
ICAO
SAFE SKIES.
SUSTAINABLE
FUTURE.

Aviation CO2 Emissions Reduction Activities

Secretariat

ICAO AND ENVIRONMENT

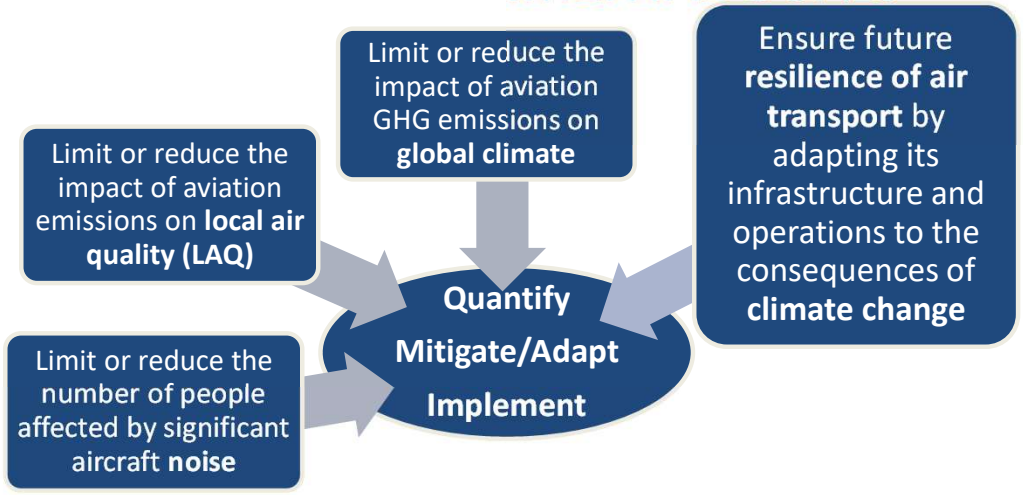
ICAO STRATEGIC OBJECTIVE

Minimize the adverse effect of global civil aviation on the environment

SUSTAINABLE DEVELOPMENT GOALS

ICAO's environmental work contributes to 14 out of the 17 United Nations SDGs

ICAO ENVIRONMENTAL GOALS

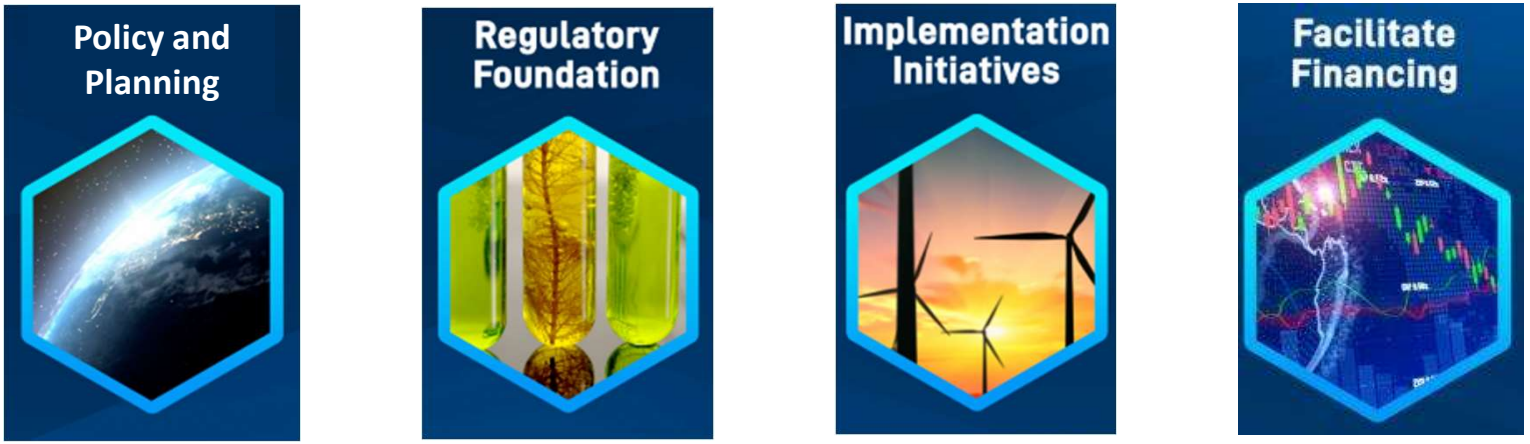


41st ASSEMBLY RESOLUTIONS

- **A41-20:** General provisions, noise and local air quality
- **A41-21:** Climate change
- **A41-22:** Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

The 41st ICAO Assembly adopted a long-term global aspirational goal (LTAG) for international aviation of net-zero carbon emissions by 2050 in support of the UNFCCC Paris Agreement's temperature goal.

