

SAF & Net-Zero

Africa highlight & IATA Initiatives

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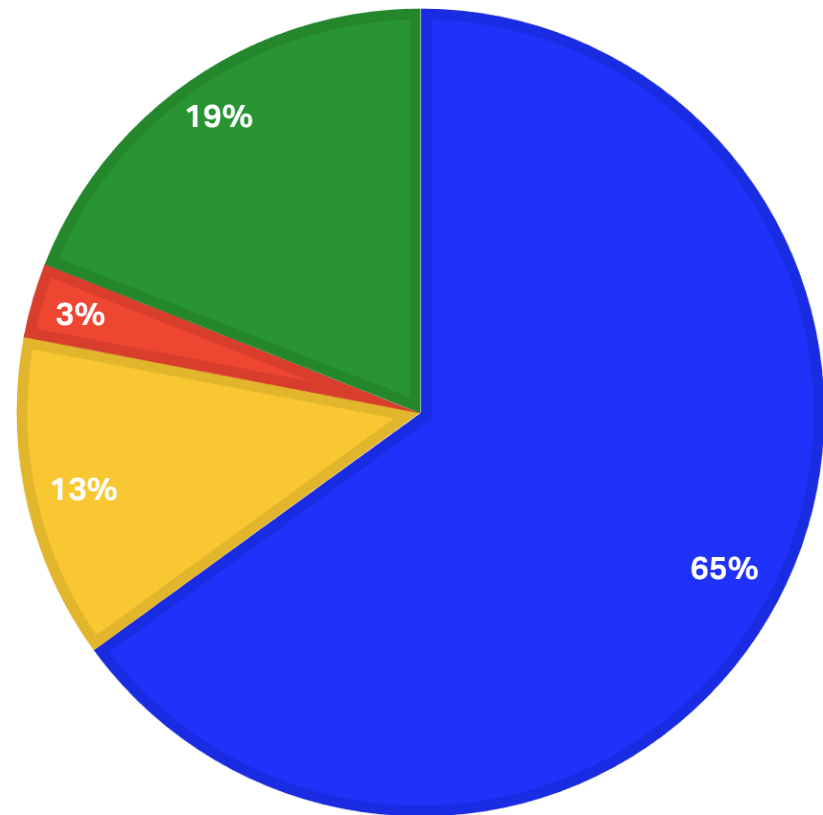
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The Critical Importance of SAF

DIFFERENT LEVERS OF NET ZERO

■ SAF ■ New Technologies
■ Infrastructure/Operations ■ Offsets/Carbon Capture



Multiple levers can be used in different combinations to achieve net-zero emissions

- SAF will be **responsible for the greatest amount of CO2 reductions by 2050 (65%)**
- **1,000 x increase in production is needed by 2050 (500 Mt)**
- With strong and urgent public policy support, this is absolutely achievable.



