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RETHINKING SAF POLICY: UNLOCKING AVIATION CLEANER ENERGIES THROUGH SYSTEMS TRANSFORMATION AND POLICY SEQUENCING

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SUMMARY

This paper discusses the importance of a broader energy systems transformation to scale up the production of SAF, LCAF, and other cleaner energies. It highlights the need for coordinated and well-sequenced policy frameworks to mobilize investment, accelerate market development, and avoid unintended consequences. The paper invites States in the Asia-Pacific region to strengthen cooperation and alignment around a global framework led by ICAO to support an effective, efficient, and equitable aviation energy transition.

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1. INTRODUCTION

1.1 At the 77th Annual General Meeting in 2021, IATA's airline members committed to achieving net-zero carbon emissions by 2050, relying on a four-pronged strategy to abate CO_2 emissions: SAF, the development and deployment of new aircraft technologies, operational improvements, and market-based measures such as offsetting and carbon capture. With the adoption of the Long-Term Aspirational Goal (LTAG) by ICAO, governments now share this objective, under which approximately 21 gigatons of CO_2 from international aviation will need to be mitigated by 2050.

1.2 SAF has the greatest potential to reduce CO2 emissions from aviation, and IATA's Net Zero Roadmaps estimate that SAF will contribute to around 65% of the decarbonization of the global air transport industry by 2050 . Achieving this will require over 500 million tonnes (Mt) of SAF annually. However, global SAF production remains limited, increasing from 1 Mt in 2024 to 1.9 Mt in 2025 and an estimated 2.4 Mt in 2026, equivalent to only 0.8% of global jet fuel use. This highlights both a considerable supply gap and a significant opportunity to mobilize investment across the aviation energy value chain. While global SAF production remains at an early stage, encouraging progress is being observed across the Asia-Pacific region. Commercial SAF production facilities are now operating in a number of regional markets, and a growing pipeline of announced projects is expected to expand regional production capacity further over the coming years. This momentum demonstrates the region's growing role in the aviation energy transition and highlights the importance of policy frameworks that can support investment, accelerate project development, and enable emerging production pathways to reach commercial scale.

1.3 Achieving net zero by 2050 will require SAF production to expand by more than 200-fold within a relatively short timeframe. While ambitious, reaching needed production levels remains feasible from a feedstock availability and technical standpoint. However, achieving this will critically depend on establishing robust, predictable, and well-sequenced policy frameworks that can mobilize large-scale investment and enable private-sector participation. On top of this, the adoption of a systems approach to a sequenced policy design will be essential to enable an effective, efficient, and equitable transition, particularly for developing countries and States with special needs, and to ensure broad and fair access to aviation cleaner energies.

2. THE IMPORTANCE OF A SYSTEM TRANSFORMATION TO BOOST PRODUCTION OF SAF, LCAF AND OTHER AVIATION CLEANER ENERGIES

2.1 Government policy plays an instrumental role in the deployment of SAF, LCAF, and other aviation cleaner energies. Policies should be targeted to create and accelerate the development of the requisite new markets and ensure they can perform their necessary functions effectively.

2.2 The world is engaged in the necessary but complex endeavor to decouple the global economy from its current fossil-based energy supply and provide alternative, renewable energy sources. This is a mammoth task as over 80% of global energy consumption is of fossil origin, illustrating how deeply embedded this form of energy is in human activity. The energy system enables technologies, infrastructures, markets, and institutions, and greases the cogs of production, transport, trade, and development - and these all evolve together. Their interlinkages create feedback loops that make simple, linear solutions fail.

2.3 Within this broader context, as outlined in IATA's publication, *The Energy Transition: System Transformation*[1], SAF production depends on feedstocks, renewable electricity, hydrogen, carbon capture, transport infrastructure, financing, and certification systems that are shared with other sectors of the economy. Aviation, therefore, cannot decarbonize in isolation. Rather, scaling SAF,

[1] IATA, The Energy Transition, March 2026, accessible here.

LCAF, and other aviation cleaner energies requires coordinated action across energy, agriculture, industry, finance, and trade, reinforcing the need for system transformation.

2.4 For airlines, this means the debate must extend beyond Civil Aviation Authorities and Transport Ministries to include Energy, Agriculture, Finance, Trade, Defense, and Economic Development authorities as part of a whole-of-government strategic priority. The rewards are potentially unprecedented. Governments can expand their countries' agriculture, improve soil health, preserve nature, bolster local communities, build energy security and independence, lift productivity, and produce sustainable growth across the entire economy, improving livelihoods for all. For developing countries and States with special needs in particular, the production of SAF can create new value chains, attract investment, support rural development, strengthen energy resilience, and open opportunities for industrial diversification and export growth. Any efforts that are directed at an individual industry can seem hard to justify politically, in addition to proving futile. Placed firmly in the context of a system transformation, they become necessary, separately and together.

2.5 Airlines across the Asia-Pacific region have demonstrated a commitment to advancing SAF and other aviation cleaner energies. Many carriers have entered into SAF offtake agreements, participated in demonstration and operational trials, and worked with producers, airports, fuel suppliers, and governments to support market development. Given this practical experience, it is essential that airlines and other aviation stakeholders are closely consulted during policy development processes. Early and meaningful industry engagement can help ensure that policy measures are practical, effective, and aligned with market realities, while supporting both environmental objectives and long-term industry competitiveness.

