POLICY

# SAF Deployment

**Government policy has an instrumental role to play in the deployment of Sustainable Aviation Fuels (SAF). IATA encourages policies which are harmonized across countries and industries, while being technology and feedstock agnostic. Incentives should be used to accelerate SAF deployment. Given SAF is in the early stages of market development, mandates should only be used if they are part of a broader strategy to increase the production of SAF and complemented with incentive programs that facilitate innovation, scale-up and unit cost reduction.**

## BACKGROUND INFORMATION

Airlines committed to net-zero carbon dioxide ($CO_2$) emissions by 2050 at the 77th International Air Transport Association (IATA) Annual General Meeting in 2021, and member states of the International Civil Aviation Organization (ICAO) agreed to a long-term aspirational goal (LTAG) of net-zero $CO_2$ emissions from aviation by 2050 in 2022. These commitments spring from the industry's conviction that it, and all forms of connectivity, are necessary for economic development. Air transport contributes directly to 15 of the 17 United Nations Sustainable Development Goals (all but Nr 14 and Nr 16)[1], and in particular to Goal Nr 1: No Poverty. Hence, flying is necessary, and flying sustainably is a must.

The anticipated traffic of the industry in 2050 would likely generate 1.8 billion tonnes of carbon emissions if fueled by traditional jet kerosene. In order to achieve net-zero emissions, 65% of the total emissions reductions will in all probability need to be achieved using Sustainable Aviation Fuel, or SAF. This, in turn, would represent more than 360 million tonnes (450 billion liters) of SAF annually by 2050, from every available sustainable feedstock.

Reaching this ambitious target will require support from governments and value-chain partners. Government policy must play a pivotal role in encouraging the scaling-up of SAF production.

## Current State and Challenges

In 2022, global SAF production is estimated to have been between 240 and 380 thousand tonnes (300 to 450 million liters), covering only around 0.1% to 0.15% of total jet fuel demand. Despite a significant price difference between conventional jet fuel and SAF, every single drop of sustainable aviation fuel produced was purchased by aircraft operators and their customers. These purchases came at an additional cost to the industry of between USD 322 million to 510 million in the single year of 2022.

Challenges to the rapid development and deployment of SAF that could be addressed through policy measures include:

- Insufficient policy support in promoting the scaling up for SAF
- Absence of a harmonized approach in SAF accounting methodology
- Lack of access to SAF in existing fuel logistics and airport infrastructure
- Lack of understanding of SAF as an insetting measure in addition to carbon offsets
- Limited availability of cost-effective and sustainable SAF feedstock and feedstock treatment infrastructure

[1] https://www.undp.org/sustainable-development-goals

- Limited investment and high costs of financing SAF production infrastructure
- Competition for resources and incentives with other sectors such as road transport and renewable power

# KEY CONSIDERATIONS FOR POLICYMAKERS

## A Need for Consistent and Stable Policies

Existing facilities which are able to produce SAF typically produce other fuels as well, such as renewable diesel. At such sites, capacity is of course optimized and SAF output "competes" with other products according to market conditions. The development of new production capacity is onerous and takes about 5 years to build currently, for existing feedstocks.

Policies need to address both near-term and longer-term SAF deployment and provide the necessary certainty for producers and investors to allocate existing capacity to SAF as well as to develop new infrastructure. Policies should also look to promote research and development of new production pathways together with the associated supply chains.

An overarching policy objective must be to strive to provide a level playing field for the global civil aviation industry. Any policy fragmentation will induce distortions and can lead to perverse outcomes. Action should be coordinated through ICAO, the UN's specialized agency for aviation, whose core mandate is to help States achieve the highest possible degree of uniformity in civil aviation regulations, standards, procedures, and organization, as directed by its 193 member states.

In general terms, policy should aim to be:

- Harmonized across countries
- Harmonized across industries
- Stable and predictable
- Technology-neutral
- Feedstock-agnostic
- Setting globally recognized sustainability standards (such as the ICAO CORSIA sustainability criteria for CORSIA-eligible fuels or the Renewable Energy Directive (RED II) for SAF used towards EU ETS compliance)
- Facilitating the certification of SAF supply chains subject to internationally agreed sustainability standards
- Stackable, i.e., allow the coexistence of multiple initiatives

## The Role of Incentives

Price, both in absolute and relative terms, tends to drive how capital is allocated and how economic agents such as producers and consumers behave. In free-market economies, prices move unrestricted according to supply and demand, and other market conditions. All forms of regulation can influence price evolutions and alter behavior. Generally speaking, incentives, such as subsidies or reduced taxes, encourage the targeted activity while dis-incentives, such as higher taxes, dampen the targeted activity.

