



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
Economic regulatory frameworks on emerging technologies
4.1: Economic regulatory frameworks on emerging technologies**

**REALISTIC REGULATORY REQUIREMENTS FOR ADVANCED AIR
MOBILITY (AAM) AND SPACE TRANSPORT OPERATIONS IN THE
NEXT DECADE**

(Presented by Ireland on behalf of the European Union and its Member States¹
and the other Member States of the European Civil Aviation Conference²)

EXECUTIVE SUMMARY

This paper presents considerations regarding the regulatory and economic implications of the emergence of Advanced Air Mobility (AAM) and Space Transport Operations (STO) as new entrants into the aviation system. It highlights the potential for divergent national approaches, and the importance of maintaining coherent and harmonised international frameworks, building on existing International Civil Aviation Organization (ICAO) provisions. The paper suggests further work at ICAO level could usefully explore the application of existing frameworks of economic regulation to these emerging activities, while identifying areas where appropriate degrees of flexibility may support innovation without compromising other strategic objectives.

Action: The conference is invited to:

- recognise the growing relevance of AAM and STO for the global air transport system;
- acknowledge the potential need to consider the applicability of existing frameworks of economic regulation, including cost allocation and charging principles, to these emerging activities;
- encourage ICAO to further explore the interaction between these developments and existing international agreements, including Air Services Agreements (ASAs); and
- support continued work, as appropriate, building on existing ICAO provisions, to facilitate the safe, efficient and harmonised integration of these activities.

*Strategic
Goals:*

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 and Every Flight is Safe and Secure.*

¹ Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden.

² Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Georgia, Iceland, Monaco, Montenegro, North Macedonia, Norway, Republic of Moldova, San Marino, Serbia, Switzerland, Türkiye, Ukraine and United Kingdom.

<i>Financial implications:</i>	Can be met within existing resources.
<i>References:</i>	N/A

1. INTRODUCTION

1.1 Advanced Air Mobility (AAM) and Space Transport Operations (STO), as defined by the International Civil Aviation Organization (ICAO) under its cross-domain work, are rapidly emerging sectors, expected to reshape how airspace is used over the coming decade. These developments introduce new categories of airspace users, with operational characteristics, business models and system needs, that can differ from those of traditional aviation; and which will require an appropriate framework for integration of these airspace users within the existing aviation system. These developments present both opportunities and challenges for ICAO and its Member States, particularly in the context of safety, economic oversight, regulatory frameworks, and the preservation of a predictable global aviation system.

1.2 In Europe and other regions, AAM is expected initially to develop domestically, before scaling up into international operations. Early international coordination is essential to ensure interoperability and facilitate the coordinated development of these technologies. At the same time, STO are already interacting with airspace used by traditional aviation, generating operational and economic impacts, often without established cost structures or clear regulation and oversight. Emerging concepts, such as point-to-point suborbital transport, may further increase the relevance of cross-border consideration.

1.3 As these sectors mature, states and ICAO may wish to consider where existing regulatory frameworks are sufficient and where adaptations may be needed, to both support innovation (bringing economic growth benefits) or ensure boundaries or limitations (i.e. “red lines”) to maintain safety, fairness, and the integrity of existing aviation frameworks. Such considerations could usefully build on existing ICAO provisions and regional or national guidance, which establish mechanisms for the coordination of activities potentially hazardous to civil aviation and airspace management, or third parties on the ground.

1.4 Existing regulatory gaps may require updates to ICAO Annexes to adequately address AAM operations, particularly with regard to low-altitude operations and autonomous systems.

1.5 This working paper proposes that ICAO undertake structured work over the next years to determine regulatory and economic adaptations needed to facilitate safe, sustainable and equitable growth of AAM and STO, without compromising the existing aviation system. The regulatory and economic development work should be coordinated with work already started by the recently established ICAO’s Global STO Taskforce, which is focused on the safe and harmonised integration of STO in global airspace.

2. DISCUSSION

2.1 Emerging operational models and their implications

2.1.1 AAM and STO introduce operational concepts that differ significantly from traditional aviation. AAM operations may involve low-altitude operations, autonomous or remotely piloted aircraft, and high-frequency short-range services. STO, by contrast, are typically trajectory-based and episodic in nature involving launch windows and temporary airspace closures that can affect large geographic areas. These two domains have in common the need for dynamic airspace allocation management that accounts

for new constraints for integration into the air traffic management (ATM) system. Consideration should for instance be given to autonomous AAM operations, which create new demands on airspace management, economic regulation and oversight (for example operator licensing and consumer protection), and regulatory coordination.

2.1.2 Maintaining a high degree of international consistency for international AAM and STO operations may be important in order to avoid fragmentation, safeguard interoperability, and ensure a predictable environment for all airspace users. In this context, existing ICAO mechanisms may provide a valuable basis for addressing these challenges.

