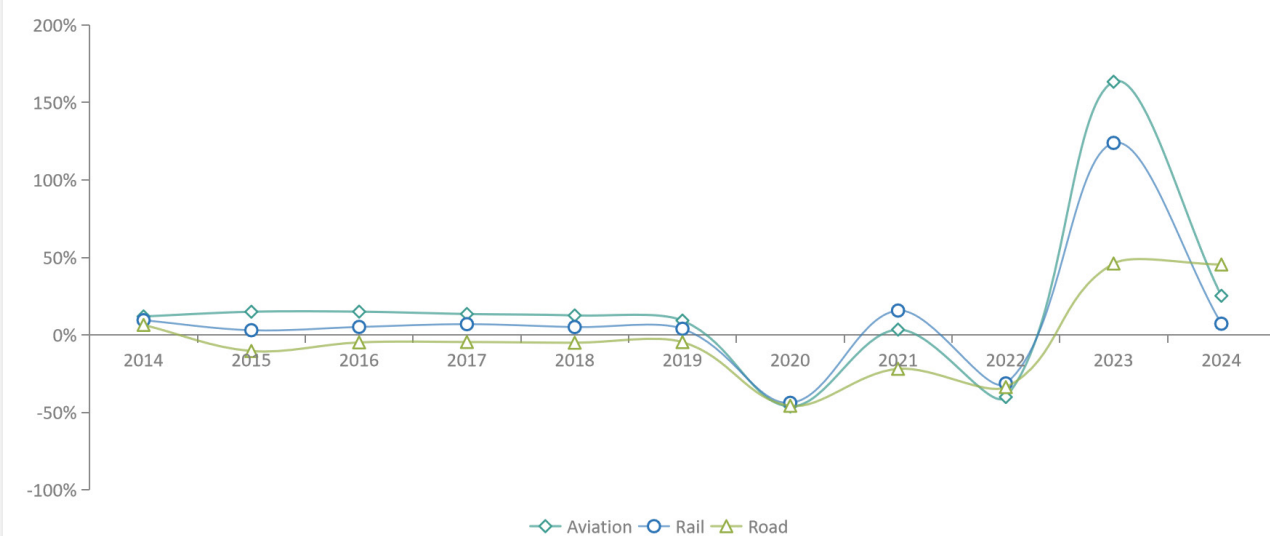
In 2024, the civil aviation cargo and mail traffic volume and cargo and mail turnover volume increased by 22.11% and 24.79% respectively, with the growth rates significantly higher than those of other transportation modes.

Major Transport Modes RPK Trends in Mainland China (2014-2024)



Source: COMAC, MOT

Growth Rate of Major Transportation in Mainland China (2014-2024)



Source: COMAC, MOT

Different Transport Modes' Freight Volume and Growth in 2024

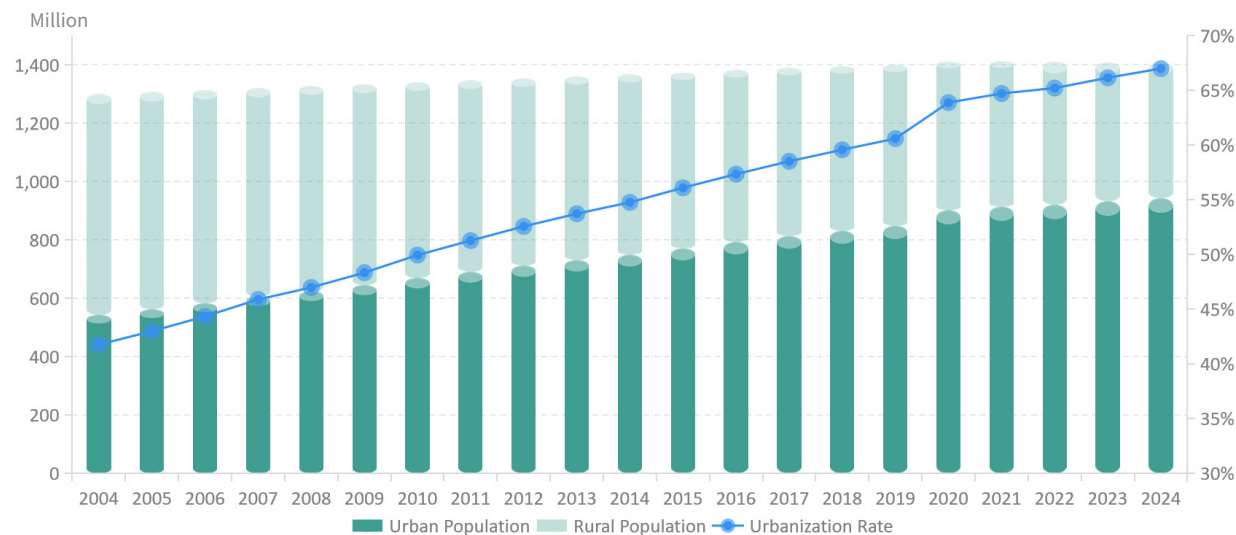
| Index | Freight Volume (Hundred Million Ton) | Rail (Hundred Million Ton) | Road (Hundred Million Ton) | Aviation (Hundred Million Ton) | Freight Turnover (Hundred Million Ton-Km) | Rail (Hundred Million Ton-Km) | Road (Hundred Million Ton-Km) | Aviation (Hundred Million Ton-Km) |
|----------------|---|-------------------------------|-------------------------------|-----------------------------------|--|----------------------------------|----------------------------------|--------------------------------------|
| 2024 | 578.3 | 51.7 | 418.8 | 898.0 | 261,948.1 | 35,861.9 | 76,847.5 | 353.9 |
| 2023 | 556.8 | 50.1 | 403.4 | 735.4 | 247,712.7 | 36,437.6 | 73,950.2 | 283.6 |
| Growth Rate(%) | 3.86 | 3.19 | 3.82 | 22.11 | 5.75 | -1.58 | 3.92 | 24.79 |

Source: COMAC, MOT

Urbanization

By the end of 2024, China's total domestic population was 1.41 billion, a decrease of 1.39 million compared with the end of 2023. The urban population was 943 million, and the urbanization rate was 67.00%, showing a continuous upward trend. The continuous improvement of the urbanization rate has driven local economic development, promoted the construction of urban aviation infrastructure, increased the number of air travelers, and thus stimulated the demand in the aviation market.

China's Urbanization (2004-2024)



Source: COMAC, NBSC

2 Recent Trends in China's Route Changes (Mainline, Regional)

In 2024 China's domestic airline routes as a whole showed a steady development trend. The number of passenger flights increased by 4.2% year-on-year, and the number of passengers transported exceeded 640 million, a 13% year-on-year increase. The route network continued to be optimised, with 654 new solo routes opened, and passenger throughput at small and medium-sized airports increased by 12.7% year-on-year. Demand for tourism travel was strong, and the number of passengers from emerging cultural and tourism cities has rose significantly.

Domestic Mainline Market

The mainline market in 2024 was characterized by strong recovery and concentrated growth. The total number of mainline routes reached 3,326 (46.2%), an increase of 144 routes from 2023, with 85.5% of passenger traffic accounting for the dominant force in the market. Hub-to-hub routes performed particularly well: despite accounting for only 20% of the total number of routes, they contributed 60.9% of flights and 65.9% of passengers, with passenger traffic growing by 12.4% year-on-year and accounting for 71.6% of the total market-wide growth, making them the core growth engine. Hub-to-trunk routes also grew significantly, accounting for 23.3% of the number of routes and increasing market share by 1.0% year-on-year. The growth rate of trunk-to-trunk routes was 22.8%, although the base was small, accounting for only 3.0%. In terms of fares, revenue per passenger kilometer on trunk routes was RMB0.58, down from 2023 but close to 2019 levels; with the highest fares on trunk-trunk routes (RMB0.62), up 12.2% year-on-year. Hubs such as Beijing and Chengdu saw significant fare declines due to capacity enrichment (10.4% decline in Beijing), but regional trunk markets such as the Northwest and Northeast saw strong fare recovery.

Domestic Feeder Market

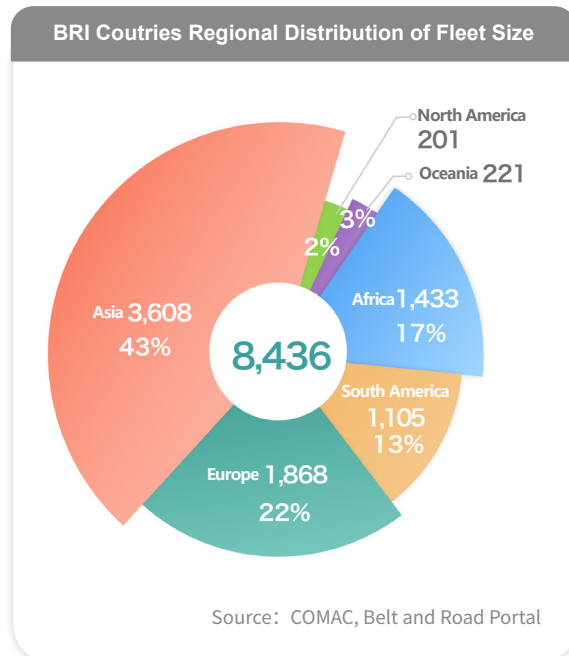
The feeder market showed a combination of overall contraction and structural differentiation. The total number of routes was 3,869 (53.8% share), 219 fewer than in 2023, with only 18.2% and 14.5% of flights and passengers respectively. The share of flights on hub-and-spoke routes, the mainstay of the feeder market (80.3% of total feeder routes), fell to 15.5%, down 2.3% year-on-year, reflecting the lagging recovery of aviation demand in remote areas. Growth was more pronounced on mainline-tributary routes, with flights up 19.2% and passengers up 26.1%, ranking first among all types of feeder routes, showing the increased role of mainline airports as sub-hubs (e.g., Yantai and Quanzhou radiating to the periphery). The development of the feeder-regional route market is more difficult, despite the number of routes increasing to 246 in 2024, but the number of flights decreased by 1.1% year-on-year, with passenger load factor at only 58.6%, and revenue per seat kilometer as low as RMB 0.30. Regional divergence in the development of regional feeder markets was significant: Xinjiang and Inner Mongolia formed provincial feeder networks relying on Huaxia Airlines, etc., and the prototype of provincial feeder circuits appeared in Heilongjiang and Guizhou; while Yunnan and other traditional feeder provinces recovered slowly. The proportion of stopover routes rose to 60%, and the growth of the fly-away/tandem mode was outstanding, reflecting airlines' have improved the efficiency of regional operation through the integration of demand.



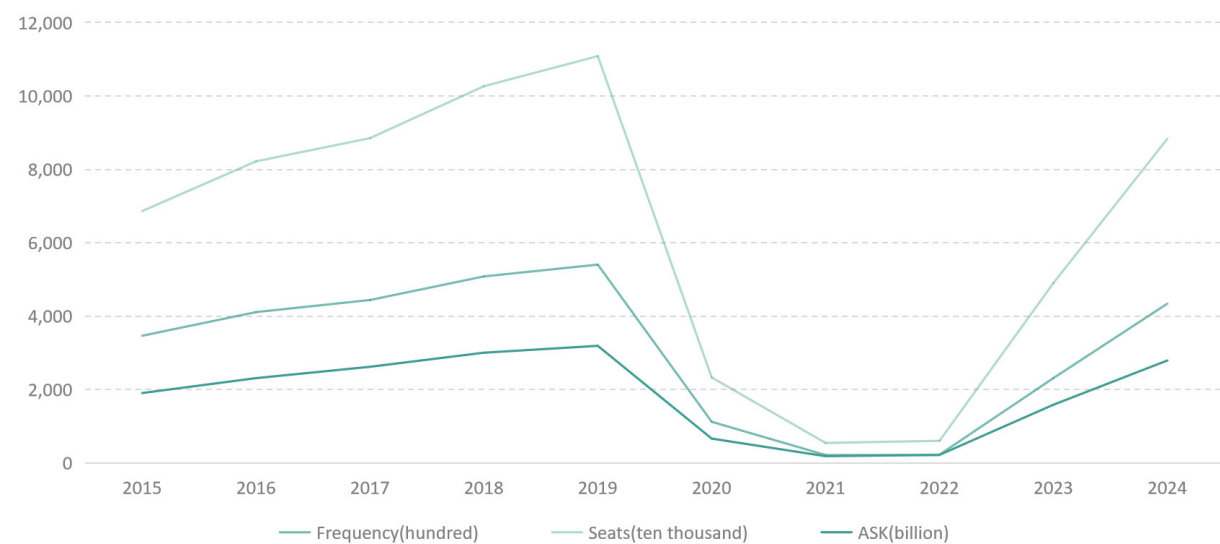
3 Grow Together with "the Belt and Road"

In 2024, Nauru and Brazil signed cooperation plans with China on jointly building the "Belt and Road Initiative" (BRI). By the end of 2024, a total of 155 countries had joined the BRI, of which 120 countries have commercial aircraft fleets, with the total number of in-service aircraft fleets reaching 8,436. By region, Asia accounted for the largest proportion of the aircraft fleet, followed by Europe and Africa.

Civil aviation serves as the "pioneer" of opening up to the outside world, shouldering important responsibilities in building air transport corridors between China and BRI countries and promoting in-depth economic and social cooperation with these countries. From 2014 to 2019, the Available Seat Kilometers (ASK) between China and BRI countries grew at an average annual compound growth rate of 10.85%, and the number of routes increased by 69.75%. Due to the pandemic, the ASK in 2021 shrank to 5.65% of that of the 2019 level. In 2024, routes between China and BRI countries achieved significant growth. Although the ASK had only recovered to 87.45% of the pre-pandemic level, compared with 2023, the number of flights increased by 87.87% and the ASK grew by 76.16%, reflecting the strong resilience of the route network between China and BRI countries.

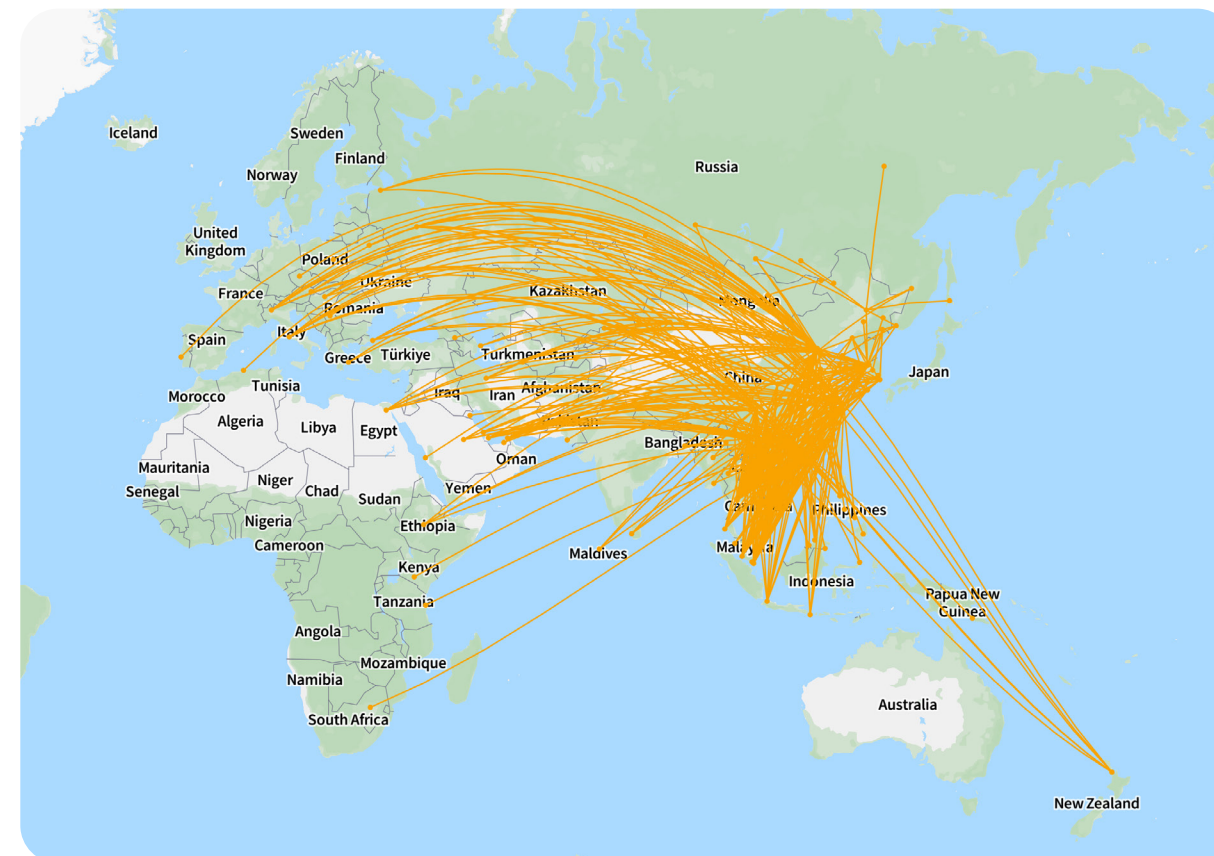


Capacity Trends between BRI countries and China (2015-2024)



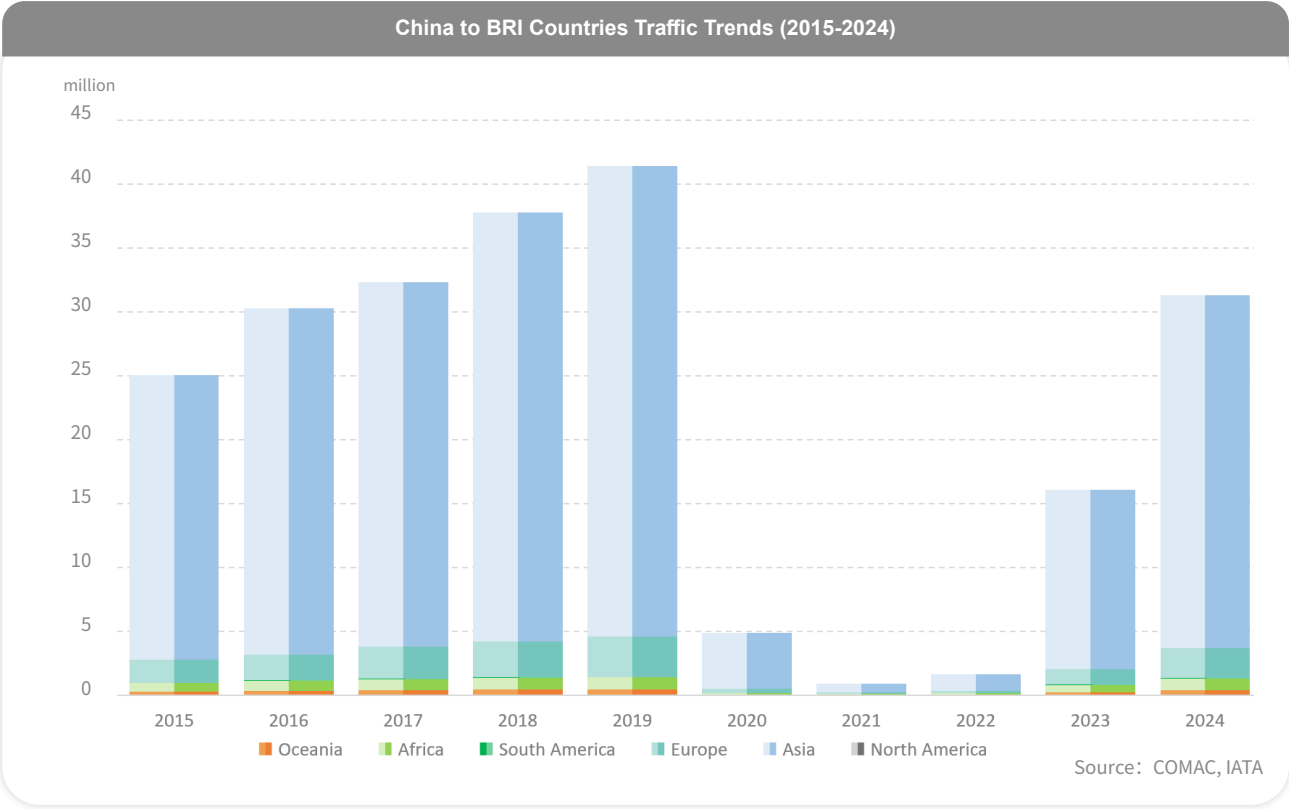
From the perspective of routes, in 2024, a total of 756 routes were opened between China and BRI countries, connecting 55 BRI countries, with a total of 434,000 flights. These routes have played an irreplaceable role in facilitating personnel flow, commodity trade, and cultural exchanges along the Belt and Road. From 2014 to 2019, the average annual compound growth rate of the total flight frequency from China to BRI countries was 9.29%, and that to Southeast Asia reached 14.21%, higher than the average growth rate. In 2024, there were 366 routes connecting Southeast Asia, accounting for 57.85% of the total flights. In the future, Southeast Asia will deepen connectivity with China, and the Belt and Road Initiative will help Southeast Asia achieve further connectivity and development.

