



The 10th Anniversary of the ICAO State Action Plan on CO₂ Emissions Reduction

25 January 2021



New ICAO Activities and State Action Plans

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ICAOMID

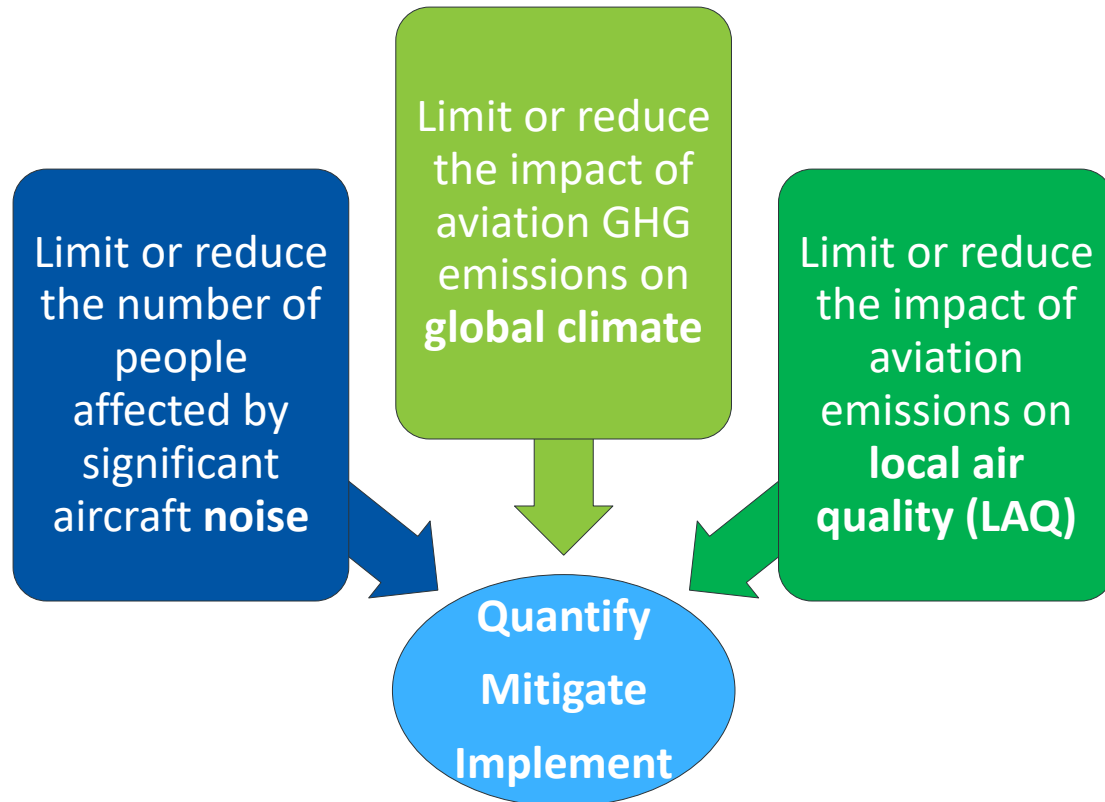




ICAO Strategic Objective Environmental Protection:

Minimize the adverse effect of global civil aviation on the environment

ICAO Environmental Goals





ICAO Global Aspirational Goals - Relationship with State Action Plans

Selecting mitigation measures from the **basket of measures** and quantifying their expected impacts (expected results) are required elements of a State Action Plan

2% fuel improvement per year

Carbon neutral growth from 2020



BASKET OF MEASURES

Complemented by

CORSIA

- ICAO utilizes the information submitted in all States' Action Plans to assess global progress towards the ICAO **global aspirational goals**
- Results are presented in an aggregated manner



Basket of CO₂ mitigation measures

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.).	
Operational improvements	CO ₂ benefits from air traffic management; air navigation; green airports; etc.	
Sustainable aviation fuels	Around 250,000 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 (CORSIA)	



