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STATES' ACTION PLANS ON CO2 EMISSIONS REDUCTION CORSIA

ICAO-AFCAC SAP and CORSIA Webinar Sessions
(17 & 23 June 2020)





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STATES' ACTION PLANS ON CO2 EMISSIONS REDUCTION

ICAO Secretariat
WACAF RO: ENV

ICAO-AFCAC SAP and CORSIA Webinar Sessions
(17 & 23 June 2020)





- Background
- Action Plan to reduce CO2 emissions
- Process to develop an Action Plan
- Tools and guidance documents developed by ICAO



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UN specialized agency

Established by the “Chicago Convention” in 1944

Forum for cooperation in all fields of civil aviation

193 Contracting States

Standards, policies & guidance for environmental protection since 1960’s

Focus on aircraft noise, local air quality and global climate

International Civil Aviation Organization





Vision



Mission

Achieve the sustainable growth of the global civil aviation system.

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

ICAO Strategic Objectives:

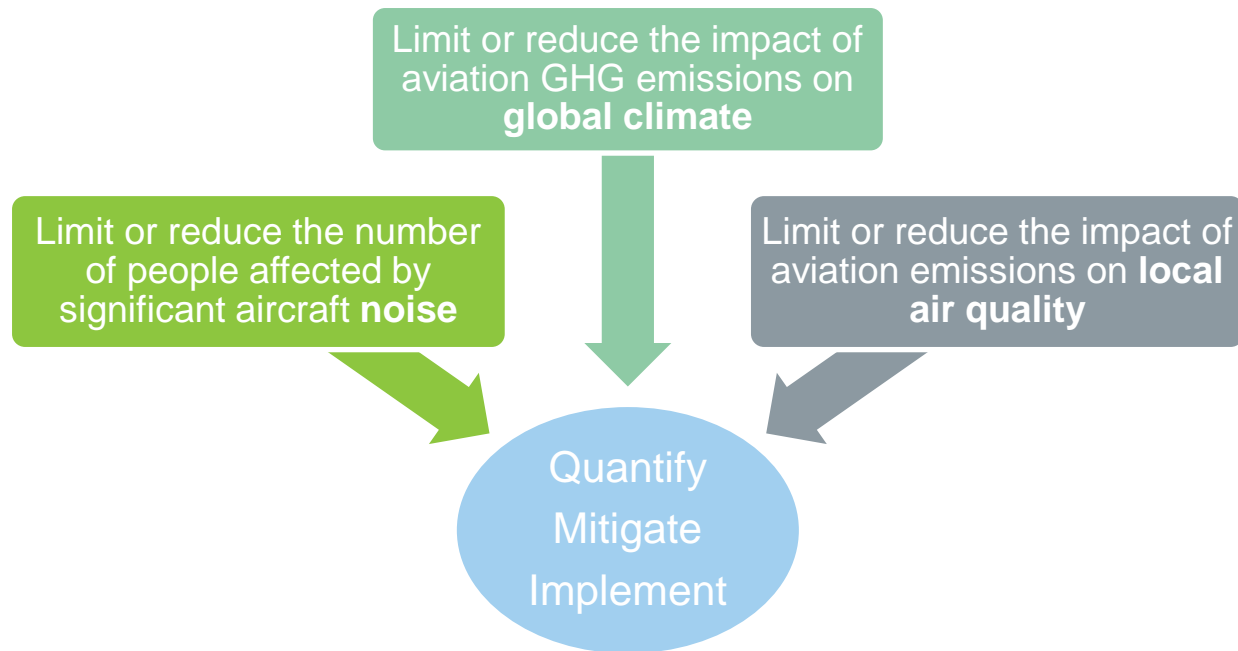
Safety	Security & Facilitation	Environmental Protection	Air Navigation Capacity and Efficiency	Economic Development of Air Transport
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ICAO Environmental Goals

ICAO Strategic Objective on Environmental Protection:

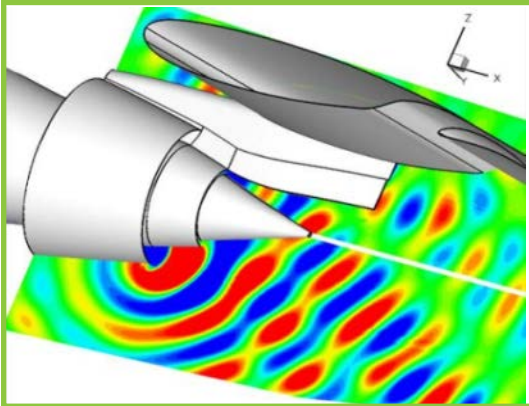
Minimize the adverse effect of global civil aviation on the environment





ICAO's work on Environment

NOISE: late '60s SARPs on Annex 16, Volume I since 1971



LOCAL AIR QUALITY: late '70s SARPs on Annex 16, Volume II, since 1981

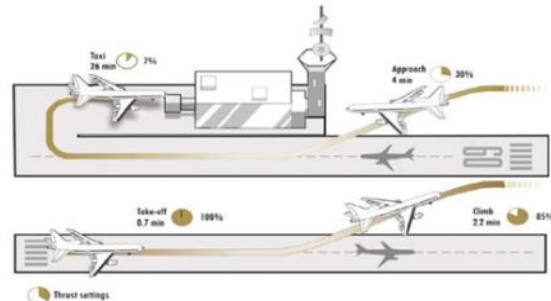


Figure 1 - Illustration of ICAO Emissions Certification Procedure LTO Cycle.
Source: ICAO.

CLIMATE CHANGE: late '80s SARPs on Annex 16, Volume III, and Volume IV





ICAO Environmental policies are defined in the ICAO Assembly Resolutions



A40-17: Consolidated statement of continuing ICAO policies and practices related to environmental protection — **General provisions, noise and local air quality**

A40-18: Consolidated statement of continuing ICAO policies and practices related to environmental protection — **Climate change**

A40-19: Consolidated statement of continuing ICAO policies and practices related to environmental protection — **Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)**



ICAO Policy



Chicago Convention
ICAO Assembly Resolutions
Consolidated statement of continuing ICAO policies and practices related to environmental protection

ICAO Standards and Recommended Practices (SARPs)



Annex 16 - Environmental Protection:
Volume I, Aircraft Noise
Volume II, Aircraft Engine Emissions
Volume III, Aeroplane CO₂ Emissions
Volume IV, CORSIA

ICAO Guidance Documents



Various guidance on noise, LAQ and climate change, e.g.:
Environmental Assessment of Proposed ATM Operational Changes (Doc 10031)
Environmental Technical Manual Volume IV (Doc 9501)



What is a State Action Plan?

