



ICAO

ENVIRONMENT



# ICAO'S LEADERSHIP TOWARDS MORE SUSTAINABLE AVIATION





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## Vision

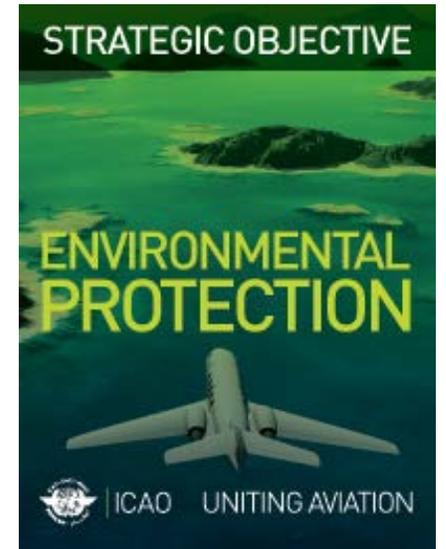
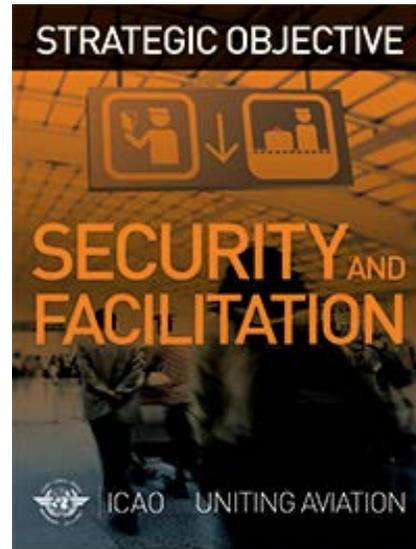
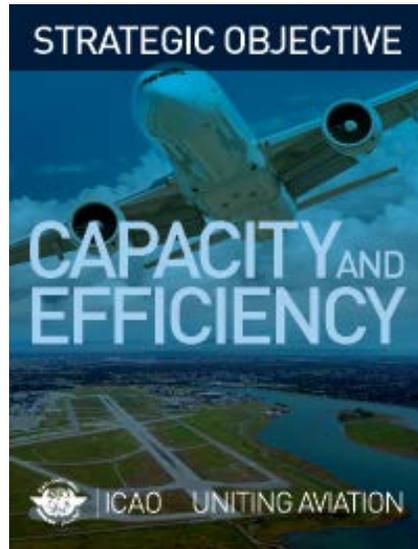
Achieve the sustainable growth of the global civil aviation system.



## Mission

To serve as the global forum of States for international civil aviation.

