



ICAO

ENVIRONMENT

NO COUNTRY LEFT BEHIND



ICAO Strategy to deal with aviation emissions

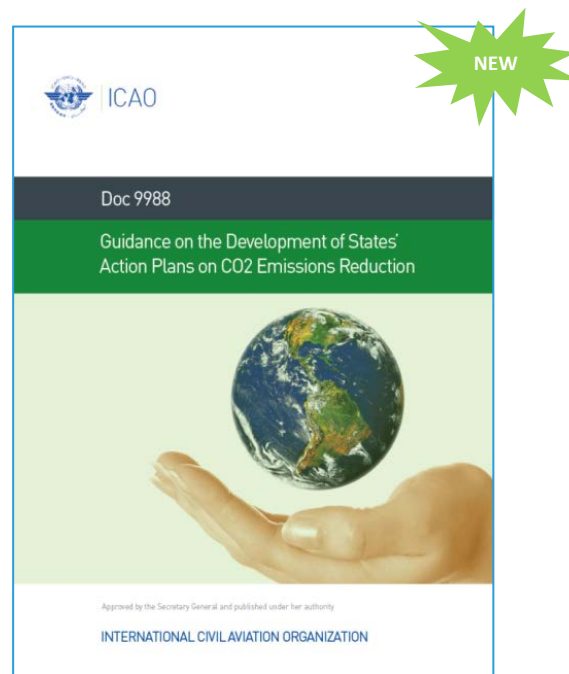
The State Action Plan Process





Overview

- Action Plan Components
- Focal Point
- Action Plan Team
 - Stakeholder involvement
 - Mitigation measures
- APER website
- ICAO Support
- Project management
- Data collection and reporting



Important chapters:
2.6, 3.3 and 4.3



Minimum Content

1

Contact information

2

Baseline Scenario (without action) fuel consumption CO₂ emissions and traffic (2010 or earlier to 2050)

3

List of selected measures

4

Expected results (fuel consumption, CO₂ emissions and traffic with the actions in #3 being taken 2017 to 2050)

5

Assistance needs (if needed)

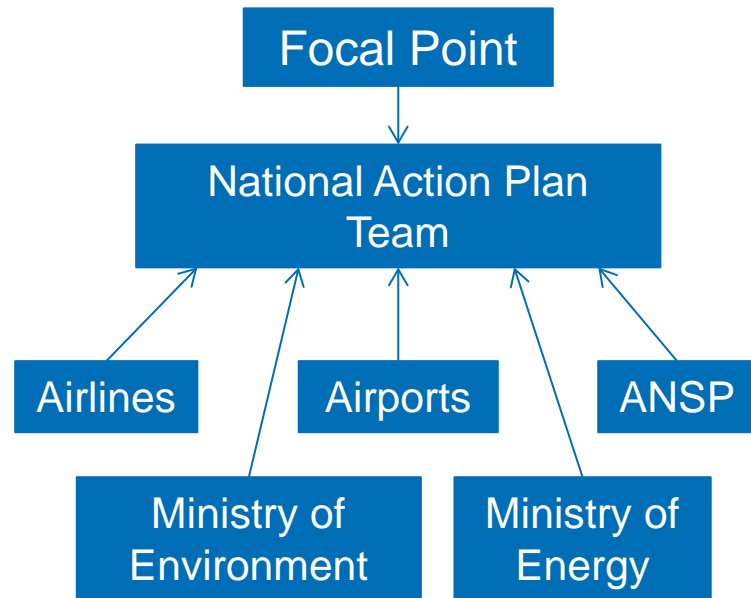
ICAO assesses all submitted State Action Plans against the same criteria

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





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 is critical and plays a critical role in the successful development of an Action Plan. He/She:
 - Builds momentum
 - Drives various interests towards a common goal
 - 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

