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

FINANCING THE ENERGY TRANSITION IN CIVIL AVIATION

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

EXECUTIVE SUMMARY

This paper presents the challenge of aviation's energy transition, the finance and policy measures needed to support it, as well as the economic opportunities it can create. Achieving this transition will require substantial investment, much of it expected to come from private sources, with public finance playing an important catalytic role. At the same time, the transition presents opportunities for States to attract investment, create jobs and support economic growth. The paper highlights the need to mobilize funding across SAF feedstock supply chains, production, distribution and enabling infrastructure, including through blended finance, innovative financing mechanisms and the ICAO Finvest Hub.

Action: The conference is invited to:

- a) encourage States in all ICAO regions to implement catalytic finance initiatives to scale-up aviation's energy transition by unlocking multilateral and private sources of finance;
- b) encourage more States to deploy SAF, LCAF and other cleaner energy policy mechanisms in the next five years to help build supply of alternative energies;
- c) encourage States to integrate aviation energy diversification into national air transport and economic development policies, investment frameworks and infrastructure planning, recognising that a resilient, diversified and sustainable aviation energy system can strengthen economic competitiveness, energy security, business continuity and long-term sector growth while attracting public and private investment; and
- d) ensure that the focus on energy transition is broader than simply jet fuel replacement – with targeted finance and policy measures aimed at a shift towards renewables in the ground energy mix.

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

<i>Strategic Goal:</i>	This working paper relates to Strategic Goals: <i>The Economic Development of Air Transport Assures the Delivery of Economic Prosperity and Societal Well-Being for All; Aviation Is Environmentally Sustainable; and No Country Left Behind.</i>
<i>Financial implications:</i>	
<i>References:</i>	

1. AVIATION'S ENERGY TRANSITION

1.1 Recent disruptions in international energy markets have highlighted an underlying vulnerability in aviation's energy system. For more than a century, aviation has relied on a single energy source – conventional jet fuel – which is supplied by an increasingly small number of refineries and typically accounts for around 8-9% of global oil. As other fossil fuel end-users, particularly road transport, transition to alternative energy sources, aviation will need to carefully consider diversifying its own energy systems. This discussion should be undertaken in the context of balancing cost elements, security of supply as well as carbon reduction measures.

1.2 The industry is already progressing its energy transition. This includes accelerating deployment of sustainable aviation fuels (SAF) produced from a range of sources, including waste, sustainable biomass and power-to-liquid options such as renewable electricity and carbon capture. In addition, significant innovation and research is underway into potential use of hydrogen and electric propulsion solutions for some aviation operations. Lower carbon aviation fuels (LCAF) can also be key to bridge the transition from conventional fossil sources towards lower carbon options.

1.3 Since the long-term climate goal was adopted by industry in 2021: 53 airlines representing 45% of global traffic have announced voluntary goals for SAF from 5%-30% of their 2030 fuel supply; 45 States have adopted (or are in the process of adopting) SAF policy to help drive demand and supply; and the production of SAF has started to scale-up, with an expected 2.4 Mt of SAF to be produced and used in 2026. However, more work is needed to accelerate this progress further.

1.4 SAF production estimates for 2030 are roughly in line with the policy measures that already exist and there is room for additional capacity with co-processing, LCAF and re-directing renewable diesel production towards SAF. Policy will be key to that switch and there is some concern over the readiness of eSAF production for several sub-mandates.

1.5 However, the real challenge comes from the steep scale-up required to take us from ~18-20Mt of SAF production in 2030 up to potentially 500Mt of SAF needed by 2050. Key to that ambitious energy transition will be policy and finance. That challenge is also an opportunity for many more States to take part in the energy transition, build green energy jobs and support economic growth through use of locally appropriate sustainable feedstocks for SAF.

1.6 Whilst much of the focus on aviation's energy transition is understandably on the most difficult challenge of scaling-up SAF, there are other elements that cannot be forgotten as governments approach the broader energy system: electrification of ground service equipment at airports, more use of electric vehicles by employees and passengers and an increasingly electrified airport terminal environment

requires a shift to renewables in the wider grid system. Hydrogen and other alternative energy sources will play a role in ground equipment use as well as feedstocks for SAF and potential direct use in the future.

2. FINANCE

2.1 It is estimated some \$3.2 trillion of investment will be needed for the energy transition in air transport. Much of this will come from private sources, but public financing is needed to [act as / provide] a catalyst, unlocking additional private sources. That role is especially important in emerging economies.

2.2 The *Waypoint 2050* analysis outlined several calls-to-action for the finance community, all of which can be supported by appropriate government policy and strengthened cooperation with the financing and energy sectors:

2.2.1 **Focus on funding SAF opportunities worldwide:** mobilize funding for SAF opportunities worldwide, covering feedstock supply chains, production, distribution, and enabling infrastructure while deploying innovative financing tools such as blended finance and novel offtake structures to unlock projects all over the world.