Routes between China and BRI Countries



In 2024, the number of Chinese travelers to BRI countries reached 31.29 million, representing a year-on-year increase of 94.54%, but reaching only 75.60% of the 2019 level. Africa experienced the best recovery in passenger numbers, almost returning to pre-pandemic levels. By region, Asian destinations accounted for the largest share of Chinese travelers, followed by Europe and Africa. In terms of specific countries, Thailand, South Korea, Singapore, Malaysia, and Vietnam remained the top five destinations for Chinese travelers both in 2019 and 2024.





In 2024, solid progress was made in high-quality cooperation under the Belt and Road Initiative. China signed Belt and Road cooperation documents with multiple countries, established the Secretariat of the Belt and Road Forum for International Cooperation, and set up over 30 multilateral cooperation platforms in professional fields such as energy, taxation, and disaster reduction. For the first time, the proportion of China's imports and exports with BRI partner countries exceeded 50%, reaching 50.3%, with imports and exports growing by 6.4%. In terms of foreign contracted projects, Chinese enterprises signed new contracts worth 1.66 trillion yuan in BRI countries, an increase of 1.4%. The China-Europe Railway Express has operated over 100,000 trains cumulatively, transporting more than 11 million TEUs of goods with a value exceeding 420 billion US dollars. The 14th Five-Year Plan for Civil Aviation Development proposes to focus on two key projects: advancing the construction of the "Air Silk Road" and enhancing international air cargo capacity. Under the Belt and Road Initiative, China and BRI countries have jointly built an "Air Silk Road" that highlights the unique advantages of aviation, promoting people's wellbeing and shared benefits.



04

Global Aviation Market Forecast

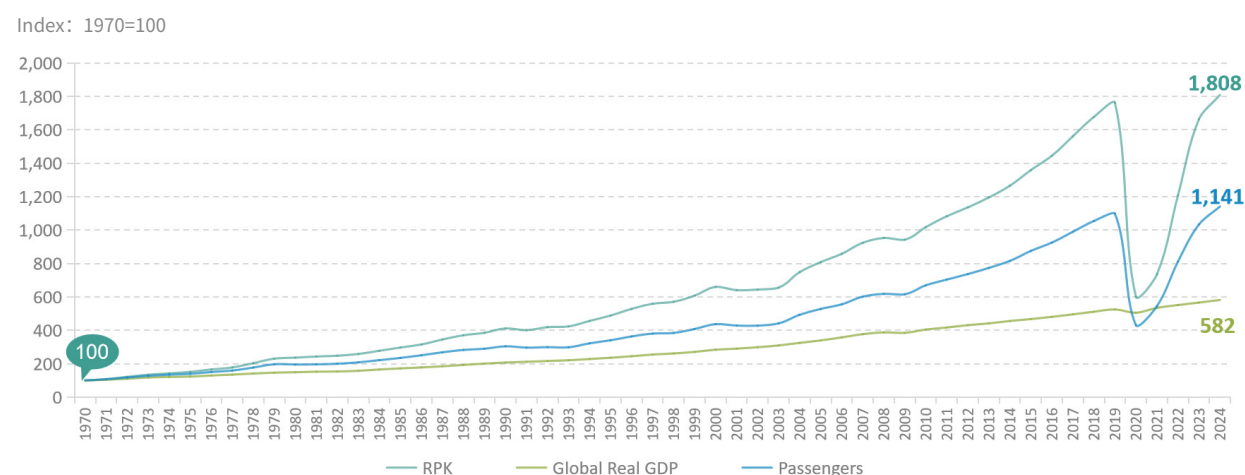
| | | | |
|--|----|----------------------|----|
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| 2 Global Fleet Market Forecast | 34 | 7 Europe | 48 |
| 3 China | 40 | 8 Russia and the CIS | 50 |
| 4 Asia-Pacific | 42 | 9 Middle East | 52 |
| 5 North America | 44 | 10 Africa | 54 |

1 Global Air Passenger Turnover Forecast

In 2024, the global civil aviation industry maintained steady growth, albeit at a slower pace compared to the previous year. Data indicates that global passenger traffic increased by 9.66% year-on-year, with the international market entering a period of rapid double-digit growth. All regional markets achieved full recovery, collectively surpassing pre-pandemic levels. This growth was primarily driven by sustained momentum in Asia and China.

Despite the Asia-Pacific routes achieving a remarkable growth rate of 28.69% for the year and accounting for over 15.12% of global international capacity, they only recovered to about 90% of pre-pandemic levels, indicating significant remaining potential. China's civil aviation sector continued to support the national opening-up strategy, with international passenger flights recovering to 6,400 weekly flights, reaching 84% of pre-pandemic scale. According to IATA (International Air Transport Association) statistics, inter-regional air passenger traffic has grown by nearly 50% over the past decade, accounting for 16.5% of total passenger traffic by 2024. This growth stems from two factors: increased available seat capacity on existing routes and the launch of new routes, expanding city connectivity.

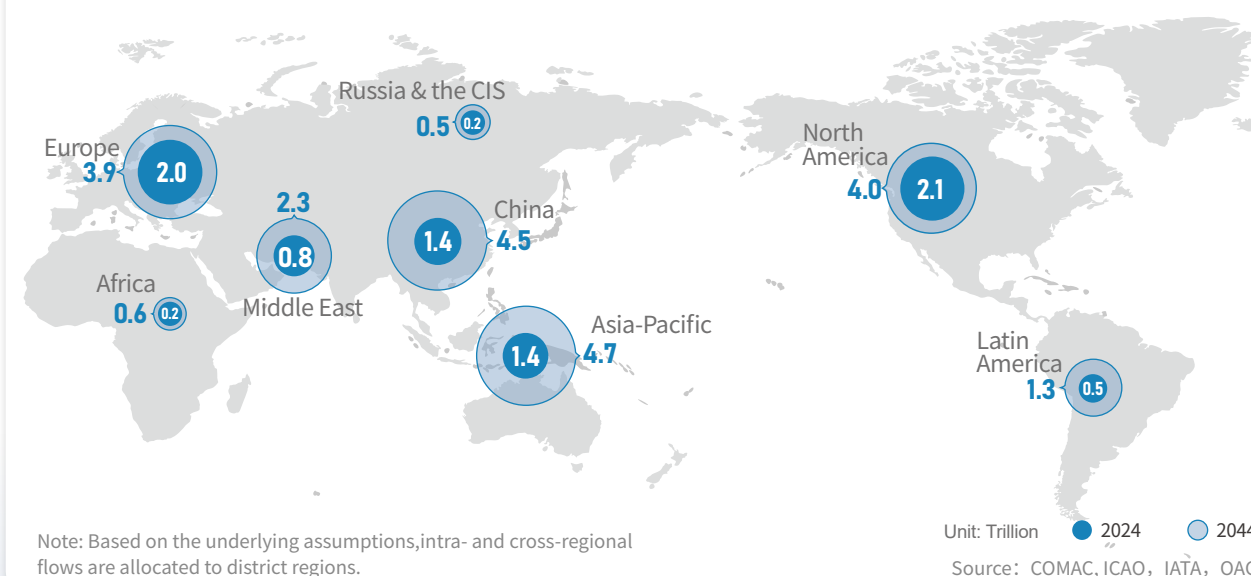
Trends of Global Passengers, RPK and Real GDP (1970-2024)



China continued to deepen its "trunk-branch connectivity and comprehensive network coverage" transportation network. The stable operation of the domestic market provided a crucial foundation for personnel mobility and economic exchange. According to the Statistical Bulletin released by the Civil Aviation Administration of China (CAAC), the industry completed passenger traffic of 1,291.47 billion passenger-kilometers in 2024, a 25.3% increase year-on-year.

The development of the aviation market is inextricably linked to economic conditions and the stability of international trade relations. Based on IHS Markit projections (with 2024 as the base year), the global economy is expected to maintain an average annual growth rate of 2.47% over the next two decades. Under this economic outlook, global passenger traffic is forecasted to grow at an average annual rate of 4.73%, reaching 21.68 trillion passenger-kilometers by 2044. China (including Hong Kong, Macau, and Taiwan) and Asia-Pacific (excluding China) are projected to account for nearly 22.0% each, ranking first and second globally. Europe follows in third place at 18.0%, with North America ranking fourth. The Middle East, Latin America, Russia & the CIS, and Africa follow in sequence.

Global Traffic in 2024 and 2044

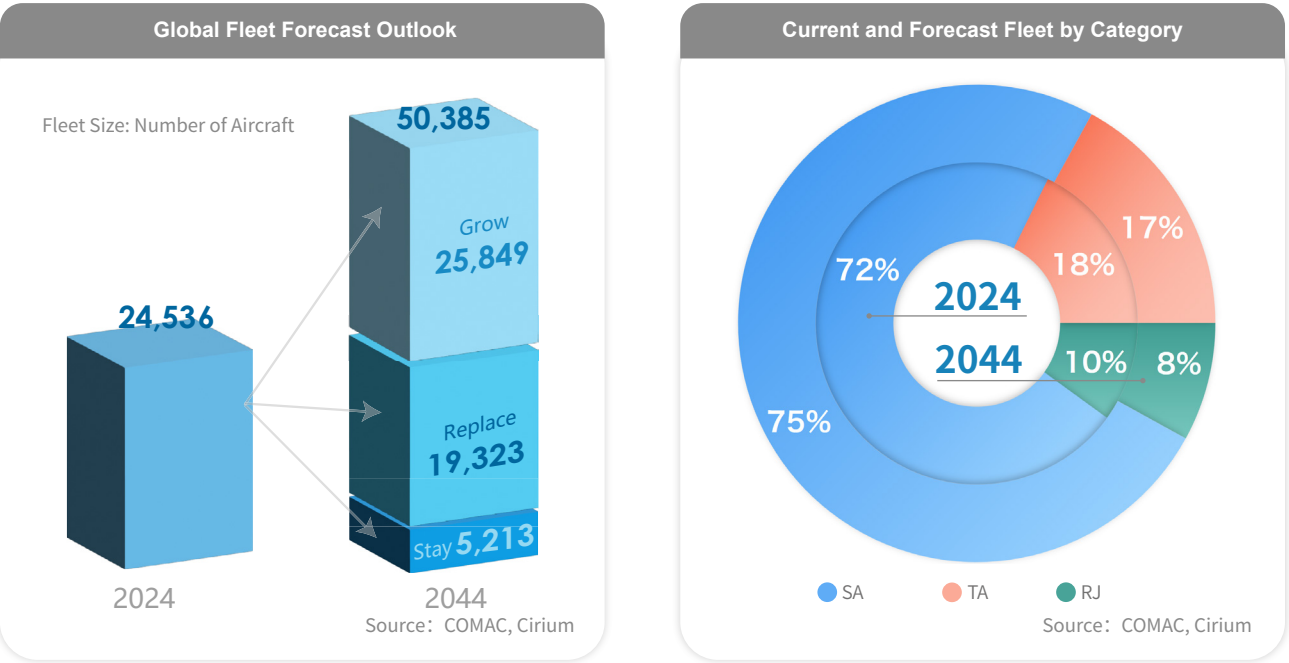


2 Global Fleet Market Forecast

Fleet Forecast Summary

In 2024, the number of active passenger aircraft stood at 24,536, an increase of 459 compared to 2023, representing a growth rate of 1.91%. In terms of the growth rate of fleet size by region, the active fleet in Latin America showed the fastest growth, increasing by 4.37% in 2024 compared to 2023. In terms of the number of active aircraft, North America had the largest fleet, with 6,972 aircraft, accounting for 28.42% of the current active passenger aircraft. In China, the active fleet in 2024 was 4,313 aircraft, an increase of 1.22% compared to 2023.

Over the next two decades, COMAC predicts that the global jet passenger aircraft fleet will grow at an average annual rate of 3.66%, and it is expected that the global number of passenger aircraft will reach 50,385 by the end of 2044. In the coming 20 years, 45,172 new passenger aircraft will be delivered globally, while 19,323 aircraft will be retired, accounting for 78.75% of the current active passenger aircraft fleet.



| Global Fleet Forecast by Category | | | | |
|-----------------------------------|--------------|------------------|----------------|--------|
| | Regional Jet | Single-Aisle Jet | Twin-Aisle Jet | Total |
| 2024 | 2,456 | 17,740 | 4,340 | 24,536 |
| 2029 F | 2,452 | 22,803 | 5,208 | 30,463 |
| 2034 F | 2,556 | 27,040 | 6,129 | 35,725 |
| 2039 F | 3,041 | 31,946 | 7,232 | 42,219 |
| 2044 F | 4,014 | 37,781 | 8,590 | 50,385 |

Source: COMAC

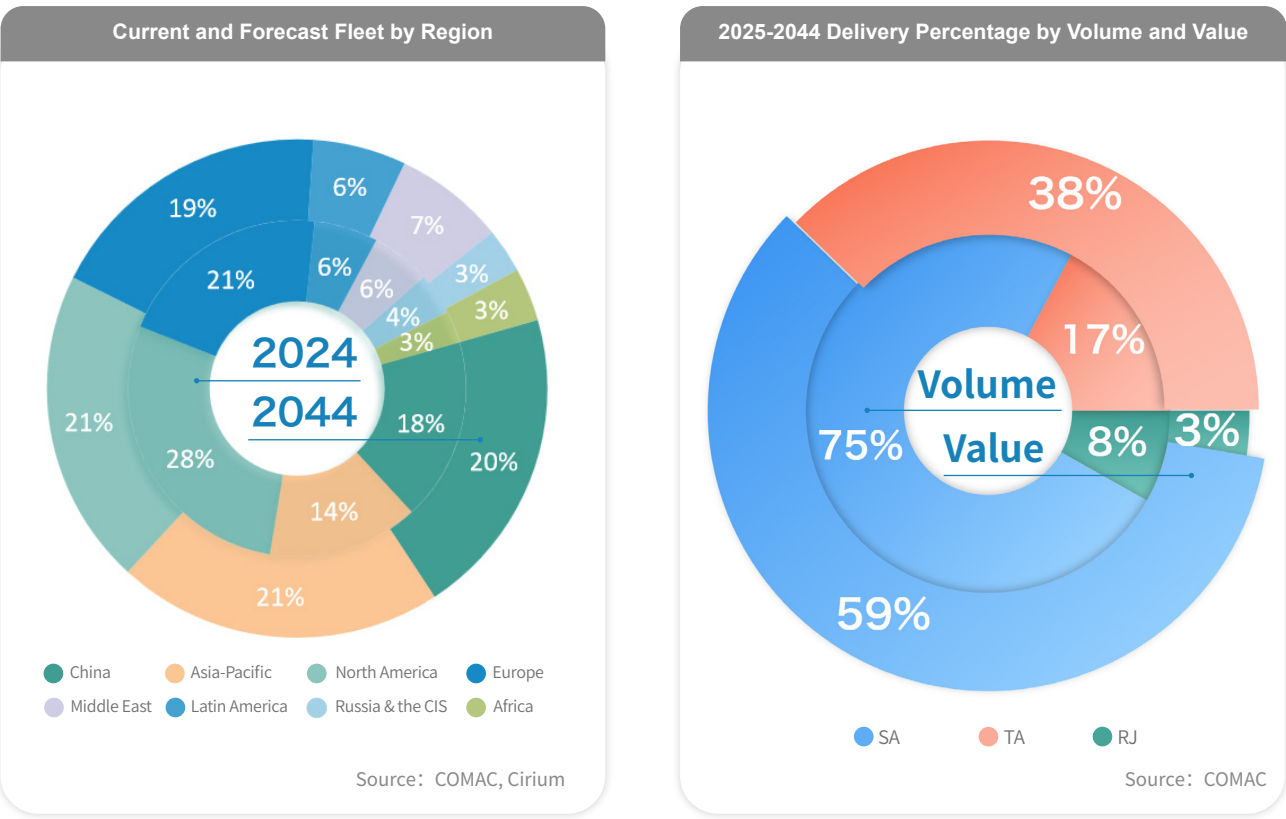
In terms of proportion, the fleet of single-aisle jet aircraft will still account for the highest share of the global total in 2044, reaching 74.98%. Over the next two decades, the proportions of twin-aisle jet aircraft fleets and turboprop regional aircraft fleets in the global total will both decline slightly. It is projected that by the end of 2044, the proportions of twin-aisle jet aircraft fleets and turboprop regional aircraft fleets will drop from 17.69% and 10.01% in 2024 to 17.05% and 7.97% respectively.

The Asia-Pacific region (including China) is the fastest-growing market, with its fleet share in the global total rising from the current 32.04% to 41.27% by 2044. Among them, the proportion of China's passenger aircraft fleet will increase from 17.58% to 20.19%. Fleet growth in mature markets will show a shrinking trend. The proportions of passenger aircraft fleets in North America and Europe in the global total will decrease from 28.42% and 20.64% to 20.51% and 18.69% respectively.

| Global Passenger Aircraft Fleet Forecast by Region | | | | | |
|--|--------|-------------------|--------|-------------------|--------------------|
| | 2024 | | 2044 F | | 2025-2044 |
| | Fleet | % of Global Total | Fleet | % of Global Total | Annual Growth Rate |
| China* | 4,313 | 17.58% | 10,175 | 20.19% | 4.38% |
| Asia-Pacific** | 3,549 | 14.46% | 10,623 | 21.08% | 5.63% |
| North America | 6,972 | 28.42% | 10,332 | 20.51% | 1.99% |
| Europe | 5,064 | 20.64% | 9,417 | 18.69% | 3.15% |
| Latin America | 1,505 | 6.13% | 3,038 | 6.03% | 3.57% |
| Middle East | 1,400 | 5.71% | 3,607 | 7.16% | 4.85% |
| Russia & the CIS | 968 | 3.95% | 1,454 | 2.89% | 2.06% |
| Africa | 765 | 3.12% | 1,739 | 3.45% | 4.19% |
| Global | 24,536 | 100% | 50,385 | 100% | 3.66% |

*China includes Hong Kong, Macao and Taiwan
**Asia-Pacific excludes China, Hong Kong, Macao and Taiwan

Source: COMAC, Cirium



Delivery Forecast Summary

Over the next two decades, driven by the demand for replacing the existing fleet and the new demand in the aviation market, approximately 45,172 jet aircraft will be delivered worldwide, with a total value of nearly 6.93 trillion US dollars.