- State Action Plans are a voluntary planning and reporting tool for States to communicate information on their activities to address CO₂ emissions from international civil aviation to ICAO

It is a living document and should be updated at least every three years

- The initiative was **established in 2010** as a result of Assembly Resolution A37-19 and support was reaffirmed in 2013 (A38-18), 2016 (A39-2) and 2019 (A40-18)



History

- Initiative established in 2010 with the adoption of Assembly Resolution **A37-19**:

9. *Encourages* States to submit their action plans outlining their respective policies and actions, and annual reporting on international aviation CO₂ emissions to ICAO;

- Reaffirmed support in 2013 with ICAO Assembly Resolution **A38-18**:

- *Para 11: “action plans should include information on the basket of measures considered by States, reflecting their respective national capacities and circumstances, and information on any specific assistance needs”*

- And reaffirmed support in 2016 with ICAO Assembly Resolution **A39-2**:

- *Para 11: “Invites those States that choose to prepare or update action plans to submit them to ICAO” and include “**quantified information** on the expected environmental benefits from the implementation of the measures chosen from the basket”*
- *Para 12: “Encourages States that have already submitted **action plans to share information** contained in action plans and **build partnerships** with other member States in order to support those States that have not prepared action plans, and to make the submitted action plans available to the public, taking into account the commercial sensitivity of information contained in States’ action plans”*



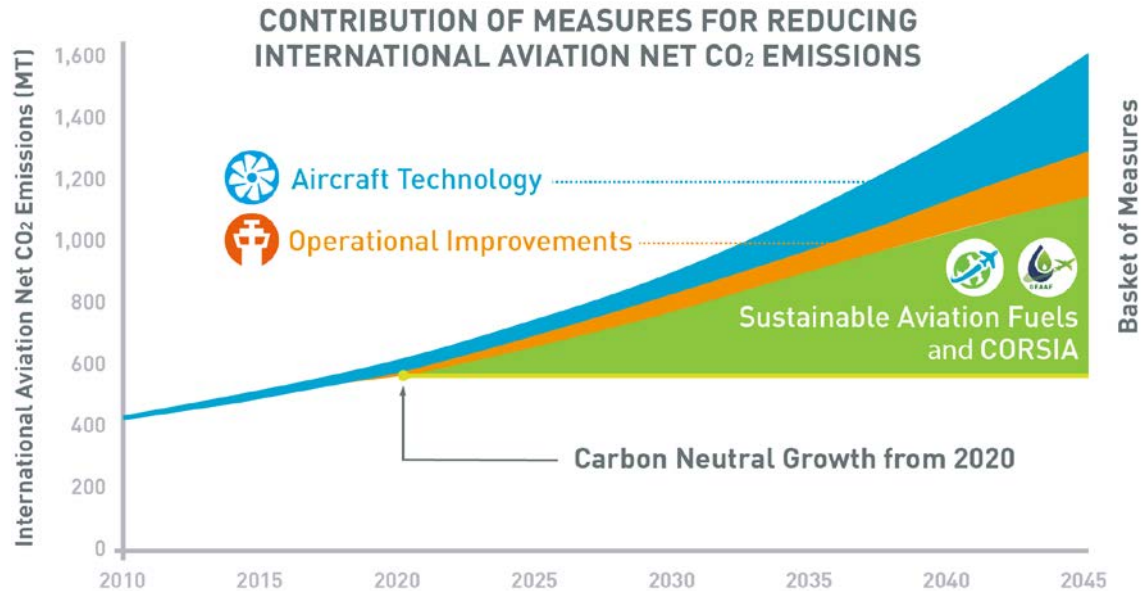
Objectives

Assembly Resolution A 40-18

- Para. 4. States and relevant organizations will work through ICAO to achieve a global **annual average fuel efficiency improvement of 2 per cent until 2020** and an aspirational global **fuel efficiency improvement rate of 2 per cent per annum from 2021 to 2050...**
- Para. 6. ...work together to strive to achieve a collective medium term global aspirational goal of **keeping the global net carbon emissions from international aviation from 2020 at the same level...**



Global Aspirational Goals



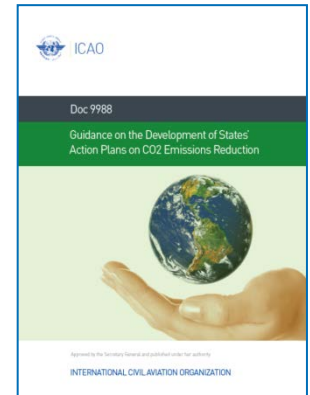
- 2% annual fuel efficiency improvement
- Carbon Neutral Growth from 2020 onwards (CNG2020)



