

# 11<sup>th</sup> ISCC Global Sustainability Conference

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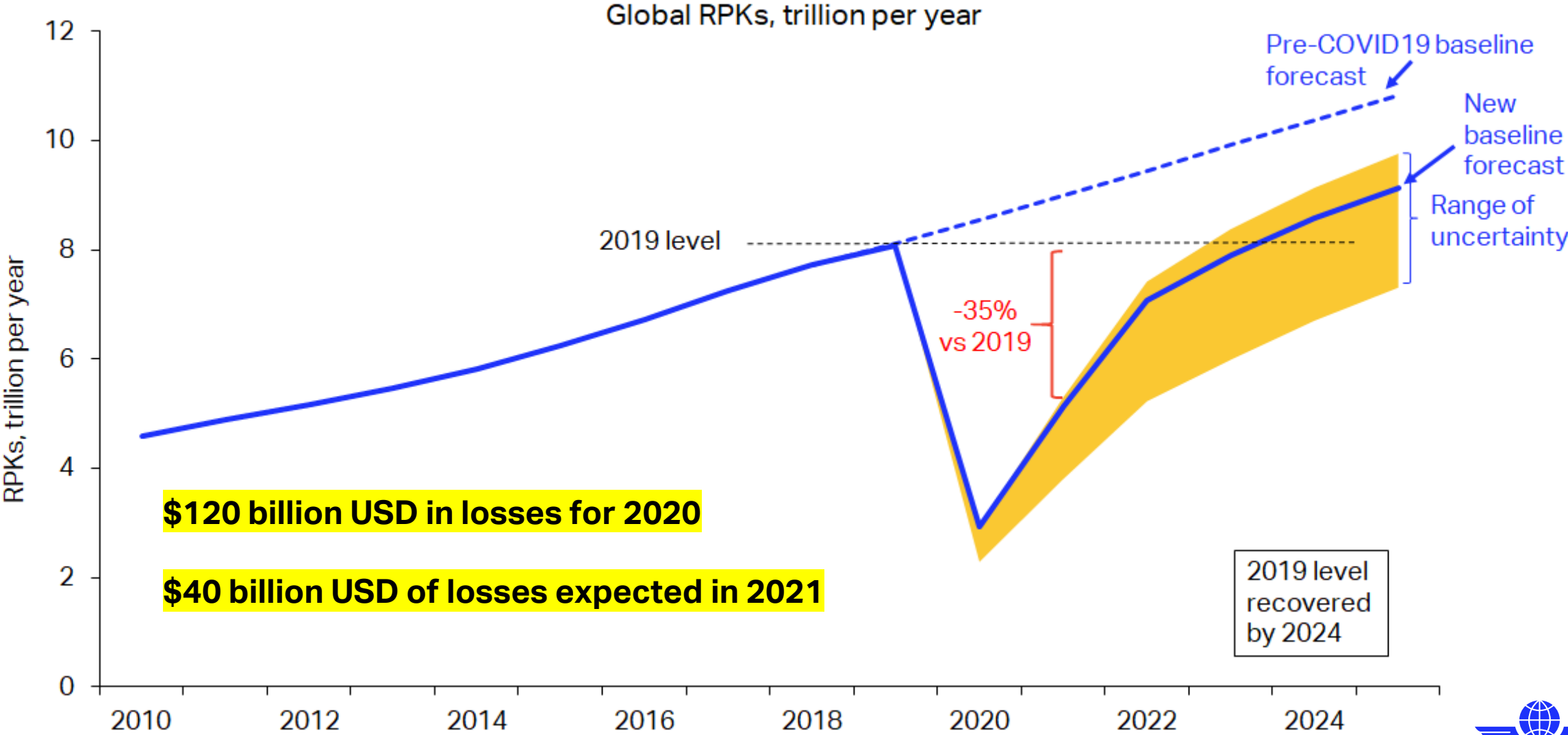
24 February 2021 - Virtual