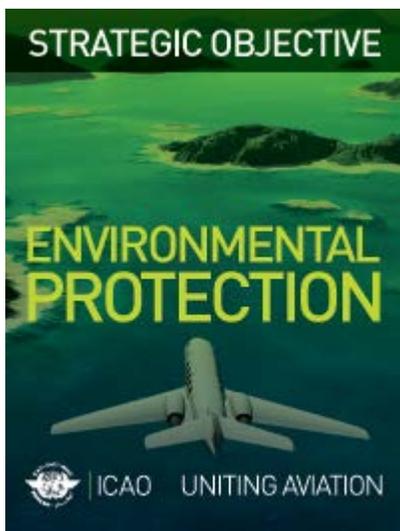
## ICAO Strategic Objectives



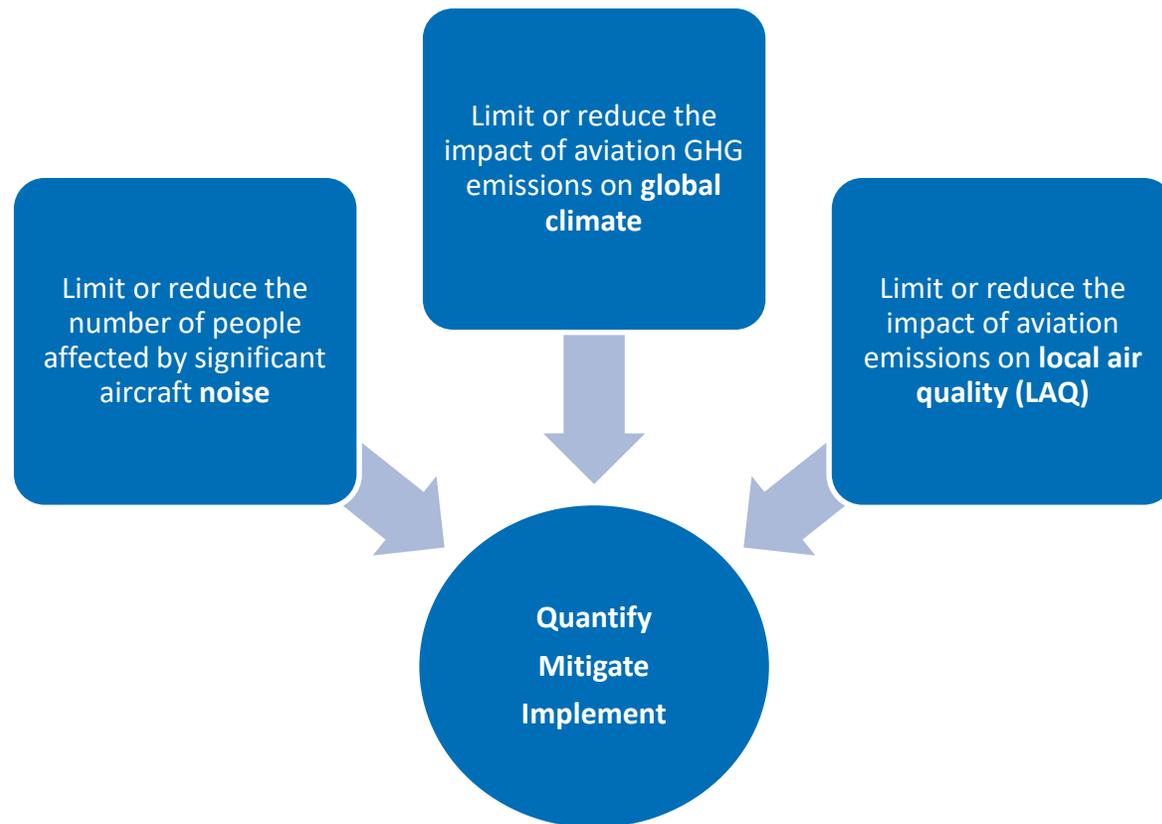


## ICAO STRATEGIC OBJECTIVE

Minimize the adverse effect of global civil aviation on the environment



## ICAO ENVIRONMENTAL GOALS





# ICAO Global Aspirational Goals – Relationship with SAP

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



- 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



**International aviation emissions are addressed through ICAO**, and thus not covered by the Nationally Determined Contributions (NDCs) under the Paris Agreement. Domestic aviation is covered by the NDCs.



Paris Agreement Goal: to limit global warming to **well below 2, preferably to 1.5 degrees Celsius**, compared to pre-industrial levels.



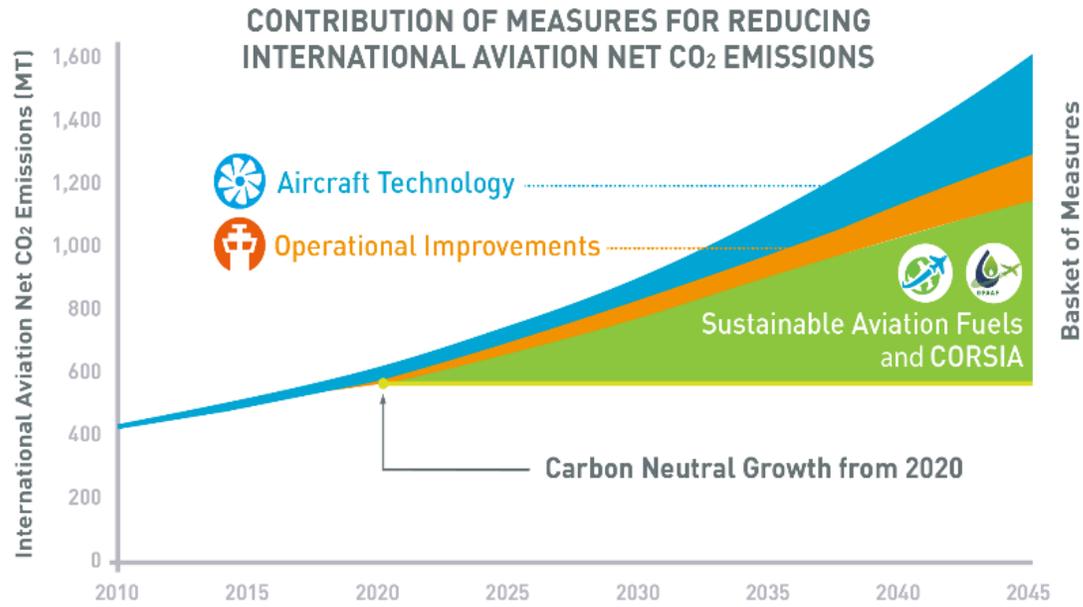
Science shows the need of **reaching Net Zero around 2050** to limit global warming to 1.5°C (2018 Special Report)