SAF Production vs Other Renewable Fuel Outputs

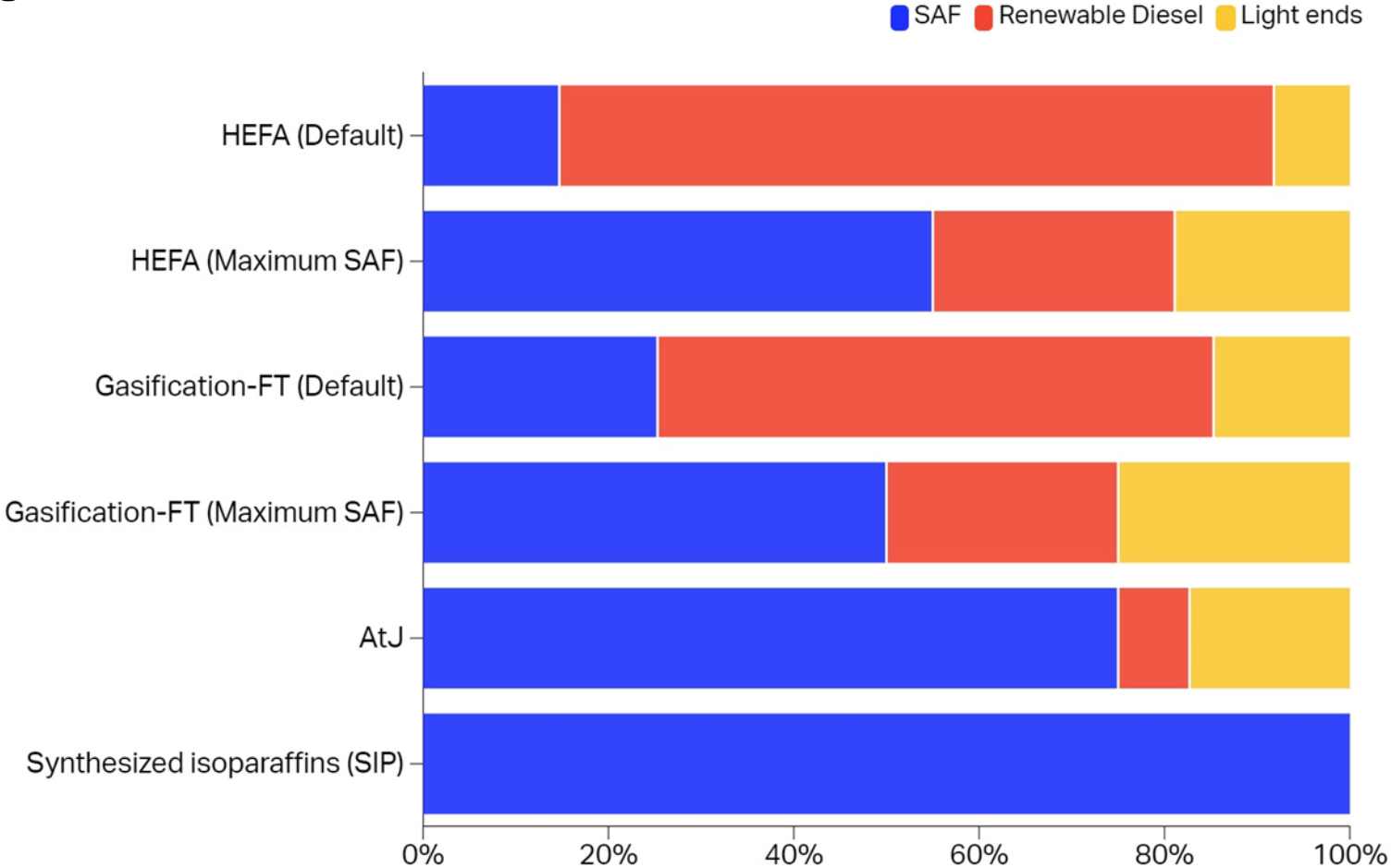
Optimum Outputs from Pathways

A typical product mix includes Renewable Diesel, SAF, and light ends like naphtha

Each production method can be optimized to produce different products

Adjusting the product mix with technology is possible but incurs costs.

Policy is crucial to ensure SAF production is not neglected.



Source: International Council on Clean Transportation (ICCT)

