11th ISCC Global Sustainability Conference

Robert Boyd

Assistant Director, Environment

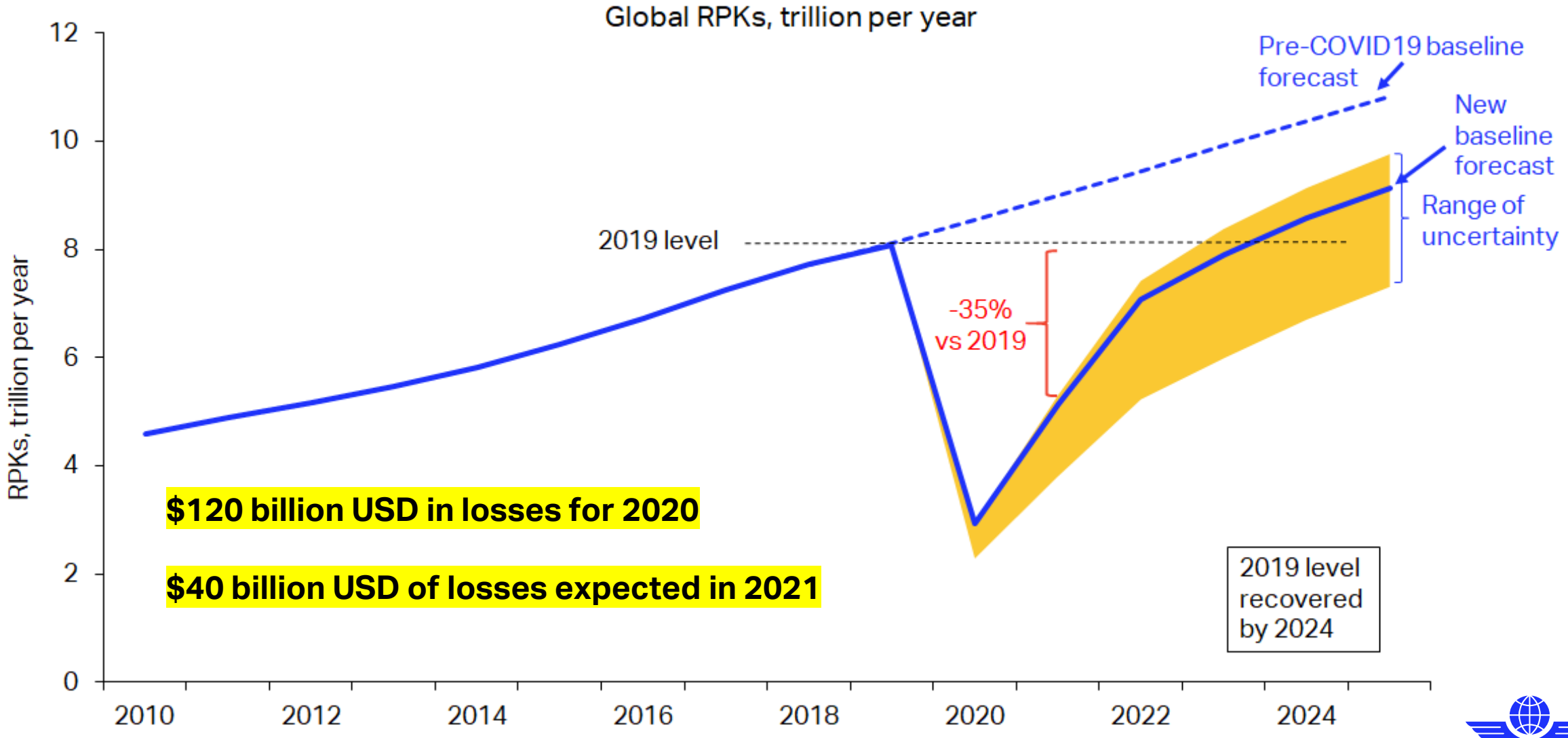
Global lead - SAF

24 February 2021 - Virtual

IATA

COVID has had a dramatic impact on the aviation industry

Does the difficult outlook impact SAF?