The desired outcome is to increase the production of SAF, and the go-to policy stance would be to incentivize its production. Such policies have proven successful in the broader renewable energy sector, and thanks to this type of regulatory support, utility-scale solar photovoltaic and onshore wind are now the cheapest options for new electricity generation in a significant majority of countries worldwide. Global solar PV capacity is set to almost triple over the 2022-2027 period, surpassing coal and becoming the largest source of power capacity in the world, according to the International Energy Agency (December 2022)[2]. The positive impact that such incentive-based policies can have on local jobs and communities, the development of environmentally friendly supply chains and local sectors, as well as in building domestic energy security, particularly in economically challenged regions, should not be overlooked. Indeed, the IMF estimates that the investment (public or private)

[2] https://www.iea.org/news/renewable-power-s-growth-is-being-turbocharged-as-countries-seek-to-strengthen-energy-security

multiplier associated with renewable energy is larger, at 1.1-1.5, than that pertaining to fossil fuel energy investment, at 0.5-0.6, and this with over 90% probability[3].

A wide range of policy incentives exist, naturally, including for example the following:

- Tax relief and tax exemptions on production, sale, or procurement
- Public capital support and loan guarantees for production facilities
- Feedstock subsidies or similar support mechanisms
- Financial market policies such as preferential treatment of tailored financial instruments
- Accounting policies, including amortization schedules
- Research and development programs and support.

## The Role of Mandates

With respect to SAF policy, mandates are state-imposed obligations to use a minimum share of SAF. Such obligations can be imposed on suppliers or buyers. Imposing such obligations in excess of the current total production capacity can, in theory, stimulate producers to increase production, though this will depend on other factors as well, including feedstock availability, access to finance for new production facilities, and any potential penalties for non-compliance. The risk of perverse outcomes is high in this context. Mandates can represent barriers to entry which can favor incumbents and discourage entrepreneurship. Mandates can also direct investment, research, and development in such a way that new feedstock and new solutions, are overlooked or discouraged as mandates create strong incentives for the use of available solutions.

If applied at the current time, mandates would benefit the well-established HEFA pathway, which today accounts for almost all SAF production, though this could come at the price of discouraging the development of new pathways. This is so because a mandate would favor the pathway, and the few existing producers, that are able to produce SAF today. The result can be an oligopolistic market structure, giving outsized pricing power to the small number of incumbent producers. Competition would be limited as new entrants would face important barriers to entering the market. Therefore, at the minimum, short-term mandates would have to be combined with policies that favor equally the ramp-up of SAF production in the mid- to long-run, given the anticipated need to develop and leverage multiple technological pathways and feedstock avenues to meet Net Zero targets.

If government mandates are to be pursued, the following should be considered:

1. Mandates should be used as a tool within a larger strategy to increase the production of SAF.
2. Mandates should be complemented with incentive programs that facilitate innovation, scale-up and unit cost reduction.
3. Mandates should not be specific to any feedstock or technical solution, given that various pathways are still under development.
4. Mandates should consider the specific challenges of the aviation industry, in particular by ensuring that suppliers actually deliver the mandated volume of SAF as opposed to opting to pay a penalty for non-compliance.
5. "Per airport" mandates should be avoided, as this could increase distribution costs, environmental impacts, and create market distortions.
6. Mandates need to be neutral in terms of their impact on fuel supply competition, ensuring price transparency of add-on calculation, access to infrastructure, and fair allocation of available SAF versus penalty charges.
7. SAF accounting mechanisms based on chain of custody models should be allowed to support the procurement of SAF products without geographical constraints.
8. The stacking of environmental attributes for compliance with multiple and/or overlapping regulatory requirements under different scopes of emissions should be allowed, while ensuring the necessary provisions to avoid double counting.

[3] IMF Working Paper, "Building Back Better: How Big Are Green Spending Multipliers?" Prepared by Nicoletta Batini, Mario Di Serio, Matteo Fragetta, Giovanni Melina, and Anthony Waldron, March 2021. NB: A multiplier greater than 1 indicates a return in excess of the original investment, while a multiplier smaller than 1 indicates a negative return on the investment.

9. Regulations should require fuel suppliers to provide aircraft operators with full and complete sustainability documentation associated with the SAF procured.

## The Role of Cross-Sector Harmonization

In the context of stimulating SAF production, one cannot ignore other policy measures across the energy sector and their potential impact on relative prices. For instance, subsidizing, or incentivizing, all forms of energy equally could lower the price level for all, while leaving relative prices unaffected. Subsidizing several forms of energy at different rates can work if these rates reflect the priorities of the energy policy, and would have an effect on relative prices, benefitting the recipient of the greatest support the most.

Currently, most countries in the world still subsidize fossil fuel production to a greater extent than renewable energy. This is at odds with declared policy agendas, given that nearly 200 countries committed to eliminating harmful fossil fuel subsidies at the COP26 in Glasgow in 2021[4]. It is also counterproductive as it will reduce the positive effect of any fiscal support in favor of SAF and other renewable energies which already receive a minority share of total subsidies (the European Union as a whole spends more money on renewable energies than on the fossil kind, but in 15 member-states the opposite remains true, according to the European Court of Auditors[5])[6]. The same considerations apply within the renewable energy space where governments need to ensure that support in favor of renewable fuels is balanced and does not dis-incentivize the production of SAF.

[4] https://www.un.org/en/climatechange/cop26
[5] https://www.eca.europa.eu/Lists/ECADocuments/RW22_01/RW_Energy_taxation_EN.pdf
[6] https://www.imf.org/en/Topics/climate-change/energy-subsidies