

ICAO Aviation Green Recovery Seminar

TIME TO BUILD BACK BETTER

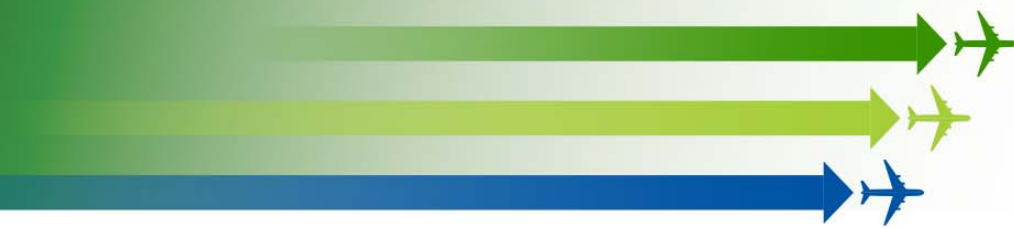




Setting the Scene – Aviation and Climate Change

Jane Hupe

Deputy Director, Environment, ICAO



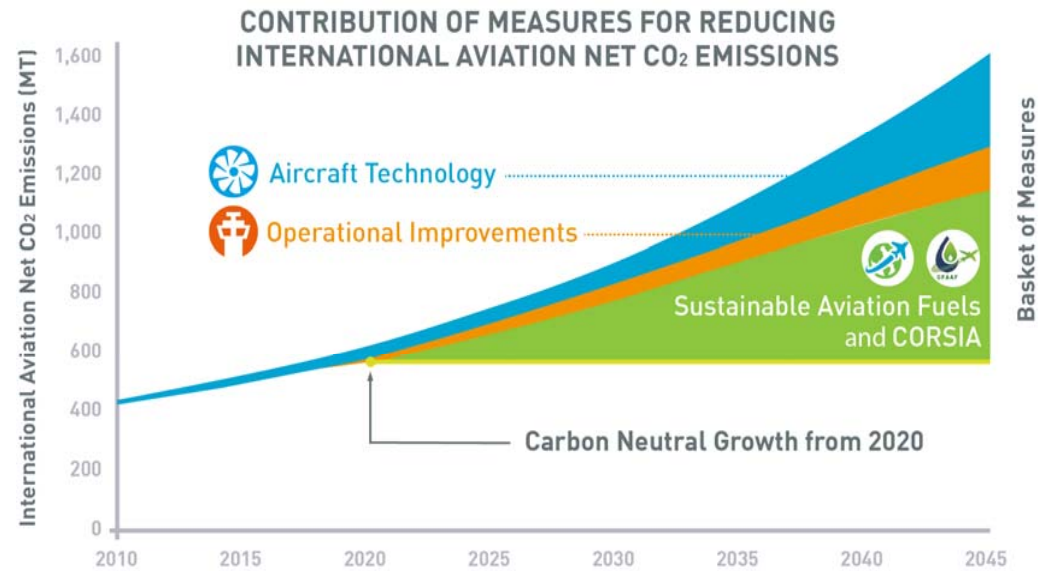
ICAO Aspirational Goals

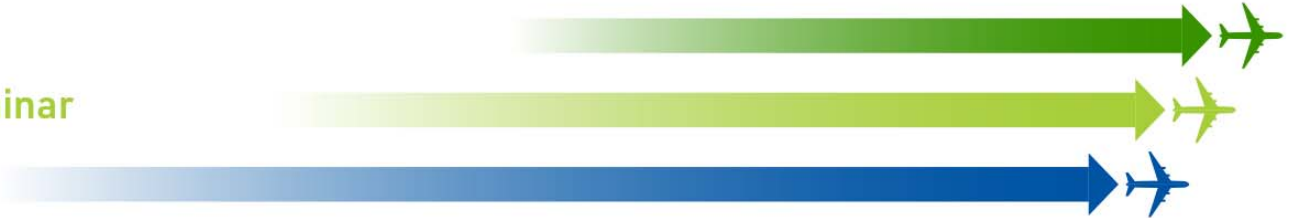
To be achieved with a 'Basket of Measures' for CO₂ reduction