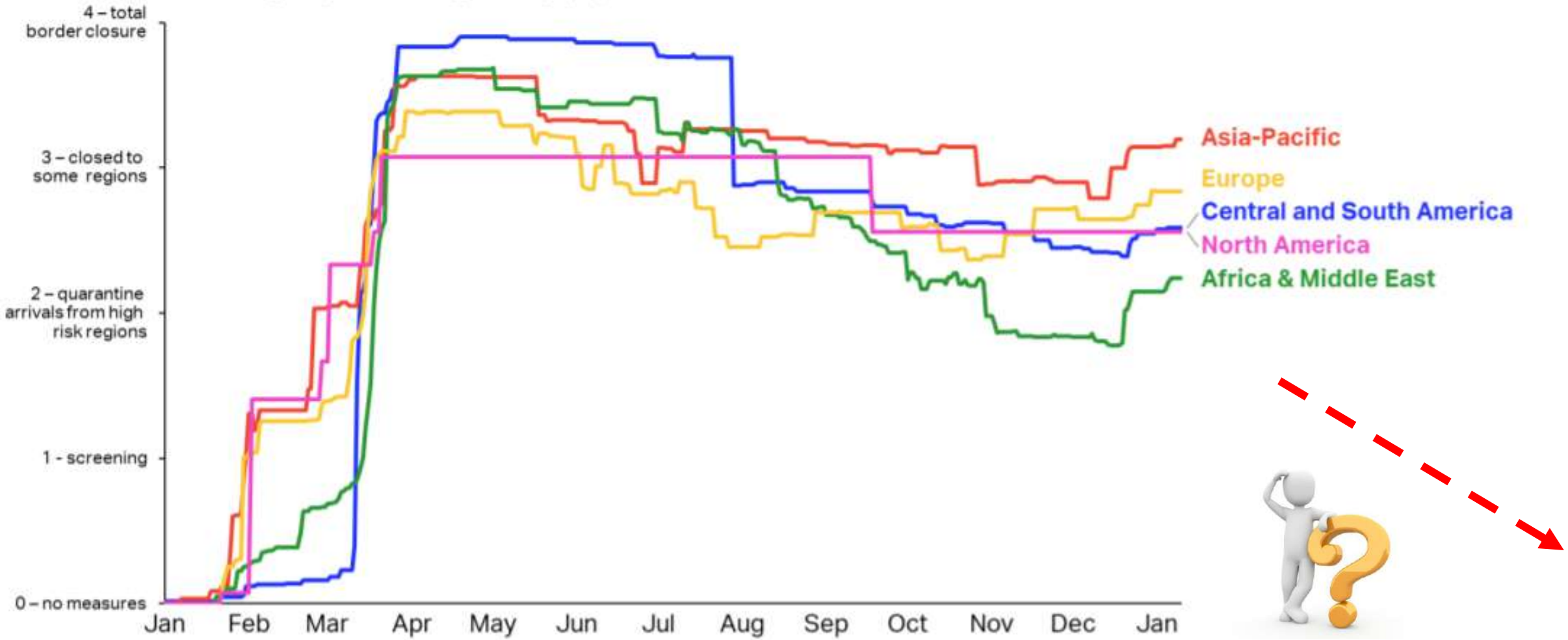
Source: IATA/Tourism Economics, *Air Passenger Forecasts*, July 2020 update

IATA Economics' Chart of the Week

29 January 2021

Travel restrictions rise amidst new COVID variants

International travel stringency index weighted by population (Jan 2020-Jan 2021)