“unless there are immediate, rapid and large-scale reductions in greenhouse gas emissions, limiting warming to close to 1.5°C or even 2°C will be beyond reach” (2021 AR6)

**Aviation** accounts for approximately **2% of the world’s man-made carbon emissions**. International aviation is responsible for 1.3%.



# ICAO Global Aspirational Goals



2010

**ICAO Assembly adopted two Global Aspirational Goals**

- 1- 2% annual fuel efficiency improvement through 2050
- 2- Carbon neutral growth from 2020 (CNG2020)

2016



2019

**ICAO Assembly requested to:**

- explore the feasibility of a long-term global aspirational goal (LTAG) for international aviation

2022

**ICAO Assembly will**

- consider the results of work on the feasibility of LTAG



<p><b>Aircraft technology</b></p> 	<p>First-ever <b>global CO2 certification Standard</b> for new types and in-production aeroplanes. <b>Fast-paced innovation</b> (new designs, composite materials, hybrid-electric aircraft, renewable energy sources, etc.).</p>	
<p><b>Operational improvements</b></p> 	<p>CO2 benefits from <b>air traffic management; air navigation; green airports; etc.</b></p>	
<p><b>Sustainable aviation fuels</b></p> 	<p><b>9 conversion processes; 46 airports</b> distributing SAF, <b>23 policy</b> adopted or under development, <b>25.8 billion liters</b> of SAF under offtake agreements</p>	
<p><b>CORSIA</b></p> 	<p><b>Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)</b>  <b>CORSIA implementation fully on track</b>  <b>88 volunteer States for 2021, 107 States for 2022, over 109 States for 2023</b></p>	