CORSIA

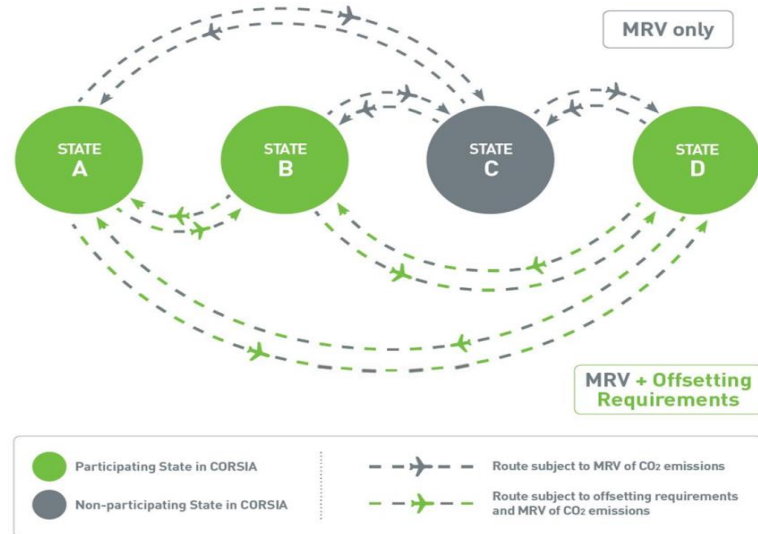


- SARPs - Annex 16 Volume IV
- ICAO CORSIA Implementation Elements
 - CORSIA States for Chapter 3 State Pairs
 - ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT)
 - CORSIA Eligible Fuels
 - CORSIA Eligible Emissions Units
 - CORSIA Central Registry (CCR)

From 1 January 2021...

All States with operators performing international flights have to continue undertaking the MRV for CO₂ emissions

All States with operators performing international flights between States participating in CORSIA have to ensure that these operators comply with the CORSIA offsetting requirements





CORSA Eligible Fuels (CEF)

- A sustainability certification process should be followed to determine if the fuel meets the CORSIA requirements.



- Fuel producers** use **Sustainability Certification Scheme (SCS)** as approved by the ICAO Council
- Fuel assessed against the Council-approved CORSIA Sustainability Criteria
- Aeroplane operators** can claim CEF emissions reduction from CORSIA offsetting requirements

Emissions reduction by the CEF depends on its **life cycle emissions values (LSf)**, with **default values or calculation methodologies** provided by ICAO.

For the purpose of the State Action Plan, States may use the CORSIA default life cycle emissions values and the methodology for calculating actual life cycle emissions values.



Fuel efficiency & aircraft technology

2% fuel improvement per year

ICAO develops **standards, policies and guidance** to ensure that the latest technology is incorporated to new type and in-production aircraft.

Annex 16 Vol III - ICAO Aeroplane CO₂ Emissions Standard (2016)

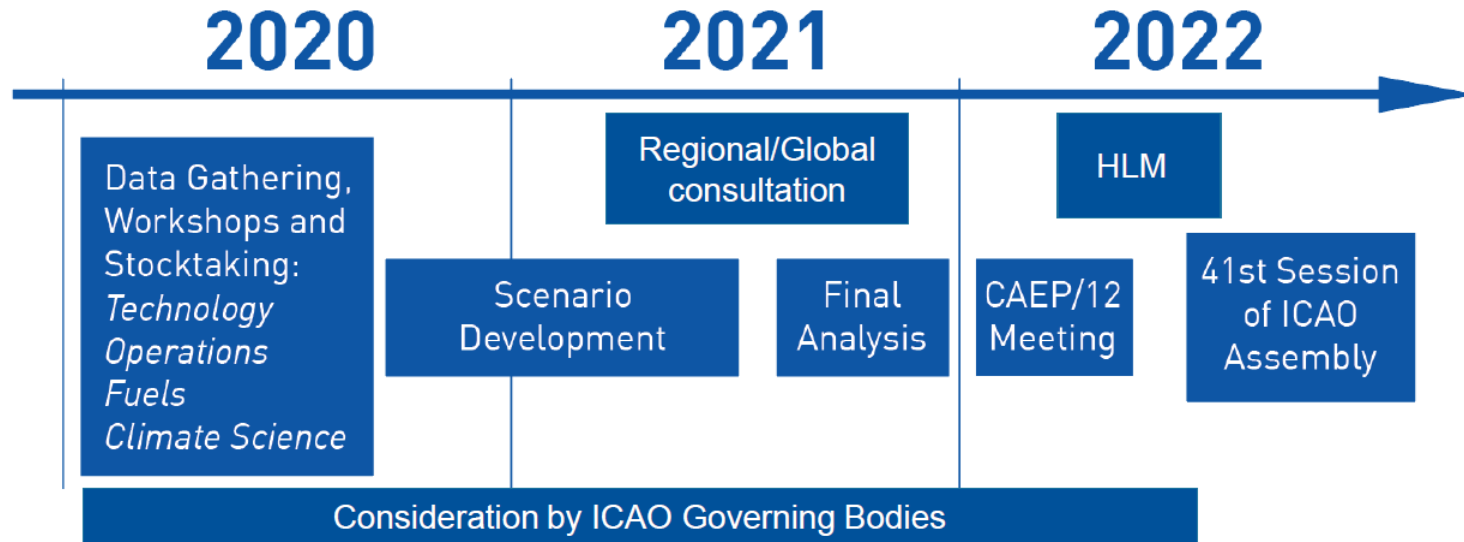
- New aircraft type designs from 2020
- Aircraft that are already in production as of 2023