Voluntary States Action Plans

Concrete action to address CO2 emissions

- 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



Available on the
APER website

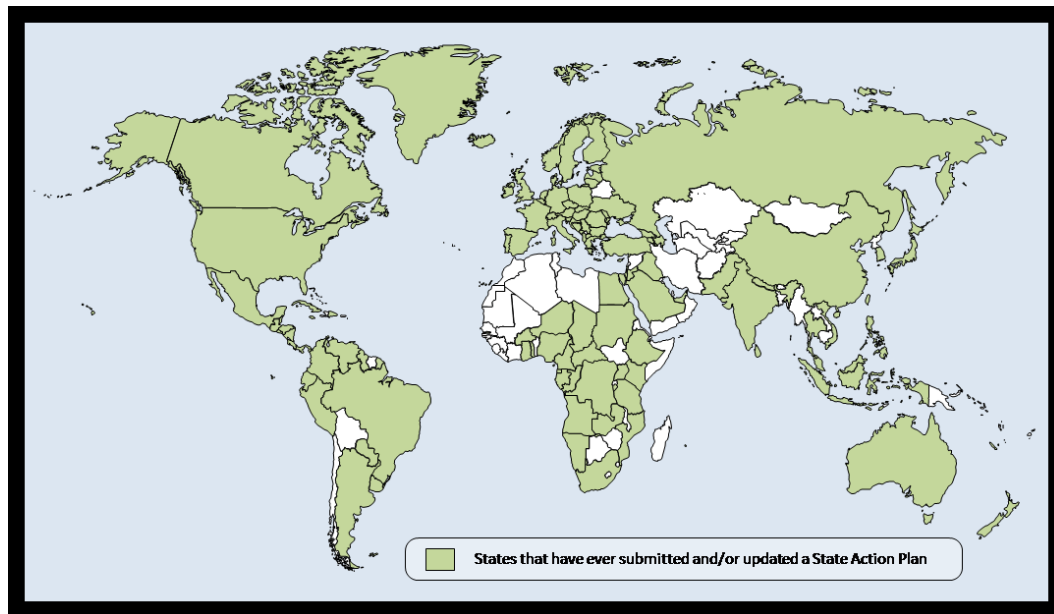


Benefits of Developing a State Action Plan

- State Action Plans give ICAO Member States the ability to:
 - Promote cooperation
 - Establish partnerships
 - Facilitate technology transfer
 - Obtain assistance
- They provide an organized means for the State to:
 - Highlight their commitment to addressing environmental challenges
 - report international aviation CO₂ emissions to ICAO
 - provide information on the basket of measures considered, reflecting their respective national capacities and circumstances, and on any specific assistance needs



Current Status



119 States representing
>97 % of global RTK have
submitted an action plan
to ICAO

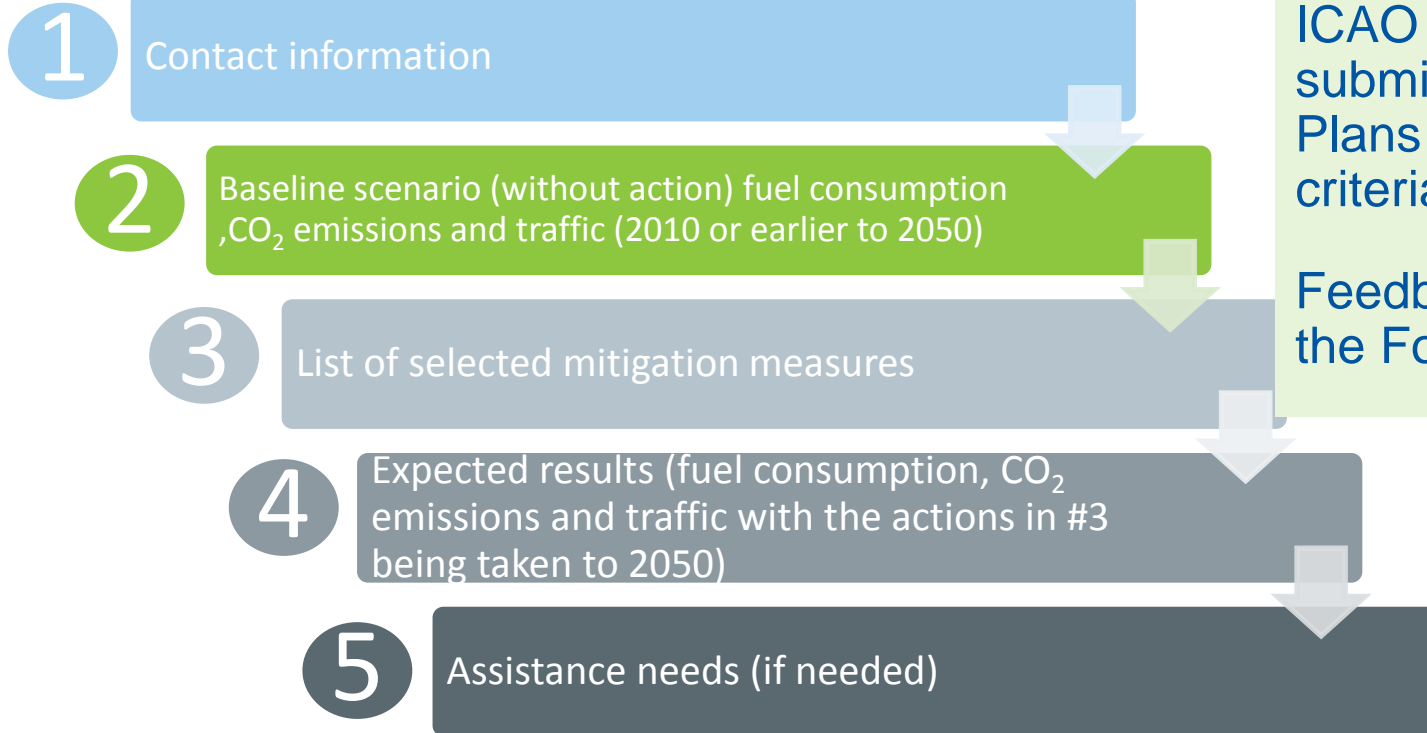
1171 experts trained from
132 States

8 ICAO Buddy Partnerships

2 capacity-building and
assistance projects



Minimum Content



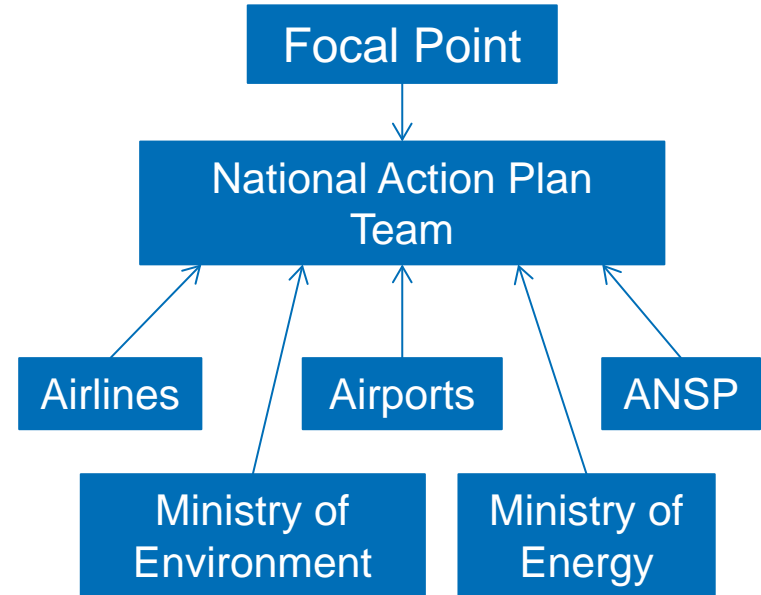
ICAO assesses all submitted State Action Plans against the same criteria

Feedback forms sent to the Focal Points



The State Action Plan 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





Key steps in the planning process

- a) establishing the team that will contribute to the development of the action plan;
- b) estimating the baseline scenario (without action) international aviation fuel consumption and traffic;
- c) selecting the measures to mitigate CO₂ emissions and improve fuel efficiency;
- d) estimating the expected results from the actions (mitigation measures) selected; and
- e) identifying any assistance needed to develop and/or implement the plan.