2% fuel improvement per year





Carbon neutral growth from 2020

BASKET OF MEASURES
Complemented by
CORSIA





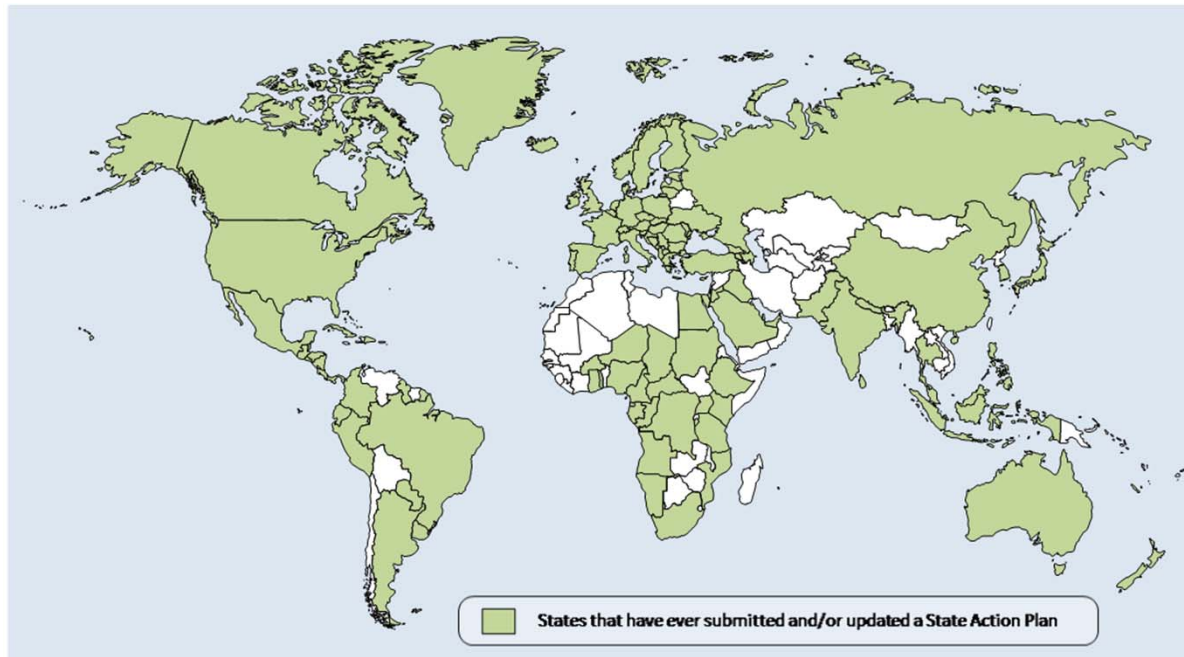
Basket of CO₂ Emission Reduction Measures – Progress since 2010

Aircraft technology	First-ever global CO₂ certification Standard for new types and in-production aeroplanes. Fast-paced innovation (new designs, composite materials, hybrid-electric aircraft, renewable energy sources, etc.). Certification of first electric aeroplane.	
Operational improvements	CO ₂ benefits from air traffic management ; air navigation; green airports ; etc.	
Sustainable aviation fuels	Over 220,000 commercial flights with drop-in aviation fuels ; 8 conversion processes; 9 airports distributing drop-in aviation fuels	
Market-based measures	Carbon Offsetting and Reduction Scheme for International Aviation (CORSA) Robust MRV system for all States and operators with 3rd party verification; Harmonized life-cycle methodologies and sustainability criteria for SAF; Harmonized emissions units criteria and process to define CORSIA eligible units.	



ICAO State Action Plans

10 years of history supporting States with the capacity and tools to take action.



119 States

representing 97.39% of global RTK have **voluntarily** submitted a State Action Plan to ICAO

