



ICAO

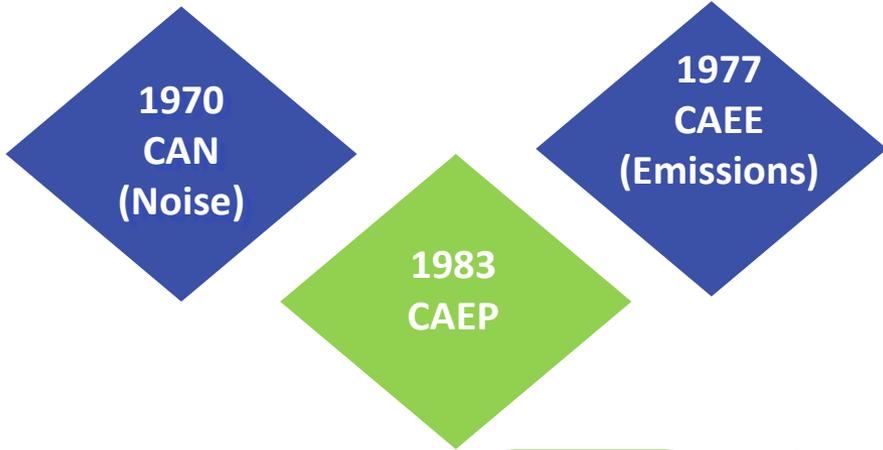
ENVIRONMENT



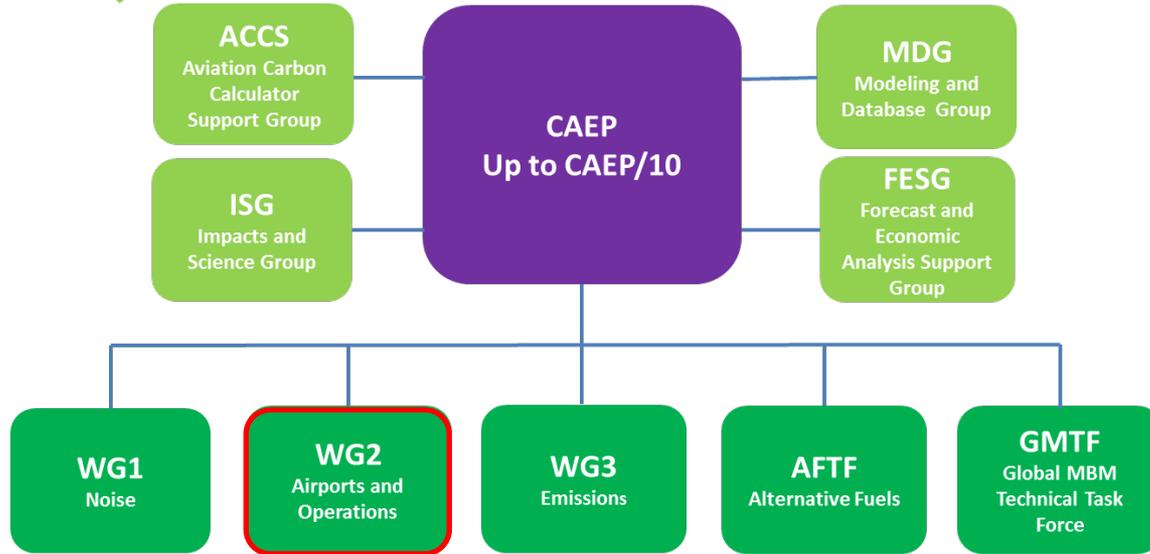
Operational improvements

Blandine Ferrier
Environment Branch
ICAO Air Transport Bureau





Established by the ICAO Council in 1983, superseding the Committee on Aircraft Noise (CAN) and the Committee on Aircraft Engine Emissions (CAEE)



