



ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

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

ADVANCING SUSTAINABLE AND LOWER-CARBON AVIATION FUEL (SAF AND LCAF)
DEVELOPMENT AND DEPLOYMENT

(Presented by Oman)

EXECUTIVE SUMMARY	
This working paper emphasizes the need for policy alignment, financing, capacity-building, and harmonized standards to scale up the development and deployment of Sustainable Aviation Fuel (SAF) and Lower Carbon Aviation Fuel (LCAF) in support of global aviation decarbonization goals.	
Action: The Assembly is invited to: a) take note of the content of this Working paper; b) urge ICAO and member states to facilitate the harmonization of SAF- LCAF accounting framework and certification standards to streamline production, approval, and adoption processes; c) request ICAO to accelerate the activation of the ICAO 'Finvest Hub' Platform to provide greater transparency on investment opportunities in the sustainable and low-carbon aviation fuel sector and identify potential financing sources for related projects; d) emphasize the role of low-carbon aviation fuel as a short-term solution for reducing emissions, particularly in countries with existing oil refining capabilities; and; e) encourage ICAO to support capacity-building initiatives across all regions to facilitate the development and deployment of sustainable and low-carbon aviation fuel by organizing in-person technical workshops tailored to the specific needs of countries	
<i>Strategic Goals:</i>	This working paper relates to the Strategic Goal – <i>Aviation is Environmentally Sustainable</i> .
<i>Financial implications:</i>	
<i>References:</i>	

1. INTRODUCTION

1.1 The International Civil Aviation Organization (ICAO) Assembly Resolution A41-21 in October 2022 recognizes that the drop-in sustainable aviation fuels are expected to have the largest impact on aviation CO₂ emissions reduction by 2050 and continue to have a large impact beyond 2050.

1.2 Resolution A41-21 requests the state to set a coordinated approach in national administrations for policy actions and investment to accelerate the appropriate research, development, deployment, and use of cleaner and renewable energy sources for aviation, including the use of Sustainable and Low-Carbon Aviation Fuel (SAF and LCAF), in accordance with their national circumstances.

1.3 The ICAO 3rd Conference on Aviation and Alternative Fuels (CAAF/3) adopted the ICAO Global Framework for SAF, LCAF and other Aviation Cleaner Energies that sets a collective global, aspirational vision to reduce CO₂ emissions in international aviation by 5 per cent by 2030 through the use of SAF, LCAF and other aviation cleaner energies.

1.4 Accordingly, Oman has undertaken several integrated efforts to raise awareness of the importance of alternative aviation fuels and to promote the development and deployment of sustainable and low-carbon aviation fuel, through initiatives such as organizing the Innovation Support Forum of SAF-LCAF and cleaner energies, establishing the National Taskforce for Sustainable and Low-Carbon Aviation Fuel, and analysing the challenges and opportunities for advancing the alternative aviation fuel industry at the national level.

2. SCALING UP SUSTAINABLE-LOWER CARBON AVIATION FUEL

2.1 Oman emphasizes that SAF and LCAF are essential elements in the global effort to decarbonize the aviation sector. However, realizing their full potential requires a clear and sustained strengthening of coordinated efforts at both the international and national levels.

2.2 Effective policy coordination, enhanced access to financing, and the accelerated deployment of relevant technologies are vital to ensure fair and efficient access to clean aviation fuels.

2.3 Government policies play an essential role in the development and deployment of SAF. Such policies should be harmonized across countries to ensure regulatory consistency, foster fair competition, and prevent market fragmentation that may slow down the global adoption and scale-up of SAF.

2.4 Enhancement of the research, development, demonstration, and innovation (R&DDI) sector helps facilitate the identification of technically and economically viable solutions, enhance SAF-LCAF production efficiency, reduce costs, and ensure the sustainability of the supply chain.

2.5 Given the high costs associated with the production of SAF and LCAF, improving access to financing supports scale-up efforts. Activating international platforms such as ICAO's Fininvest Hub can enhance transparency and connect viable projects—particularly in developing States—with potential investors, thereby increasing success rates and reducing financial risks.

2.6 Capacity-building is a critical enabler in accelerating the transition to clean aviation fuels, particularly in States at early stages of sector development. This may include the organization of specialized training programs, assistance in developing institutional and regulatory frameworks, conducting feasibility studies and techno-economic assessments, as well as promoting cross-border knowledge exchange. Such

efforts should be tailored to the specific needs and circumstances of each State under ACT-SAF, ensuring that no State is left behind.

2.7 Oman acknowledges that the development of sustainable and low-carbon aviation fuel industry depends on strategic partnerships between governments, the private sector, academia, and international organizations. Regional and global cooperation is essential to establishing efficient and sustainable supply chains by harmonizing standards, fostering innovation, sharing technology, and coordinating policies, particularly in regions with shared resources and opportunities.

3. LCAF AS A VIABLE NEAR-TERM SOLUTION FOR AVIATION DECARBONIZATION

3.1 LCAF presents a viable short-term solution for reducing emissions from international aviation, providing airlines with an immediate pathway to lowering their carbon footprint.

3.2 The production of low-carbon aviation fuel is more feasible in regions with existing oil refining infrastructure, leveraging current facilities to adapt and scale cleaner fuel production.

3.3 Achieving this potential will require substantial efforts in conducting life cycle assessments and establishing effective mechanisms to reduce carbon intensity. These efforts are likely to face several challenges, including the high costs of emission reduction technologies, limited technical expertise, certifications and other associated barriers.

3.4 Co-processing technologies in existing refineries present a viable pathway for producing LCAF and SAF, subject to careful consideration of the technical, economic, and regulatory requirements involved.

3.5 Regional cooperation is critical to develop a regional LCAF supply chain, facilitating resource sharing, technological exchange, and harmonized regulatory frameworks.

4. HARMONIZED APPROACHES FOR SAF AND LCAF DEPLOYMENT

4.1 Harmonizing international standards for SAF and LCAF, including certification, sustainability criteria, and accounting methodologies, is essential to avoid regulatory conflicts and reduce administrative burdens on airlines.

4.2 A unified global approach to SAF approval will strengthen supply chains, build trust among stakeholders, lower costs, and accelerate production and innovation, thereby ensuring environmental integrity and supporting effective emissions reduction efforts.

4.3 It is recognized that a harmonized global SAF accounting framework, supported by a robust chain of custody, is essential to ensure credible environmental claims, prevent double counting, and uphold market integrity, thereby supporting the goal of achieving net-zero emissions by 2050.

4.4 Patchworks of standards, policies, and accounting frameworks create challenges for the efficient development and deployment of sustainable aviation fuels by increasing administrative complexity and creating uncertainty in verifying environmental benefits.