SAF Production Status & Renewable Fuel Capacity

- SAF share versus total renewable fuel output needs to increase substantially

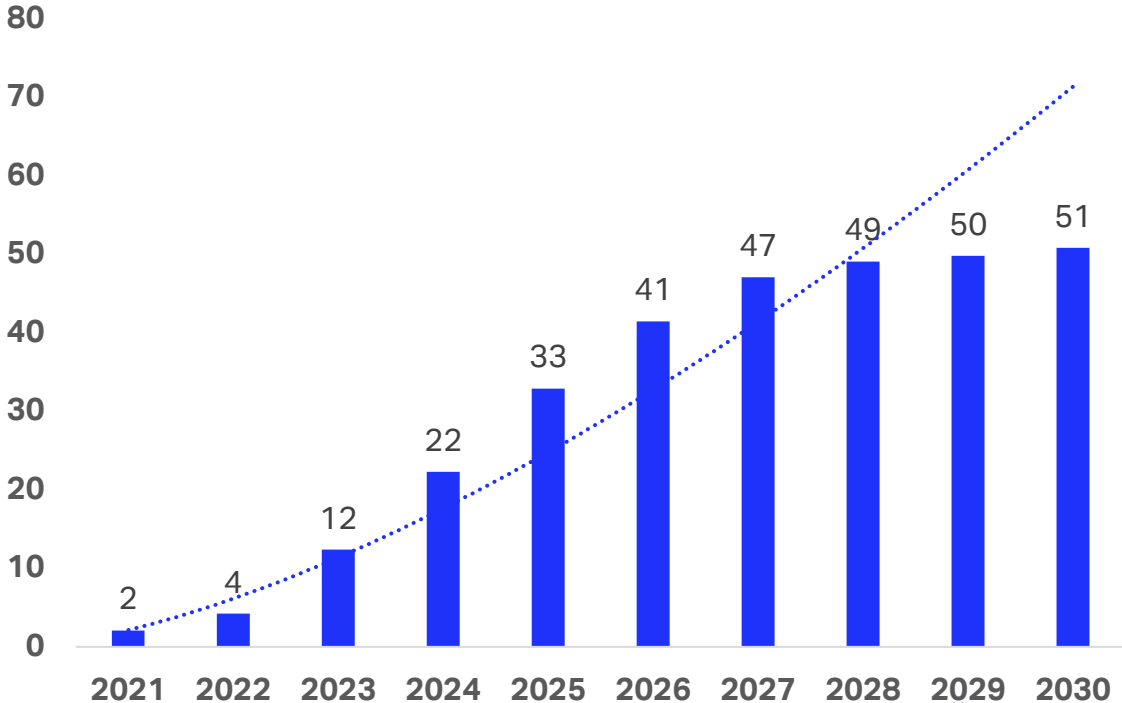
SAF as a % age Share of Fuels

Year	2019	2020	2021	2022	2023e	2024f
Estimated SAF Output (Mt)	<0.02	0.05	0.08	0.24	0.5	1.5*
Global Jet Fuel (Mt)	288	157	182	254	271*	285
SAF % of Global Jet Fuels	<0.01%	0.03%	0.04%	0.1%	0.2%	0.53%
% SAF from total RF capacity					3%	6%?

* Based on current projections and assumptions that delayed 2023 capacity will fully commercialize in 2024.