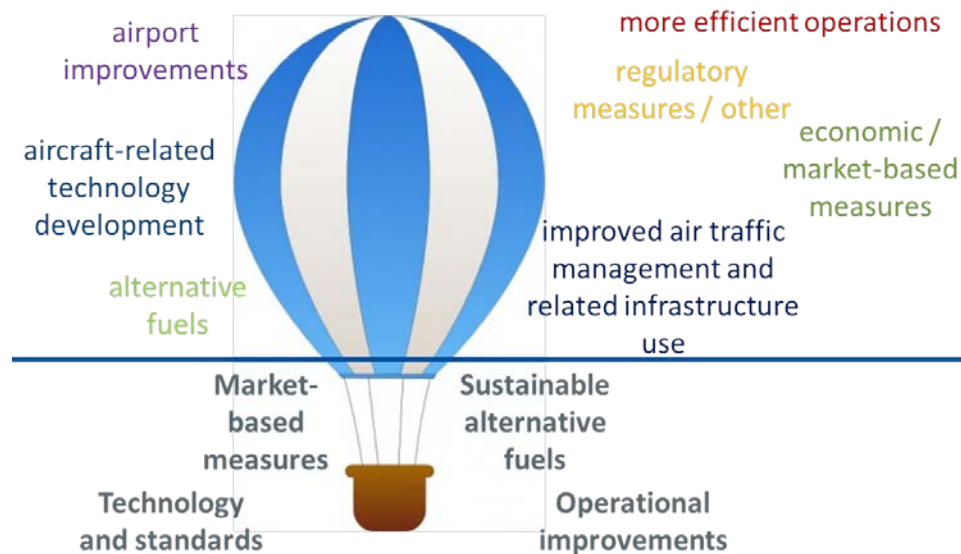
- In order to develop the State Action Plan the Focal Point needs to work with a **Team** including the **different Aviation Stakeholders**
- Data needed for the development of the State Action Plan and the information on implementation of the mitigation measures - provided by the different Members of 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



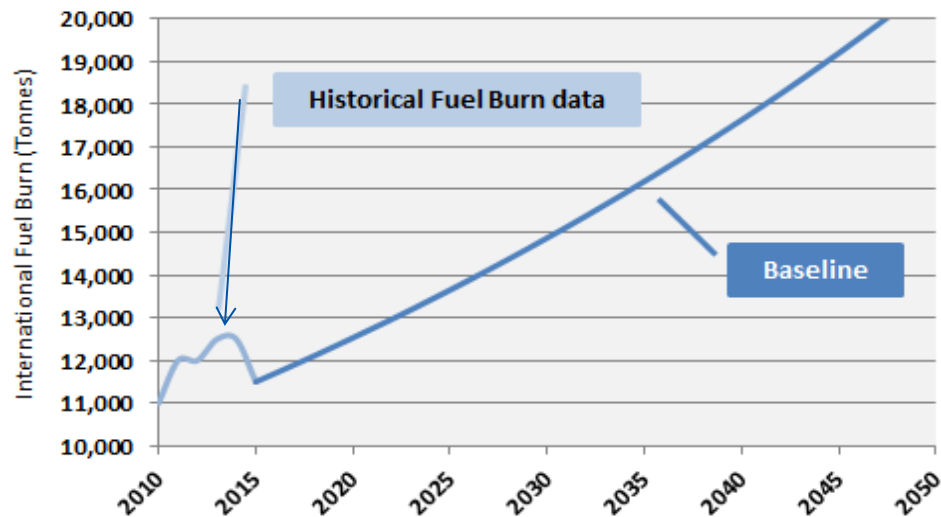
Baseline scenario

- 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

- 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

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 200,000 commercial flights with drop-in aviation fuels ; 6 conversion processes ; 7 airports distributing drop-in aviation fuels	
Global market-based measure	Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)	