# COVID has had a dramatic impact on the aviation industry

*Does the difficult outlook impact SAF?*



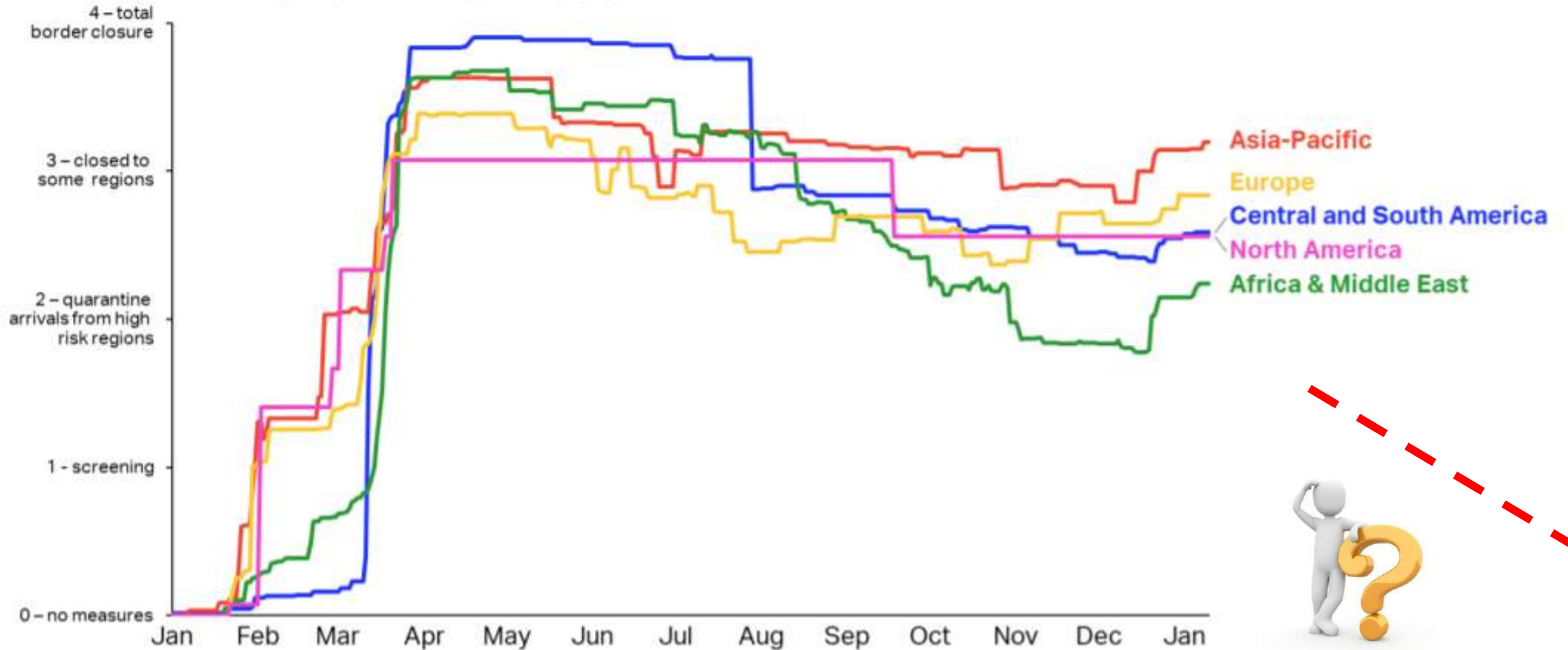
Source: IATA/Tourism Economics, *Air Passenger Forecasts*, July 2020 update

# 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<sub>2</sub> 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