States may be interested in highlighting their compliance with this standard within their State Action Plan
(Mitigation Measure: Technology)



Exploration of the feasibility of a Long-Term Global Aspirational Goal (LTAG) for international aviation: open & inclusive. Existing, foreseen and innovative measures.

General LTAG Work Timeline



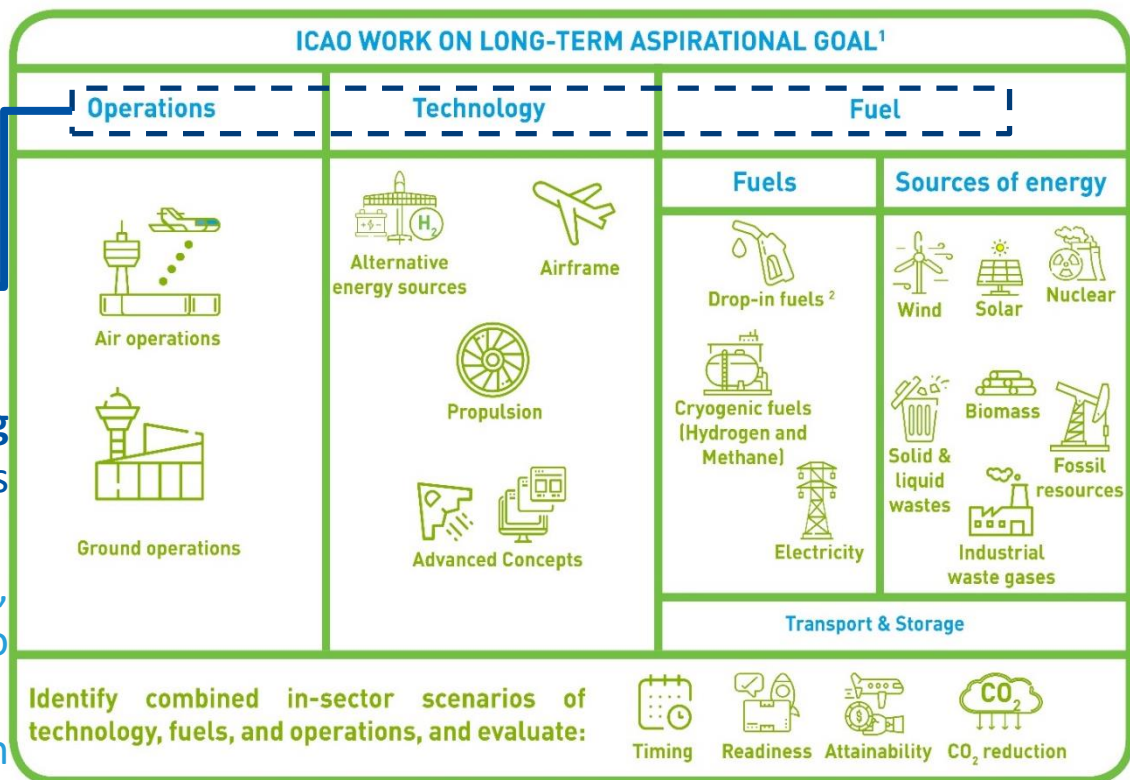


Interactions between Long-Term Aspirational Goal (LTAG)

& State Action Plan (SAP)

“In-sector” measures from the basket of measures

- LTAG work is assessing both **existing and innovative in-sector** emissions reductions measures.
- **SAP → LTAG**: source of information, experiences and good practices to be shared (bottom up)
- **LTAG → SAP**: source of inspiration for you to build **your next State Action Plan** (top down)



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



ICAO Stocktaking Seminar

- ICAO Stocktaking Seminar on aviation in-sector CO₂ emissions reductions





- 8-11 September 2010
- More than 1000 participants
- Over 100 questionnaire
- Feed LTAG process
- “Take stock” of Member States’



and stakeholders’ progress on aviation in-sector CO₂ emissions reductions

- Collecting data on technology, operations and fuels
- Solutions, innovations, visions, roadmaps
- Questionnaires – Support the ICAO work on the feasibility of a long-term global aspirational goal for international aviation