## Status as of 25 April 2022

**177**

CCR States  
Accounts

**260**

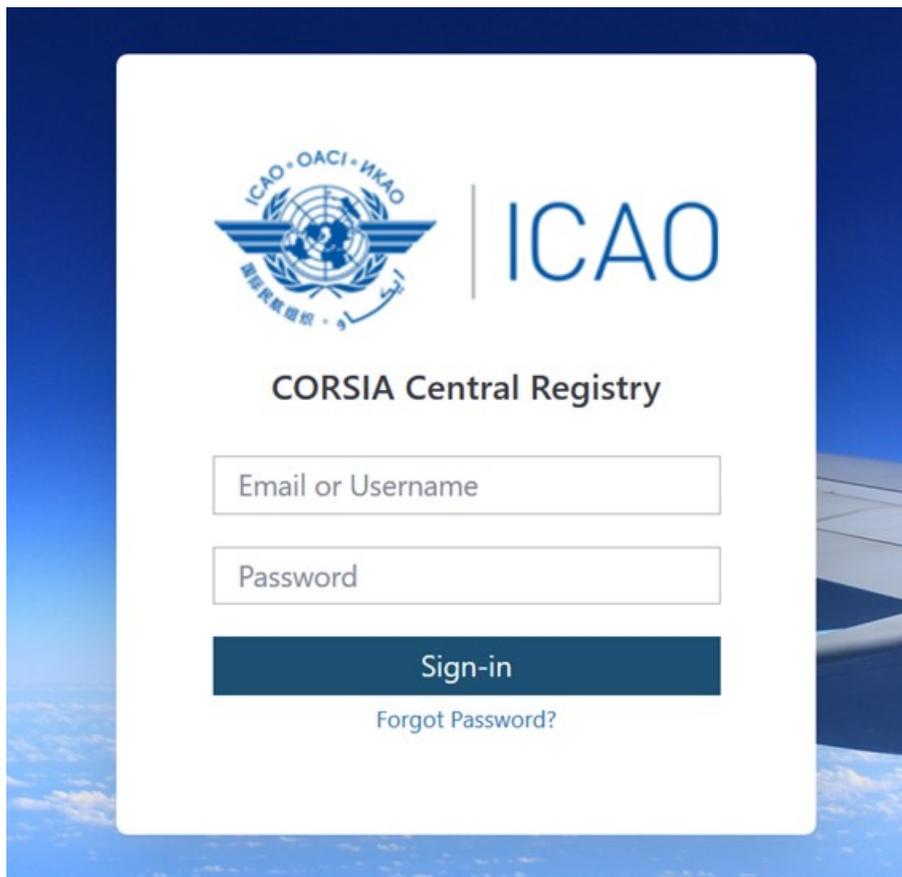
CCR Users  
Accounts

**599**

Aeroplane  
Operators  
reported

**60**

Accredited  
Verification Bodies  
reported



**117**

2019 CO<sub>2</sub>  
Reports in CCR

**606\***

Mtonnes of 2019  
CO<sub>2</sub> Emissions

**110**

2020 CO<sub>2</sub>  
Reports in CCR

**265\***

Mtonnes of 2020  
CO<sub>2</sub> Emissions

*\* Totals include CO<sub>2</sub> emissions submitted by States and emissions provided by ICAO to fill the emissions gaps*

For CORSIA Newsletter, visit: [www.icao.int/corsia](http://www.icao.int/corsia)



## Resolution A40-18, paragraph 9 requested the LTAG work

### Task

*The Assembly... Requests the Council to continue to explore the feasibility of a long term global aspirational goal for international aviation,*

### How to do the task

*through conducting detailed studies assessing the attainability and impacts of any goals proposed, including the impact on growth as well as costs in all countries, especially developing countries,*

### Timeline

*for the progress of the work to be presented to the 41st Session of the ICAO Assembly. [2022]*

### Consideration

*Assessment of long term goals should include information from Member States on their experiences working towards the medium term goal.*



## CAEP undertook:

*(1) data gathering*

*(2) development of combined in-sector scenarios*

*(3) conducted final analysis* of the scenarios to understand those *impacts on CO<sub>2</sub> emissions* and *cost associated with the scenarios* and *economic impacts on aviation growth, noise and air quality*, in all countries especially developing countries and the results was placed *in context of the latest consensus scientific knowledge*.

The Council in March 2022 agreed that ICAO LTAG report be made available, as the input to further consideration by all States and stakeholders at the LTAG GLADs.

The LTAG report is now available at the LTAG Website.

<https://www.icao.int/environmental-protection/Pages/LTAG.aspx>  
(or search “ICAO LTAG”)