2025-2044 Global Delivery Forecast by Category

| | Regional Jet | Single-Aisle | Twin-Aisle | Total |
|-------------------------|--------------|--------------|------------|--------|
| 2025-2044 Deliveries | 3,699 | 33,693 | 7,780 | 45,172 |
| Market Value Billion \$ | 189 | 4,125 | 2,617 | 6,931 |

Source: COMAC

Among them, approximately 74.59% of the aircraft will be single-aisle jetliners, 17.22% will be wide-body jetliners, and 8.19% will be turbofan regional airliners. In terms of aircraft value distribution, single-aisle jetliners will account for 59.52%, wide-body jetliners approximately 37.76%, and turbofan regional airliners only 2.72%.

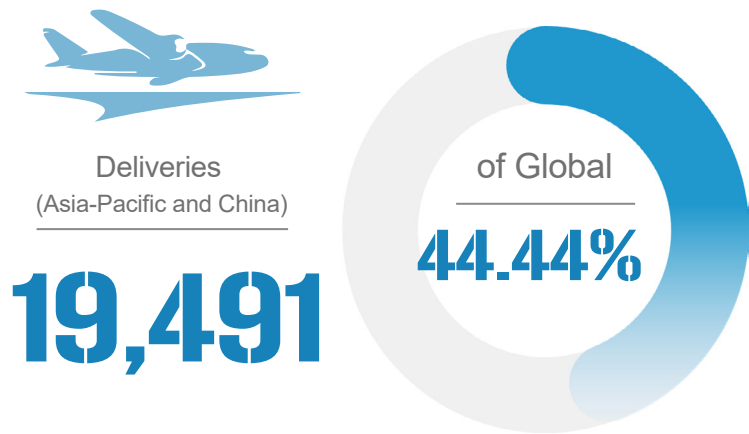
Global Historical and Forecast Deliveries by Region

| | 2005–2024 Historical Deliveries | | 2025–2044 Forecast Deliveries | |
|------------------|---------------------------------|--------|-------------------------------|--------|
| China* | 4,592 | 18.11% | 9,736 | 22.20% |
| Asia-Pacific** | 4,421 | 17.43% | 9,755 | 22.24% |
| North America | 5,936 | 23.41% | 8,954 | 20.41% |
| Europe | 5,386 | 21.24% | 8,513 | 19.41% |
| Latin America | 1,681 | 6.63% | 2,557 | 5.83% |
| Middle East | 1,383 | 5.45% | 3,256 | 7.42% |
| Russia & the CIS | 1,062 | 4.19% | 1,088 | 2.48% |
| Africa | 898 | 3.54% | 1,313 | 2.99% |
| Global | 25,359 | 100% | 43,863 | 100% |

*China includes Hong Kong, Macao and Taiwan
**Asia-Pacific excludes China, Hong Kong, Macao and Taiwan

Source: COMAC, Cirium

Over the next two decades, the Asia-Pacific region (including China) will be the largest market for new aircraft deliveries, with approximately 19,491 new aircraft to be delivered, accounting for about 44.44% of the global total. Among these, China's new aircraft deliveries will account for approximately 22.20% of the global total. The two mature markets of North America and Europe will receive 8,954 and 8,513 new passenger aircraft respectively. In addition, the Middle East, as an emerging market with significant growth in new aircraft deliveries, will have a demand for 3,256 new aircraft.

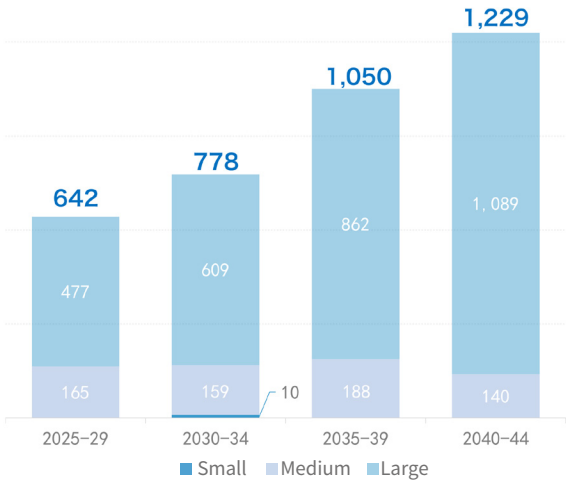


Turbofan Regional Aircraft Forecast

As of the end of 2024, turbofan regional aircraft accounted for 10.01% of the global passenger aircraft fleet, and this proportion is expected to drop to 7.97% by 2044. Future market demand will be mainly concentrated on large turbofan regional aircraft.

Over the next two decades, approximately 87.17% of existing turbofan regional aircraft will be phased out. It is estimated that there will be around 3,699 turbofan regional aircraft deliveries, 82.10% of which (about 3,037) will be large turbofan regional aircraft. By 2044, the total number of turbofan regional aircraft in the fleet will reach 4,014 units.

2025-2044 Global Regional Jet Forecast Deliveries by Seat Size

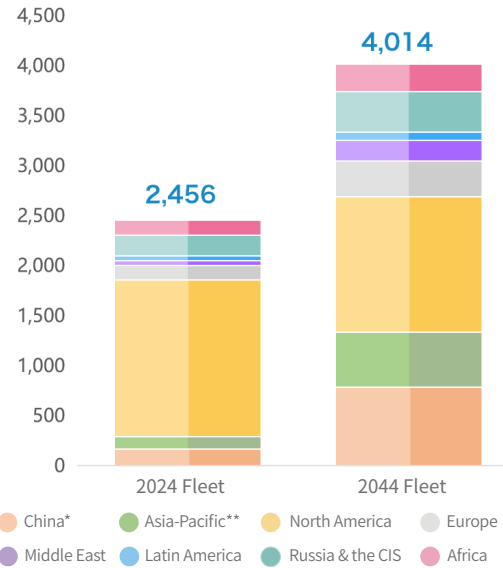


| | Small | Medium | Large |
|-----------------------------------|-------|--------|-------|
| 2025-29 | 0 | 165 | 477 |
| 2030-34 | 10 | 159 | 609 |
| 2035-39 | 0 | 188 | 862 |
| 2040-44 | 0 | 140 | 1,089 |
| 2025-2044 Deliveries | 10 | 652 | 3,037 |
| Market Value (Hundred Million \$) | 3 | 312 | 1,573 |

Source: COMAC

In terms of fleet size, over the next 20 years, North America will remain the largest market for turbofan regional aircraft fleets, with its fleet size accounting for 33.76% of the global regional aircraft fleet. China's regional aircraft fleet will grow rapidly, with its proportion in this category increasing from 6.96% in 2024 to 19.58% in 2044. The Middle East will have the smallest regional aircraft fleet in the world, with its global share remaining at approximately 1.97% by 2044.

2024 and 2044 Current and Forecast Regional Jet Fleet by Region



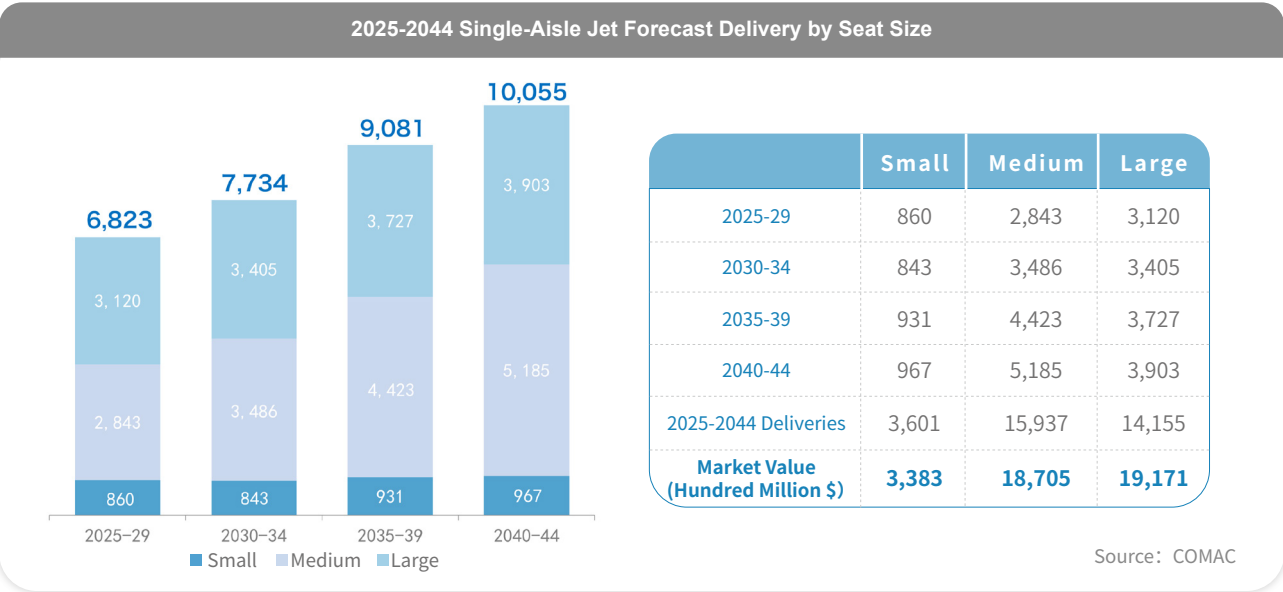
| | 2024 Fleet | 2044 Fleet |
|------------------|------------|------------|
| China* | 171 | 786 |
| Asia-Pacific** | 122 | 553 |
| North America | 1,564 | 1,355 |
| Europe | 143 | 355 |
| Latin America | 50 | 206 |
| Middle East | 48 | 79 |
| Russia & the CIS | 205 | 409 |
| Africa | 153 | 271 |
| Global | 2,456 | 4,014 |

*China includes Hong Kong, Macao and Taiwan
**Asia-Pacific excludes China, Hong Kong, Macao and Taiwan

Source: COMAC, Cirium

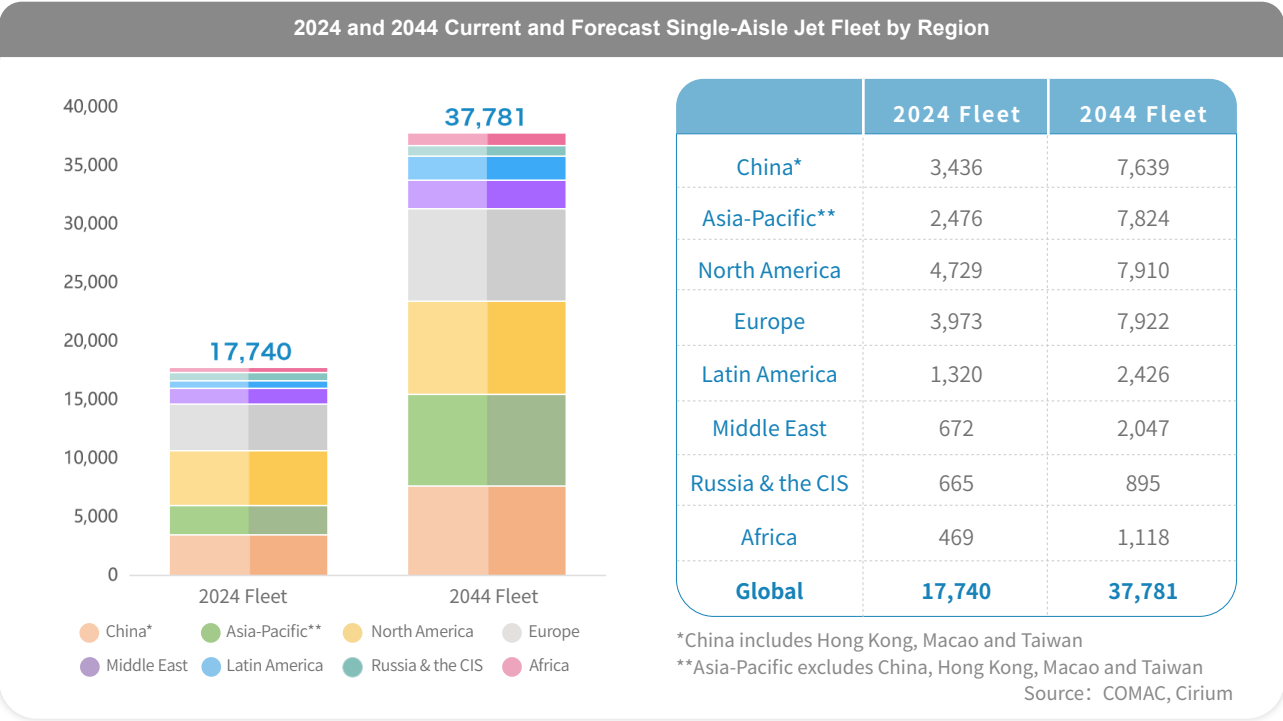
Single-Aisle Passenger Jet Forecast

Over the next two decades, single-aisle jet aircraft will remain the most in-demand in the market. It is projected that by the end of the forecast period, approximately 77.00% of those in the existing fleet will be replaced by new and more fuel-efficient models. Over the next twenty years, an estimated 33,693 single-aisle jets will be delivered globally for service, with 47.30% being medium-sized single-aisle jet aircraft.



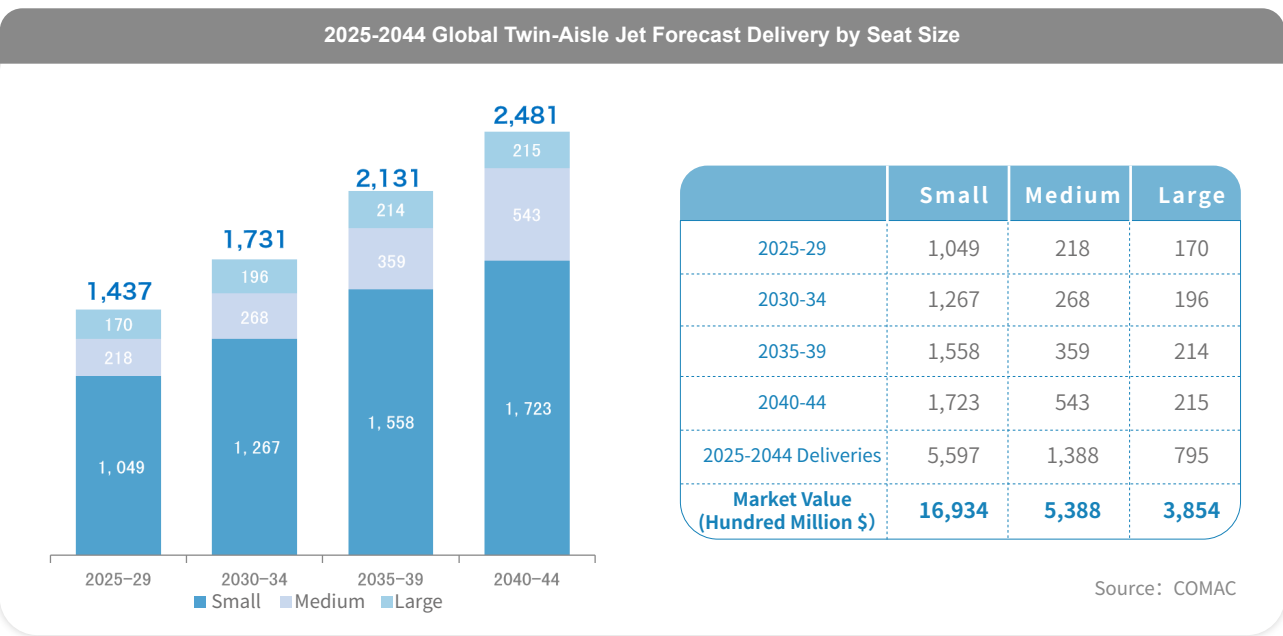
The Asia-Pacific region (including China) will be the largest market for single-aisle jet aircraft, accounting for 42.81% of global new deliveries, with China alone making up 21.52%. This region is home to many emerging economies with rapidly developing economies. Domestic, intra-regional and even many inter-regional routes across China, India, and Southeast Asia will be the target markets for single-aisle jet aircraft.

Europe and North America will remain major markets for single-aisle jet aircraft, accounting for 21.21% and 19.82% of global deliveries, respectively. In these mature markets, demand for replacing old aircraft, along with the increasing number and expanding scale of low- cost airlines, will continue to drive the growth in the number of single-aisle jet aircraft.