Commitment of the 13 Oneworld airlines to achieve net-zero by 2050

 CO ₂ reductions per flight	80%
 Level of finance required	75%
 Timeframe	2025
 Main challenges	<ul style="list-style-type: none">• Scaling-up• Financing



Stocktaking Process



- **Questionnaires**
- Open and inclusive

- All ICAO Member States and relevant stakeholders are invited to submit a Stocktaking Questionnaire to share information on measures they implement or plan to implement



LTAG work



- **1 - Data Gathering**

- All publically-available SAPs will be considered within the context of the LTAG work

BOTTOM UP APPROACH

State Action Plans



Stocktaking Process



- Questionnaires
- Open invitation



LTAG work



- 1 - Data Gathering

TOP DOWN APPROACH

- Work on LTAG and Stocktaking: great source of inspiration for you to **build your next State Action Plan**
- Submitted questionnaires from stakeholders in your State may also provide new or updated quantified information that may be relevant for the State Action Plan
 - important role of the SAP Focal Point in coordinating with national Stakeholders

State Action Plans



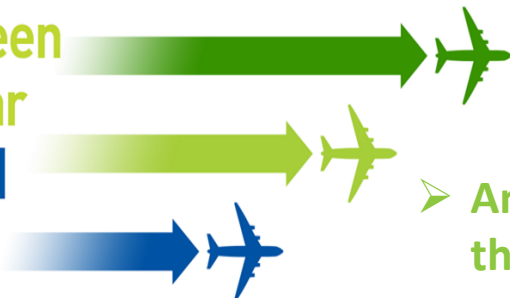
ICAO Aviation Green Recovery Seminar (23 to 24 November 2020)

ICAO Aviation Green Recovery Seminar

TIME TO BUILD BACK BETTER

Virtual event | 23 - 24 NOVEMBER 2020

#GreenRecovery



- Answering the call for aviation green recovery in the context of COVID 19 and climate change
- Forum of discussion, with aviation and climate leaders and experts
- Beyond aviation in-sector CO2 reduction measures

Seminar programme – 4 sessions:

1. Climate Crisis and Aviation
2. Deep Decarbonisation Pathways
3. Supporting Green Recovery Beyond Aviation
4. Aviation Global Green Recovery, What's the Plan?



Three “in-sector” measures aligned with the Global Coalition for Sustainable Aviation

In-sector aviation CO₂ emissions reduction initiatives - Tracker tool

Updates on recent **in-sector** aviation CO₂ emissions reduction initiatives is continuously monitored through the Tracker tool



The main objective of the ICAO Global Coalition for Sustainable Aviation is to promote the sustainable growth of international aviation.

As part of the Coalition, the ICAO in-sector aviation CO₂ emissions reduction initiatives tracker tool provides a variety of information related to initiatives to reduce the environmental footprint of aviation, including details on past and ongoing measures and initiatives.

The tracker tool has **three main streams: Technology, Operations and Sustainable Aviation Fuels.**



Technology



Operations



Sustainable Aviation Fuels



Including New Activities in a State Action Plan

- The adoption of new measures or technologies may require coordination with new stakeholders
 - Research organizations and academia
 - Start-up companies
 - Energy suppliers
 - Battery producers
 - New fuel suppliers
 - Waste management companies
 - NGOs and local communities





Airport development, adaptation and resilience to climate change

ICAO's work:

- Report on the possible effects of climate change on air navigation services over the North Atlantic
- Airport Planning Manual, Part 2 (Doc 9184)
- Climate Adaptation Synthesis (2019)
- Development of a climate change risk assessment methodology
- Cooperation with other UN Bodies
- Build partnerships to implement resilience programs at airports
- Raise awareness, key to enhancing preparedness: ICAO Environmental reports, Green Airport Seminar
- Eco-Airport Toolkit e-collection