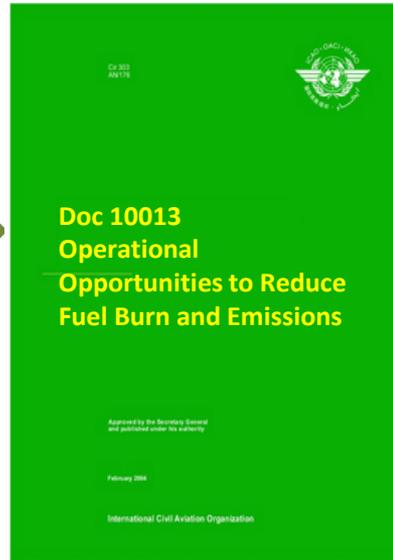
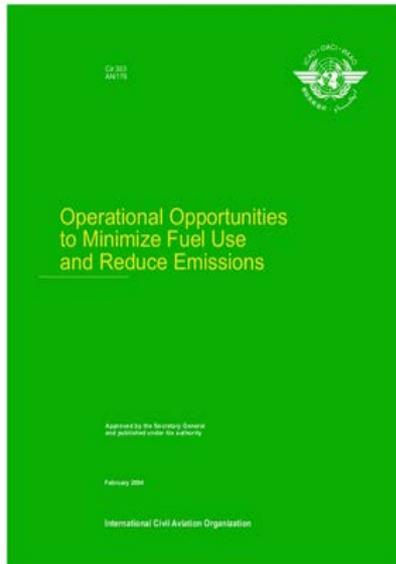


Guidance and Tools

Guidance Documents – in February 2013, CAEP recommended a new set of guidance materials and tools that will provide States and the aviation community with state-of-the-art information in this area

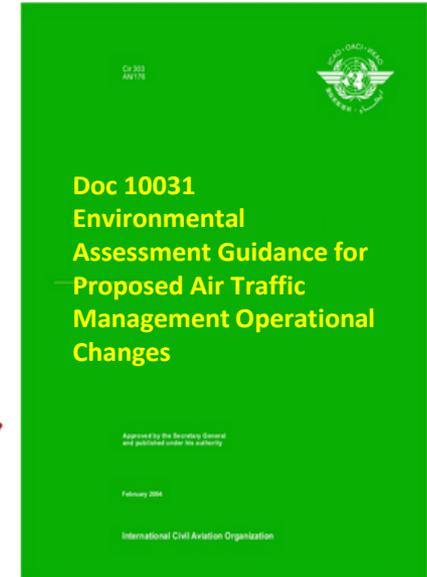


Guidance and Tools



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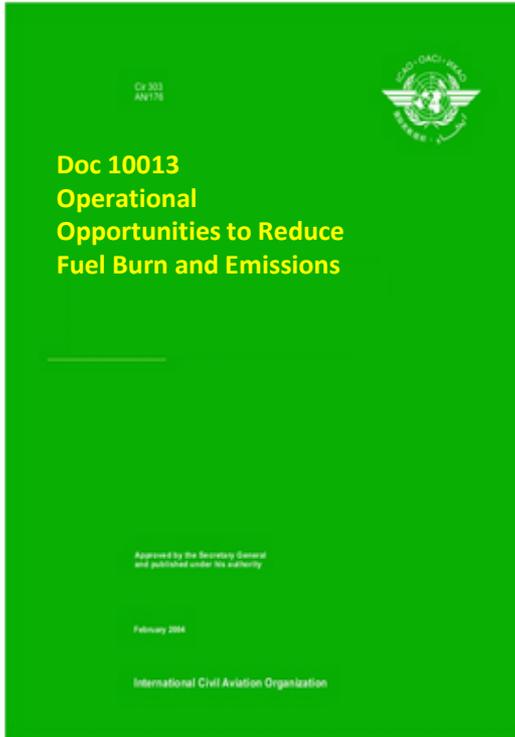
NEW !!!



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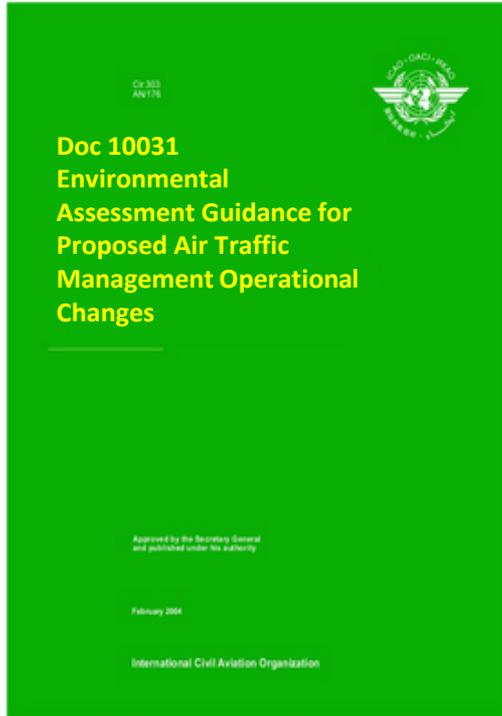
Guidance and Tools



- Update of the ICAO circular 303 which is to be published as a new ICAO manual.
- Information on airport operations, maintenance, weight reduction, air traffic management, and other aircraft operations



Guidance and Tools



- The information contained in this new guidance document was made available to States in 2011 on a preliminary basis to assist in the development of State Action Plan



Guidance and Tools

Tools – The ICAO Secretariat has continued to create new tools to assess the environmental impact of international aviation operations.