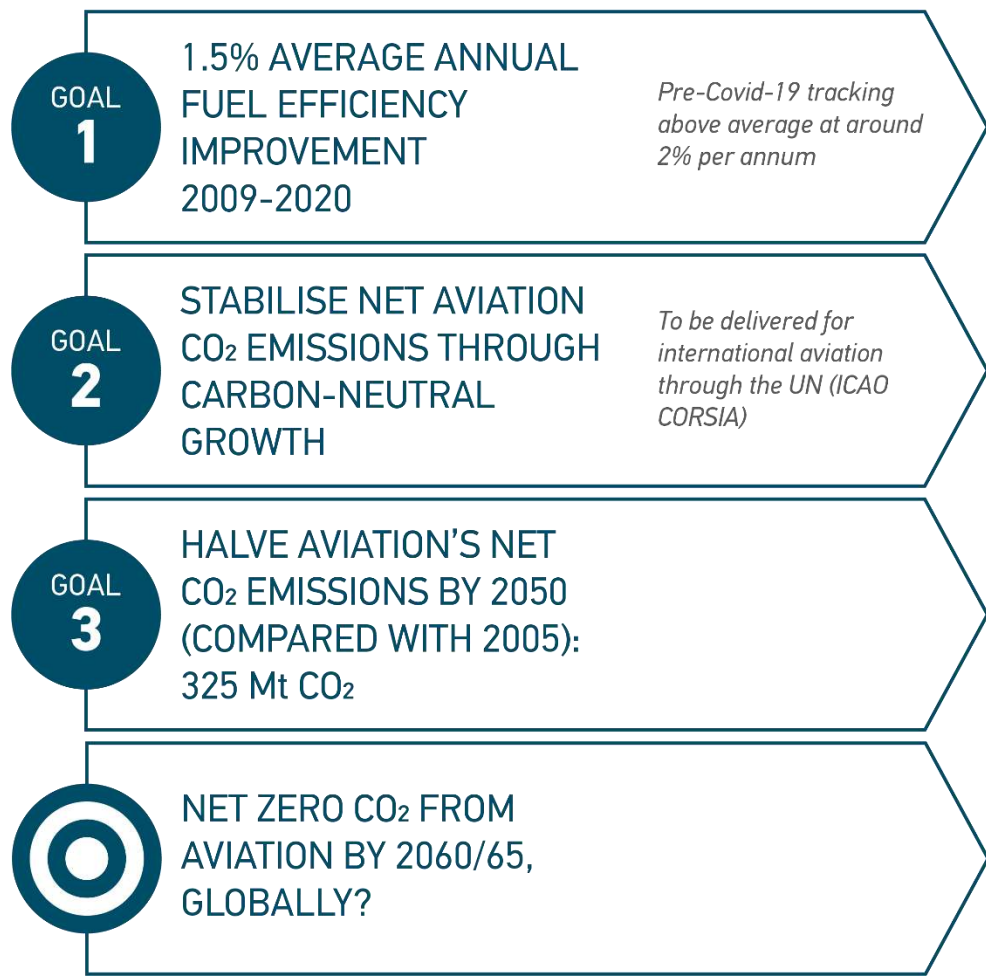


Air transport established sector-wide climate goals in 2009.

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<sub>2</sub> from air transport at a global level is possible by around 2060/65 (some regions will be able to reach that point faster).



