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# International Civil Aviation Organization Environmental Work

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# International Civil Aviation Organization

UN specialized agency

Established by the “Chicago Convention” in 1944

Forum for cooperation in all fields of civil aviation

191 Contracting States

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

Focus on aircraft noise, local air quality and global climate

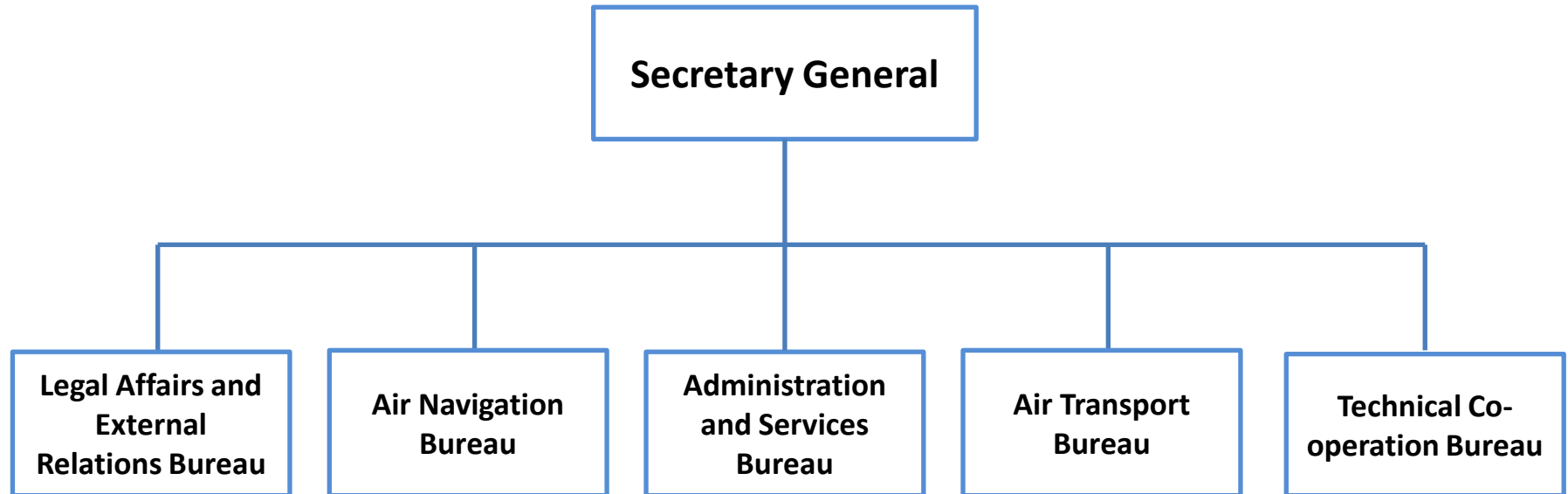




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International Civil Aviation Organization



**ICAO Environment Branch is under the  
Air Transport Bureau (ATB)**





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# Aviation in Context

## SOCIETY

**3 billion passengers** per year carried worldwide<sup>1</sup>

**56.6 million jobs** supported by aviation worldwide<sup>2</sup>

Scheduled worldwide passenger traffic forecast to **grow at 4.4%** per year<sup>1</sup>

## ECONOMY

**2.2 trillion USD** global economic impact<sup>2</sup>

Up to **3.5% of global GDP** supported<sup>2</sup>

**35% of world trade** by value carried<sup>2</sup>

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**2% of global human-made CO<sub>2</sub> emissions<sup>3</sup>**, approximately **65% of this 2% are from international aviation** (≈1.3%)

**Fast, reliable, and safe mode of transport**

**No comparative alternatives for long haul passenger transport**

Source: 1. ICAO Facts and Figures retrieved 27 March 2014, 2. ATAG "Aviation Benefits Beyond Borders,"2010, 3. IPCC 4th Assessment Report, 2007.