economic /
market-based
measures

regulatory
measures /
other

aircraft-related
technology
development

alternative
fuels

improved air traffic
management and related
infrastructure use

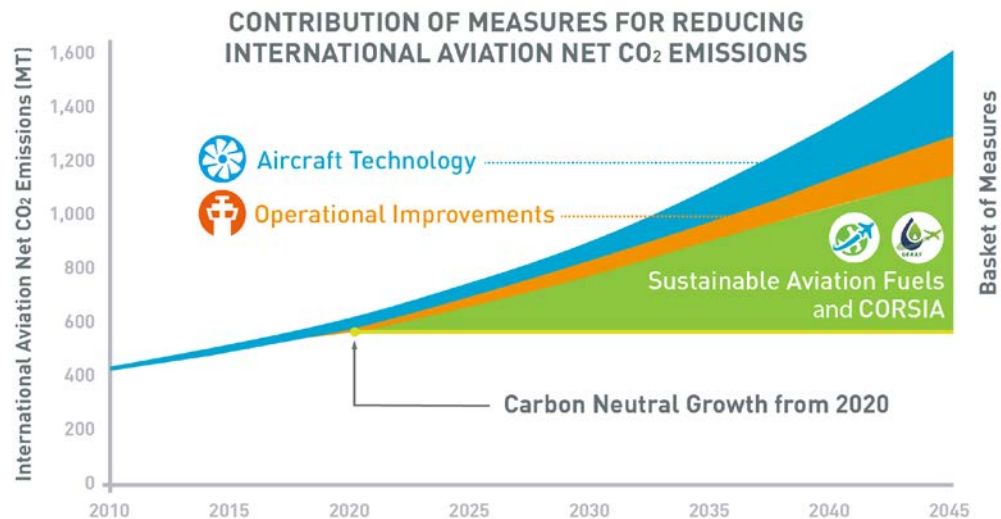
more efficient
operations

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))



Basket of Measures



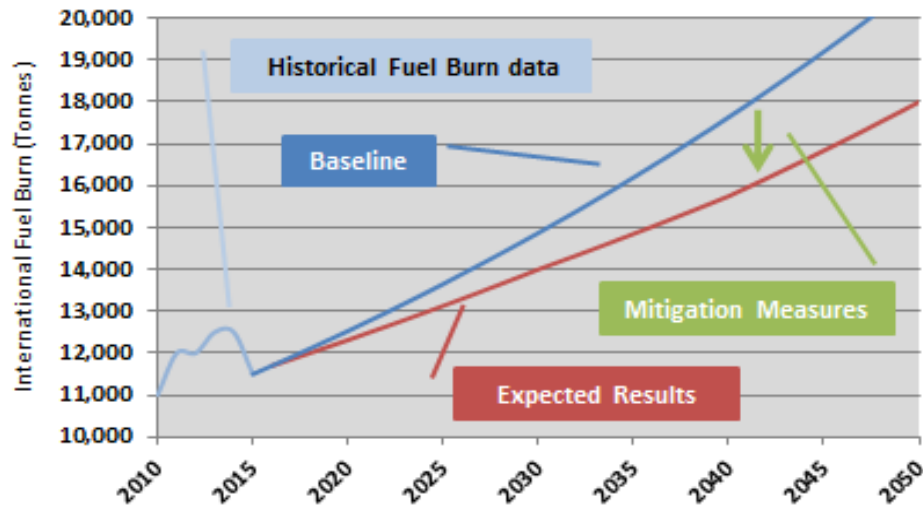
Selection of Mitigation Measures

- 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

**Step 1**

Contact Info

APER website – Step 1

- Main contact
 - State Focal Point for the Action Plan
 - Same Focal Point as for the ICAO-EU project in some States
- Other contacts
 - Individual points of contact for different parts of the action plan
 - Usually members of the Action Plan Team



Step 2 Baseline

APER website – Step 2

- Comprehensive baseline scenario by year
 - Traffic, fuel consumption, and CO₂ emissions in the absence of action
- **Metrics** used to measure progress
 - Volume of fuel per RTK
 - Net CO₂ emissions
- Methodology used in the Action Plan for the attribution of international aviation emissions to your State
 - ICAO Methodology – (Country of registration)
 - IPCC Methodology – (Country of departure)
- Supporting documents



Step 3

Identification of Mitigation Measures

APER website – Step 3

- Identification of proposed measures
 - Description of the action
 - Date of implementation (start date) and date when benefits start
 - Anticipated change in fuel and/or CO₂ emissions
 - Economic Cost
 - Co-benefits
 - Barriers to implementation (if any)
 - Reference to relevant legislation (if appropriate)



Step 4

Expected results

APER website – Step 4

- The expected results represent the projected fuel consumption and CO₂ emissions after the implementation of the measures selected.
- Projected fuel consumption, CO₂ emissions and traffic for the same future years as the baseline scenario should therefore be shown.
- Only aggregate expected results need to be submitted, but the guidance allow the incremental benefits of each measure to be calculated.
- **Rules of Thumbs** are provided by ICAO to estimate the expected benefits of the measures in the basket of measures.