Source: IATA Sustainability and Economics

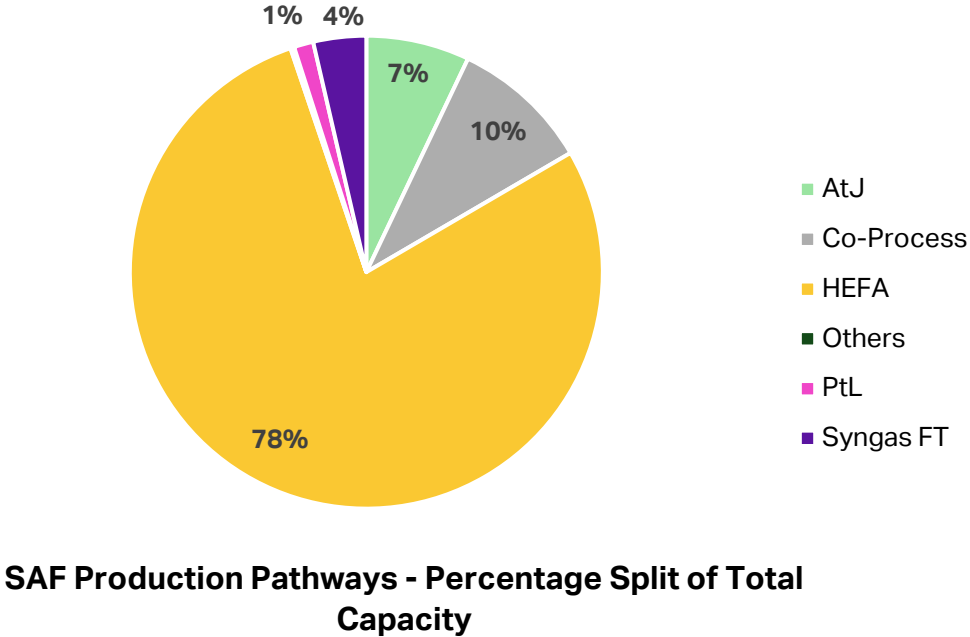
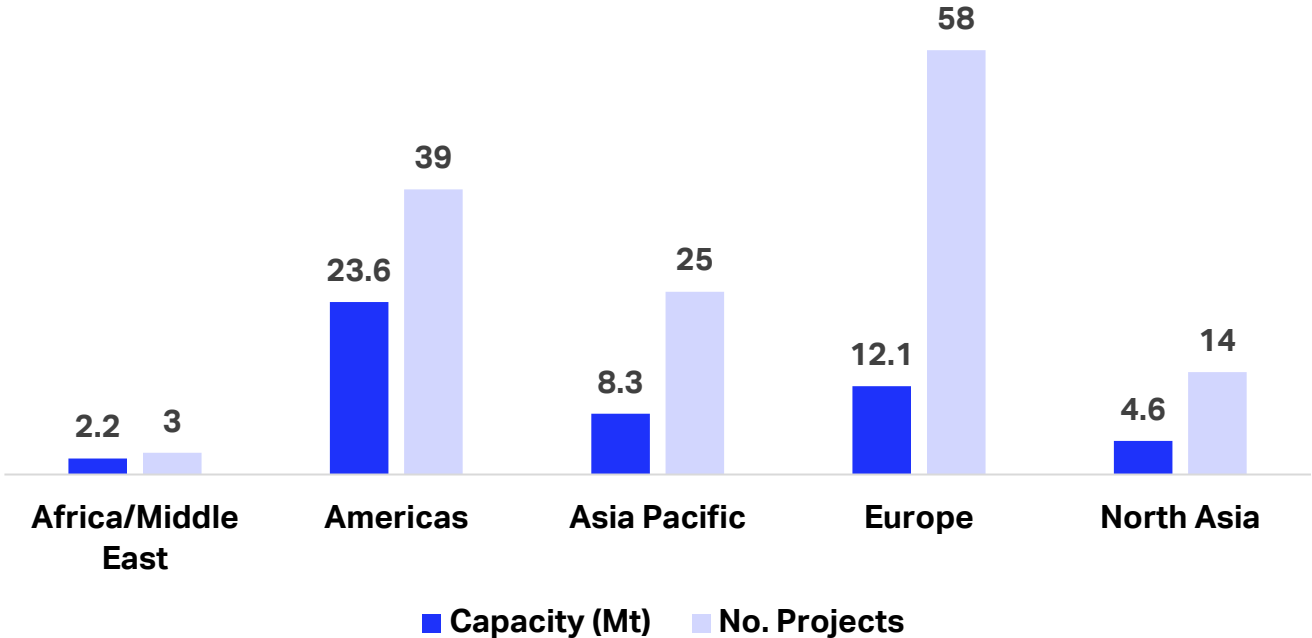
Cumulative Renewable Fuel Capacity* (Mt)



*Renewable Fuel projects typically have a 3–5 year lag effect from Project Announcement to Commercialization.



Projects and SAF Pathways to 2030



- **140** identified SAF projects progressing, by **100+** producers in **31** countries
- Focus of projects in certain geographies is aligned to policies to promote SAF
- HEFA will continue to dominate SAF production unless we accelerate deployment of alternate pathways



