Perspectives of SAF in the aviation sector

IEA Bioenergy Triannual Conference 2021

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Virtual: 3 December 2021

IATA

October 2021:
Aviation industry commits to net zero emissions 2050

Green

Airline Industry Targets Net-Zero Carbon Emissions by 2050

By Siddharth Vikram Philip, Mary Schlangenstein, and Christopher Jasper
October 4, 2021, 3:38 PM GMT+2 *Updated on October 4, 2021, 5:26 PM GMT+2*

- IATA says commitment vital as Chinese carriers query timeline
- Group calls for new technologies, help with $2 trillion cost

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.

Press Release No: 66

Date: 4 October 2021

Net-Zero Carbon Emissions by 2050

FLY NET ZERO

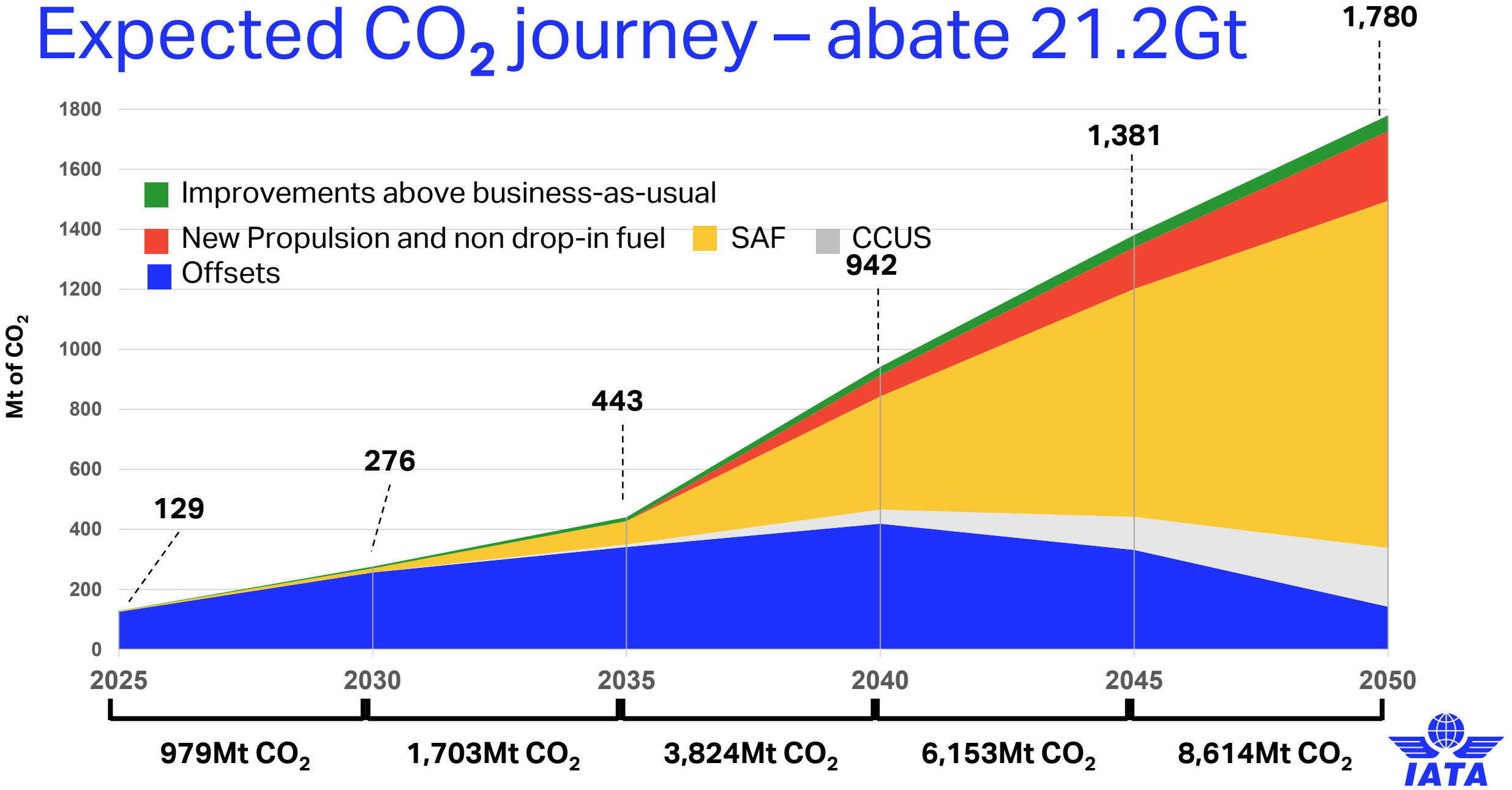
Translation:
Cero emisiones netas de CO2 en 2050 (pdf)
国际航协：2050年实现净零碳排放 (pdf)

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.