Source: IATA Economics analysis based on Oxford University data

Aviation and Environment

Anti-aviation activism has not disappeared

Aviation contributes ‘only’ about 2% of all CO_2 emissions

Governments face growing pressure to act on environment

International policy changing

Despite COVID, airlines used more SAF in 2020 than ever before

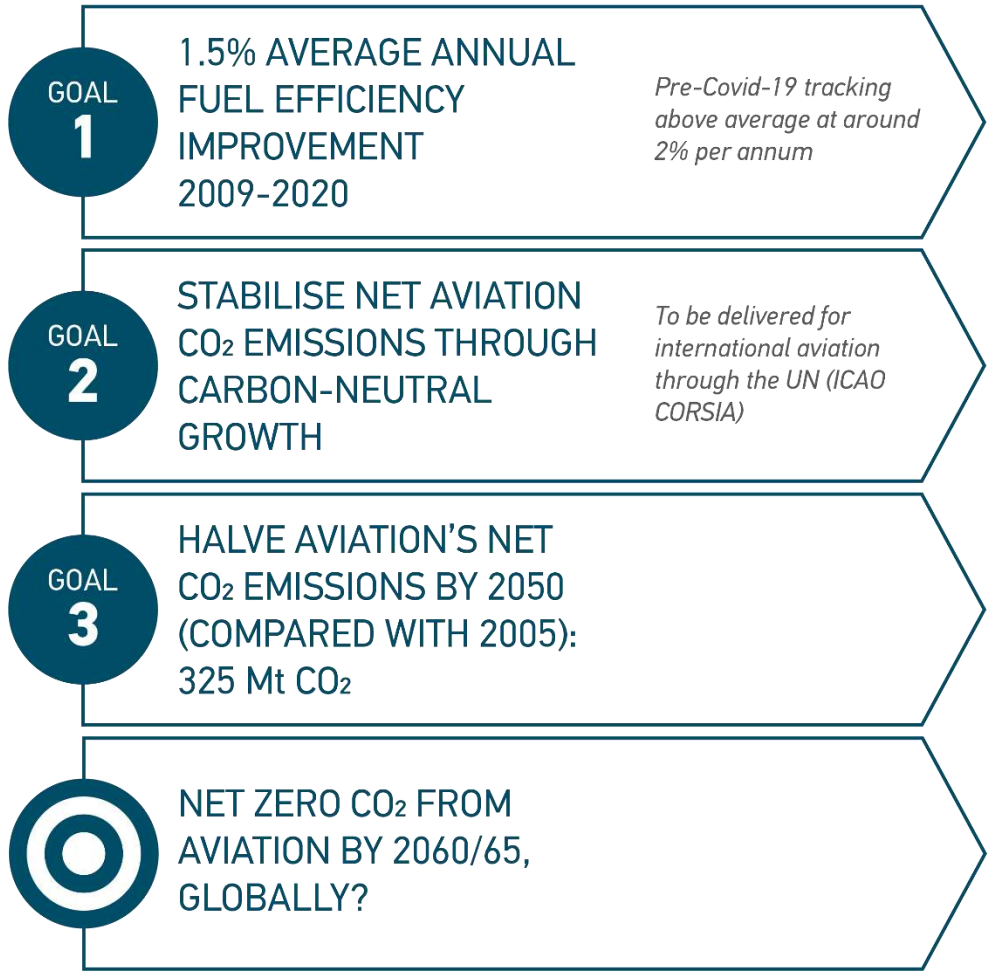
Aviation and Environment - Current state of play

Air transport established sector-wide climate goals in 2009.

