

Presentation

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Air transport management enables global economic and social development by connecting people, goods, and markets in an agile and efficient manner. Regions with sparse populations, rugged terrain, and limited surface-transport options depend even more heavily on air services. Balancing expansion, modernization, and mitigation of environmental impacts must be a priority for public administration, airport and airline operators, authorities, and researchers, requiring solutions based on scientific evidence.

The strategic and operational challenges facing air transport now demand more finely tailored studies on integrating transport modes, developing and implementing sustainable technologies, and accommodating the sector's rapid growth. The International Civil Aviation Organization (ICAO 2024) projects that global air traffic will climb by roughly 4.3% per year over the next two decades. Key research fronts include applying artificial intelligence to air-transport operations (Patriarca *et al.* 2022; Sadou and Njoya 2023), devising solutions for sustainable aviation (Allal-Chérif *et al.* 2022), and advancing the field of advanced air mobility (Fox 2020; Schweiger *et al.* 2022).

In the context of infrastructure, the increased demand for air transport requires investments in runways, terminals, and air navigation systems. Studies on planning, modernization, and infrastructure optimization are necessary to ensure the system's capacity. Operational efficiency, in turn, is essential for the competitiveness and economic sustainability of the sector. Modernizing the occupations related to air traffic control, airport operations, and maintenance is essential to attract and retain a skilled workforce – an imperative rendered even more urgent in the post-pandemic era. Strategies to mitigate noise and local congestion are key to integrating with surrounding communities. The intersection of these elements constitutes a research frontier that demands collaboration between different areas of human expertise.

Continued research is essential to shrink aviation's carbon footprint and achieve net-zero emissions, yet significant academic challenges remain with respect to energy sources (Lau *et al.* 2024) and advances in aircraft technology and fleet composition (Abrantes *et al.* 2024). Airspace organization is likewise critical for sustainability, especially as urban air mobility (UAM) and drones are introduced (Aposporis 2024). This thematic section, "Air Transportation Systems: Infrastructure, Operations, and Environmental Integration," seeks to enrich both scholarship and practice by welcoming studies on topics ranging from the optimization of airport airside operations and physical infrastructure to air traffic management, regulatory frameworks, aviation sustainability, and the incorporation of electric vertical takeoff and landing (eVTOL) vehicles. The contributions are directly aligned with Sustainable Development Goals 9 and 13 (UN 2025), reinforcing the pursuit of a resilient and sustainable aviation system.

This thematic section grew out of the joint work of the Brazilian Air Transport Research Society (SBTA) and the Academia Cearense de Ciências Aeroespaciais (ACCAER). Through a series of scientific initiatives and meetings, both organizations stimulate research and dialogue on the educational, technological, economic, social, and environmental dimensions of air transport. The Journal of Aerospace Technology and Management hopes to deepen knowledge about the sector's challenges and propose viable solutions for a more efficient, safe, and environmentally responsible future of air transport by promoting dialogue and cooperation between sectors.

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CONFLICT OF INTEREST

Nothing to declare.

AUTHORS' CONTRIBUTION

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