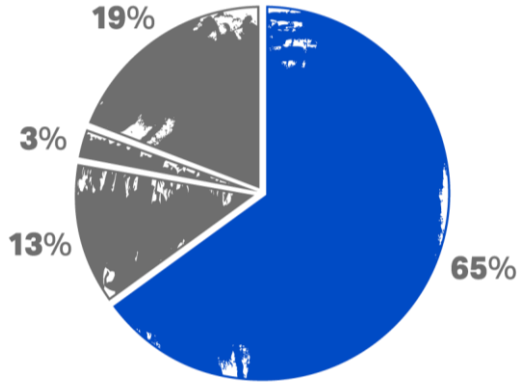
"The world's airlines have taken a momentous decision to ensure that flying is sustainable. The post-COVID-19 re-connect will be on a clear path towards net zero. That will ensure the freedom of future generations to sustainably explore, learn, trade, build markets, appreciate cultures and connect with 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.

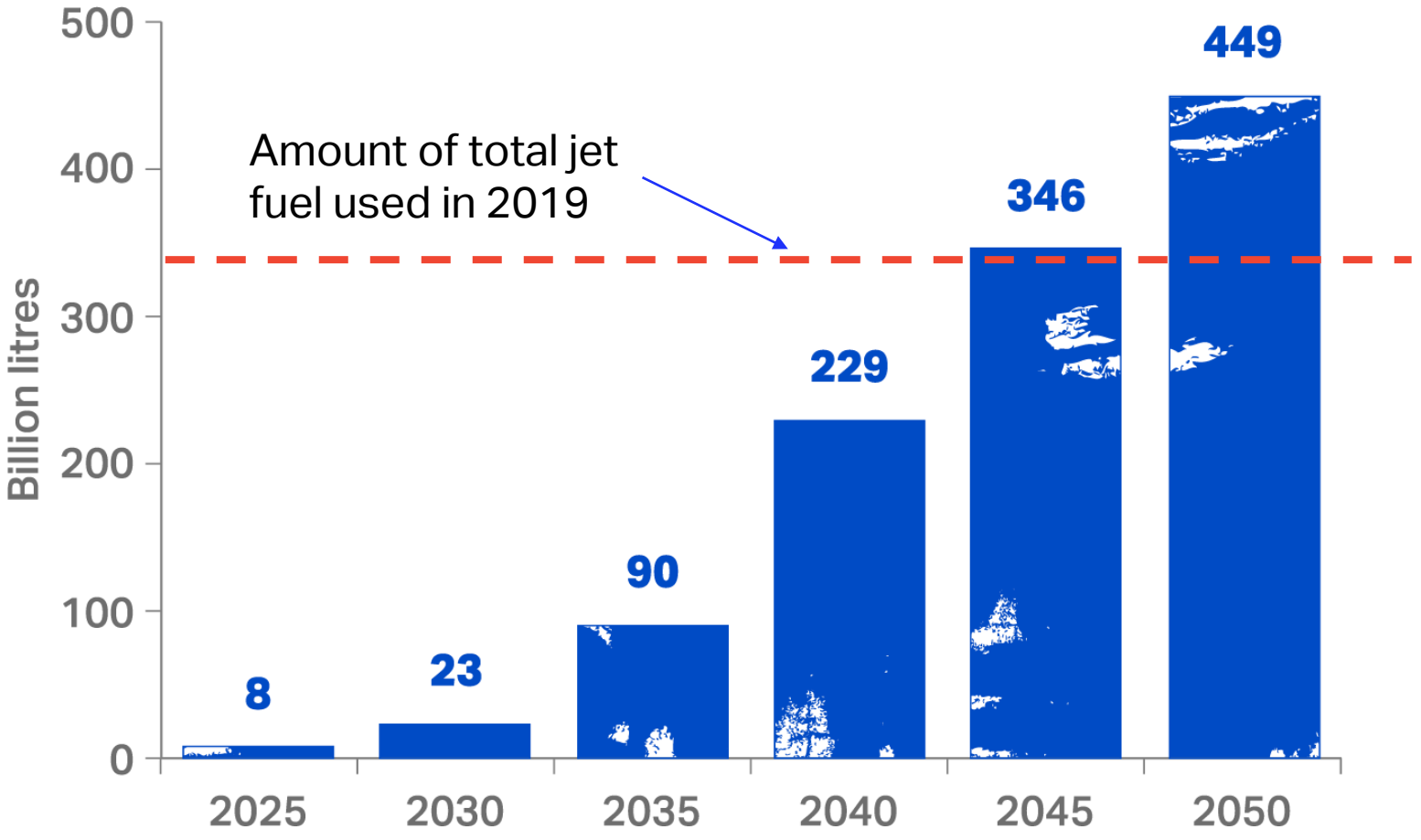
Achieving net zero emissions will be a huge challenge. The aviation industry must progressively reduce its emissions while accommodating the growing demand of a world that is eager to fly. To be able to serve the needs of the ten billion people expected to fly in 2050, at least 1.8 gigatons of carbon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

