

AFI Sustainable Aviation Fuel Workshop

Robert Boyd , Assistant Director, Energy Transition and Policy

Virtual: 12 April 2022



How do airlines define SAF?

15 years of work developing an alternative to fossil kerosene

SUSTAINABLE 

Meets
sustainability
criteria

AVIATION 

Meets technical &
certification
requirements
for use in
commercial
aircraft

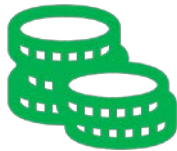
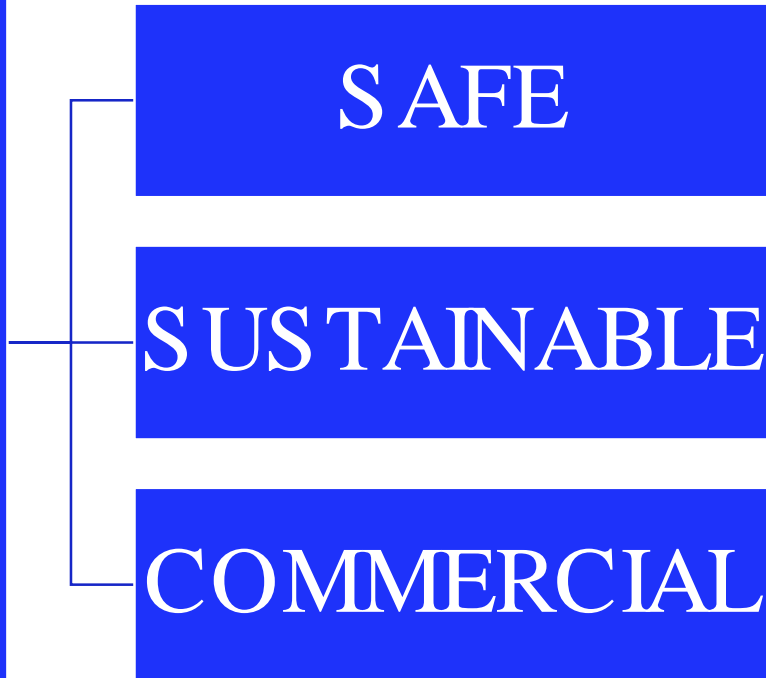
FUEL 

Uses
alternative to
crude oil
feedstock

SAF is a drop-in fuel

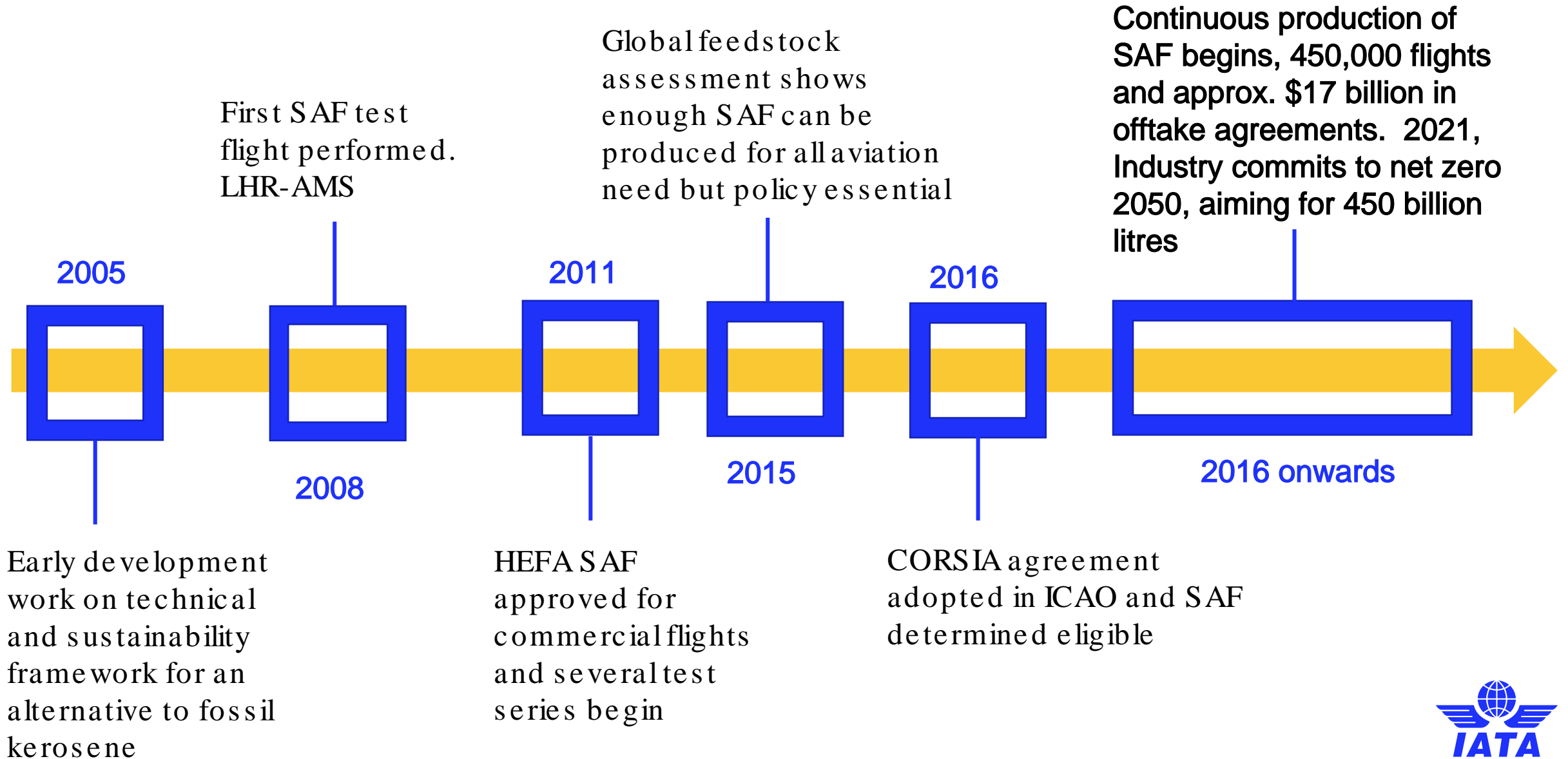
SAF: The most important criteria for airlines :

