Achieving Climate Change Goals for International Aviation
Aviation Emissions in Context

- Fast, reliable, and safe mode of transport
- No comparative alternatives for long haul passenger transport
- 2.3 billion passengers per year carried worldwide
- Scheduled passenger traffic worldwide forecast to grow at ~4.7% per year
- Aircraft produced today are 70% more fuel efficient than 40 years ago
- First sector with a special IPCC report (1999)
- Responsible for up to 8% of global economy

Global GHG Emissions by Sector, 2004

- Agriculture: 14%
- Residential and Commercial Buildings: 8%
- Waste and Wastewater: 3%
- Energy Supply: 26%
- Forestry: 17%
- Industry: 19%
- Transport: 13%

Source: IPCC

Global Transportation CO₂ Emissions, 2000

- Road: 74%
- Aviation: 13%
- Other: 13%

Aviation’s Global CO₂ Emissions, 2000

- Global CO₂ Emissions: 98%
- Aviation CO₂ Emissions: 2% (Int’l Aviation’s Contribution was ~1.2%)
ICAO and UNFCCC Working Together

- **UNFCCC / Kyoto Protocol:**
  - Domestic aviation emissions

- **ICAO:**
  - International aviation emissions

- “It is vital that ICAO and the UNFCCC meet the challenge of climate change in a complementary fashion.”

**Christiana Figueres**, Executive Secretary of the UNFCCC
Where We Have Been

2.5% per year improvement in fuel efficiency
Where We Are Going
CAEP/8 Aviation CO$_2$ Trends to 2036
International Traffic Only

- Technology and operations
- Alt. Fuels and Economic Instruments

2% Annual Fuel Efficiency Improvement

CO$_2$ Mt

2006 2012 2018 2024 2030 2036
ICAO Analysis Conclusions

• 2% annual fuel efficiency goal to 2020 likely to be achieved

• Feasibility of more ambitious goals depends on work in all areas identified by the High-level Meeting – no single element can achieve the goals alone
  – Technology, Operations, Alternative Fuels, Economic Instruments

• Measures need to be applied as appropriate based on local circumstances
EC Conclusions

• A number of studies have demonstrated that it is feasible to set ambitious reduction goals for aviation.

• Cost effectiveness can be assured by allowing access to lower cost reduction in other sectors (international credits / offsets).

• The EU considers that a net 10% reduction in GHG emissions below 2005 levels by 2020 to be achievable.

• Technical, operational and market based measures should be pursued.
Results for U.S. Aviation

Can Achieve Carbon Neutral Growth
Industry Emissions Reduction Roadmap

- “Frozen technology” emissions
- Known technology, operations and infrastructure measures
- Biofuels and additional technology
- Carbon-neutral growth 2020
- Gross emissions trajectory
- Economic measures

CO₂ emissions

- No action
- Tech Ops Infra
- Biofuels + add. Tech

CNG 2020

-50% by 2050

(schematic)
Overall Conclusions

• Technology and operational efficiency make the 2% annual fuel efficiency goal until 2020 achievable
• Various analyses have shown the feasibility of achieving more ambitious goals at the State and the Regional levels
• Combination of measures need to be applied, as appropriate, based on local circumstances
For more information

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