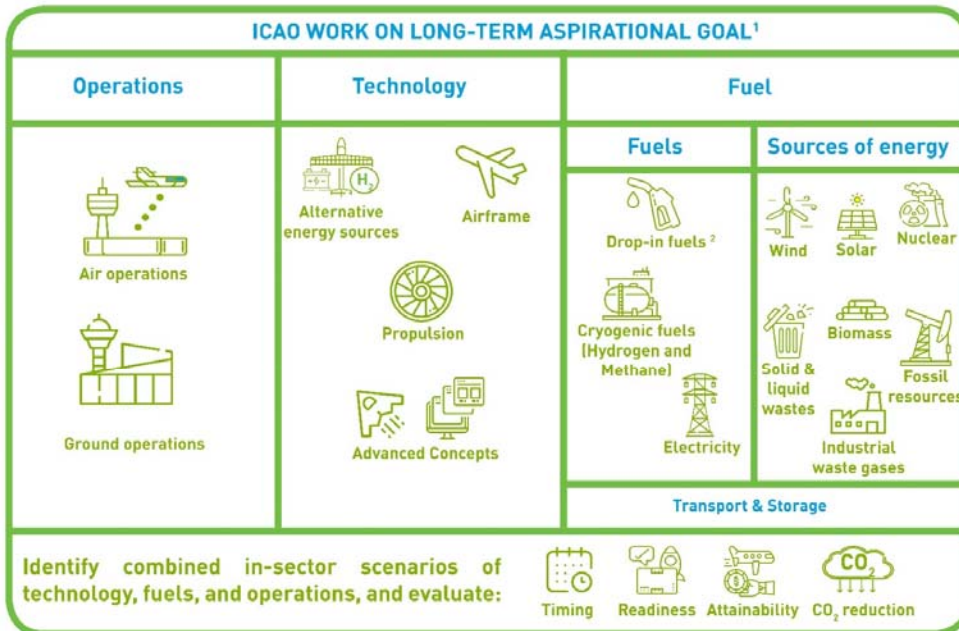
SEPTEMBER 2020

10 YEARS ANNIVERSARY



Long Term Aspirational Goal (LTAG)

Exploration of the feasibility for the sector



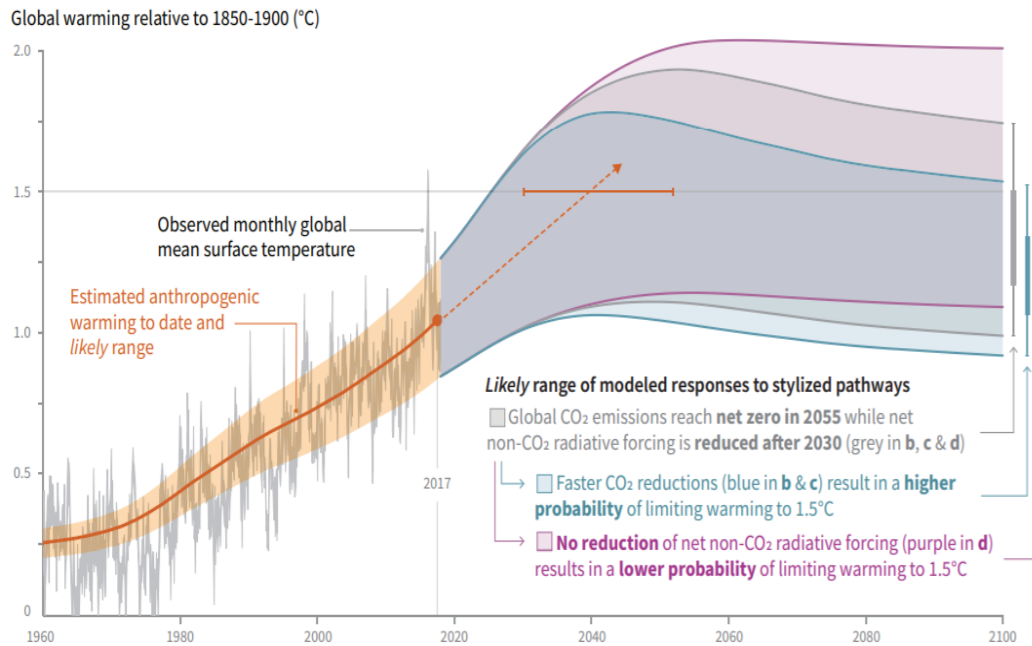
- **ICAO 40th Assembly (2019)** – Exploration of the feasibility of a Long-Term Global Aspirational Goal (LTAG) for international aviation
- **Open & Inclusive**
Existing, foreseen and innovative measures
- **New activities** are arising which could further reduce aviation emissions
- **Focused on in-sector measures**