Policy



- ASTM certified
- Feedstock agnostic but must be truly sustainable
- Offtake agreement or investment
- Policy, including regulatory standards – vital!
- The role of ICAO is essential

Brief history on SAF



October 2021: Aviation industry commits to net zero emissions 2050

AIR TRANSPORT

IATA Ups Industry's Environmental Target to Net-zero Emissions by 2050

by Cathy Buyck - October 4, 2021, 4:10 PM



IATA's annual general meeting voted to step up plans to eliminate carbon dioxide emissions from the airline industry. (Photo: IATA)

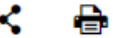


International Air Transport Association (IATA) members on Monday voted to strengthen the airline industry's environmental ambition and set a target to achieve net-zero carbon emissions by 2050, up from a previous target to half CO2 emissions on 2005 levels by 2050. The new target was expected and approved at the IATA annual general meeting in Boston in spite of requests by Chinese airlines to delay the timeframe to 2060, in line with China's carbon neutrality pledge by 2060.

5

Press Release No: 66

Date: 4 October 2021



Net-Zero Carbon Emissions by 2050



Translation:

[Cero emisiones netas de CO2 en 2050 \(pdf\)](#)

[国际航协：2050年实现净零碳排放 \(pdf\)](#)

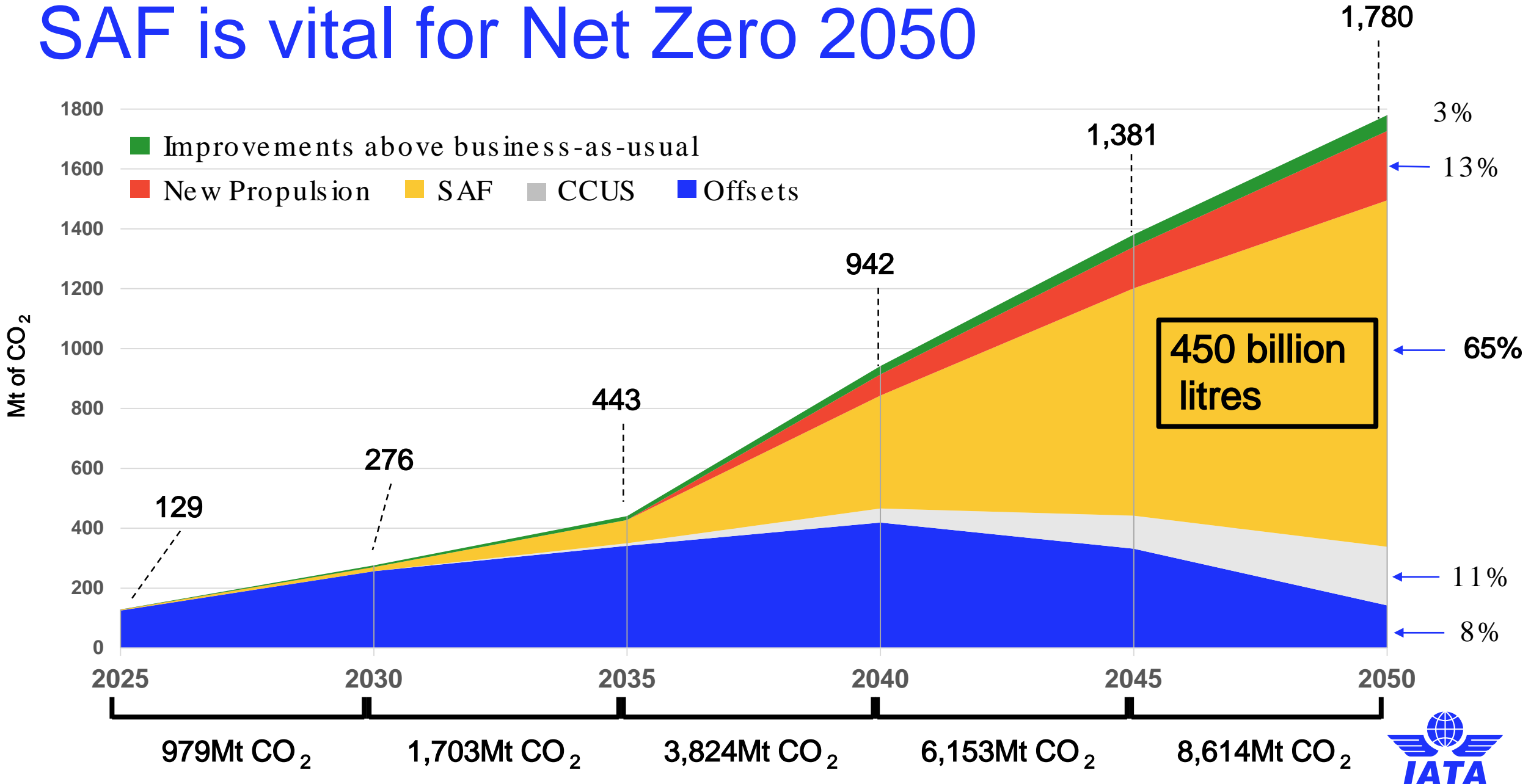