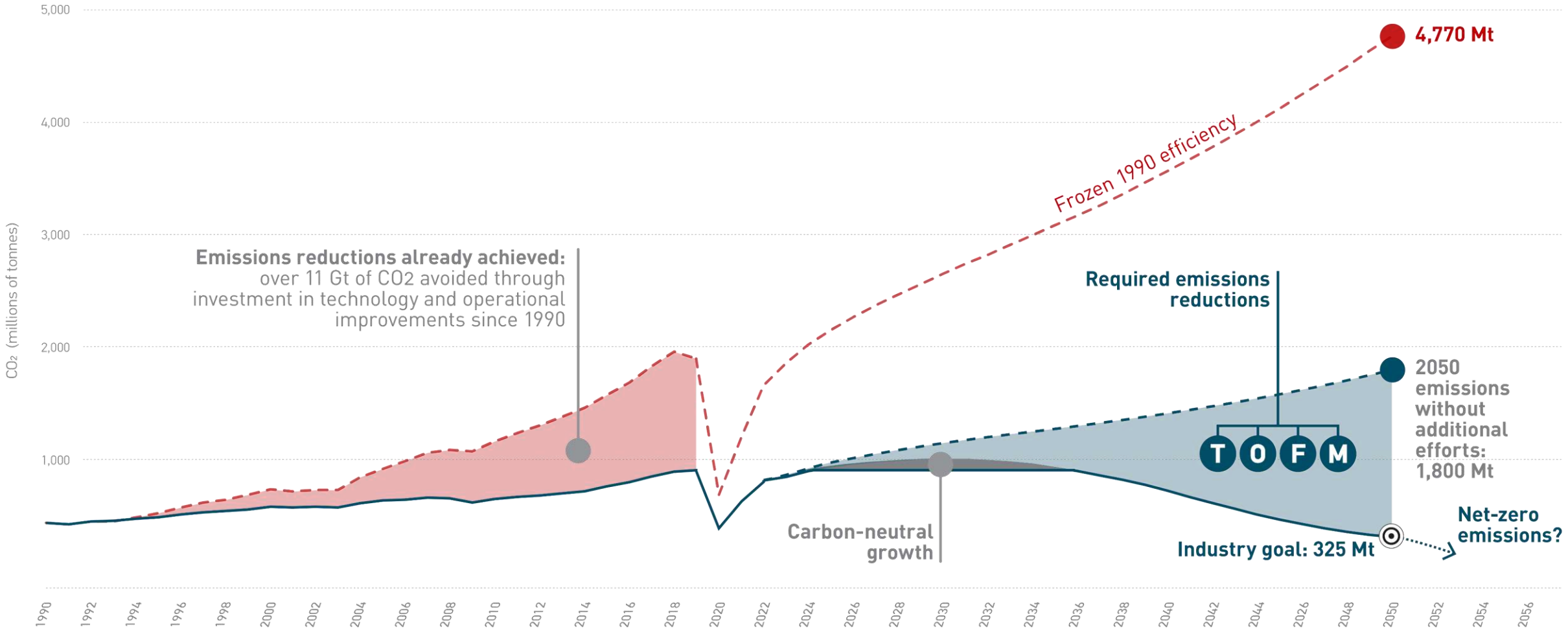
Waypoint 2050 provides details of the pathway to meeting the long-term goal.

Key takeaways:

- Aviation's long-term climate goal is in line with the Paris Agreement, is a significant challenge, but is achievable.
- Additionally, with the right government support and advances from the research community, net zero CO_2 from air transport at a global level is possible by around 2060/65 (some regions will be able to reach that point faster).



Charting a course for 2050, and net-zero globally



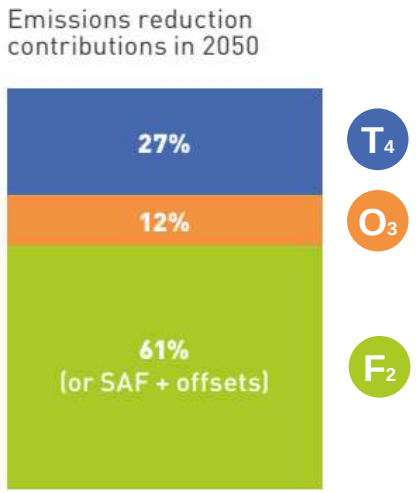
Source: Waypoint 2050 (ATAG)

Meeting the industry goal. A lot of SAF required

Scenario 1

Pushing technology and operations

Industry prioritises technology and operational improvements

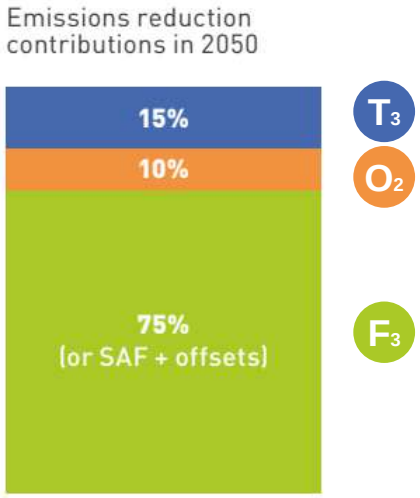


Electric and hybrid short-range (<100 seat) aircraft from 2035/2040. High-range operational improvements. 290-390 Mt of SAF by 2050.