ICAO Global Framework on SAF, LCAF and other Aviation Cleaner Energies

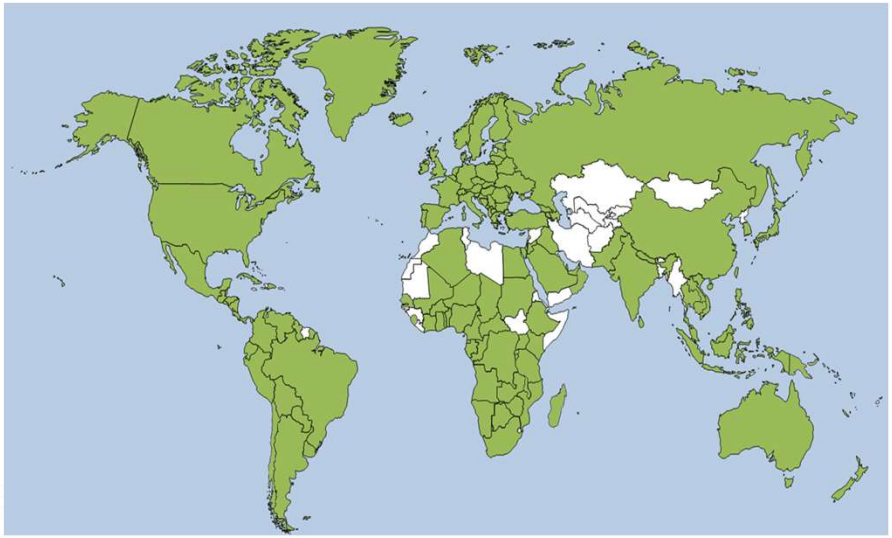


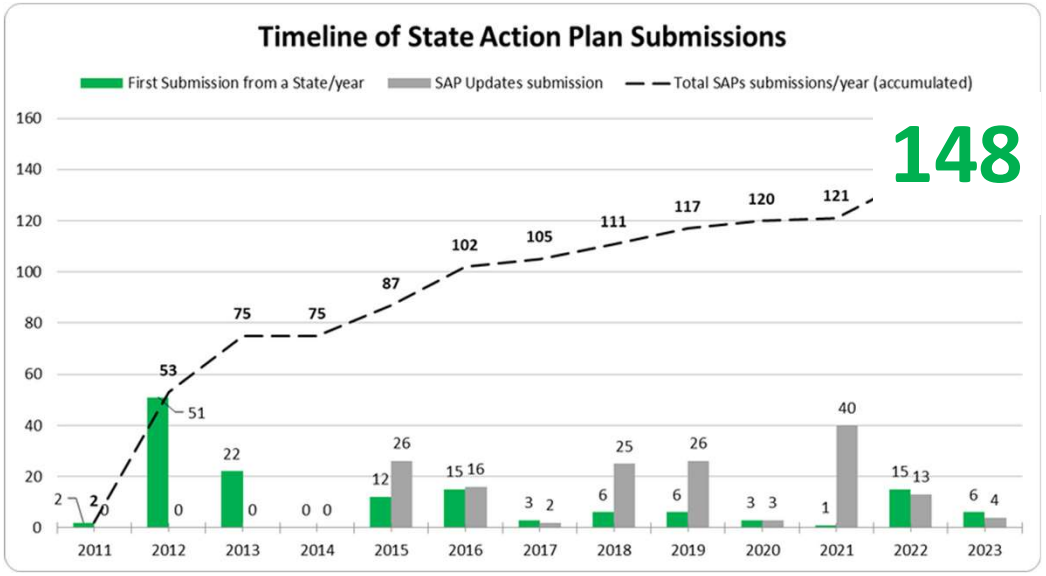
Supports global scale-up of aviation cleaner energies – Collective Vision to reduce 5% CO2 by 2030

ICAO State Action Plans (SAP) initiative

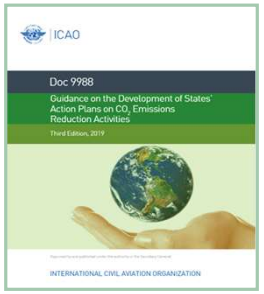
https://www.icao.int/environmental-protection/Pages/ClimateChange_ActionPlan.aspx

148 States (98.99% of global RTK) have voluntarily submitted State Action Plans





Need for SAP updates in light of LTAG and Global Framework



Guidance on the Development of States' Action Plan on CO2 Emissions Reduction Activities (Doc 9988)

Updated version is now available !