The Action Plan Focal Point

- The role of the Focal Point is to:
 - lead the development of the Action Plan
 - coordinate amongst national stakeholders
 - liaise with ICAO
- The Focal Point is the only person authorized to submit the Action Plan and to access the ICAO APER website
- The Focal point plays a critical role in the successful development of an Action Plan. He/She:
 - Drives various interests towards a common goal – State Action Plan
 - Possess the leadership skills to get people on-board and motivate them
 - Is a “do-er”
 - Is typically a member of the CAA / DGCA



National Action Plan Team

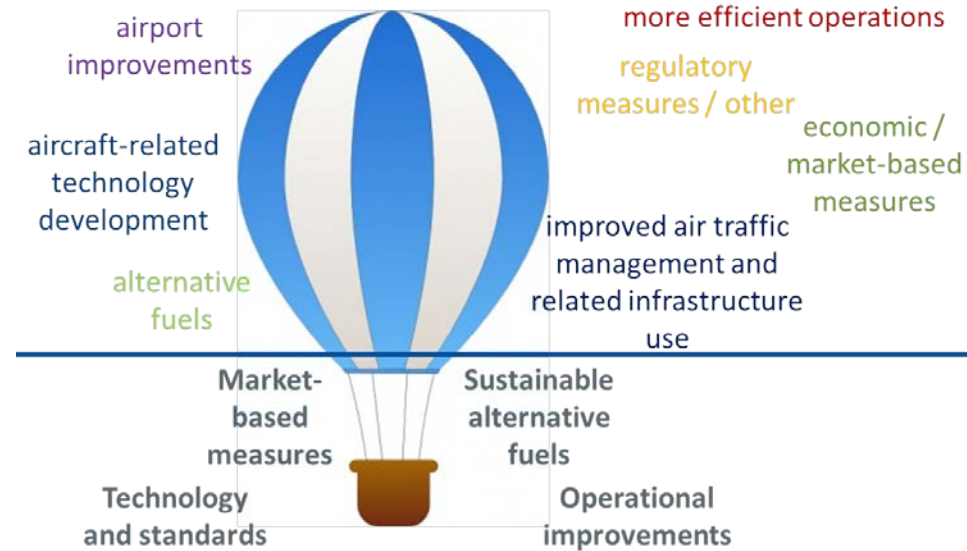
- In order to develop the State Action Plan the Focal Point needs to work with a **Team** including the **different Aviation Stakeholders**
- Data needed for the development of the State Action Plan and the information on implementation of the mitigation measures - provided by the different Members of the Team (fuel consumption, traffic data, CO₂ emissions data).



The Action Plan Team

- Mitigation measures are many and so are the stakeholders involved
- Depending on the exact measures chosen, these can be:
 - Airlines
 - Airports
 - ANSPs
 - Fuel providers
 - Airframe/engine manufacturers
 - Other Government entities
 - Academia and research institutions
 - Community groups
 - etc.

7 Categories of Measures



ICAO Basket of Measures



Baseline Scenario

- The baseline scenario describes the **historic** evolution of fuel consumption, CO₂ emissions, and traffic in the State and the expected future evolution **in the absence of action**
 - It should :
 - Include annual historic fuel consumption and traffic from international aviation from 2010 or earlier
 - Forecast future fuel consumption and traffic to 2050
 - Provide quantified data for the years 2010, 2020 and if possible 2050



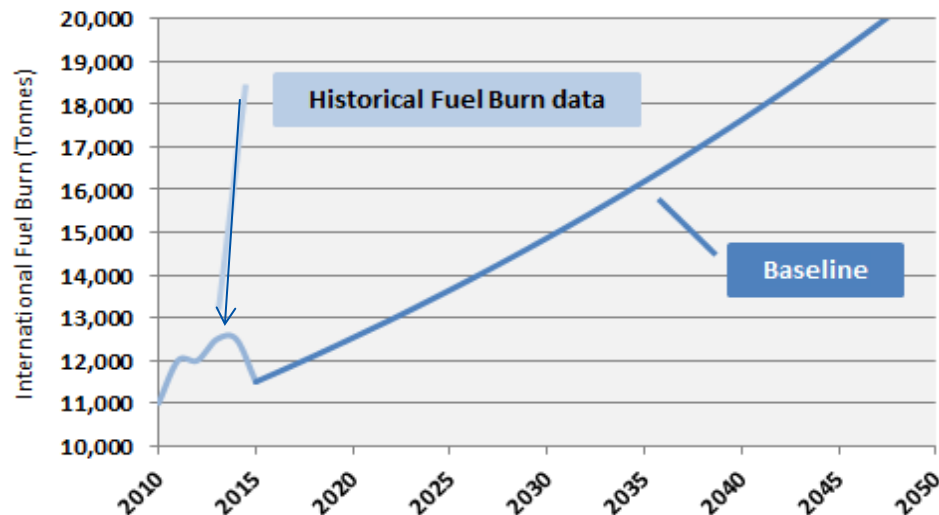
Baseline scenario

- Accounting for current and future (without action) traffic, fuel consumption and CO₂ emissions data
 - Differentiating between international and domestic emissions
 - Collecting or estimating historic aircraft activity and fuel consumption data
 - Forecasting future baseline aircraft activity and fuel consumption
 - Verification of estimates



Example			
Year	Historical Data		Fuel efficiency
	RTK * ('000)	Fuel Burn (tonnes)	
2010	25'000	11'000	0.440
2011	30'000	12'000	0.400
2012	32'000	12'000	0.375
2013	33'000	12'500	0.379
2014	32'000	12'500	0.391
2015	30'000	11'500	0.383

What is a Baseline ?