Expected CO_2 journey – abate 21.2Gt



SAF expected to do the heavy lifting





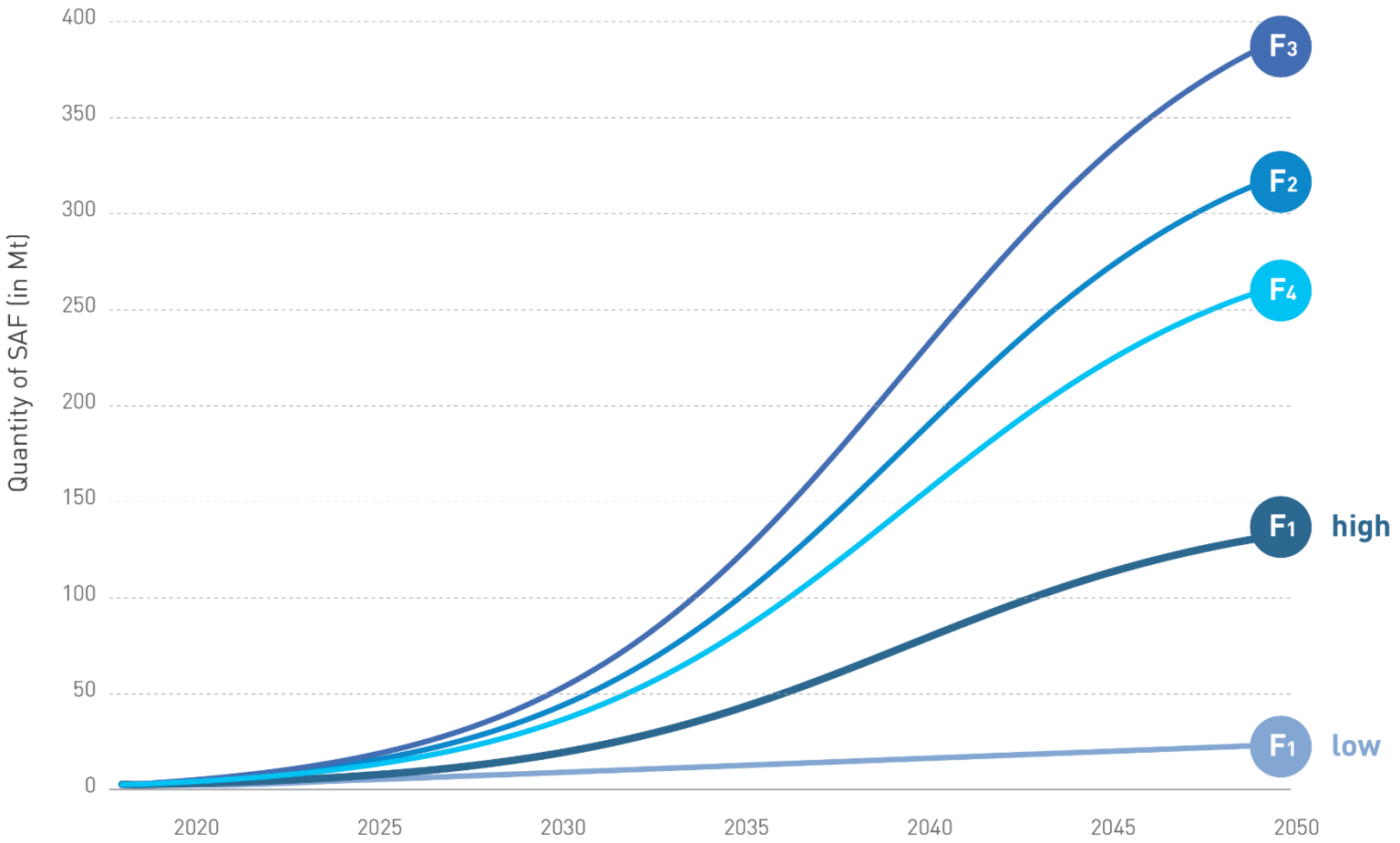
Big reliance on ramping up SAF production