Scenario 2

Aggressive sustainable aviation fuel deployment

Industry prioritises investment in sustainable aviation fuel over technology

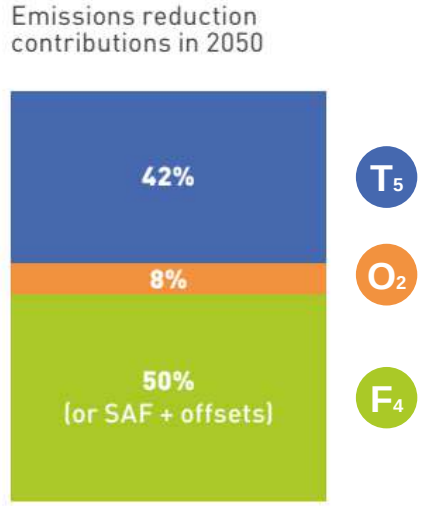


New airframe configurations such as blended wing body. Mid-range operational improvements. 350-450 Mt of SAF by 2050.

Scenario 3

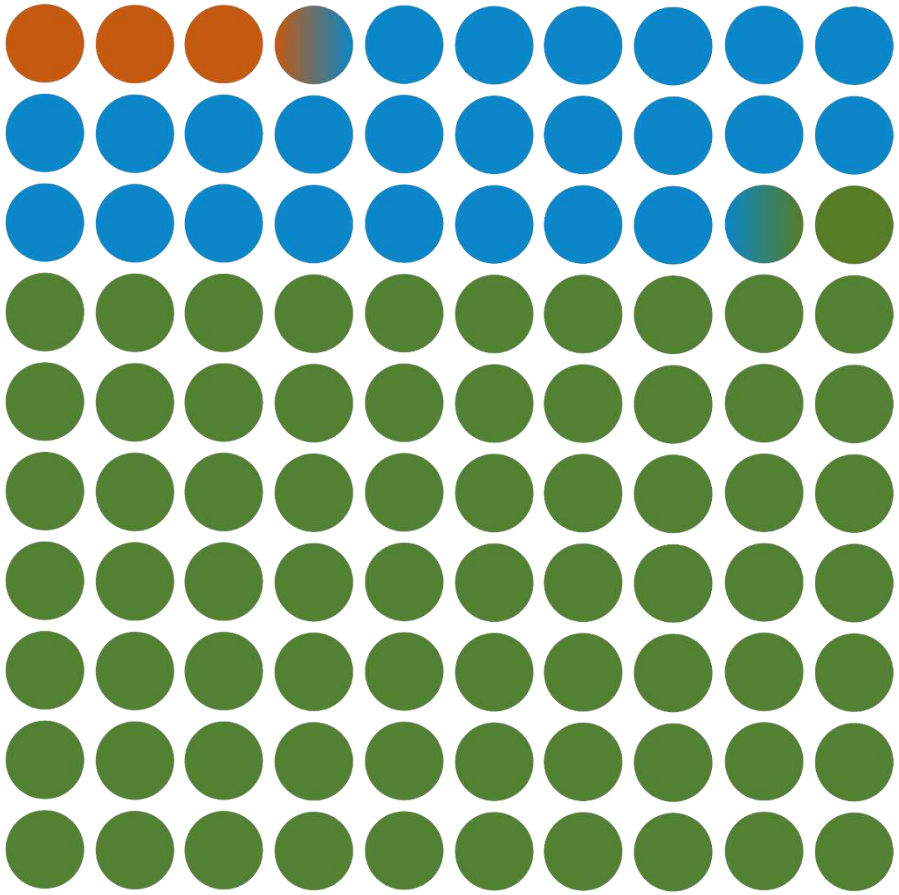
Aspirational and aggressive technology perspective

Highly ambitious technology developments: electric and/or hydrogen for up to 200 seat aircraft before 2035



Very aggressive zero emissions aircraft (electric, hydrogen) by 2035-2040. Mid-range operational improvements. 235-340 Mt of SAF by 2050.

SAF will do most of the decarbonizing, even with hydrogen and electric



Even assuming highly optimistic use of **electric** and **hydrogen** energy for short-haul and some medium-haul operations in 2050, the vast majority of traffic (RPKs) will still rely on the use of **sustainable aviation fuel**.