Science-based work

Capacity Building

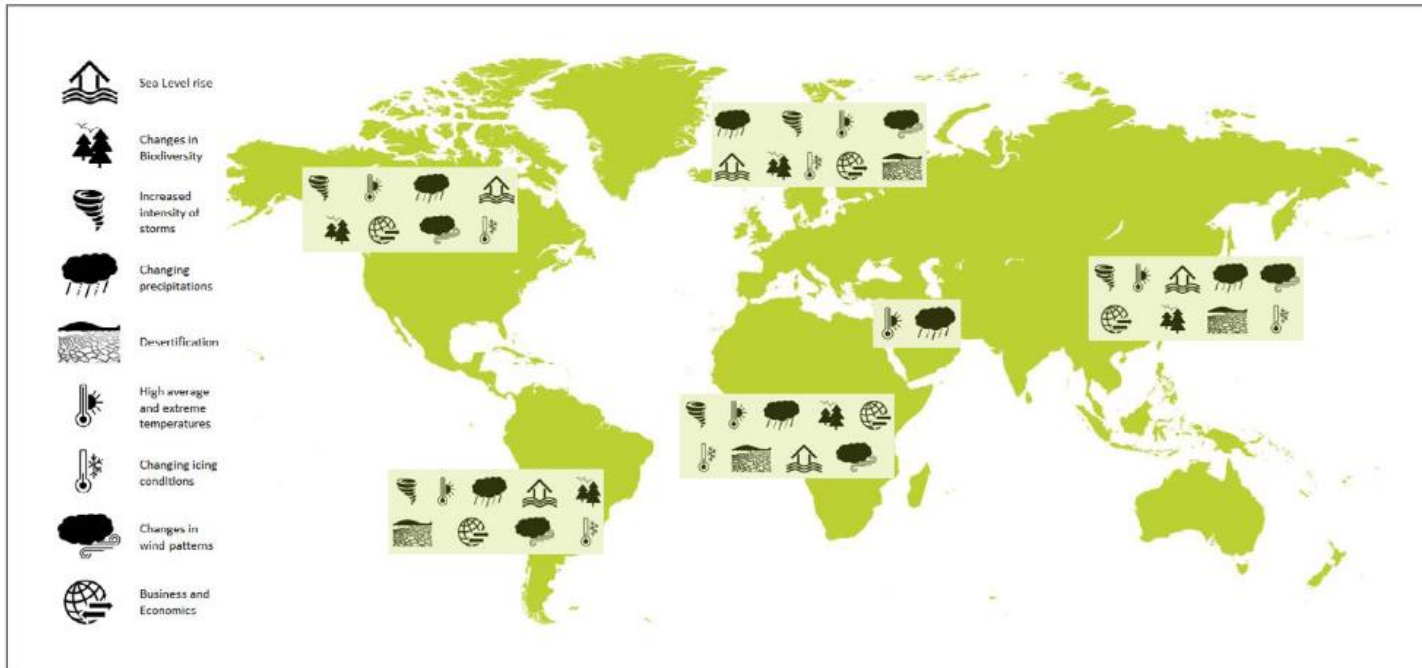
Outreach





Climate Adaptation Synthesis (2019)

FIGURE 1: Based on replies from ICAO Member States, the ICAO Global Climate Adaptation Risk Map (ICAO, 2019) shows the nature of the climate change impacts on international aviation.



- Not a traditional element of a State Action Plan
- Could be a useful element to consider within the context of your State Action Plan



Quantification within State Action Plans

- Including quantified information within State Action Plans ensures that:
 - Your State develops a **clear understanding** of the share and projections of international aviation CO₂ emissions
 - Opportunity to showcase the latest innovations with the State.
 - ICAO can **assess progress towards the global aspirational goals**
 - ICAO can utilize the **latest information on innovations in the work on the feasibility of a long term aspirational goal.**
- ICAO has developed a range of tools to support the quantification of the State Action Plans

A40-18, para 11 – ... **the action plans should include** information on the basket of measures considered by States, reflecting respective national capacities and circumstances, **quantified information** on the expected environmental benefits from the implementation of the measures chosen from the basket, and information on any specific assistance needs;



Publically-available State Action Plans

- States that have granted ICAO permission to make their State Action Plan publically-available are posted on:
 - https://www.icao.int/environmental-protection/Pages/ClimateChange_ActionPlan.aspx
- States are encouraged to make their SAP publically available
 - Showcases your State's commitment to environmental actions
 - Provides an example for States that have not yet developed a SAP
 - Ensures that your State's information will be considered within:
 - ICAO Work on the Feasibility of a Long-Term Aspirational Goal (LTAG) for International Aviation



ICAO-EU Project Phase II: 2020-2023

ICAO 2nd Assistance Project with EU Funding

- supporting 10 selected AFI States in both Regions



Botswana
Comoros
Madagascar
Rwanda
Zimbabwe

ESAF



Benin
Cabo Verde
Cote d'Ivoire
Mali
Senegal

WACAF

- ❖ Improved national capacity of the beneficiary States to develop/update and implement an Action Plan on CO2 emissions reduction from international aviation in accordance with ICAO recommendations ;
- ❖ State Action Plans on emissions reduction are developed by the beneficiary States;
- ❖ Mitigation measures selected by the beneficiary States are assessed for feasibility.