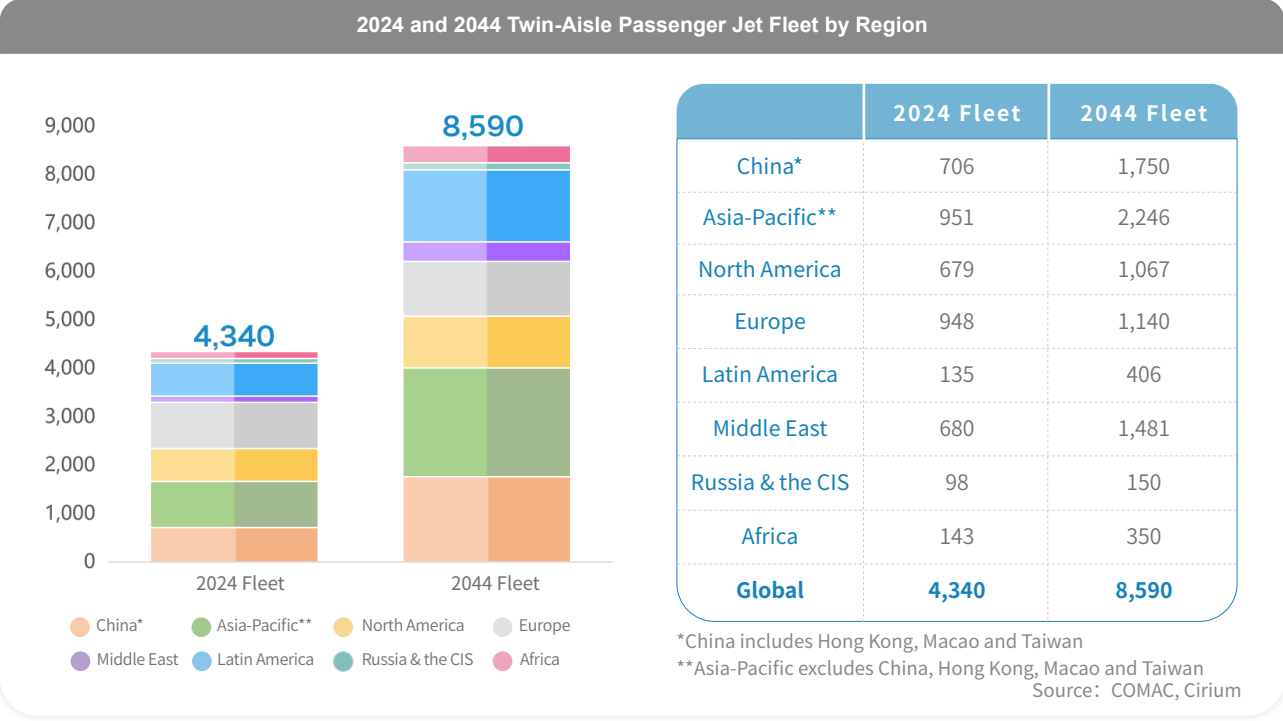


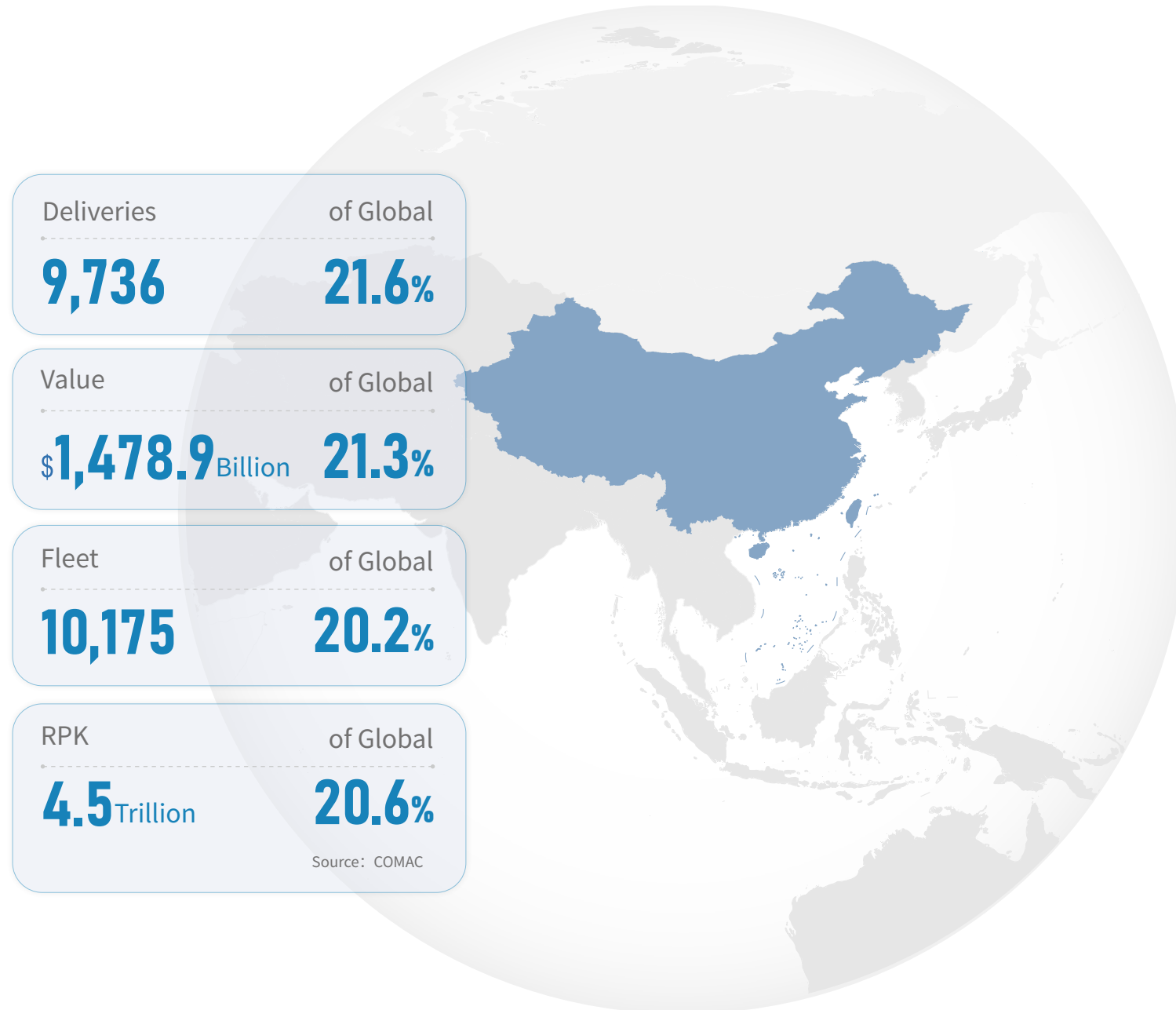
Twin-Aisle Jet Forecast

Over the next two decades, 7,780 twin-aisle jet aircraft are projected to be delivered globally, with a total value of approximately \$2.62 trillion. Among them, about 71.94% will be small twin-aisle jet aircraft with a seating capacity of 200-300 seats. This type of aircraft features strong operational flexibility and wide route adaptability. The fleet of twin-aisle jet aircraft will grow at an average annual rate of 3.35%, with the average seat count increasing from 300 to 327. Over the next twenty years, approximately 81.34% of the existing twin-aisle fleet is expected to be replaced.



Domestic and intra-regional markets with high passenger density, especially in the Asia-Pacific region, will be the target markets for these twin-aisle jet aircraft. Over the next two decades, deliveries of twin-aisle aircraft to airlines in the Asia-Pacific region (including China) are expected to account for 48.05% of the global twin-aisle jet deliveries, while Europe and the Middle East will also have significant demand for this type of aircraft.

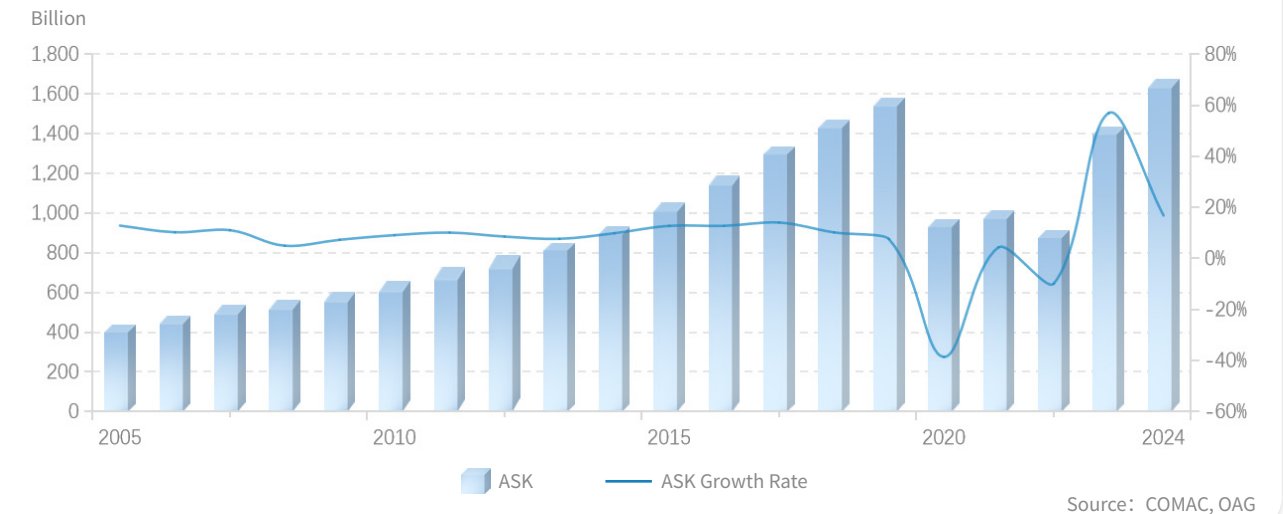




Market

China's economy performed well in 2024, with its GDP exceeding 130 trillion yuan for the first time. Calculated at constant prices, it grew by 5.0% compared to the previous year. The economy picked up significantly in the fourth quarter, providing a solid foundation for the development of various industries. According to IHS forecasts, China's economy is expected to maintain a growth rate of 3.86% over the next 20 years, which is higher than the global average. In 2024, China's civil aviation transportation production reached a new high. The number of international passenger flights increased to 6,400 per week, recovering to 84% of the pre-pandemic level. Nineteen new destinations in countries participating in the Belt and Road Initiative were added. Passenger traffic to Central Asia, West Asia, and Europe exceeded the 2019 level, growing by 152.4%, 49.5%, and 25.7%, respectively. Operational efficiency was significantly enhanced, with the average daily utilization rate of aircraft reaching 8.9 hours, that is, an increase of 0.8 hours compared to the previous year. The seat occupancy rate of regular flights was 83.3%, up by 5.4 percentage points. The civil aviation industry reduced its losses by 20.6 billion yuan compared to the previous year, achieving an overall profit and a marked improvement in economic benefits. After a year of steady and orderly recovery, the production and operation order has returned to normal, and favorable factors supporting high-quality development have continued to increase. China's civil aviation is entering a new cycle of sustained, rapid, and healthy development.

China Historical ASK Trends (2005-2024)



Network

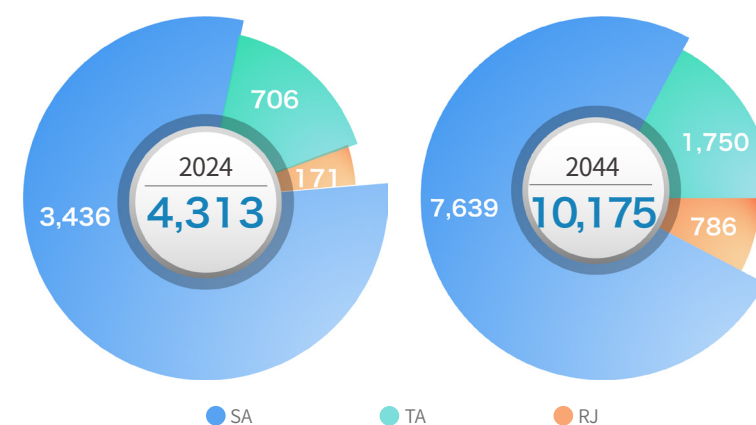
According to OAG's data, in 2024, there were 3,672 domestic routes and 988 international routes in the Chinese mainland. The number of domestic routes exceeded the 2019 level, while the number of international routes only recovered to 63.33% of the pre-pandemic level. In 2024, the ASK of the Chinese mainland increased by 6.82% year-on-year, reaching 99.57% of the 2019 level, basically recovering to the pre-pandemic level. The domestic ASK was 121.99% of the 2019 level, while the international ASK was only 71.46%.

Fleet

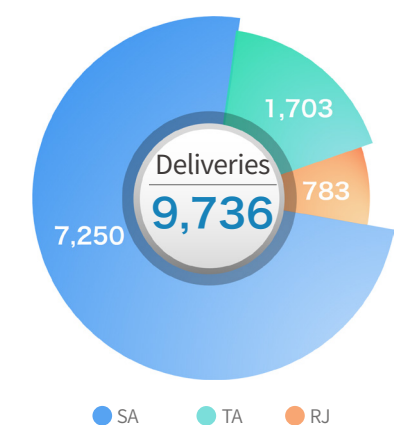
It is predicted that by 2044, China's aviation market will have 10,175 commercial aircraft, including 7,639 single-aisle jets, 1,740 wide-body jets, and 786 regional jets. China's aviation market will become the world's largest single aviation market, leading the growth of the global aviation market in the future.

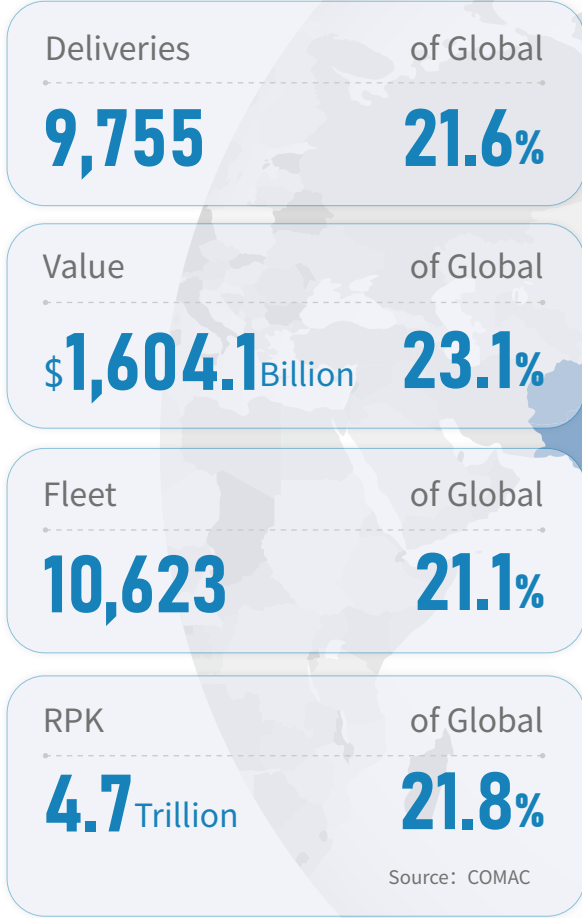
In the next 20 years, 9,736 aircraft are expected to be delivered to the Chinese market. Of these, 7,250 will be single-aisle jet aircraft, accounting for 74.46% of total deliveries; 1,703 will be wide-body jet aircraft, making up 18.71%; and the remaining 783 will be regional jet aircraft, comprising 8.04%.

China Fleet Growth



China Deliveries by Category (2025-2044)





Market

In 2024, the Asia-Pacific aviation market showed a rapid recovery trend, with passenger traffic gradually returning to near pre-pandemic levels. Notably, demand for international routes grew significantly, driven by the sustained rebound in cross-border tourism and business travel in China, India, and Southeast Asian countries. The expansion of low-cost carriers and further upgrades to airport infrastructure have made the Asia-Pacific region one of the fastest-growing aviation markets globally.

Supported by core drivers such as manufacturing upgrades, global supply chain restructuring, accelerated digital economy development, and demographic dividends, the Asia-Pacific economy demonstrated strong vitality. In 2024, the region (excluding China) recorded merchandise trade growth (exports: 3.4%, imports: 3.6%) far exceeding the global average, with a GDP year-on-year increase of 4.59%, higher than the global level. Over the next two decades, the Asia-Pacific region (excluding China) is projected to achieve an average GDP growth rate of 3.28%, significantly outpacing the global average.



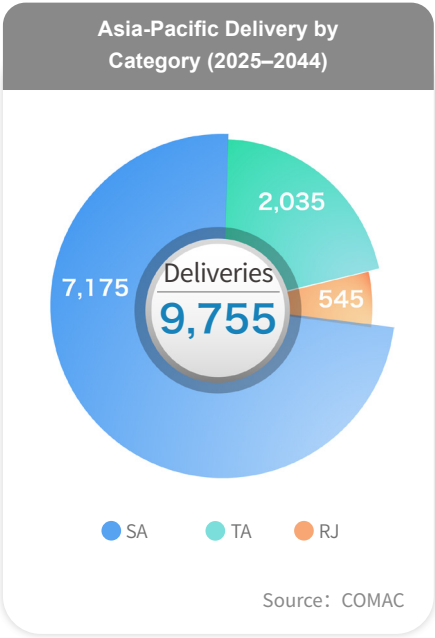
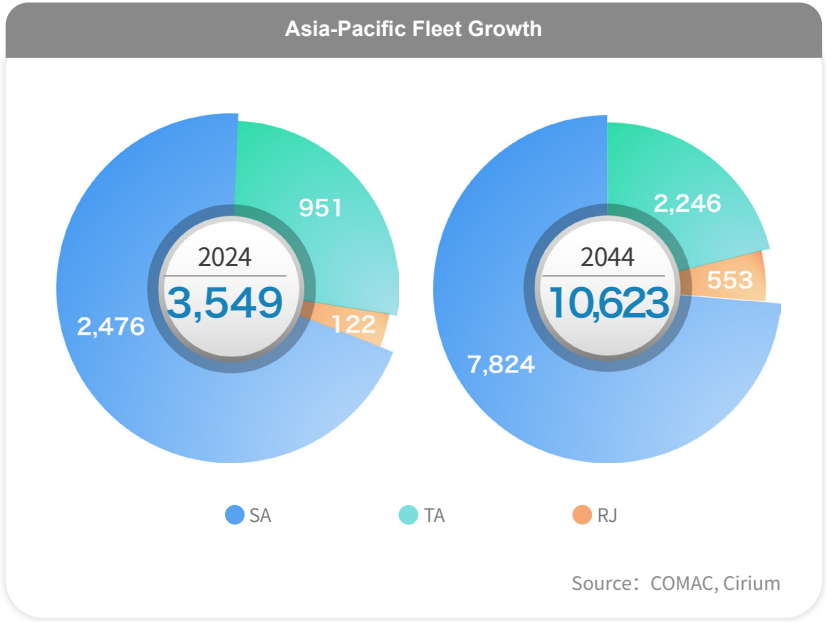
Network

In 2024, the Asia-Pacific region's ASK increased by 14.71% compared to 2023. Measured by available seats, the region's overall capacity grew by 10.26%, reflecting a rapidly expanding air transport market. The region also saw increased capacity deployment on international routes, with international ASK rising by 18.52% year-on-year. The number of international routes increased by 432 compared to 2023.

Fleet

In 2024, the Asia-Pacific aircraft fleet reached a total of 3,549, representing an increase of 85 aircraft compared to 2023. Among these, single-aisle jet airliners accounted for 69.76%, turbofan regional jets for 3.44%, and twin-aisle jet airliners for 26.80%. It is projected that by 2044, the Asia-Pacific fleet will expand to 10,623 aircraft. Over the next two decades, the region is expected to receive 9,755 new aircraft, with a total estimated value of approximately \$1.6 trillion.

Over the next twenty years, single-aisle jet airliners will remain the primary driver of fleet growth, with deliveries totalling 7,175—accounting for 21.30% of global single-aisle jet deliveries. Turbofan regional jet deliveries are projected to reach 545, representing 14.73% of the global total, while twin-aisle jet airliner deliveries are expected to reach 2,035 units, making up 26.16% of the worldwide figure.

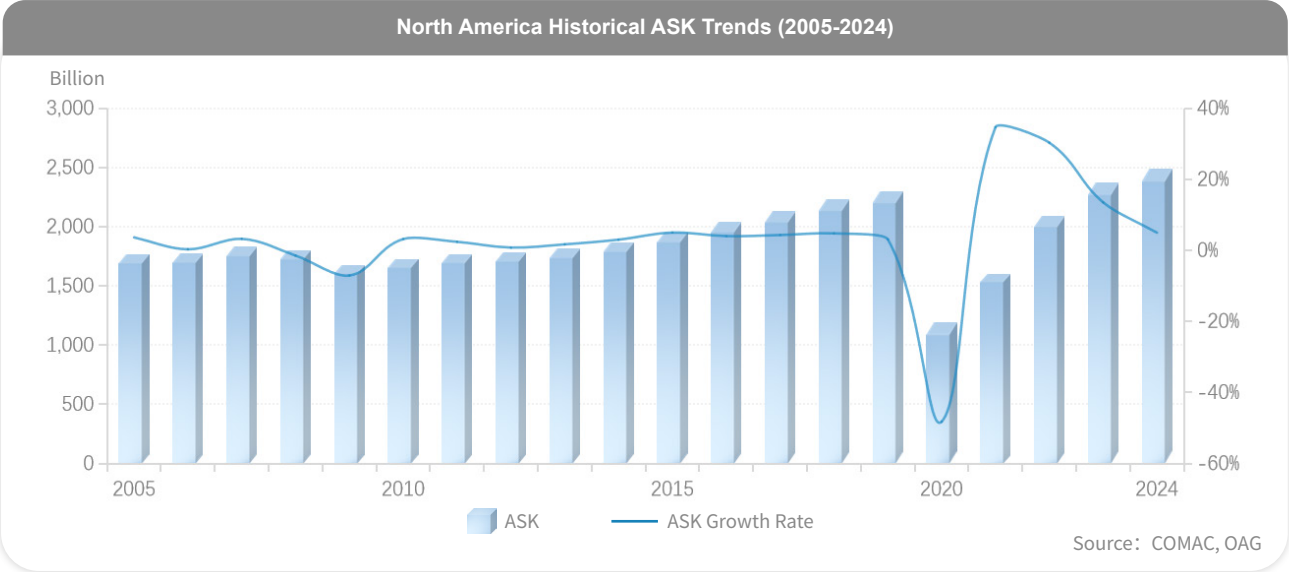




Market

In 2024, the economic growth rate of the United States slowed further to 2.70%, down from 2.78% in 2023. Despite the continued resilience of consumer spending and stability in the labor market, the lagged effects of the high-interest-rate environment have gradually emerged, and the market expects U.S. economic activities to cool further. The Federal Reserve's latest forecast keeps the projected economic growth for 2024 at a low level of 1.4%. Meanwhile, Canada's economy remains in a sluggish growth, with an annual growth rate of only 1.3%, continuing the low growth trend of 1.2% in 2023. The high-interest-rate environment, inflationary pressures, and adjustments in the housing market have become the main dragging factors.

