



International Civil Aviation Organization

WORKING PAPER

A42-WP/490

EX/221

25/8/25

(Information paper)

English only

ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 16: Environmental Protection – International Aviation and Climate Change

INTERNATIONAL TEST ARENA FOR ZERO AND LOW EMISSION AVIATION

(Presented by Norway)

EXECUTIVE SUMMARY

To accelerate the transition of the sector, the Norwegian Government, through the Civil Aviation Authority Norway (CAA Norway) and the State airport operator and air navigation service provider Avinor, has launched an International Test Arena for Zero and Low Emission Aviation. The initiative aims to foster innovation through real-world testing of new and innovative technologies in an aviation ecosystem. The arena spans the Regulatory Sandbox concept developed in cooperation with the European Union Aviation Safety Agency (EASA) and Avinor's 43-airport network with related infrastructure, as well as air navigation services. The International Test Arena will support diverse technologies such as electric, hybrid-electric, and hydrogen-powered aircraft, including eVTOLs. It offers manufacturers, operators and other key stakeholders a structured framework for demonstration and learning. With Norway's long distances, challenging topography and reliance on aviation, the arena is a proving ground for sustainable air mobility. It should improve national and international connectivity, while also supporting energy transitions and encouraging innovation across transport and infrastructure sectors.

<i>Strategic Goals:</i>	This working paper relates to the Strategic Goal <i>Aviation is Environmentally Sustainable</i>
<i>Financial implications:</i>	N/A
<i>References:</i>	Norwegian Government (2023) National Aviation Strategy for Norway weblink Norwegian Government (2024) National Transport Plan 2025-2036 weblink Norwegian Government (2024) National Transport Plan 2025-2036 English summary weblink Norwegian Government (2025) State budget 2025 weblink Norwegian Government (2025) Drones and New Air Mobility weblink

1. INTRODUCTION

1.1 In pursuit of reducing emissions from aviation, while maintaining or improving our mobility capabilities in our long-stretched and topographically challenging country, the Norwegian Government is assessing different technology pathways. The key purpose is to contribute to accelerating the transition towards zero and low emission aviation, with an aim to introduce commercial zero or low emission aircraft in Norway as soon as viable technology is available and relevant. Norway is in a strong position to be promoting and supporting the introduction of these technologies due to our high dependency on aviation for both domestic and international travels and wide network of city pairings and regional air connections where commuter and regional size aircraft can play an important part.

1.2 With Norway's broad experience in decarbonizing transport through all electric, hybrid-electric and hydrogen-based solutions in the road and maritime sectors, there is significant expertise available for cross-sectorial learning and insights on the use of support mechanisms and policies to support transitional activities. The Norwegian Government has detailed the ambition to accelerate the transition to zero and low emission aviation in the National Aviation Strategy (2023), the newly released white paper on Drones and New Air Mobility (2025), and prioritized 1 billion NOK to the objective in the National Transport Plan 2025-2036.

1.3 Funding is provided through the State Budget, and to operationalize the ambitions expressed from the Government, the Civil Aviation Authority of Norway (CAA Norway) and State-owned Avinor (owning and operating a broad network of 43 commercial airports, as well as providing Air Navigation Services), have joined forces to establish the International Test Arena for Zero and Low Emission Aviation.

2. INTERNATIONAL TEST ARENA STRUCTURE

2.1 The overall mission of the test arena, where the first flight took place on 8 August 2025, is to understand the consequences of new technologies and concepts, both possibilities and limitations, and to prepare the aviation ecosystem to support these new solutions. The International Test Arena aims to provide a suitable and relevant framework for accelerated learning and with a systemic approach. Through practical trials and demonstrations of innovative and sustainable solutions, we are allowing for broad and open knowledge development in an operational environment. The International Test Arena is open for manufacturers, operators and other key stakeholders, and participants will be selected based on sets of criteria. The criteria may be adjusted to make sure the activities are supporting policies and priorities, which naturally evolve over time.

2.2 The CAA Norway is responsible for developing the integrated Regulatory Sandbox, which is designed to allow for different technologies and concepts to be tested and demonstrated. Involvement of a range of different stakeholders is important, and the Regulatory Sandbox will provide a defined structure and process to allow for demonstrations and trials without all components necessarily being certified. It provides a scene for regulatory learning, where existing rules and standards can be assessed and where needs for changes or new rules and standards can be identified. Furthermore, regulators and authorities will develop a deeper understanding of new technologies and prepare for future competencies. CAA Norway is collaborating with EASA to develop the Regulatory Sandbox, and is also in dialogue with other authorities to ensure collaboration where necessary to address joint challenges and find synergies.