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4

# dB

Noise

Emissions

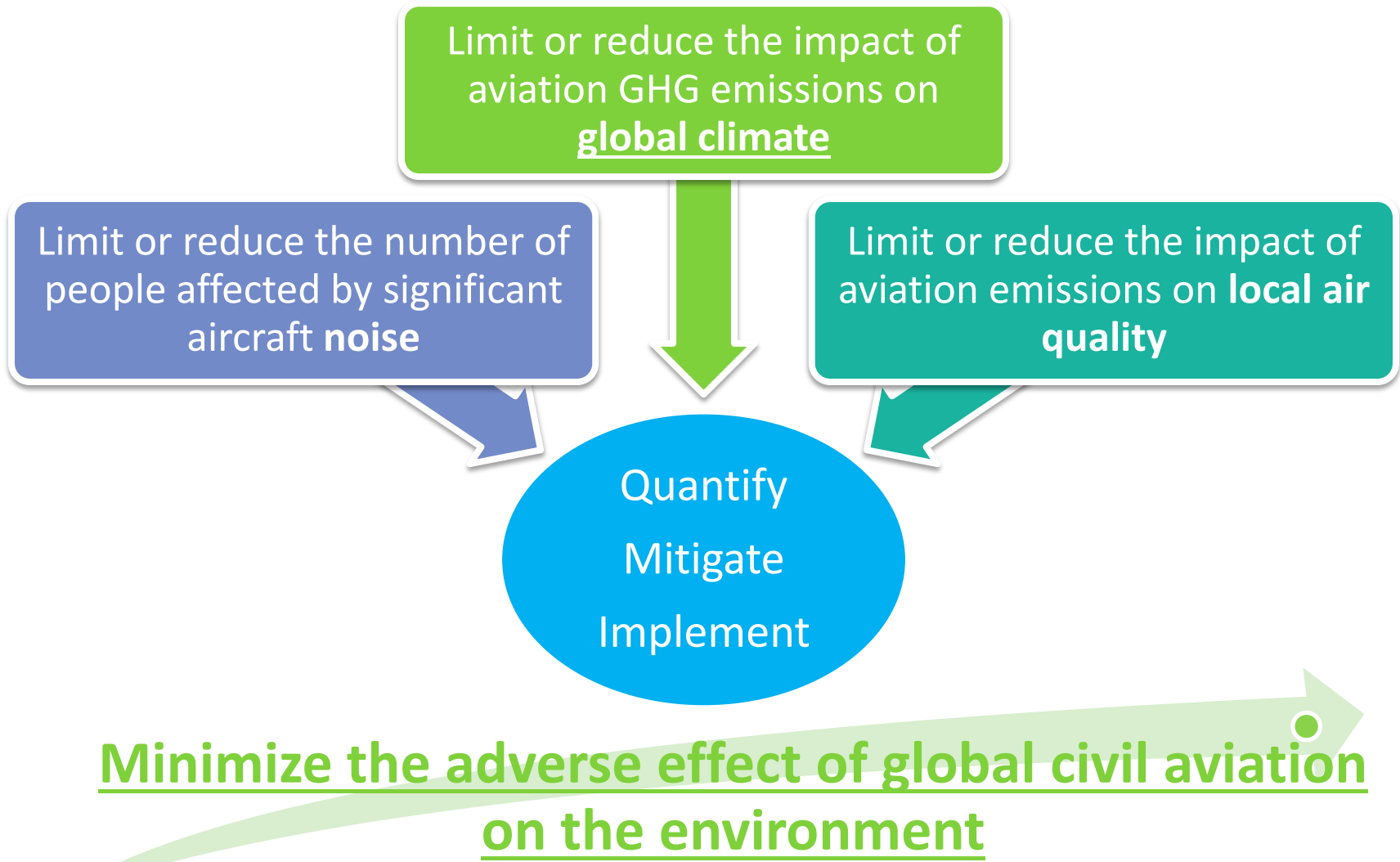
# CO<sub>2</sub>

# HC

# NO<sub>x</sub>

# CO







### Approach to Quantification through:

- Data Collection and Compilation (RTK, Fuels and Emissions Reduction)
- Forecasting
- Modelling

### Approach to Mitigation through:

- Technology and Standards
- Operational Measures
- Market-based Measures
- Alternative Fuels