ICAO Fuel Savings Estimation Tool (IFSET)



Aviation System Block Upgrade (ASBU)



Expected Goals

Based on a study made by the Independent Expert Operational Goals Groups (IEOGG), Operational improvements have the following potential fuel reduction:

FINAL REPORT OF THE INDEPENDENT EXPERT

OPERATIONAL GOALS GROUP (IEOGG)

1. INTRODUCTION

1.1 Operational improvements, in conjunction with aircraft technology improvements, are key elements that contribute to the achievement of ICAO environmental goals and the sustainability of the aviation sector. ICAO therefore requires the thorough assessment and definition of potential environmental goals.

1.2 The high-level purpose of operational goals is to inform decision makers of achievable environmental benefits if the potential improvements are implemented. In addition, these goals will provide valuable input into the ICAO Committee on Aviation Environmental Protection (CAEP)'s environmental trend assessment process through its Modelling and Databases Group (MDG).

2. BACKGROUND

Goal	2020	2030	2040
Goal	3.25 %	6.75 %	9.00 %
LCL (Lower Confidence Limit)	2.25 %	4.50 %	5.75 %

All results indicate a reduction in fuel usage/emissions relative to 2010 levels.



Expected Goals

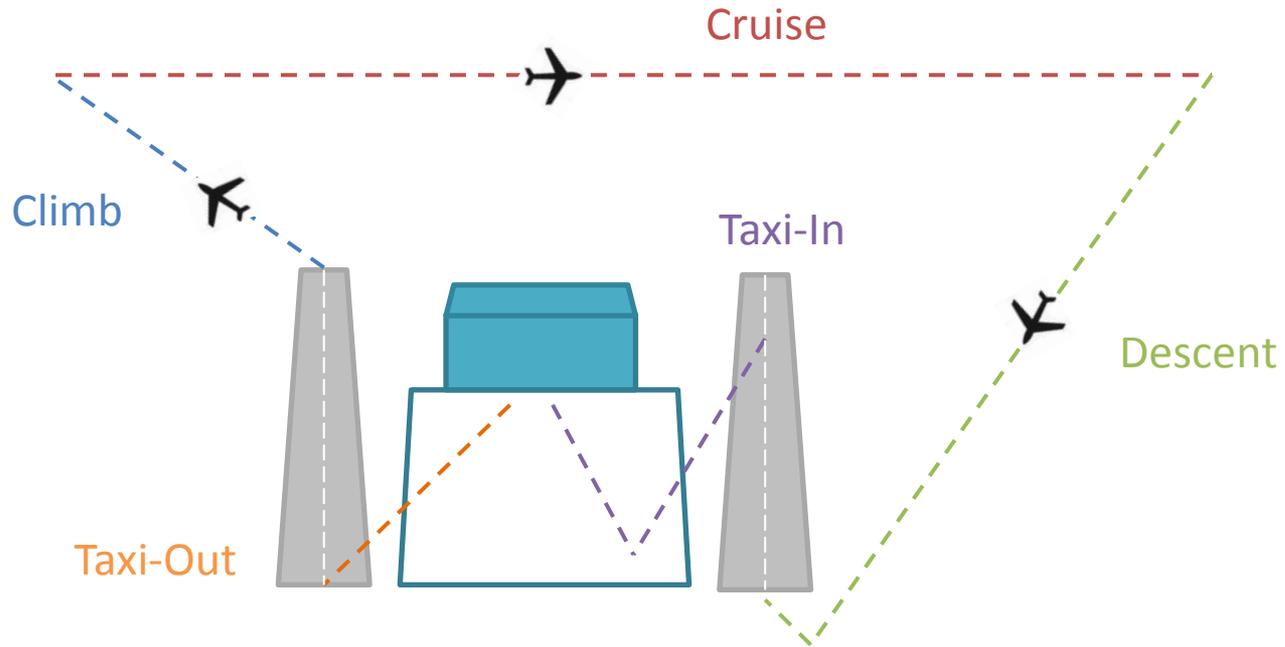
Potential fuel reduction/emission by phase of flight:

