International Civil Aviation Organization

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WORKING PAPER

SEVENTH WORLDWIDE AIR TRANSPORT CONFERENCE (ATCONF/7)

Montréal, HQ, 16 to 20 November 2026

Agenda Item 1: Overview of developments in the field of air transport
1.1: Developments and progress since the Sixth Worldwide Air Transport Conference (ATConf/6)

SUPPORTING A ROBUST SUPPLY CHAIN TO ENABLE INDUSTRY GROWTH

(Presented by the International Coordinating Council of Aerospace Industries Associations (ICCAIA) and International Business Aviation Council (IBAC)))

EXECUTIVE SUMMARY

This paper presents the critical economic importance of a robust and efficient global aviation supply chain, particularly from the perspective of aircraft and engine manufacturers, suppliers and Approved Maintenance Organizations (AMOs) and how current supply chain disruptions are constraining the economic development of air transport. Delays in aircraft delivery reduce airlines' capacity to grow routes and serve emerging markets, particularly in developing and least-developed countries. Extended maintenance cycles increase operating costs, making air travel unaffordable in price-sensitive regions. The paper highlights the challenges and opportunities within the aviation supply chain, particularly in the context of recent global disruptions, and proposes actions to remove supply chain barriers, accelerate fleet modernization, and enable the economic and social benefits of air transport for all.

Action: The conference is invited to:

a) encourage States to adopt policies that:
   i. support a robust supply chain for the aviation industry, particularly in areas where there is competition with other sectors;
   ii. remove procedural and economic barriers to facilitate the free flow of critical aviation components and materials;and
   iii. ensure access to critical elements and minerals, including increased end-of-life recycling efforts;

b) encourage States to support the development, growth and mutual recognition of Approved Maintenance Organizations (AMOs), including through appropriate certification recognition mechanisms, ensuring that AMO capacity and certification pathways keep pace with growing maintenance demands and new aircraft technologies, while avoiding unnecessary duplication of certification processes;

c) ask the International Civil Aviation Organization (ICAO) to establish supply chain resilience as a priority, integrating supply chain metrics into its ongoing air transport economic monitoring and

[1] English, Arabic, Chines, French, Russian and Spanish versions provided by ICCAIA and IBAC

policy guidance, as part of its holistic view and prioritisation of the work programme including as new requirements arise; d) ask ICAO to include the continued functioning of supply chains in its work on crisis response; e) request ICAO to ensure that supply chain resilience remains a visible, accountable strategic issue on the ICAO Council and future Air Transport Conferences agendas, and that annual State of the Industry reporting provides visibility on status and concerns.	
Strategic Goal:	This working paper relates to Strategic Goal: *The Economic Development of Air Transport Assures the Delivery of Economic Prosperity and Societal Well-Being for All*.
Financial implications:	N/A
References:	ATAG *Waypoint 2050* – Third edition; ATAG *Aviation: Benefits Beyond Borders*; WTO Agreement on Trade in Civil Aircraft (ACTA, 1979); IATA & Oliver Wyman (Oct 2025): *"Reviving the Commercial Aircraft Supply Chain"*.

1. INTRODUCTION

1.1 Whilst air transport surpassed pre-Covid-19 traffic levels in 2025, aviation has been among the hardest-hit sectors and the aftershocks caused by the crisis continue to be felt in different areas across the sector. Supply chain disruptions continue to hamper the production of aircraft, engines and critical components, delaying delivery of more fuel-efficient aircraft and therefore fleet renewal and modernisation. Geopolitical shifts, conflicts and tariff challenges have further intensified these pressures driving up costs.

1.2 New aircraft and aircraft parts delivery shortages have become a capacity constraint to efficiently satisfy growing demand. Forecasts, both from the manufacturers and from specialist organisations like Cirium, predict that there will be demand for over 40,000 new aircraft in the next 20 years; partially for replacement, partially for growth. Approximately 100,000 new engines will therefore be needed in the same period. According to the International Air Transport Association (IATA), global commercial aircraft order backlogs have reached a record high of over 17,000 aircraft, equivalent to roughly 12 years of current manufacturing capacity. Driven by strong travel demand, production delays, and supply chain constraints, the wait time between placing an order and delivery now spans well into the 2030s. Similar constraints apply to the business aviation sector.

1.3 Persistent shortages of critical aircraft parts, components and engines (including limited supply of rare earth elements), competition for electronic components with new markets, the length of time for certification (including parallel or multiple certification processes for Approved Maintenance Organizations (AMOs)), rising costs, labour shortages (both in industry and regulatory authorities), and manufacturing bottlenecks are hindering both new aircraft production and maintenance operations.

1.4 Those supply chain constraints translate into measurable economic costs to States, airlines, manufacturers and passengers. IATA estimates the direct cost to the global airline industry at more than USD 11 billion in 2025 alone in excess fuel cost (approximately USD 4.2 billion), additional maintenance costs (USD 3.1 billion), increased engine leasing costs (USD 2.6 billion) and surplus inventory holding costs (USD 1.4 billion).