### Approach to Implementation through:

- States' action plans and Assistance to States

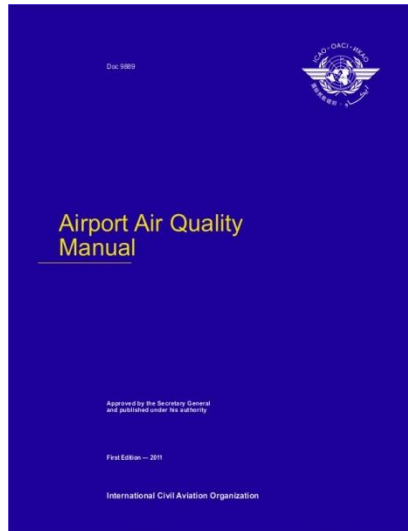
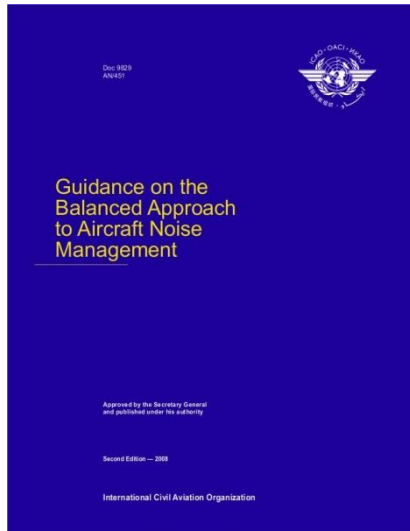
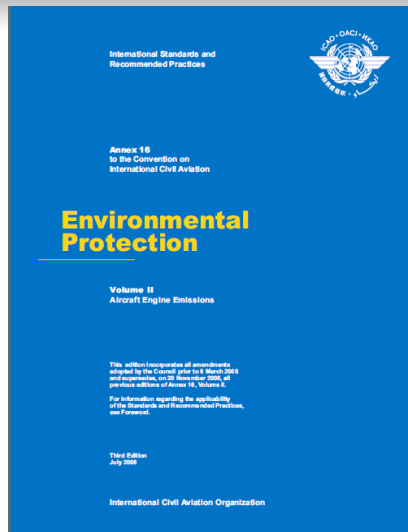
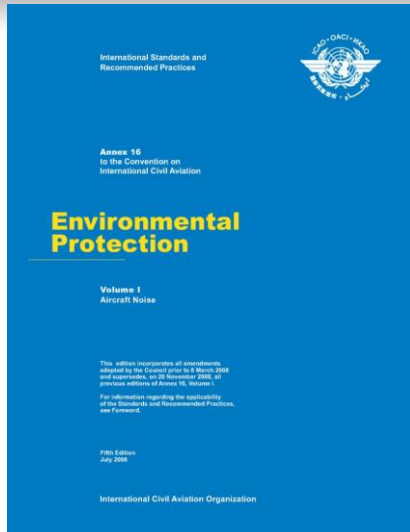




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# ICAO SARPs and Guidance



- **ICAO SARPs**

Annex 16 – Volume I, Aircraft Noise

Annex 16 – Volume II, Aircraft Engine Emissions

- **ICAO GUIDANCE**  
(examples)