Production needs to go from 100 million liters today to at least 449 billion liters in 2050.

SAF should contribute around 65% of the emissions reductions needed in 2050.

IATA

The Waypoint 2050 study analyzed decarbonization potential from technology, operations/infrastructure and then developed forecasts / backcasts for SAF



Scenario	Description	2050 Mt SAF	2050 % of fuel supply
F1 F1 **Current trends – baseline**	Continuation of current growth of SAF development	20-144	5 – 30%
F2 **Pushing technology and SAF**	**Backcast** with a ramp-up in SAF production	290-390	82%
F3 **Aggressive SAF**	**Backcast** with a priority placed on SAF investment by the industry	350-450	86%
F4 **Aspirational technology**	**Backcast** with SAF filling the gap following radical technology developments	235-340	77%

Feedstock will evolve, but it is not a constraint

Sustainability: A 'race to the top' but vital to respect international sustainability agreements






Current most common options → Most likely mid-century

Waste oils	Municipal solid waste / industrial off-gasses	Wood processing and forestry waste	Agricultural waste	Oil and cellulosic crops	Power-to-liquid sources

Evolution of SAF will take place in three waves

Production today

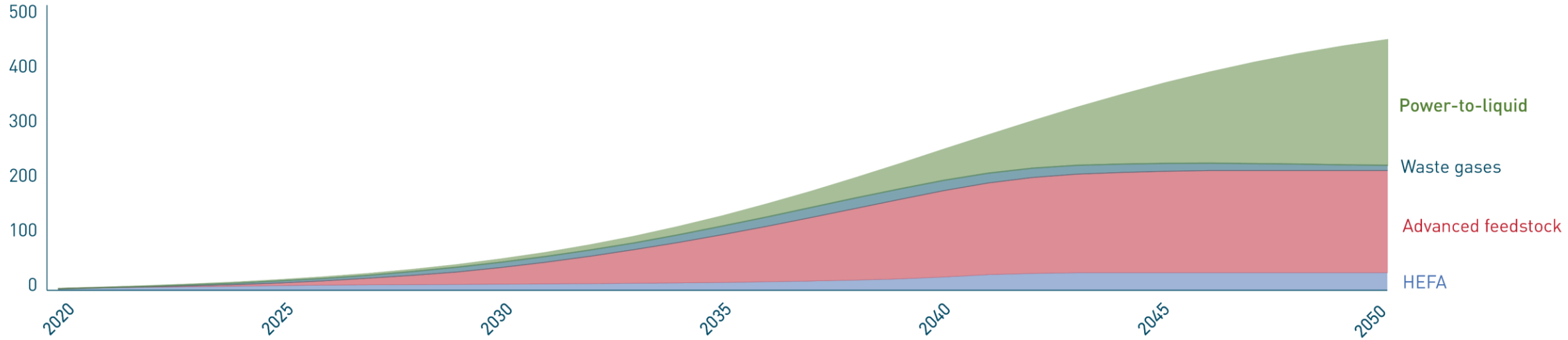
HEFA processes using waste fats and oils