Conclusions

- Include the latest innovations within your State Action Plan action plan. States are **encouraged to submit new and updated plans by June 2021**.
- **ICAO Stocktaking and LTAG** work focussed on in-sector reductions:
 - SAPs are a great source of information, experiences and **good practices to be shared** with Stocktaking and LTAG. (Submit a Questionnaire)
 - Stocktaking, Green Recovery and the Innovation Symposium are a great source of **inspiration** for you to build your next State Action Plan (ICAO TV)
- In order to include new activities within a State Action Plan, coordination with **new stakeholders** may be needed
- Think about **adaptation and resilience** for your next State Action Plan
- ICAO will continue to provide assistance to States in developing their State Action Plan.



ICAO

ENVIRONMENT

NO COUNTRY LEFT BEHIND



ICAO

North American
Central American
and Caribbean
(NACC) Office
Mexico City

South American
(SAM) Office
Lima

ICAO
Headquarters
Montréal

Western and
Central African
(WACAF) Office
Dakar

European and
North Atlantic
(EUR/NAT) Office
Paris

Middle East
(MID) Office
Cairo

Eastern and
Southern African
(ESAF) Office
Nairobi

Asia and Pacific
(APAC) Sub-office
Beijing

Asia and Pacific
(APAC) Office
Bangkok



THANK YOU



ICAO

ENVIRONMENT

NO COUNTRY LEFT BEHIND



Backup slides



Calls to address climate crisis & deliver results within aviation

- “Manufacturers are ready to build on this history of success and explore a all range of innovative technologies. Call for incentives on SAF. Support the LTAG work.” – **Eric Fanning**
- “Drive ambition and action on climate change. Build trust. Disruptive change. Leadership. The transition to net zero is inevitable. The risks of 1.5°C are high. Kids are angry. Scientists are scared. We need a collective roadmap to zero emissions by 2050, delivered for COP26” – **Nigel Topping**
- [In the past] the world has completely changed thanks to innovation that was brought by aviation. With climate change, we have to go back to the track of disruptive innovation. Aviation could be carbon neutral! Aviators are innovators. We can build the next phase of the history of aviation, all together – **Bertrand Piccard**

Announcement: Commitment of 13 airlines to achieve net-zero by 2050 – oneworld, Rob Gurney



Valérie Plante
Mayor – City of Montréal



Rob Gurney
CEO - oneworld



Patrick Gandil
Director DGAC – France



Bertrand Piccard
Initiator & Chairman – Solar Impulse Foundation



Eric Fanning
Chair - ICCAIA



Nigel Topping
High Level Champion, COP26



Global Symposium on the Implementation of Innovation in Aviation

- As part of the Symposium (8-11 December 2020), two panel sessions were organized on Green Innovation.
- Otto Aviation** announced new electric and hydrogen-powered aircraft projects based on the advanced aerodynamic Celera 500L design.
- Wright Electric** will hold a battery technology innovation day during 2021.

GLOBAL SYMPOSIUM ON THE IMPLEMENTATION OF INNOVATION IN AVIATION

08 - 11 DEC 2020 Online



GREEN INNOVATION PANELISTS BANGKOK. PARIS. MONTREAL



Jane Hupe
Deputy Director,
Environment, ICAO



Darryl Abelscroft
Head of Aviation Decarbonisation Strategy, the UK Government's Department for Transport



Charlotte Hardenbol
Head of Programs & Solutions, SkyNRG



Simone Rauer
Head of Aviation Environmental Roadmap - Corporate Affairs, AIRBUS



Benjamin Binet
Vice President of Strategy, Airspace Mobility Solutions, THALES



Denis Bonnet
Vice President of Innovation, THALES Avionics



Val Miftakhov
CEO, ZeroAvia, Inc.