* **Revenue-Tonne Kilometre (RTK)** = revenue load (persons and cargo) in tonnes (t) * distance flown in kilometres (km)
 RTK represents a measure of the size of air transport;




Mitigation Measures

- Identification of measures that will be implemented in order to achieve CO₂ emissions reductions and/or improve fuel efficiency
- Selection of measures and quantifying their expected results
 - Review of the basket of measures, their feasibility and emissions reduction potential
 - Prioritization and selection of mitigation measures
 - **Quantifying the effects** on fuel consumption and CO₂ emissions from the measures selected



Mitigation Measures

<p>Aircraft technology</p>	<p>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.).</p>	
<p>Operational improvements</p>	<p>CO₂ benefits from air traffic management; air navigation; green airports; etc.</p>	
<p>Sustainable aviation fuels</p>	<p>Around 200,000 commercial flights with drop-in aviation fuels; 6 conversion processes; 7 airports distributing drop-in aviation fuels</p>	
<p>Global market-based measure</p>	<p>Carbon Offsetting and Reduction Scheme for International Aviation (CORSA)</p>	

economic / market-based measures

regulatory measures / other

aircraft-related technology development

alternative fuels

improved air traffic management and related infrastructure use

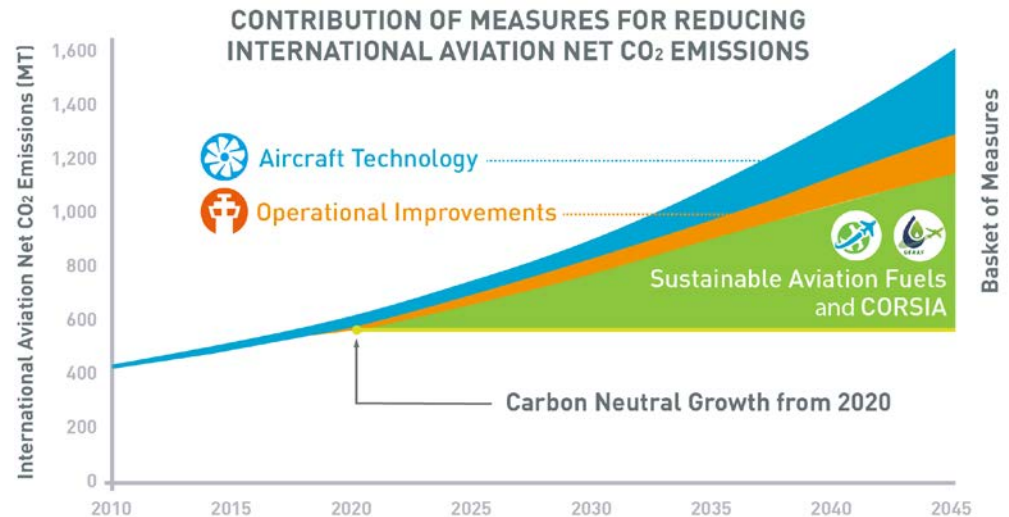
more efficient operations

airport improvements



The Basket of Measures

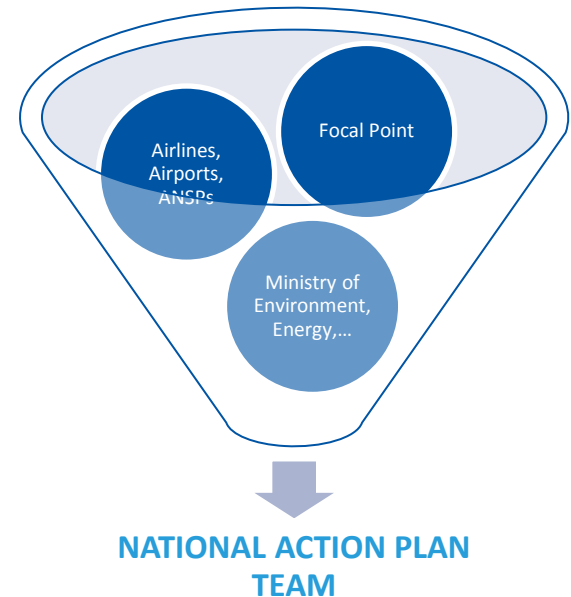
- Aircraft Technology
- Operational Improvements
- Sustainable Aviation Fuels
- Market-Based Measures
(Carbon Offsetting and
Reduction Scheme for
International Aviation
(CORSIA))





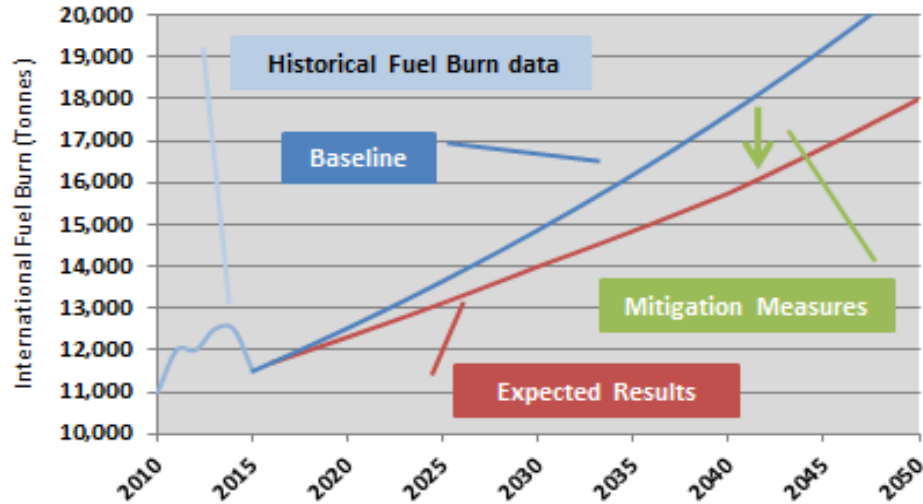
Selection of Mitigation Measures

- The Focal Point should always work in collaboration with the **National Action Plan Team**
- **Context** is key for the selection of appropriate mitigation measures