# Main takeaway from the LTAG Report



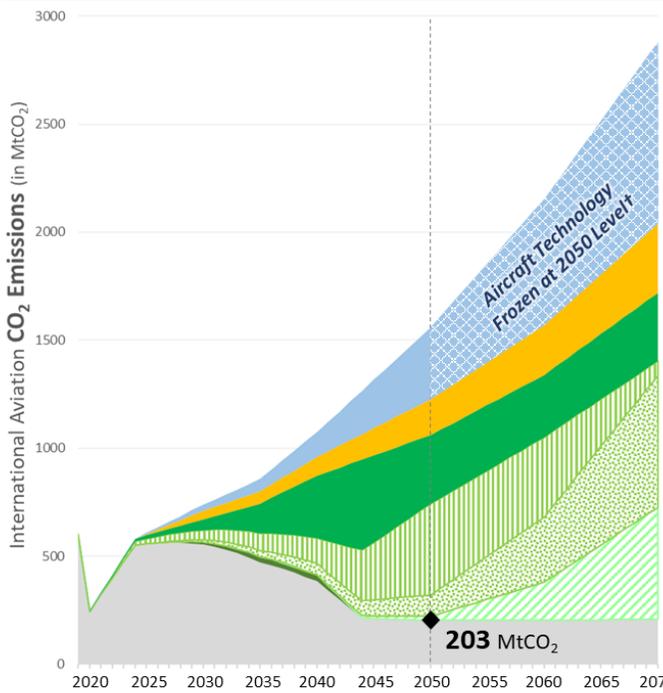
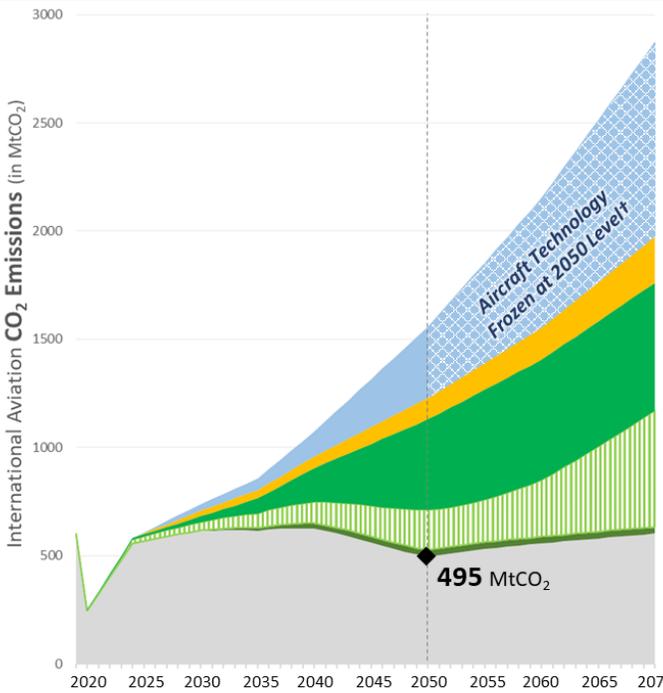
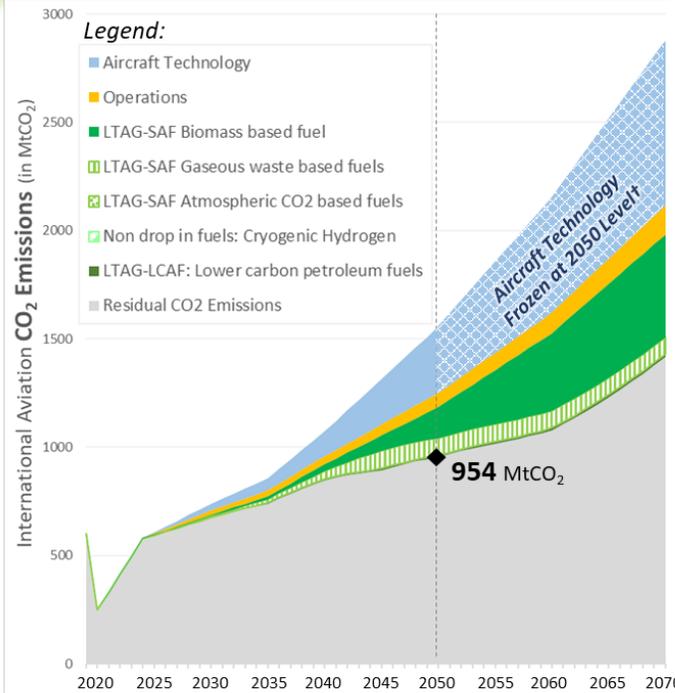
## IS1 LTAG Integrated Scenario 1

## IS2 LTAG Integrated Scenario 2

## IS3 LTAG Integrated Scenario 3

**Legend:**

- Aircraft Technology
- Operations
- LTAG-SAF Biomass based fuel
- LTAG-SAF Gaseous waste based fuels
- LTAG-SAF Atmospheric CO2 based fuels
- Non drop in fuels: Cryogenic Hydrogen
- LTAG-LCAF: Lower carbon petroleum fuels
- Residual CO2 Emissions



### Metrics

### IS1

### IS2

### IS3

CO<sub>2</sub> Emissions in 2050 after Reductions

≈**950 MtCO<sub>2</sub>** in 2050  
(**160%** of 2019 CO<sub>2</sub> emissions)

≈**500 MtCO<sub>2</sub>** in 2050  
(**80%** of 2019 CO<sub>2</sub> emissions)

≈**200 MtCO<sub>2</sub>** in 2050  
(**35%** of 2019 CO<sub>2</sub> emissions)