Advanced SAF

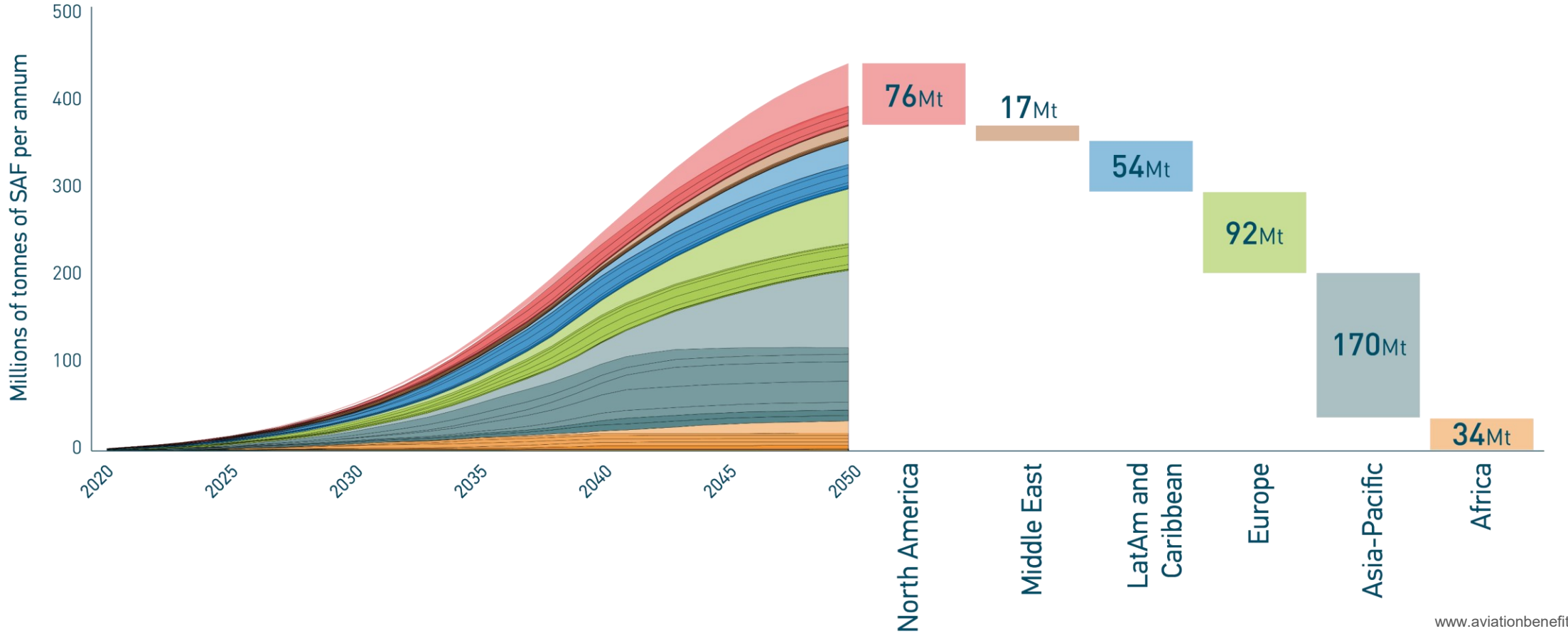
Alcohol-to-jet, fischer-tropsh or other using biological material

Power-to-liquids

Using low-carbon electricity and green hydrogen



SAF production evolution on a regional basis



ICAO 40th Assembly

(24 Sep-4 Oct 2019 Montreal)
182 States, 55 Int'l Organizations, 2400+ attendees

CORSIA
"CORSIA is the **only** global market-based measure applying to CO2 emissions from international aviation so as to avoid a possible patchwork of duplicative State or regional MBMs, thus ensuring that international aviation CO2 emissions should be accounted for only once".