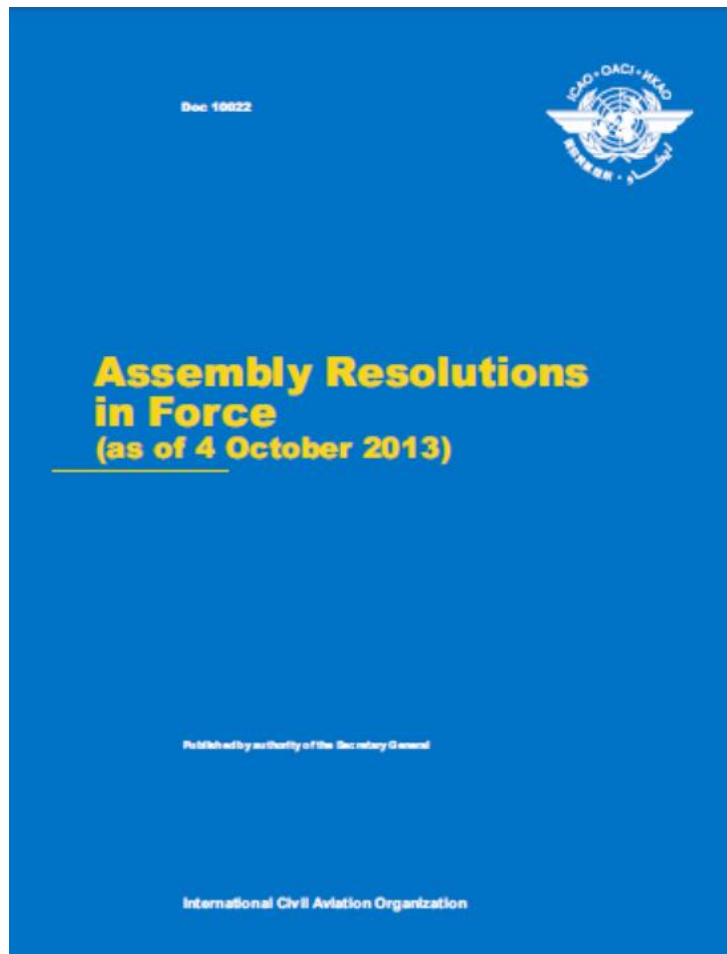
NOISE – *Guidance on the Balanced Approach to Aircraft Noise Management*  
(Doc 9829)

EMISSIONS – *Airport Air Quality Manual*  
(Doc 9889)



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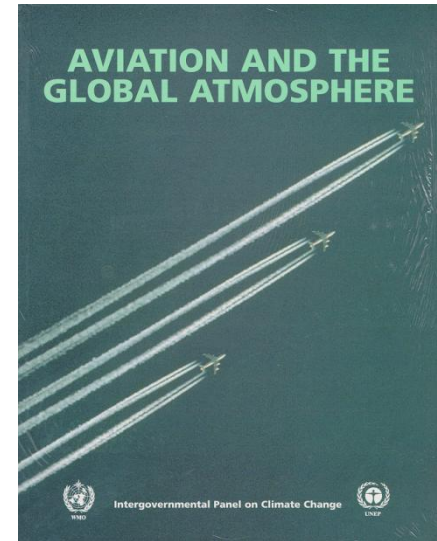




- **A38-17:** Consolidated statement of continuing ICAO policies and practices related to environmental protection – General provisions, noise and local air quality
- **A38-18:** Consolidated statement of continuing ICAO policies and practices related to environmental protection – Climate change



- IPCC Special Report on Aviation and the Global Atmosphere (1999)
- Climate Change 2007, the Fourth Assessment Report (AR4) published in 2007
- Kyoto Protocol, adopted 1997 came into effect 16 February 2005 – “... to pursue limitation or reduction of emissions of greenhouse gases from international aviation, working through ICAO”