Expected Results



Baseline

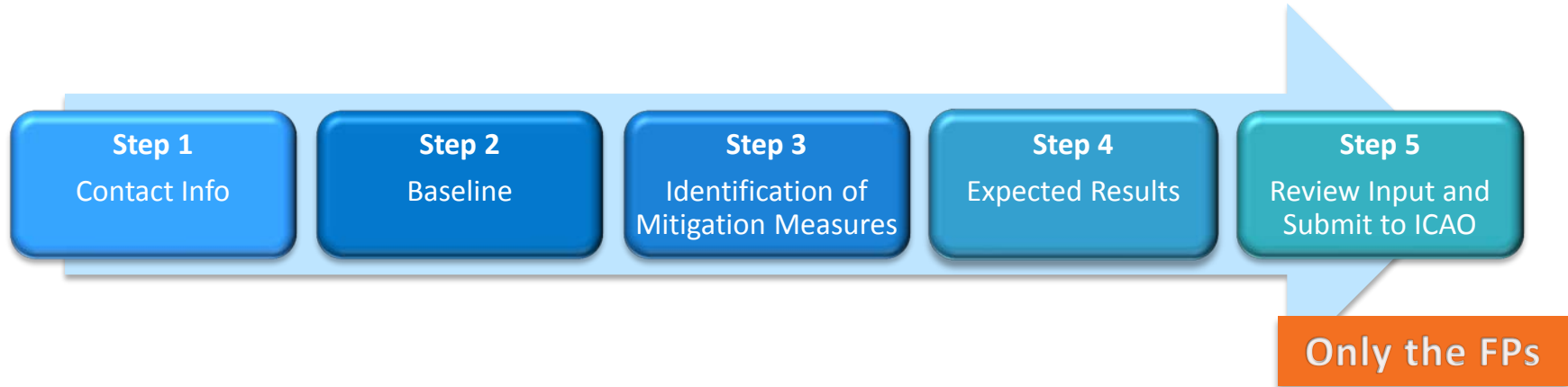
List of Mitigation Measures

Expected Results



Site overview

APER website



→ Follows the main parts of the Action Plan



Data confidentiality

- To protect confidentiality, the State may elect not to make certain data publicly available, or aggregate/de-identify the data before including it in the action plan
- In the event that confidential data is collected (e.g., from individual air carriers or on specific international routes), appropriate procedures should be followed by the State for the designation and treatment of such information in accordance with the applicable national legislation and regulations
- A State could improve transparency by explaining in its action plan how confidential information has been treated
- Action plans are submitted to ICAO on a confidential basis. They are **only published on the ICAO public website at the request of the State**
- Assembly Resolution “*Encourages States (...) to **make the submitted action plans available to the public, taking into account the commercial sensitivity of information contained in States’ action plans**”*, in which case States can anonymize data, e.g. by aggregating/de-identifying the data before including it in the action plan



States

Action Plans submitted to ICAO

- ICAO Secretariat follows-up with State focal point regarding any questions

Annual reporting on fuel consumption

Action Plans submitted are made available to the public, if requested by the authoring State

Results from all States are aggregated to estimate future progress toward Assembly goals

Council and Assembly are informed of results



Updating an Action Plan

- States are invited to submit and subsequently update their Action Plan **every three years** preferably on the year prior to the Assembly year
- Regular updates of the State Action Plan are essential to fully deliver the benefits of the initiative at the national level.

Regular updates **increase the robustness of the data collection process**, the understanding of stakeholders operating needs and constraints, the **ownership of the content of the document**, the preparedness for the implementation of mitigation measures and the **ability to demonstrate progress.**



ICAO's Facilitating Role

ICAO has facilitated the States' Action Plans initiative since 2010 by:

- developing guidance material and tools
- enabling capacity-building and assistance projects
 - ICAO / European Union Joint Assistance Project
 - ICAO / UNDP Joint Assistance Project financed by the Global Environment Facility (GEF)
- partnering States through the State Action Plan Buddy Programme
- organizing workshops and training seminars
- answering questions and providing support



ICAO State Action Plan Buddy Programme

The ICAO State Action Plan Buddy Programme invites States that have not yet developed, or are in the process of developing, a State Action Plan to establish a partnership with a State that has already developed and submitted a State Action Plan to ICAO.

Partners		Status of Action Plan		
State providing support	State receiving support	Under development	Submitted to ICAO	Posted on the ICAO website
Bulgaria	The former Yugoslav Republic of Macedonia		X	X
Spain	Ukraine		X	X
São Tomé and Príncipe	Cabo Verde	X		
Namibia	Zambia		X	
Kenya	Botswana	X		
Dominican Republic	Panama		X	X
Namibia	Gambia	X		
Brazil	Mozambique		X	





Feedback form

ICAO State Action Plan Feedback Form

Required

Optional

State:		ICAO Region:	
SAP Submission Date:	[dd-mm-yyyy]	Notes:	
Previous Submissions:	[dd-mm-yyyy]		
	[dd-mm-yyyy]		

Overview

Preliminary requirement for the development of a State Action Plan	
Has the State nominated a State Action Plan Focal Point?	[Yes / No]
State Action Plan Minimum Requirements (from ICAO Doc 9988, Box 1)	Included?
Baseline scenario (without action) fuel consumption, CO ₂ emissions, and RTK	[Yes / Partially / No]
Measures to mitigate CO ₂ emissions	[Yes / No]
Expected results (estimated impact of selected mitigation measures on the baseline, including fuel consumption, CO ₂ emissions)	[Yes / Partially / No]
Other	
Does the State Action Plan request assistance?	[Yes / No]
Notes:	

Baseline Scenario

Elements of a State Action Plan	Included?	Notes
Historical data	[Yes / No]	
Baseline scenario	[Yes / Partially / No]	
↳ from (first year)	[Year]	
↳ to (last year)	[Year]	
↳ data on annual basis	[Yes / No]	
→ if no, provide step used	[Number]	

ICAO State Action Plan Feedback Form

Required

Optional

Mitigation Measures

Elements of a State Action Plan	Included?	Notes
Measures evaluated	[Fully / Partially / No]	
↳ data on annual basis	[Yes / No]	
→ if no, provide step used	[Number]	

___ Fully Quantified ___ Partially Quantified ___ Not Quantified

Expected Results

Elements of a State Action Plan	Included?	Notes
Expected results data	[Yes / Partially / No]	
↳ from (starting date)	[Year]	
↳ to (ending date)	[Year]	
↳ data on annual basis	[Yes / No]	
→ if no, provide step used	[Number]	