Reduction in 2050 from the Baseline

**39% total** through: Technologies - 20%, Operations - 4%, Fuels - 15%

**68% total** through: Technologies - 21%, Operations - 6%, Fuels - 41%

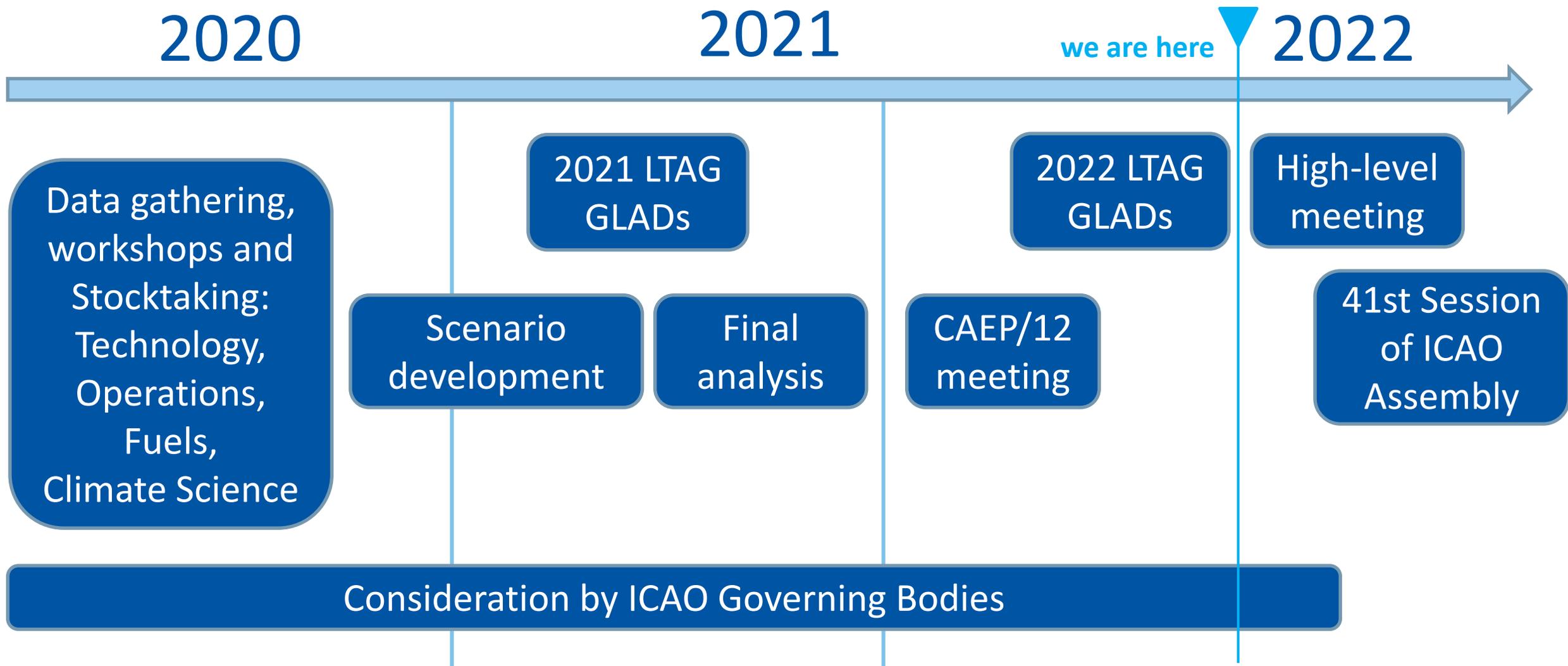
**87% total** through: Technologies - 21%, Operations - 11%, Fuels - 55%

Cumulative residual Emissions from 2020 to 2070

23 GtCO<sub>2</sub> (2020 to 2050)  
23 GtCO<sub>2</sub> (2051 to 2070)

17 GtCO<sub>2</sub> (2020 to 2050)  
11 GtCO<sub>2</sub> (2051 to 2070)

12 GtCO<sub>2</sub> (2020 to 2050)  
4 GtCO<sub>2</sub> (2051 to 2070)





- Part of the ICAO consultative process, the ICAO Global Aviation Dialogues (GLADs) on LTAG held as a series of five virtual regional events.
- Objectives of LTAG GLADs were:
  - 1) communicate the latest ICAO technical work on LTAG**  
(How can the ICAO technical work form the basis of a decision on LTAG?); and
  - 2) discuss how to facilitate a decision on LTAG**  
(What will the ICAO High-level Meeting recommend and what will the 41st Session of the ICAO Assembly be requested to decide on LTAG?).
- A total of **421** participants from **108** States and **11** Organizations attended the five event.