Boston - The International Air Transport Association (IATA) 77th Annual General Meeting approved a resolution for the global air transport industry to achieve net-zero carbon emissions by 2050. This commitment will align with the Paris Agreement goal for global warming not to exceed 1.5°C.

"The world's airlines have taken a momentous decision to ensure that flying is sustainable. The post-COVID-19 re-connect will be on a clear path towards net zero. That will ensure the freedom of future generations to sustainably explore, learn, trade, build markets, appreciate cultures and connect with people the world over. With the collective efforts of the entire value chain and supportive government policies, aviation will achieve net zero emissions by 2050," said Willie Walsh, IATA's Director General.

Achieving net zero emissions will be a huge challenge. The aviation industry must progressively reduce its emissions while accommodating the growing demand of a world that is eager to fly. To be able to serve the needs of the ten billion people expected to fly in 2050, at least 1.8 gigatons of carbon must be abated in that year. Moreover, the net zero commitment implies that a cumulative total of 21.2 gigatons of carbon will be abated between now and 2050.


IATA

SAF is vital for Net Zero 2050



Achieving net zero:

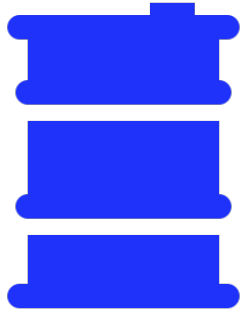
Three decades to scale production by 3,500 times