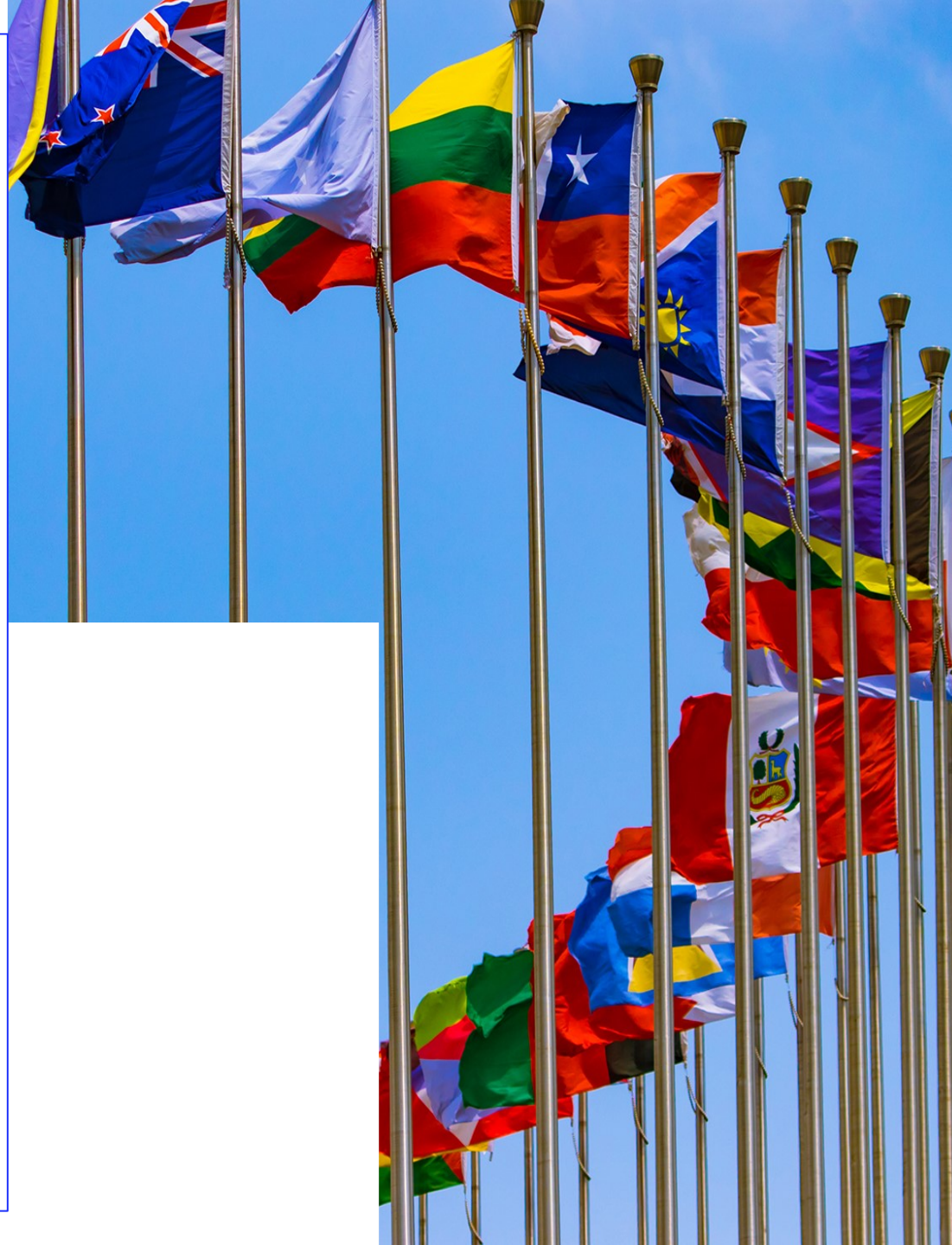
ICAO 41ST Assembly

(26 Sep-7 Oct 2022 Montreal)
Long-term goal

A 2050 emissions goal will be discussed and likely agreed by States. Different to the industry goal this will become regulation in the Chicago Convention

Conference on Aviation Alternative Fuel / 3 (CAAF/3)

(Before 2025)
Opportunity for States to agree on quantitative SAF ambition. Such an approach would reduce policy distortion risks



Global SAF Facts in 2021

380,000 flights

2016: 500 flight

2025: 1 million flights

100+ million litres per annum

2016: 8 million litres

2025: around 5 billion litres

38 Countries with SAF policy

2016: 2 countries

2025: potentially a global agreement

7 technical pathways

2016: 4 technical pathways

2025: 11 technical pathways

60%-100% CO_2 reduction

2016: approx. 60% reduction

2025: approx. 80% reduction

$15 billion in forward purchase agreements

2016: $2.5 billion

2025: > $30 billion

2025 figures are IATA Environment estimates

The aviation energy transition creates a huge number of opportunities too

Building:

5,000 – 7,000 production facilities

Improving energy security and resilience

Creating opportunities in all countries – 90% of current oil production is in 22 countries

Assumes small-scale production close to feedstocks and airports – likely opportunities for some consolidation

Investment of:

$1.0-1.45 trillion

~6% of annual fossil and gas investment

Aviation currently uses ~7% of liquid fuels

However, aviation will be a sector more important to the energy industry in the future as other transport shifts to electric.

And 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

Q & A