2.2.2 **Investigate innovative financing mechanisms:** consider using the ICAO Finvest Hub platform to support maturation and launch of SAF projects; encourage international financial institutions to create financing solutions that help attract investment in aviation and airport renewable and low-carbon energy projects, and create support mechanisms, especially in regions lacking the financial or institutional capacity to independently drive the renewable and low-carbon energy transition.

2.2.3 **Re-evaluate conventional project risk tolerance assumptions:** including relationship to climate risks; aircraft financiers should consider SAF investments as complement to and risk mitigation for aircraft investment portfolios.

2.3 The ICAO Finvest Hub provides one source of coordination for this activity and is strongly supported by the industry. This initiative, in conjunction with ICAO's ACT-SAF, will help generate long-term benefits for ICAO, the aviation sector and governments around the world if supported adequately.

3. POLICY

3.1 States should ensure an integration of aviation energy transition into short-, medium- and long-term economic policies and strategies, including: energy diversification as an economic resilience priority; the regional economic development opportunities of energy transition; trade and global equity. In the *Waypoint 2050* report, several measures that will help the energy transition are noted:

3.1.1 **Develop policies that support SAF production, distribution and use:** develop wider clean energy transition strategy to, in addition to deploying sustainable aviation fuels (SAF), include hydrogen and low-carbon electricity requirements of aviation in national energy strategies; monitor the effectiveness of SAF policies in delivering what is intended to deliver and to proactively correct any unintended consequences that discourage SAF adoption; work with industry to develop comprehensive and robust SAF registry interoperability, facilitate transparent SAF transactions (including exploration of international book and claim mechanisms) to increase efficiency of complying with regulatory demand policies such as blend mandates (this will help ensure a more efficient roll-out domestically, promote system efficiencies, reduce price premiums as well as make the business case for SAF to be produced in

emerging economies); enhance policy frameworks that prevent SAF costs from falling disproportionately on aircraft operators and passengers; explore innovative local policy actions to incentivise the use of SAF; identify opportunities presented by SAF and its feedstocks to support regional energy autonomy and resilience goals; develop policy frameworks that supports fair and non-discriminatory access to fuel infrastructure. Policy measures should take into account differences in operating models, fleet characteristics, scale of operations and access to cleaner energy, and should avoid creating disproportionate barriers or costs for operators for which SAF availability or infrastructure may be limited.

3.1.2 **Invest in SAF:** bridge investment risks across both demand (short-term offtakes) and supply (long-term facilities) by supporting the growth of a national SAF industry. This includes attracting capital for new capacity through loan guarantees, revenue certainty mechanisms, and policy stability, while also advancing research into local SAF pathways and related clean energy industries; demonstrate leadership with a commitment for government travel to be undertaken on SAF.

3.1.3 **Support the technical development of SAF:** adopt globally-recognized sustainability standards and work to harmonize global standards including through ICAO; identify opportunities for local SAF industries and work with academic institutions to support skills and workforce development to feed the jobs generated by new energy industries.

3.1.4 **Demonstrate recognition of sustainable aviation fuel (SAF) as the primary driver of aviation decarbonization to 2050:** recognise aviation as a priority end-use sector due to the limited cost-effective alternatives to liquid fuels and prioritise feedstock; develop durable and long-lasting policies that put SAF on a more level playing field with fossil fuel options, such as providing incentives for production, blending and use of SAF, differentiating SAF from other alternative transport fuels; redirect fossil fuel subsidies towards supporting low-carbon and renewable energy scale-up, including SAF and reinvest sector-generated funds directly into research and development for sustainable aviation technologies, particularly in emerging economies.

3.2 IATA has also published a useful list of sequenced policy approaches, outlined in its Working Paper for ATConf/7: *Rethinking SAF policy* (WP/30).

3.3 Aside from support for jet fuel transition, access to sufficient, reliable, renewable and low-carbon energy for ground and airport operations is essential to meet growing demand, achieve ICAO and aviation decarbonization goals and build out a more resilient system. Governments should prioritise the decarbonization of electricity grids and the modernisation and resilience of energy infrastructure, including grid capacity and energy storage, and collaborate with ICAO and industry to overcome technical, financial, and policy obstacles that limit renewable and low-carbon energy deployment at airports, especially in developing countries. Support for green hydrogen production, distribution and scale-up is also of keen interest – aviation will need access to significant quantities by 2050 for direct use and as a feedstock for eSAF options.

3.4 Importantly, the key is to create long-term policy certainty and investment signals for SAF, LCAF and other cleaner energy production and deployment.

4. CONCLUSION

4.1 Aviation's energy transition will help the sector in securing supply, balancing costs, diversifying sources and decarbonizing our energy system. This shift should be accelerated in the coming years to help create jobs and economic opportunities, including in developing regions.

4.2 Core to the transition will be a comprehensive programme of policy measures and finance sector engagement, which the industry urges governments to develop in the next five years to ensure that aviation is on track in its ambition to decarbonize by the middle of the century.

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