GOAL 1

1.5% AVERAGE ANNUAL FUEL EFFICIENCY IMPROVEMENT 2009-2020

*Pre-Covid-19 tracking above average at around 2% per annum*

GOAL 2

STABILISE NET AVIATION CO<sub>2</sub> EMISSIONS THROUGH CARBON-NEUTRAL GROWTH

*To be delivered for international aviation through the UN (ICAO CORSIA)*

GOAL 3

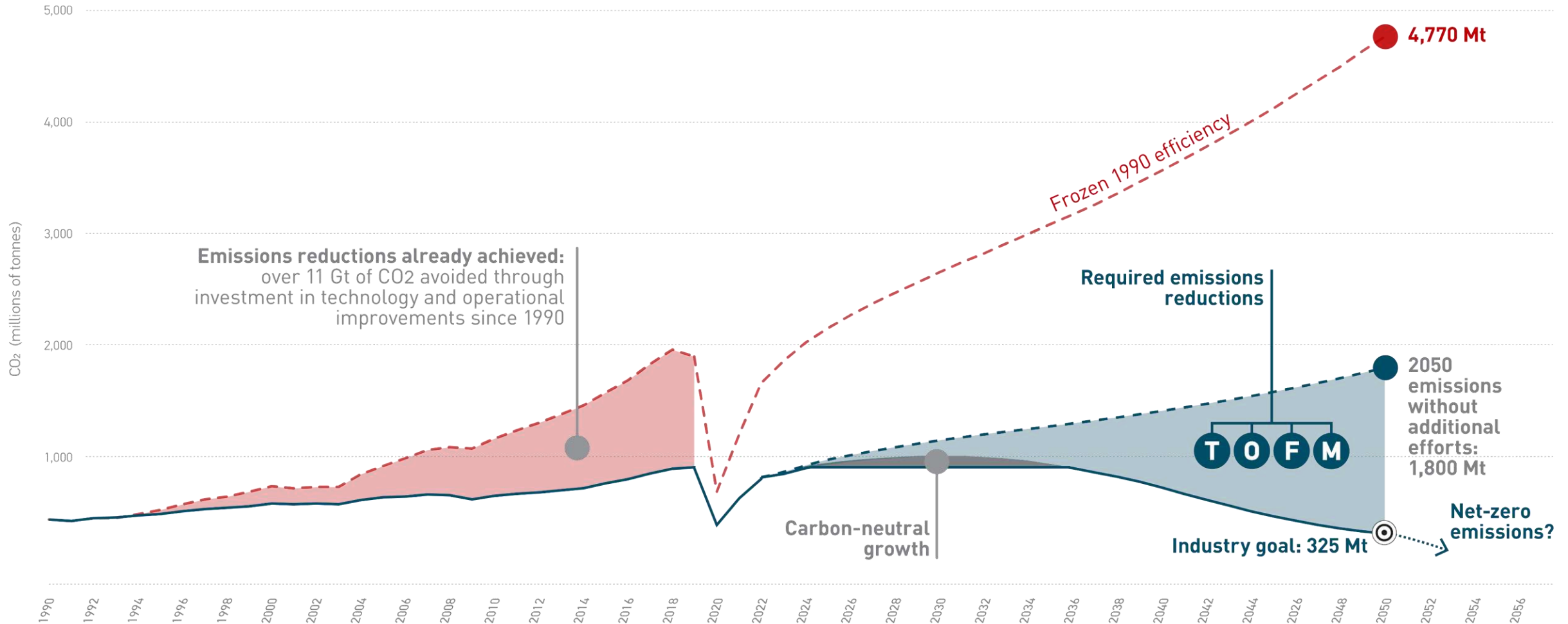
HALVE AVIATION'S NET CO<sub>2</sub> EMISSIONS BY 2050 (COMPARED WITH 2005): 325 Mt CO<sub>2</sub>



NET ZERO CO<sub>2</sub> FROM AVIATION BY 2060/65, GLOBALLY?



# Charting a course for 2050, and net-zero globally



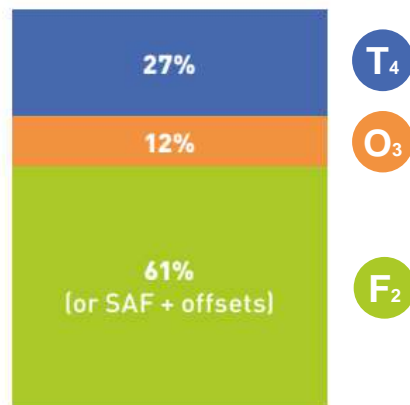
# Meeting the industry goal. A lot of SAF required

## Scenario 1

### Pushing technology and operations

Industry prioritises technology and operational improvements

Emissions reduction contributions in 2050



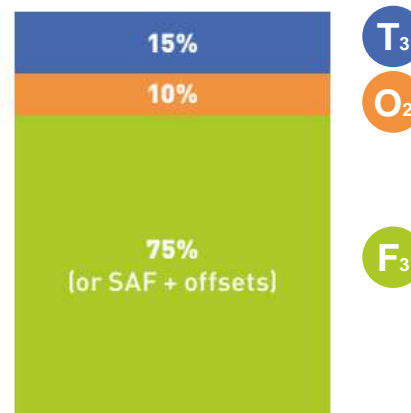
Electric and hybrid short-range (<100 seat) aircraft from 2035/2040. High-range operational improvements. 290-390 Mt of SAF by 2050.