In the aviation market, North American airlines performed steadily in 2024, with passenger traffic growing by 6.8% year-on-year and capacity expanding by 7.4%. The load factor edged down by 0.5 percentage points to 84.2%. Despite adverse factors such as the slowdown of the U.S. economy and the weakening of consumer and business confidence due to the escalation of tariff policies, North American airlines still achieved the highest profits globally by virtue of their high load factor (84.2%) and improved revenue levels. Their net profit reached 11.5 billion U.S. dollars in 2024 and is expected to climb further to 12.7 billion U.S. dollars in 2025, with a net profit margin stably maintained at a high level of 4.0%. However, the industry still faces multiple challenges: the pilot shortage continues to worsen, and hidden dangers related to engine reliability persist, particularly impacting the low-cost aviation sector. Additionally, the adjustment of U.S. trade and immigration policies has triggered negative sentiment among overseas tourists, and it is projected that the number of international tourists will decline in 2025, which may pose new constraints on the growth of the regional aviation market.



Network

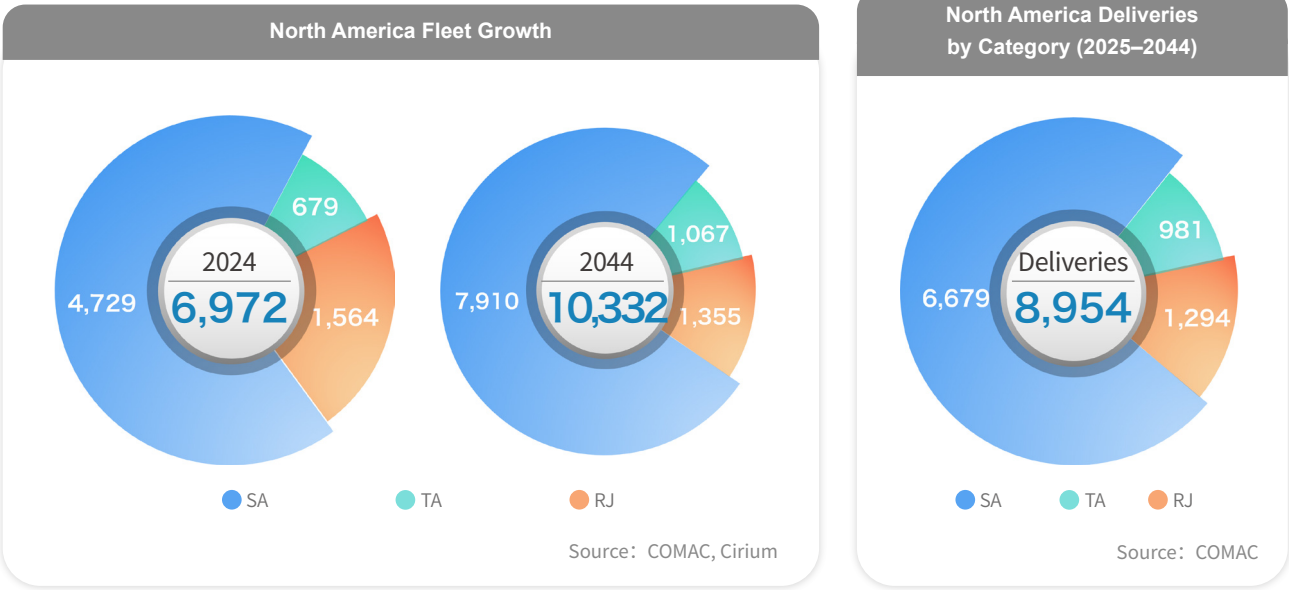
In 2024, the available seat kilometers (ASK) in North America increased by 4.98% compared to 2023. Carriers in North America operated a total of 6,943 routes, covering approximately 20.57% of the global route network, with 180 more routes than in 2023. Among the routes operated by North American carriers, 79.76% were intra-North American routes.

In terms of available seats, in 2024, the seats deployed by North American carriers within the North American region accounted for 90.94% of their total seat deployment. The top three inter-regional markets in terms of seat deployment were North America-Latin America, North America-Europe, and North America-Asia-Pacific, with proportions of 9.25%, 3.73%, and 1.02% respectively.

Fleet

In 2024, there were 6,972 active passenger aircraft in North America, among which single-aisle jet aircraft accounted for 67.83% and turbofan regional aircraft made up 22.43%. By 2044, the fleet size in this region will reach 10,332 aircraft, accounting for 20.51% of the global total.

Over the next two decades, 8,954 new aircraft will be delivered to this region, with a total value of approximately 1.1968 trillion US dollars. Single-aisle aircraft will remain the main driver of fleet growth, with 6,679 units to be delivered, accounting for 19.82% of global single-aisle aircraft deliveries. Deliveries of turbofan regional aircraft will reach 1,294 units, making up 34.98% of global turbofan regional aircraft deliveries. As for twin-aisle jet aircraft, 981 units will be delivered, representing 12.61% of global twin-aisle jet aircraft deliveries.



6 Latin America

Deliveries of Global
2,557 **5.7%**

Value of Global
\$355.4Billion **5.1%**

Fleet of Global
3,038 **6.0%**

RPK of Global
1.3Trillion **6.1%**

Source: COMAC

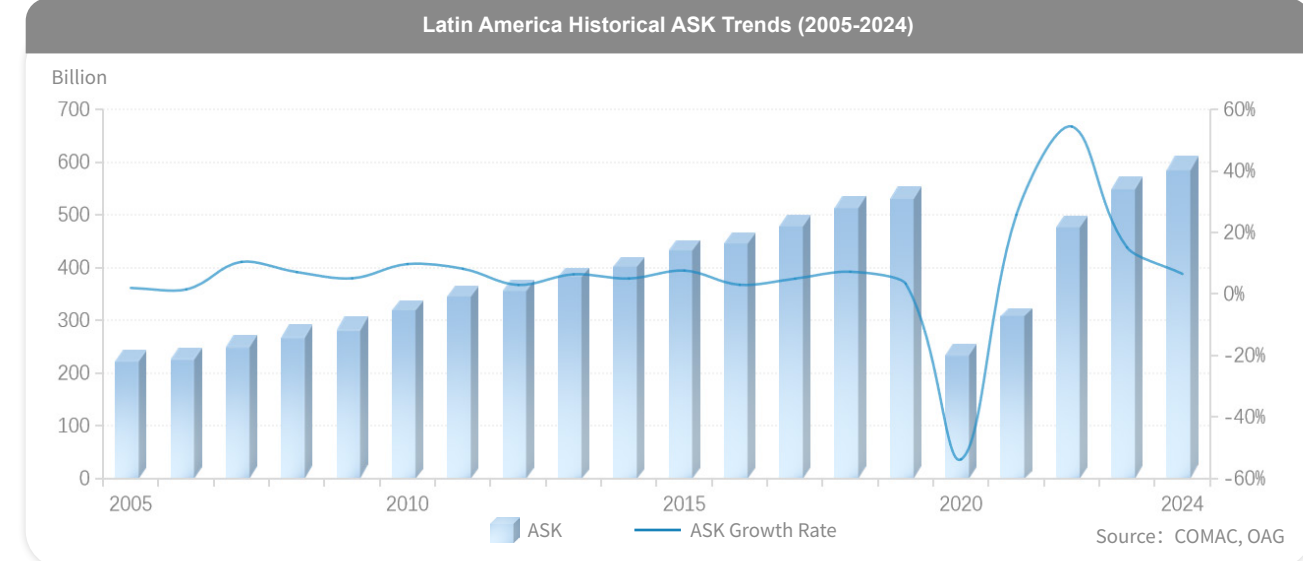
Market

In 2024, the overall economy of Latin America showed a moderate recovery trend. According to IHS data, the economic growth rate of Latin America reached 2.34% in 2024 and is expected to rise to 2.44% in 2025. Despite challenges such as the global economic slowdown and the high-interest-rate environment, many countries have actively promoted industrial diversification, green transformation, and regional integration, effectively unleashing endogenous growth potential. The United Nations pointed out that the poverty rate in Latin America has dropped to the lowest level since 1990, and inflation and liquidity pressures have been alleviated (phasedly). Countries such as Brazil, Peru, Chile, Uruguay, and Costa Rica performed particularly well. Among them, Brazil's economy grew by 3.4%, the highest level in nearly four years, with trade sales and consumer confidence rebounding simultaneously. In terms of industries, Brazil implemented the "New Industry" plan, Chile accelerated the development of the lithium battery industry, and Peru promoted the deep processing of copper and lithium resources, driving the regional economy to transform and upgrade towards higher value-added directions.

Markets in Central and South American countries such as Mexico, Colombia, and Chile performed particularly well, serving as key drivers of both profit and traffic growth.

Of special note, Brazil's two major airlines—Azul and Gol—announced in 2025 that they had reached an agreement to explore a potential business merger in the Brazilian market. If finalized, the merger would mark a significant consolidation of Brazil's aviation sector, potentially reshaping the competitive landscape of the country's civil aviation industry.

Overall, although the Latin American economy continued its slow growth momentum in 2024, the macroeconomic environment improved compared with 2023. The recovery in consumption and structural transformation have become key supporting forces, and the aviation market has maintained a strong recovery trend. Driven by industrial transformation, regional cooperation, and the improvement of quality and efficiency in foreign economic and trade, the medium- and long-term growth prospects of the Latin American aviation industry still hold potential.



Network

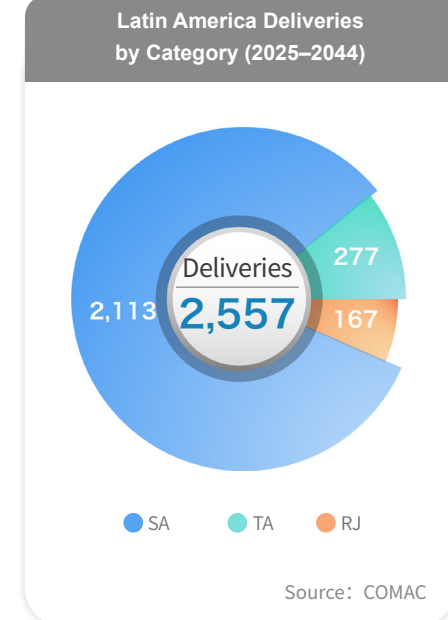
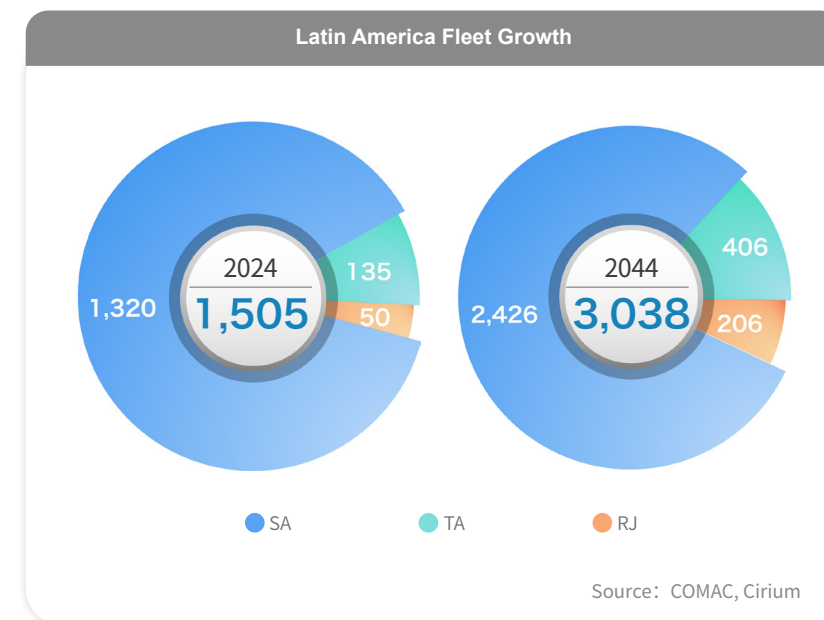
In 2024, the available seat kilometers (ASK) in Latin America increased by 4.97% compared with 2023. Carriers in Latin America operated a total of 2,116 routes, covering approximately 6.27% of the global route network, with 68 fewer routes than in 2023. Among the routes operated by Latin American carriers, 82.60% were intra-Latin American routes.

In terms of capacity deployment, the available seats within the Latin American region accounted for 86.96% of the total seats. The top three inter-regional markets in terms of capacity allocation were Latin America-North America, Latin America-Europe, and Latin America-Asia-Pacific, with proportions of 10.38%, 2.18%, and 0.23% respectively.

Fleet

The fleet size in Latin America stood at 1,505 aircraft in 2024, of which single-aisle jet aircraft accounted for 87.71% and twin-aisle jet aircraft made up 8.97%. By 2044, the regional fleet size will reach 3,038 aircraft, representing 6.03% of the global total.

Over the next two decades, 2,557 aircraft will be delivered to Latin America, including 167 turbofan regional aircraft, which accounts for 6.53% of the total aircraft deliveries in the region. It is projected that by 2044, the number of turbofan regional aircraft in the region will reach 206. As for single-aisle jet aircraft, 2,113 will be delivered, making up 82.63% of the regional deliveries, with the fleet size increasing from 1,320 in 2024 to 2,426. Additionally, 277 twin-aisle jet aircraft will be delivered, bringing the fleet size to 406.



Deliveries

8,513

of Global

18.8%

Value

\$1,241.0 Billion

of Global

17.9%

Fleet

9,417

of Global

18.7%

RPK

3.8 Trillion

of Global

17.6%

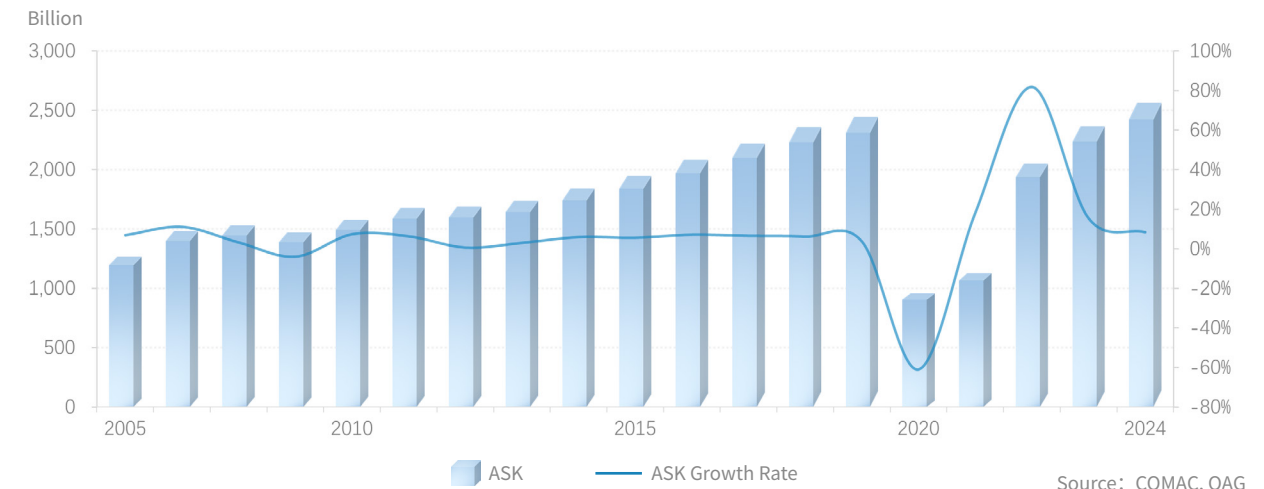
Source: COMAC

Market

In 2024, Europe's GDP grew by 1.6% year-on-year, below the global average. Over the next two decades, the region's GDP growth is projected at 1.55%, significantly lower than the worldwide average. Amid challenges such as heightened geopolitical tensions, rising global trade protectionism, uneven regional economic development, and increasing energy security risks, Europe's economic recovery remains sluggish.

The European aviation market showed steady recovery in 2024. Passenger traffic has returned to pre-pandemic (2019) levels, though business travel and long-haul routes lag behind, while leisure travel demand remains strong. Low-cost carriers (LCCs) continue to expand in Europe, gradually increasing their market share. However, factors such as geopolitical instability and the EU Emissions Trading System (ETS) pose challenges to the region's aviation industry.

Europe Historical ASK Trends (2005-2024)



Network

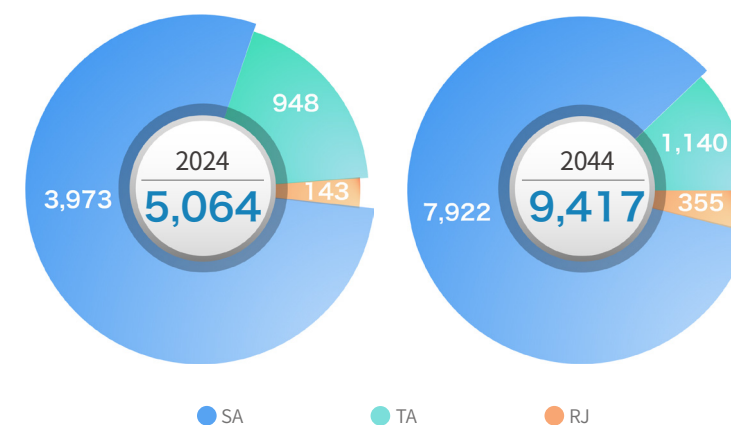
2024 marked a year of rapid route expansion in Europe, with international routes remaining the focus of capacity deployment. International routes accounted for 95.38% of Europe's total ASK. The number of operational routes in Europe increased by 771 compared to 2023, while overall market capacity (measured in available seats) grew by 7.61% year-on-year.

Fleet

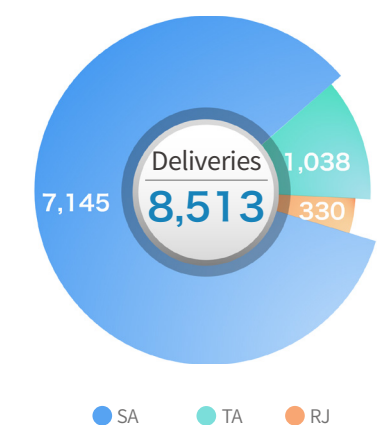
In 2024, the European passenger aircraft fleet reached 5,064 units, marking an increase of 153 aircraft compared to 2023 and accounting for 20.64% of the global fleet. Among these, single-aisle jet airliners comprised 78.45%, turbofan regional jets 2.82%, and twin-aisle jet airliners 18.72%. Over the next twenty years, Europe is projected to receive 8,513 new passenger aircraft, expanding its fleet to 9,417 units by 2044—This would represent approximately 18.69% of the global fleet—with a total delivery value of \$1.24 trillion USD.

Over the next two decades, single-aisle jet airliners will remain the primary driver of fleet growth, with 7,145 deliveries expected, accounting for 21.20% of global single-aisle jet deliveries. Turbofan regional jet deliveries will reach 330, representing 8.92% of the global total, while twin-aisle jet deliveries will reach total 1,038, representing 13.34% of the worldwide.