2. SUPPLY CHAIN DISRUPTIONS (AIRCRAFT PARTS, LABOUR SHORTAGES, ACCESS TO CRITICAL ELEMENTS AND TARIFFS)

2.1 Aircraft are complex systems integrating thousands of large and small components, coming from a range of suppliers spread across the globe that also rely on their own supply chains. Some more specialised components are made by small and medium-sized enterprises which focus on high-end aerospace manufacturing, sometimes for distinct parts (for example, there are entire companies which only manufacture aircraft-grade springs, or 3D-printed brackets for aircraft seats). While manufacturers struggle to scale production to meet strong demand, AMOs are particularly affected by limited availability of essential parts.

2.2 The Covid-19 pandemic had significant impacts on aircraft technology development and the entry into service of new aircraft models. Supply chain disruptions created severe challenges, contributing to production and delivery delays, some of which continue to this day.

2.3 Delays impact both manufacturers and airlines, with airlines flying older-generation aircraft for longer than planned, impacting fleet-wide efficiency. Aging fleets and component reliability issues drive up maintenance expenses, while parts shortages and longer maintenance cycles increase the risk of flight cancellations and service interruptions, affecting both customer satisfaction and airline revenues.

2.4 In addition, there is a challenge in developing AMO capacity globally to ensure appropriate maintenance capability for the servicing of the newer high-technology engines, whose maintenance intervals may differ from older types, and of new developing sectors like drones and Advanced Air Mobility (AAM) which need a modified approach to that of traditional civil aviation.

2.5 Avionics suites are becoming more complex in design, requiring the complete recertification and replacement of entire integrated systems rather than individual line replaceable units. This leads to challenges with multiple mandatory new requirements impacting testing and certification programs and timelines.

2.6 The shortage of skilled labour (such as engineers, technicians), as referenced in ICCAIA ATConf/7-WP/92, further compounds these challenges, slowing production ramp-up and extending maintenance turnaround times.

2.7 At the same time, geopolitical conflicts and instability continue to disrupt global aviation, affecting air routes, airports, increasing insurance and security costs, and limiting the availability of essential materials and components.

2.8 Scarcity of and challenges to access critical elements can lead to significant supply chain disruptions. As an example, the supply of titanium is highly concentrated, and is currently transitioning due to geopolitical risks, feedstock scarcity, and supply chain vulnerabilities. Because of its high strength-to-weight ratio and heat resistance, titanium is critical for modern airframes (engine pylons, landing gear), and engine fan blades, and disks. Rare earth elements (REEs) and alloys are also indispensable to the aerospace industry, as they provide the heat resistance, lightweight strength, and magnetic properties required for high-performance aircraft. However, approximately 60 to 70% of global rare earth elements production is concentrated in one geographic region, creating single-point-of-failure risk. Silicon chips are also key components where the aviation industry is facing competition and higher demands by other sectors (consumer electronics, automotive sector).

2.9 Ensuring the security and sustainability of supply of those elements is essential, including for older aircraft where there is a lack of spare parts often due to obsolescence and a lack of availability of parts from retired, dismantled aircraft. Broader application and expedited approval of supplemental type certificates (STCs) and use of 3D printing could also help overcome those challenges. Manufacturers are investing heavily in circular economy and recycling to lower the risks associated to essential materials and components access in times of global disruptions.

2.10 Tariffs (taxes or charges on imported goods) can also have a significant impact on the aviation sector by raising production costs for aircraft manufacturers, particularly pertaining to materials or derivative parts, and delaying supply-chain throughput. In general, much of the civil aviation sector is covered under the zero-tariff framework governed by the World Trade Organization (WTO) *Agreement on Trade in Civil Aircraft*, a 1979 pact that eliminates import duties on civil aircraft, engines, and parts across participating nations. However, not all States are covered, and it is difficult to ensure coverage deep in the supply chain of, for example, avionic components. Closer collaboration between ICAO and the World Customs Organisation (WCO) could help avoid import delays and unnecessary costs.

3. CONCLUSION

3.1 All of the factors above contribute to increased operating expenses amidst strong demand for air travel. Supply chain issues are causing a long tail of disruption for: manufacturing of aircraft and engine parts; access to recycled or reused parts for maintenance; labour shortages; limited access to critical elements and materials. Global disruptions and tariffs hinder productivity, efficiency, innovation and potentially, the long-term growth of the sector.

3.2 They also underscore the need for further action and coordination at the international level to ensure a tariff-free trading environment, address the remaining supply chain challenges to ensure timely delivery of the latest generation of fuel-efficient aircraft and develop additional AMO capacity to service growing maintenance needs of the growing global fleet.

3.3 The pressure is rising on Original Equipment Manufacturers (OEMs) to implement a number of related system changes without a holistic approach to prioritization and change, which is impacting certification and delivery capability. Some changes are required nationally, others at the International Civil Aviation Organization (ICAO) level. Although many of these systems are extremely beneficial and are supported by industry, dealing with these in a piecemeal manner will be costly and will hinder implementation. The industry would benefit from a more holistic and coordinated view of future evolution across all systems and requirements, with appropriate prioritization and sequencing, to avoid continuous and costly retrofit programmes that can disrupt production, consume limited engineering and certification capacity, and delay the delivery of new aircraft.

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