



WORKING PAPER

**SEVENTH WORLDWIDE AIR TRANSPORT CONFERENCE
(ATCONF/7)**

Montréal, HQ, 16 to 20 November 2026

**Agenda Item 4: Emerging technologies, new business models and other associated aspects
4.2: Support and economic opportunities of access to aviation cleaner energies**

**ENSURING AIR TRANSPORT CONNECTIVITY, ECONOMIC
DEVELOPMENT AND RESILIENCE IN A CHANGING CLIMATE**

(Presented by the International Coordinating Council of Aerospace Industries Associations (ICCAIA), Airports Council International (ACI), Aviation Services Association (ASA World), Air Transport Action Group (ATAG), Civil Air Navigation Services Organisation (CANSO), International Air Transport Association (IATA) and International Business Aviation Council (IBAC))

EXECUTIVE SUMMARY

This paper emphasizes the importance of prioritizing climate adaptation and resilience in the aviation sector to ensure continuity of operations and connectivity which lead to the sustainable economic development of States and regions. Climate events are increasingly affecting aviation connectivity, technologies, infrastructure and operations, as well as the aviation workforce and passengers. They will continue to have greater impact in the short, medium, and long term. This paper underscores the need for accelerated and intensified action at a global level, and for the integration of climate adaptation and resilience into State risk management, infrastructure and investment planning and frameworks.

Action: The conference is invited to:

- recognize the urgency and critical importance of aviation climate adaptation and resilience in ensuring the long-term safety, security, operational and economical sustainability of international air transport;
- encourage States to include the aviation sector's climate resilience and adaptation into their overall risk, management, infrastructure and investment planning and frameworks; and
- request ICAO to convene a high-level event dedicated to this topic, following the 44th Session of the ICAO Assembly.

Strategic Goal:

This working paper relates to Strategic Goals: *The Economic Development of Air Transport Assures the Delivery of Economic Prosperity and Societal Well-Being for All and Aviation is Environmentally Sustainable.*

Financial implications:

N/A

¹ English, Arabic, Chinese, French, Russian and Spanish versions provided by ICCAIA.

<i>References:</i>	EACCA Climate Adaptation Guidance_online 02122025.pdf https://www.icao.int/sites/default/files/Meetings/a42/Documents/WP/wp_560_en.pdf https://www2023.icao.int/Meetings/anconf14/Documents/WP/wp_053_en.pdf ACI Europe, Adapting Aviation Changing Climate_final.pdf ACI APAC & MID, Climate Risk Assessment Guideline EASA Action Plan on climate adaptation and resilience
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1. INTRODUCTION

1.1 The aviation industry is a key driver of global economic and social development; connecting the world in a unique way, creating employment, facilitating trade, enabling tourism, and supporting sustainable development all around the world. For further information, see information paper ATConf/7-WP/194 by ATAG. The path towards sustainable aviation requires not only robust sectoral mitigation measures, but also decisive action to adapt to and remain resilient against climate effects, to maintain global connectivity and safeguard the socio-economic benefits of air travel.

1.2 Major climate effects and extreme weather events, such as sea-level rise, higher average and extreme temperatures, desertification, changing precipitations and icing conditions, increased intensity of storms, turbulences, and changes in wind patterns, have already caused major disruptions both in the air and on the ground, causing safety risks, changes in aircraft performance, flight delays, runway shutdowns, infrastructure failures, power shortages, airport access challenges, adverse impacts on the health and safety of passengers and aviation personnel, and economic damage.

1.3 For example, the prolonged closure of Porto Alegre International Airport following severe flooding in 2024 disrupted passenger and cargo operations, resulting in significant economic losses for airlines, airports and the regional economy². According to a EUROCONTROL study, a single day of closure due to flooding could cost medium-sized airports up to €3 million and major hubs approximately €18 million in diverted flights and clean-up efforts³. No region of the world is immune to the growing operational and economic impacts of climate-related hazards.

2. CLIMATE ADAPTATION AS A SYSTEM-WIDE AND CROSS-CUTTING CHALLENGE

2.1 Climate resilience is a system-wide challenge affecting the whole aviation ecosystem including airports, airlines, pilots, original equipment manufacturers (OEMs), air navigation service providers (ANSPs), business aviation, regulators, among other stakeholders. It is also a cross-cutting issue that inherently extends beyond environmental policy, with implication on airport planning and infrastructure, air navigation services, aircraft operations, safety, security, emergency preparedness and response, capacity, facilitation, workforce, economic sustainability and continuity of air transport, which requires proactive and collaborative action.

2.2 Airports operations and infrastructure are already impacted, and airports have different levels of maturity and readiness capabilities in managing climate and disaster risks, depending on the local circumstances. Many airports are already taking action to strengthen their resilience through the implementation of prioritized and tailored adaptation strategies, such as integrating resilience practices into infrastructure planning, design, construction and operations.

² ICAO 42nd Assembly, Working Paper 243 presented by Brazil and supported by 10 LACAC Member States, [wp_243_en.pdf](#)

³ [EUROCONTROL study on climate change risks for European aviation | EUROCONTROL](#)

2.3 Airlines are also increasingly exposed to the climate change impacts from more frequent and severe weather events disrupting airline operations, increasing delays and costs, and in some cases limiting aircraft performance. To enhance resilience in operations, airlines are investing in improved weather forecasting, operational flexibility, disruption management, and closer collaboration with airports and air navigation service providers.