David Bogue
Chief Technology Officer, Otto Aviation



Geoff Hounsell
Vice President, Flight Operations support and ATM, Emirates



Alejandro Rios-Galvan
Director, Sustainable Bioenergy Research Consortium



Jeffrey Engler
CEO, Wright Electric



James Wang
Professor and Director of eVTOL Research and Innovation Center at NTU, Singapore



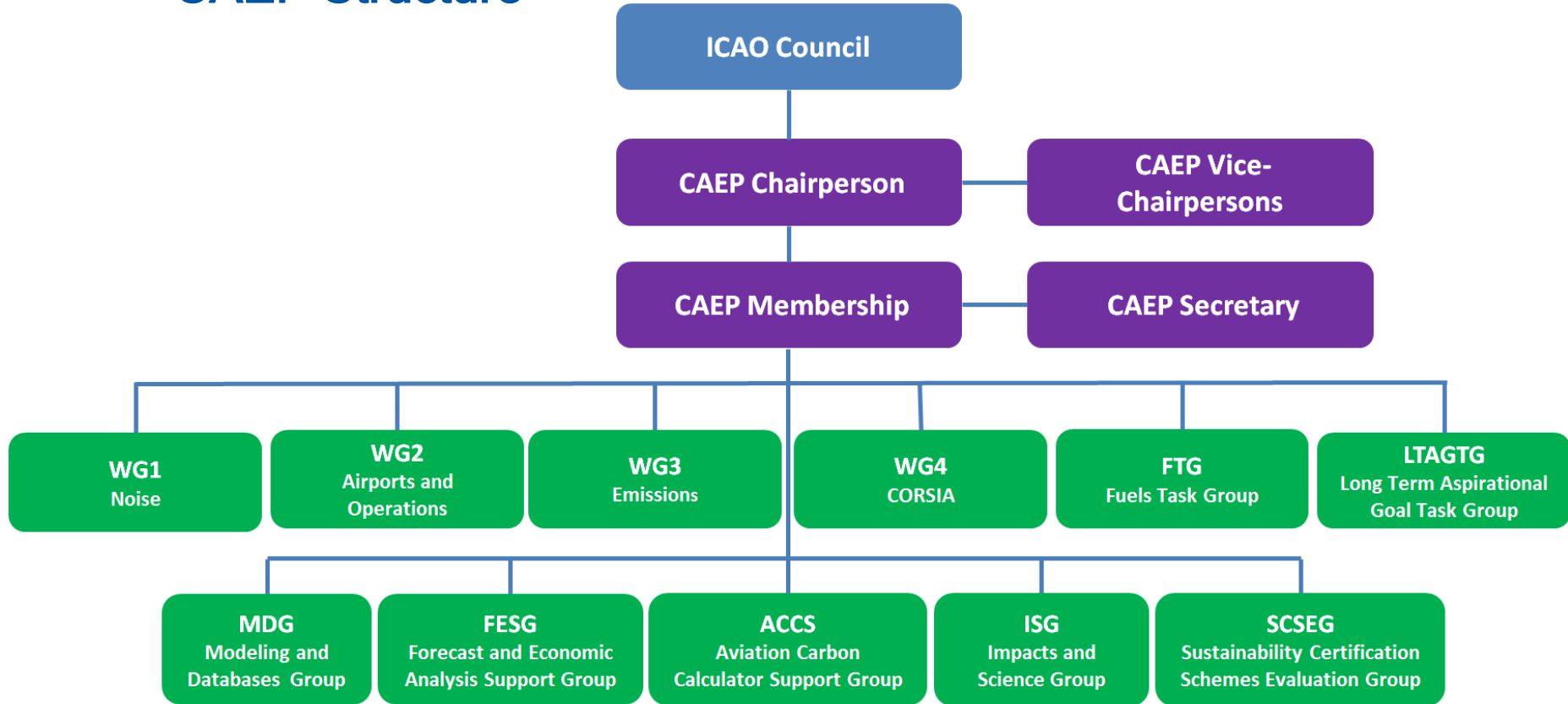
Naveed Hussain
Vice President and General Manager, Boeing Research & Technology