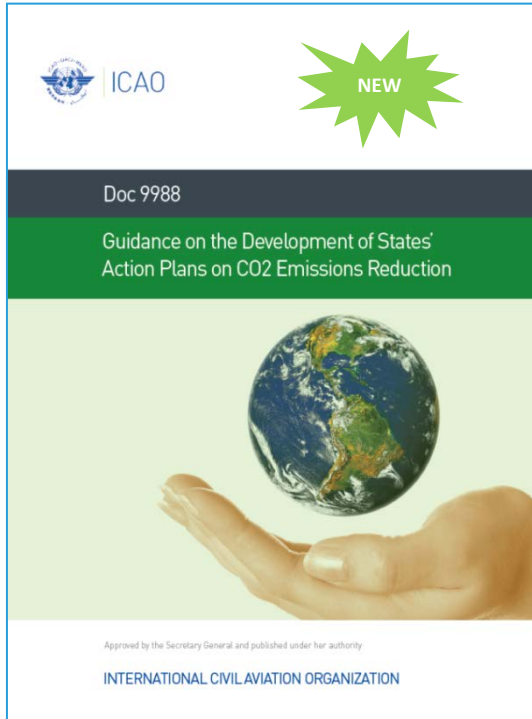
___ Fully Quantified ___ Partially Quantified ___ Not Quantified



Additional Notes:



Guidance: ICAO Doc 9988



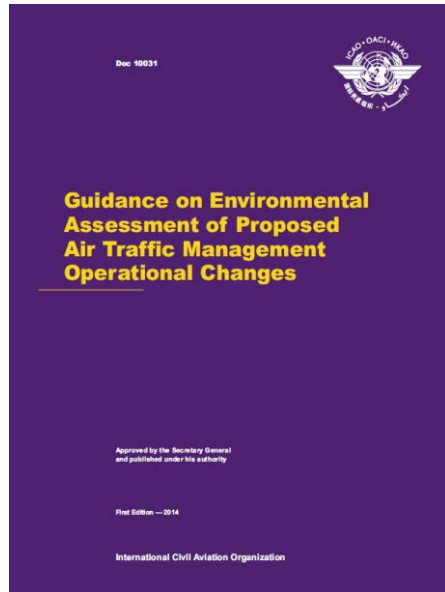
State Action Plan Focal Points have dedicated access to *Guidance on the Development of States' Action Plans on CO₂ Emissions Reduction Activities* Doc 9988 - ICAO Secure Portal - APER

It describes the required elements of a State Action Plan and provides a step-by-step guide on how to develop it

- Overview and introduction
- Baseline calculation
- Mitigation measures and expected results
- Implementation and assistance
- Appendix with examples and detailed information



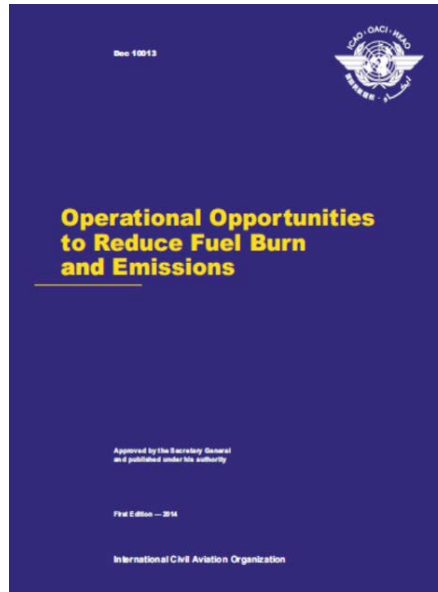
Supporting Guidance Documents



ICAO Doc 10031

Assessment of environmental effects from operations changes

Available on ICAO public website



ICAO Doc 10013

Airport operations, maintenance, weight reduction, air traffic management etc.

Available on APER website



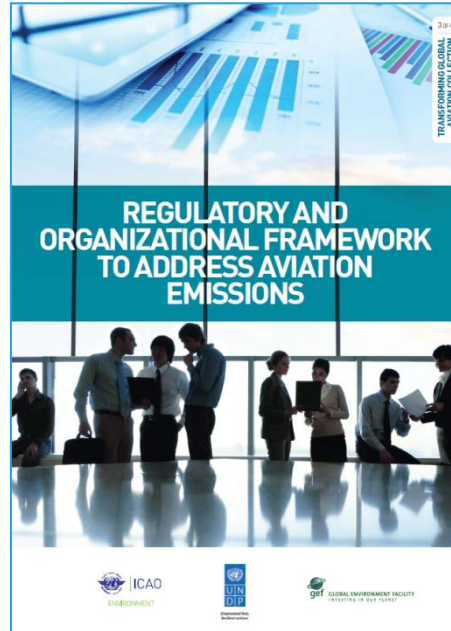
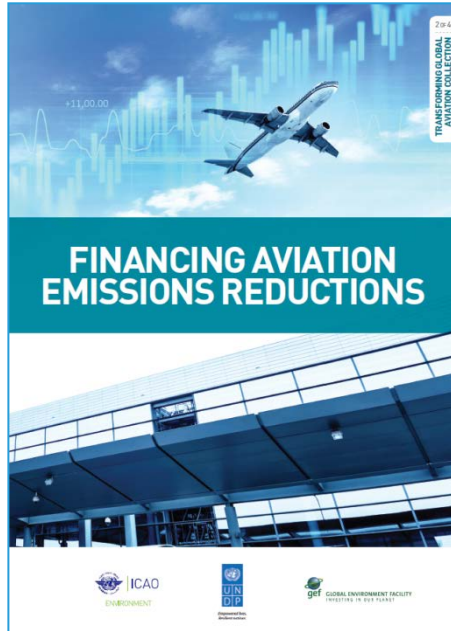
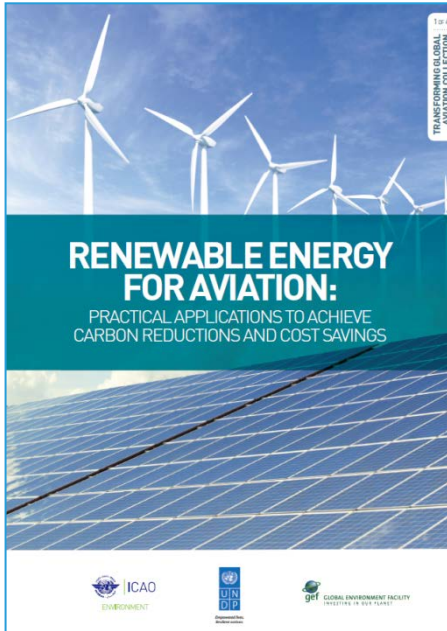
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Additional Guidance documents