- ✓ Questions and answers at the Q&A session (Day 1) were consolidated by the Secretariat, and are available as FAQs on the GLADs website;
- ✓ Views expressed at the Dialogue session (Day 2) were consolidated by the Secretariat, and are available at the GLADs website

**2022 Global Aviation Dialogues (GLADs) on the Feasibility of Long-term Aspirational Goal (LTAG) for International Aviation CO<sub>2</sub> Emissions Reductions**  
**Dialogue Sessions - Day 2**  
**COMPILATION OF VIEWS**

*Note: This document is a compilation of the views expressed, both verbally and in written format, during the second day of the*

*Topic 1: What mi  
The latest IPCC f  
for 2050. In this r  
at the global leve  
global CO2 reduc*

*Topic 2: What do  
As detailed in the  
What would be th  
aspirational goal  
provided?*

*The views are con  
and Observers pr*

**2022 Global Aviation Dialogues (GLADs) on the Feasibility of Long-term Aspirational Goal (LTAG) for International Aviation CO<sub>2</sub> Emissions Reductions**  
**COMPILATION OF QUESTIONS AND ANSWERS**

*Note: This document is a compilation of the questions and answers exchanged, both verbally and in written format, during the first day of the five regional 2022 ICAO LTAG GLADs sessions.*

*The questions have been grouped into five categories: 1) LTAG Scenarios; 2) LTAG Costs; 3) Technologies; 4) Fuels; and 5) Other questions. To facilitate understanding, the ICAO Secretariat has further grouped similar questions for the same answer. Please note that some States and Observers provided questions in more than one of the regional sessions.*

*Although the answers provided during the LTAG GLADs are aligned with the conclusions of the LTAG report, the reader is invited to refer to the [complete LTAG report](#) whenever possible.*

<https://www.icao.int/Meetings/2022-ICAO-LTAG-GLADS/Pages/default.aspx>



- **88** States in 2021 → **111** States in 2022  
(with two additional States having confirmed participation in 2023)
- ACT-CORSIA buddy partnerships involving 16 supporting States and 118 requesting States, to support the timely implementation of CORSIA, including notable efforts from several States to the initiative





# Sustainable Aviation Fuels (SAF) and Lower Carbon Aviation Fuels (LCAF)



- Exponential increase in SAF-related initiatives
- States' commitments to embracing the introduction of SAF, in line with the 2050 ICAO Vision
- States are encouraged to support third ICAO Conference on Aviation Alternative Fuels (CAAFF/3), in 2023

SAF Tracking tools (click on the drops for details)