State Action Plans (SAPs)

Current status:

1.# States submitted SAP: **24 (62%)**

Australia	India	Malaysia	Philippines	Thailand
Brunei Darussalam	Indonesia	Nepal	Republic Of Korea	Tonga
Cambodia	Japan	New Zealand	Singapore	Vanuatu
China	Kiribati	Pakistan	Solomon Islands	Viet Nam
Fiji	Lao PDR	Papua New Guinea	Sri Lanka	

2.# States not yet submitted SAP: **15 (38%)**

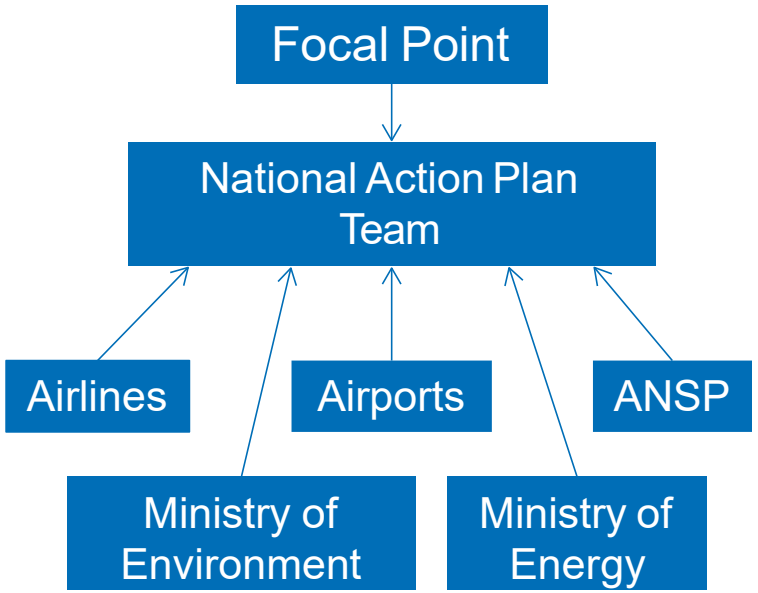
Afghanistan	Cook Islands	Marshall Islands	Myanmar	Samoa
Bangladesh	Democratic Peoples Republic of Korea	Micronesia (Federated States of)	Nauru	Timor-Leste
Bhutan	Maldives	Mongolia	Palau	Tuvalu

State Action Plans (SAP)

- State Action Plans are a voluntary planning and reporting tool for States to communicate information on their activities to address CO_2 emissions from international civil aviation to ICAO
  - A living document that should be updated at least every three years
- To provide a big-picture view of the State's activities
- For States
  - Opportunity to identify measures that will improve fuel efficiency and reduce emissions
- For ICAO
  - Assess future progress toward the achievement of ICAO global aspirational goals

The State Action Plan (SAP) Process

- The State:
  - Designates a State Action Plan Focal Point and communicates their contact information to ICAO
- The Focal Point:
  - Coordinates with ICAO
  - Establishes a National Action Plan Team
  - Develops the State Action Plan and submits the document to ICAO