Source: IATA Sustainability and Economics

Co-processing as a Transition Opportunity

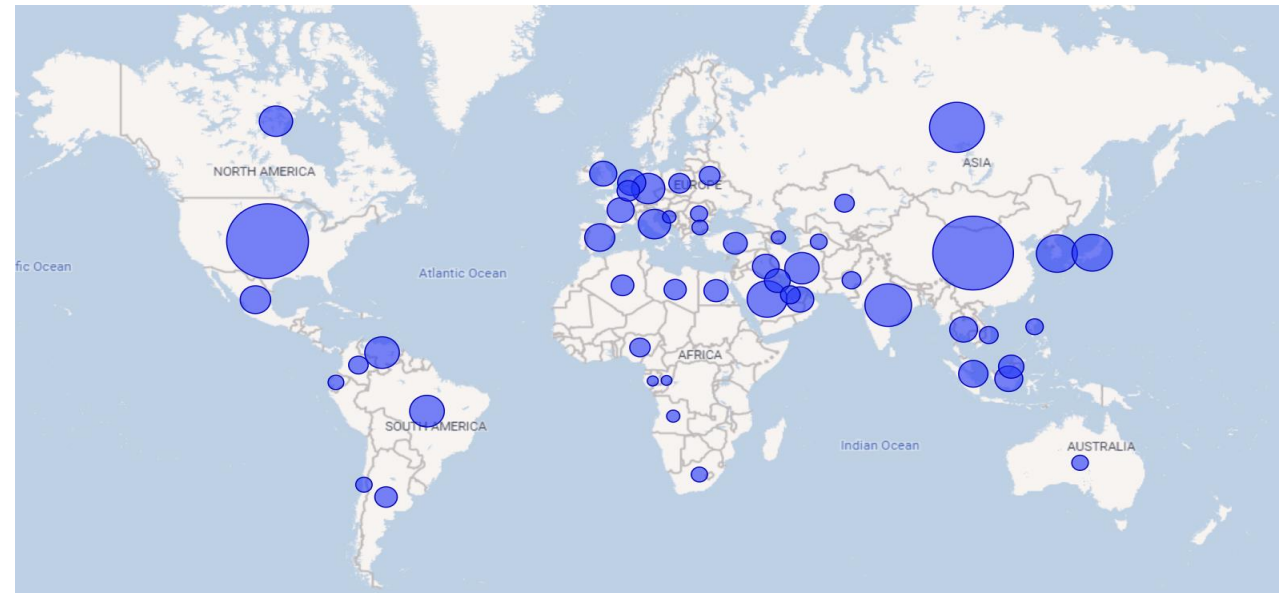
Co-processing (ASTM approved) in existing refineries can swiftly expand SAF production

Potential increase in co-processing limit from 5% to 30%

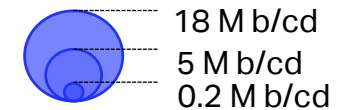
Policies must facilitate common acceptance of life cycle assessments.

Co-processing should be seen as a transition facilitator – it is not a goal itself.

Available Refining Volume



Refinery Capacity Volume



Essential for continued progress

1. Accelerated investment into sustainable aviation fuels by traditional and new fuel companies
2. Incentives from governments to facilitate optimal SAF outputs from renewable fuel refineries
3. Regional diversification of feedstock and SAF production
4. Use and recognition of global SAF Accounting framework by all parties



Key Enabler: Policy

ICAO CAAF/3 Outcome

5% CO₂ emissions reduction
in international aviation by 2030
through SAF and LCAF

- **682Mt of CO₂** expected to be produced by international flights in 2030
- **34Mt** should be reduced through SAF & LCAF
- This would correspond to **~ 14 Mt SAF**

Mt: million tonnes; 1 tonne = 1,250 liters

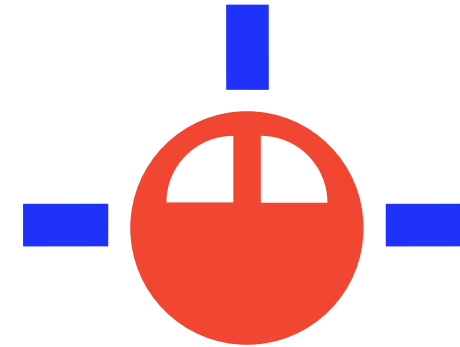
Global Policy and Airline Commitments



2030 estimate

17Mt

**includes incentivizing
policies and mandates**



2030 estimate

15Mt

**64 airlines with SAF
voluntary commitments /
agreements**



Canada
 - Clean Fuel Regulation in force in which SAF creates credits
 - BC LCFS regulation requires fuel suppliers to blend SAF starting at 1% in 2028, 2% in 2029 and 3% in 2030.
 - Also includes a carbon intensity target for jet fuel: 2% in 2026, 4% in 2027, 6% in 2028, 10% in 2030.