Goal	Taxi-Out	Climb	Cruise	Descent	Taxi-In
2020 Goal	33.50 %	0.50 %	1.50 %	4.75 %	27.25 %
LCL	22.25 %	0.25 %	0.75 %	3.25 %	18.75 %
2030 Goal	62.25 %	0.75 %	3.50 %	12.00 %	50.50 %
LCL	39.00 %	0.50 %	1.75 %	7.50 %	30.75 %
2040 Goal	81.25 %	1.00 %	4.75 %	14.75 %	66.50 %
LCL	49.75 %	0.75 %	2.50 %	9.00 %	40.75 %

Background – Definition – Examples – Expected Goals – Guidance and Tools



Where and when Operational improvements take place ?



Examples

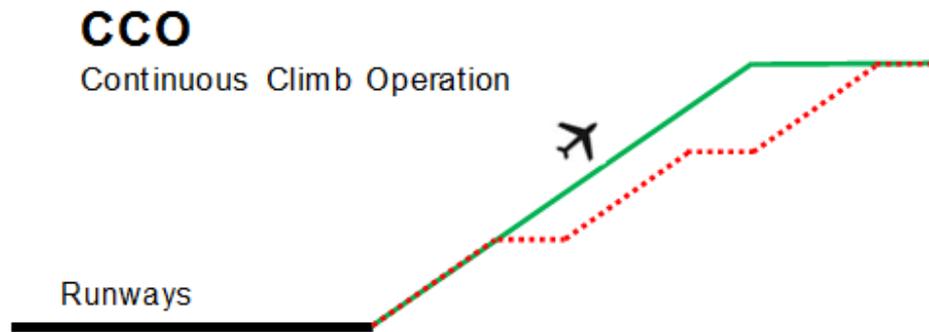
- **Taxi-Out and Taxi-in:** Minimum engine taxi and better surface management.
 - single engine taxi
 - electric taxi



Sources: EGTS (Airbus) and WheelTug



- **Take off and Climb:** operations that require the greatest engine thrust (highest fuel use).
- Continuous Climb Operations



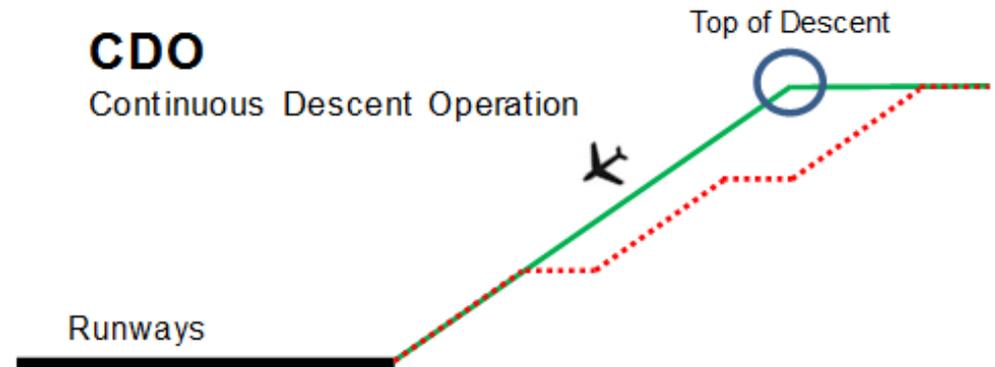
For more information see *Continuous Climb Operations Manual, ICAO Doc 9993*



- **Cruise:** optimization of cruise trajectories. Collaboration among all Stakeholders to fully optimize the cruise performance improvement.
 - Fly using the shortest air distance
 - Fly at the most fuel-efficient speed
 - Managing aircraft system to minimize fuel usage
 - ...