Sam Bruce
Associate Director, CSIRO Futures

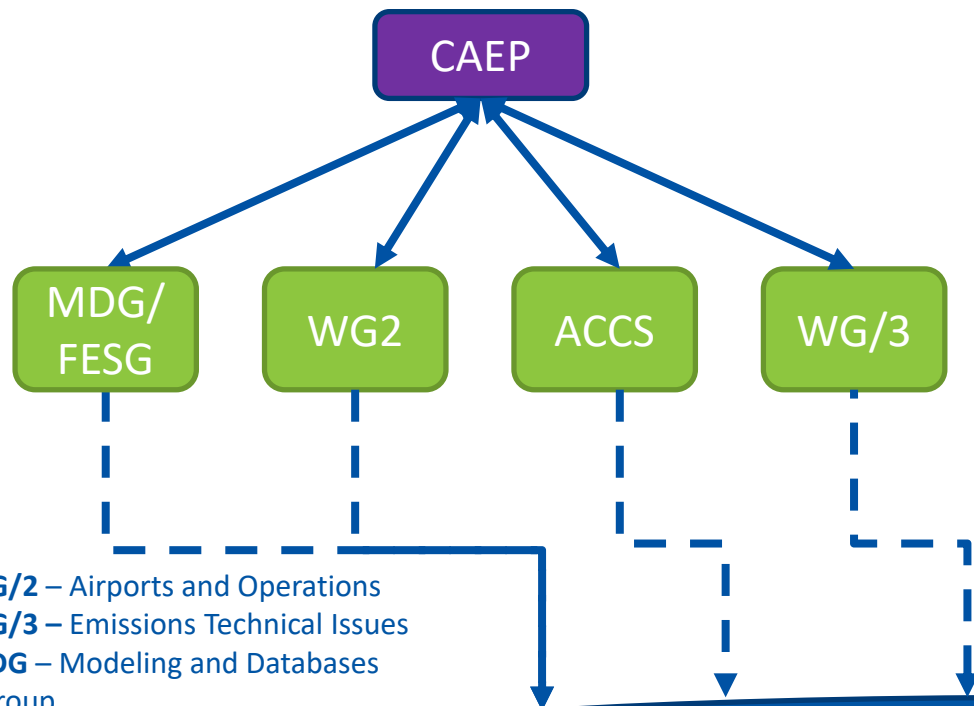


CAEP Structure





State Action Plan interactions with CAEP working groups, con't



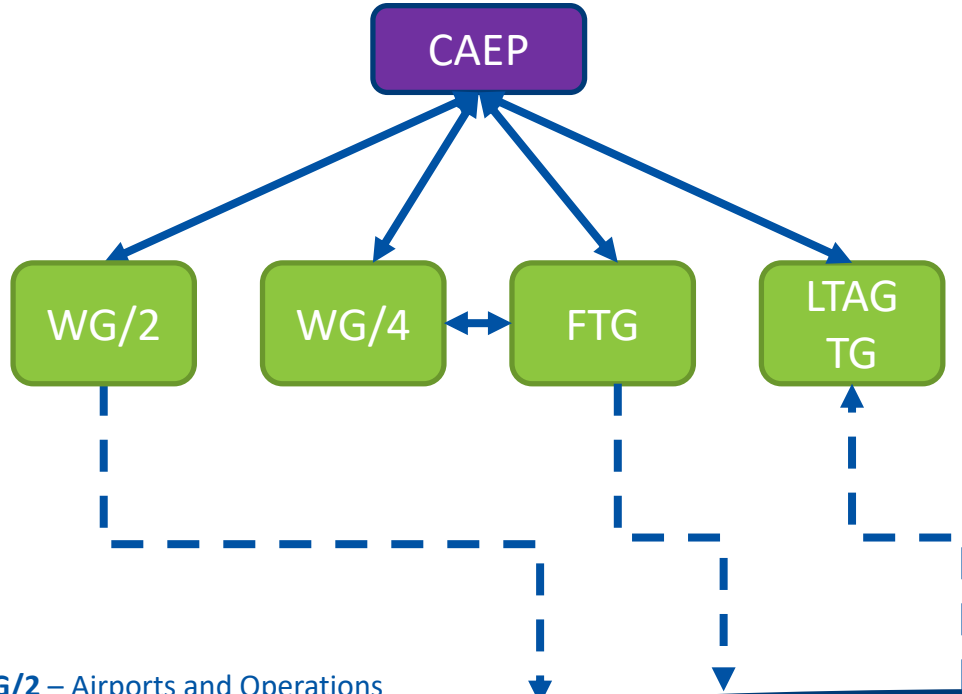
- MDG, FESG and WG2 developed the Rules of Thumb within Doc 9988
- ACCS developed the Carbon Calculator, which can be used within the SAP development process
- WG/3 developed the CO₂ standard, which impacts new aircraft design and production

WG/2 – Airports and Operations
WG/3 – Emissions Technical Issues
MDG – Modeling and Databases Group
FESG – Forecasting and Economic Analysis Support Group
ACCS – Aviation Carbon Calculator Support Group

State Action Plans



State Action Plan interactions with CAEP working groups, con't



- WG/2 includes work on air traffic management and flight efficiency (“operational procedures” within the basket of measures)
 - Documents developed by WG/2 can support SAP development
- WG/4 on CORSIA and FTG on fuels. Presentation on CORSIA later today.
- Information from publically-available SAPs can feed into LTAG TG work

WG/2 – Airports and Operations
WG/4 – CORSIA
FTG – Fuels Task Group
LTAG TG – Long Term Aspirational Goal Task Group

State Action Plans