2.3 The International Test Arena will, in principle, encompass Avinor's entire network of airports and airspace. Their network and geographical conditions, from major hubs like Oslo Airport down

to smaller regional airports, spanning from coastlines to mountainous areas, and various climatic conditions, provide unique opportunities to test aircraft under very diverse operational conditions. Facilitation for testing and demonstration will be established based on market needs, and geographical areas will be considered in consultation with interested users of the test arena. Avinor will provide the necessary ground infrastructure and access to required energy, i.e electric power and hydrogen, as well as providing air traffic services and airspace as needed to run demonstration programmes.

2.4 For the aviation industry the International Test Arena provides both manufacturers, operators and other key stakeholders an opportunity for faster and more efficient progress towards market introduction for innovative solutions. They will ,for example, be able to apply new technologies in a prepared ecosystem, to gain visibility and credibility for emerging technologies and to engage with critical stakeholders such as end users, energy providers and investors. The aviation industry will also gain an increased understanding of what the barriers and the possibilities are for successful market introductions for different kinds of technologies.

2.5 As an overarching ambition is to develop knowledge and insights with a systemic approach, as well as creating good models for distribution of the outcomes of the activities within the International Test Arena, other critical stakeholders will be in a better position to make their assessments. Such stakeholders can include politicians, academia and research, energy producers, regulators, investors and the general public. By running credible and real-world tests and demonstrations, we expect to see an increased interest and basis for adjustments in policies, regulation, non-fossil energy supply, support and funding schemes, and other factors fostering faster innovation and development.

2.6 Working with innovative solutions is also an opportunity to assess and create improved ways of reaching safety objectives. Within the International Test Arena, there will be a Joint Safety Group whose responsibility is to follow ongoing operations closely and perform assessments for every phase of a programme. A Safety Risk Board will ensure sufficient resources are dedicated to the process and ensure the safety risks are kept As Low as Reasonably Practical (ALARP) at all times. Special attention will be given to proactive safety management, systemic safety risks, as well as risks emerging from working with new technologies.

3. FUTURE MOBILITY

3.1 There is wide ongoing market dialogue to spark interest with manufacturers and future operators of zero and low emission technologies. The ambition is to run real world tests and demonstrations of 1-3 new concepts per year in the years to come. There is significant international interest from manufacturers and other stakeholders. Due to different levels of maturity and the number of different designs, there will be assessments on which areas to prioritize. The scope of technologies today includes primarily manned aviation cargo and passenger transport, fixed-wing aircraft as well as eVTOLs, based on battery-electric, hybrid-electric or hydrogen propulsion systems. However, we also expect to see other areas involving unmanned and autonomous solutions as we proceed. Alternative fuels (such as Sustainable Aviation Fuels (SAF)) are also relevant if testing and regulatory assistance is needed. Considering recent geopolitical developments, we are reminded of the importance of flexibility in the strategic orientation of the Test Arena. A Strategic Advisory Body is therefore established to ensure relevant thematic prioritization and a sufficient international orientation.

3.2 From a Norwegian perspective, where transport by road and rail are often not suitable alternatives, and with many rather sparsely populated areas, air transportation with little or no direct emissions can make aviation increasingly attractive. By establishing an arena where new technologies can

be operated in a fully equipped and credible ecosystem and through relevant use cases, there are better opportunities to raise awareness and mature concepts of new air mobility with the general public. Additionally, Norway has a comprehensive network of Public Service Obligations (PSO) routes. There is an expressed political ambition to phase-in zero or low emission aircraft through future PSO tenders.

3.3 Innovation in aviation is not happening in a vacuum, and there are significant potential synergies in working with other sectors. An example is development of shared infrastructure and energy carriers that can be used by different transport modes, as well as developing thematic knowledge and competency connected to new technologies. Furthermore, by understanding more about possibilities and applications of new concepts we expect to contribute more strongly in assessing and promoting new transport solutions and how different mobility needs may be met in the future.

3.4 Working with new aviation technologies to be able to significantly reduce emissions is a global challenge. We should therefore join forces where it can create added value and support a targeted and safe development and introduction of new solutions. At the same time, from a Norwegian standpoint, we also want to see additional benefits through an improvement of the mobility system, as well as utilizing the International Test Arena to understand how we can contribute and collaborate with other sectors. Finally, we are open to collaborate with both ICAO and ICAO Member States to provide additional push to the work on environmental protection and innovation.

— END —