USA
 SAF Grand Challenge, California LCFS, US RFS, 2022 Inflation Reduction Act (promote domestic SAF production) in force

UK
 - SAF mandate expected from 2025
 - UK RTFO (production of SAF generate certificates for fuel suppliers) and UK ETS (0 emissions factor applies to SAF) in force
 - Revenue Certainty Mechanism expected

France
 - Volumetric domestic SAF mandate began from 2022
 - EU RED II and EU ETS in force

Colombia
 New climate action law tasks govt to promote SAF development domestically

Brazil
 - SAF mandate expected for domestic flights from 2027 requiring them to achieve emissions reductions through the use of SAF: 1% in 2027, increasing to 10% in 2037

Norway
 Volumetric SAF mandate began from 2020

Sweden
 - Emission reduction obligation in force – 0.8% in 2021 to 27% in 2030
 - EU RED and EU ETS in force

Germany
 As part of national implementation of RED, PtL blending target established: 0.5% in 2026, 1% in 2028, 2% in 2030 by volume

UAE
 "General Policy for SAF" announced in Dec 2023, including a voluntary target of providing 1% of fuel supplied to national airlines in UAE at UAE airports to be locally produced SAF by 2031

India
 "Indicative blending targets" for international flights set: 1% in 2027, 2% in 2028, 5% in 2030

Thailand
 There are indications towards implementing a SAF mandate: 1% SAF use by 2027

EU
 - SAF mandate (RefuelEU) from 2025
 - EU RED (SAF is qualified under the scheme to meet road and rail renewable targets, and is assigned a multiplier of 1.2) and EU ETS (SAF used under the scheme is considered to have 0 emissions) in force and also offers allowances for the use of SAF

Turkey
 SAF mandate expected from 2025

Australia
 Govt confirmed creation of Net Zero Authority: AUD 400 million to accelerate SAF projects in the country; emerging target of 1 billion litres of SAF by 2030

New Zealand
 Draft Tourism Environment Action Plan mentions that a SAF mandate is being explored

China
 CAAC has indicated consideration of a SAF target and is looking into the feasibility of achieving SAF consumption over 10% by 2035 and close to 50% by 2050
 - SAF development roadmap from CAAC also expected including such overarching targets

Japan
 - Soft target to replace 10% consumption by Japanese airlines by SAF by 2030
 - GTET Act offers USD 2.2 billion for 5 years from 2024 also to support SAF production

Malaysia
 National Energy Transition Roadmap published: 1% SAF blending mandate from 2027 expected, along with plan to incentivize investment in SAF production

Singapore
 SAF Target and SAF levy established

- SAF Mandates implemented
- SAF Mandates expected
- Non-Mandate SAF policies/incentives implemented
- Non-Mandate SAF policies/incentives expected

The observed trends in policy setting

- A growing number of emerging policy options on SAF are no longer US/EU-centric.
- A mix of SAF supply-side and demand-side policies are observed: Japan, UK, Singapore...
- A mix of volumetric targets and carbon intensity targets in policy settings are emerging.
- More dynamism is reflected in the setting of national SAF targets, depending on the domestic/regional production of SAF.

Building blocks for an effective SAF policy framework



- There is no one size fits all solution, nor right/wrong policy options *per se*.
- Successful SAF policy making may require a customized strategy specific to each State's own circumstances.