2.4 OEMs are working on adapting aircraft designs to new climate challenges such as higher temperatures, variable air density and increased turbulence, through innovations in air conditioning systems, aerodynamic design, turbulence detection and avoidance systems and engine performance optimization.

2.5 ANSPs face the challenge of managing more complex and variable air traffic flows under increasingly unpredictable weather conditions, requiring flexible and adaptive airspace management strategies.

2.6 In this context, alongside reducing vulnerabilities through resilient infrastructure, collaborative operational frameworks can increase the aviation system resilience. Airport Collaborative Decision-Making (A-CDM) is incremental, accessible and rapidly deployable, in particular for Least Developed Countries (LDCs), Landlocked Developing Countries (LLDCs) and Small Island Developing States (SIDS). A-CDM Adverse Conditions procedures are hazard-agnostic and could be extended to the full range of climate hazards. With an airport-scope focus, Total Airport Management is also relevant to reinforce adaptation by taking into consideration potential hazards beyond the airside (e.g., access road, power supply or terminal). Adapting and deploying such frameworks would convert these existing proven tools into a global near-term adaptation measure.

2.7 Additionally, transport networks are highly interconnected, and disruptions in one part of the system often propagate across other transport modes and regions, with spillover effects well beyond the sector, and ultimately presenting a risk of impacting entire economies and communities (e.g. tourism, trade). This reinforces the need for a system-wide approach to resilience, including, but not limited to, aviation.

2.8 In this regard, the energy transition is foundational, as renewable energy systems improve energy self-sufficiency and operational continuity, which are critical for climate resilience. As climate change increasingly disrupts energy infrastructure, especially electricity networks, resilient local energy systems and storage become essential.

3. INTEGRATING AVIATION CLIMATE ADAPTATION INTO RISK MANAGEMENT, INFRASTRUCTURE AND INVESTMENT PLANNING AND FRAMEWORKS

3.1 ICAO has advanced work on climate adaptation through its Committee on Aviation Environmental Protection (CAEP), including guidance on assessment of climate-related risks and their infrastructure and operational impacts on aviation. This work highlights climate risk assessment and adaptation planning as key elements for strengthening aviation resilience.

3.2 In addition to the existing technical work, the authors of this paper support prioritizing aviation resilience and adaptation at global level and setting appropriate frameworks to safeguard critical aviation assets, with particular attention given to the circumstances and needs of developing States, with a special focus on LDCs, LLDCs and SIDS, in line with the ICAO's *No Country Left Behind* Strategic Goal. Taking a strategic and comprehensive approach will enhance the aviation sector's ability to maintain safe,

secure, and reliable connectivity worldwide, and should cover access to data, policy and planning, implementation support, financing and economic instruments.

3.3 In this context, it is imperative to recognize that there is no ‘one size fits all’ as the impacts depend on local context, exposure levels and vulnerabilities. Therefore, robust climate risk assessments and considerations should be embedded at the earliest stages of planning, across all aviation stakeholders.

3.4 Encouraging and supporting access to financing and investments related to aviation climate change resilience is essential to support the implementation of adaptation measures, by integrating aviation climate adaptation and resilience needs in infrastructure and investment plans as well as broader capital planning. This is particularly important for LLDCs and SIDS which often face disproportionately high climate risks while having limited financial and technical capacity. States, development banks, and financing institutions should recognize airports and aircraft as critical assets, that support economic and social resilience, and safeguard national and regional supply chains. Recognizing adaptation measures as value-preserving investments rather than additional costs can help unlock financing for resilience projects.

3.5 ICAO, States, and other international organizations and institutions have an important role in creating enabling conditions for adaptation investments and facilitating access to a broad range of financing instruments. This includes developing supportive policy, and regulatory frameworks that encourage investment in climate-resilient aviation infrastructure, reduce financing barriers, improve the bankability of adaptation projects, and ensure that aviation adaptation and resilience projects – including operational and digital resilience measures alongside capital infrastructure – are eligible for development finance, climate finance, and disaster-risk reduction funding mechanisms.

3.6 Finally, aviation infrastructure and assets face growing insurability challenges (e.g. affordability and availability of insurance coverage for airports, aircraft and other aviation infrastructure and assets) associated with climate-related risks. States, insurers, and financial institutions should work collaboratively to explore risk-sharing approaches, resilience incentives, and insurance solutions that maintain adequate protection for critical aviation infrastructure while encouraging adaptation investments.

4. CONCLUSION

4.1 While the industry is proactively and collaboratively addressing the pressing need for adaptation and resilience by raising awareness, promoting climate change risk assessments, and supporting the implementation of risk-based adaptation measures, the increasing frequency and severity of climate-related events are outpacing in places current adaptation efforts, and progress remains constrained by challenges including limited resources, insufficient data, and competing policy and investment priorities.

4.2 Addressing these challenges that threaten global connectivity, economic development and resilience of air transport requires a coordinated global approach, not only local or fragmented efforts. Strengthened collaboration between ICAO, States, industry and other organizations and institutions is therefore essential to progress aviation climate resilience and adaptation through the convening of a high-level event following the 44th Session of the ICAO Assembly in 2028 (i.e. triennium 2029-2031).

4.3 Proactive adaptation measures implemented today will reduce future costs, strengthen the resilience of aviation systems, support the long-term growth and socio-economic benefits of air travel, and enhance the sector's ability to continue serving communities and economies safely and efficiently in the decades ahead.