Europe Fleet Growth



Europe Deliveries by Category (2025-2044)



Deliveries

1,088

of Global

2.4%

Value

\$124.4Billion

of Global

1.8%

Fleet

1,454

of Global

2.9%

RPK

0.5Trillion

of Global

2.1%

Source: COMAC

Market

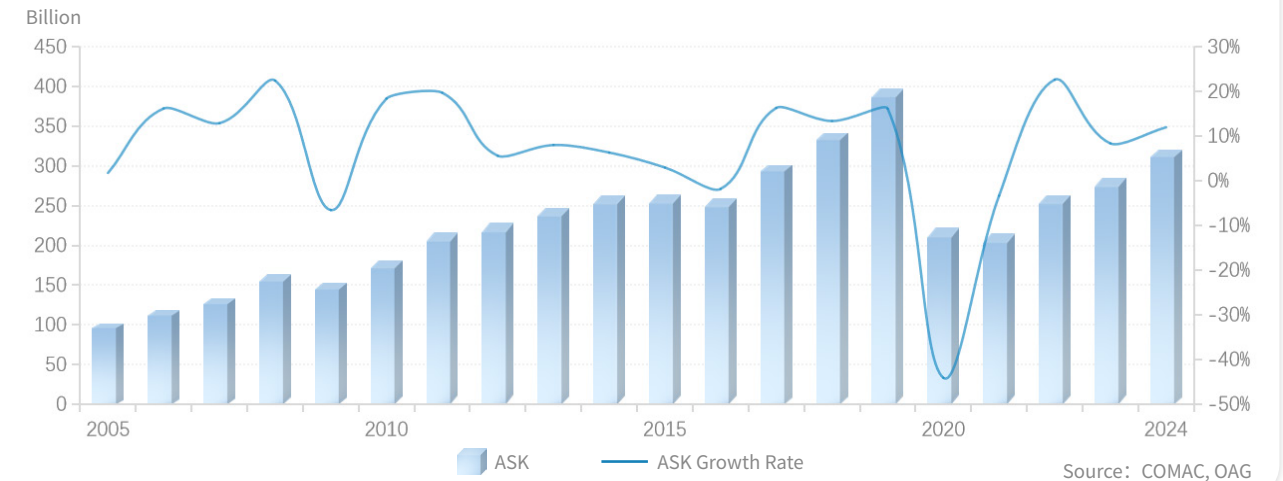
In 2024, Russia demonstrated considerable resilience and growth potential amid a complex geopolitical and economic landscape. However, it also faced significant challenges, including inflationary pressures and international sanctions. Despite these obstacles, the Russian economy maintained a stable growth trajectory, with the GDP growth exceeding government forecasts.

According to data from the Federal State Statistics Service of Russia, the country's gross domestic product (GDP) grew by 4.1% in 2024. Russia's nominal GDP reached a record high of 200 trillion rubles (approximately USD 2.05 trillion). In the context of a volatile international environment and a high inflation rate of 9.52%, Russia's economic growth was primarily driven by robust investment and consumer demand. Industrial output, in particular, made a significant contribution, increasing by 4.6% year-on-year. Despite the continued interest rate hikes by the Central Bank of Russia, consumer confidence and willingness to spend remained strong.

In the same year, the annual available seat kilometers (ASK) of Russian and CIS airlines increased by 12.01% compared to 2023, representing a rise of 3.432 billion seat kilometers. This indicates a continued recovery in the aviation market.

Collectively, these figures reflect the sustained momentum of Russia's economic growth and highlight the resilience and potential of its civil aviation industry within a challenging global environment.

Russia & the CIS Historical ASK Trends (2005-2024)



Network

In 2024, the available seat kilometers (ASK) of Russian and CIS carriers increased by 12.01% compared to 2023. In particular, the ASK for the intra-regional route market rose by 3.31%.

In the cross-regional market, the largest segment remained the Russia and the CIS–Europe market, which recorded a 17.32% increase in ASK compared to the previous year. The Russia and the CIS–Middle East market became the second-largest, with ASK rising by 13.31%. The Russia and the CIS–Asia-Pacific market ranked third, with a 38.82% increase. Notably, the Russia and the CIS–China market experienced the most significant growth, with ASK surging by 125.82% in 2024, making it the fourth-largest market.

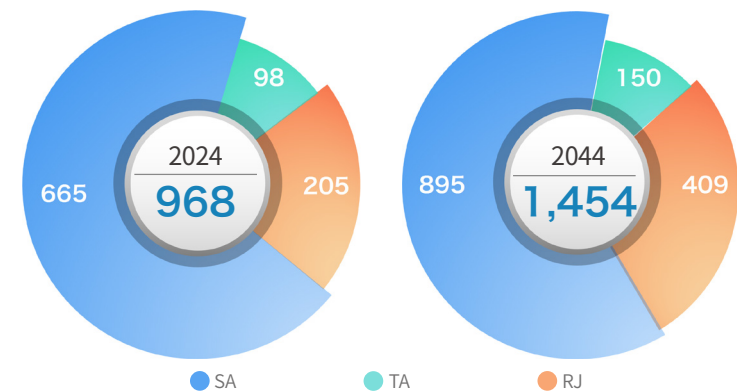
Fleet

In 2024, 968 passenger aircraft were in service across Russia and the CIS region, with single-aisle jet aircraft accounting for 68.70% and regional turbofan jets making up 21.18%. By 2044, the fleet size in the region is projected to grow to 1,454 aircraft, representing 2.89% of the global total.

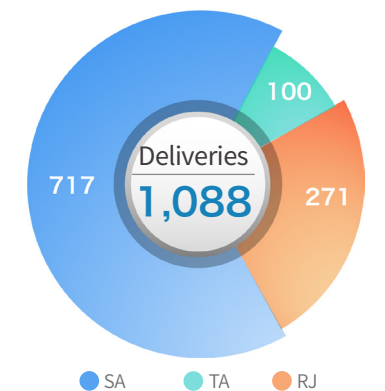
Although the Russian aviation market is currently maintaining a steady development trend, it still faces significant challenges—such as acquiring new aircraft and overcoming route restrictions—due to the complex international situation and ongoing Western sanctions.

Over the next 20 years, 1,088 new aircraft are expected to be delivered to the region, with a total estimated value of approximately US\$124.4 billion. Single-aisle passenger aircraft will continue to be the primary driver of fleet growth, with 717 units delivered (65.90%). Deliveries of regional turbofan jets will reach 271 units, while twin-aisle jets will account for 100 deliveries.

Russia & the CIS Fleet Growth



Russia & the CIS Deliveries by Category (2025-2044)



Deliveries

3,256

of Global

7.2%

Value

\$739 Billion

of Global

10.7%

Fleet

3,607

of Global

7.2%

RPK

2.3 Trillion

of Global

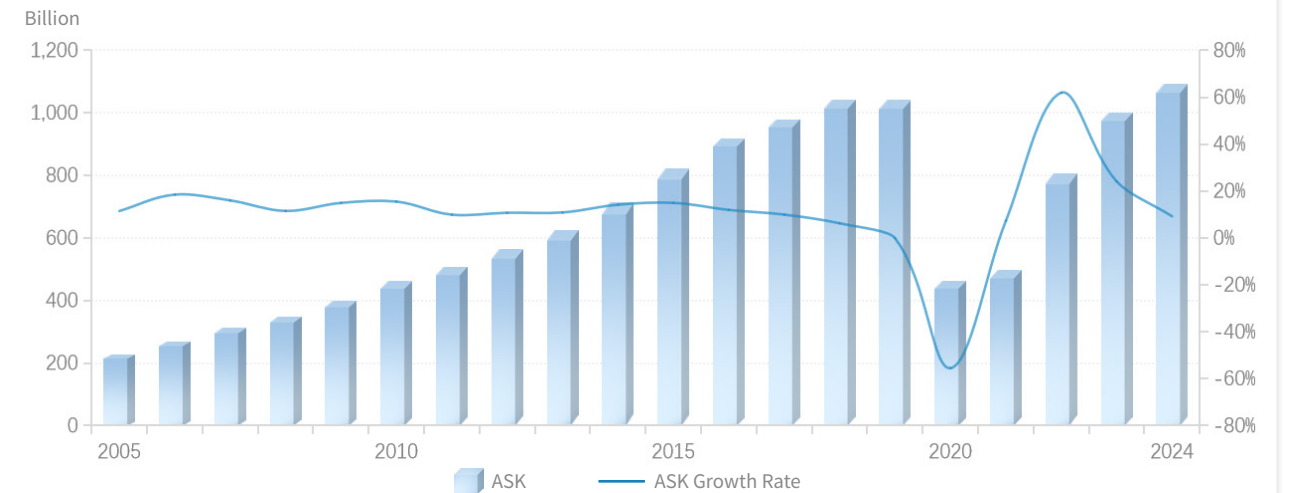
10.6%

Source: COMAC

Market

The Middle East aviation market continued its recovery in 2024 with a strong rebound in international passenger traffic, reinforcing the region's importance as a global aviation hub. Although the Middle East's GDP growth of 2.18% year-on-year in 2024 was slightly lower than the global average, the energy transition and economic diversification strategies (e.g., the development of non-oil industries, such as tourism, finance, and high-end services) are unlocking growth potential. Regional hubs such as Dubai, Abu Dhabi and Doha, with their free trade environments, business vibrancy and large-scale MICE events, are driving a significant rebound in air travel demand. In terms of infrastructure, countries continue to promote airport expansion, high-speed rail connections, and upgrades to cargo and logistics systems to enhance aviation capacity and regional connectivity. In terms of technology and management, smart terminals, automation systems, and digital operation platforms continue to gain popularity, boosting both operational efficiency and passenger experience. Meanwhile, the aviation education and vocational training system is improving, attracting a large number of young talents to enter the industry. Looking ahead to the next two decades, the Middle East's GDP is expected to grow at an average annual rate of 2.59%, outpacing the global average. Combined with the regional integration process, strategic location advantages and policy stability, the Middle East will continue to strengthen its position as an international aviation hub, providing strong support and long-term impetus for the development of the global aviation network.

Middle East Historical ASK Trends (2005-2024)



Source: COMAC, OAG

Network

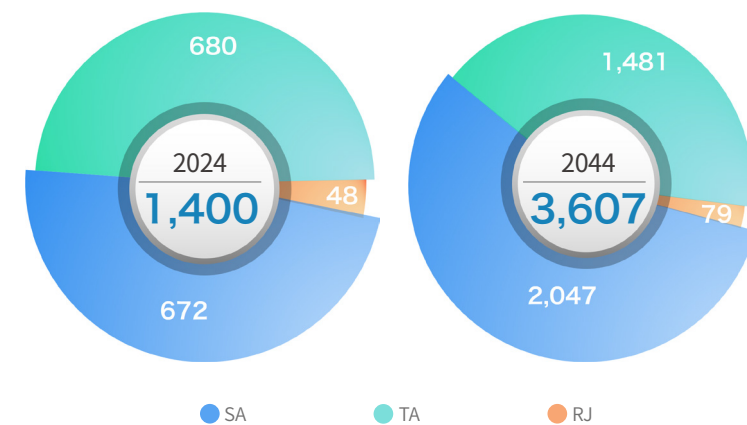
In 2024, Middle East regional capacity (ASK) recovered beyond 2019 levels, increasing by 5.12 % compared to 2019. The centre of gravity of capacity placement in the Middle East remains mainly on international routes, accounting for 96.98% of total capacity, a slight decrease of 0.16% compared to the previous year.. In 2024, the total number of routes in the Middle East was slightly lower than in the previous year, with 451 domestic routes (9 fewer) and 4,034 international routes (38 fewer).

Fleet

With 1,400 passenger aircraft in service in the Middle East in 2024, including 48.00% single-aisle jetliners, 3.43% turbofan regional jets and 48.57 %twin-aisle jets, the region's fleet size is set to reach 3,607 aircraft by 2044, representing 7.16% of the global fleet.

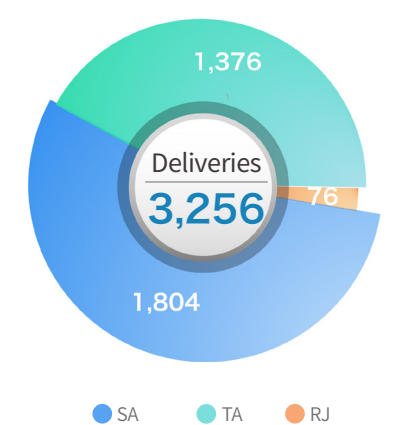
Over the next two decades, the region will see 3,256 new aircraft deliveries valued at approximately \$739 billion. Single-aisle airliners will be the mainstay of fleet growth, with 1,804 deliveries, or 5.35% of global single-aisle deliveries; twin-aisle jet airliners, with 1,376 deliveries, or 17.69 % of global twin-aisle deliveries; and turbofan regional airliners, with 76 deliveries, or 2.05 % of global turbofan regional airliner deliveries.

Middle East Fleet Growth

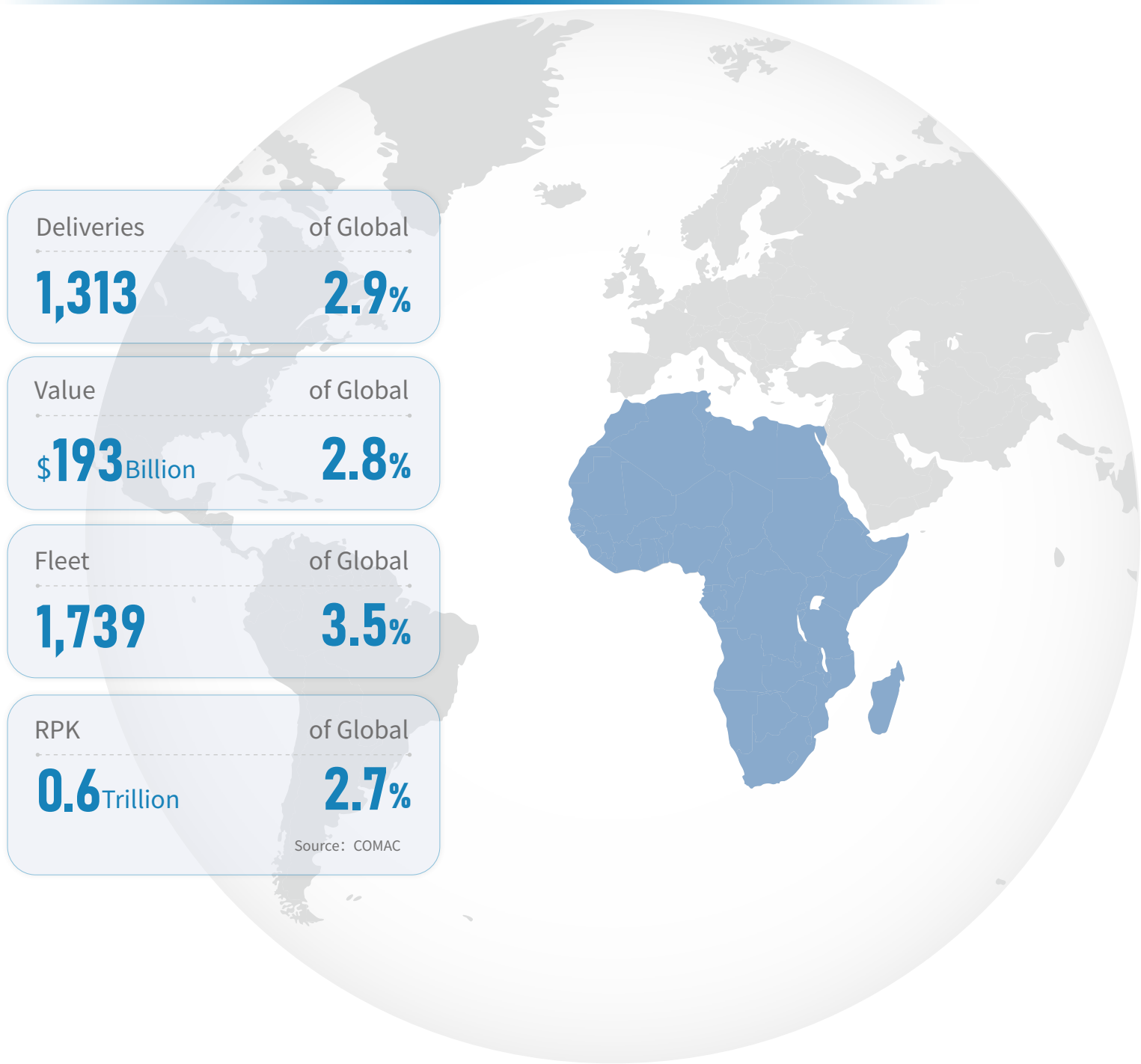


Source: COMAC, Cirium

Middle East Deliveries by Category (2025-2044)



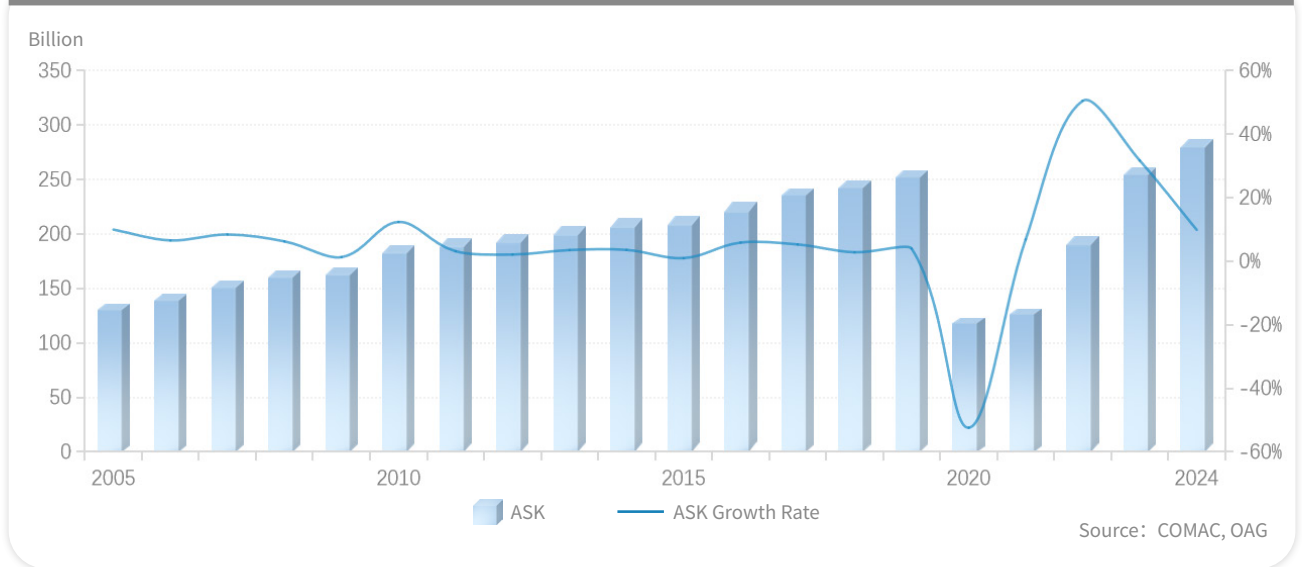
Source: COMAC



Market

Africa's aviation market showed a solid recovery in 2024, with deeper regional cooperation and systematic infrastructure improvements as the core drivers of the market's rebound. Air passenger traffic picked up significantly as demand for tourism and business activities continued to grow. Although Africa's GDP growth of 2.6% year-on-year in 2024 is lower than the global average, it is expected to accelerate in the next two decades with an average annual growth rate of 3.86%, far exceeding the global economic growth expectations, injecting strong momentum for the sustainable development of the aviation industry. The full implementation of the African continent's Free Trade Area (FTA) has effectively promoted intra-regional trade flows and usiness travel, directly boosting demand for air travel. At the same time, African countries are leveraging their rich natural resources and cultural heritage to attract global tourists by optimizing visa policies and diversifying tourism offerings, which is driving the continued expansion of the high-end air travel market.

Africa Historical ASK Trends (2005-2024)



Network

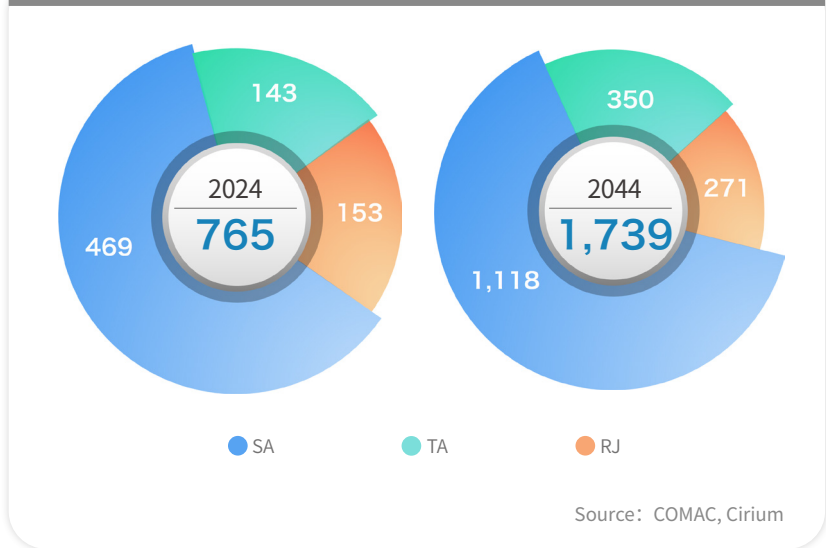
In 2024, Africa's regional capacity (ASK) recovered beyond 2019 levels, increasing by 12.92% from 2019 levels. Capacity deployment in the Africa region remained heavily focused on international routes, accounting for 94.39% of total capacity, a slight decrease of 0.64% compared to the previous year. In terms of changes in the number of routes, the total number of routes in the Africa region in 2024 increased slightly compared to the previous year, with 1,285 domestic routes, 22 fewer than the previous year, and 4,395 international routes, 169 more than the previous year.