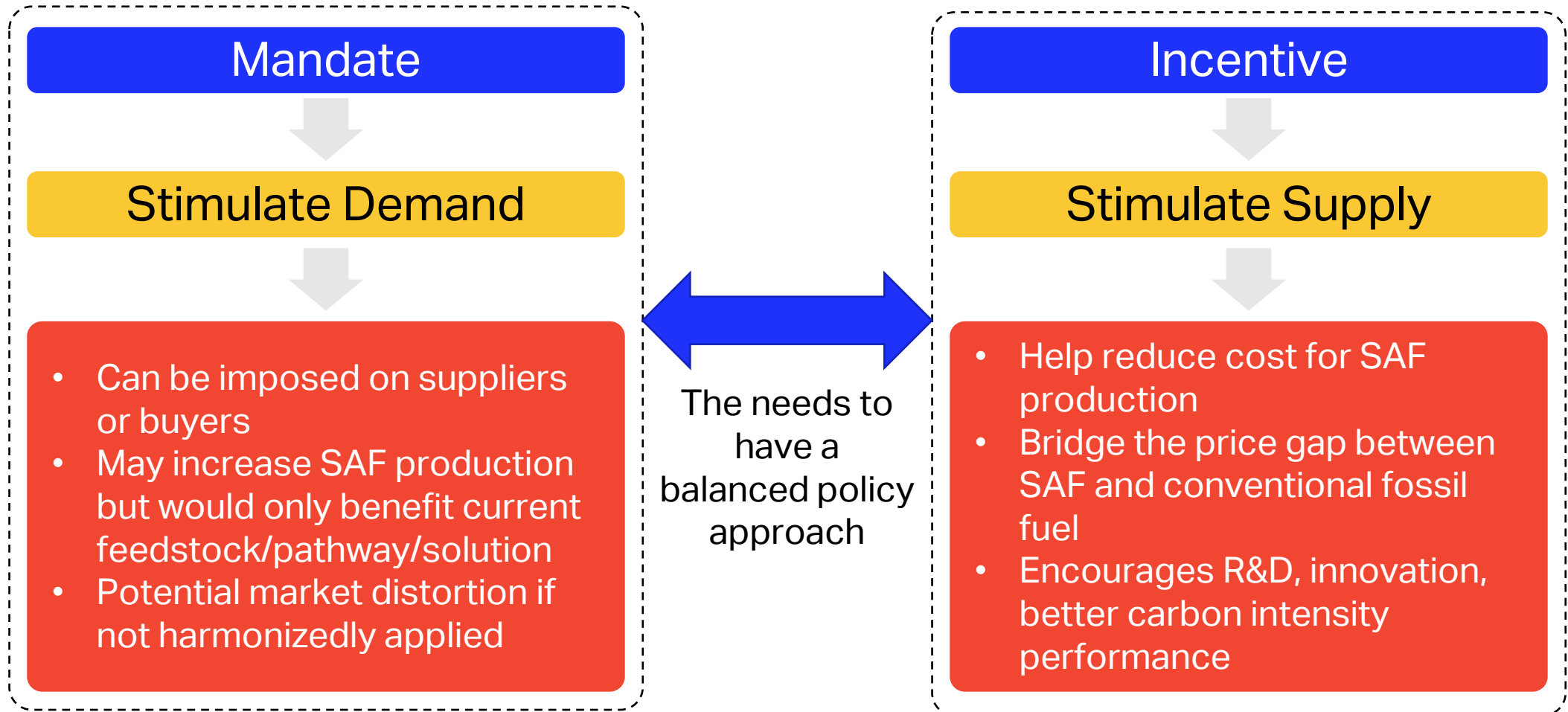
Effective SAF policies should be able to:

- Upscale SAF supply
- Enhance the price competitiveness of SAF to CAJ
- Assist SAF facility operation
- Recognize SAF environmental benefits
- Create structural SAF demand
- Promote R&D of new production technology (pathways) and the required supply chain.

We need to see more:

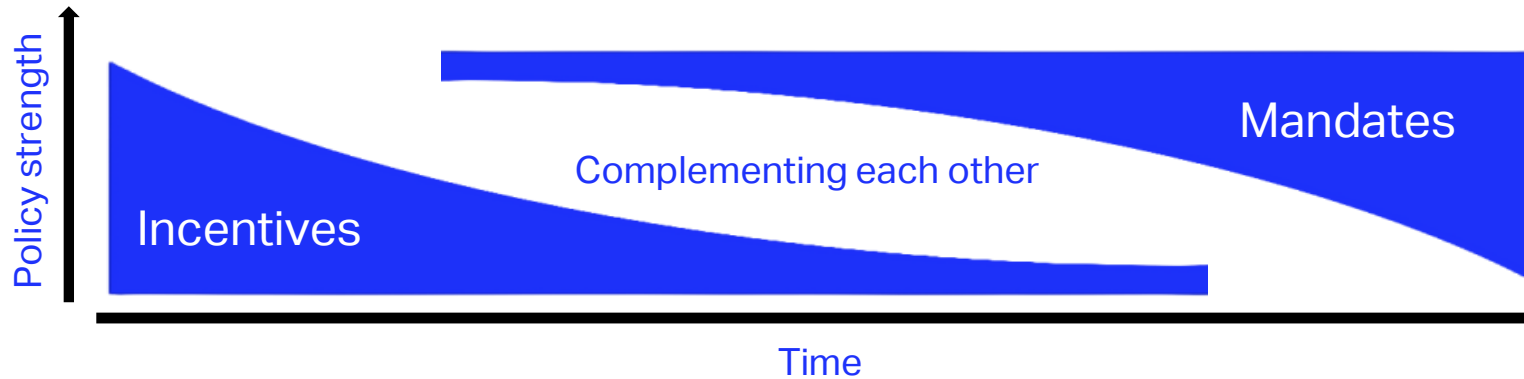
- Standalone policy options to attract capital to expand SAF supply
- Policy efforts to reduce disincentives to produce SAF relative to other renewable fuels
- Mandates paired with program design and fiscal measures to help reduce the cost gap between SAF and CAJ
- Policy consistency, harmonization, and stackable options.