¹ This work should identify and evaluate existing, foreseen, and innovative in-sector measures in technology, fuels and operations, and their enablers, including information of probable costs. This will assist in identifying gaps, and information and expertise needed, in order to complete a thorough assessment of all in sector CO₂ reductions for international aviation. This should include timing, readiness, attainability and the quantity of CO₂ reduction possible, based on a feasible roll out into the aviation sector.
² Sustainable Aviation Fuels (SAF), Low Carbon Aviation Fuels (LCAF), E-Fuels. Icons made by Freepik from www.flaticon.com



IPCC's Projection – Global Temperature Change

Cumulative CO₂ emissions and future net effect will determine future global warming and climate-related risks



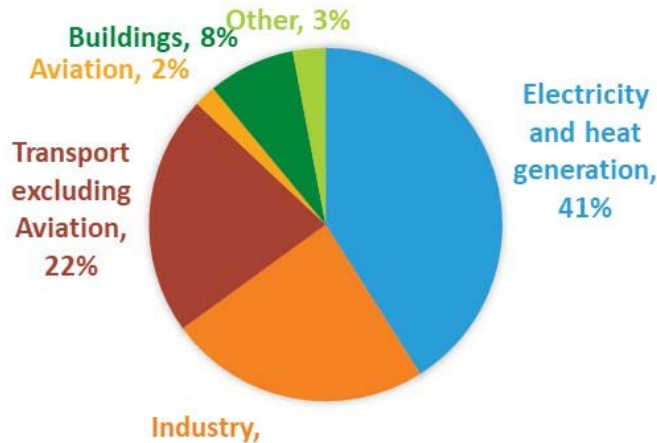
*IPCC SR1.5

- Considering the long lifetime of CO₂ in the atmosphere, the effects are considered in a cumulative manner.
- Slower reductions now will require faster reductions later, and likely more extreme negative emissions.
- **To meet the Paris Climate Goals:**
 - 1.5°C scenarios: net zero CO₂ emissions before 2050 + substantial reductions of other GHG;
 - "Well below 2°C" scenarios: net zero CO₂ emission after 2050 + reductions of other GHG.