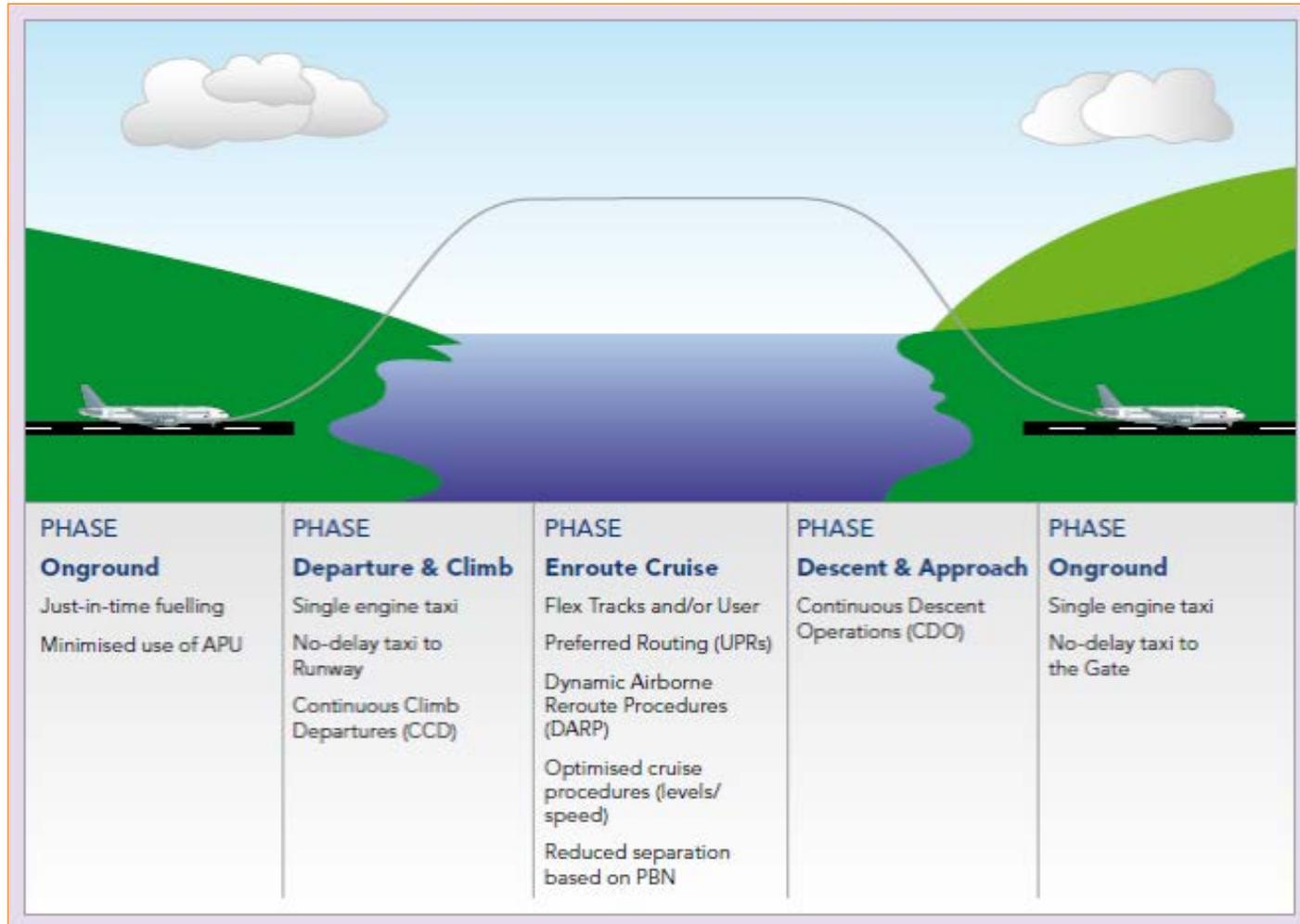


- **Descent and Landing:** Optimized profile descents; speed control en route to reduce congestion in terminal in near term;
 - Continuous Descent Operation (CDO)
 - Arrival Manager (DMAN)



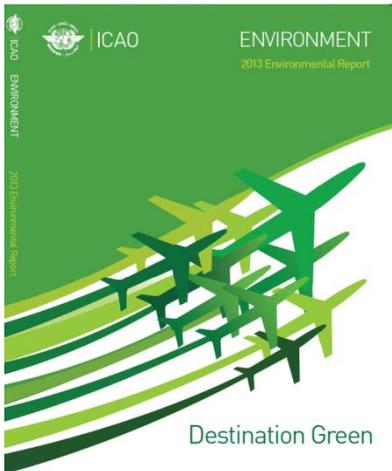


Operational improvements





For more information on ICAO activities on Operational Improvements...



ICAO Web Page
www.icao.int/

THANK YOU