Fleet

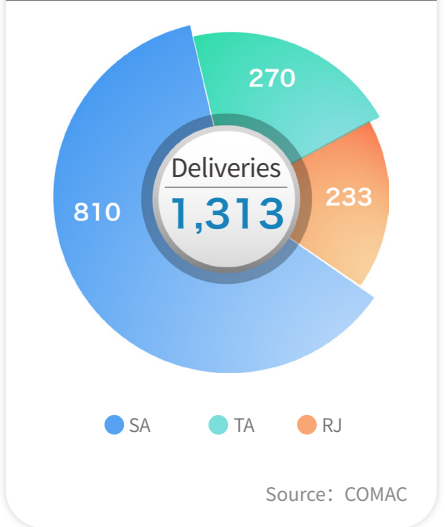
The Africa region had 765 passenger aircraft in service in 2024, of which 61.31% are single-aisle jetliners, 20.00% are turbofan regional jets and 18.69% are twin-aisle jetliners, and the region's fleet size is set to reach 1,739 aircraft by 2044, accounting for 3.45% of the global fleet.

Over the next two decades, the region will see 1,313 new aircraft deliveries valued at approximately \$192.5 billion. Single-aisle airliners are the mainstay of fleet growth, with 810 deliveries, or 2.40% of global single-aisle deliveries; twin-aisle jetliners, with 270 deliveries, or 3.47% of global twin-aisle deliveries; and turbofan regional jets, with 233 deliveries, or 6.30% of global turbofan regional jet deliveries.

Africa Fleet Growth



Africa Deliveries by Category (2025–2044)





05

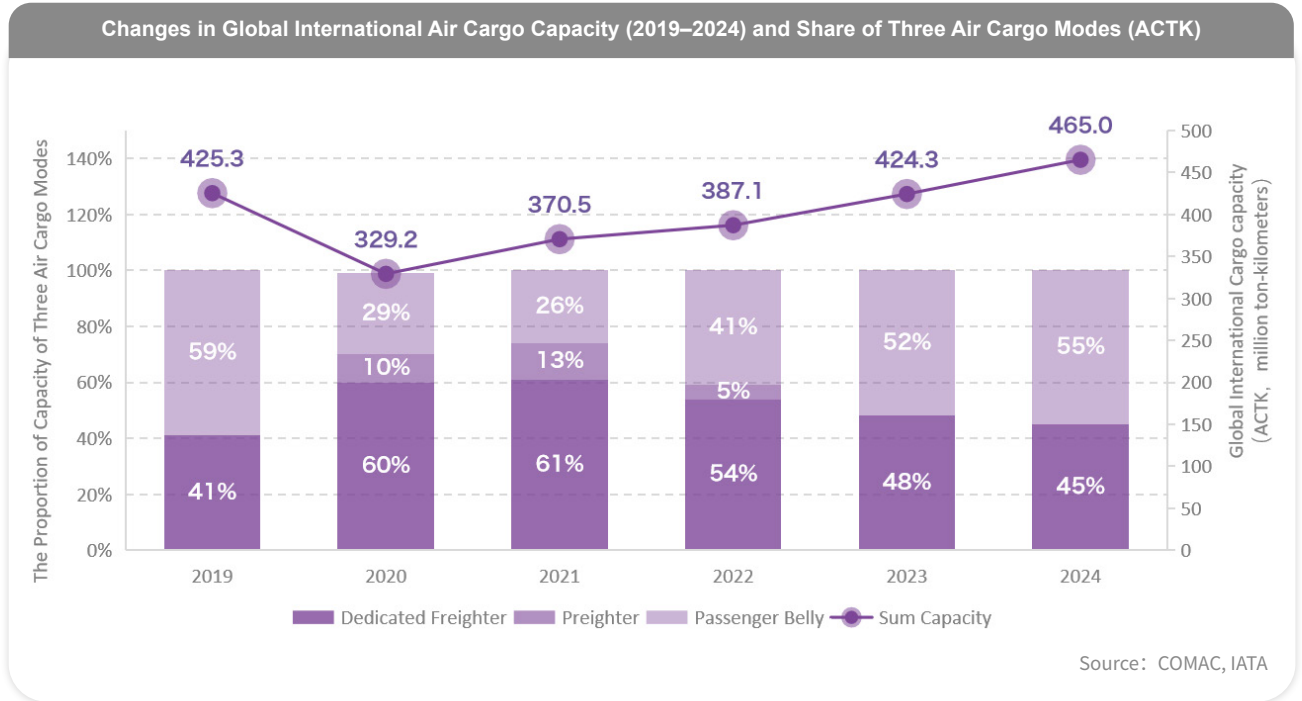
Freighter Market Forecast

| | |
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| 1 Global Air Cargo Market | 57 |
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1 Global Air Cargo Market

Changes in International Air Cargo Capacity

Looking back at the global air cargo market after the pandemic, international air cargo capacity (ACTK) rebounded from its lowest point in 2020 (329.2 billion tonne-kilometers) to 370.5 billion tonne-kilometers in 2021, an increase of 12.5%. In 2022, global international air cargo capacity continued to grow to 387.1 billion tonne-kilometers, reaching 91.0% of 2019 levels. By 2023, global international air cargo capacity reached 424.3 billion tonne-kilometers, a year-on-year increase of 9.6%, nearly matching pre-pandemic (2019) levels. In 2024, global international air cargo capacity expanded further to 465.0 billion tonne-kilometers, a 9.6% increase from the previous year and 9.3% higher than in 2019.

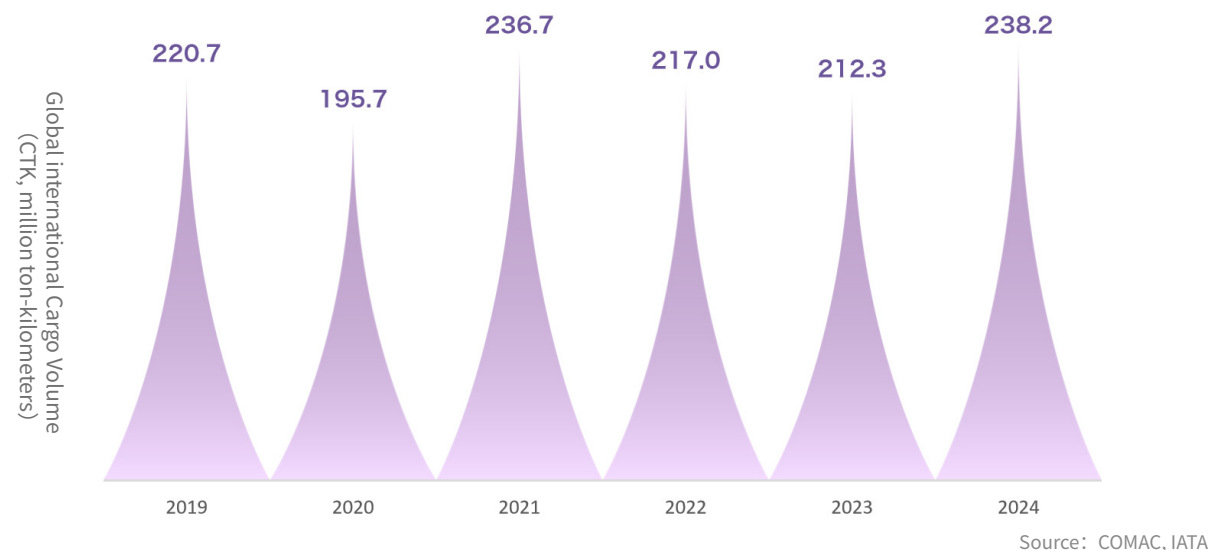


After 2022, with the end of the global COVID-19 pandemic, the international passenger market recovered rapidly. As a result, the share of belly-hold cargo capacity in total international air cargo rebounded to 41.0%, while the shares of dedicated freighters and temporarily converted freighters declined to 54.0% and 5.0%, respectively. In 2023, as global international passenger traffic continued to recover, belly-hold cargo capacity's share in global international air cargo rose to 52.0%, while dedicated freighters' share fell to 48.0%, and temporarily converted freighters completely exited the global air cargo market. By 2024, belly-hold cargo capacity's share further increased to 55.0%, while dedicated freighters' share declined to 45.0%.

Changes in International Air Cargo Traffic

In 2020, global international air cargo tonne-kilometers (CTK) dropped from 220.7 billion tonne-kilometers in 2019 to 195.7 billion tonne-kilometers, a decline of 11.3%. Due to the surge in global trade amid the pandemic, air cargo volume rebounded to 236.7 billion tonne-kilometers in 2021, surpassing pre-pandemic levels. In 2022, international air cargo tonne-kilometers fell by 8.3% year-on-year to 217.0 billion tonne-kilometers, slightly below pre-pandemic levels. By 2023, the total international air cargo volume saw a minor decrease of 1.9% to 212.3 billion tonne-kilometers. In 2024, as the global economy gradually recovered, international air cargo volume grew by 12.2% year-on-year to 238.2 billion tonne-kilometers, exceeding 2021 levels and marking the peak in air cargo volume over the past five years.

Changes in Global International Air Cargo Traffic (2019–2024)



2 Current Status of the Global Air Cargo Market

In 2024, cargo tonne-kilometers (CTK) increased by approximately 11.3% year-on-year compared to 2023, with full-year cargo demand surpassing 2021 levels. The industry-wide available cargo tonne-kilometers (ACTK) grew by 7.4% year-on-year, while the average annual yield decreased by 1.6% compared to 2023 but remained 39.0% higher than in 2019. This growth was primarily driven by strong e-commerce development, various maritime shipping constraints, and airspace restrictions, all of which contributed to rapid expansion in air cargo. As a result, airline cargo volumes reached historic highs. Notably, from late 2023 to December 2024, international trade routes in the air cargo market achieved 17 consecutive months of significant growth. Additionally, the intra-Asia cargo market demonstrated the most notable expansion, with double-digit year-on-year growth and 14 consecutive months of positive growth.



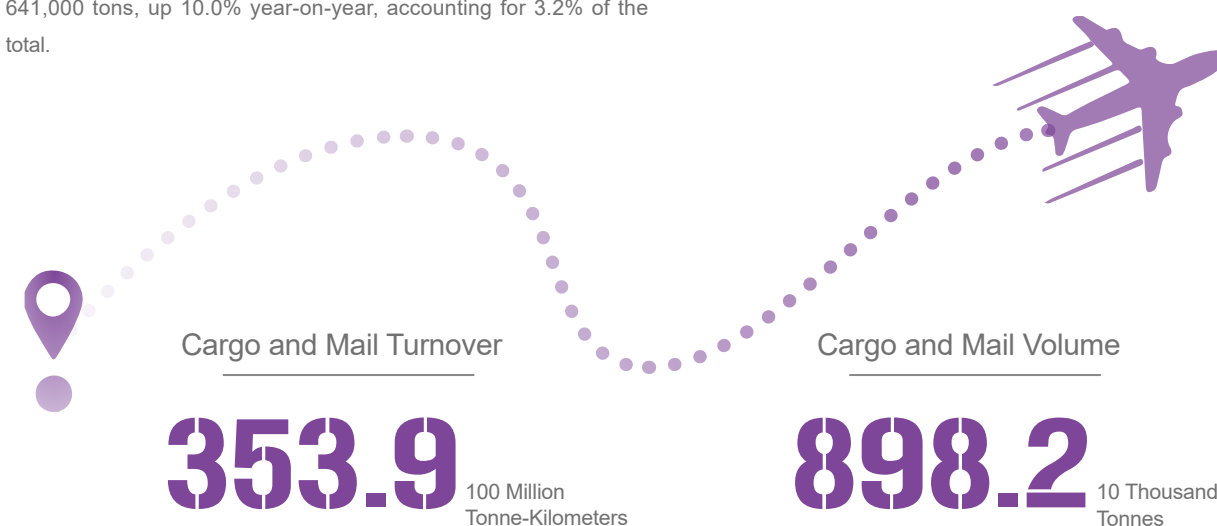
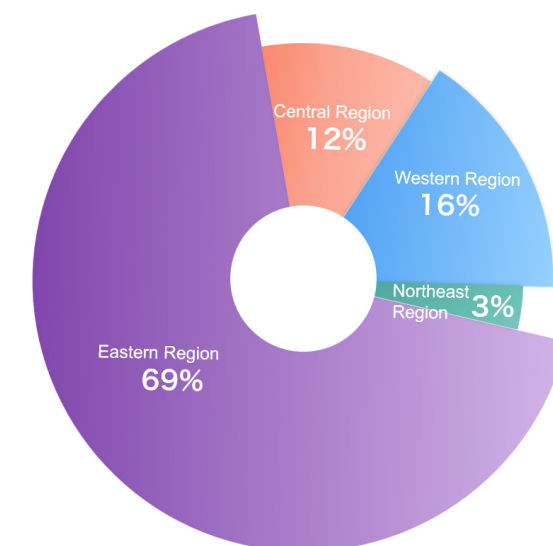
3 Current Status of China's Air Cargo Market

In 2024, China's civil aviation industry achieved a cargo and mail turnover of 353.9 billion ton-kilometers, marking a year-on-year increase of 24.8%. Domestic routes accounted for 82.4 billion ton-kilometers of cargo and mail turnover, up 17.0% year-on-year, with routes to Hong Kong, Macao, and Taiwan contributing 2.0 billion ton-kilometers, a 10.6% increase. International routes recorded a cargo and mail turnover of 271.5 billion ton-kilometers, reflecting a 27.4% year-on-year growth.

In terms of transport volume, China's civil aviation handled 8.982 million tons of cargo and mail in 2024, a 22.1% increase compared to the previous year. Domestic routes accounted for 5.376 million tons, up 17.8% year-on-year, with routes to Hong Kong, Macao, and Taiwan handling 164,000 tons, an 8.4% increase. International routes transported 3.606 million tons of cargo and mail, representing a 29.3% year-on-year growth.

In 2024, the eastern region handled 13.767 million tons of cargo and mail throughput, a 14.1% year-on-year increase, accounting for 68.6% of the total volume. The central region handled 2.402 million tons, up 58.5% year-on-year, making up 12.0% of the total. The western region recorded 3.253 million tons, a 21.9% increase, contributing 16.2% of the total. The northeastern region handled 641,000 tons, up 10.0% year-on-year, accounting for 3.2% of the total.

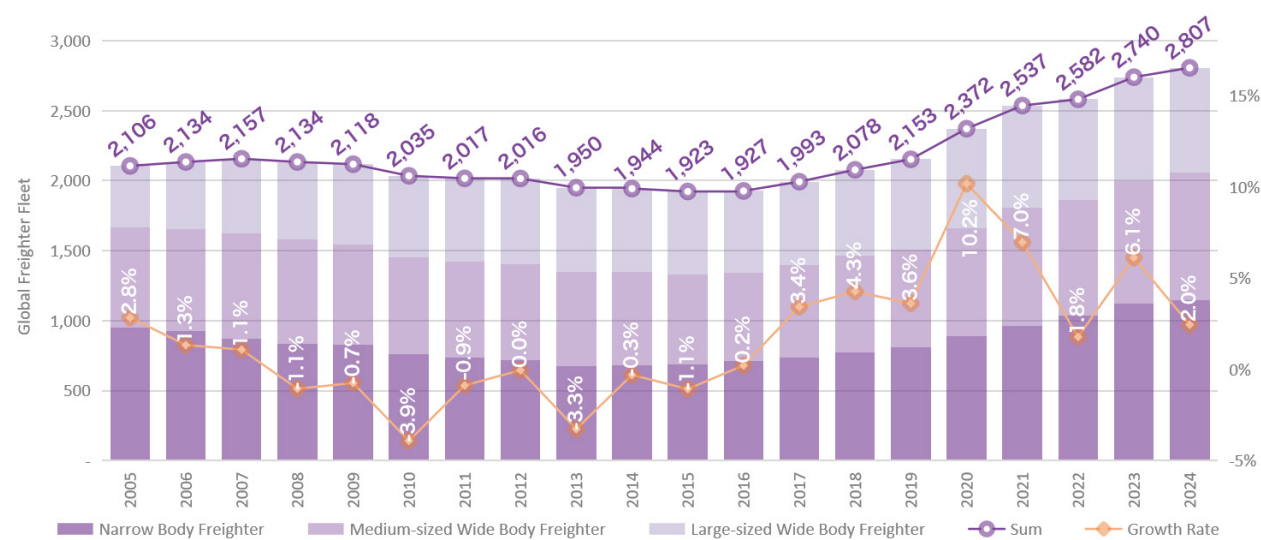
Regional Distribution of Cargo and Mail Throughput at Civil Aviation Airports in 2024



4 Historical Development of the Global Cargo Aircraft Fleet

From 2002 to 2007, the global cargo aircraft fleet grew from 2,026 to 2,157, with a compound annual growth rate (CAGR) of just 1.3% over the six-year period, indicating slow growth. Between 2008 and 2015, the number of cargo aircraft worldwide showed a year-on-year decline, with an eight-year CAGR of -1.5%. Notably, in 2010 and 2013, the year-on-year growth rates dropped significantly, reaching -3.9% and -3.3%, respectively. From 2017 to 2024, the global cargo aircraft fleet experienced relatively rapid growth, with an eight-year CAGR of 5.0%. Particularly in 2020 and 2021, following the outbreak of the pandemic, growth rates surged to 10.2% and 7.0%, respectively, reflecting accelerated expansion. However, by 2024, the growth rate of cargo aircraft declined to 2.0%.

Trends in the Global Cargo Aircraft Fleet (2005–2024)



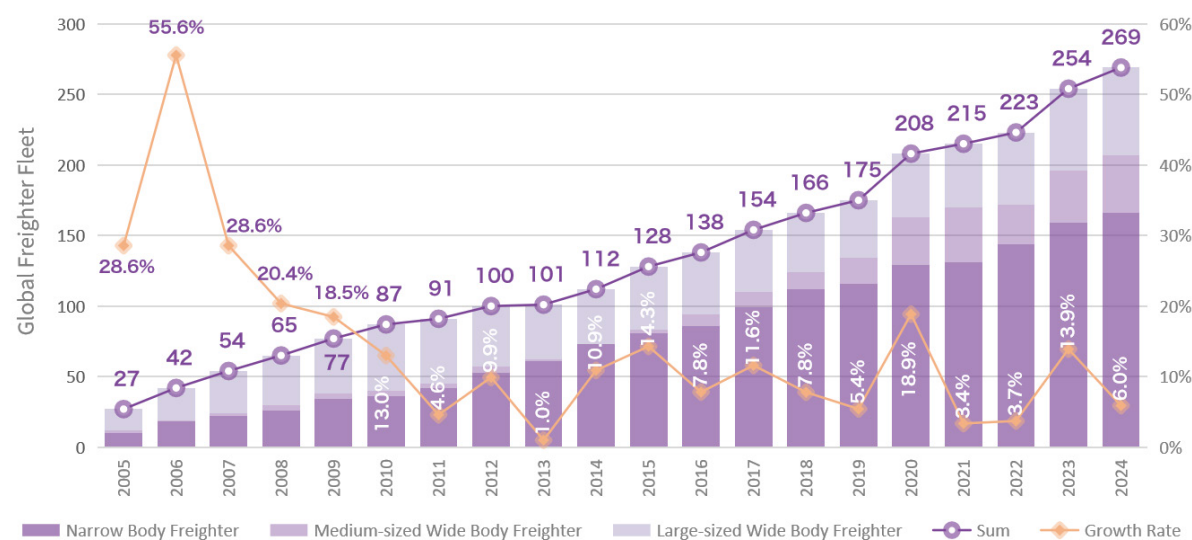
Source: COMAC, Cirium

As of the end of 2024, the global cargo aircraft fleet totaled 2,807 units (including both active and stored aircraft), comprising 1,146 narrow-body freighters, 909 medium wide-body freighters, and 752 large wide-body freighters.