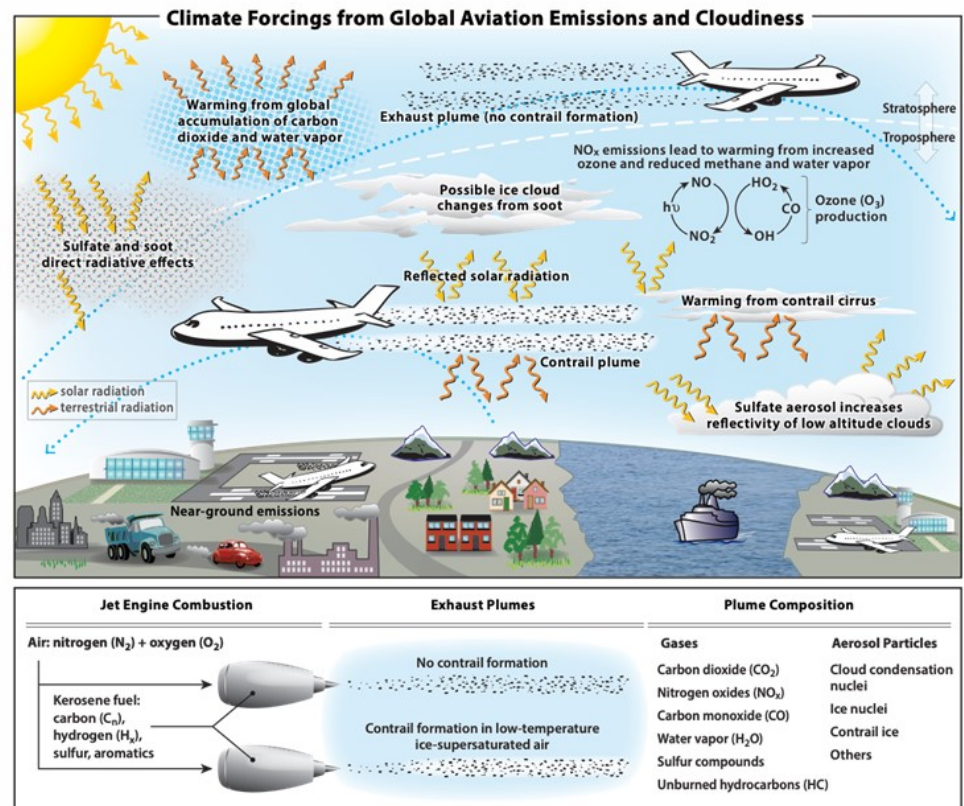


Global Aviation Impact on Climate

- **The aviation sector** accounts for approx. 2% of global anthropogenic CO₂ emissions (IPCC1999 and AR5 IPCC 2014).
- **International aviation** alone accounts for 1.3% of global anthropogenic CO₂ emissions.



Statistics report "CO2 Emissions from Fuel Combustion" (IEA, 2020)