2021 

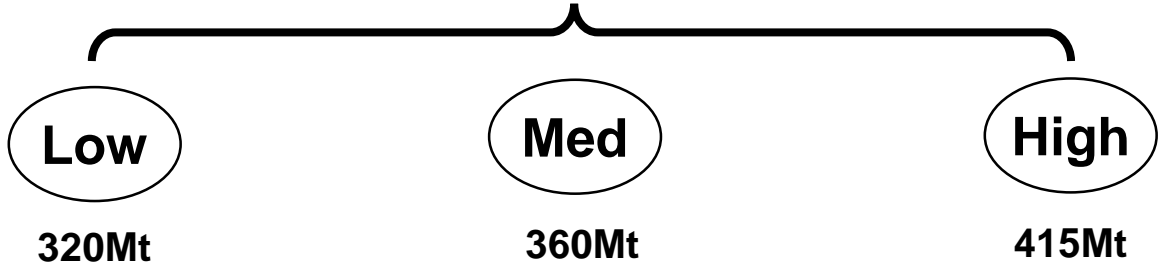
100,000
Tonnes SAF



2050



~350,000,000
Tonnes SAF



IATA is involved in numerous initiatives

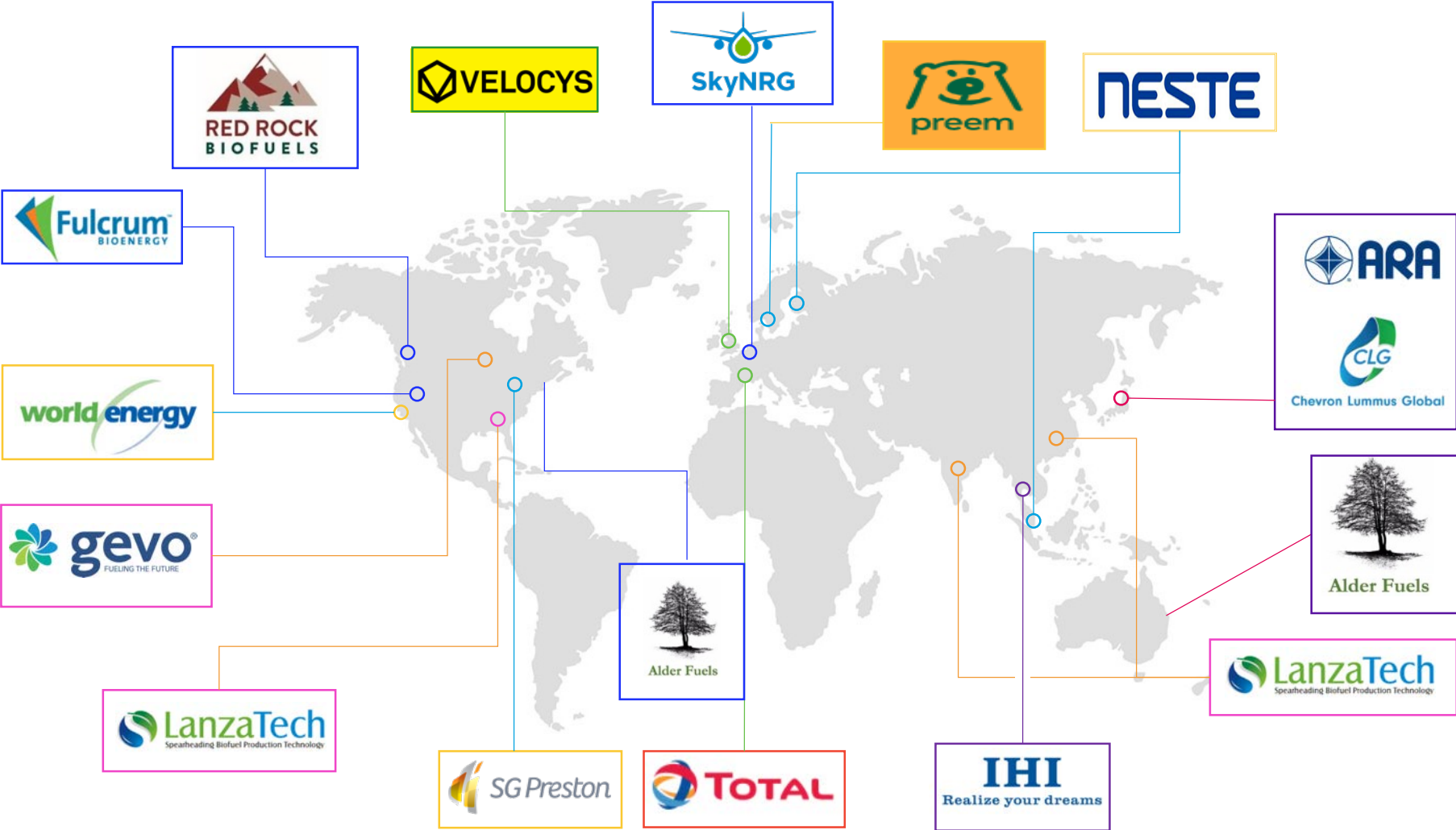
Numerous global initiatives and policy discussions including:

- Fitfor55: ReFuelEU
- UK Jet Zero Council
- COP26 (Glasgow)
- Canada Clean Fuel Standard
- Various US legislative proposals / discussions
- Blenders tax credit
- Country SAF mandates in Europe
- Nordic initiatives
- SAF initiative in Japan
- EU-China (H2020 Alternate Project)
- H2020 Alight project (SAF deployment best practice)
- NZ mandate inc SAF
- Aust: Bridging the gap – Government consultation
- Indonesia mandate (SAF?)
- CST
- Various industry roadmaps
- ICAO (LTAG and CAAF/3)



All SAF development has airline involvement

Around 5 billion litres of SAF production under construction:



Source: ICF analysis, IATA research / news announcements

One world airlines → AEMETIS



Airlines are rapidly developing SAF readiness



Delta Air Lines purchase agreement with Gevo for 75 million gallons of SAF annually for 7 years. Estimated revenue of USD 2.8 billion.



Oneworld Alliance plans to purchase up to 200 million gallons of SAF fuel per year from Gevo. Delivery of the fuel is expected to start in 2027 for 5-year term.



DHL announced agreement with BP and Neste for 800 million liters of SAF, covering over half of the 10% SAF blend by 2026 target.

Some examples from March 2022

Developing SAF readiness

IATA is aiming to develop a SAF readiness metric that can assist airlines becoming SAF ready as soon as possible

- The Index will consist of key indicators in the areas of:
 - airline corporate readiness and SAF strategy
 - airline SAF purchasing capability
 - feedstock availability and supply chain.
- Results and recommendations will be summarized in the form of a one-page information sheet for each member
- First phase: Expected by June 2022



Airline AB

SAF READINESS PROFILE

- 4 SAF flights
- Off-take (YES - 2)
- Domicile: [XXX]
- Int (60%) Dom (40%)
- Total Fuel (3 billion L/p/a)
- Fleet: 200

PROFILE

AB is an [XXXX] based airline operating [international and domestic] services. AB has been active in SAF since [XXX]

SAF RATING



AIRLINE CORPORATE STRATEGY



AIRLINE SAF PURCHASING



RESULTS AND RECOMMENDATIONS

Advanced:

AB has a strong [XXX] year history of SAF engagement and development. The overall score of 7.5/10 puts AB in the top x% of global airlines and in the x percentile for the [XXX] region. Key strengths include:

- Management expertise including CEO
- Strong balance sheet enabling SAF introduction
- Positive customer and corporate drivers

Recommendations:

AB would benefit from focusing on enhancing the domestic SAF production opportunities. Challenges include the lack of supportive policy, high cost of labor, and weak but growing customer engagement.

Opportunities include:

- Structured advocacy campaign for supportive policy
- Develop feedstock aggregation strategy
- Techno-Economics assessment focusing [XXX]

F

New jobs are a huge energy transition opportunity

Will create:

Up to 14 million jobs

With 90% across the supply chain

Supporting collection of feedstock and construction of facilities

Helping to support a just transition from fossil fuel jobs to clean energy

Potential jobs created or sustained

Scenario	Description	Global	Africa	Asia-Pacific	Europe	Latin America Caribbean	Middle East	North America
F ₂ Pushing technology and SAF	Backcast with a ramp-up in SAF production	13.5m	1.2m	5.6m	2.4m	1.9m	0.4m	2.0m
F ₃ Aggressive SAF	Backcast with a priority placed on SAF investment by the industry	14.1m	1.2m	5.9m	2.5m	2.0m	0.4m	2.1m
F ₄ Aspirational technology	Backcast with SAF filling the gap following radical technology developments	13.0m	1.2m	5.4m	2.3m	1.9m	0.3m	1.9m

Global SAF Facts in 2022



> 50 airlines
> 450,000 flights

2016: 500 flight

2025: 2 million flights



7 technical pathways

2016: 4 technical pathways

2025: 11 technical pathways



125+ million litres per annum

2016: 8 million litres

2025: around 5 billion litres



70% - 100% CO₂ reduction

2016: approx. 60% reduction

2025: approx. 80% reduction



38 Countries with SAF policy

2016: 2 countries

2025: potentially a global agreement



\$17 billion in forward purchase agreements

2016: \$2.5 billion

2025: > \$30 billion