5 Historical Development of China's Cargo Aircraft Fleet

In 2002, following the restructuring of China's three major airlines, carriers adopted a "passenger-cargo synergy + dedicated cargo" strategy, establishing specialized freight companies and cargo divisions to develop air cargo and express delivery services. Concurrently, several private logistics enterprises focused on building global air cargo networks to operate dedicated freighter fleets. This development model—combining "state-owned and private enterprises" with "passenger-cargo synergy and dedicated cargo operations"—has driven sustained growth in China's air cargo market. Since then, China's all-cargo aircraft fleet has expanded rapidly. From 2005 to 2024, the fleet achieved a remarkable 20-year compound annual growth rate (CAGR) of 12.2%.

Trends in China's Cargo Aircraft Fleet (2005–2024)



Source: COMAC, Cirium

From 2008 to 2011, affected by the global economic downturn, the growth rate of China's freighter fleet slowed down, but the overall size continued to expand. Encouraged by the aviation logistics development policies of the State Council, the Civil Aviation Administration of China (CAAC), and local governments, the demand for air logistics in China continued to rise, driving the freighter fleet to grow accordingly. From 2014 to 2019, the freighter fleet experienced another period of sustained and significant growth, with an average annual compound growth rate of approximately 9.3%.

From 2020 to 2021, as the passenger market remained sluggish due to the ongoing impact of the pandemic while cargo demand further increased, the number of dedicated freighters (including temporarily converted freighters) continued to rise. Notably, in 2020, the year the pandemic first emerged, the growth rate of dedicated freighters reached 18.9%. The growth slowed in 2021 and 2022, with annual growth rates of 3.4% and 3.7%, respectively. In contrast, 2023 saw a sharp increase of 13.9%, followed by a slowdown to 6.0% in 2024.

By the end of 2024, there were 235 active freighters in mainland China, consisting of 142 narrow-body freighters, 59 medium wide-body freighters, and 34 large wide-body freighters. From 2005 to 2024, a total of 1,115 freighters were retired worldwide, including 596 narrow-body freighters, 257 medium wide-body freighters, and 262 large wide-body freighters.



6 Global Freighter Retirements

From 2005 to 2024, a total of 1,115 freighters were retired worldwide, including 596 narrow-body freighters, 257 medium wide-body freighters, and 262 large wide-body freighters.

Among the global narrow-body freighter fleet, 568 retired narrow-body freighters had an average retirement age of 37.5 years. Of these:

- 387 (68.1%) were retired between 33 and 42 years of age.
- 91 (16.0%) were retired before 33 years of age.
- 90 (15.8%) were retired after 42 years of age.

Global Narrow-Body Freighter Retirements (2005–2024)



Source: COMAC, Cirium

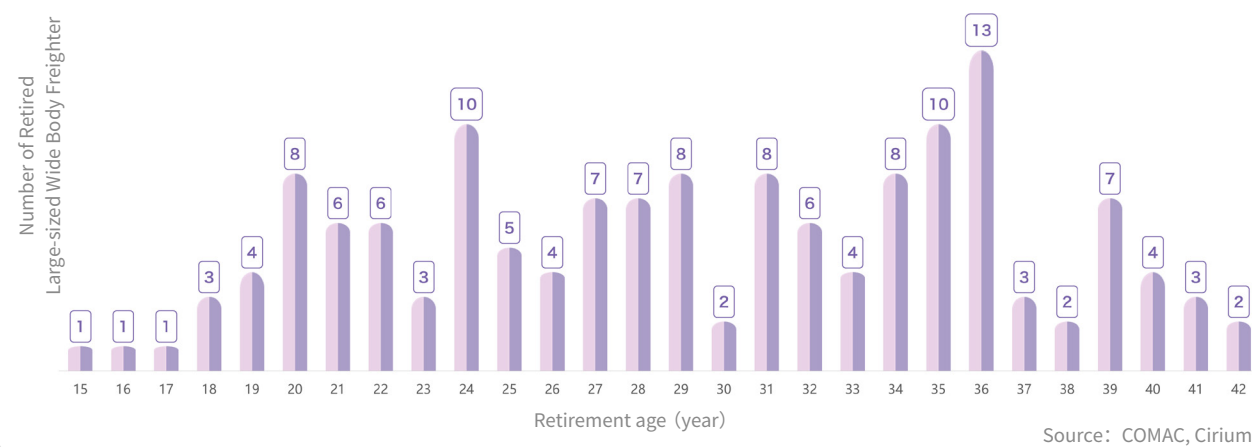
In the global medium wide-body freighter fleet, a total of 313 aircraft have been retired with an average service life of 31.4 years. Analysis reveals that 214 units (68.4% of the total) were retired between 22 to 35 years of service, while 21 aircraft (6.7%) were decommissioned before reaching 22 years of operation. Additionally, 78 freighters (24.9%) remained in service for over 35 years before retirement.

Global Medium Wide-body Freighter Retirement Overview (2005-2024)



The global fleet of large wide-body freighters saw 146 aircraft retired with an average service life of 29.5 years. Retirement ages for these aircraft were notably dispersed across different service periods: 64 units (approximately 43.8% of the total) were retired between 20-29 years of service, while 49 aircraft (about 33.6%) were decommissioned after 31-36 years in operation. The remaining 33 freighters (accounting for 22.6%) were retired at various other service ages, demonstrating a relatively wide distribution of operational lifespans among large wide-body cargo aircraft.

Global Large Wide-body Freighter Retirement Overview (2005-2024)

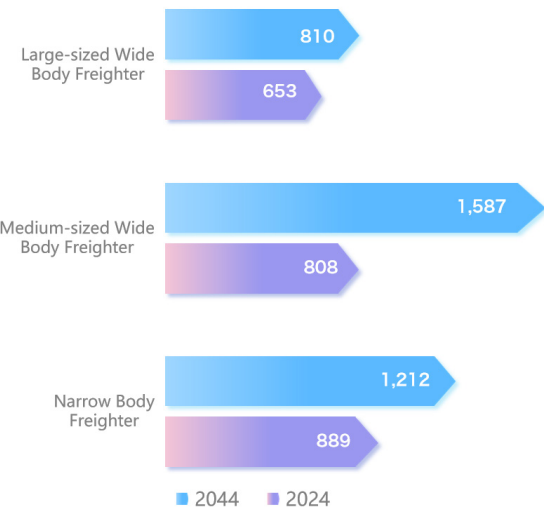


In 2024, a total of 23 dedicated freighters were permanently retired worldwide, comprising 10 narrow-body freighters, 8 medium wide-body freighters, and 5 large wide-body freighters.

7 Global Freighter Fleet Forecast for the Next Two Decades

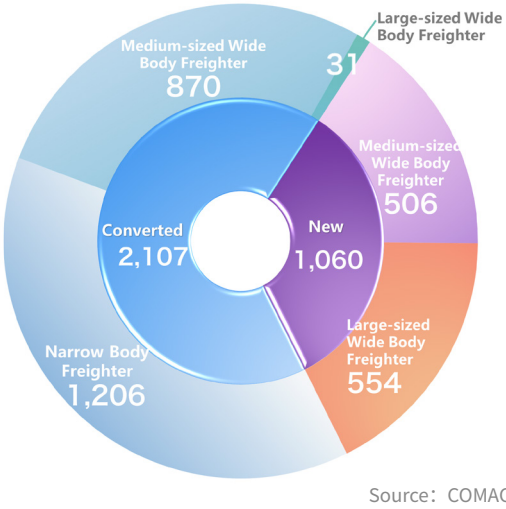
By 2044, the global freighter fleet is projected to reach 3,609 aircraft, consisting of 1,212 narrow-body freighters, 1,587 medium wide-body freighters, and 810 large wide-body freighters.

Historical and Projected Global Freighter Fleet Size



Over the next two decades, the global freighter fleet is expected to receive 1,060 newly delivered freighters, including 506 medium wide-body and 554 large wide-body freighters. Additionally, approximately 2,107 passenger aircraft are projected to enter the cargo market through passenger-to-freighter (P2F) conversions, comprising 1,206 narrow-body, 870 medium wide-body, and 31 large wide-body converted freighters.

Forecast of Global Freighter Deliveries by Type (2025-2044)



Regionally, North America remains the largest demand market for freighters, with 1,256 freighter deliveries projected over the next two decades, expanding its fleet to 1,499 units by 2044. The Asia-Pacific region (excluding China) will maintain steady growth, expecting 332 deliveries to reach a fleet size of 351 aircraft. China (including Hong Kong, Macau, and Taiwan) will demonstrate stable expansion in air cargo, with 393 new freighters entering service to achieve a 450-unit fleet. Europe will experience moderate growth, with its freighter fleet reaching 643 units. Developing regions like Latin America, the Middle East, and Africa, while having smaller cargo markets, will still see fleet expansion. Notably, Russia and the CIS countries are projected to be the only region among the eight global markets with potential fleet reduction, as their aging freighter inventory faces slow replenishment amid progressive retirements.

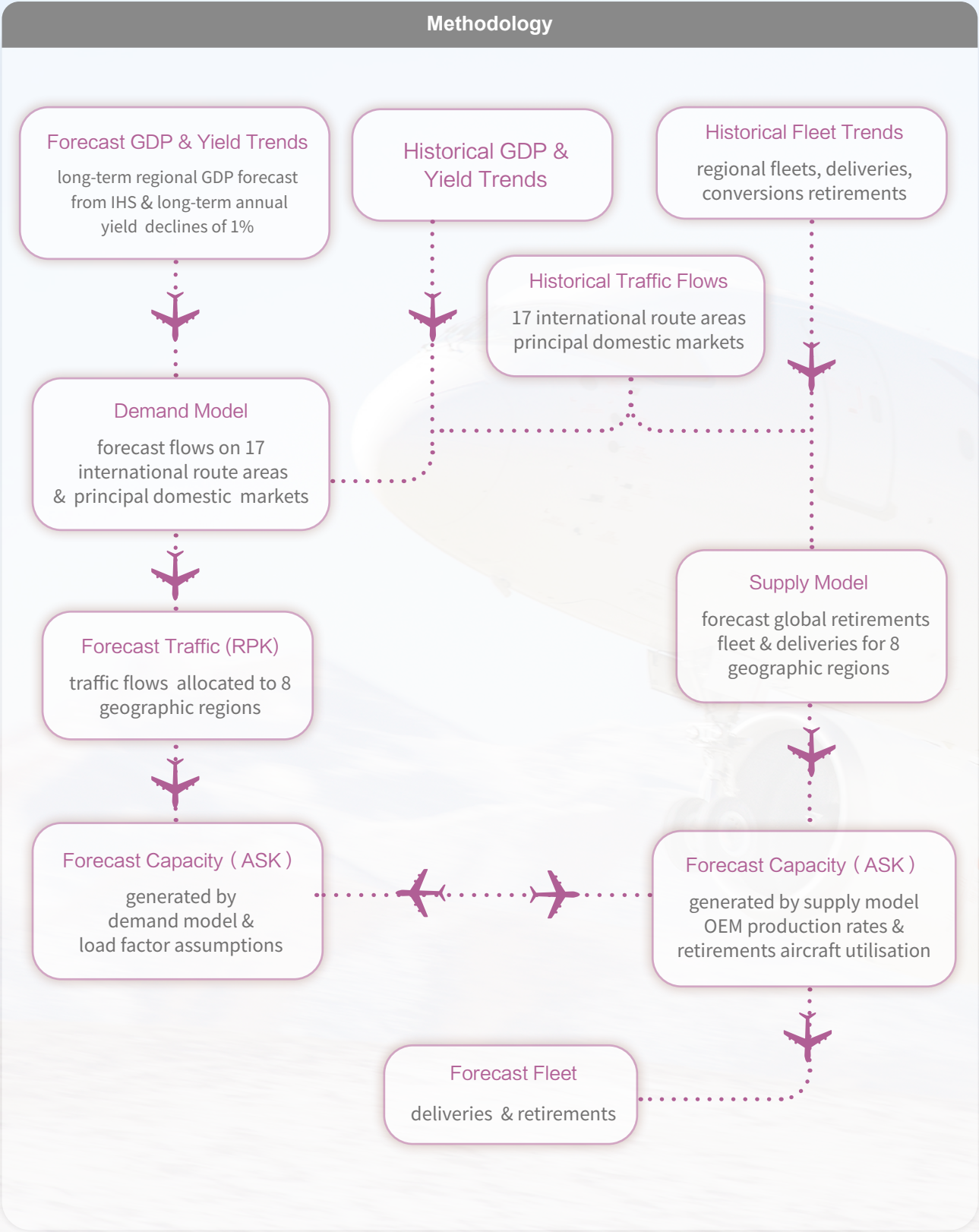


Global Freighter Deliveries by Region Over the Next Two Decades
& Freighter Fleet Sizes in 2024 and 2044



Source: COMAC, Cirium
Note: The 2024 freighter fleet data excludes parked/stored aircraft, and China's figures include Hong Kong, Macau, and Taiwan regions.

APPENDICES & DATA TABLES



| Aircraft Size Category Definition | | |
|-----------------------------------|--|--|
| | Passenger Regional Jet | Passenger Single-Aisle Jets Passenger Twin-Aisle Jets |
| Small Regional Jets | Embraer ERJ145 Bombardier CRJ100 / 200 Dornier 328Jet Embraer ERJ135/140 UAC Yak-40 | |
| Medium Regional Jets | Bombardier CRJ700 Embraer E170 / E175 Antonov An-148 BAE System 146-100 Fokker 70 | |
| Large Regional Jets | COMAC C909 UAC Superjet 100 BombardierCRJ900 / 1000 Antonov An-158 FokkerF28-1000 BAE System RJ85/RJ100 BAE System 146-200/300 | |
| Small Single-Aisle Jets | | Embraer E190 / 195 / 190-E2 / 195-E2 Airbus A319neo Airbus A220-100/300 Boeing 737 MAX 7 Airbus A318 / A319 Boeing 737-600 / 700 Boeing 717 Boeing 737-200 / 300 / 500 McDonnell Douglas DC-9 Tupolev Tu-134 UAC Yak- 42 |
| Medium Single-Aisle Jets | | Airbus A320neo Boeing 737 MAX 8 / MAX 200 COMAC C919 UAC MC-21-300 Boeing 737-800 Airbus A320 Boeing 727-200 Boeing 737-400 McDonnell Douglas MD-80 / -90 Tupolev TU-154 |
| Large Single-Aisle Jets | | Airbus A321neo Boeing 737-900ER / MAX 9 Boeing 737 MAX 10 Airbus A321 Tupolev TU-204 Boeing 737-900 Boeing 757-200 / 300 Ilyushin IL-62 |
| Small Twin-Aisle Jets | | AirbusA330-800neo/900neo Airbus A350XWB 900 Boeing 787-8 / 9 / 10X Boeing 777-200ER / LR Airbus A330-200 / 300 Boeing 767-300ER Airbus A300 Airbus A310 Airbus A340-200 / 300 / 500 Boeing 767-200 / 300 / 400 Boeing 777-200 Ilyushin IL-86 / 96 Lockheed L1011 McDonnell Douglas DC-10 / MD-11 |
| Medium Twin-Aisle Jets | | Airbus A350XWB-1000 Boeing 777-300ER Boeing 777-8 Airbus A340-600 Boeing 777-300 |
| Large Twin-Aisle Jets | | Boeing 777-9 Boeing 747-8 Airbus A380-800 Boeing 747-400 Boeing 747 Classics |

Note: Aircraft in Bold represents "In Production"

| Freighter Size Category | | |
|-----------------------------|----------------------------|---------------------------|
| Small Narrow-Body Freighter | Medium Wide-Body Freighter | Large Wide-Body Freighter |
| 727 | | |
| 737 (JT8D) | | |
| 737 (CFMI) | | |
| 737 NG | | |
| 757 | | |
| A320 | | |
| A321 | 767 | |
| An-72 | A300 | 747 |
| An-74 | A310 | 777 |
| C909 | A330 | An-124 |
| BAE 146 | A340 | IL-96 |
| CRJ100/200 | DC-10 | MD-11 |
| DC-8 | IL-76 | |
| DC-9 | | |
| E195 | | |
| IL-62 | | |
| MD-80 | | |
| Tu-204 | | |
| Yak-40 | | |

| Global RPK Traffic Forecast Summary | | | | | | |
|---|-------|--------|--------|--------|--------|----------------|
| ICAO Routes | 2024 | 2029 | 2034 | 2039 | 2044 | 2024-2044 CAGR |
| International RPK (Billions) | | | | | | |
| Between North America and Central America/Caribbean | 123 | 143 | 171 | 203 | 241 | 4.3% |
| Between and within Central America and the Caribbean | 14 | 16 | 19 | 22 | 26 | 5.7% |
| Between Bermuda, Canada, Mexico and the United States | 157 | 169 | 186 | 205 | 225 | 2.2% |
| Between North America/Central America/Caribbean and South America | 152 | 211 | 251 | 299 | 356 | 4.6% |
| Local South America | 24 | 33 | 45 | 61 | 82 | 4.5% |
| Local Europe | 906 | 1,070 | 1,193 | 1,310 | 1,396 | 2.7% |
| Local Middle East | 47 | 60 | 71 | 81 | 88 | 3.6% |
| Local Africa | 50 | 57 | 69 | 96 | 130 | 5.4% |
| Between Europe and Middle East | 291 | 420 | 501 | 587 | 677 | 4.1% |
| Between Europe/Middle East and Africa | 321 | 452 | 590 | 794 | 981 | 6.3% |
| North Atlantic | 800 | 962 | 1,069 | 1,181 | 1,289 | 2.4% |
| Mid-Atlantic | 178 | 203 | 227 | 245 | 256 | 1.8% |
| South Atlantic | 113 | 161 | 192 | 227 | 266 | 3.8% |
| Local Asia/Pacific | 819 | 1,651 | 2,186 | 2,822 | 3,569 | 6.9% |
| Between Europe/Middle East/Africa and Asia/Pacific | 1,029 | 1,609 | 2,090 | 2,644 | 3,311 | 6.5% |
| North/Mid-Pacific | 328 | 597 | 697 | 818 | 954 | 4.0% |
| South Pacific | 64 | 104 | 123 | 146 | 172 | 3.9% |
| Total International | 5,416 | 7,916 | 9,676 | 11,742 | 14,020 | 4.8% |
| Domestic RPK (Billions) | | | | | | |
| Europe | 166 | 209 | 242 | 275 | 316 | 3.7% |
| Japan | 77 | 83 | 87 | 90 | 94 | 1.0% |
| China | 893 | 1,370 | 1,821 | 2,325 | 2,859 | 6.3% |
| US | 1,290 | 1,442 | 1,537 | 1,644 | 1,750 | 2.3% |
| Other | 756 | 1,118 | 1,421 | 1,790 | 2,227 | 4.2% |
| Total Domestic | 3,183 | 4,223 | 5,108 | 6,125 | 7,245 | 4.2% |
| World Total | 8,599 | 12,139 | 14,784 | 17,866 | 21,265 | 4.6% |