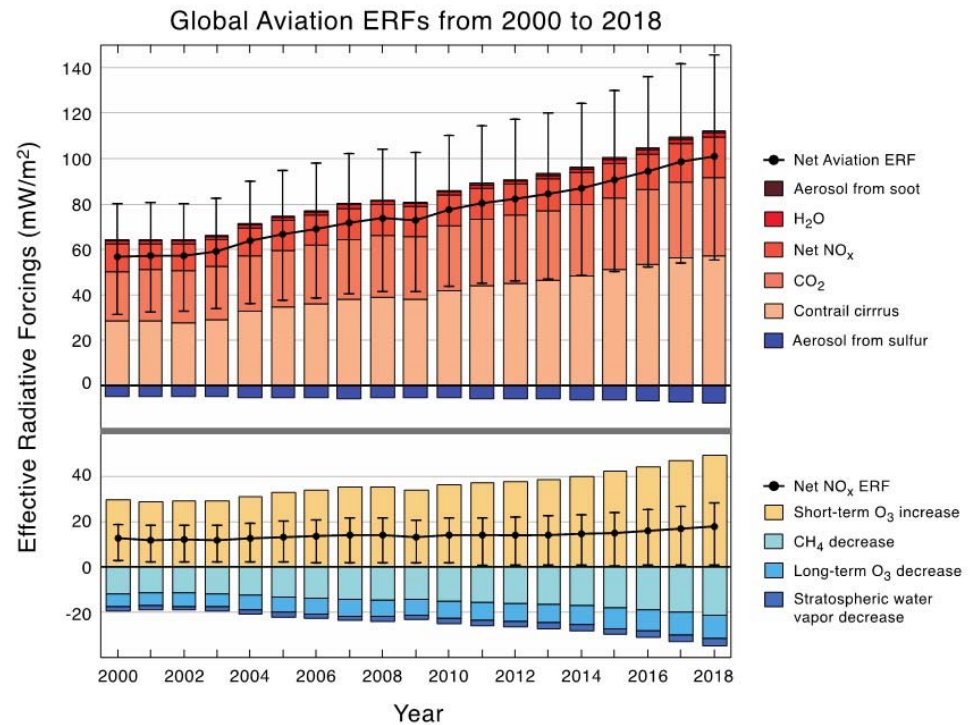


Lee et al. (2020) Atmospheric Environment



Global Aviation Impact on Climate

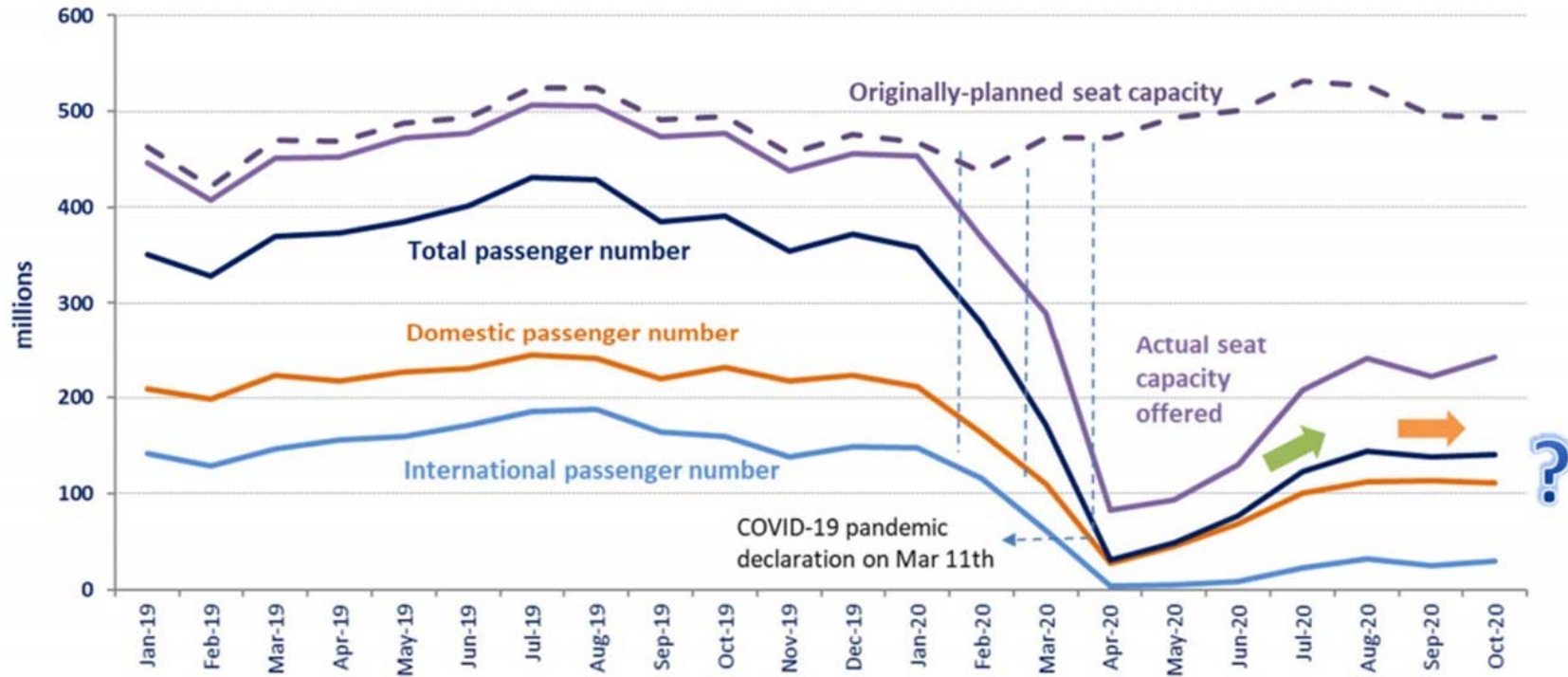
- The major forcing from global aviation come from contrail cirrus clouds, CO₂ and the 'net NO_x' effect, with minor contributions from water vapor, soot and sulfur aerosol radiation interactions.
 - Together, aviation impacts are 3.5% of total anthropogenic forcing. [Lee et al, 2020].