State Action Plan Minimum Contents

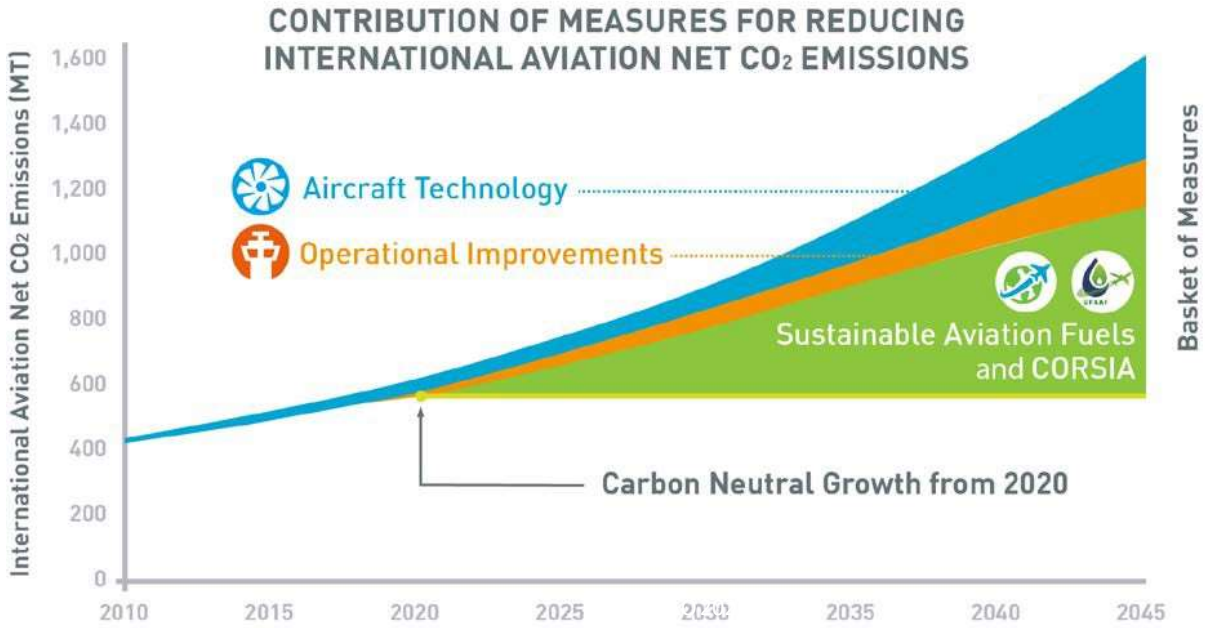
1. State Action Plan Focal Point contact information
2. Baseline scenario – international fuel consumption, CO_2 emissions and traffic data projected to 2050 (without action)
3. List of selected emissions mitigation measures
4. Expected results – international fuel consumption and CO_2 emissions projected to 2050 (with the actions in #3)
5. Assistance needs (if needed)

The Basket of Measures

Doc 9988 Chapter 4

APER, EBT, IFSET, MACC

- Aircraft Technology
- Operational Improvements
- Sustainable Aviation Fuels (SAF)
- Market-Based Measures



→ **Select measures and quantify their expected results:** feasibility, emissions reduction potential, prioritization of measures, quantification of fuel & CO2 reduction results

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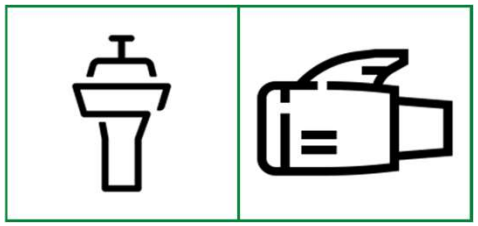
Examples of Mitigation Measures selected in the APAC Region

✓ AIRCRAFT TECHNOLOGY

- Fleet modernization – fuel-efficient aircraft
- Engine modernization – fuel-efficient engines
- Retrofitting and upgrade improvements on existing aircraft (e.g. installation of winglets/sharklets, etc.)
- Upgrading the avionics equipment – to meet current navigational requirements

Examples of Mitigation Measures selected in the APAC Region



✓ OPERATIONAL IMPROVEMENTS

- Modernization of Air Traffic Management (ATM) infrastructure
- Performance Based Navigation (PBN) and User Preferred Routes (UPR) implementation
- Airport collaborative decision-making (A-CDM) implementation
- Best practices in operations (e.g. aircraft weight reduction, minimizing flaps (take-off and landing), minimizing the use of reversers, single-engine taxi, reduction on APU usage, etc.)