# Liaison with other UN Bodies and International Organizations

|   |   |
|---|---|
| <b>UN Framework Convention on Climate Change (UNFCCC)</b> <ul style="list-style-type: none"> <li>• Implementation of the Convention and Kyoto Protocol (Art 2.2)</li> <li>• Post-2012 Negotiation on Climate Change</li> <li>• Coordinate Activities and Inputs to SBI, SBSTA, ADP</li> <li>• Aviation Emissions Data and Methodological Issues</li> <li>• Flexible Mechanisms – Aviation Projects for CDM</li> </ul>   | <b>Food and Agriculture Organization (FAO)</b> <p>Agricultural aspects of Sustainable Alternative Fuels</p>   |
| <b>Intergovernmental Panel on Climate Change (IPCC)</b> <ul style="list-style-type: none"> <li>• Special Report on Aviation and the Global Atmosphere – 1999</li> <li>• IPCC 4<sup>th</sup> and 5<sup>th</sup> Assessment Reports</li> <li>• Coordination on Methodologies</li> <li>• IPCC Guidelines for National Greenhouse Gas Inventories</li> <li>• IPCC Emissions Factors Database</li> <li>• IPCC Emissions Scenarios – Aviation Scenarios Inputs</li> </ul> | <b>UN Economic Commission for Europe (UNECE)</b> <p>Conference on Transport and Environment</p>   |
| <b>UN Environment Programme (UNEP)</b> <ul style="list-style-type: none"> <li>• EMG/IMG – Carbon Neutral UN Initiative</li> <li>• EMG/IMG – Green Economy</li> <li>• EMG/IMG – Sustainability Management</li> <li>• Sustainable UN (SUN)</li> </ul>   | <b>UNECE Convention on Long-Range Transboundary Pollution (CLRTAP)</b> <p>Protocols on Substances – NO<sub>x</sub>, Volatile Organic Compounds (VOCs)</p>   |
| <b>UN World Meteorological Organization (WMO)</b> <ul style="list-style-type: none"> <li>• Adaptation</li> <li>• Data Collection</li> <li>• CAEP Technical Input</li> </ul>   | <b>Ozone Secretariat (Montreal Protocol)</b> <ul style="list-style-type: none"> <li>• Updates/guidance Regarding Montreal Protocol for the Depletion of Ozone</li> <li>• Scientific Assessment Panel</li> <li>• ANB in Charge of Use of Halons for Aircraft Fire-fighting</li> </ul>  |
| <b>UN Chief Executives Board for Coordination (UN CEB)</b> <ul style="list-style-type: none"> <li>• Participation on High Level Meetings</li> <li>• Statements on Climate Change Mitigation</li> </ul>  | <b>International Standards Organization (ISO)</b> <ul style="list-style-type: none"> <li>• TC20 – Aircraft and Space Vehicles</li> <li>• TC70 – Internal Combustion Engines*</li> <li>• TC146 – Air Quality</li> <li>• TC207 – Environmental Management*</li> </ul> <p>*Indirectly</p>  |
| <b>UN Industrial Development Organization (UNIDO)</b> <ul style="list-style-type: none"> <li>• Participation on High Level Meetings</li> <li>• Cooperation on Climate Change</li> </ul>   | <b>Society of Automotive Engineers (SAE International)</b> <ul style="list-style-type: none"> <li>• Aircraft Exhaust Emissions measurement (E-31)</li> <li>• Aircraft Noise Measure &amp; Noise Aviation Emission Modeling (E-21)</li> <li>• Ac-9 Aircraft Environmental Systems Committee</li> </ul>                           |
| <b>UN Commission on Sustainable Development (UN CSD)</b> <ul style="list-style-type: none"> <li>• Agenda 21 and Further Developments</li> <li>• Rio+12</li> <li>• MDG</li> <li>• SDG</li> </ul>   | <b>International Electrotechnical Commission (IEC)</b> <ul style="list-style-type: none"> <li>• Noise Measurement Instruments (Electroacoustic, Instrument Specifications, Performance Requirements)</li> <li>• IEC Publication Nos 179, 225, 651 and 804</li> <li>• IEC 60942; 61094 (Parts 3 and 4); 61260/61672-1</li> </ul> |
| <b>UN World Health Organization (WHO)</b> <p>Coordination on Noise and Health Legislation/Research Regarding Aviation</p>   | <b>International Chamber of Commerce – Commission on Transport and Logistics (ICC CST)</b> <p>Cooperation on Air Transport and Environment</p>  |
| <b>International Maritime Organization (IMO)</b> <p>Cooperation on climate change regarding sectoral approaches (bunkers)</p>   | <b>World Economic Forum (WEF)</b> <p>Cooperation on Climate Change Projects</p>   |
| <b>UN World Tourism Organization (UNWTO)</b> <p>Aviation Environmental Policies and Tourism</p>   | <b>International Energy Agency (IEA)</b> <p>Data Sharing on Related Issues (Fuel, CO<sub>2</sub>)</p>   |
| <b>High level Committee on Programmes (HLCP)</b> <ul style="list-style-type: none"> <li>• UN System Coordination</li> <li>• Climate Change</li> <li>• UNFCCC COP/CMP</li> </ul>   | <b>International Renewable Energy Agency (IRENA)</b> <ul style="list-style-type: none"> <li>• Renewable Energies</li> <li>• Aviation Biofuels</li> </ul>  |



- ICAO Work priorities are:
  - State action plans and assistance
  - Sustainable alternative fuels for aviation
  - Market-based Measures (MBMs)
  - Global aspirational goals
  - CO<sub>2</sub> Standard expected to be developed by 2016; and
  - work in cooperation with other UN bodies in particular in support to the UNFCCC process
- Climate change will remain the main challenge on the ICAO environmental activities in the upcoming years.