2050 % of operations by energy source (indicative example)

ATAG schematic indication of potential energy use in 2050

SAF Facts in 2021

315,000 flights

2016: 500 flight

2025: 1 million flights

100+ million litres per annum

2016: 8 million litres

2025: around 5 billion litres

36 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

$7 billion in forward purchase agreements

2016: $2.5 billion

2025: > $30 billion

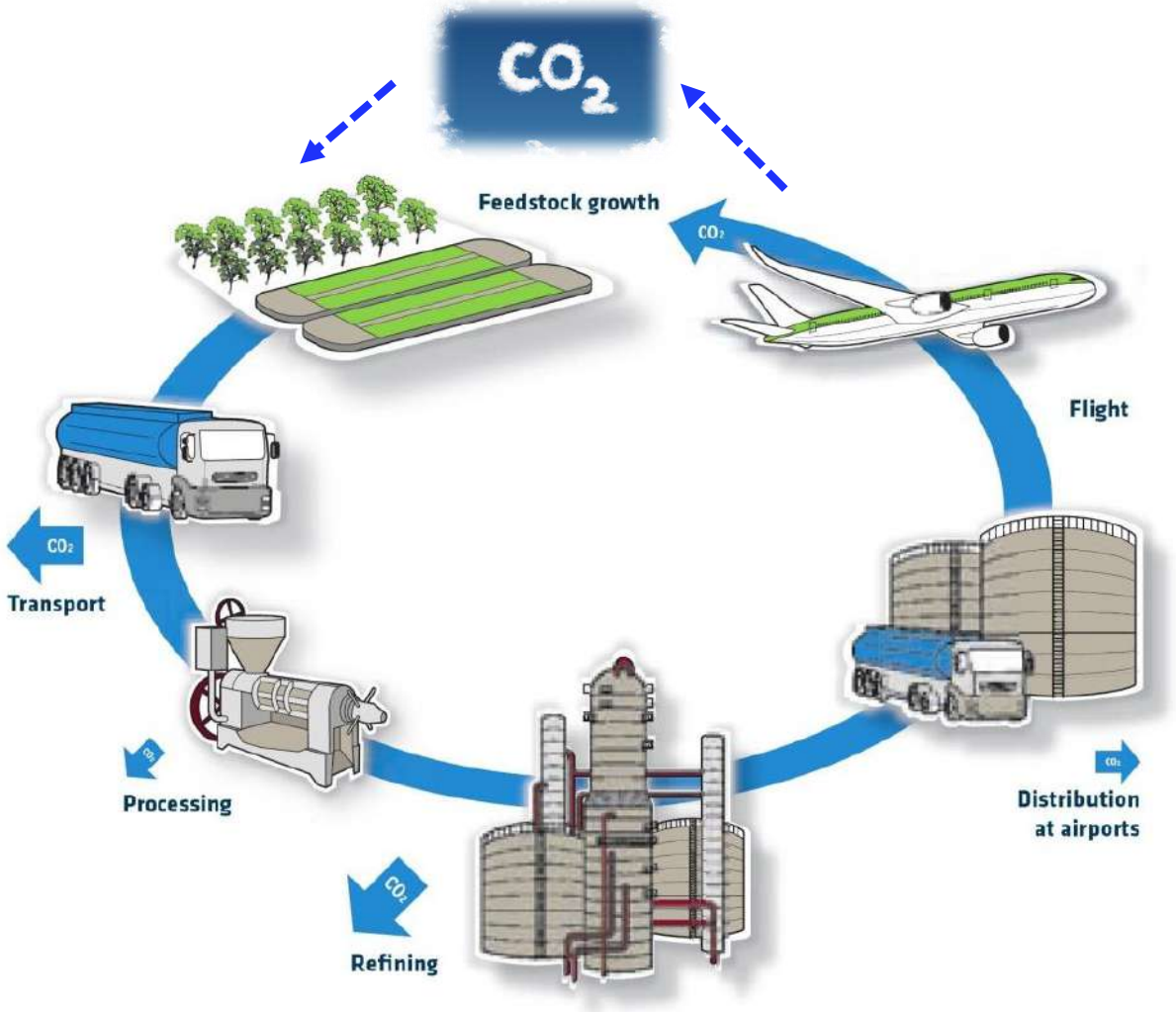
2025 figures are IATA Environment estimates

SAF can reduce lifecycle emissions by 80% compared to fossil fuel

Crops grown on high carbon stock land

Don’t threaten food / water security

High carbon alternative sources



Airline industry position on sustainability

Potential sources of SAF






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

Common
But
Differentiated
Responsibilities

Q & A