3. NASCENT MARKETS SUCCEED WHEN POLICY TOOLS ARE SEQUENCED AND INTEGRATED

3.1 New energy markets typically evolve through stages of market creation, scale-up, and maturation, requiring a portfolio of supportive policy instruments at different points in their development. Optimal policymaking, therefore, must consider not only which tools to use but when to use them. The transition requires a sequenced approach that builds supply, transfers risk, develops infrastructure, and ultimately enables demand. This sequencing consideration is particularly relevant in the Asia-Pacific region. Many States have already adopted SAF policies, roadmaps, or targets, while others are actively developing policy frameworks to support domestic SAF production and deployment. As policymakers evaluate available approaches, there is significant value in drawing on lessons from jurisdictions where SAF policies have already been implemented, while ensuring that policy measures are introduced in a strategic sequence that reflects local market maturity, infrastructure readiness, feedstock availability, and investment conditions. A well-sequenced approach can help avoid unintended consequences and accelerate the development of sustainable SAF markets across the region.

3.2 In this context, mandates should be viewed as one of the elements of a broader policy framework rather than a starting point. While mandates can be effective in mature markets with established supply and infrastructure, their premature introduction may increase costs, constrain supply, and create market distortions. Before mandates are considered, production capacity, distribution systems, and supporting infrastructure should be sufficiently developed.

3.3 Markets fail when policy tools are used in isolation and at the wrong time. They succeed when tools are sequenced and integrated, addressing bottlenecks in order of what they enable, and with keen attention paid to the wider energy system and ripple effects. A sequenced approach to the policies that can be used in market formation, aiming at system transformation, could be articulated as follows:

1. Remove, reduce, and redirect direct corporate subsidies in favor of fossil energies to renewables;
2. Promote and enable co-processing and LCAF;
3. Conduct public procurement for public consumption;
4. Ensure open access to airport infrastructure;

5. Provide capital support such as tax credits, grants, loan guarantees, concessional finance;
6. Accelerate new technologies and production pathways;
7. Develop, harmonize, and simplify certification, standards, and related processes;
8. Introduce a book-and-claim system;
9. Stabilize revenue: contracts for difference, production tax credits;
10. Transfer risk: create a global SAF risk-transfer vehicle;
11. Invest in infrastructure: pipelines, storage;
12. Consider mandates and carbon pricing;
13. Avoid policy volatility at all times.

4. AVOIDING UNINTENDED CONSEQUENCES IN SAF POLICY DESIGN

4.1 Current policy measures remain insufficient to deliver the scale of aviation's SAF production required for air transport's energy transition. Additional action is needed without delay. At the same time, States should address and avoid unintended consequences arising from the premature introduction of mandates. IATA and its members remain committed to working with governments to identify and resolve such issues and to draw lessons from existing policy experiences.

4.2 Experience with SAF mandates in the European Union and the United Kingdom indicates that fuel suppliers are passing the costs of compliance, including the financial risks associated with non-compliance, through to airlines via additional charges on fossil jet fuel purchases. While the mandates apply to fuel suppliers, they provide little incentive for suppliers to absorb these costs, leaving airlines to bear them while also being deprived of their right to self-determination in their fuel procurement, be it fossil jet fuel or SAF. The outcome is that costs increase for airlines, CO_2 emission cuts are uncertain, and airlines can find themselves unable to claim these "SAF purchases" against their regulatory obligations. Based on an IATA survey, these charges average around USD 54 per tonne of jet fuel, compared with an estimated SAF market premium of USD 22 per tonne.[2] Across the EU, this was estimated to have increased airline costs by around USD 1.3 billion in 2025, funds that could otherwise support the purchase of an additional 1.2 Mt of SAF, equivalent to approximately 2.7 Mt of annual CO_2 emissions reductions. Similar pricing behavior under the UK SAF mandate could forgo a further 0.8 Mt of CO_2 emissions reductions.[3]

4.3 A core argument made in support of mandates is the demand signal they give for SAF production. The success of this has so far proven questionable. The EU and UK mandates contain clear signals for e-SAF production through their sub-mandates, while the UK also includes a "HEFA cap," signaling the need for advanced SAF from alternative feedstocks. These signals are well-defined and legislated, but to date have failed to support the successful construction of e-SAF or non-HEFA SAF facilities anywhere near the required magnitude. The lack of supply will result in significant additional costs that will eventually be passed on to the airlines and risk undermining the wider sector.

4.4 These experiences highlight the importance of designing SAF policies that follow a sequenced approach while being competition-neutral, non-duplicative, and aligned across jurisdictions. Given the inherently international nature of air transport, fragmented or inconsistent regulatory frameworks can increase compliance costs, create administrative burdens, distort competition, and reduce the cost-effectiveness of emissions reductions. Building on the global framework established through ICAO, greater policy coherence can help accelerate SAF deployment while preserving connectivity, affordability, and the efficiency of the international air transport system.

5. ACTION BY THE CONFERENCE

5.1 The Conference is invited to:

a) recognize the importance of a systems approach and well-sequenced policy frameworks to accelerate the scale-up of SAF, LCAF, and other aviation cleaner

[2] S&P Global Commodity Insights

[3] IATA chart of the week, Excessive SAF Fees in the EU: A lost opportunity to abate 2.7 million tonnes of CO_2, accessible here.

energies;

b) encourage States in the Asia-Pacific region, in collaboration with ICAO, to step up efforts to create the enabling conditions for scaling up production globally, including through harmonized policies that mobilize investment, reduce risks, and avoid unintended market distortions; and

c) invite States in the Asia-Pacific region to continue working closely with IATA and other industry stakeholders through an ongoing multilateral process to support the development of coordinated and effective policy frameworks that ensure an efficient, equitable, and globally harmonized aviation energy transition.

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