EBT
Tool



Step 4 Expected results

APER website – Step 4 con't

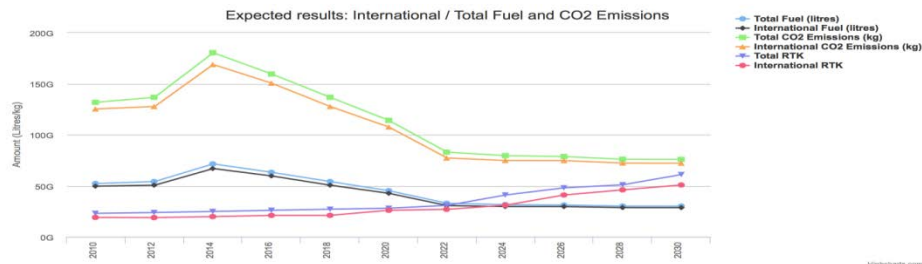
Expected Results

Expected results represent the projected fuel consumption and CO₂ emissions (i.e. after implementation of mitigation actions) that the State envisages to reach.

[Show Chart](#)

Year	Total RTK	International RTK	Total Fuel (litres)	International Fuel (litres)	Total Fuel Efficiency	International Fuel Efficiency	Total CO2 Emissions (kg)	International CO2 Emissions (kg)
2010	22,986,382,000.6	18,986,382,000.6	52,192,112,670.5	49,620,459,480.8	2.3	2.6	131,816,399,770.3	125,321,432,480.2
2012	23,790,905,001.0	18,790,905,001.0	54,143,306,370.5	50,571,653,180.8	2.3	2.7	136,744,334,580.2	127,723,767,290.1
2014	24,790,905,001.0	19,790,905,001.0	71,442,554,290.5	66,870,901,100.7	2.9	3.4	180,435,315,120.7	168,889,147,830.6
2016	25,986,382,000.6	20,986,382,000.6	63,192,112,670.5	59,620,459,480.8	2.4	2.8	159,597,999,770.3	150,577,432,480.2
2018	26,986,382,000.6	20,986,382,000.6	54,143,306,370.5	50,571,653,180.8	2.0	2.4	136,744,334,580.2	127,723,767,290.1
2020	27,986,382,000.6	25,986,382,000.6	45,192,112,670.5	42,620,459,480.8	1.6	1.6	114,137,199,770.3	107,642,232,480.2

Click the icon to calculate the annual improvement



highcharts.com



APER website - Step 4 con't

- Assistance Needs:
 - Last part of the Action Plan
 - Important to create new partnerships and mobilize support for the implementation of mitigation measures
 - ICAO can facilitate access to the required assistance
 - Can be added on the APER website as supporting document

Supporting Documents

Upload New Document

File Name

Assistance Request - Alternative Fuels.pdf

**Step 5**

Review Input and Submit to ICAO

APER website – Step 5

- Review inputs
Opportunity to review all details
- Submit to ICAO

Only the Focal Point can submit



Publicly available www.icao.int

ICAO Tools

- Carbon Calculator for States



- IFSET



- Environmental Benefits Tools (EBT)

Additionally
available as
Apple and
Android
applications



EBT Activation

1. Please click the "Enable Editing" button above.

- AND/OR
2. Please click the "Enable Content" button above.

3. Please click on the button "Continue" below.


WELCOME TO THE ENVIRONMENTAL BENEFIT TOOL (EBT)

A tutorial has been developed on how to use the EBT.
The tutorial (text and video) can be accessed at all times by clicking on the button depicted below.



[Go to the tutorial](#)

[Skip the tutorial](#)

- ICAO Online Training on States Action' Plans





ICAO Environmental Tools

- State Action Plan Focal Points
 - Action Plan for Emissions Reduction (APER) Website
 - Environmental Benefit Tool (EBT)
 - Marginal Abatement Cost (MAC) Curve Tool





Feedback form

ICAO State Action Plan Feedback Form

☐ Required
☐ Optional

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



Project Management

- Developing and implementing an Action Plan resembles the execution of any project:
 - Defines an objective and a timeline
 - Identifies and mobilizes the resources needed to meet the objectives
 - Involves a range of stakeholders and necessitates interaction and consultation