Examples of Mitigation Measures selected in the APAC Region

- ✓ SUSTAINABLE AVIATION FUELS (SAF) AND CLEANER ENERGY
  - Development and use of aviation fuels (feasibility study, R & D, demo flights, and commercial flights)
  - Development of policies/standards for SAF use

Examples of Mitigation Measures selected in the APAC Region

✓ MARKET-BASED MEASURES

- Voluntary participation in the offsetting requirements of CORSIA
- Development of national regulation to support CORSIA implementation

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State Action Plans (SAP)

Singapore Sustainable Air Hub Blueprint (Feb 2024)

- Achieve net-zero aviation CO2 emissions by 2050
- Twelve initiatives across three domains:
  - Airport
  - Airline
  - Air Traffic Management (ATM)

Singapore Sustainable Air Hub Blueprint

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Singapore Sustainable Air Hub Blueprint

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Airport domain: Maximal efforts to reduce energy use and deploy renewables

- Increase rooftop solar power generation to 10% of 2019 consumption
- Potential for airfield solar power generation of another 5%

a) Solar power deployment
b) Clean energy airside vehicles
c) Building energy efficiency
d) Low-carbon electricity imports
e) Resource circularity through waste-to-energy

→ CAAS will explore the use of hydrogen-powered vehicles to understand how hydrogen can be used safely in airport operations.

→ Changi Airport will assess the feasibility of installing airfield solar power without compromising the safety and efficiency of airport operations.

Singapore Sustainable Air Hub Blueprint

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Airline domain: Build ecosystem to support the use of SAF in Singapore

- SAF expected to contribute around 65% of the carbon emissions reduction needed to achieve net zero by 2050

a) National SAF target and SAF levy
b) Central SAF procurement
c) SAF production in Singapore and the region
d) Airline fleet renewal and operational improvements

Newer, fuel-efficient aircraft: These planes use less fuel and produce less emissions.
Operational improvements: Efforts like reducing aircraft weight and minimizing the use of auxiliary power units (APUs) on the ground help cut fuel consumption and CO2 emissions.
Optimized flight plans: Efficient flight management, reducing airspace congestion, finding better routes, and leveraging data analytics and digital tools all contribute to in-flight fuel savings and emissions reduction.

Singapore Sustainable Air Hub Blueprint

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Air Traffic Management domain: Operational improvements to increase efficiency and reduce fuel burn

- 10% reduction in additional fuel burn and emissions expected over the next five years

a) Advanced demand-capacity balancing implementation

- Expand suite of ATFM solutions to include LR-ATFM
- Strengthen integration between MET and ATM

b) Performance-based navigation enhancement

- Develop smart tools to facilitate CCO and CDO
- Implement direct point-to-point routings

c) Gate-to-gate trajectory optimisation

- Improve precision in separation between aircraft during take-off and landing
- Implement enablers for TBO

ICAO BP 2023-2025 priority focus areas (PFAs)

ICAO Council agreed to seven priority focus areas (PFAs) to guide the current ICAO Business Plan activities:

1. Advanced air mobility and new entrants
2. Crisis preparedness and response
3. USOAP and USAP evolution and engagement
4. Cybersecurity
5. **Long-term aspirational goal (LTAG)**
6. Transformational Objective
7. Implementation support

ICAO BP 2023-2025 priority focus areas (PFAs)

Long-term aspirational goal (LTAG)

- Holistic strategy for net-zero carbon emissions by 2050, including:
  - Technological advancements
  - Operational improvements
  - Sustainable fuels
  - Market-based measures

- 2023-2025 Business Plan priorities:
  - Monitoring progress and reporting to States
  - Enhancing policy and regulatory frameworks
  - Providing implementation support (e.g., ACT-SAF programme)
  - Facilitating access to financing for clean energy and decarbonization projects

- Additional initiatives:
  - ICAO FINVEST Hub proposal
  - Study on establishing a climate finance initiative under ICAO
  - Integration of activities from the Third Conference on Aviation Alternative Fuels (CAAF/3)

How does this relate to APANPIRG and RASG-APAC?

FOURTEENTH AIR NAVIGATION CONFERENCE (AN-Conf/14)

REPORT OF THE COMMITTEE ON AGENDA ITEM 1
Agenda Item 1: Update on the ICAO 2023-2025 Business Plan and long-term strategic planning
1.1: Reprioritization of the ICAO 2023-2025 Business Plan

Recommendation 1.1/1 – Support to ICAO's programmatic business planning approach initiated by the Business Plan 2023 - 2025 priority focus areas

That … ICAO:

…

d) through the PIRGs and RASGs, in accordance with the GANP and GASP and their respective regional plans, incorporate into their work programmes and projects, initiatives taking into account alignment with the ICAO PFAs.

Thank You

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