## Scenario 2

### Aggressive sustainable aviation fuel deployment

Industry prioritises investment in sustainable aviation fuel over technology

Emissions reduction contributions in 2050



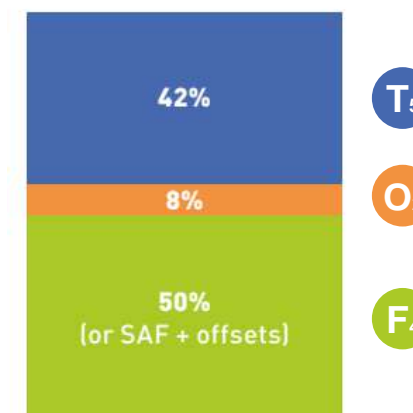
New airframe configurations such as blended wing body. Mid-range operational improvements. 350-450 Mt of SAF by 2050.

## Scenario 3

### Aspirational and aggressive technology perspective

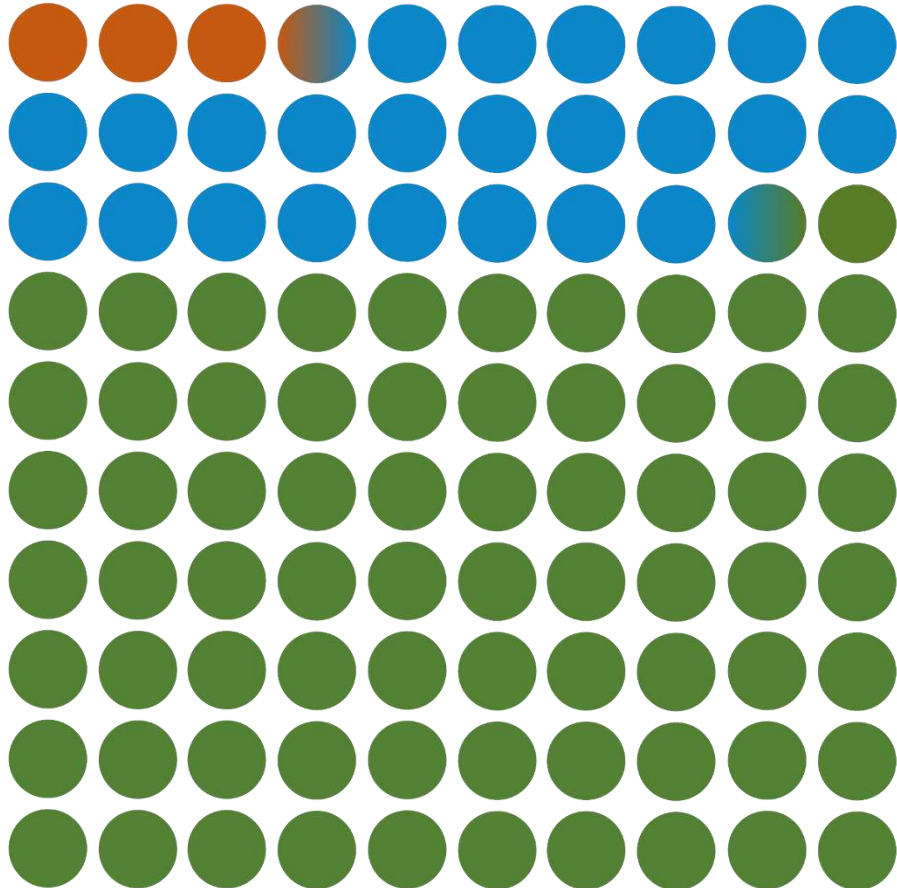
Highly ambitious technology developments: electric and/or hydrogen for up to 200 seat aircraft before 2035