Financed by the Global Environment Facility - GEF



ICAO Environmental Tools Suite



ICAO Carbon Emissions Calculator

Allows passengers/cargo to estimate CO₂ emissions from air travel



ICAO Fuel Savings Estimation Tool (IFSET)

Assists States in estimating fuel savings from operational improvements



ICAO Green Meetings Calculator

Supports decision making in minimizing CO₂ emissions from air travel to attend meetings



ICAO CORSIA CERT

ICAO CORSIA CERT supports aeroplane operators in fulfilling their monitoring and reporting requirements in CORSIA by populating the standardized Emissions Monitoring Plan and Emissions Report templates

<https://www.icao.int/environmental-protection/Pages/Tools.aspx>



ICAO Environmental Tools Suite

Additional tools* to facilitate the preparation of State's Action Plans:

- **ICAO Environmental Benefit Tool**
Helps States to develop their Action Plan (Baseline, Mitigation Measures, Expected Results)
- **Marginal Abatement Cost Curve**
- **ICAO Aviation Environmental System (AES)**
Allows CAAs to monitor CO₂ emissions from international aviation at State level
- **ICAO Online Training INTERNATIONAL AVIATION: States' Action Plan**



* Developed for specific uses and for specific users.



ICAO capacity building, assistance, and partnerships

→ Facilitate financing for development and implementation of States' Action Plans

- ICAO-EU project: *Capacity Building for CO₂ Mitigation from International Aviation*
- ICAO-UNDP project: *Transforming the Global Aviation Sector: Emission Reduction from International Aviation*

→ Support States for the implementation of CORSIA

- ICAO-Germany *Small-Scale Implementation Project of the CORSIA MRV system*

→ Various projects supporting the basket of measures for international aviation

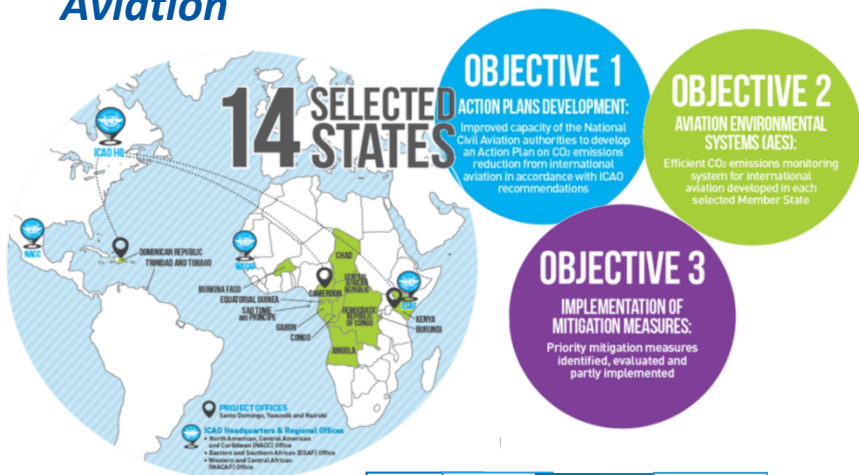
- United Nations Framework Convention on Climate Change (UNFCCC)
- United Nations Institute for Training and Research (UNITAR)
- Accreditation with the Green Climate Fund (GCF)



ICAO capacity building, assistance, and partnerships

→ ICAO-EU project *Capacity Building for CO₂ Mitigation from International Aviation*

→ ICAO-UNDP project *Transforming the Global Aviation Sector: Emission Reduction from International Aviation*



- Development of guidance documents on Sustainable Aviation Fuels, Renewable Energy, Governance, and Financing Aviation Emissions Reductions
- Implementation of a pilot project on renewable energy at two international airports in Jamaica



SOLAR-AT-GATE PROJECT



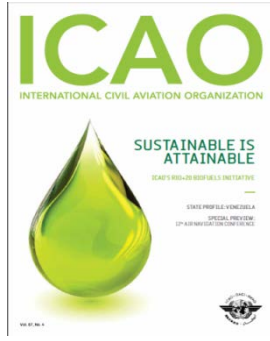


In Summary

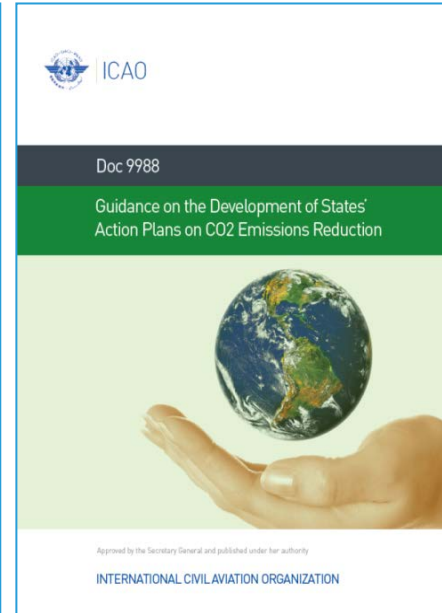
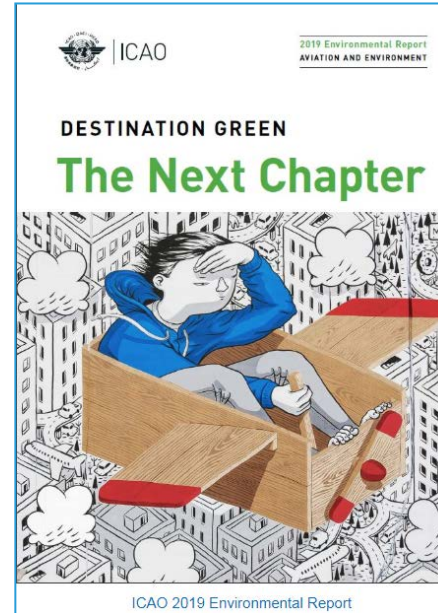
- ICAO encourages all Member States to develop a State Action Plan and **keep it up-to-date** – every 3 years – **NEXT UPDATE 2021**
- State Action Plans provide **States an opportunity to identify measures** that will improve fuel efficiency and reduce emissions
- Assembly encourages **robust and quantified** State Action Plans allow ICAO to assess future progress toward the achievement of ICAO global aspirational goals
- Exchange of information with national stakeholders is key - facilitate the implementation of mitigation measures



Additional Information



ICAO 2016 ENVIRONMENTAL REPORT



For more information, please visit our website: <http://www.icao.int/env>



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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