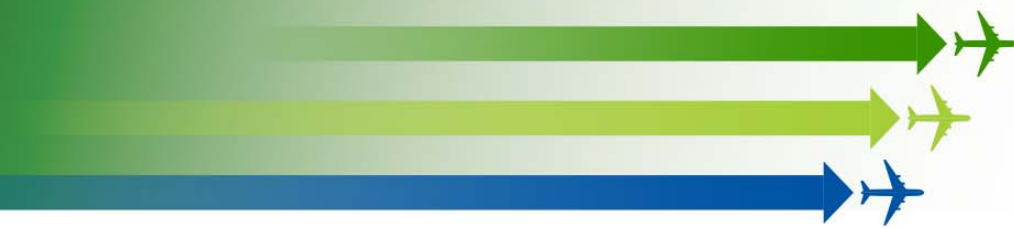


UNPRECEDENT IMPACT ON THE AVIATION SECTOR

COVID-19's Impact on Passenger number and Capacity

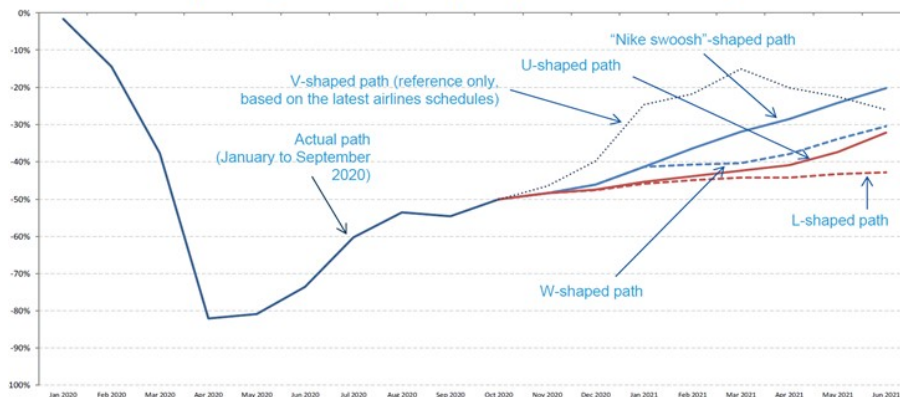


Source: ICAO Coronavirus Economic Impact (as of 18 Nov 2020), ICAO ADS-B operation data

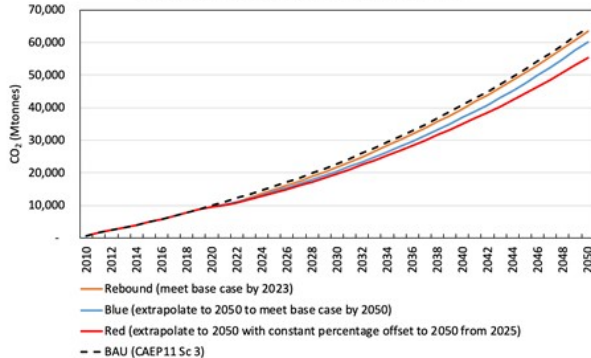


UNPRECEDENT IMPACT ON THE AVIATION SECTOR

Scenarios for passenger seat capacity compared to Baseline (business as usual)



Global Scenarios: Cumulative CO₂ (2010 to 2050)



Approximately 10% difference between base case counterfactual and 'worst case' scenarios for entire history (1940 – 2050) cumulative aviation CO₂ emissions
Lee et al., work in progress

- COVID-19 pandemic has **dramatically reduced air traffic and associated emissions.**
- Air traffic will likely **recover** in a few years to former levels and is expected to grow further. But... **what is the new normal?**
- **Uncertainties** on:
 - Future level of demand for aviation;
 - Impacts of future fleet mix;
 - Social behavior.



UNPRECEDENT PACE OF PROGRESS + GREEN INDUSTRIAL REVOLUTION

➤ ICAO Stocktaking Seminar on aviation in-sector CO₂ emissions reductions - 8-11 September 2020

- More than 1000 participants
- “Take stock” of Member States’ and stakeholders’ progress on aviation in-sector CO₂ emissions reductions
 - Feed **LTAG** process;
 - Collecting data on **technology, operations and fuels**;
 - More than **100 evolutionary and disruptive innovations**;
 - **Net-Zero Commitments and roadmaps** from Industry stakeholders, States and Organizations.

➤ Other events :

- ATAG 2020 Global Sustainable Aviation Forum - Green Recovery (Sept 29,2020)
- RAES Climate Change Conference (Nov 3-4, 2020)
- RACE to ZERO DIALOGUES, Transport Day (Nov 11, 2020)
- UNFCCC /DIALOGUES (Nov 23 – Dec 4, 2020)



- **Climate Science shows that aviation needs to do more**
- **Technology and research show it is possible.**





UNPRECEDENT PACE OF PROGRESS + GREEN INDUSTRIAL REVOLUTION

The post-COVID-19 recovery - A great momentum for global climate action

➤ Recent Initiatives from the Aviation Sector:

Norway:
First zero emissions commercial flight by 2030, all domestic flights electrified by 2040.

UK Jet Zero Council:
Partnership between industry and government on developing UK capabilities to deliver net zero-emission commercial flight.

European Aviation Round Table:
Joint commitment from over 20 associations to work with policy makers to achieve net zero CO₂ emissions by 2050.

European Union Green Deal

Japan:
Net-Zero by 2050 announcement

France:
1.5 billion in zero emissions aircraft

Aerei da Trasporto Regionale

Billy Bishop Toronto City Airport

Juiz de Fora Airport

Directorate General of Civil Aviation (DGCA)





Thank you

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