2.2 **Economic oversight, and cost considerations**

2.2.1 STO already create operational impacts on air navigation service providers (ANSPs) and airspace users, particularly when launches or re-entries require rerouting or temporary airspace segregation. While such impacts are currently managed through established operational procedures, associated costs may not be recovered through established mechanisms, raising questions of fairness and economic sustainability.

2.2.2 Similarly, AAM operations may require development of new physical infrastructure – such as vertiports, charging stations or dedicated operational environments: whose financing and cost-recovery models remain unclear. AAM operations may also require digital infrastructure to support new services, providers, and processes: whose economic viability and cost efficiency depend significantly on their ability to operate seamlessly across international markets.

2.2.3 ICAO and state-level economic policies will need to evolve to address: cost allocation principles for STO-related airspace impacts; charging frameworks for AAM infrastructure and services; avoidance of market distortion between traditional aviation and emerging operators; and transparency and predictability in economic oversight. In this context, it may be useful to explore how existing ICAO economic policies and principles could be applied or further developed.

2.2.4 These issues must be addressed early to prevent fragmented national approaches that hinder global harmonisation.

2.3 **Regulatory flexibility and mechanisms to enable innovation**

2.3.1 AAM and space transport technologies are advancing rapidly, and overly rigid regulatory frameworks could impede innovation. It may also be important to ensure that any degree of flexibility remains consistent with the overall stability and integrity of the aviation system. ICAO must therefore identify areas where existing Standard and Recommended Practices (SARPs) and guidance are sufficient, temporary or experimental frameworks may be appropriate and new or supplementary instruments be required.

2.3.2 Regulatory sandboxes for AAM can provide controlled environments for testing innovative technologies and concepts, while enabling regulators to assess risks, gather operational experience and refine regulatory frameworks through real-time feedback.

2.4 **Implications for Air Services Agreements (ASAs) and international treaty oversight**

2.4.1 ASAs form the legal foundation for scheduled international air services, defining traffic rights, market access, and the conditions under which airlines may operate between States. These treaties were drafted with conventional, crewed aircraft in mind, and their application to emerging

technologies – particularly uncrewed AAM cargo operations – remains uncertain. Not all AAM operations will require international oversight but for those operations where international regulation and frameworks need to be applied, common approaches, interoperability and market access transparency will be important.

2.4.2 As AAM capabilities continue to develop and expand into more frequent, cross-border and complex (including uncrewed) operations, new operational models will emerge that may not fit within traditional treaty definitions or require extra clarification with regards to existing agreements. For example, foreign owned uncrewed aircraft transporting cargo regularly within another State's territory, in functional terms could resemble scheduled 9th freedom operations yet it is unclear whether they would fall under the scope of an ASA in the same way as a small, crewed aircraft performing the service. Key uncertainties include whether an unmanned aircraft system (UAS) conducting cross-border cargo delivery constitutes an air service under existing ASAs; whether such operators require traffic rights negotiated through ASAs; how ownership and control provisions apply to non-traditional operators; and whether scheduled/non-scheduled distinctions remain meaningful for automated, high-frequency operations.

2.5 Treaty gaps for Space Transport Operations (STO)

2.5.1 ICAO Annex 11 - *Air Traffic Services*, Standard 2.19 requires that states coordinate on STO, as uncoordinated operations are hazardous to aviation, though the means, timing etc. are not clear. Additionally, as space transport vehicles are not considered aircraft, their use of airspace is addressed through coordination mechanisms rather than a unified legal regime. There are other complex aspects of the international situation to consider: the Chicago Convention establishes State sovereignty over airspace above national territory, but no state may exercise sovereignty over the high seas (air traffic services (ATS) are provided through delegated responsibilities). At present, space operations are governed by separate international legal instruments, assigning responsibilities to launching States.

2.5.2 While established ICAO provisions provide mechanisms to manage the impact of STO on aviation through airspace management and coordination processes, further guidance or clarification could support states in addressing the evolving interface between aviation and space activities, including regulatory, operational and economic dimensions.

2.6 Defining regulatory 'red lines' to protect system integrity and maintain key principles

2.6.1 While innovation should be supported, ICAO and its Member States must also define clear boundaries to ensure that emerging industries do not compromise the principles that underpin global aviation. These may include: preservation of safety as the overriding priority; protection of equitable access to airspace; avoidance of economic discrimination and unfair competitive advantage; ensuring that new entrants contribute fairly to the costs they impose; maintenance of interoperability and predictability across borders; and minimisation of disruption to existing airspace users through adequate and smart traffic management processes.

3. CONCLUSION

3.1 AAM and STO represent transformative developments in global aviation. By undertaking structured work over the next few years, and building on existing ICAO provisions and guidance, and the ongoing work of existing working groups, ICAO can support Member States to identify appropriate regulatory flexibilities, define necessary boundaries and develop economic frameworks that support sustainable growth.

3.2 The conference is asked to encourage Member States to contribute actively to shaping the future regulatory landscape for AAM and STO, in accordance with the actions in the executive summary and through further examination of the issues raised in this paper.

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