



Transport and Energy the Challenge of Climate Change

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1. ICAO's Role and Working Methods

1.1 The International Civil Aviation Organization – ICAO – is a United Nations Specialised Agency and has been recognised by its 190 contracting States as the lead agency for dealing with all matters of international civil aviation, including its impact on the environment.

1.2 ICAO's role is to facilitate dialogue and collaboration within the aviation community on measures to address aviation's impact on climate change. As a result, the contracting States develop and decide on appropriate standards, guidance and policy recommendations.

1.3 Most of the environmental activities of ICAO are undertaken through the Committee on Aviation Environmental Protection – CAEP – which has been established by the Council of ICAO. CAEP is composed of experts from States, airline associations, aviation industry associations and environmental non-governmental organisations. The work of CAEP produces deliverables that are technologically feasible, environmentally beneficial, and economically reasonable. Various mechanisms such as technological improvements, i.e. reduction at source, as well as operational and market-based measures have been developed, and it is with these mechanisms that standards and guidance material aimed at limiting or reducing aircraft emissions have been established.

2. Some Results

2.1 Aircraft engines are required to meet certification standards adopted by ICAO. Of particular relevance to climate change is the standard for nitrogen oxides (NO_x), a precursor for ozone which, at higher altitudes, becomes a greenhouse gas. The current NO_x standards are about 40% more stringent than the original standard of 1981. Work is currently underway to determine the feasibility of lowering NO_x standards even further. An important step in this direction was the establishment of mid-term (2016) and long-term (2026) technology goals for NO_x reductions to assist engine emissions manufacturers in their planning.

2.2 Operational measures are equally important for reducing emissions. ICAO has produced information on their environmental benefits, and work is continuing on operational measures that can provide additional environmental benefits.

2.3 In addition to technological and operational measures, ICAO has been exploring market-based measures and has developed draft guidance material to help States integrate international civil aviation emissions into existing carbon trading schemes. ICAO is also exploring the use of other flexible mechanisms.

2.4 In 2004, at the 35th Session of its Assembly, ICAO developed a template agreement for voluntary measures to reduce aviation emissions. It was used by several contracting States as a model for their emissions policy. In September 2007, at the 36th Session of the Assembly, the focus was on developing

a framework for implementing policy options to limit or reduce the environmental impact of aircraft engine emissions through technology and standards, operational measures to reduce fuel consumption and market-based measures.

2.5 At the same time, ICAO is developing a harmonised methodology for estimation carbon emissions from aviation. This methodology will be useful for a large number of stakeholders and also for other United Nations bodies. On the one hand, it can help to assess consistently the contribution to CO₂ emissions from air travel and, on the other, facilitate the effort towards carbon neutrality.

2.6 ICAO has not been specifically involved in the question of fuel supply and the possible development of alternative fuels from that point of view. However, through CAEP, the development of alternative fuels has been closely monitored. It may be noted in this context that hydrogen, although it promises environmental advantages as a fuel, would pose considerable technical challenges as an aviation fuel, mainly because of the need for significantly larger fuel tanks than those required for currently used fuels. More information on both aspects of alternative fuels may be found in the ICAO Environmental Report which may be viewed on the ICAO website <http://www.icao.int/env/>.

3. Future Steps

3.1 Although significant progress has been made, the achievements will not be enough to fully offset the growth in carbon emissions from the sustained air traffic growth around the world.

3.2 ICAO is consequently continuing to pursue a comprehensive approach to the problem and has recently constituted the *Group on International Aviation and Climate Change* to develop and recommend to the Council a *Programme of Action on International Aviation and Climate Change* and a common strategy to limit or reduce greenhouse gas emissions attributable to international civil aviation, consistent with ICAO policies and practices related to environmental protection as confirmed by the ICAO Assembly in September 2007.

3.3 Aviation environmental protection is a complex challenge involving many interconnected technical, operational, economic, social and political factors. Delegates at the ICAO Assembly in September 2007 requested ICAO, among other things, to continue assessing the impact of aircraft engine emissions on the environment, proposing related policy options, and updating standards and related guidance for contracting States on the application of measures aimed at reducing or limiting the environmental impact of emissions.

3.4 As we move forward, we must ensure that action is taken in a cooperative and harmonized manner. Air transport is a driver of economic and social development especially among developing countries. The enormous benefits that can accrue from aviation may be jeopardized if they are achieved at the expense of the environment.

SOME AVIATION FACTS

ICAO Actual – All Air Traffic (2005):

Over 3 720 billion passenger-kilometres were logged by the world's scheduled airlines (domestic and international).

Nearly 143 billion tonne-kilometres of freight were transported by scheduled airline services (domestic and international).

Percentage of International Air Traffic (2005):

International traffic represents almost 60% of the total scheduled passenger traffic and about 83% of freight air traffic.

Future Air Traffic Growth (2005 – 2025):

Total scheduled passenger traffic worldwide is forecast to increase at an average annual rate of 4.6 per cent for the period 2005–2025.

International scheduled passenger traffic is expected to increase at 5.3% per annum from 2005 to 2025.

ICAO Environmental Goal on Global Emissions:

To limit or reduce the impact of aviation greenhouse gas emissions on the global climate.

Aviation contributes about 2% of globally produced CO₂ and accounts for 13% of fossil fuels consumed by transport.

Reducing Emissions at Source - Technology:

ICAO continuously reviews its environmental standards, promoting more efficient, cleaner aircraft. Today's modern aircraft are about 75% more fuel efficient in terms of CO₂ intensity than first-generation turbo-jet aircraft, NO_x emissions have been reduced by some 40%, soot and hydrocarbons has been virtually eliminated and continued improvements are expected.

Market-Based Measures:

Market-based measures are policy tools designed to achieve environmental goals at a lower cost and in a more flexible manner than traditional command and control regulatory measures.

Emissions Trading: The draft guidance document (ICAO Doc 9885) identifies a range of emission trading issues.

Voluntary Emissions: Trading Activities: ICAO/CAEP developed a template to facilitate voluntary agreements and collects information for the purpose of information sharing among stakeholders.

Carbon Offsets: ICAO is developing a harmonized, per-passenger emissions methodology, and provides guidance on carbon dioxide calculation methods and reference tools.