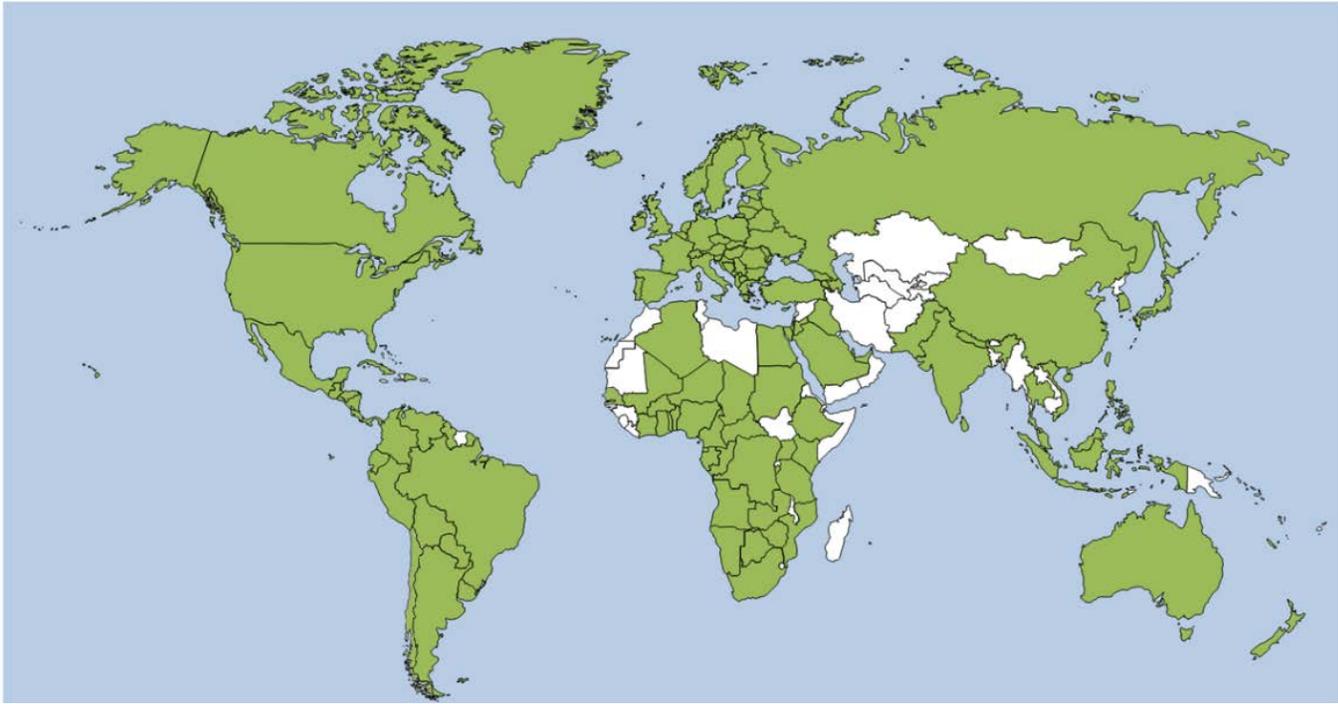


**New - SAF facilities map**  
see the facilities (existing and announced) that can produce SAF





By April 2022, **129 Member States**, representing **98.08 %** of international aviation traffic, voluntarily submitted action plans to ICAO.



## ICAO-EU Assistance Projects- Phase I & II



Botswana  
Madagascar  
Rwanda  
Seychelles  
Zimbabwe

**ESAF**



Benin  
Cabo Verde  
Cote d'Ivoire  
Mali  
Senegal

**WACAF**



- All States are invited to:
  - ✓ contribute and join ICAO Stocktaking 2022 on aviation in sector CO<sub>2</sub> emissions reductions will be held on 18-19 July as a virtual event, prior to the ICAO High-level Meeting on LTAG;
  - ✓ attend the High-level Meeting to be convened from 20 to 22 July 2022 in Montréal;
  - ✓ support the ICAO process leading to the next assembly for an ambitious aspirational goal for the sector;
  - ✓ Support the third ICAO Conference on Aviation Alternative Fuels (CAAF/3), in 2023.



# Timeline and Actions (2022)



Timeline	Responsibility	Action
1 January to 31 December 2022	Operator	Monitor 2022 CO <sub>2</sub> emissions from international flights
1 January to 30 April 2022	Operator and Verification Body	<ul style="list-style-type: none"> <li>- Operator to compile 2021 CO<sub>2</sub> emissions data</li> <li>- Verification body to verify 2021 Emissions Report</li> </ul>
30 April 2022	Operator and Verification Body	Submit Emissions Report and associated Verification Report to the State of attribution
1 May 2022 to 31 July 2022	State	Conduct order of magnitude check of verified Emissions Report
31 July 2022	State	Submit aggregate 2021 CO <sub>2</sub> emissions data to ICAO through the CCR
31 October 2022	ICAO	<ul style="list-style-type: none"> <li>- Publish 2021 CO<sub>2</sub> emissions</li> <li>- Publish 2021 SGF</li> </ul>
30 November 2022	State	Submit to ICAO through the CCR: <ul style="list-style-type: none"> <li>- List of operators attributed to the State</li> <li>- List of verification bodies accredited in the State</li> </ul>
31 December 2022	ICAO	Publish list of aeroplane operators and list of verification bodies



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Headquarters  
Montréal

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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  
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THANK YOU

[www.icao.int/corsia](http://www.icao.int/corsia)

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