Stakeholder involvement and thorough planning is key to success



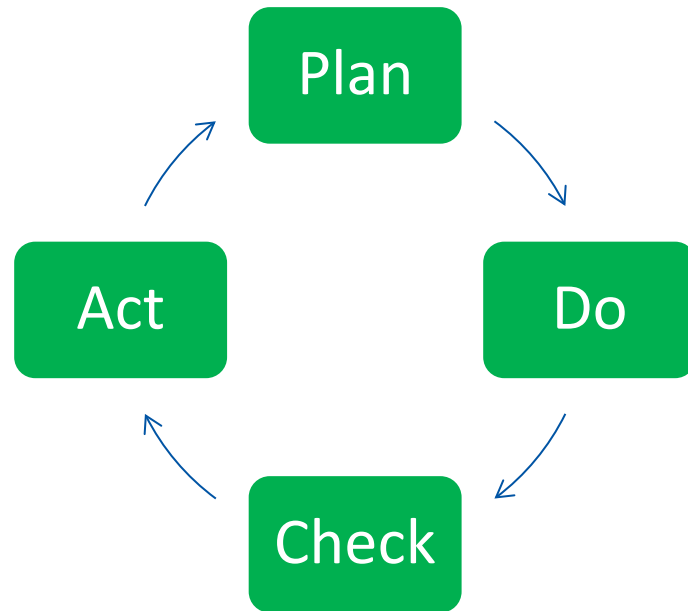
Action Plans and Project Management

PLAN: Assemble team → collect data → establish baseline scenario → select mitigation measures → quantify expected impact of measures → Identify assistance needs

DO: Implement the Action Plan and monitor progress towards established goals

CHECK: Analyze results (i.e. fuel burn and emissions) and compare against established goals in Action Plan

ACT: Make adjustments according to results and reflect this in updated 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 A39-2 “*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



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)
 - Organizing workshops and training seminars
 - Partnering States through the State Action Plan Buddy Programme
 - Answering questions and providing support



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
 - Outline their respective policies and actions



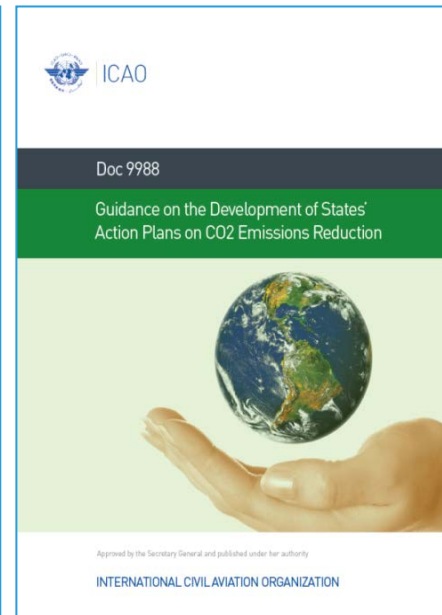
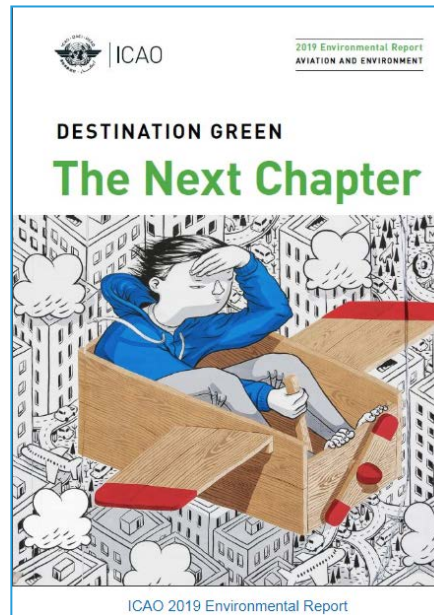
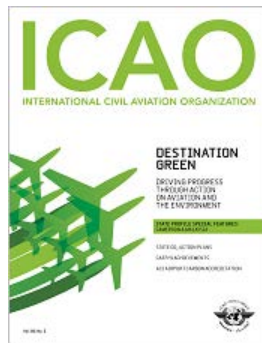
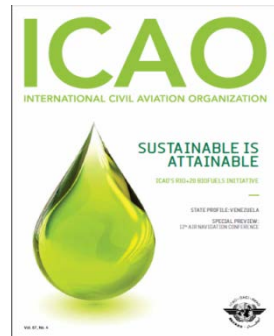
ICAO

ENVIRONMENT

NO COUNTRY LEFT BEHIND



Additional Information



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



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