SAF Policy Options: Incentive and Mandate



Policy instruments for SAFs: Incentives & Mandates

Timing of the policy instruments is the key



Any policies directed at SAF blending and use should be preceded by measures to stimulate SAF production!

Incentives should come first

- Create a functioning market first through incentives
- Stimulate new players and the diversification of SAF production
- Facilitate innovation + reduce unit cost + support 'first-of-a-kind' production facilities

Mandates to follow when production is there

- Should be complemented with incentives
- Not in favor of any specific feedstock or pathways
- Combined with policies with mid- to long-term goals of ramping up SAF production

IATA's Initiatives: Accelerating SAF Uptake

IATA's SAF Registry aims to accelerate SAF uptake by authoritatively accounting and reporting emissions reductions from SAF:

Key attributes include:

- **Promote a Global SAF Market**
- **Broad Application and Neutrality**
- **Regulatory Compliance**
- **Independent Governance**
- **Cost Efficiency**

Initial support already from:

- ✓ 17 airlines,
- ✓ 1 airline group
- ✓ 6 National Aviation Authorities,
- ✓ 3 OEMs
- ✓ 1 Fuel Producer

Increasing rapidly...



IATA's Initiatives: SAF Handbook & Capacity Building

In 2022 (IATA) conducted a thorough assessment of airlines' SAF readiness. As a result, SAF Induction Training sessions were delivered globally in 2023 to ensure a basic understanding of Sustainable Aviation Fuels by all IATA member airlines.

We have now taken that course syllabus and updated previous SAF guidance documents to create a new SAF Handbook, to support SAF deployment by broadening industry understanding.



IATA's Initiatives: Focus Africa



Africa's opportunities

Africa is home to over 18% of the world's population, despite this Africa's presence in the aviation industry accounts for just 2.1% of air global passengers.



Focus Africa Priority Areas

- **Safety:** Improve operational safety through a data driven, collaborative program to reduce safety incidents and accidents, in the air and on the ground.
- **Infrastructure:** Facilitate the growth of efficient, secure, and cost-effective aviation infrastructure.
- **Connectivity:** Promote the liberalization of intra-African market access through the Single African Air Transport Market (SAATM).
- **Finance and Distribution:** Accelerate the implementation of secure, effective and cost-efficient financial services and adoption of modern retailing standards.
- **Sustainability:** Assist Africa's air transport industry to achieve the "Net Zero by 2050" emissions targets agreed to by industry and the UN's International Civil Aviation Organisation (ICAO).
- **Future Skills:** Promote aviation-related career paths and ensure a steady supply of diverse and suitably skilled talent to meet the industry's future needs.

Sustainability

Level-up knowledge and resources on sustainability



- This initiative is designed to support airlines in Africa on their journey to net-zero, sustainable aviation.
- It provides unique access to resources and seeks to support airlines develop reduction programs in line with the industry's 2050 CO2 emissions strategy.

Encourage countries in Africa to increase SAF production and explore development opportunities



- This initiative aims to engage with a wide range of industry and policy stakeholders on all SAF topics and facilitate cooperation and promote partnerships between them.
- Focus areas include providing policy support for the commercialization of SAF and removing barriers to the realization of a cost competitive SAF.

Work with partners to secure airlines' access to sustainable finance



- The continued importance of sustainability for aviation will accelerate the requirement for capital to develop new technologies, infrastructure, and fuels.
- Green Finance will play a huge role in driving industry initiatives forward, ensuring that projects are properly financed, measured, and accounted for, and providing a supportive investment framework