Emissions reduction contributions in 2050



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)





# 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<sub>2</sub> 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



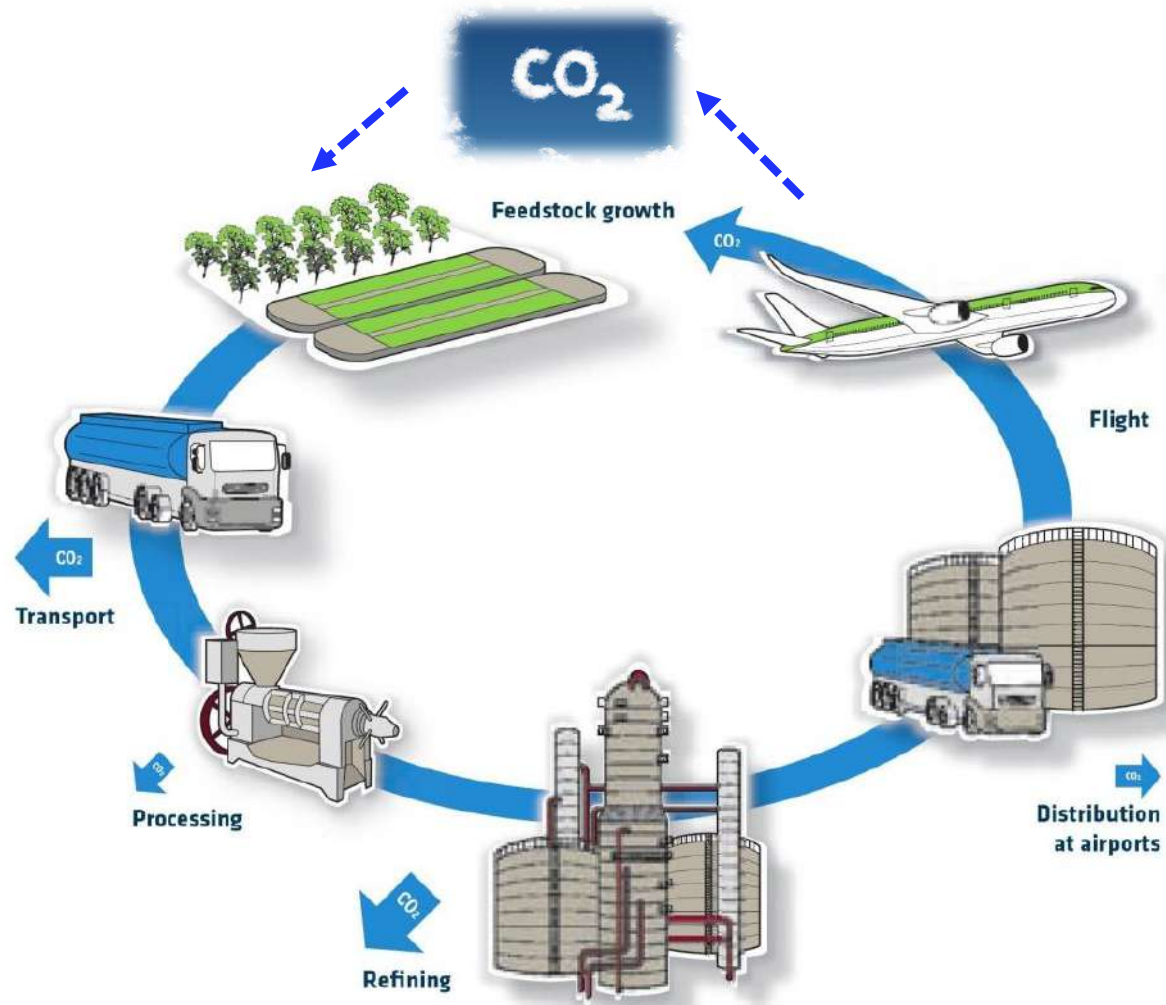
Crops grown on high carbon stock land



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