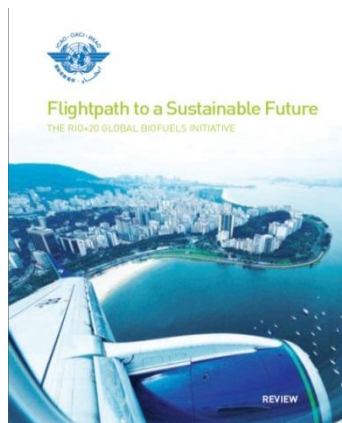
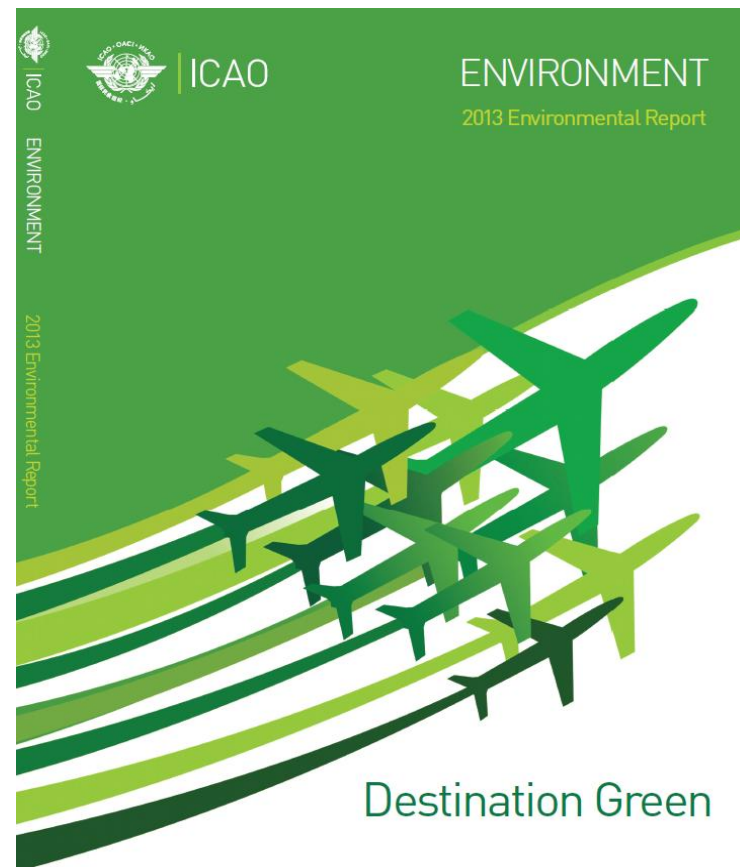
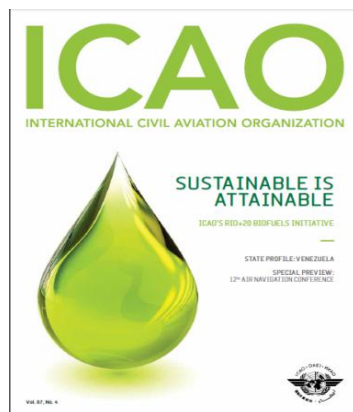
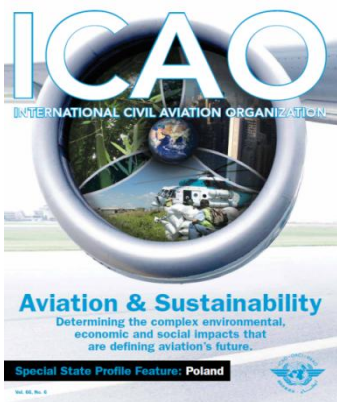


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## Additional information



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

